IBM Planning Analytics
Version 2 Release 0

Installation and Configuration

Note

Before you use this information and the product it supports, read the information in “Notices” on page 399.

Product Information

This document applies to IBM Planning Analytics Version 2.0 and might also apply to subsequent releases.

Last updated: 2020-10-12

Contents

Introduction

This document describes how to install, upgrade, and configure IBM® Planning Analytics Local software components on Microsoft Windows and UNIX operating systems.

Audience

Planning Analytics Local integrates business planning, performance measurement, and operational data to enable companies to optimize business effectiveness and customer interaction. Planning Analytics provides immediate visibility into data, accountability within a collaborative process, and a consistent view of information, allowing managers to quickly stabilize operational fluctuations and take advantage of new opportunities.

To use this document, you should be familiar with:

- Installation concepts
- Security issues
- Basic Windows or UNIX administration skills
- The existing server environment and security infrastructure in your organization
- Your Planning Analytics system and network requirements

Finding information

To find documentation on the web, including all translated documentation, access IBM Knowledge Center (http://www.ibm.com/support/knowledgecenter).

Security considerations

For security considerations for IBM Planning Analytics Local, see Chapter 15, “Planning Analytics Local security,” on page 233. Information on managing user and group authentication can be found in the *Managing Users and Groups* chapter of the *TM1 Operations* documentation.

Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products. The installation wizard has accessibility features. For more information, see Accessibility features.

IBM HTML documentation has accessibility features. PDF documents are supplemental and include no added accessibility features.

Accessibility checklist

This product's IBM Knowledge Center documentation is hosted in the IBM Knowledge Center - Hosted Edition service. To request the current accessibility status for the IBM Knowledge Center, visit the IBM Accessibility Research information web page (https://www.ibm.com/able/guidelines/ci162/accessibility_checklist.html) .

Forward-looking statements

This documentation describes the current functionality of the product. References to items that are not currently available may be included. No implication of any future availability should be inferred. Any such references are not a commitment, promise, or legal obligation to deliver any material, code, or functionality. The development, release, and timing of features or functionality remain at the sole discretion of IBM.

Samples disclaimer

The Sample Outdoors Company, Great Outdoors Company, GO Sales, any variation of the Sample Outdoors or Great Outdoors names, and Planning Sample depict fictitious business operations with sample data used to develop sample applications for IBM and IBM customers. These fictitious records include sample data for sales transactions, product distribution, finance, and human resources. Any resemblance to actual names, addresses, contact numbers, or transaction values is coincidental. Other sample files may contain fictional data manually or machine generated, factual data compiled from academic or public sources, or data used with permission of the copyright holder, for use as sample data to develop sample applications. Product names referenced may be the trademarks of their respective owners. Unauthorized duplication is prohibited.

Chapter 1. What's new in Planning Analytics

Read about what's new or updated in IBM Planning Analytics and components that are installed with Planning Analytics, such as TM1® Server, TM1 Web, TM1 Performance Modeler, and TM1 Architect. Some updates affect only IBM Planning Analytics Local.

Planning Analytics 2.0.9.3 - October 9, 2020

IBM Planning Analytics Local version 2.0.9.3 and the cloud release of IBM Planning Analytics version 2.0.9.3 includes updates for IBM TM1 Server version 11.8.2.

IBM Planning Analytics version 2.0.9.3 includes numerous improvements and defect fixes. This version does not include new features. However, PMHub is fully deprecated as of version 2.0.9.3, as previously announced in the IBM Planning Analytics 2.0 deprecation notices. For details about the impact of this deprecation, see PMHub deprecation.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

PMHub deprecation

PMHub is fully deprecated as of IBM Planning Analytics version 2.0.9.3, as previously announced in the IBM Planning Analytics 2.0 deprecation notices.

IBM Planning Analytics for Microsoft Excel must use hubless mode when upgrading to 2.0.9.3. In hubless mode, Planning Analytics for Microsoft Excel connects to Planning Analytics sources via Planning Analytics Workspace.

Planning Analytics for Microsoft Excel version 2.0.41 and prior do not support hubless mode. If you have version 2.0.41 or prior, please upgrade to the most recent version of Planning Analytics for Microsoft Excel when you install IBM Planning Analytics version 2.0.9.3

Planning Analytics for Microsoft Excel version 2.0.52 and later forces all non-overridden connections to IBM Planning Analytics version 2.0.9 or later to use hubless mode.

If you currently use an overridden connection to IBM Planning Analytics, you must remove the override to connect to IBM Planning Analytics version 2.0.9.3.

An overridden connection looks like this: `http://<hostname>/?pmhub&rest`. For example, `http://planninganalytics.ibmcloud.com/?pmhub&rest`.

You must remove the override and use `http://<hostname>/`. For example, `http://planninganalytics.ibmcloud.com/`.

Note that Exploration Views and Quick Reports encode their host information internally. As long as the `<hostname>` remains the same when moving from an overridden to a non-overridden connection, you do not need to modify any views or reports. In any circumstance, it is preferable to update your connection before interacting with any reporting content.

Planning Analytics 2.0.9.2 - July 27, 2020

IBM Planning Analytics Local version 2.0.9.2 and the cloud release of IBM Planning Analytics version 2.0.9.2 includes updates for IBM TM1 Server version 11.8.1.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

TM1 Web is no longer part of the Planning Analytics long cadence (LC) release

As of the 2.0.9.2 LC release of IBM Planning Analytics, TM1 Web is no longer included in the long cadence release.

Instead, new versions of TM1 Web will be available approximately once a month, similar to the release schedules of IBM Planning Analytics Workspace and IBM Planning Analytics for Microsoft Excel. The first version of TM1 Web to be available on this new schedule is 2.0.55 SC.

New installer for TM1 Web

As of the 2.0.9.2 LC/2.0.55 SC releases of IBM Planning Analytics, TM1 Web is installed with the IBM Planning Analytics Spreadsheet Services installer. TM1 Web is no longer part of the web tier within the Planning Analytics Local installer.

For details on installing TM1 Web with the IBM Planning Analytics Spreadsheet Services installer, see Installing and configuring Planning Analytics TM1 Web.

Planning Analytics 2.0.9.1 - May 21, 2020

IBM Planning Analytics Local version 2.0.9.1 and the cloud release of IBM Planning Analytics version 2.0.9.1 includes updates for IBM TM1 Server version 11.8.0.

IBM Planning Analytics version 2.0.9.1 includes numerous improvements and defect fixes, but does not include new features.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

Planning Analytics 2.0.9 - December 16, 2019

IBM Planning Analytics Local version 2.0.9 and the cloud release of IBM Planning Analytics version 2.0.9 includes updates and new features for IBM TM1 Server version 11.7.0.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

Manage a list of TM1 databases on the TM1 Admin Server

In TM1 Server version 11.7.0, you can set up one TM1 Admin Server that refers to the active TM1 databases for a model. All your users can point to the TM1 Admin Server and you can rapidly switch over from one TM1 database to another TM1 database. The TM1 Admin Server doesn't need to be restarted, which means that you can completely automate the failover to the backup system if a crash occurs on a TM1 database.

GET the list of databases that are available

To see which databases are currently self-registered, you can retrieve the list of TM1 databases that are registered with the TM1 Admin Server. You can use GET against the `~/api/v1/Servers` resource to find the list of all databases that are available.

```
GET http://<adminserver>:<adminserver_port>/api/v1/Servers
```

Example response body:

```
{
    "@odata.context": "$metadata#Servers",
    "value": [
        {
            "Name": "24retail",
            "SelfRegistered": true,
            "Host": "http://DESKTOP-RHJLSO4:8014",
            "IPAddress": "9.24.156.199",
```

```
            "IPv6Address": "",
            "PortNumber": 17414,
            "ClientMessagePortNumber": 0,
            "HTTPPortNumber": 8014,
            "IsLocal": false,
            "UsingSSL": false,
            "SSLCertificateID": null,
            "SSLCertificateAuthority": null,
            "SSLCertificateRevocationList": null,
            "ClientExportSSLSvrCert": false,
            "ClientExportSSLSvrKeyID": null,
            "AcceptingClients": true,
            "LastUpdated": "2020-01-09T13:44:04.566Z"
        },
        {
            "Name": "GO_New_Stores",
            "SelfRegistered": true,
            "Host": "https://DESKTOP-RHJLSO4:5010",
            "IPAddress": "9.24.156.199",
            "IPv6Address": "",
            "PortNumber": 45557,
            "ClientMessagePortNumber": 0,
            "HTTPPortNumber": 5010,
            "IsLocal": false,
            "UsingSSL": true,
            "SSLCertificateID": null,
            "SSLCertificateAuthority": null,
            "SSLCertificateRevocationList": null,
            "ClientExportSSLSvrCert": false,
            "ClientExportSSLSvrKeyID": null,
            "AcceptingClients": true,
            "LastUpdated": "2020-01-09T13:44:10.120Z"
        },
        {
            "Name": "GO_Scorecards",
            "SelfRegistered": true,
            "Host": "https://DESKTOP-RHJLSO4:44312",
            "IPAddress": "9.24.156.199",
            "IPv6Address": "",
            "PortNumber": 44321,
            "ClientMessagePortNumber": 0,
            "HTTPPortNumber": 44312,
            "IsLocal": false,
            "UsingSSL": true,
            "SSLCertificateID": null,
            "SSLCertificateAuthority": null,
            "SSLCertificateRevocationList": null,
            "ClientExportSSLSvrCert": false,
            "ClientExportSSLSvrKeyID": null,
            "AcceptingClients": true,
            "LastUpdated": "2020-01-09T13:44:09.360Z"
        },
        {
            "Name": "Planning Sample",
            "SelfRegistered": true,
            "Host": "https://DESKTOP-RHJLSO4:12354",
            "IPAddress": "9.24.156.199",
            "IPv6Address": "",
            "PortNumber": 12345,
            "ClientMessagePortNumber": 0,
            "HTTPPortNumber": 12354,
            "IsLocal": false,
            "UsingSSL": true,
            "SSLCertificateID": null,
            "SSLCertificateAuthority": null,
            "SSLCertificateRevocationList": null,
            "ClientExportSSLSvrCert": false,
            "ClientExportSSLSvrKeyID": null,
            "AcceptingClients": true,
            "LastUpdated": "2020-01-09T13:44:02.022Z"
        },
        {
            "Name": "proven_techniques",
            "SelfRegistered": true,
            "Host": "https://DESKTOP-RHJLSO4:5011",
            "IPAddress": "9.24.156.199",
            "IPv6Address": "",
            "PortNumber": 53333,
            "ClientMessagePortNumber": 0,
            "HTTPPortNumber": 5011,
            "IsLocal": false,
            "UsingSSL": true,
```

```
            "SSLCertificateID": null,
            "SSLCertificateAuthority": null,
            "SSLCertificateRevocationList": null,
            "ClientExportSSLSvrCert": false,
            "ClientExportSSLSvrKeyID": null,
            "AcceptingClients": true,
            "LastUpdated": "2020-01-09T13:44:10.173Z"
        },
        {
            "Name": "SData",
            "SelfRegistered": true,
            "Host": "https://DESKTOP-RHJLSO4:8010",
            "IPAddress": "9.24.156.199",
            "IPv6Address": "",
            "PortNumber": 12346,
            "ClientMessagePortNumber": 0,
            "HTTPPortNumber": 8010,
            "IsLocal": false,
            "UsingSSL": true,
            "SSLCertificateID": null,
            "SSLCertificateAuthority": null,
            "SSLCertificateRevocationList": null,
            "ClientExportSSLSvrCert": false,
            "ClientExportSSLSvrKeyID": null,
            "AcceptingClients": true,
            "LastUpdated": "2020-01-09T13:44:09.619Z"
        },
        {
            "Name": "MyDB",
            "SelfRegistered": true,
            "Host": "https://DESKTOP-RHJLSO4:5001",
            "IPAddress": "9.24.156.199",
            "IPv6Address": "",
            "PortNumber": 60042,
            "ClientMessagePortNumber": 0,
            "HTTPPortNumber": 5001,
            "IsLocal": false,
            "UsingSSL": true,
            "SSLCertificateID": null,
            "SSLCertificateAuthority": null,
            "SSLCertificateRevocationList": null,
            "ClientExportSSLSvrCert": false,
            "ClientExportSSLSvrKeyID": null,
            "AcceptingClients": true,
            "LastUpdated": "2020-01-09T13:44:09.475Z"
        }
    ]
}
```


GET details for a specific database

You can do a GET against a specific database, for example, ~/api/v1/Servers('*<database_name>*'), to retrieve details of that database.

```
GET http://<adminserver>:<adminserver_port>/api/v1/Servers('<database_name>')
```

Example response body for GET http://<adminserver>:5895/api/v1/Servers('Sdata')


```
{
    "@odata.context": "$metadata#Servers/$entity",
    "Name": "SData",
    "SelfRegistered": true,
    "Host": "https://DESKTOP-RHJLSO4:8010",
    "IPAddress": "9.24.156.199",
    "IPv6Address": "",
    "PortNumber": 12346,
    "ClientMessagePortNumber": 0,
    "HTTPPortNumber": 8010,
    "IsLocal": false,
    "UsingSSL": true,
    "SSLCertificateID": null,
    "SSLCertificateAuthority": null,
    "SSLCertificateRevocationList": null,
    "ClientExportSSLSvrCert": false,
    "ClientExportSSLSvrKeyID": null,
    "AcceptingClients": true,
```

```
    "LastUpdated": "2020-01-09T13:54:10.343Z"
}
```

POST a database to your list of available TM1 databases

You can add another TM1 database to your list of available databases. POST changes to the database list on the TM1 Admin Server as a collection of `Server` entities.

```
POST http://<adminserver>:<adminserver_port>/api/v1/Servers
```

Example body with a database to add:

```
{
    "Name":"MyModel1",
    "IPAddress":"172.20.10.10",
    "PortNumber":12345,
    "UsingSSL": true,
    "ClientMessagePortNumber":61098,
    "HTTPPortNumber":12999,
    "ClientExportSSLSvrCert":true,
    "ClientExportSSLSvrKeyID":"whateverExportSSLSvrKeyID",
    "AcceptingClients":true
}
```

Example response body for POST, which shows defaults applied

```
{
    "@odata.context": "$metadata#Servers/$entity",
    "Name": "MyModel1",
    "SelfRegistered": false,
    "Host": null,
    "IPAddress": "172.20.10.10",
    "IPv6Address": "",
    "PortNumber": 12345,
    "ClientMessagePortNumber": 61098,
    "HTTPPortNumber": 12999,
    "IsLocal": false,
    "UsingSSL": true,
    "SSLCertificateID": null,
    "SSLCertificateAuthority": null,
    "SSLCertificateRevocationList": null,
    "ClientExportSSLSvrCert": true,
    "ClientExportSSLSvrKeyID": "whateverExportSSLSvrKeyID",
    "AcceptingClients": true,
    "LastUpdated": "2020-01-09T22:09:19.838Z"
}
```

PATCH a database to your list of available TM1 databases

Use PATCH to upsert (insert or update) a database to your list of available databases. PATCH changes to the database list on the TM1 Admin Server as a collection of `Server` entities.

```
PATCH http://<adminserver>:<adminserver_port>/api/v1/Servers
```

Example body with a database to insert or update:

Some properties are not required in the body. The response body shows you the defaults that are applied.

```
{
    "Name": "MyModel2",
    "IPAddress":"172.20.10.10",
    "PortNumber":12345,
    "UsingSSL":false
}
```

Example response body for PATCH, which shows defaults applied

```
{
    "@odata.context": "$metadata#Servers/$entity",
    "Name": "MyModel2",
    "SelfRegistered": false,
    "Host": null,
```

```
    "IPAddress": "172.20.10.10",
    "IPv6Address": "",
    "PortNumber": 12345,
    "ClientMessagePortNumber": 0,
    "HTTPPortNumber": 0,
    "IsLocal": false,
    "UsingSSL": false,
    "SSLCertificateID": null,
    "SSLCertificateAuthority": null,
    "SSLCertificateRevocationList": null,
    "ClientExportSSLSvrCert": false,
    "ClientExportSSLSvrKeyID": null,
    "AcceptingClients": false,
    "LastUpdated": "2020-01-09T13:51:13.770Z"
}
```

PATCH or DELETE a specific TM1 database

You can PATCH updates to individual TM1 databases or DELETE individual TM1 databases only if they were added using the TM1 REST API. Both of these requests use the same format.

The request body for a PATCH to an individual database cannot have the Name property because this property is implied by the URL.

```
PATCH http://<adminserver>:<adminserver_port>/api/v1/Servers('<database_name>')
```

```
{
    "IPAddress":"172.20.10.10",
    "PortNumber":12345,
    "UsingSSL":false
}
```

You don't need a request body to DELETE an individual database.

```
DELETE http://<adminserver>:<adminserver_port>/api/v1/Servers('<database_name>')
```

Use the ViewZeroOut TurboIntegrator function on MDX views

The ViewZeroOut TurboIntegrator function now works on MDX-based views. You can zero out the data of views with intersections that are unique to elements that exist only in hierarchies. For all views, including multi-hierarchy views, ViewZeroOut collects intersected leaf sets before it sets all data points in a view to zero.

Related topics:

ViewZeroOut

Use dynamic shapes and images in websheets

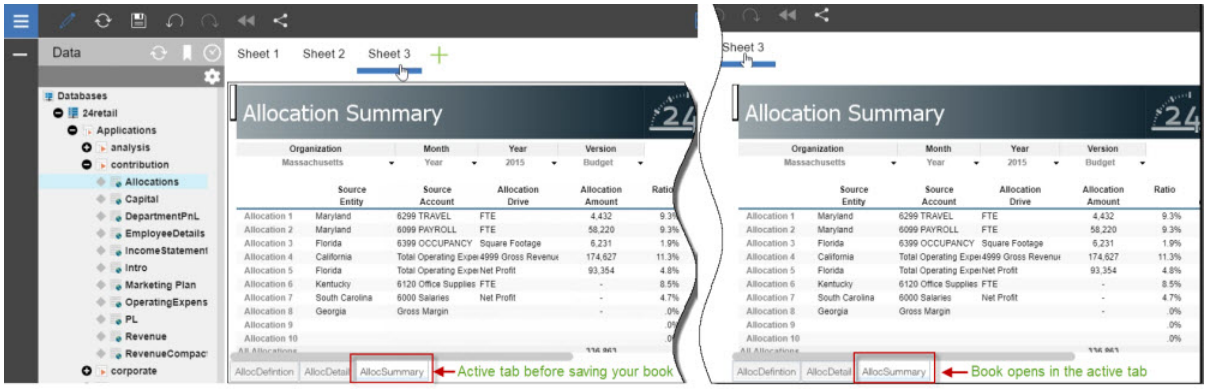
Customize your websheets! In TM1 Web, you can dynamically insert shapes and images anywhere in your websheet where you'd like the image to change when the value of a cell changes. You can dynamically insert logos, employee pictures, flags, product images, and more.

A dynamic image can be created by assigning a named range that contains an INDIRECT or INDEX-based formula to an image object. The formula resolves to a cell reference, and if an image is anchored to that cell, the dynamic shape reflects that image object's content.

To support this feature, TM1 Web persists the assigned formula, and when it recalculates, TM1 Web evaluates the named range formula to a cell reference. Using this cell reference, TM1 Web can then update the image object's file name to match the referenced image.

Open a websheet on the active tab when you save a multi-tab websheet

If you have a websheet with multiple tabs in a book, Planning Analytics Workspace keeps track of the active websheet tab when you save the book. Then, when you open the book in Planning Analytics Workspace later, you are right where you left off in your work!



Using Planning Analytics version 2.0.9 and Planning Analytics Workspace version 2.0.46, when you open a book with a websheet in Planning Analytics Workspace, the tab that you saved the websheet with is active.

Note: You must be using Planning Analytics Workspace on IBM Planning Analytics version 2.0.9 to take advantage of this feature of websheets in IBM Planning Analytics TM1 Web.

If you don't have Planning Analytics version 2.0.9, the default tab that the websheet was published with (using TM1 Perspectives or Planning Analytics for Microsoft Excel) is active when you open the book in Planning Analytics Workspace.

Deprecation of TM1 Operations Console

Deprecated in v2.0.9 In Planning Analytics version 2.0.9, TM1 Operations Console is no longer supported. When you access the TM1 Operations Console URL, you see a general 500 error message that indicates that the URL is not available. You can use IBM Planning Analytics Administration to monitor databases in IBM Planning Analytics and IBM Planning Analytics Local.

Related topics:

Monitor and administer databases

Planning Analytics 2.0.8 - July 17, 2019

IBM Planning Analytics Local version 2.0.8 and the cloud release of IBM Planning Analytics version 2.0.8 includes updates and new features for IBM TM1 Server version 11.6.0.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

View process rollback and restart messages in TM1 logs

This update makes it easier to detect lock exceptions for TurboIntegrator processes, and makes it easier to process the tm1server.log file with automation tools. When a TurboIntegrator process rolls back and restarts, the process is now represented in the `tm1server.log` file as three steps: starting, restarting because of lock contention or rollback, and then finishing. An entry was added to the `tm1server.log` file that shows the TurboIntegrator process as restarting due to lock contention or rollback instead of just starting. This logging is enabled by default without setting any specific debug options.

Example log

```
2364    [15]    INFO    2019-01-09 20:30:37.986    TM1.Process    Process
"Diag.LockTest.DimensionWrite1" executed by user "CJP/stuart"
17088   [15]    INFO    2019-01-09 20:30:37.987    TM1.Process    Process
"Diag.LockTest.DimensionWrite2" executed by user "CJP/stuart"
```

```
17088   [15]   INFO   2019-01-09 20:30:41.058   TM1.Process   Process
"Diag.LockTest.DimensionWrite2" rolled back due to lock exception (2364).  Process will restart
automatically"
2364    [15]   INFO   2019-01-09 20:30:41.054   TM1.Process   Process
"Diag.LockTest.DimensionWrite1":  finished executing normally, elapsed time 3.07 seconds
17088   [15]   INFO   2019-01-09 20:30:41.058   TM1.Process   Process
"Diag.LockTest.DimensionWrite2" executed by user "CJP/stuart"
17088   [15]   INFO   2019-01-09 20:30:44.064   TM1.Process   Process
"Diag.LockTest.DimensionWrite2":  finished executing normally, elapsed time 3.00 seconds
```

View and report on audit log data with the TM1 REST APIs

You can retrieve audit logs by using the TM1 REST APIs the same way that you retrieve other logging data such as transaction and message logs. You can also use ODATA filters such as top, skip, and select for querying the details of audit logs. The contents of the audit log is unchanged.

If you are authorized to get audit logs, you can use the following query to retrieve audit logs:

```
/api/v1/AuditLogEntries
```

Note: If you are not authorized to get audit logs, for example if you are not an administrator, the result of this query is empty.

If the audit log has details, you can expand the `AuditDetails` by using the following query:

```
/api/v1/AuditLogEntries?$expand=AuditDetails
```

You can use filter options, such as top, skip, and select, to create queries based on any data field, including the time stamp. For example:

```
$filter=TimeStamp gt 2019-04-23T11:13:45Z
$filter=contains(Description, 'New')
$filter=ObjectType eq ‘Dimension’
$select=UserName,Description,ObjectType,ObjectName
$count=true
$skip=2
$top=4
```

You can also use change tracking. When you set the `Prefer` header to `odata.track-changes`, a delta link is appended to each response body.

You can use `TailAuditLog()` to obtain the current `timeStamp` only. Then, you can use `/api/v1/AuditLogEntries/!delta('<timestamp>')` to retrieve any audit logs that occur after that `timeStamp`. For example:

```
/api/v1/AuditLogEntries
/api/v1/AuditLogEntries/!delta('<timestamp>')
```

Or:

```
/api/v1/AuditLogEntries?$select=User,ObjectType,ObjectName,Details&$expand=
AuditDetails($select=ID,User,Description,ObjectType,ObjectName)
```

Example of an auditLog entry

```
{
   "ID":"<id>",
   "TimeStamp":"2019-01-16T13:57:46Z",
   "User":"",
   "Description":"Server 'lemonade' was shutdown.",
   "ObjectType":"Server",
   "ObjectName":"SYSTEM"
}
```

Example auditLogEntry with AuditDetails

```
{
   "ID":"<id>",
   "TimeStamp":"2019-01-16T13:59:50Z",
   "User":"",
   "Description":"Server 'lemonade' was started.",
   "ObjectType":"Server",
   "ObjectName":"SYSTEM",
   "AuditDetails":[
      {
         "DetailID":"<id>",
         "TimeStamp":"2019-01-16T13:59:50Z",
         "User":"",
         "Description":"Property ChangedSinceLoaded was set to 'FALSE' for server 'lemonade'.",
         "ObjectType":"Server",
         "ObjectName":"SYSTEM"
      }
   ]
}
```

TM1 REST API updates

The following entity types were added to support audit logging:

- AuditDetail
- AuditLogEntry

The following function was added to support audit logging:

- TailAuditLog

What's next?

For more information about audit logging in general, see Using the audit log.

Iterate through SQL rowsets to speed up drill through queries

You can use TM1 REST API actions and entities to execute a relational drill through and retrieve results as a rowset entity. You can use the rowset to iteratively retrieve subsequent subset rows. This approach improves the performance of retrieving drill through results.

Actions

In Planning Analytics version 2.0.8, you can use the following actions to execute relational drillthroughs but return rowsets:

- Use ExecuteRelationalDrillthroughWithRowset to execute a relational drill through to get a rowset of a relational table.
- Use RelationalDrillthrough.ExecuteWithRowset to drill into a cell to get a rowset of a relational table.

Entity types

In Planning Analytics version 2.0.8, you can use the following entity types:

- A Rowset represents the result of an execution of a relational drill through. A rowset is session-scoped and must be deleted after you use it. Closing a session invalidates all of its rowsets.
- A RowsetRow represents a row in a rowset. The RowsetRow can be retrieved in subsequent requests. These subsequent requests do not cause the drillthrough process to be re-executed.

Example: Drill into a cell to get a rowset

```
POST /api/v1/Cubes('x')/Views('x')/tm1.Execute
POST /api/v1/Cellsets('x')/Cells(N)/DrillthroughScripts('x')/tm1.ExecuteWithRowset
GET /api/v1/Rowsets('x')?$expand=Rows($top=1000)
DELETE /api/v1/Rowsets('x')
```

Example: Use a transient process to open a CSV rowset

```
POST /api/v1/ExecuteRelationalDrillthroughWithRowset?$expand=Rows($select=A,B)
{
    "DrillthroughProcess":
    {
        "EpilogProcedure": "#****Begin: Generated Statements***\r\nReturnCsvTableHandle;\r
\n#****End: Generated Statements****",
        "DataSource": {
            "Type": "ASCII",
            "asciiDelimiterChar": ",",
            "asciiDelimiterType": "Character",
            "dataSourceNameForServer": "CSV_FILENAME.csv"
        }
    }
}
```

Review updates to the TM1 REST API metadata

IBM Planning Analytics Local version 2.0.8 and the cloud release of IBM Planning Analytics version 2.0.8 includes the following updates to the TM1 REST APIs for IBM TM1 Server version 11.6.0.

Metadata updates

The following entity types were changed in 11.6.0:

- **Added** `AuditDetail`
- **Added** `AuditLogEntry`
- **Added** `Rowset`
- **Added** `RowsetRow`

The following functions were changed in 11.6.0:

- **Added** `TailAuditLog`

The following actions were changed in 11.6.0:

- **Added** `ExecuteRelationalDrillthroughWithRowset`
- **Added** `RelationalDrillthrough.ExecuteWithRowset`
- **Added** `Cube.Load`
- **Added** `Cube.Unload`

To learn more, see What's new in 11.6.0 (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_rest_api.2.0.0.doc/r_restapi_v1_csdl_whats_new.html#restapi_v1_csdl_whats_new_11_6_0).

Include user names and memory usage in TM1 Web logs

User names and memory usage are included in TM1 Web logs. This update makes it easy to see when a user runs an active form, workbook, or cube that renders too many rows. To turn on this optional logging, the logging level of `log4j.logger.com.ibm.cognos.tm1` must be set to DEBUG in the `\tm1_64\webapps\tm1web\WEB-INF\configuration\log4j.properties` file. You can review the audit logs and reduce the number of rows in the rendering.

The following information is included in logs:

- Timestamp
- Application and Active Form name
- Number of rows that were generated
- User name
- Current heap memory after the websheet renders

Example log when you open an active form

```
"<TIMESTAMP>:CLASSNAME:Constructed view for <ActiveFormViewid> contains <#> rows, by user
'<username>'.
<TIMESTAMP>:CLASSNAME:Current heap memory usage: <MB>".
```

Example log when you open a workbook

```
"<TIMESTAMP>:CLASSNAME:Creating WorkbookMetaData for <sheet name>, by user '<username>'.
<TIMESTAMP>:CLASSNAME:Current heap memory usage: <MB>".
```

Example log when you open a cube view

```
"<TIMESTAMP>:CLASSNAME:Exit from getUpdatedCubeViewData, updatedData: class name, username:
<username>.
<TIMESTAMP>:CLASSNAME:Current heap memory usage: <MB>".
```

Changes saved automatically in TM1 Application Web

In Planning Analytics version 2.0.8, the **Save** confirmation dialog box in IBM TM1 Application Web has been removed. When you close a view, you are not prompted to save changes. All data changes are saved automatically when you close the application. Your changes are available when you reopen the application. This change applies to all web browsers.

Configure login using TM1 Web URL API with Cognos Analytics security

In Planning Analytics version 2.0.8, a new parameter CSPHeaderFrameSource is available in the `tm1web_config.xml` file. If you use the TM1 Web URL API configured with integrated security mode 5 (Cognos® Analytics security authentication), you must set this parameter to allow users to log in. This parameter controls security of the context that is loaded in the <frame> element, which is used by TM1 Web URL API. The CSPHeaderFrameSource parameter defines allowed sources for Content-Security-Policy (CSP) `frame-src` policy.

Syntax

```
<add key="CSPHeaderFrameSource" value="" />
```

If the CSPHeaderFrameSource is specified, it sets the allowed sources for the `frame-src` policy. If the value is left blank or the parameter is not set, the default value is '*', which allows content from all sources to load.

Remember: In IBM Planning Analytics Local version 2.0.8, you install a new version of the `tm1web_config.xml` file that is called `tm1web_config.xml.new` and your existing `tm1web_config.xml` file is preserved. To take advantage of fixes that are applied to this release, you must rename the `tm1web_config.xml.new` file to `tm1web_config.xml` and you must reapply any changes that you made to your previous configuration settings.

Example

```
<add key="CSPHeaderFrameSource" value="'self'" />
```

Sets the `frame-src` policy to 'self'.

Allows contents from the site's origin to load.

Example

```
<add key="CSPHeaderFrameSource" value="http://CAM_HOST:CAM_PORT http://
TM1WEB_HOST:TM1WEB_PORT" />
```

Sets the `frame-src` policy to http://CAM_HOST:CAM_PORT http://TM1WEB_HOST:TM1WEB_PORT.

Allows contents from CAM_HOST:PORT and TM1WEB_HOST:PORT to load.

What to do next

For more information on how to define sources for `frame-src`, see Sources on the MDN web docs site.

Relational data sources in TM1 Web websheets removed

Removed in v2.0.8 The ability to use relational data sources in TM1 Web has been removed from IBM Planning Analytics Local version 2.0.8. The IBM Data Server Driver for JDBC and SQLJ 4.17 (10.5.0.2) have also been removed from the installation kit (db2cc4.jar, ojdbc6.jar, sqlj4.zip, sqljdbc4.jar).

Planning Analytics version 2.0.7 was the last release with support for relational data sources in TM1 Web websheets.

TM1 Package Connector removed from Planning Analytics Local

Removed in v2.0.8 With IBM Planning Analytics Local version 2.0.8, the IBM Cognos Package Connector is no longer included in the Planning Analytics Local installation kit. This change does not affect Planning Analytics on cloud. Cognos Package Connector is not available or supported in Planning Analytics on cloud.

Planning Analytics 2.0.7 - April 29, 2019

IBM Planning Analytics Local version 2.0.7 and the cloud release of IBM Planning Analytics version 2.0.7 includes updates and new features for IBM TM1 Server version 11.5.0.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

Install IBM Planning Analytics Local on Windows Server 2019

IBM Planning Analytics Local is now supported on Windows Server 2019.

To learn more, see Planning Analytics Local Installation and Configuration (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_inst.2.0.0.doc/pa_install.html)..

Upgrade to WebSphere Liberty Profile 18.0.0.4

The WebSphere Liberty Profile has been upgraded to 18.0.0.4. This upgrade requires a manual change to the `server.xml` file for existing IBM Planning Analytics Local installations that upgrade to Planning Analytics Local version 2.0.7.

In Planning Analytics Local version 2.0.7, the `server.xml` file has been updated to add the following property to disable sending server version information in response headers.

```
<webContainer disableXPoweredBy="true"/>
```

The response header is informational and not required for operations. It is now disabled by default to minimize thread surface.

Remember: In Planning Analytics Local version 2.0.7, you install a new version of the `server.xml` file that is called `server.xml.new` and your existing `server.xml` file is preserved. To take advantage of fixes that are applied to this release, you must rename the `server.xml.new` file to `server.xml` and you must reapply any changes that you made to your previous configuration settings.

For more information, see Upgrading Planning Analytics Local (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_inst.2.0.0.doc/c_tm1_inst_upgradingfromearlierversionsoftm1.html).

Optimize the login process with a new tms1.cfg parameter

A new parameter, **OptimizeClient**, has been added to the tms1.cfg file to prevent obtaining a lock when serializing objects when a user authenticates. This parameter determines whether private objects are loaded when the user authenticates during TM1 Server startup.

Note: A new user that was dynamically added, who logs in with CAM authentication, is still subject to lock contention because a new element must be added to the `}clients` dimension.

Organizations with many users, or users with many private objects, can set which users this parameter is applied to. This approach impacts the server load and potentially the amount of memory that is consumed at startup.

The **OptimizeClient** parameter can be set as follows:

- None = 0
- OperationsAdmin = 1
- Admin = 2
- All = 3

For more information, see **OptimizeClient** (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_inst.2.0.0.doc/c_optimizeclient.html).

Monitor threads with the Top logger

TM1 Server dynamically monitors the threads that are running and now outputs thread status to the `tm1top.log` file by using the Top logger. You can also log information about the sandboxes and job queue for a specific database.

You can use the new Top logger in IBM Planning Analytics on cloud and IBM Planning Analytics Local. You can download the logs from IBM Planning Analytics Administration. For more information, see Download database log files.

Note: The content of the `tm1top.log` file is the same as the TM1Top logs. The TM1Top utility is scheduled for deprecation on Planning Analytics Local.

Configure tm1s.cfg parameters

The Top logger is `Off` by default. To enable logging, you must add **TopLogging=T** to the `tm1s.cfg` file before you start your TM1 Server.

Note: This parameter cannot be configured in Planning Analytics Administration.

The following settings can be configured in the `tm1s.cfg` file:

TopLogging
Enables dynamic logging of the threads running in an instance of the TM1 Server. The Top logger can also display information about the sandboxes and job queue for a specific database.

Boolean, dynamic

Default=FALSE

TopScanFrequency
The logging frequency (interval) in seconds.

Integer, dynamic

Default is 5 seconds

0 disables the Top logger.

TopScanMode.Threads
Enables logging of the current processing state of each thread. This information includes the name of the user or process that started the thread, the API function that the thread is executing, the lock status of the last object that was locked, the number of objects that are used by the thread, and the total time, in seconds, that the current API function or chore process has been processing.

Default = T

TopScanMode.Sandboxes
Enables logging of the active sandboxes for the current server, the total memory that is consumed for all sandboxes by a user, and the number of sandboxes for this user.

Default = F

TopScanMode.SandboxQueueMetrics
Enables logging of sandbox queue metrics. The name of the node for the sandbox, the status of the sandbox in the queue, and the length of time the sandbox was in the queue before it was processed is logged for each sandbox in the queue.

Default = F

For more information, see Parameters in the tm1s.cfg file.

If TM1 Server starts with **TopLogging** turned on, the server adds the Top logger configuration to the `tm1s-log.properties` file if the configuration is not already there. The log level is `INFO`. The special log format is controlled by the format parameter of the definition, which must be set to `TM1Top`.

The following configuration information is added:

```
log4j.logger.Top=INFO, S_Top
log4j.appender.S_Top=org.apache.log4j.SharedMemoryAppender
log4j.appender.S_Top.MemorySize=5 MB
log4j.appender.S_Top.MaxFileSize=100 MB
log4j.appender.S_Top.MaxBackupIndex=20
log4j.appender.S_Top.File=tm1top.log
log4j.appender.S_Top.Format=TM1Top
```

After the Top logger is enabled and the configuration settings are added to the `tm1s-log.properties`, you can disable or enable the Top logger without restarting the TM1 Server.

TM1 REST API support

The Top logger and its settings can be read and modified by using the TMI REST API:

```
GET /api/v1/ActiveConfiguration/Administration/TopLog
PATCH /api/v1/StaticConfiguration/Administration/TopLog
{
    "ScanFrequency": "P0DT00H00M02S"
}
GET /api/v1/Loggers('Top')
PATCH /api/v1/Loggers('Top')
{
    "Level": "Off"
}
```

For more information, see TopLogSettings and TopScanMode.

Log example

```
=====  2019-01-09 22:20:54 GMT      2019-01-09 17:20:54 local  ===== Server:Planning Sample
============
10744  Th:Pseudo          -              Idle        -              -
-              -   0
22584  Th:DynamicConfig   -              Idle        -              -
-              -   0
676    Admin               :1            Idle        -              -
-              -   0
4920   Sa         Architect              Idle        -              -
-              -   0
=====  2019-01-09 22:20:56 GMT      2019-01-09 17:20:56 local  ===== Server:Planning Sample
============
8120   C:SleepEvery10s      -            Run:R    -              Process SyncSleep_10    Prolog
(6)   0
10744  Th:Pseudo          -              Idle        -              -
-              -   0
22584  Th:DynamicConfig     -            Idle        -              -
-              -   0
676    Admin    :1     Run:R  -  POST   /api/v1/Cubes('plan_BudgetPlan')/Views('def')/
```

```
tm1.Execute   -  1
22620  > Work unit for 676       -                              -             -
-       -    0
3284   > Work unit for 676       -                              -             -
-       -    0
22376  > Work unit for 676       -                              -             -
-       -    0
17568  > Work unit for 676       -                              -             -
-       -    0
2940   > Work unit for 676       -                              -             -
-       -    0
128    > Work unit for 676       -                              -             -
-       -    0
20552  > Work unit for 676       -                              -             -
-       -    0
4920     Sa           Architect         Idle        -          -             -
-         0
```

Run multiple processes on their own thread with a new TurboIntegrator function

You can now run TurboIntegrator processes in parallel, each on its own thread that is managed by TM1 Server, by using the new `RunProcess` function. This approach speeds up data load and other operations where TurboIntegrator processes are used to divide the work.

You can use the new `RunProcess(ProcessName, [ParamName1, ParamValue1,ParamName2, ParamValue2]);` function to run TurboIntegrator processes in parallel on a separate thread within the server. By using the `RunProcess` function, issues such as external encrypted credentials can be avoided.

For more information, see RunProcess.

Prepare for changes in behavior in TM1 Server

IBM Planning Analytics Local version 2.0.7 and the cloud release of IBM Planning Analytics version 2.0.7 includes updates that change behavior in IBM TM1 Server version 11.5.0. Review this list to prepare for your upgrade.

Default logging level of TM1.Mdx.Interface logger
In IBM Planning Analytics version 2.0.7 or later, the TM1.Mdx.Interface logger reports syntax errors only when set to DEBUG level.

Previously, in IBM Planning Analytics version 2.0.6 or earlier, the TM1.Mdx.Interface logger reported syntax errors when it was set to ERROR level. However, when Planning Analytics for Microsoft Excel or Planning Analytics Workspace generated invalid MDX internally, the tm1server log filled up quickly with a large number of entries in the form:

```
11276 [6b5] ERROR 2017-10-16 13:51:10.237 TM1.Mdx.Interface
    Syntax error at or near: 'hildren},{[Entity].[]})}', character position 21
```

These errors now appear only when the logging level is set to DEBUG. For more information, see System and performance monitoring (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_op.2.0.0.doc/c_systemandperformancemonitoring_n160007.html).

Default value of RulesOverwriteCellsOnLoad parameter
In IBM Planning Analytics version 2.0.7 or later, if the **RulesOverwriteCellsOnLoad** parameter is not present in the configuration file then it is assumed to be False by default. This is a change in behavior.

Previously, in IBM Planning Analytics version 2.0.6 or earlier, if this parameter was not present in the configuration file then it was assumed to be True by default.

For more information, see **RulesOverwriteCellsOnLoad** (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_inst.2.0.0.doc/c_rulesoverwritecellsonload.html).

Searching large transaction logs
In IBM Planning Analytics version 2.0.7 or later, if there are too many INVALID records, for example more than **500** invalid records in **one search** in the transaction logs, search stops and an error message is

generated in the server log. User intervention is required to clean up the transaction logs. This change prevents the server from searching for long periods and blocking other activities.

For example, the error message contains the following text:

```
Starts from <file name>, over 500 bad transaction records found, transaction
log searching stopped.
```

The error message indicates where the search was started. For example, if the user searched from December 1 to December 12, the server searches multiple log files. The "Starts from" indicates where in the transaction logs the cleanup must start.

This change in the behavior of searching large transaction logs prevents the TM1 Server from generating large logs. However, user intervention is required to clean up the invalid records if the logs become too large.

Learn more about updates to TM1 REST APIs

IBM Planning Analytics Local version 2.0.7 and the cloud release of IBM Planning Analytics version 2.0.7 includes the following updates to the TM1 REST APIs for IBM TM1 Server version 11.5.0.

Metadata updates

The following entity types were changed in 11.5.0:

- **Added** `GitPlan`
- **Added** `GitPullPlan`
- **Added** `GitPushPlan`

The following complex types were changed in 11.5.0:

- **Added** `Git`
- **Added** `GitCommit`
- **Added** `GitRemote`
- **Added** `TopLogSettings`

The following enumerated types were changed in 11.5.0:

- **Added** `GitPlanExecutionMode`
- **Added** `TopScanMode`

The following actions were changed in 11.5.0:

- **Added** `GitPullPlan.Execute`
- **Added** `GitPushPlan.Execute`
- **Added** `GitDeploy`
- **Added** `GitInit`
- **Added** `GitPull`
- **Added** `GitPush`
- **Added** `GitStatus`
- **Added** `GitUninit`

The following properties were changed in 11.5.0:

- **Deprecated** property `ID` in `Entry`
- **Added** property `Active` in `Session`

To learn more, see What's new in 11.5.0 (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_rest_api.2.0.0.doc/r_restapi_v1_csdl_whats_new.html#restapi_v1_csdl_whats_new_11_5_0).

Support for hiding hierarchies

The `Visible` property of a `Hierarchy` (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_rest_api.2.0.0.doc/r_restapi_v1_csdl_alltypes.html#restapi_v1_csdl_entitytype_Hierarchy) entity has been extended to allow a client to filter any collection of hierarchies.

For example:

```
GET /api/v1/Dimensions('dim')/Hierarchies?$filter=Visible eq true
```

By default, the `Visible` property is determined by the `Visible` dimension property (currently this is in the }DimensionProperties cube, which includes every individual hierarchy). This property defaults to True.

If a control cube exists with the name }HierarchyVisibility_{{DIMNAME}}, which has two dimensions: }Hierarchies_{{DIMNAME}} and }Groups, then more specific values here will overwrite the default dimension property (if TRUE or FALSE is written to the appropriate cell). Similar to security, if a user belongs to multiple groups, and any of those groups sets the hierarchy as visible, then the hierarchy will be visible.

Determining the value of the `Visible` property uses the following logic:

- Is there a value of TRUE anywhere in the }HierarchyVisibility_{{DIMNAME}} cube for this hierarchy or any group the current user belongs to? Then, `Visible` = true.
- Is there a value of FALSE anywhere in the }HierarchyVisibility_{{DIMNAME}} cube for this hierarchy or any group the current user belongs to? Then, `Visible` = false.
- Is the value of the VISIBILITY dimension property (note that this is per hierarchy) set to TRUE? Then, `Visible` = true.
- Is the value of the VISIBILITY dimension property set to FALSE? Then, `Visible` = false.
- Otherwise, `Visible` = true.

Use Git source control to deploy database assets between environments

As an administrator of a TM1 database, you can deploy database assets between environments (for example, from development to production) without stopping the database or manually copying and pasting assets. The source specifications of models and their database assets are created and managed with Git commands. You can see the structure of the database assets in Git and use Git commands to add and remove versions of your assets easily.

Why is this useful?

- You can see your database assets in an easy to read format. Assets can include chores, cubes, dimensions, processes, and more.
- You can build different versions of your database assets by using Git branches.
- You can control which versions of your database assets you use for your environments. Use one branch for your development environment and another for your production environment.
- You can see the differences between versions of your database assets easily. You can even revert to previous versions if you need to.
- You can deploy your database assets directly to your environment by using Git commands.

Note: This capability is available only in Planning Analytics Local.

To learn more, see Managing TM1 database assets with Git (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_rest_api.2.0.0.doc/c_tm1_restapi_model_deployment.html).

Load websheets faster in TM1 Web

To optimize loading of websheets in TM1 Web, you can set a new feature flag `OptimizeCssForHiddenContent`. The feature flag can be added in `tm1_64\webapps\tm1web\WEB-INF\configuration\features.json`.

When `OptimizeCssForHiddenContent` is set to `true`, CSS style information that comes from hidden content (sheets, rows, columns, cells, or controls) is excluded during websheet loading.

`OptimizeCssForHiddenContent` is set to `false` by default.

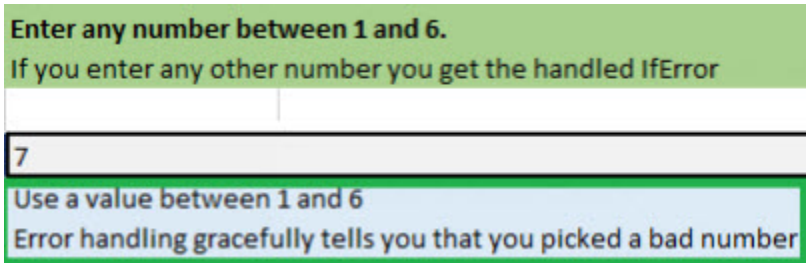
Example

```
{
    "NestedDbsEvaluation": false,
    "NewIrrAlgorithm": false ,
    "OptimizeCssForHiddenContent": true
}
```

Use the IFERROR Excel function in TM1 Web

IBM Planning Analytics TM1 Web now supports the use of the IFERROR function in websheets.

The IFERROR function traps errors in a formula and returns an alternative result, such as text, when an error is detected.

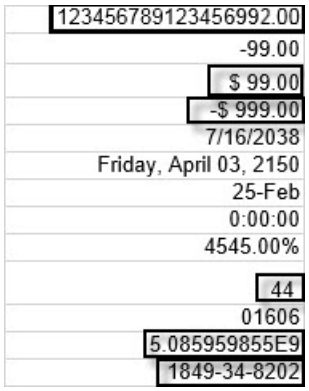
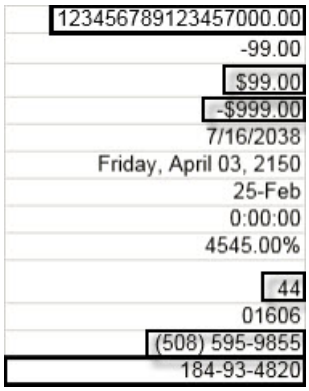
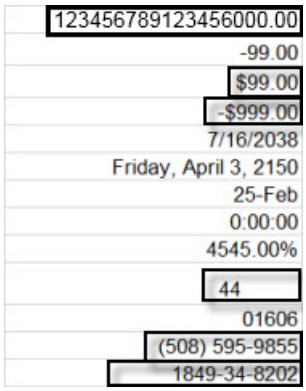


Take advantage of improved cell formatting in TM1 Web websheets

The cell formatting of currency, fractions, phone numbers, and social security numbers in TM1 Web websheets has improved.

The following changes have been made to formatting of cells in websheets:

- For numbers with more than 15 digits, cells in websheets round up the number to the first 15 digits. For example, "123456789123456992.00" appears as "123456789123457000.00". In Excel, only the first 15 digits are stored and remaining digits are replaced by zeros. For example, "123456789123456992.00" appears as "123456789123456000.00".
- Currency appears with no space after the $ sign. Negative currency also appears with no space after the dollar sign. For example, "$99.00" and "-$999.00".
- Fractions are formatted to appear in fraction format "# ??/??" with a space between the whole number and the fraction. When the number is a whole number, the cell is formatted without a space after the whole number.
- Phone numbers are formatted as "(nnn) nnn-nnnn" as in Excel.
- Social security numbers are formatted with the first 9 digits. Any digits that follow the first 9 digits are truncated. For example, "1849348202" appears as "184-93-4820" with the last digit "2" truncated. This formatting is different in Excel. For numbers with more than 9 digits, Excel adds the format to the last 9 digits while the additional digits at the beginning don't change. For example, in Excel, "1849348202" appears as "1849-34-8202".

TM1 Web version 2.0.6 or earlier	TM1 Web version 2.0.7 or later	Cell formatting in Excel
		

This cell formatting is enabled by default in TM1 Web websheets with the feature flag `NewDataFormatter`. The feature flag can be set in `tm1_64\webapps\tm1web\WEB-INF\configuration\features.json`.

Example

```
{
    "NestedDbsEvaluation": false,
    "NewIrrAlgorithm": false ,
    "NewDataFormatter": true
}
```

Check out updated TM1 Web configuration defaults

The following TM1 Web configuration parameters have new default settings. These settings were previously recommendations. They are now default settings in the `tm1web_config.xml` file for new installations of TM1 Web.

Note: Some default configuration parameter values for Planning Analytics on cloud are different than in Planning Analytics Local.

ExportCellsThreshold

Specifies the maximum number of cells that an export of a websheet or a cube view can contain.

Default changed from blank to 1000000.

MaximumConcurrentExports

Specifies the maximum number of concurrent exports that can be executed from TM1 Web.

The default value in Planning Analytics on cloud is set to 3. This default value is unchanged.

The default value in Planning Analytics Local is changed from 5 to 4.

MaximumSheetsForExport

Specifies the maximum number of sheets that are allowed to export.

Default changed from 100 to 50.

WorkbookMaxCellCount

Specifies the maximum cell count of a workbook as a number with no thousands separators.

Default changed from -1 to 500000.

For more information, see TM1 Web configuration parameters.

Review deprecation notices

The following tools and components are deprecated or scheduled for deprecation in IBM Planning Analytics version 2.0.7. Review deprecation details for IBM Planning Analytics version 2.0.7 in Deprecation notices for IBM Planning Analytics.

- **Relational data sources in TM1 Web websheets (local only)**

  Planning Analytics version 2.0.7 is the last release with support for relational data sources in TM1 Web websheets.

- **IBM TM1 Package Connector (local only)**

  Planning Analytics version 2.0.7 is the last release of TM1 Package Connector.

- **Advanced Rules Editor (TM1 Architect and TM1 Perspectives only)**

  As of Planning Analytics version 2.0.7, the **AdvancedRulesEditor** parameter in the `tm1p.ini` file is ignored. The Advanced Rules Editor does not launch in TM1 Architect and TM1 Perspectives, only the basic rule editor launches.

- **IBM TM1 Operations Console**

  IBM TM1 Operations Console is scheduled for deprecation. You can use IBM Planning Analytics Administration to monitor databases in IBM Planning Analytics and IBM Planning Analytics Local.

  To learn more, see Monitor and administer databases (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/c_paw_administer_servers.html)..

- **IBM Cognos Performance Management Hub**

  IBM Cognos Performance Management Hub (PMHub) is scheduled for deprecation.

  In Planning Analytics version 2.0.7, the following features have been disabled in PMHub because of security vulnerabilities:

  – Watchlists (com.ibm.ba.pm.service.watchlist)
  – Async job API (com.ibm.ba.pm.service.queue)
  – Pmpsvc passthrough support for PMHub (com.ibm.ba.pm.pmpsvc)
  – Support for old PMHub TM1 v1 requests (com.ibm.ba.pm.bridge)

  If you currently use these features, you have the option of maintaining a TM1 Server that is installed with Planning Analytics version 2.0.6 (ring-fenced by a firewall if necessary) and change any systems that use these features to reference this server.

- **IBM TM1 Top utility**

  The TM1 Top utility is scheduled for deprecation.

Planning Analytics 2.0.6 - October 11, 2018

IBM Planning Analytics Local version 2.0.6 and the cloud release of IBM Planning Analytics version 2.0.6 includes updates and new features for IBM TM1 Server version 11.4.0.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

Upgrade to Java 8 and removal of Java 7

Planning Analytics Local has been upgraded to Java™ 8.0.5.20.

Important: You must stop all related IBM Cognos TM1 and IBM Planning Analytics services before you upgrade to Planning Analytics version 2.0.6.

On Windows, if the installation detects an existing JRE 7, a new JRE 8 is installed during the installation, and the JRE 7 `cacerts` file is copied to the `Java80\jre\lib\security` location. If you have an existing Java80 folder, the `cacerts` file is not copied over. The existing Java70 folder is removed. On Linux®, you must install Java 8.0.5.20.

Note: With the upgrade to Java 8 in Planning Analytics version 2.0.6, some tools such as the IBM Key Management tool (`ikeyman.exe`), are now located in the `<PA_install_directory>\jre\bin` directory of the Planning Analytics installation or in the IBM JRE installation if Linux used.

For more information, see Upgrading from Planning Analytics version 2.0.0 (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_inst.2.0.0.doc/t_tm1_inst_upgrade_200.html).

ThirdPartyCertificateTool no longer supported

Not supported in v2.0.6 + The ThirdPartyCertificateTool requires Java 7 and is not supported in Planning Analytics version 2.0.6 or later.

New TurboIntegrator functions to delete leaf elements from dimension or hierarchy

You can use TurboIntegrator functions to delete leaf elements from a dimension or hierarchy using a subset of elements for higher performance.

`DimensionDeleteElements( dimension, subset)`
The subset provides the list of elements to delete from the indicated dimension. The subset is usually temporary.

`HierarchyDeleteElements( dimension, hierarchy, subset)`
If you use `HierarchyDeleteElements` and the indicated hierarchy is the Leaves hierarchy, then the subset should list those leaves that should be deleted, and they are removed completely from the dimension.

New parameter to configure session timeout for TM1 Web

In IBM Planning Analytics Local version 2.0.6, there is a new parameter in the `tm1web_config.xml` file called `HttpSessionTimeout`. This parameter defines the session timeout (in minutes) of the HTTP session for TM1 Web.

If the `HttpSessionTimeout` parameter is not specified (missing or blank), the value is less than 1 or not a numerical value, the default `session-timeout` that is defined in the `web.xml` file is used.

Important: As of IBM Planning Analytics Local version 2.0.6, you must not change the `session-timeout` value in the `web.xml` file.

For more information, see Setting the TM1 Web session timeout (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_ug.2.0.0.doc/t_paw_troubleshooting_web_timeout.html).

Remember: In IBM Planning Analytics Local version 2.0.6, you install a new version of the `tm1web_config.xml` file that is called `tm1web_config.xml.new` and your existing `tm1web_config.xml` file is preserved. To take advantage of fixes that are applied to this release, you must rename the `tm1web_config.xml.new` file to `tm1web_config.xml` and you must reapply any changes that you made to your previous configuration settings.

TM1 REST API updates

IBM Planning Analytics Local version 2.0.6 and the cloud release of IBM Planning Analytics version 2.0.6 includes the following updates to the TM1 REST APIs for IBM TM1 Server version 11.4.0.

Metadata updates

The following functions were introduced in 11.4.0:

- Cube.DimensionsStorageOrder
- GetOIDCKeys

The following actions were introduced in 11.4.0:

- Cube.ReorderDimensions

- RemoveOIDCKeyFromCache

To learn more, see What's new in 11.4.0 (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_rest_api.2.0.0.doc/r_restapi_v1_csdl.html#restapi_v1_csdl_whats_new_11_4_0).

Planning Analytics 2.0.5 - June 25, 2018

IBM Planning Analytics Local version 2.0.5 and the cloud release of IBM Planning Analytics version 2.0.5 includes updates and new features for IBM TM1 Server version 11.3.0.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

Local installation and configuration updates

IBM Planning Analytics Local version 2.0.5 includes the following updates to installation and configuration.

Planning Analytics Administration agent installation

The Planning Analytics Administration agent is required for the following features in Planning Analytics Workspace Local:

- Adding dimension members and attributes using drag and drop
- Importing data into a cube using drag and drop

For more information, see Planning Analytics Administration agent installation (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_inst.2.0.0.doc/c_tm1_install_paa.html).

Not supported 32-bit version of Planning Analytics no longer available

Planning Analytics Local version 2.0.5 does not include a 32-bit version of the installation program. For more information, see http://www-01.ibm.com/support/docview.wss?uid=swg22013654.

TM1 Server updates

IBM Planning Analytics Local version 2.0.5 and the cloud release of IBM Planning Analytics version 2.0.5 includes the following features for IBM TM1 Server version 11.3.0.

Change in the behavior of the STR function

The behavior of the STR function has been updated. This may cause a behavior change in usage depending on which version of IBM Planning Analytics you are upgrading from.

For more information, see STR (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_ref.2.0.0.doc/r_tm1_ref_str.html.

Change in the behavior of TI process rollback

A TurboIntegrator process that encounters a major error now rolls back instead of committing any changes.

This change in behavior impacts only major errors. The entire TurboIntegrator process is a single atomic transaction. Either the entire process succeeds and is committed, or the entire process fails and rolls back. For example, errors such as the data source failing to open or attempting to write to a cube that doesn't exist are major errors and now trigger a rollback.

The handling of minor errors is unchanged. For example, errors such as having a malformed input line in a data source logs a minor error and continues running the next data source record.

Multi-threaded loading of individual cubes

You can enable multi-threaded loading of individual cubes, which delivers better speeds than the approach that is enabled by the `MaximumCubeLoadThreads` setting. The following `tm1s.cfg` settings are available to enable and configure this feature:

- `MTCubeLoad`
- `MTCubeLoad.MinFileSize`
- `MTCubeLoad.UseBookmarkFiles`
- `MTCubeLoad.Weight`
- `IndexStoreDirectory`
- `PreallocatedMemory.BeforeLoad`
- `PreallocatedMemory.Size`
- `PreallocatedMemory.ThreadNumber`

Using `MTCubeLoad` also eliminates the risk of changing feeder generation sequences. When `MTCubeLoad` is enabled, the `MaximumCubeLoadThreads` configuration option is ignored.

TM1 Server administrators can use new `tm1s.cfg` settings (`PreallocatedMemory.Size`, `PreallocatedMemory.ThreadNumber`, and `PreallocatedMemory.BeforeLoad`) to configure preallocation memory and optimize scale-up and performance results.

The following loggers have been added:

log4j.logger.TM1.Server.Loading=DEBUG
: Allows you to capture individual timing of TM1 Server loading stages: DeSerializeDimensions, DeSerializeAttributeCubes, DeSerializeRegularCubes, GenerateServerSecurity.

log4j.logger.TM1.Cube.Loading=DEBUG
: Captures cube loading time, separately for `.cub` and `.feeder` files.

For more information, see `MTCubeLoad` (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_inst.2.0.0.doc/c_tm1_inst_mtcubeload.html).

New operational administrator

IBM Planning Analytics has a new system's user group, OperationsAdmin, whose sole purpose is to do maintenance and operational work. The members of this group do not see any of TM1 metadata, nor any cube or any other data. However, members of this group can perform tasks such as unlock users, disconnect users, and cancel threads.

For more information, see Administrative groups and authority (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_op.2.0.0.doc/c_understandingadministrativegroupsandauthority_n1701b8.html).

Reference a public subset by name in MDX

You can use the `TM1SubsetToSet` (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_ref.2.0.0.doc/r_tm1_ref_tm1subsettoset.html) function to return the members of a public TM1 subset. If a private and a public subset have identical names, enter the optional scope parameter as `public` to return the members of the public TM1 subset. If the scope parameter is not specified, the server searches first for a private subset.

TM1 REST API updates

IBM Planning Analytics Local version 2.0.5 and the cloud release of IBM Planning Analytics version 2.0.5 includes the following updates to the TM1 REST APIs for IBM TM1 Server version 11.3.0.

Batch request capability

To execute a set of cell updates as autonomous requests, each of which can individually succeed or fail, you can batch multiple requests in one request.

The 11.3.0 version of the OData v4.0 based REST APIs partially implements the JSON format based $batch implementation, as specified in Chapter 19 of the OData Committee Specification 1: Batch Requests and Responses (http://docs.oasis-open.org/odata/odata-json-format/v4.01/odata-json-format-v4.01.pdf).

To learn more, see Batch options (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_rest_api.2.0.0.doc/dg_tm1_odata_additional_ops.html#dg_tm1_odata_batch_query_update_options).

Metadata updates

The following types were introduced in 11.3.0:

- `ErrorLogFile`
- `ProcessExecuteResult`
- `ProcessExecuteStatusCode`

The following entity types were **deprecated** in 11.3.0:

- `ProcessErrorLog`

The following functions and actions were introduced in 11.3.0:

- `TailMessageLog`
- `TailTransactionLog`
- `ExecuteProcessWithReturn`
- `Process.ExecuteWithReturn`

The following actions were **deprecated** in 11.3.0:

- `Process.Execute`
- `ExecuteProcess`

To learn more, see What's new in 11.3.0 (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_rest_api.2.0.0.doc/r_restapi_v1_csdl.html#restapi_v1_csdl_whats_new_11_3_0).

Documentation updates

The TM1 REST API documentation has been updated to include information about data spreading. To learn more, see Data spreading with the TM1 REST API (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_rest_api.2.0.0.doc/c_spreading_rest_api.html).

TM1 Web updates

IBM Planning Analytics Local version 2.0.5 and the cloud-only release of IBM Planning Analytics version 2.0.5 includes the following features for TM1 Web.

Changes to `web.xml` file

If you are upgrading IBM Planning Analytics TM1 Web with this installation of IBM Planning Analytics Local version 2.0.5, you install a new version of the `web.xml` file called `web.xml.new` and your existing `web.xml` file is preserved.

To take advantage of fixes applied to this release, you must use the `web.xml.new` file and you must reapply any changes that you made to your previous configuration settings. In particular, restore your values for **`session-timeout`**.

1. Back up the existing `web.xml` file in `<PA_installation_location>/webapps/tm1web/WEB-INF`. For example, rename `web.xml` to `web.xml.old`. This step backs up your current settings.
2. Rename `web.xml.new` to `web.xml`. This step uses the new version of `web.xml` that is supplied with IBM Planning Analytics Local version 2.0.5.
3. Replace the entry for **`session-timeout`** in `web.xml` with the entry from `web.xml.old`. This step restores any changes that you made to this property previously.

   For example:

```
<session-config>
    <session-timeout>20</session-timeout>
</session-config>
```

Exporting to PDF

Exporting a websheet to PDF uses the print area information. If you define a print area in a worksheet, only the data in that area is exported to PDF. This behavior is the same as printing from Excel.

Cognos Insight updates

IBM Planning Analytics Local version 2.0.5 includes updates for Cognos Insight.

Deprecated Cognos Insight - Distributed mode

IBM Planning Analytics version 2.0.5 is the last release of Cognos Insight – Distributed mode when used with TM1 Applications. Cognos Insight in Connected mode and TM1 Application Web will continue to be supported.

This change does not affect the functionality of the client, with the exception of work offline. If the ability to work offline is an important capability, IBM recommends the use of IBM Planning Analytics for Microsoft Excel.

Planning Analytics 2.0.4 - February 16, 2018

IBM Planning Analytics Local version 2.0.4 and the cloud release of IBM Planning Analytics version 2.0.4 includes updates and new features for IBM TM1 Server version 11.2.0.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

Local installation and configuration updates

IBM Planning Analytics Local version 2.0.4 includes the following updates to installation and configuration.

Deprecated 32-bit version of TM1 Server client installation

Planning Analytics Local version 2.0.4 is the last release of the 32-bit version of the TM1 Server client installation program.

For more information, see http://www-01.ibm.com/support/docview.wss?uid=swg22013654.

TM1 Server updates

IBM Planning Analytics Local version 2.0.4 and the cloud release of IBM Planning Analytics version 2.0.4 includes the following features for IBM TM1 Server version 11.2.0.

Encryption at rest

TM1 Server uses a two-tier key management system to encrypt and decrypt server data. TM1 APIs enable and disable data encryption. With the TM1 Server command line utility, you can perform master key rotations for added security. And, if you need to, you can restore files by using the TM1Crypt utility. For more information, see the TM1 Server data encryption in the *Planning Analytics Installation and Configuration* documentation.

Note: Encryption is not supported for IBM Planning Analytics on cloud. Encryption is available for Planning Analytics Local customers only. Encryption is not supported on a TM1 Server that is using replication and sync. Blobs are excluded from server artifacts that are encrypted by encryption at rest.

Server stability and improved server shutdown

The TM1 Server performs the following tasks to safely shut down the server:

1. Terminates all spawned external processes.
2. Cancels all running threads (which is the same as an administrator logging in and canceling all running threads).
3. Collects and produces information and metrics for the shutdown process.
4. Sends data to the event log and the server log.

You can use IBM Planning Analytics Administration to start and stop databases.

Change to reporting of memory consumed by feeders in TM1 Server

TM1 Server now reports the memory that is consumed by feeders only once. If there are no changes to rules or cube data, the memory consumption represents a static value that is recorded after the server successfully starts. If there are changes to rules, feeders, or cube data during the running of the server, the Memory Used for Feeders value in the }StatsByCube control cube is updated the next time that the server starts.

Note: The memory accounting is accurate at start-up time. You cannot change your feeders and see what kind of memory profile is generated without restarting the server.

For more information, see Performance Monitoring Control Cubes(https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_op.2.0.0.doc/c_performancemonitoringcontrolcubes_n608ec.html).

Selectively enable multi-threaded query processing

The MTQQuery parameter in the tm1s.cfg file is now set to True by default. You can use a new TI function, `EnableMTQQuery()`, to selectively enable or disable multi-threaded query processing when calculating a view to be used in a TI process.

TM1 support for localizable attributes for View, Subset, and TI Processes

TM1 Server supports localizable attributes. You can provide a localized value for the attributes of Dimension, Element, and Cube. TM1 Server automatically returns the correct value for an attribute based on the user-supplied language locale or preferred language locale setting. You don't need to create an alias attribute or text attribute for each language.

In this version of TM1 Server, the View, TI Process, and Subset objects can also have attributes that are localizable. For more information, see Attributes and localization.

Sandbox comparisons

To enable sandbox comparisons, you can set **EnableSandboxDimension** parameter in your tm1s.cfg file.

For more information, see EnableSandboxDimension.

REST API updates

The following changes were made to the TM1 REST APIs:

- You can use the REST API actions `ExecuteCubeDrillthrough` and `ExecuteRelationalDrillthrough` to preview a datasource. For more information, see Preview a datasource.
- You can rename or copy a folder in the TM1 Server by using the Copy and `Move` actions that are bound to the Entry entity. Copy creates an Entry with a different name in the target destination and leaves the source Entry the same. Move creates an Entry with a different name in the target destination and removes the source Entry. You can specify whether the Entry that is created should be public or private. If the target folder is unspecified, the parent folder of the source is used. If the target Name is unspecified, the name of the source is used.
- You can retrieve elements by supplying either alias or invariant name: The OData-compliant REST API requires an application to know the type of the key when asked for dimension element. The supplied key can either be invariant name or alias. However, when the type is not known, that is, can be either invariant name or alias, the application cannot determine which one to use. For more information, see Retrieve elements by supplying either alias or invariant name.
- You can now execute a PUT on the reference of the subset element collection to update the collection. You can execute a DELETE on the reference of the collection to empty the collection. The $filter query option can be used to specify which element to be removed. For more information, see Update all elements in a static set.

To learn more, see What's new in 11.2.0 (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_rest_api.2.0.0.doc/r_restapi_v1_csdl.html#restapi_v1_csdl_whats_new_11_2_0).

TM1 Performance Modeler updates

IBM Planning Analytics Local version 2.0.4 and the cloud release of IBM Planning Analytics version 2.0.4 includes updates to IBM Cognos TM1 Performance Modeler.

In IBM Planning Analytics version 2.0.4, TM1 Performance Modeler is started as a Java application without a console window.

If you are trying to locate the TM1 Performance Modeler process in Task Manager, you must look for `javaw.exe`. Previously, this process appeared in Task Manager as `PerformanceModeler.exe`.

When TM1 Performance Modeler is starting up, the icon in the taskbar might appear as  .

Cognos Insight updates

IBM Planning Analytics Local version 2.0.4 includes new features for Cognos Insight.

The following features were introduced in IBM Planning Analytics Local version 2.0.4. For more information, see the *Cognos Insight* documentation in IBM Knowledge Center.

Autosum

For any widget with numeric values in the grid, you can highlight cells and display their sum and average at the lower left side of the widget with a count of the number of cells selected.

1. To enable this feature for any widget, from the drop-down menu at the upper left of the widget, select **Show Autosum**.
2. Click in the grid to close the menu.

3. Highlight any range of numeric cells. For disconnected cells, use Ctrl+click to multi-select cells.

If you select any cells that contain strings, these cells are not included in the count of selected cells.

If none of the cells you select contain numeric data, the average displays NaN (not a number).

Context-sensitive action buttons

You can add parameters that can be synchronized with your TM1 data to an action button that runs a TurboIntegrator (TI) process. When the TI process runs, the parameter is dynamically replaced by the name of the currently selected member of the specified dimension.

For more information, see Adding action buttons that run a script (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.dsk_ug.2.0.0.doc/t_dsk_work_script.html).

Changes to startup

In IBM Planning Analytics 2.0.4, Cognos Insight is started as a Java application without a console window.

If you are trying to locate the Cognos Insight process in Task Manager, you must look for `javaw.exe`. Previously, this process appeared in Task Manager as `CognosInsight.exe`.

When Cognos Insight is starting up, the icon in the taskbar might appear as  .

Deprecation of Cognos Insight - Distributed mode

As of IBM Planning Analytics version 2.0.4, IBM announces the intent to deprecate the use of Cognos Insight – Distributed mode when used with TM1 Applications. Cognos Insight in Connected mode and TM1 Application Web will continue to be supported.

This change does not affect the functionality of the client, with the exception of work offline. If the ability to work offline is an important capability, IBM recommends the use of IBM Planning Analytics for Microsoft Excel.

Planning Analytics 2.0.3 - September 19, 2017

IBM Planning Analytics Local version 2.0.3 and the cloud release of IBM Planning Analytics version 2.0.3 includes updates and new features for IBM TM1 Server version 11.1.0.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

Local installation and configuration updates

IBM Planning Analytics Local version 2.0.3 includes the following updates for installation and configuration.

Support for TM1 Server on IBM POWER8 little endian (LE)

You can now install IBM TM1 Server on Red Hat Enterprise Linux (RHEL) Server 7.1 operating system on POWER8 LE hardware. The *IBM Planning Analytics version 2.0.3 POWER8 LE install kit* provides TM1 Server only. The kit contains no applications or other components.

Note:

- You cannot use the IBM Cognos Configuration tool with this version of TM1 Server. You must use provided scripts to start and stop the TM1 Server. For more information, see Use scripts to start a TM1 Server on UNIX or Linux.
- This installation uses a subset of the TM1 Server configuration parameters in the `cogstartup.xml` file. For more information, see The tm1s.cfg.configuration file.

For more information, see Installing IBM TM1 Server on UNIX or Linux. For more information about supported operating systems, create a report for IBM Planning Analytics Local by using Software Product Compatibility Reports.

Not supported AIX for Planning Analytics Local version 2.0.3

Important:

Planning Analytics Local version 2.0.2 is the last release with AIX® support.

Planning Analytics Local version 2.0.3 is not supported on AIX.

New runtime C/C++ libraries for TM1 Server installed on UNIX or Linux

If you are running TM1 Server on Red Hat Enterprise Linux, you must install the runtime C/C++ libraries before you install Planning Analytics Local version 2.0.3. You can create a detailed system requirements report by using the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

Deprecated 32-bit version of TM1 Server

There is no longer a 32-bit installation program for TM1 Server. Planning Analytics Local for Windows 32-bit can be used only to install TM1 components.

TM1 Server updates

IBM Planning Analytics Local version 2.0.3 and the cloud release of IBM Planning Analytics version 2.0.3 includes the following features for IBM TM1 Server version 11.1.0.0.

Updates to the TM1Crypt utility

The TM1Crypt utility has been updated. For more information, see Running the TM1Crypt utility.

Enhanced cube rule area definition support for model using multiple hierarchies

Cube rules have changed as of IBM TM1 Server version 11.1.0.0. You can use a single rule statement to cover a set of same-named consolidated elements across hierarchies of the same dimension. This approach gives you greater flexibility with hierarchies.

For more information, see Use the Or operator to specify cube rules across hierarchies.

Changes to default behavior for FileRetry.FileSpec parameter

As of IBM TM1 Server version 11.1.0.0, if the FileRetry.FileSpec parameter is not specified in the tms1.cfg file (default), the retry logic is applied to all files in the logs directory only.

For more information, see FileRetry.FileSpec.

New tm1s.cfg parameter ODBCTimeoutInSeconds

The ODBCTimeoutInSeconds parameter specifies the timeout value that is sent to the ODBC driver using the SQL_ATTR_QUERY_TIMEOUT and SQL_ATTR_CONNECTION_TIMEOUT connection attributes.

For more information, see ODBCTimeoutInSeconds.

New tm1s.cfg parameter SQLRowsetSize

The SQLRowsetSize parameter specifies the maximum number of rows to retrieve per ODBC request.

For more information, see SQLRowsetSize.

New logger introduced

The TM1 server uses monitoring code to generate log messages that are pushed out to the `ops.logger`. Critical events that are pushed out to this logger include the following:

- Threads and their state
- Thread state of interest
- High contention
- Pool memory size
- Chore failure

To learn more, see Logging essential server information and Set database configuration parameters.

Updates to TM1 REST APIs

Types, actions, and functions have been added or changed in the TM1 REST API schema for IBM Planning Analytics Local version 2.0.3. These include the following features for TM1 server version 11.1.0.0:

- Locking and unlocking cubes or dimensions.
- Rule tracing, which includes tracing the calculation of a single cell. The result contains any components of the calculation.
- Ability to set the `Context` on a `Session` to better identify sessions and their associated threads. The client or consumers sets a context, which in turn allows consumers of this information to know who the client or consumer is.
- New properties in the `Document`, `ExternalDatabaseSettings`, and `Session` entities.

For more information, see the Release notes in *TM1 REST API* documentation.

TM1 Web updates

IBM Planning Analytics Local version 2.0.3 and the cloud-only release of IBM Planning Analytics version 2.0.3 includes the following features for TM1 Web.

Display the current TM1 database label in TM1 Web

The TM1DatabaseLabel parameter displays the TM1 database label in the banner beside the user name. For more information, see TM1DatabaseLabel Parameter and TM1 Web Configuration Parameters.

Specify the maximum cell count of a workbook

The WorkbookMaxCellCount parameter specifies the maximum cell count of a workbook as a number with no thousands separators. You can use WorkbookMaxCellCount to avoid issues opening workbooks with many cells.

For more information, see TM1 Web Configuration Parameters.

Limit the number of cells that can be exported from websheets

The ExportCellsThreshold parameter specifies the maximum number of cells that an export of a websheet or a cube view can contain. If the number of selected cells exceeds the threshold, a warning message is displayed and the export does not start.

For more information, see TM1 Web Configuration Parameters.

Hide dimensions in the cube viewer

The CubeViewerHiddenDimensionsEnabled parameter allows you to hide dimensions in the TM1 Web cube viewer.

For more information, see TM1 Web Configuration Parameters.

Waterfall chart support

TM1 Web supports excel-based Waterfall charts in websheets. These charts were released in Microsoft Excel 2016.

Planning Analytics 2.0.2 - June 1, 2017

IBM Planning Analytics Local version 2.0.2 and the cloud release of IBM Planning Analytics version 2.0.2 includes updates and new features for IBM TM1 Server version 11.0.2.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

TM1 Server updates

IBM Planning Analytics Local version 2.0.2 and the cloud release of IBM Planning Analytics version 2.0.2 includes the following features for IBM TM1 Server version 11.0.2.

HTTP support enabled by default

The **HTTPPortNumber** tm1s.cfg parameter was optional is earlier releases. To support REST API features and applications that use the APIs, this option must be specified. If **HTTPPortNumber** is not defined in your tm1s.cfg file, then port number "5001" is assigned automatically.

MDXSelectCalculatedMemberInputs enabled by default

The **MDXSelectCalculatedMemberInputs** tm1s.cfg parameter is no longer optional. This tm1s.cfg parameter is now enabled by default.

New configuration parameters to prevent automatic TM1 server shutdown

You can prevent automatic TM1 server shutdowns when network issues block access to transaction logs. This feature is enabled by using three new tm1s.cfg parameters: **FileRetry.FileSpec**, **FileRetry.Count**, and **FileRetry.Delay**.

Planning Analytics 2.0.1 - February 7, 2017

IBM Planning Analytics Local version 2.0.1 and the cloud release of IBM Planning Analytics version 2.0.1 includes fixes for IBM TM1 Server version 11.0.1.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

Planning Analytics 2.0.0 - December 16, 2016

IBM Planning Analytics Local version 2.0.0 and the cloud release of IBM Planning Analytics version 2.0.0 includes updates and new features for IBM TM1 Server version 11.0.0.

Note: Updates to each version of IBM Planning Analytics are cumulative. If you are upgrading IBM Planning Analytics, review all updates since your installed version to plan your upgrade and application deployment.

Local installation and configuration updates

IBM Planning Analytics Local version 2.0.0 includes the following updates for installation and configuration.

WebSphere Liberty Profile is the default application server

IBM Planning Analytics installs a WebSphere® Liberty Profile as the default application server. Apache Tomcat is no longer installed as the default application server as it was for IBM TM1 Server.

Note: In IBM Planning Analytics Local version 2.0.0, Performance Manager Hub can deploy only to another WebSphere Liberty Profile server; other versions of WebSphere are not supported.

WebSphere Liberty Profile uses the same default port numbers as were used for the Apache Tomcat server. For example, the default port number 9300 is also used for the WebSphere Liberty Profile.

Changes to selectable components in the TM1 Server installation wizard

In the TM1 Server installation wizard, the tiers that contain the selectable components were renamed.

- The TM1 Application Tier was renamed the TM1 Data Tier.
- The Web Application Tier was renamed the TM1 Web Tier.
- The TM1 Client Tier and the Developer Tier were merged to form the newly named TM1 Rich Tier.
- The Samples component was moved under the TM1 Data Tier.

TM1 Server updates

IBM Planning Analytics version 2.0.0 includes all features that were introduced in IBM TM1 Server version 11.0.0.0.

The following features were introduced in IBM TM1 Server version 11.0.0.0. For more information about these features, see the *TM1 for Developers*, *TM1 Reference*, and *TM1 REST API* documentation in IBM Knowledge Center.

Hierarchies

You can now create multiple hierarchies inside dimensions. This capability is supported through TM1 REST APIs, TurboIntegrator processes, and Planning Analytics Workspace modeling. This enhancement provides the following benefits:

- More efficient cube design
- Faster cube processing
- Attribute analysis
- Structured dimensions
- Dynamic analysis
- Re-org scenario planning
- Planning Analytics Workspace integration and modeling capabilities

New Control dimensions

The following control dimensions were added:

- The }Subsets_DimensionName dimension is used to track the subsets in each dimension. Each element in this dimension represents a subset.
- The }Views_CubeName dimension is used to track the views in each cube. Each element in this dimension represents a view.

Multi-threaded feeders

Multi-threaded feeders improve the performance of bulk feeder construction and cube feeder updates by using the number of available CPU cores. Three `tm1s.cfg` settings (**`MTFeeders`**, **`MTFeeders.AtStartup`**, and **`MTFeeders.AtomicWeight`**) were added to enable and configure this feature. For more information, see multi-threaded feeders in the *TM1 Rules* documentation.

MDX views as a TI data source

Previously, a view could be created and saved by using MDX expressions. In this release, the MDX-based view can now be used as a TurboIntegrator data source.

Support for multiple cores on Microsoft Windows

TM1 server multi-threaded queries are no longer limited to 64 CPU cores. Microsoft Windows Platforms with more than 64 processors can take full advantage of this feature and its performance benefits.

Deprecated IPAddress tm1s.cfg parameter deprecated

The **`IPAddress`** `tm1s.cfg` parameter is obsolete and has been replaced with **`IPAddressV4`** and **`IPAddressV6`**. You can use these parameters to specify whether TM1 client requests are routed through the public or private adapter. The default behavior uses the public IP adapter, which requires modifications to firewall profiles.

New TurboIntegrator Transactional rollback functions

Four new TurboIntegrator functions have been added to assist with managing chores: **`ChoreRollback`**, **`ProcessExitByChoreRollback`**, **`ProcessRollback`**, and **`ProcessExitByProcessRollback`**. For more information, see the *TM1 Reference* documentation.

New TM1 REST APIs

Types, actions, and functions have been added or changed in the TM1 REST API metadata for IBM TM1 Server version 11.0.0.0. These include support for TurboIntegrator debug contexts.

For more information, see the Metadata in *TM1 REST API* documentation.

TurboIntegrator Debugger tool

You can access a TurboIntegrator Debugger tool on IBM developerWorks. This tool provides a user interface where you can set breakpoints and step through TurboIntegrator processes to identify possible issues or errors in your TurboIntegrator scripts. The TurboIntegrator Debugger, which is built on the new TurboIntegrator process debugging capabilities of the TM1 REST API, is in preview release and is not a supported component of IBM Planning Analytics Local version 2.0.0.

TM1 Web updates

IBM Planning Analytics Local version 2.0.0 includes all features that were introduced in TM1 Web 10.3.0, which was introduced for IBM Planning Analytics on Cloud.

The following features were introduced in IBM Planning Analytics Local version 2.0.0. For more information about these features, see the *TM1 Web* documentation in IBM Knowledge Center.

Hierarchies in TM1 Web

TM1 websheets can display more than one hierarchy in a dimension.

Note: Hierarchies can be viewed in TM1 Web, however, you cannot create hierarchies in TM1 Web. You must create hierarchies in Planning Analytics Workspace. For more information, see Planning Analytics Workspace in IBM Knowledge Center.

You can open hierarchies by using Quick Reports in IBM Planning Analytics for Microsoft Excel.

Quick Reports (formerly Flex Views) are published as live websheets. A live websheet maintains its connection to the TM1 server. If the data on the server changes, the live websheet reflects the change.

For more information about Quick Reports, see Planning Analytics for Microsoft Excel in IBM Knowledge Center.

Note: Relative proportional spreading and relative percent adjustments are not supported in Quick Reports that are opened in TM1 Web.

TM1 Web API enhancements

The TM1 Web API has the following new functionality:

- As of IBM Planning Analytics Local version 2.0.0, it is no longer mandatory to use the version of Dojo that is provided with TM1 Web to load the TM1 Web JavaScript Library modules. TM1 Web now supports using the AMD loader from Dojo version 1.7 and later to load the JavaScript Library modules.
- The HTML <head> and <body> tags that are required to use the JavaScript library are simpler.
- The `tm1web/api/session/session` module in the JavaScript library allows users to log in, retrieve session information based on a session token, and destroy a session based on a session token.
- The `tm1web/api/session/LoginDialog` module in the JavaScript library allows users to display or destroy a login dialog box.
- The `tm1web/api/Workbook` class in the JavaScript library exposes execution information after an action button is executed. The `onActionButtonExecution` method API allows users to replace an existing Workbook or create a new one when an action button is clicked.
- The `tm1web/api/Workbook` class and the `tm1web/api/CubeViewer` class include `subset` and `subsets` set properties and methods.

For more information, see *TM1 Web API* in the *TM1 for Developers* documentation.

Relational websheets

TM1 Web now allows you to view relational data on the same websheet as TM1 data. By defining a relational query in an Excel file and then uploading the file to TM1 Web, you can view the results on the same websheet or tab. This allows you to report on OLAP and relational data together.

For more information, see Working with relational data in websheets (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_ug.2.0.0.doc/c_relational_data_websheets.html) in IBM Knowledge Center.

TM1 Web Accessibility

TM1 Web includes accessibility features to help you perform tasks by using only a keyboard. These features include keyboard navigation and keyboard access to menus and dialog boxes that are related to websheets.

- Context menus are accessed by using Shift+F10. The Up Arrow and Down Arrow keys select items from within the context menu.
- To expand or collapse a row in a websheet, you can use the Space bar.
- To access the set selector, you can use the Space bar. The Tab key moves you between the search, the Arrow keys, and the tree. Up Arrow and Down Arrow keys move you between items in the tree. The Enter key selects the focused item in the tree.

Note: When you access the set selector, if you press Esc to exit after you make changes, you lose your focus on the cell that you originally launched from. You are focused on the main page.

Support for Excel shapes in workbooks

Excel shapes, including basic shapes, arrows, banners, equation shapes, and lines, can be added to workbooks in TM1 Web. To see the list of supported and unsupported Excel shapes, see the List of Microsoft Excel-supported functionality by menu in IBM TM1 Web version 10.2.2 and later.

Single sign-on for TM1 Web

You can configure single sign-on for IBM TM1 Web by using Integrated Login (Kerberos) and the application server's security layer. Single sign-on enables HTTP users to log in only once to TM1 Web.

For more information, see *Configuring Integrated Login for TM1 Web using Kerberos and SPNEGO* in the *Planning Analytics Installation and Configuration* documentation.

TM1 worksheet functions

The following worksheet functions are now available:

TM1ELLIST
Returns a set of element values from a TM1 model by using a single formula.

TM1GLOBALSANDBOX
Returns the current global active sandbox that was selected from the toolbar.

TM1INFO
Returns information about the current TM1 version and client.

TM1PRIMARYDB
Returns the primary TM1 server name that the user is authenticated through, even if the user is implicitly logged in to multiple TM1 servers.

TM1 Performance Modeler updates

IBM Planning Analytics Local version 2.0.0 also includes all features that were introduced in Cognos TM1 Performance Modeler version 10.3.0, which was introduced for IBM Planning Analytics on Cloud.

The following features were introduced in IBM Planning Analytics Local version 2.0.0. For more information about these features, see the *IBM Cognos TM1 Performance Modeler* documentation.

Regenerate rules for the whole model

You can now regenerate rules for the whole model instead of having to regenerate rules one cube at a time. In the Model Design pane, right-click the server name and select **Generate Rules**.

Quick access to control cubes

You can quickly create a view for a control cube by double-clicking the control cube. Previously you right-clicked the control cube and selected **New view**. The view is named the same as the control cube, without the curly bracket.

Filter and search for objects in Model Design view

You can find and filter on objects that match specific criteria in the Model Design view. For example, you can find all objects that include `sales`, including rules, cubes, processes, subsets, links, views, dimensions, and chores. You can also do a selective search where you specify which objects that you want to search on. For example, you might want to list all rules that contain the word `tent`.

Search for elements in a dimension

When you edit large dimensions, navigation can be difficult. To make it easier, you can search through existing elements of the dimension that is open in the dimension editor.

Delete and rename imported terms in a cube calculation

You can now delete and rename terms that are used in a cube calculation. The cube calculation dynamically updates to match the term and checks to ensure that the calculation is valid.

Cognos Insight updates

IBM Cognos Insight is now installed as a component of IBM Planning Analytics Local. IBM Planning Analytics Local version 2.0.0 includes all features that were introduced in fix packs for Cognos Insight version 10.2.2, and also Cognos Insight version 10.3.0, which was introduced for IBM Planning Analytics on Cloud.

Note: For more information about new features in previous versions of Cognos Insight, see New features in the *Cognos Insight* documentation in IBM Knowledge Center.

The following features were introduced in IBM Planning Analytics Local version 2.0.0. For more information, see the *Cognos Insight* documentation in IBM Knowledge Center.

Row and column headers are highlighted when a cell is selected

When a cell is selected in a grid, the corresponding row and column headers are highlighted as they are in Excel. The color of the highlighting matches the color of the cell.

Search for objects in the content pane

You can search for objects in the content pane. You can type characters to filter on when you are unsure of an exact object name, or if you want to find objects that match specific criteria. The search finds all objects in the tree that match the criteria.

Search for members in the dimension editor

When you edit large dimensions, navigation can be difficult. To make it easier, you can search through existing elements of the dimension that is open in the dimension editor.

New right-click menu options for cells

Two new options available on the right-click menu for a cell:

- Export to
- Freeze panes

Previously, these options were available only from the widget toolbar.

Chapter 2. Planning your installation

You can decide how to install and configure IBM Planning Analytics Local to provide the best possible performance. The installation and configuration choices that you make depend on your requirements, resources, and preferences.

Software requirements

Before you install IBM Planning Analytics Local or client components, review system requirements and set up prerequisite software in your environment.

Supported environments

For an updated list of environments that are supported by IBM Planning Analytics including information about operating systems, servers, and databases, create a detailed system requirements report with the Software Product Compatibility Reports tool.

Prerequisite software

Planning Analytics requires the installation of specific software components before it can be installed and used.

Download and install the following components on the target system before you install the related Planning Analytics components.

Prerequisite Component	Description
Microsoft Excel	Required for Planning Analytics for Microsoft Excel and IBM TM1 Perspectives.
Microsoft .NET Framework	Required for IBM TM1 Perspectives and IBM TM1 Architect.

Available installation programs

IBM Planning Analytics Local provides installation programs for Planning Analytics components on different operating systems and for different deployment scenarios. You can download all of the Planning Analytics Local installation programs from IBM Passport Advantage®.

The installation programs and component options are organized by operating system and architecture tier to support deployment in single and multiple computer environments.

Planning Analytics Local for Windows 64-bit
Includes a combined collection of 32-bit and 64-bit components for installation on a 64-bit Microsoft Windows system.

This installation program runs only on a 64-bit Windows system.

Use this installation program to install all components on a single 64-bit Windows system or to selectively install individual components, such as the IBM TM1 Admin Server and IBM TM1 Server, on separate 64-bit Windows systems.

By default, this installation program automatically installs the IBM Cognos Configuration tool for managing the TM1 Admin Server, TM1 Server, and TM1 Applications components.

Planning Analytics Local for UNIX and Linux
Includes only the UNIX and Linux versions of the following TM1 components.

- TM1 Server
- TM1 Admin Server
- IBM Planning Analytics TM1 Web application servers:

  - IBM Planning Analytics TM1 Web
  - Cognos TM1 Applications
  - Cognos TM1 Operations Console (Deprecated in v2.0.9)

  Use the TM1 UNIX installation program to install these components on any of the supported UNIX or Linux operating systems. A separate installation program is available for each of these supported operating systems.

  By default, this installation program automatically installs the IBM Cognos Configuration tool for managing the TM1 Admin Server and TM1 Server components.

Planning Analytics Local for IBM POWER8® little endian (LE)
Includes only the following "TM1 Data Tier installation components" on page 39.

- TM1 Server
  - TM1 Tools
  - TM1 Samples
- TM1 Admin Server

This installation program does not install the utility for managing the TM1 Admin Server and TM1 Server components. You must use the following scripts to start and stop the TM1 Server:

- startup_tm1admsrv.sh
- startup_tm1admsrv.sh
- startup_tm1s.sh
- shutdown_tm1s.sh

Note: This installation does not provide PMPSVC scripts. If you want to edit the configuration parameters for this installation, you must edit the `cogstartup.xml` file in a text editor. The `cogstartup.xml` file contains a subset of the parameters in the `tms1.cfg` file.

For more information about TM1 configuration parameters, see "Parameters in the tm1s.cfg file" on page 322.

IBM Planning Analytics Workspace
Use this installation program to install Planning Analytics Workspace as part of your Planning Analytics Local on-premises installation. Planning Analytics Workspace is the web-based interface for IBM Planning Analytics.

Before you install Planning Analytics Workspace, you must have IBM Planning Analytics Local version 2.0.0 or greater installed.

For more information, see Chapter 10, "Installing Planning Analytics Workspace Local," on page 147.

IBM Planning Analytics for Microsoft Excel
Use this installation program to distribute and install Planning Analytics for Microsoft Excel.

Planning Analytics Local includes samples that you can use with Planning Analytics for Microsoft Excel.

For more information, see Chapter 12, "Installing and configuring Planning Analytics for Microsoft Excel," on page 189.

Planning Analytics Local Client-only
Includes only the standard IBM TM1 clients / user interfaces and related TM1 API support files. These components are only available as 32-bit versions.

- IBM TM1 Architect
- IBM TM1 Perspectives
- IBM TM1 APIs
- IBM TM1 Performance Modeler
- IBM Cognos Insight®

Use this installation program to distribute and install TM1 clients to multiple computers in your environment.

Note: You can also use the TM1 Client installation program to enable IBM Cognos Analytics reporting against TM1 data sources. Using the TM1 Client installation program for this purpose installs the TM1 API files on your Cognos Analytics servers that are running report services on Microsoft Windows.

TM1 Package Connector for Cognos Analytics Removed in v2.0.8
Optional installation program, which installs components that support IBM Planning Analytics connectivity to Cognos Analytics packages with SAP Business Warehouse data sources and other relational and ODBC data sources.

You can also set up an unattended installation and configuration.

Available components

IBM Planning Analytics Local includes a collection of server and client components for administering, monitoring, modeling, analyzing, and interacting with TM1 data.

The installation program organizes TM1 components into groups based on architecture tier. You can install different combinations of components onto a single computer or across multiple computers, depending on your specific requirements, operating system and environment. Each component requires a specific operating system and software environment.

By default, IBM Planning Analytics uses a WebSphere Application Server Liberty Profile as the application server. You can configure Planning Analytics to run on other supported application servers that you currently use in your environment.

TM1 Data Tier installation components

The Data Tier in the IBM Planning Analytics installation program includes the fundamental components such as the IBM TM1 Admin and IBM TM1 Server components.

The following table includes the description and operating system for each TM1 component in the Data Tier. For more information, see Chapter 7, “Installing the Data Tier,” on page 81.

Table 1. System requirements for TM1 Data Tier components

Component	Operating System	Description
TM1 Server	64-bit Windows 64-bit UNIX 64-bit Linux	The TM1 Server manages requests from TM1 clients. It loads the names of all available permanent objects, such as cubes and dimensions into memory. It responds to client requests by completing calculations, consolidations, and updates as required. The TM1 Server also manages security by granting or denying access to server objects and maintaining a log of changes to the database. See “TM1 Server installation” on page 81.

Table 1. System requirements for TM1 Data Tier components (continued)		
Component	**Operating System**	**Description**
TM Admin Server	64-bit Windows 64-bit UNIX 64-bit Linux	A process that tracks all TM1 servers that run on a network. An Admin Server runs on an Admin Host server. When a TM1 server starts, the server registers itself with an Admin Server that is running on a specified Admin Host. TM1 clients reference the Admin Server to determine which TM1 servers are available on the network. See "TM1 Server installation" on page 81.
TM1 Tools	Supported operating systems vary by tool.	Includes the following collection of tools and utilities for TM1 administrators, developers, and modelers: TIRunTI TM1xfer See "Cognos TM1 tools installation" on page 94.
Samples	64-bit Windows 64-bit UNIX 64-bit Linux	Installs TM1 samples databases: See "Cognos TM1 sample databases installation" on page 95.
Planning Analytics Administration agent	64-bit Windows 64-bit UNIX 64-bit Linux	Installs the Planning Analytics Administration agent, which is required in Planning Analytics Workspace Local. See "Install and configure the Planning Analytics Administration agent (local only)" on page 104.

TM1 Web Tier installation components

The TM1 Web Tier installation components require a web application server on which to run. By default, they are configured to work with the provided Java web application server.

The following table includes the description and operating system for each TM1 component in the TM1 Web Tier. For more information, see Chapter 8, "Installing the Web Tier," on page 111.

Table 2. TM1 Web Tier components		
Component	**Operating System**	**Description**
TM1 Application Gateway	64-bit Windows	Java web component that provides the provisioning of the TM1 Performance Modeler and Cognos Insight components to remote users. This component is installed with the IBM TM1 Application Server. See "TM1 Application Server installation" on page 111.

Table 2. TM1 Web Tier components (continued)		
Component	**Operating System**	**Description**
TM1 Application Server	64-bit Windows	Java web application that provides the primary support for IBM TM1 Applications. TM1 Applications component is used to design, deploy, and run managed planning and contribution-based applications on TM1 data. This component also interacts with TM1 Performance Modeler and Cognos Insight components. This component requires a Java web application server and the Java Runtime Environment (JRE). You can use the WebSphere® Liberty application server that is installed by default or your own instance of an application server such as IBM WebSphere Application Server. An IBM JRE is installed automatically with TM1 Applications. If you are using an application server, use the JRE that is installed with it. See “TM1 Application Server installation” on page 111.
TM1 Web	64-bit Windows	Web server and client components that run on the provided Java web application server. TM1 Web enables users to connect to TM1 Servers and interact with data using one of the supported web browsers. See “Cognos TM1 Web installation” on page 122.
TM1 Operations Console	64-bit Windows	Java web application that provides a web-based monitoring tool for TM1 administrators to monitor and act on TM1 server activity. The IBM TM1 Operations Console provides a simple and effective way to understand how TM1 servers and user loads are working. You can use this component with the WebSphere® Liberty application server that is installed by default or your own installation of a supported application server. An IBM JRE is installed automatically with TM1 on Windows. If you are using an application server, use the JRE that is installed with it. See “Installing Cognos TM1 Operations Console using the provided WebSphere® Liberty webserver software” on page 126.

TM1 Rich Tier installation components

The TM1 Rich Tier contains tools for end-users and a collection of TM1 APIs.

The following table includes the description and operating system for each TM1 component in the Rich Tier. For more information, see Chapter 9, “Installing the Rich Tier,” on page 133.

Table 3. Rich Tier components		
Component	**Operating System**	**Description**
TM1 Architect	32-bit Windows	A Windows desktop application for administering, creating, and maintaining data and metadata on both local and remote TM1 servers. See “Installing Cognos TM1 Architect” on page 133.
TM1 Performance Modeler	32-bit Windows	Java, Eclipse-based rich client interface that is started from the Cognos TM1 Applications portal page. Enables developers to build planning and analysis models in the TM1 environment. Available as a selectable component in the Client-only, and 64-bit Windows installation programs. By default, this component is available but not selected in the 64-bit Windows installation programs. See “Installing Cognos TM1 Performance Modeler” on page 134.
TM1 Perspectives	32-bit Windows	Cognos TM1 add-in client for Microsoft Excel. Lets you use the features of Excel to perform complex analysis on data that is stored in a TM1 server. Can also create and maintain objects and data on both local and remote TM1 servers. See “Installing Cognos TM1 Perspectives” on page 138.
Cognos Insight	32-bit Windows	Java , Eclipse-based rich client interface that can be started independently or from the Cognos TM1 Applications portal page. Available as a selectable component in the Client-only, and 64-bit Windows installation programs. By default, this component is available but not selected in the 64-bit Windows installation programs. See “Installing Cognos Insight” on page 139.

Table 3. Rich Tier components (continued)		
Component	**Operating System**	**Description**
TM1 APIs	Dependent upon specific APIs	Installs the required files that enable developers to work with the following TM1 application programming interfaces (APIs). **TM1 API** - Allows developers to create custom C, C ++ and VB applications that interact with TM1. **TM1 Java API** - Allows developers to create custom Java applications that interact with TM1. **TM1 .NET API** - Allows developers to create custom Microsoft .NET applications that interact with TM1. See "Installing Cognos TM1 APIs" on page 144.

Additional installation components not listed

Some components are not listed or selectable in the installation program.

The following table includes the description and operating system for required components that are not listed or selectable in the installation program but are installed by default with the installation of other selectable components.

Table 4. Additional Planning Analytics components not listed in the installation wizard		
Component	**Operating System**	**Description**
Planning Analytics Workspace	64-bit Windows	A web-based interface for IBM Planning Analytics. It provides an interface to TM1 data, with ways to plan, create, and analyze your content. See Chapter 10, "Installing Planning Analytics Workspace Local," on page 147.
Planning Analytics for Microsoft Excel	64-bit Windows	A Microsoft Excel-based tool that professional report authors use to build sophisticated, multiple-sheet, multiple-query reports against multiple databases. See Chapter 12, "Installing and configuring Planning Analytics for Microsoft Excel," on page 189.
TM1 OLE DB Provider Application	64-bit Windows	A tool that allows third-party software to retrieve cube data from the IBM TM1 Server by using MDX queries.

TM1 Client Differentiation

IBM Planning Analytics provides multiple clients for developers, administrators, and users. Understanding these clients and their differences can help you decide which client is most appropriate for your needs.

All clients are described fully in the Planning Analytics documentation.

End-user clients

You can use several user clients to interact with TM1 data.

IBM Planning Analytics Workspace

IBM Planning Analytics Workspace is a web-based interface for IBM Planning Analytics. You can connect to TM1 data to plan, create, and analyze your content.

For more information, see Planning Analytics Workspace installation on IBM Knowledge Center (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_inst.2.0.0.doc/c_paw_install_overview.html).

IBM Planning Analytics for Microsoft Excel

IBM Planning Analytics for Microsoft Excel is intended for users who work in global networked environments. It is the client of choice for users who primarily employ Microsoft Excel for analyzing TM1 information and build their own custom layouts by using Microsoft Excel functions. Planning Analytics for Microsoft Excel is also beneficial for users who need to access both TM1 and Cognos Analyticsdata from the same Excel client interface.

Planning Analytics for Microsoft Excel offers the following benefits:

- Optimized for wide area networks
- Provides a familiar spreadsheet environment that does not require a power-user level of knowledge in Excel to analyze and contribute to TM1 data
- Combines the capabilities of Microsoft Excel with a drag and drop approach to analyzing TM1 cubes
- Provides a flexible range-based mode to add formats and user calculations directly within a spreadsheet
- Provides access to TM1 data objects, such as cubes, views, dimension subsets, aliases, and sandboxes
- Combines read/write Microsoft Excel-based TM1 Planning with read-only analysis against Cognos Analytics data sources in the same spreadsheet interface

For more information, see Planning Analytics for Microsoft Excel installation and configuration on IBM Knowledge Center (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_inst.2.0.0.doc/c_ig_cor_overview.html).

IBM Cognos TM1 Web

IBM Cognos TM1 Web is a zero-footprint web client that you can use to analyze and modify TM1 data from any supported web browser. You cannot use TM1 Web to access the TM1 Application Web workflow page. Therefore, you cannot participate in TM1 Applications with TM1 Web.

IBM Cognos TM1 Application Web

IBM Cognos TM1 Application Web is a zero-footprint web client that you can use to open Cognos TM1 Applications with any supported web browser. From the Cognos TM1 Application Web workflow page, you can open a node, take ownership, enter data, and contribute to a plan. Cognos TM1 Application Web is most useful when a corporate policy prohibits the installation of a local client, or when you use an operating system other than Microsoft Windows.

IBM Cognos Insight

IBM Cognos Insight is a client for TM1 Application Web and a personal analysis tool that you can use to analyze almost any set of data. In the context of Cognos TM1 Application Web, Cognos Insight is a full client application that is provisioned locally or as a remote download. When used as a client for Cognos TM1 Application Web, you can use the Connected Mode.

Connected Mode

Connected Mode creates a live, bidirectional connection to the IBM TM1 Server. Any data that is updated on the TM1 Server is updated in the Insight client when you perform a recalculation in Insight. This approach ensures that the data on the Insight client is always current when you analyze or contribute to a plan. The trade-off for the live connection to the TM1 Server is that more traffic is generated on the LAN and a heavier load is placed on the TM1 Server.

Connected Mode should be used by users who have a fast connection to the TM1 Server and do not suffer from any network latency.

Administration clients

You can use IBM Planning Analytics administration clients to administer your TM1 data and models.

IBM Cognos TM1 Performance Modeler

IBM Cognos TM1 Performance Modeler is a TM1 modeling tool, which you can use to create or generate dimensions, cubes, rules, processes, and other objects. Performance Modeler simplifies the modeling process by automatically generating the rules and feeders that are required for your applications. Performance Modeler also introduces guided import, a simplified process for importing data and metadata into a TM1 server. Performance Modeler should be used as the primary development and maintenance tool for all new and existing TM1 models.

IBM Cognos TM1 Architect

IBM Cognos TM1 Architect is an older TM1 modeling tool that supports the creation and maintenance of all TM1 objects. TM1 Architect does not support automatic feeder and rules generation, and does not provide guided import capabilities. Architect users are encouraged use Cognos TM1 Performance Modeler as the primary development environment for all TM1 models.

IBM Cognos TM1 Perspectives

IBM Cognos TM1 Perspectives is the TM1 Excel Add-In. Cognos TM1 Perspectives can be used for TM1 model development and for analyzing data with Microsoft Excel capabilities. Like Cognos TM1 Architect, Perspectives support the creation and maintenance of all TM1 objects, but do not provide the advanced capabilities of Performance Modeler. Users that require an Excel Add-In interface and the ability to use Microsoft Excel functions, such as charting of TM1 data, can use Perspectives. Otherwise, administrators are encouraged to use Performance Modeler as the primary development environment for all TM1 models.

IBM Cognos TM1 Operations Console (Deprecated in v2.0.9)

IBM Cognos TM1 Operations Console is a web-based operations tool that is designed to facilitate the monitoring, support, and management of TM1 servers, providing greater insight into day-to-day server operations. The Cognos TM1 Operations Console lets you monitor threads that run on multiple TM1 servers at the same time dynamically. You can sort and filter thread activity, and schedule the logging of server activity. The Operations Console also provides a health check feature that determines the current state of each TM1 server that is being monitored. The Operations Console should be the interface of choice for TM1 administrators who are managing an enterprise-scale TM1 environment.

Configuration overview

After you install IBM Planning Analytics Local, use the Cognos Configuration tool and the TM1 configuration file parameters to configure the program for optimal performance.

Default installation values

IBM Planning Analytics Local uses the following default configuration values.

Table 5. Default configuration values for Planning Analytics installation

Item	Description and Default Value
Default installation location	On a 64-bit Microsoft Windows system: `C:\Program Files\IBM\cognos\tm1_64`
Admin Server port number	The TCP/IP port number on which the Admin Server listens for client requests. The default value is 5495 (unsecured). This value is set in IBM Cognos Configuration.
Admin Server SSL port number	The TCP/IP port number on which all TM1 components communicate with the Cognos TM1 Admin Server using Transport Layer Security (TLS). The default value is 5498 (secured) This value is set in IBM Cognos Configuration.
TM1 server port number	The port on which the TM1 server runs. This parameter is used to distinguish multiple TM1 servers running on the same computer. Valid port values fall between 5000 and 65535. The default value is 12345. This value is set with the **`PortNumber`** parameter in the `Tm1s.cfg` server configuration file.

Table 5. Default configuration values for Planning Analytics installation (continued)	
Item	**Description and Default Value**
TM1 Client Message port number	This port number establishes a secondary port for client progress messages to use when a lengthy operation is waiting to be canceled. This value is set with the **`ClientMessagePortNumber`** parameter in the `Tm1s.cfg` server configuration file. The default value is blank. By default, this port number is automatically and dynamically assigned when the TM1 server starts. You do not have to set **`ClientMessagePortNumber`** to a specific number unless firewalls or other network issues require the listener port to be a well-known number. **CAUTION:** If you choose to set a specific value for the ClientMessagePortNumber parameter, instead of having it dynamically assigned, be sure to assign unique port numbers for all the TM1 server and client message ports you are using. If you have two servers running on the same machine using the same port number, the message activity may cause a system conflict or hang.
Admin Server to REST API unsecured communication port number (`tm1AdminHTTPPortNumber`)	Specifies the HTTP port number that is used by TM1 Admin Server to communicate with the TM1 REST API for unsecured communication. The default value is 5895. This value cannot be changed using IBM Cognos Configuration. For more information, see Appendix 1: TM1 Admin Host in the *TM1 REST API* documentation.
Admin Server to REST API secured communication port number (`tm1AdminHTTPSPortNumber`)	Specifies the HTTPS port number that is used by TM1 Admin Server to communicate with the TM1 REST API for secured (SSL) communication. The default value is 5898. This value cannot be changed using IBM Cognos Configuration. For more information, see Appendix 1: TM1 Admin Host in the *TM1 REST API* documentation.

Table 5. Default configuration values for Planning Analytics installation (continued)	
Item	**Description and Default Value**
Admin Server host name	Specifies the computer name or IP address of the Admin Host on which a Cognos TM1 Admin Server is running. The default value is blank, which uses `localhost` to represent the computer on which the installation is run. This value is set with the **`AdminHost`** parameter in the `Tm1s.cfg` and `Tm1p.cfg` configuration files.
Sample TM1 server names	Planning Analytics Sample PlanSamp SData GO_New_Stores PData Proven_Techniques GO_scorecards 24Retail Login credentials: **User name:** `admin` **Password:** `apple`
Default port numbers for sample servers	PlanSamp - port 12354 SData - port 8010 GO_New_Stores - port 5010 PData - port 8011 Proven_Techniques - port 5011 GO_scorecards - port 44312 24Retail - port 8014 You can change a port number for a server by editing the HTTPPortNumber value in the tm1s.cfg file. For more information, see “HTTPPortNumber” on page 336.

Table 5. Default configuration values for Planning Analytics installation (continued)	
Item	**Description and Default Value**

Default data directory for sample TM1 servers	`C:\Program Files\IBM\cognos \tm1_64\samples\tm1\PlanSamp`
	`C:\Program Files\IBM\cognos \tm1_64\samples\tm1\SData`
	`C:\Program Files\IBM\cognos \tm1_64\samples\tm1\GO_New_Stores`
	`C:\Program Files\IBM\cognos \tm1_64\samples\tm1\PData`
	`C:\Program Files\IBM\cognos \tm1_64\samples\tm1\Proven_Techniques`
	`C:\Program Files\IBM\cognos \tm1_64\samples\tm1\GO_scorecards`
	`C:\Program Files\IBM\cognos \tm1_64\samples\tm1\24Retail`

Security mode	A Standard installation uses Cognos TM1 Authentication. In this mode, the TM1 server prompts users for a user name and password when they log in to TM1 components.

TM1 Server and Cognos Configuration

The IBM Cognos Configuration tool is used to start, stop, configure, and save the setting for each IBM TM1 Server.

Use Cognos Configuration to manage the following components and tasks:

Table 6. Cognos Configuration tasks	
Component/task	**Action**
TM1 Admin Server	Start and stop the server.
TM1 Server	Start, stop, and add TM1 Servers (also known as TM1 databases).
TM1 Application Server	Start and stop the provided WebSphere® Liberty web application server that supports the following TM1 clients: • IBM TM1 Web • IBM TM1 Applications • IBM TM1 Operations Console (Deprecated in v2.0.9) In Cognos Configuration Explorer, navigate to **Local Configuration** > **Environment** > **IBM Cognos TM1 services** and right-click **IBM Cognos TM1**.

Table 6. Cognos Configuration tasks (continued)	
Component/task	**Action**
Saving configuration information	When you save the configuration setting in Cognos Configuration, the tool: • verifies the configuration • generates cryptographic information • checks integrity of encrypted data • saves configuration for TM1 servers • backs up configuration files • saves configuration parameters
Creating war files for deployment	If you want to deploy the TM1 Applications server with your own web application server, use Cognos Configuration to create the required web application (war) file. In Cognos Configuration click **Actions** > **Build Application Files**.

TM1 configuration files and parameters

IBM Planning Analytics uses a collection of configuration files and parameters to control the behavior of IBM TM1 Server and client components.

Table 7. Summary of configuration options for different TM1 components	
Configuration	**Description**
`Tm1s.cfg` file	TM1 Server configuration See "The tm1s.cfg configuration file" on page 312.
`Tm1p.ini` file	Client configuration for Cognos TM1 Architect and Cognos TM1 Perspectives See "The Tm1p.ini client configuration file" on page 372.
Cognos TM1 Web `tm1web_config.xml` file	Cognos TM1 Web configuration and settings See "Modifying TM1 Web configuration parameters" on page 207.

Cognos TM1 Applications
`pmpsvc_config.xml`
`fpmsvc_config.xml`
	Cognos TM1 Applications configuration files
	Client settings are stored in the `pmpsvc_config.xml` file.
	Server settings are stored in the `fpmsvc_config.xml` file.

Cognos TM1 Operations Console (Deprecated in v2.0.9)	Cognos TM1 Operations Console configuration See "Installing Cognos TM1 Operations Console using the provided WebSphere® Liberty webserver software" on page 126.
Planning Analytics Administration agent `bootstrap.properties` file	Planning Analytics Administration agent configuration files See "Sample bootstrap.properties file" on page 107.

User accounts for running TM1 services on Windows

When you use IBM Cognos Configuration to start the Cognos TM1 Admin Server and IBM TM1 Server, they are registered to run as Windows services with the predefined Microsoft Windows Local System Account. You must manually change these services to run under a specific user account.

Note: If TM1 Server requires access to external data sources with ODBC or ODBO, you must manually change it to run under a specific user account that has access to these data sources.

Run TM1 services under a specific Windows user account

By default, Cognos Configuration registers the following TM1 services to run under the Microsoft Windows Local System Account:

- IBM TM1 Server
- Cognos TM1 Admin Server

Important: Change these TM1 services to run under a specific user account on Microsoft Windows.

For more information, see "Changing TM1 services to run as a specific user account on Windows" on page 82.

After you make these changes, you will still be able to use Cognos Configuration to start and stop these services.

Required privileges for a specific Windows user account

The user account for running TM1 services on Windows must be included in the database owner group to access SQL tables and views.

The user account must have read and write privileges to the TM1 database and log directories.

The account must have the following privileges on the local computer:

- Act as part of the operating system
- Bypass traverse checking
- Increase quotas (Adjust memory quotas for a process)
- Replace a process level token
- Log on as a service
- Have read and write privileges on the Windows Registry item

Note: Not all of these properties are available in all versions of Windows, such as Windows Server 2012 and newer. Refer to Microsoft Windows documentation for the currently available properties.

You can use the Security Settings and Group Policy features in Microsoft Windows to configure these security privileges. For example, in Microsoft Windows 7, click **Administrative Tools** > **Local Security Policy**, and then click to expand **Security Settings** > **Local Policies** > **User Rights Assignment**.

To set read and write privileges for the Windows Registry, use the Windows Registry editor.

Installing IBM Planning Analytics Local on Networks without domains

If you install IBM Planning Analytics Local in a network that does not use a domain controller, you can set your TM1 services to use local accounts.

For details on configuring TM1 services, see "Changing TM1 services to run as a specific user account on Windows" on page 82.

If you use one or more local accounts for your TM1 services, you must be sure these accounts have the following privileges on their local machines:

- Act as part of the operating system
- Bypass traverse checking
- Increase quotas

- Replace a process-level token
- Log on as a service

If you set up file shares in your Windows network for use by TM1 components, be sure that each local account that you set up to run a TM1 service has access to those shares.

Note: If you install on a machine that does not participate in a Microsoft Windows domain, you cannot use Integrated Login.

Local machine syntax

Do not use dot (.) as an abbreviation for the local machine domain when you specify login information.

You must explicitly enter the machine name. In certain configurations, using the `.\username` syntax may cause serious problems.

Accessibility

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products.

For more information about the commitment that IBM has to accessibility, see the IBM Accessibility Center at http://www.ibm.com/able.

Keyboard shortcuts for the installation wizard

Keyboard shortcuts, or shortcut keys, provide you with an easier and often faster method of navigating and using software.

The installation wizard uses standard Microsoft Windows operating system navigation keys in addition to application-specific keys.

Note: The following keyboard shortcuts are based on US standard keyboards.

The following table lists the keyboard shortcuts that you can use to perform some of the main tasks in the installation wizard on the Windows operating system.

Action	Shortcut key
Move to the next field on a page	Tab
Return to the previous field on a page	Shift+Tab
Close the installation wizard	Alt+F4
Move to the next configuration step	Alt+N
Return to the previous configuration step	Alt+B
Move to the next selection in a list	Down arrow
Move to the previous selection in a list	Up arrow

The following table lists the keyboard shortcuts you can use to perform some of the main tasks in the installation wizard on the UNIX or Linux operating system.

Action	Shortcut key
Move to the next field on a page	Tab
Return to the previous field on a page	Shift+Tab
Close the installation wizard	Alt+F4
Move to the next selection in a list	Down arrow
Move to the previous selection in a list	Up arrow

The following table lists the keyboard shortcuts you can use to perform some of the main tasks in the License Agreement page of the installation wizard.

Action	Shortcut key
Accept the license agreement	Alt+A
Decline the license agreement	Alt+D
Quit the installation wizard	Alt+x

Keyboard shortcuts for Cognos Configuration

Keyboard shortcuts, or shortcut keys, provide you with an easier and often faster method of navigating and using software.

The following keyboard shortcuts are based on US standard keyboards.

The following table lists the keyboard shortcuts that you can use to perform some of the main tasks in IBM Cognos Configuration on the Windows operating system.

Action	Shortcut key
Save the current configuration	Ctrl+S
Close Cognos Configuration	Alt+F4
Rename the selected item	F2
Display the File menu	Alt+F
Display the Edit menuAlt+H	Alt+E
Display the View menu	Alt+V
Display the Actions menu	Alt+A
Display the Help menu	Alt+H

The following table lists the keyboard shortcuts that you can use to perform some of the main tasks in Cognos Configuration on the UNIX or Linux operating system.

Action	Shortcut key
Save the current configuration	Tab
Close Cognos Configuration	Shift+Tab
Rename the selected item	Alt+F4

Chapter 3. Planning Analytics Local architecture

To understand the architecture of the major IBM Planning Analytics Local components, you should be familiar with your information technology infrastructure and with the business needs of people in your organization who will use Planning Analytics Local.

For details about Planning Analytics Local login authentication and communication security, see “Authentication security ” on page 234.

Planning Analytics architecture

IBM Planning Analytics employs a distributed, client-server architecture that consists of the IBM TM1 Server to which a combination of different clients can connect.

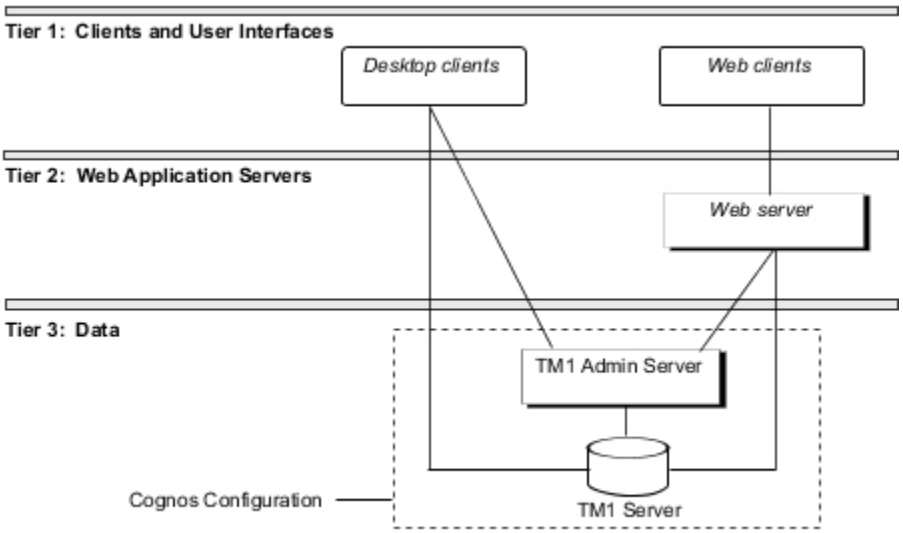


Figure 1. High-level overview of the IBM Planning Analytics client-server architecture

Planning Analytics provides the following clients and user interfaces:

- Cognos TM1 Perspectives
- Cognos TM1 Architect
- Cognos TM1 Web client
- Cognos TM1 Application portal and workflow (using the Cognos TM1 Application Server)
- Cognos TM1 Performance Modeler
- Cognos Insight

In this environment, corporate data resides on remote servers, which authorized clients can access. Depending on how you set up the system, clients can access one or more remote TM1 Servers to obtain different kinds of data.

Windows desktop clients

TM1 Perspectives and TM1 Architect can connect to a local TM1 Server, which acts as a repository for private TM1 data. If you have permission, you can copy data from a remote server to your local server by replicating that data, and then synchronize your updates back to the remote server.

TM1 Perspectives, TM1 Architect, and TM1 Client are standard TM1 clients. In a normal LAN or WAN environment, these clients all communicate with a remote server using the TCP/IP network protocol.

TM1 Admin Server overview

The IBM Cognos TM1 Admin Server is a process that keeps track of all TM1 servers running on a network. An Admin Server runs on a computer known as an Admin Host.

When the IBM TM1 Server starts, the server registers itself with an Admin Server that is running on a specified Admin Host. TM1 clients reference the Admin Server to determine which TM1 servers are available on the network.

The Admin Server maintains the following information for each available TM1 Server:

- Server name
- IP address
- Protocol
- Port number

All this information is supplied by the TM1 Server when the server registers itself on the Admin Server.

An Admin Server must be running before a TM1 Server can start. If you have specified an Admin Host in the Tm1s.cfg file or the server command line, the TM1 Server will attempt to connect to an Admin Server on that host. The TM1 Server will fail to come up if it is unable to connect to the Admin Server for any reason.

If you have not specified an Admin Host, the TM1 Server attempts to connect to an Admin Server on the local machine. If an Admin Server is not currently running on the local machine, the TM1 Server starts a new Admin Server and connects to it.

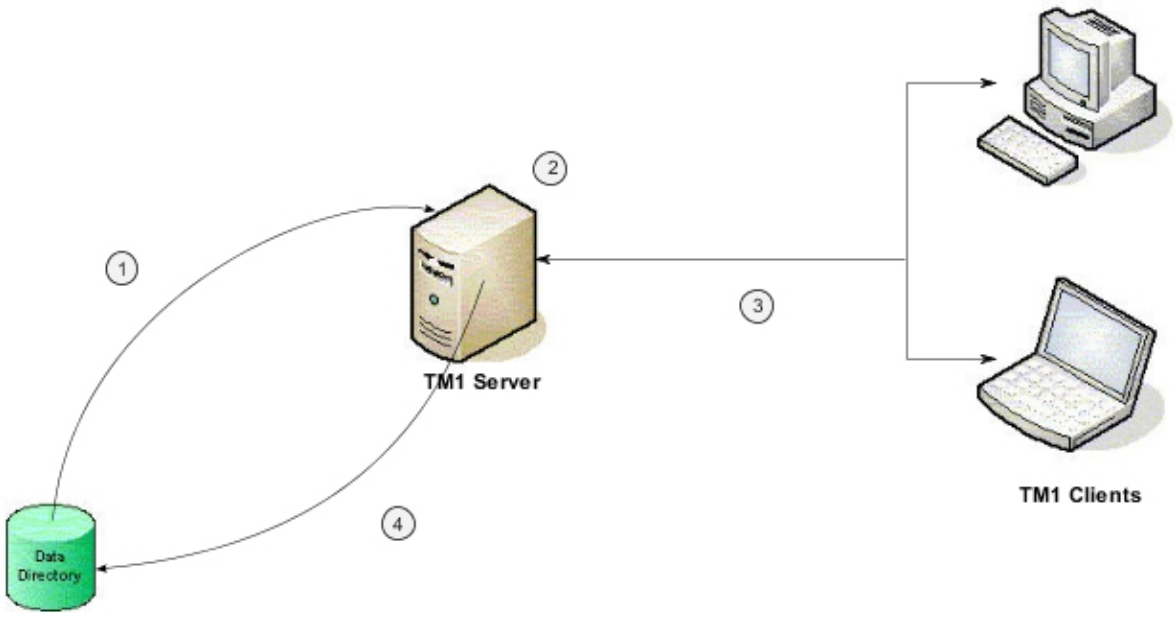
The Admin Server becomes aware of a TM1 Server on the network by listening for notification from the server. Usually, the TM1 Server sends notification of its presence at a regular interval called the "heartbeat interval," which is 60 seconds by default. When the Admin Server detects theTM1 Server, that server becomes registered and available to clients on the network. However, if the Admin Server does not detect the presence of a registered TM1 Server over a period equal to three times the heartbeat interval, that TM1 Server is removed from the list of servers available on the network. Consequently, the TM1 Server will not be available to clients on the network.

By default, the Admin Server uses port 5495. If port 5495 is already in use, you can assign a new port number by creating a new service called Tm1admsrv. All TM1 applications look for a named service called Tm1admsrv, and if that service exists, the applications use the port number assigned to the service. If the service does not exist, TM1 applications use port 5495.

TM1 Server overview

The IBM TM1 Server manages access to the TM1 data directory for TM1 clients.

The following figure illustrates the operations of a remote TM1 Server server. These operations are explained in the text that follows.



1. When the TM1 server is started, all TM1 data is loaded from the TM1 data directory into RAM on the server machine. At the same time, the server opens a new transactional log file called tm1s.log in the data directory. After the cubes are loaded, the remote server is available.

   The remote TM1 Server registers itself with one or more Admin Servers so that clients can connect to the remote TM1 Server. Client applications contact Admin Servers to locate available TM1 Servers. The clients log into the TM1 Servers whose data they want to access.
2. While the TM1 server is running, all cube data resides in RAM. All edits received from TM1 clients are stored in a transaction log file named tm1s.log.

   As new values are received from clients, the TM1 Serverwrites the records to the tm1s.log file, keeping track of every data change, including the date and time the edit occurred, and the ID of the client who made the edit.
3. TM1 clients retrieve cube values from the server. Clients also send edits to cube values to the TM1 server. As the server calculates new values in response to client requests, the server stores them in memory, increasing the amount of memory used by the server.
4. When the TM1 server is shut down, or when an explicit **Save Data** command is issued, any changes to cube values are written from the transactional log file to the data directory.

   All records in the tm1s.log file are saved to disk, and the transaction log file is renamed by appending a date/time stamp to it. The tm1s.log file is saved in the server's data directory to back out data transactions. For details, see the topic Backing out transactions using the transaction log in the *TM1 Operations* documentation.

   If the server is intentionally shut down without saving the changes, the log file is saved with a time/date stamp and the extension is changed to .rej. You can process the tm1s*yyyymmddhhmmss*.rej file through TurboIntegrator to recover the transactions.

   To save all changes to the data on a TM1 Server at any time without shutting down the server, right-click a server in Server Explorer and click **Save Data**. All records in the tm1s.log file are immediately written to disk, the transaction log file is renamed by appending a date/time stamp to it, and a new tm1s.log file is created to accept any subsequent edits to cube values.

   Any changes to the metadata, such as dimension definitions and cube definitions, are immediately saved to disk. The changes to the metadata are not written to the transaction log file.

TM1 files overview

IBM TM1 Server requires many object and system files, most of which are stored in the TM1 Server's data directory.

Some of these files are installed with the product, while others are generated for each dimension and cube you create. Yet other files are generated by TM1 to store metadata, such as security information.

The following table lists the files that define cubes, dimensions, and other TM1 objects. These files are located in the data directory, which is described later in this documentation.

Table 8. Files that define cubes, dimensions, and other objects

File Extension	Description
.blb	Cube formatting file
.cho	Chore definition file
.cub	Cube database file
.dim	Compiled dimension
.dit	ASCII dimension source file
.pro	TurboIntegrator process definition file
.rux	Compiled rule
.sub	Dimension subset
.tbu	ASCII source for view file
.tqu	Saved query
.tru	ASCII source for a rule file
.vue	Saved view

Data directory overview

The data directory contains the cubes, dimensions, and system information that are loaded into memory when an IBM TM1 Server is started. When you access a server from any TM1 client, TM1 reads data from that server's data directory.

When you run TM1, the changes you make to cube values are immediately stored in memory and in the transaction log (Tm1s.log). TM1 then saves the data back to the data directory when any of the following occur:

- TM1 Server is shut down.
- An administrator right-clicks a server icon in Server Explorer and chooses **Save Data** from the menu. TM1 saves the changes to the selected server.
- An administrator chooses **File** > **Save Data All** in Server Explorer. TM1 saves the changes to all the connected servers, if you have the proper authority.
- A user saves the batch updates.

Choose the path for your data directory when you install TM1 Server.

Table 9. Default Data Directory Paths	
Data Directory	**Default Path**
Local TM1 Server	*installation_location*\custom\tm1data\pdata
Remote Windows TM1 Server for sample data	*installation_location*\custom\tm1data\sdata
UNIX TM1 Server	*installation_location*/custom/tm1data/sdata

Required network access
A client's ability to save data is determined by the IBM TM1 security scheme.

For more information, see the *TM1 Developer* documentation.

Important: Make this directory visible only to administrators and to the login account that is used by the server.

Multiple data directories
You can specify that you want IBM TM1 Server to use multiple data directories by separating the directory names with semicolons. When you specify multiple data directories, TM1 does the following.

- Accesses cubes and dimensions from each of the specified directories. If there is a duplicate object, TM1 accesses the object from the first directory specified.
- Writes changes to the directory where the object is located. When you create a new object, TM1 writes to the first directory you had specified.

For example, suppose you want to store dimensions in a directory called tm1dims, and cubes in a directory called tm1cubes. You would specify the following in the Tm1s.cfg file:

```
DatabaseDirectory="c:\tm1dims;c:\tm1cubes"
```

By concatenating the two directories, you can access these objects through Server Explorer as if they were in a single location.

Note: You cannot store cube (.cub) and rules (.rux) files in separate data directories. The .rux file must reside in the same directory as the .cub file with which it is associated. If the .rux file is not in the same directory as the associated .cub file, rules will not load properly.

Data directory location
You specify the location of the data directory differently for local and remote servers.

- For a local server, specify the location of the data directory by naming this directory in the DataBaseDirectory parameter of the Tm1p.ini file.

  You can change the `.ini` file by using the IBM Cognos TM1 Options menu in Server Explorer.

  For more information, see "The Tm1p.ini client configuration file" on page 372.
- For a remote server, specify the location of the data directory by using either the DatabaseDirectory parameter in the Tm1s.cfg file or the -d command-line parameter when you bring up the server.

For information on server parameters, see "The tm1s.cfg configuration file" on page 312.

A remote server must be able to recognize the drive where the data directory resides. If the directory is on a remote drive, you must map that drive to a local drive letter.

Tip: When you access a remote server, you do not need to map to the drive where the server data directory resides.

If you do not specify the location of the data directory, the IBM TM1 Server cannot start and the following error message displays.

```
Data Directory not specified. Aborting server startup.
```

TM1 Web architecture

IBM Cognos TM1 Web uses a multi-tiered architecture that enables users to access and interact with TM1 data using any supported web browser.

The IBM TM1 Web multi-tiered architecture includes web client, web application server, and data component tiers.

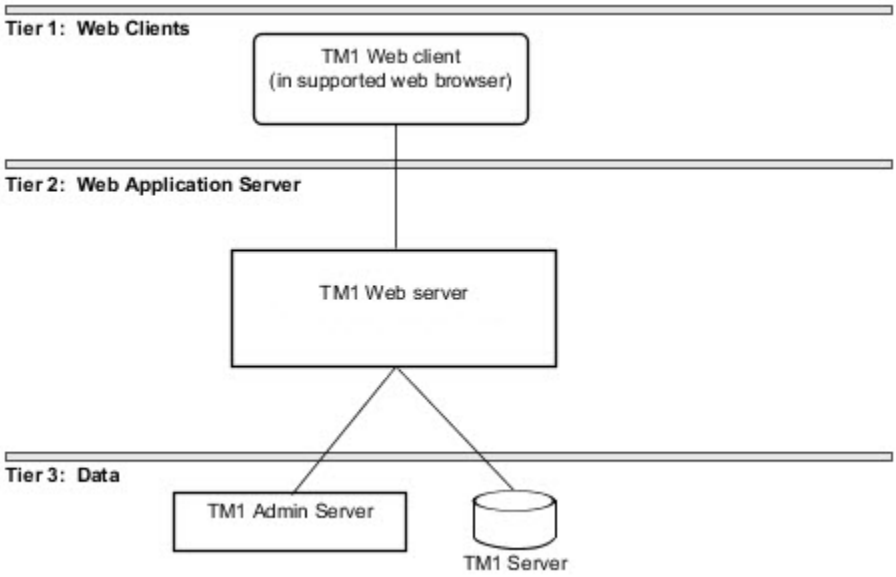


Figure 2. TM1 Web architecture overview diagram

Tier 1: Web clients

The web clients tier allows users to access and interact with TM1 data using any of the supported web browsers. Users can work with TM1 cubes and TM1 Websheets.

For an updated list of environments that are supported by TM1 including information about operating systems, TM1 servers, and databases, create a detailed system requirements report using the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

Tier 2: Web application server

TM1 Web runs on a Java-based web application server.

This tier provides support for converting and displaying Microsoft Excel worksheets as TM1 Websheets. This service also exports Websheets back to Microsoft Excel and PDF formats.

Tier 3: Data

This tier includes the TM1 Admin Server and at least one TM1 Server.

IBM TM1 Admin server

The TM1 Admin Server can be installed on any computer on your LAN but it must reside in the same LAN segment as your TM1 Server. Typically, the TM1 Server and the TM1 Admin Server are installed on the same computer.

IBM TM1 server

The TM1 server can be installed on the same computer that hosts your Web server, but installing on a separate computer is more efficient.

The version of the TM1 Server that is used in your TM1 Web environment must be equal to or more recent than the version of TM1 Web that you are running. If the version of TM1 Web you are running is more recent than the version of the TM1 server, users will receive an error when attempting to log in to TM1 Web.

Accessing multiple TM1 servers from TM1 Web

IBM Cognos TM1 Web provides multi-database support, allowing users to access multiple TM1 Servers that are registered on the same TM1 Admin Server and where users have the same user name and password combination.

When you log in, TM1 Web displays the Navigation pane for the primary server that you selected on the login screen. However, if your user name and password combination matches other TM1 Servers registered under the same TM1 Admin Server, then TM1 Web will automatically log you in to these other servers on an as-needed basis. This behavior is different from TM1 Architect and TM1 Perspectives where you have to log into other TM1 Servers as a separate, manual step.

Multi-database support mainly applies to Websheets because they can contain TM1 formulas and references that point to other TM1 Servers. For example, if you open a Websheet that does contain TM1 references to another server registered under the same Admin Server, TM1 Web will attempt to log you into this other server using your current user name and password.

Limiting access to a single TM1 Server from TM1 Web

If you want to prevent TM1 Web users from using multi-database support to access other TM1 servers under the same Admin Server, you can use a different Admin Server to register each IBM TM1 Server.

For example, with this configuration, if you log into TM1 Web and try to open a Websheet that references another TM1 Server registered under a different Admin Server, the data will not display even if you have the same user name and password for that server.

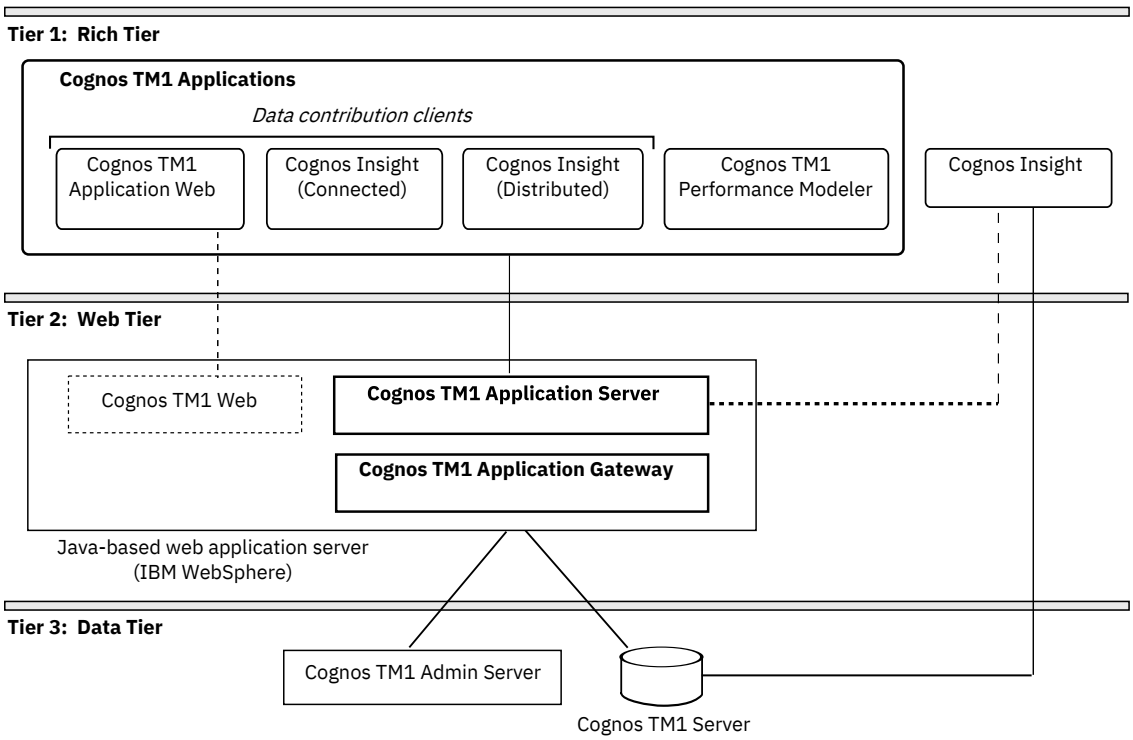
Tip: If you configure your TM1 servers to run under separate Admin Servers, but still want to access them from TM1 Web, TM1 Architect, or TM1 Perspectives , you can use the AdminHost parameter. This parameter lets you specify multiple Admin Hosts so users can access any TM1 Servers that are registered with the Admin Servers on the specified hosts.

- For information about configuring TM1 Web to access multiple Admin Servers, see "Configuring the Login Page using AdminHostName and TM1ServerName" in *TM1 Operation*.
- For information about configuring TM1 Architect and TM1 Perspectives to access multiple Admin Servers, see “Specifying multiple Cognos TM1 Admin Hosts” on page 91.

TM1 Applications architecture

IBM TM1 Applications has a multi-tiered architecture that consists of three tiers: Web clients in the Rich tier, Web application servers in the Web tier, and data in the Data tier.

The following diagram shows the multi-tiered architecture and basic communication paths for all the TM1 Applications components.



The lines in the TM1 Applications architecture diagram show the typical communication paths required for the tasks managed by the TM1 Application Server, such as keeping track of workflow states.

In addition to these communication lines, TM1 Performance Modeler and Cognos Insight also require a direct connection to the underlying IBM TM1 Server at all times.

TM1 Data Tier: Data

The data tier for IBM TM1 Applications includes the IBM TM1 Admin Server and one or more IBM TM1 Servers running on either a Microsoft Windows or UNIX-based system. The TM1 Application Server and related client interfaces communicate with the components in the data tier to access TM1 data.

IBM TM1 Server

The TM1 Server contains the data for the applications that you build and deploy with TM1 Applications.

TM1 Admin Server

The TM1 Admin Server is a process that keeps track of all TM1 Servers running on a network. The TM1 Application Server communicates with the TM1 Admin Server to determine which TM1 Servers are available on the network.

TM1 Web Tier: Application servers

The Web Tier contains the required Java-based web application server.

Java web application server

The following components require a Java-based web application server. You can use the version of WebSphere Liberty that is provided with the installation or your own installation of one of the supported Java-based web application servers.

TM1 Application Server
Java-based web application that provides the primary support for IBM TM1 Applications.

TM1 Application Gateway
Java-based web component that provides the provisioning of the TM1 Performance Modeler and Cognos Insight components to remote end users.

TM1 Application Web client

An optional user interface based on TM1 Web technology for viewing and editing application data. If you are using this option, the supporting files for it run on this same web application server.

Using security and web server provided by Cognos Analytics

If you use TM1 Applications with an IBM TM1 Server that is using IBM Cognos security, you can deploy the TM1 Application Server with the WebSphere Liberty web server that is supplied with IBM Cognos. For details, see "Using Cognos TM1 Applications with Cognos security" on page 257.

TM1 Rich Tier: Web clients

The Rich tier contains all the user interfaces for IBM TM1 Applications. These user interfaces are used by end-users, administrators, and planning application developers.

TM1 Applications

The main TM1 Applications client is a web browser-based user interface supported by a Java-based web application server, such as the provided installation of WebSphere Liberty. The user interfaces for TM1 Applications are organized into two main sub-pages and three different data contribution clients.

TM1 Applications page (portal page)

The TM1 Applications page (portal page) is the main starting point for both administrator and non-administrator users. This page provides a list of available applications that is filtered for the current user. Clicking on an application in this page opens the workflow page.

Administrators and application developers can also open TM1 Performance Modeler and Cognos Insight from the TM1 Applications toolbar.

TM1 Application page (workflow page)

The TM1 Application page (workflow page) allows you to manage tasks within a single application. This client displays each node that a user is responsible for contributing to and/or reviewing in a specific plan. Depending on how you configure the application, the user can open the Cognos Insight client or TM1 Application Web client for any accessible node in this client.

Data contribution clients

The following table summarizes the TM1 Applications data contribution clients that enable users to work with data in grid and chart formats.

Table 10. TM1 Applications - data contribution clients

Client	Description
IBM TM1 Application Web	Default client. Processing is in real time with the server. Enables users to view and edit application data in a grid format using TM1 cube views or TM1 Websheets based on infrastructure from TM1 Web
IBM Cognos Insight - Connected	IBM Cognos Insight client. Processing is in real time with the server. Enables users to view and edit application data in a dashboard or workspace format. This client can be provisioned and installed from the TM1 Application Gateway or installed remotely by a system administrator using a Windows Installer command line and other software management tools.

TM1 Performance Modeler

The TM1 Performance Modeler client provides the user interface for administrators and developers to design and deploy applications.

This user interface must be installed locally on the user's computer. Users can provision and install this client from the TM1 Application Gateway the first time they open the client. System administrators can also distribute and install the program remotely using Windows Installer and other software management tools. For details, see “Installing Cognos TM1 Performance Modeler” on page 134.

Cognos Insight

Cognos Insight can run separate from TM1 Applications to enable users to create workspaces to use within an application.

This user interface must be installed locally on the user's computer. It can be provisioned from the TM1 Application Gateway and installed by the user the first time they open the client. System administrators can also distribute and install the program remotely using a Windows Installer command line and other software management tools. For details, see “Installing Cognos Insight” on page 139.

Chapter 4. Deploying Planning Analytics Local

You can install and deploy components on a single computer or across multiple computers in a networked environment.

For each component you want to install on a different computer, run the Cognos TM1 Installation Wizard on that computer.

Server components

You can install the following server components on separate dedicated computers:

- Cognos TM1 Admin Server and IBM TM1 Server
- Cognos TM1 Application Server

Client components

You can install the following client components on multiple computers:

- Cognos TM1 Perspectives
- Cognos TM1 Architect
- Cognos TM1 Performance Modeler
- Cognos Insight

Deploying Planning Analytics on a single Windows computer

Installing IBM TM1 components on one computer running Microsoft Windows is a practical approach for proof of concept, test, demonstration, development and training environments.

Installation on a single Windows computer is primarily intended for a single user on 64-bit Windows operating systems. However these are not server class, production level operating systems and this type of deployment should only be used for individual use and not in a production environment with multiple users.

Typical single computer installation

A typical TM1 installation on a single Windows computer includes the following components:

TM1 Data Tier

- IBM TM1 Server
- TM1 Admin server
- TM1 Tools
- TM1 Samples

TM1 Web Tier

- TM1 Application Gateway
- TM1 Application Server
- Cognos Access Manager

TM1 Rich Tier

- TM1 Architect
- Performance Modeler
- TM1 Perspectives
- Cognos Insight

- TM1 APIs

You can adjust which components you install based on your specific needs.

Deploying TM1 Admin Server and TM1 Server

You can install the IBM TM1 Server and IBM Cognos TM1 Admin Server components on a separate Microsoft Windows and UNIX computer in your hardware environment.

For each component you want to install on a different computer, run the IBM Planning Analytics wizard on that computer.

You can install the Cognos TM1 Admin Server on the same computer on which the IBM TM1 Server is installed or another computer on your network.

When a TM1 Server is running, it registers itself on the specified Admin Server. TM1 clients then connect to this Admin Server to obtain information about TM1 servers available on a network.

If you distribute the server components throughout your network, you must know certain information about where your components will be installed, and the configuration of those components. The following list provides information about what you need to know to install each component.

Table 11. Installing TM1 server components

Component	Description
IBM TM1 Server	To install and configure the TM1 Server, you must know the name of the computer on which the TM1 Admin Server is running.
Cognos TM1 Admin Server	This can be installed without any knowledge of your network topology.

Important Notes on Distributed Installations

TM1 services must run on computers set to the same locale. You cannot, for example, install some services on a computer running the US English locale, and other services on a computer running the German locale. Set the locale using the Standards and Formats option in Microsoft Windows **Start Menu**, **Regional and Local Settings**.

Deploying TM1 Applications components on a single computer

For development, testing, or demonstration purposes, you may want to install all of the required components for IBM TM1 Applications onto a single computer running Microsoft Windows.

Deploying TM1 Applications to a single computer is the quickest way to get the program up and running.

Installation program

Use the 64-bit installation program for Windows to install TM1 Applications on a single Windows-based computer.

Required TM1 components

The following components are required to deploy and run TM1 Applications on a single Windows-based computer.

- IBM TM1 Server
- Cognos TM1 Admin Server
- Cognos TM1 Application Server
- Cognos TM1 Application Gateway
- Cognos TM1 Web

- Cognos TM1 Sample databases (optional) - Allows you to easily run a sample TM1 Server for testing purposes.

By default, the Cognos Configuration tool is required and automatically installed with this configuration. After completing the installation, you use Cognos Configuration to deploy and start the TM1 Application Server and manage your TM1 servers.

A version of WebSphere Liberty web application server is also automatically installed for use with TM1 Applications.

TM1 Web is required if you plan to use the TM1 Applications Web client.

Required web application servers

TM1 Applications requires a Java-based web application server.

You can deploy TM1 Applications to one of the following Java-based web application servers:

- Use the version of IBM WebSphere Liberty that is provided with the installation
- Use your own instance of IBM WebSphere Liberty

Deploying TM1 Applications components on separate computers

Deploying some or all of the IBM TM1 Applications components on separate, dedicated computers can improve performance, availability, and capacity.

Depending on your network environment and business requirements, you can distribute the TM1 Web Tier and TM1 Data Tier across multiple computers in a number of different ways.

Deploy TM1 Web Tier and TM1 Data Tier on separate computers.

This configuration combines the Java web application server for TM1 Applications and IBM TM1 Web on the same computer but locates the TM1 Data Tier (IBM TM1 Server) on a separate computer.

Deploy web application servers on separate computers

This configuration places the Java web application server for TM1 Applications and TM1 Web on their own computers. The TM1 Data Tier could also be installed on one of these computers or its own dedicated computer.

Deploy all components on separate computers

This configuration places the Java web application servers for TM1 Applications and TM1 Web and the TM1 Admin Server and the IBM TM1 Server all on separate computers.

Checklist for deploying TM1 Applications

Use the following checklist to help you install the IBM TM1 Application Server and related components on separate computers.

Table 12. Installation scenarios for deploying IBM TM1 Applications

Installation scenario	Installation steps
Running all the Java web applications together on a separate computer	Use the TM1 installation program to install the TM1 Application Server, TM1 Application Gateway, and TM1 Web on the computer running the Java web application server.

Table 12. Installation scenarios for deploying IBM TM1 Applications (continued)	
Installation scenario	**Installation steps**
Running TM1 Web on a separate computer	Use the TM1 installation program to install TM1 Web on a separate computer. The installation wizard installs the required files for the TM1 Application Web client - one of the client interfaces for viewing and editing application data.
Running the TM1 Data Tier on a separate computer	Use the TM1 installation program to install the TM1 Admin Server and TM1 Server components on that computer. For more information, see "Deploying TM1 Admin Server and TM1 Server" on page 66

Deploying TM1 client applications

This section describes how to deploy the different IBM TM1 client (user interfaces) in your network environment.

TM1 clients include:

- Cognos TM1 Perspectives
- Cognos TM1 Architect
- Cognos TM1 Performance Modeler
- Cognos TM1 Web (using a URL or web link)
- Cognos TM1 Applications (using a URL or web link)
- Cognos Insight

Chapter 5. Upgrading Planning Analytics Local

You should upgrade an earlier version of IBM Cognos TM1 to the current version of IBM Planning Analytics in stages. Follow these basic steps to upgrade.

Procedure

1. Required: Stop all related IBM Cognos TM1 and IBM Planning Analytics services.
2. Back up your existing data, configuration settings, and applications.
3. Optional: Remove the previous version of the product.
4. Install the new version of the product.
5. Restore your data, configuration settings, and applications with the new version of the product.
6. Restart all required IBM Cognos TM1 and IBM Planning Analytics services.

Prerequisites for upgrading

Before you upgrade, back up your existing data, application, and configuration files to a safe place. You must also stop all related IBM Cognos TM1 and IBM Planning Analytics services before performing an upgrade.

Back up your existing data

Depending on your network architecture and deployment of IBM Planning Analytics, your TM1 data might be on more than one computer. Make a list of where this data is located and create a plan to back up the data.

The following files must be backed up:

- IBM TM1 Server configuration and database files
- Planning Analytics Administration agent configuration files (`bootstrap.properties`)
- Cognos TM1 Admin Server configuration files
- Cognos TM1 Web server configuration and custom files
- Cognos TM1 Architect client configuration file
- Cognos TM1 Perspectives client configuration file
- Cognos TM1 Contributor application and configuration files

Before you upgrade

Extra steps are required if you are also upgrading a previous version of Cognos TM1 to IBM Planning Analytics. Review the following considerations before you upgrade.

IBM TM1 Server

In Planning Analytics Local version 2.0.7, the `server.xml` file has been updated to add the following property to disable sending server version information in response headers.

```
<webContainer disableXPoweredBy="true"/>
```

The response header is informational and not required for operations. It is now disabled by default to minimize thread surface.

If you are upgrading to IBM Planning Analytics Local version 2.0.7, you install a new version of the `server.xml` file that is called `server.xml.new` and your existing `server.xml` file is preserved. To take advantage of fixes that are applied to this release, you must rename the `server.new` file to `server.xml` and you must reapply any changes that you made to your previous configuration settings.

Cognos TM1 Admin Server

As of IBM Cognos TM1 version 10.1.0, the TM1 Admin Server configuration file, `Tm1admsrv.ini`, is no longer used or supported by TM1. You must use Cognos Configuration to configure the Cognos TM1 Admin Server.

Cognos TM1 Applications

Attention: You will need to edit your previous applications in Cognos TM1 Performance Modeler in the following cases:

- Dynamic Subsets cannot be used as the approval hierarchy in Cognos TM1 Applications.
- Applications cannot share the same approval cubes in Cognos TM1 Applications.

A version of WebSphere® Liberty web application server is installed with the new version of TM1. You can use this instance of WebSphere® Liberty to run Cognos TM1 Applications and manage it using Cognos Configuration.

If you plan to use Cognos TM1 Applications *without* Microsoft Excel installed on the web server where you are running Cognos TM1 Web, you will need to explicitly set the **`ExcelWebPublishEnabled`** parameter to True (T) in the `tm1s.cfg` configuration file for your TM1 servers. Earlier versions of Cognos TM1 Contributor did not require this parameter to be set.

Upgrading from Planning Analytics version 2.0.0

When you upgrade IBM Planning Analytics Local from version 2.0.0 to version 2.0.x, you do not need to uninstall the previous version. You can install IBM Planning Analytics Local version 2.0.x directly over version 2.0.0.

Note: A change made in IBM Planning Analytics version 2.0.2 IF4 updates a data type field in the Cognos TM1 database. If you upgrade to version 2.0.2 or any later version, you can't downgrade to an earlier version. For more information, see Database structure change affects Cognos TM1 and Planning Analytics.

Planning Analytics Local supports Java 8 starting in Planning Analytics version 2.0.6. If you install Planning Analytics version 2.0.6 over an older version of Planning Analytics, your installation removes the existing Java 7 directories and installs the Java 8 directories.

Important: You must stop all related IBM Cognos TM1 and IBM Planning Analytics services before you upgrade to a new version of Planning Analytics.

If you use the Cognos TM1 samples and want to keep any updates you made to them, you must back them up before you start the upgrade. After you upgrade, you can copy or move the samples back to the installation location. For more information, see “Upgrading the samples” on page 104.

For more information, see the following topics, depending on your computer environment and which TM1 components you want to install.

- Chapter 6, “Installing Planning Analytics Local on a single computer,” on page 73
- Chapter 7, “Installing the Data Tier,” on page 81
- Chapter 8, “Installing the Web Tier,” on page 111
- Chapter 9, “Installing the Rich Tier,” on page 133
- Chapter 10, “Installing Planning Analytics Workspace Local,” on page 147
- Chapter 12, “Installing and configuring Planning Analytics for Microsoft Excel,” on page 189
- Chapter 14, “Integrating Planning Analytics Local with IBM Cognos software,” on page 227

Note: If you are upgrading to Planning Analytics version 2.0.6 on top of version 2.0.5 plus a fix pack on a single computer on Windows, you must uninstall and reinstall IBM TM1 Performance Modeler and IBM® Cognos Insight to take advantage of the upgrade to Java 8:

1. Install Planning Analytics version 2.0.6.
2. Uninstall IBM TM1 Performance Modeler and IBM® Cognos Insight.

3. Reinstall IBM TM1 Performance Modeler and IBM® Cognos Insight by running the `PerformanceModeler.msi` and `CognosInsight.msi` in *pa_installation_location* `\webapps\pmpsvc\rcp_installs`.

Upgrading Planning Analytics for Microsoft Excel

When you upgrade IBM Planning Analytics for Microsoft Excel, you need to uninstall the previous version and then install the current version. You cannot install Planning Analytics for Microsoft Excel directly over the previous version.

Before you begin

You must back up existing data and configuration files before you uninstall the previous version.

Procedure

1. Close all Microsoft Excel windows.
2. Back up existing data and configuration files.
3. Uninstall the previous version of Planning Analytics for Microsoft Excel. For more information, see"Uninstall IBM Planning Analytics for Microsoft Excel" on page 195.
4. Download and extract the installation program.
5. Install the new version of Planning Analytics for Microsoft Excel. For more information, see "Installing IBM Planning Analytics for Microsoft Excel" on page 194.

   Note: If you are upgrading from Cognos Analysis for Microsoft Excel to Planning Analytics for Microsoft Excel, you must delete the `C:\Users\<user>\AppData\Local\Cognos\Office Connection` folder.

Upgrading from Cognos TM1 version 10.2.x

When you upgrade IBM Cognos TM1 version 10.2.x to IBM Planning Analytics version 2.0.0, you need to uninstall the previous version and then install the current version. You cannot install IBM Planning Analytics version 2.0.0 directly over version 10.2.x. You should also plan to back up existing data and configuration files before uninstalling the previous version.

About this task

The following steps provide guidelines for upgrading Cognos TM1 version 10.2.x to the current version.

Procedure

1. Back up existing data and configuration files:

   You should plan to back up existing data and configuration files to a safe location for all computers where Cognos TM1 components were installed. For details see the following topics:

   - "Backing up data and configuration files for IBM Planning Analytics Local" on page 307
2. Uninstall all Cognos TM1 components:

   If you installed the previous version of Cognos TM1 in a distributed environment, you will need to uninstall the TM1 components from each computer.

   - "Uninstalling IBM Planning Analytics" on page 308
3. Install the current version of IBM Cognos TM1:

   Refer to the following topics, depending on your computer environment and which Cognos TM1 components you want to install.

   - Chapter 6, "Installing Planning Analytics Local on a single computer," on page 73
   - "TM1 Server installation" on page 81
   - "TM1 Application Server installation" on page 111

- Chapter 9, “Installing the Rich Tier,” on page 133
- “Installing Cognos TM1 Operations Console using the provided WebSphere® Liberty webserver software” on page 126

4. After installing the new version of Cognos TM1 Applications, remove the cache of your web browser. If the cache is not removed, the browser may mix old Cognos TM1 Applications and new Cognos TM1 Applications files together.
5. Restore previous Cognos TM1 data and configuration files:

   Depending on which components you installed, update each computer with your previous data and configuration files.

   - “Restoring data and configuration files in IBM Planning Analytics version 2.0.0” on page 309
   - “Restoring application and configuration files in Cognos TM1 Applications” on page 311

Chapter 6. Installing Planning Analytics Local on a single computer

This type of installation puts Planning Analytics on a single computer running the Microsoft Windows operating system and using default settings. Use this kind of installation to get up and running quickly with Planning Analytics or to install a test or evaluation environment.

The single computer installation explains how to install and run:

- TM1 Admin Server
- TM1 Server
- IBM TM1 Application Server
- Cognos TM1 Application Web
- Cognos TM1 Perspectives
- Cognos TM1 Architect
- Cognos TM1 Performance Modeler
- Cognos Insight

This installation scenario assumes:

- You are on a single 64-bit computer running the Microsoft Windows operating system.
- You use the WebSphere® Liberty web server software installed by the Planning Analytics installation.
- You use the default standard TM1 authentication.
- You accept the default configurations including English as the language.

Remember: Your browser may use a slightly different interface than the browser used in the steps described here.

Install the prerequisite software

You need the prerequisite software before you can install IBM Planning Analytics. If you do not have these prerequisites in place, the installation wizard displays a message about them. If you are missing any of the prerequisites, you need to install them before you can continue. You might already have this software installed.

About this task

Review the environments that are supported by Planning Analytics including information on operating systems, patches, web servers, and web browsers, by using the Software Product Compatibility Reports tool.

Procedure

1. For IBM Planning Analytics for Microsoft Excel and IBM TM1 Perspectives, install or confirm that you have
   - Microsoft Excel
2. For IBM TM1 Perspectives or IBM TM1 Architect, install or confirm that you have:
   - Microsoft .NET Framework

Install the basic Planning Analytics components

Use the installation program to select the components you want to install and the location on your computer where you want to install them.

Before you begin

- Ensure that you have administrator privileges for the computer on which you are installing software.
- Ensure that the computer has a TEMP system variable that points to the directory where you want to store temporary files. During installation, files are temporarily copied to this directory.
- Ensure that the directories where you install Planning Analytics components contain only ASCII characters in the path name. Some Microsoft Windows web server software does not support non-ASCII characters in directory names.
- Ensure that all of the prerequisite software has been installed.

Procedure

1. To start the installation:
   - Go to the download location for the IBM Planning Analytics installation program that you want to use.
   - If the installation wizard does not open automatically, go to the operating system directory to locate the `issetup.exe` command.
2. Right-click the `issetup.exe` file and click **Run as Administrator**.
3. Follow the directions in the installation wizard to select all of the components.

   The components that you need to run the software are selected by default.

   If you do not want to install Cognos Insight or Cognos TM1 Performance Modeler, skip to step "6" on page 74.
4. To include Cognos Insight in the installation, expand the **TM1 Rich Tier** and then select **Cognos Insight**.
5. To include Cognos TM1 Performance Modeler in the installation, expand the **TM1 Rich Tier** and then select **TM1 Performance Modeler**.
6. Click **Next** until the installation begins.

   The installation runs until all components have been installed. This may take a significant amount of time.

   Tip: For earlier Windows operating systems, you can check **Start Cognos Configuration** on the last screen of the installation to immediately run the configuration tool. On Microsoft Windows 7 or later and Windows Server operating system software, do not check that box and instead use the **Start** menu so you can choose **Run as Administrator** when launching the Cognos Configuration tool.
7. Click **Finish**.

Use Cognos Configuration to start Planning Analytics components

Before you can use Planning Analytics, you need to start the IBM TM1 Admin Server, the IBM TM1 Application Server, and at least one IBM TM1 sample database server. This action registers the servers in the Windows service registry. Then you need to configure the services so that they run under a specific user. Servers that are running in a Microsoft Windows environment are referred to as services.

Procedure

1. If it is not already running, start the configuration tool by clicking **Start** > **All Programs** > **IBM Cognos TM1** > **IBM Cognos Configuration**.

   Remember: Right-click and use **Run as Administrator** on Windows and Windows Server operating system software.

2. In the Cognos Configuration **Explorer** pane, expand **Local Configuration** > **Environment.**
3. Right-click the **TM1 Admin Server** component and select **Start**.

   Start the TM1 Admin Server first since that server must be running before any sample database can run.

   The Cognos Configuration tool prompts you to save any edits made to the configuration settings. This process will take longer the first time you save a setting as the cryptographic settings and other actions take place for the first time. Click **Yes** in response to the message asking you to save the settings. You will also see this type of message when you close Cognos Configuration.
4. Expand **IBM Cognos TM1 services**. Right-click **IBM Cognos TM1** and select **Start**.

   If **TM1 Application Server** is not installed in your environment, see "Install TM1 Application Server with your own installation of WebSphere" on page 118.
5. Expand the **Data Access** > **TM1 Server** node and right-click each TM1 sample database server that you want to start and select **Start**.

   For example, start the provided sample databases:

   a) **SData**

   b) **Planning Sample**

   c) **GO_New_Stores**
6. Click **File** > **Save**.
7. Now that the services are all registered in the Windows services registry, you can reconfigure them to use a specific user account:

   a) In Cognos Configuration, right-click each service you want to change and select **Stop**.

   b) Open Windows Services.

   c) Right-click on each service and select **Properties**.

   d) Enter a user name and password valid on your system with the appropriate rights for the service.

   See " User accounts for running TM1 services on Windows" on page 51.

   e) Close Windows Services.
8. In Cognos Configuration, right-click each server and select **Start**.
9. Close Cognos Configuration.

Run Cognos TM1 Perspectives

After installation, you can run IBM Cognos TM1 Perspectives.

Procedure

1. From the Windows **Start** menu, click **IBM Cognos TM1** > **Perspectives**.

   If the component does not start, ensure that the servers you started with Cognos Configuration are still running.
2. Click **Enable Macros** when the security warning displays.
3. Click **TM1** > **Server Explorer**, then expand **TM1** to see the servers that are available.
4. Double-click a TM1 Server to log in.

   For SData, Planning Sample, or GO_New_Stores use these login credentials:

   - **User name:** `admin`
   - **Password:** `apple`

   Tip: To load Cognos TM1 Perspectives automatically whenever you start Microsoft Excel, add *`TM1_location`*`/Tm1p.xla` to Microsoft Excel's add-in tool list, where *TM1_location* is the file directory where TM1 is installed. After completing this step, "TM1" displays on the Microsoft Excel menu bar.

Run Cognos TM1 Architect

After installation, you can run IBM Cognos TM1 Architect.

Procedure

1. From the Windows **Start** click **All Programs** > **IBM Cognos TM1** > **Architect**. If Cognos TM1 Architect does not start up, ensure that the servers you started with Cognos Configuration are still running.
2. Expand **TM1** to see the servers that are available.
3. Double-click a TM1 Server to log in.
4. Use these credentials to log into the SData, Planning Sample, or GO_New_Stores sample databases:
   - **User name:** `admin`
   - **Password:** `apple`

Run Cognos TM1 Web

The IBM Planning Analytics installation configures IBM Cognos TM1 Web to run with the provided version of the WebSphere® Liberty web application server.

Procedure

1. In a web browser, enter the following URL: `http://localhost:9510/tm1web/`

   You can use the "localhost" term to make the computer location default to use your current computer. Or you can explicitly enter the IP address or name for the computer where you installed Planning Analytics.
2. Depending on what other components you have launched, the Log In box values will usually be automatically entered for you. If they are not, you can enter or change those values as needed.
3. Click **Log In**.

Run Cognos TM1 Application Web

IBM Cognos TM1 Application Web is the web-based client and portal used to run planning applications built using IBM TM1 data.

About this task

Cognos TM1 Application Web is also used to launch IBM Cognos TM1 Performance Modeler and can be used to launch IBM Cognos Insight.

Procedure

1. In a web browser, enter the following URL: `http://localhost:9510/pmpsvc` where 9510 is the usual port used by Cognos TM1 Application Server. If you used a different port when you installed, enter that other value here.
2. Specify the configuration settings the Admin Host, server, types of clients, and the URL for Cognos TM1 Application Web.
3. Click **OK**.
4. Enter **admin** and **apple** for the **username** and **password** for the sample TM1 servers.
5. To complete the installation, dismiss the message about editing the following parameters in the `tm1s.cfg` file.
   - **`AllowSeparateNandCRules`**
   - **`ForceReevaluationOfFeedersForFedCellsOnDataChange`**
   - **`DistributedPlanningOutputDir`**

   You do not need to edit these parameters until you begin working with the clients.

The portal is empty until you build an application using Cognos TM1 Performance Modeler or import an existing application.

Run Cognos TM1 Performance Modeler

IBM Cognos TM1 Performance Modeler is available as an unselected component of the IBM Planning Analytics installation. You launch Cognos TM1 Performance Modeler from the IBM Cognos TM1 Applications portal.

About this task

After Cognos TM1 Performance Modeler is installed, you can also start the program from the desktop icon that gets installed or from the Microsoft Windows Start menu. Click **Start** > **All Programs** > **IBM Cognos TM1 Performance Modeler** > **IBM Cognos TM1 Performance Modeler**.

Procedure

1. From the Cognos TM1 Applications portal, click the **Open Performance Modeler**  icon.

   Remember: Depending on your browser, you may see slightly different steps used to install downloaded components such as Cognos TM1 Performance Modeler.
2. Click **OK** with the **Open with IBM Cognos RCP Application Updater** selected on the `provagent.cogrcp_modeler` dialog box.
3. Click **OK** to dismiss the configuration settings message and complete the installation.

   You do not need to edit those parameters until you begin working with the clients.
4. Click the **Model Design** tab to see the GO_New_Stores data cubes and structure.
5. Click the **Application Design** tab to build a new application using GO_New_Stores.

   The *TM1 Performance Modeler* documentation provides details on building models.

Run Cognos Insight

IBM Cognos Insight is available as an unselected component of the IBM Planning Analytics installation. Cognos Insight can be used as a client for contributing to applications and also as a dynamic workspace builder for creating interactive contributing user experiences.

Procedure

1. To run Cognos Insight, complete one of the following actions:

   - From the Cognos TM1 Applications portal, click the Cognos Insight icon  .

     Or you can:
   - Right-click a node of an application that has been configured to use Cognos Insight.
   - You can also click the Cognos Insight desktop icon that gets installed.
   - Use the Microsoft Windows Start menu. Click **Start** > **All Programs** > **IBM Cognos Insight** > **IBM Cognos Insight**.
   - Cognos Insight can also be installed as a stand-alone component.

   Remember: Depending on your browser, you may see slightly different steps used to install downloaded components such as Cognos Insight.
2. Click **OK** with the **Open With IBM Cognos RCP Application Updater** selected on the `provagent.cogrcp_insight` dialog box.
3. If you see an Executable file warning, click **OK** to proceed with the installation.

What to do next

See the *Cognos Insight* documentation for details about creating Cognos Insight workspaces and using Cognos Insight as a client for contributing to applications.

Use Cognos TM1 Application Web

The IBM Cognos TM1 Application Web is a web-based client used to contribute to planning applications and to work with IBM TM1 Websheets.

Before you begin

You need a planning application before you can use Cognos TM1 Application Web. The application designer identifies which clients can be used with a particular application.

Tip: You can see which clients the designer made available for an application by right-clicking a node of the application when it is displayed in the IBM Cognos TM1 Application Web.

Procedure

1. In Cognos TM1 Application Web, click a planning application.
2. Click **Open Cognos TM1 Application** to launch the Cognos TM1 Application Web client.

   See the *TM1 Web*, *TM1 Architect and Perspectives*, and the *TM1 Applications* documentation for details on how to contribute to an application using Cognos TM1 Application Web.

Other Planning Analytics components

The IBM Planning Analytics installation makes many other components available and has many other ways to customize the installation.

See the following the documentation and components for details about other ways to install, deploy, and configure Planning Analytics:

Other Planning Analytics components

See the related documentation for details on these additional components for Planning Analytics.

IBM Planning Analytics Workspace Local

Use IBM Planning Analytics Workspace Local with IBM TM1 data sources to plan, create, and analyze your content.

IBM Planning Analytics Administration

Use IBM Planning Analytics Administration to monitor your IBM TM1 data sources.

IBM Planning Analytics for Microsoft Excel

Use IBM Planning Analytics for Microsoft Excel with IBM TM1 data sources to enter and write back values to TM1 cubes.

IBM Planning Analytics TM1 Web

Use the zero-footprint IBM Planning Analytics TM1 Web client to analyze and modify TM1 data from any supported web browser.

IBM Cognos TM1 Operations Console (Deprecated in v2.0.9)

The IBM Cognos TM1 Operations Console is a tool used by administrators to monitor the activity of TM1 servers on the network. See *TM1 Operations* for more information.

Scorecarding with Planning Analytics

Scorecarding with Planning Analytics integrates scorecarding and strategy management capabilities into Planning Analytics to provide better integration of performance management with planning. You can create scorecard solutions that contain interactive impact diagrams, strategy maps, and custom

diagrams that monitor your key performance indicators (KPIs). For more information, see *TM1 Performance Modeler*.

Planning Analytics integration with other IBM Cognos software

IBM Cognos Analytics security

You can configure the IBM TM1 Server to authenticate users using IBM Cognos Analytics security.

IBM Cognos TM1 Package Connector Removed in v2.0.8

The IBM Cognos TM1 Package Connector is used to import IBM Cognos Framework Manager packages. See *TM1 TurboIntegrator* for more information.

IBM Cognos Analytics reporting

You can configure IBM Cognos Analytics to access TM1 servers and cubes from Cognos Analytics applications such as Cognos Report Studio and Cognos Query Studio.

iWidgets in IBM Cognos Workspace

You can display IBM Cognos TM1 Web data objects, such as cube views, charts, and Websheets as iWidgets in IBM Cognos Workspace.

For more information, see Chapter 14, “Integrating Planning Analytics Local with IBM Cognos software,” on page 227.

Chapter 7. Installing the Data Tier

You can install Data Tier components using the IBM Planning Analytics Local installation program.

You can install the following Data Tier components:

- TM1 Server
- TM1 Tools
- TM1 Samples
- Planning Analytics Administration agent

TM1 Server installation

You can install and configure the IBM TM1 Admin Server and IBM TM1 Server on a dedicated computer running either the Microsoft Windows, UNIX, or Linux operating system.

The TM1 Admin Server can reside on the same computer as the TM1 Server or another computer on your network.

The server components can be installed on a 64-bit computer running Microsoft Windows, UNIX, or Linux operating systems.

Server components

The TM1 Server components include the following:

- TM1 Admin Server (required)
- TM1 Server (required)
- TM1 Tools (optional)

These components are grouped together under the TM1 Data Tier in the installation program.

IBM Cognos Configuration

By default, IBM Cognos Configuration is also installed with the required components on Windows, UNIX, and Linux as the primary tool for managing the TM1 Admin Server and TM1 Server. This tool provides a user interface for stopping and starting the server components.

Installing IBM TM1 Server on Windows

You can install the TM1 Server server components on 64-bit computers running the Microsoft Windows operating system. Use this type of installation to install and run the TM1 Server on a dedicated computer that remote users can access.

Install IBM TM1 Server components on Windows

Install the IBM TM1 Server components on a computer that uses Microsoft Windows.

Procedure

1. Choose the installation program that matches the type of computer being used for the TM1 Server:
2. Right-click the `issetup.exe` file and click **Run as Administrator**.
3. Follow the directions in the installation wizard and advance to the **Component Selection** page.
4. Clear all the components. By default, all components are initially selected.
5. Expand the **TM1 Data Tier** and select the following components:
   - **TM1 Server**
   - **TM1 Admin Server**

- **TM1 Tools** (optional)
- **TM1 Samples** (optional)

6. Follow the directions in the installation wizard to complete the installation.
7. In the **Finish** page of the installation wizard, click **Finish**.

Use Cognos Configuration to start TM1 servers on Windows

Before you can use the IBM TM1 Server, you need to start the IBM TM1 Admin Server in IBM Cognos Configuration. Servers that are running in a Microsoft Windows environment are referred to as services.

About this task

By default, Cognos Configuration registers TM1 Server components to run as Windows services using the predefined Local System account. However, the TM1 components should be run as a specific user.

Important: Change the following TM1 services that are created by Cognos Configuration so that the services run under a specific user account on Microsoft Windows:

- TM1 Admin Server
- TM1 Server

For details, see, " User accounts for running TM1 services on Windows" on page 51.

Procedure

1. If it is not already running, start the configuration tool by clicking **Start** > **All Programs** > **IBM Cognos TM1** > **IBM Cognos Configuration**.

   Remember: Right-click and use **Run as Administrator** on Windows and Windows Server operating system software.
2. In the Cognos Configuration **Explorer** pane, expand **Local Configuration** > **Environment.**
3. Right-click each server that you want to start and select **Start**:
   a) **TM1 Admin Server**

      Tip: The Cognos Configuration tool prompts you to save any edits made to the configuration settings. This process will take longer the first time you save a setting as the cryptographic settings and other actions take place for the first time. Click **Yes** in response to the message asking you to save the settings. You will also see this type of message when you close Cognos Configuration.
4. Expand the **Data Access** > **TM1 Server** node and right-click each TM1 sample database server that you want to start and select **Start**.

   For example, start the provided sample databases:
   a) **SData**
   b) **Planning Sample**
   c) **GO_New_Stores**
5. Click **File** > **Save**.
6. Edit the entries for the TM1 components in Windows Services so that they run under a specific user account.

   For details, see, "Changing TM1 services to run as a specific user account on Windows" on page 82.

Changing TM1 services to run as a specific user account on Windows

When you use IBM Cognos Configuration to manage TM1 services, you need to change the default user account that runs the Microsoft Windows services for the TM1 Admin Server and any TM1 servers that you start with Cognos Configuration. By default, Cognos Configuration registers these services under the predefined Microsoft Windows Local System account. However, these services should be changed to run as a specific user account.

Before you begin

Review the required account privileges for using a user account other than Local System account. For details, see " User accounts for running TM1 services on Windows" on page 51.

About this task

Use Windows Services to change the user account for a TM1 component that is configured to run as a service.

Procedure

1. Open IBM Cognos Configuration.
2. Expand the **Explorer** > **Local Configuration** tree:
   a) Expand the **Local Configuration** > **Environment** node.
   b) Expand the **Data Access** > **TM1 Server** node.
3. Right-click on each TM1 component you want to change and select **Stop**.
   - **TM1 Admin Server**
   - *TM1 Server name* - the name for each server you have in Cognos Configuration.

   Tip: You don't need to stop the **IBM Cognos TM1** component in **IBM Cognos TM1 services**.
4. Open Windows Services.
5. Locate the TM1 component that you want to update and change the user account for the Windows service that runs it:
   a) Right-click on the service, select **Properties** and then click the **Log On** tab.
   b) Enter a new user name and password for the service.
   c) Repeat these steps for any other TM1 component running as a Windows service that you want to change.
6. Close Windows Services.
7. In Cognos Configuration, right-click on the item and select **Start** to restart each service that you changed.
8. Close Cognos Configuration.

Installing IBM TM1 Server on UNIX or Linux

You can install the TM1 Server components on a 64-bit computer that is running either a UNIX or Linux operating system. Use this type of installation to install and run the TM1 Server on a dedicated computer that remote users can access.

Prerequisites

As of IBM Planning Analytics version 2.0.2, IBM TM1 Server uses `nmap()` or `nunmap()` for large block allocation on Linux. Therefore, you must be aware of the `vm.max_map_count` limit. By default on Linux, the `vm.max_map_count` is 65530 and this count is insufficient when large data models are used.

When the limit of 65530 is reached, you might receive an error message that TM1 Server is unable to allocate memory for a large block or a memory leak might occur.

To update the `vm.max_map_count`, run the following command as root:

```
sysctl -w vm.max_map_count=655300
```

To set this value permanently, update the `vm.max_map_count` setting in your `/etc/sysctl.conf` file.

To verify the setting, after you restart your TM1 Server, run the following command:

```
sysctl vm.max_map_count
```

Managing components after installation

After you install, you can use the start and stop scripts that are provided with the installation to manage your TM1 Server. You can also use IBM Cognos Configuration to manage the servers you want to run in some cases.

Note: You cannot use IBM Cognos Configuration to start and stop your IBM TM1 Server on IBM POWER8 LE. You must use the start and stop scripts that are provided.

Accessing and viewing data

To view and interact with the data that is stored in a TM1 Server on UNIX or Linux, use one of the TM1 clients on a computer that is running Microsoft Windows.

Tip: You can use Cognos TM1 Architect on a computer that is running Microsoft Windows to remotely log in to a server that is running on a UNIX or Linux system.

Install IBM TM1 Server components on UNIX or Linux

You can use the installation wizard to select the server components for installation and the installation location on your computer.

For a complete list of supported UNIX and Linux operating systems, create a detailed system requirements report for IBM Planning Analytics Local software by using the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

Before you begin

When you install TM1 Server on UNIX or Linux operating systems, configure the components to run as a user with appropriate permissions for TM1 binary files and TM1 databases.

Note: Only the TM1 Server components can run on UNIX or Linux. You cannot run TM1 clients on UNIX or Linux.

Complete the following prerequisites:

- Familiarize yourself with TM1 terms and concepts.

  For more information, see the *TM1 for Developers* documentation.
- Determine which components you want to install and how they must be distributed across your hardware environment.

  For more information on how to design the optimal TM1 environment, see Chapter 3, “Planning Analytics Local architecture,” on page 55 and Chapter 4, “Deploying Planning Analytics Local,” on page 65.
- Determine your hardware and software requirements.

  Review a list of supported environments, including operating systems, patches, web servers, and web browsers, by creating a detailed system requirements report for IBM Planning Analytics Local software with the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

  – If you plan to import data from another relational database, install your database software first.
  – If you are running Oracle on UNIX, install the appropriate UNIX client software for your Oracle database on the UNIX machine. Use the Oracle Network Configuration Assistant to specify a local net service name.
  – If you are running on Red Hat Enterprise Linux, install the required runtime C/C++ libraries that are listed in the **Prerequisites** tab of the **Detailed Systems Requirements Report** or verify that they are already available. Additional libraries might need to be installed, depending on your version of Red Hat Enterprise Linux. For example, on Red Hat Enterprise Linux (RHEL) Server 7, run the following command to install additional libraries:

    ```
    yum -y install libstdc++ libstdc++.i686 motif libXm.so.4 libXtst
    ```

- **Optional:** Install your own copy of the Java Runtime Environment (JRE) if necessary. The TM1 installation does not provide a JRE for UNIX installations.

  Note: If you are installing on IBM POWER8 LE, you do not need to install a JRE.
- **Optional:** Check the X-server software on your UNIX machine.

  To run the Graphical User Interface UNIX Installation Wizard, X-server software must be installed on the machine that hosts your TM1 components. You must install X-server client software on the machine from which you run the TM1 Installation Wizard. If X-server software is not installed on the UNIX machine, run the console installation.

  Note: If you do not use X-server software, you must use an unattended installation. For more information, see "Setting up unattended installations and configurations" on page 301.
- **Optional:** Install and configure the TM1 components to run as a user with appropriate permissions for TM1 binary files and TM1 databases.

Procedure

1. Go to the location where the installation files were downloaded and extracted, or insert the product disk.
2. Go to the operating system directory and then type the following command:

   `./issetup`
3. Follow the directions in the installation wizard and copy the required files to your computer.
4. Select the components that you want to install. By default, all components are installed.
5. In the **Finish** page of the installation wizard, click **Finish**.

Use Cognos Configuration on UNIX or Linux

You can IBM Cognos Configuration to configure your TM1 components and to start and stop services.

Before you begin

You must have set the *JAVA_HOME* environment variable before you can start IBM Cognos Configuration. Ensure that the *JAVA_HOME* environment variable is set to a valid JRE location.

Note: You cannot use the IBM Cognos Configuration tool with IBM TM1 Server on POWER8 LE. You must use provided scripts to start and stop the TM1 Server.

To use IBM Cognos Configuration to start and stop your IBM TM1 Server on UNIX, follow these steps.

Procedure

1. Go to the *install_location*`/bin64` directory and then type

   `./cogconfig.sh`
2. In the **Explorer** window, click **Local Configuration** > **Environment**.
3. Right-click **Cognos TM1 Admin Server**, and click **Start**.
4. Under **Data Access** > **Cognos TM1 Server**, right-click a server, and click **Start**.

Use scripts to start a TM1 Server on UNIX or Linux

You can use the start and stop scripts that are provided with the installation to start and stop your IBM TM1 Server on UNIX or Linux.

About this task

On UNIX or Linux, you can use the following commands and scripts to start and stop TM1 Server. See "Starting a UNIX TM1 Server" and "Stopping a UNIX TM1 Server" in the *TM1 Operations* documentation for more details.

- `startup_tm1admsrv.sh` - start TM1 Admin Server
- `shutdown_tm1admsrv.sh` - shut down TM1 Admin Server

- `startup_tm1s.sh` - start TM1 Server
- `tm1srvstop.exe` - utility for stopping a TM1 Server
- `shutdown_tm1s.sh` - alternate method to shut down a TM1 Server
- `startup_pmpsvc.sh` - start TM1 Application Server
- `shutdown_pmpsvc.sh` - shut down TM1 Application Server

On POWER8 LE, the following commands are not available.

- `tm1srvstop.exe` - utility for stopping a TM1 Server
- `startup_pmpsvc.sh` - start TM1 Application Server
- `shutdown_pmpsvc.sh` - shut down TM1 Application Server

Character Encoding for TM1 Object Names on UNIX and Windows Systems
The following guidelines are related to ensuring correct and consistent character encoding in your TM1 object names for objects such as cubes, views, dimensions, and subsets.

Moving TM1 Databases Between Windows and UNIX Systems

Do not manually move and use TM1 database files from a Microsoft Windows system to a UNIX system (or from UNIX to Windows) when your TM1 object names contain non-ASCII characters (characters beyond the original 128 ASCII character set).

Manually moving files is an issue because of the possible incompatible character encoding or mapping between these two platforms. The Windows operating system stores directory and file names in UTF-16 character encoding, while the UNIX operating system can store names using different character encodings, depending on which locale is currently being used.

For example, TM1 object names for cubes and dimensions that include non-ASCII characters would not display correctly in TM1 client applications if the TM1 database files were copied from one platform and run on another where different character encoding is used.

Instead of manually moving files, use the tm1xfer utility to move TM1 data between different platforms.

Use the tm1xfer utility

The tm1xfer utility compresses and moves TM1 server objects from one platform to another platform while preserving mixed case names for objects on both Microsoft Windows and UNIX platforms. For more information, see the "tm1xfer" topic in *TM1 Operations*.

Use the same locale as the UNIX system when starting a TM1 Server with non-ASCII characters in the name

If your TM1 object names (for cubes, views, dimensions, subsets, etc.) include non-ASCII characters, use the same locale when starting up a TM1 Server on a UNIX system.

This ensures that TM1 object names and the related TM1 directory and file names on the UNIX system always use the same character encoding. Starting the TM1 Server under a different locale than previously used could cause TM1 object names to display incorrectly if the names were originally created and stored in a different locale.

For example, TM1 object names for cubes and dimensions that are saved when the server is running under the `en_US` locale might not display correctly if the server is re-started using the `ja_JP` locale.

TM1 language configuration

IBM Planning Analytics automatically configures language for the IBM TM1 Server, client user interfaces, and messages by detecting the current language of the operating system user account or web browser where they are running. You can override this automatic configuration and configure TM1 Server to use a specific language from any of the supported languages.

For details about supported languages, see “TM1 language codes” on page 87.

Automatic detection of language

TM1 uses the following process to automatically detect and configure language at runtime:

1. The TM1 Server and clients that run in Microsoft Windows try to detect and use the language that is configured in the locale of the operating system for the current user. On Windows, this is configured with **Regional and Language Options**. The detected language will be used if it matches one of the supported languages.

   Important: By default, any TM1 Server that you start with IBM Cognos Configuration is initially configured to run as a Windows service using the Windows Local System reserved user account. If you want the TM1 Server to use the language based on a specific user account, change the service to run as that user and configure the language for the user with the Windows **Regional and Language Options**. For details, see "Changing TM1 services to run as a specific user account on Windows" on page 82.
2. The server and client components also check for an override based on the TM1 **Language** configuration parameter:
   - The server checks the **Language** parameter in the `Tm1s.cfg` configuration file. If a valid language code is configured, that language is used for the server messages.
   - The client components check the **Language** parameter in the `Tm1p.ini` configuration file. If a valid language code is configured, that language is used in the user interface.
3. If the language configured in any of the above does not match a valid supported language, English is used.

Language configuration for TM1 components

Languages are set separately for the following TM1 components.

Table 13. Summary of language configuration for TM1 components

Component	Language Configuration
TM1 Server	Use the Language parameter in the `Tm1s.cfg` file to configure a specific language for a TM1 Server. For details, see "Configuring language for the IBM TM1 Server" on page 88
TM1 Architect, TM1 Perspectives	Use the Language parameter in the `Tm1p.ini` file to configure a specific language for TM1 clients that run on Microsoft Windows. For details, see "Configuring language for TM1 clients on Windows" on page 89
TM1 Web	Use the language settings in your web browser to select a specific language for TM1 Web. For details, see "Configuring web browser language for TM1 Web" on page 224

TM1 language codes

The following table summarizes the language codes for the supported languages in IBM TM1.

Language	Code
Brazilian Portuguese	bra
Croatian	hrv
Czech	csy

Language	Code
Chinese (Simplified)	sch
Chinese (Traditional)	tch
Danish	dan
Dutch	nld
German	deu
Finnish	fin
French	fra
Hungarian	hun
Italian	ita
Japanese	jpn
Kazakh	kaz
Korean	kor
Norwegian	nor
Polish	pol
Romanian	rom
Russian	rus
Spanish	esp
Slovenian	slv
Swedish	sve
Thai	tha
Turkish	trk

Configuring language for the IBM TM1 Server

Use the **Language** parameter in the `Tm1s.cfg` file to configure a specific language for the IBM TM1 Server.

About this task

The **Language** configuration parameter for the TM1 Server controls the language for messages generated by the server. The parameter also applies to the user interface of the dialog box when you run the server as an application instead of a Windows service.

For more details about the TM1 Server **Language** parameter, see Language parameter in the Tm1s.cfg file.

Note: If you want the TM1 Server to use a language based on a user account instead of the **Language** parameter, change the Microsoft Windows service that runs the TM1 Server to run as a specific user. For details, see "Changing TM1 services to run as a specific user account on Windows" on page 82.

Procedure

1. Use a text editor to open the TM1 Server configuration file, `Tm1s.cfg`.

   For location details, see "Location of the tm1s.cfg file" on page 312.
2. Edit or add the **Language** parameter with the language code you want to use.

For example:

```
Language=deu
```

For a list of supported language codes, see "TM1 language codes" on page 87.

3. Save and close the `Tm1s.cfg` file.
4. Restart the TM1 Server.

Configuring language for TM1 clients on Windows

Use the Language parameter in the `Tm1p.ini` file to configure a specific language for IBM TM1 clients that run on Microsoft Windows such as Cognos TM1 Architect and Cognos TM1 Perspectives.

About this task

For details about this parameter, see Language parameter in the Tm1p.ini file.

Note: The Language parameter for TM1 clients is separate from the parameter of the same name for the TM1 Server.

Procedure

1. Use a text editor to open the TM1 client configuration file, `Tm1p.ini`.

   For location details, see "Location of the Tm1p.ini File" on page 372.
2. Edit or add the Language parameter with the language code you want to use.

   For example:

   `Language=sch`

   For a list of supported language codes, see "TM1 language codes" on page 87.
3. Save and close the `Tm1p.ini` file.
4. Restart the TM1 client.

Advanced TM1 Admin Server and TM1 Server configuration

You can use advanced configuration to customize IBM TM1 Server for your specific business requirements and environment after you have completed the initial installation steps.

Creating a new empty TM1 Server in Cognos Configuration

You can use IBM Cognos Configuration to create a new empty IBM TM1 Server.

About this task

These steps create the `tms.cfg` configuration file and other required files for a new empty TM1 Server. Perform these steps only on an empty directory that does not contain any other files.

Tip: If you want to add an existing TM1 Server to Cognos Configuration, see "Adding an existing TM1 Server in Cognos Configuration" on page 90.

Procedure

1. Use your operating system to create an empty folder for the new TM1 Server files.
2. Open IBM Cognos Configuration.
3. In the **Explorer** panel, under **Data Access**, right click **TM1 Server**, and click **New Resource** > **TM1 Server Instances**.
4. In the **Name** box, enter a name for your server.
5. In the **Type** box, select **TM1 Server instance** and click **OK**.

   The new server is added under the **TM1 Server** node and the properties for it are displayed in the **TM1 Server instances - Resource Properties** list.

6. In the **Resource Properties** list, click the entry box and click the edit icon.
7. Enter or browse to the path for the empty folder where you want to create the new TM1 Server.

   Tip: Do not include the file name in this path. You only need to select the folder.
8. Click **Select**.
9. Click **File** > **Save**.

   A new `tms.cfg` file is automatically created in the folder. Values for the following configuration parameters are automatically added to the file.

   - The **`ServerName`** parameter is set to the server name that you specified.
   - The **`DataBaseDirectory`** parameter is set to the data directory that you specified.
   - The **`PortNumber`** parameter is set to a random auto-generated port number.
10. If you are using this database with TM1 Applications, edit the `tms.cfg` file with the required parameter values.

    For details, see "Configuring a TM1 Server to work with TM1 Application Web" on page 115.
11. In the Cognos Configuration **Explorer** panel, right-click the new server and click **Start**.

    The basic files for the new TM1 Server are created in the folder.
12. To test the new TM1 Server, start TM1 Architect and log in to the database with user name `admin` and no password.

Adding an existing TM1 Server in Cognos Configuration
You can manage an existing IBM TM1 Server by adding it to IBM Cognos Configuration.

Before you begin
This procedure requires that you have an existing TM1 data directory with a valid `tm1s.cfg` file.

Procedure

1. Open IBM Cognos Configuration.
2. In the **Explorer** panel, under **Data Access**, right click **TM1 Server**, and click **New Resource** > **TM1 Server Instances**.
3. In the **Name** box, enter the same name that is set for the **`ServerName`** parameter in the `tm1s.cfg` file.
4. In the **Type** box, select **TM1 Server instance** and click **OK**.

   The new server is added under the **TM1 Server** node and the properties for it are displayed in the **TM1 Server instances - Resource Properties** list.
5. In the **Resource Properties** list, click the box to the right of the **TM1 Server configuration path** and click the edit icon.
6. Enter or browse to the path for the existing TM1 data directory.

   Tip: Do not include the file name in this path. You only need to select the folder.
7. Click **Select**.
8. Click **File** > **Save**.
9. In the Cognos Configuration **Explorer** panel, right-click the new server and click **Start**.
10. To test this TM1 Server, start TM1 Architect and log in to the database.

Specifying the location of the Cognos TM1 Admin Host
You specify the location of the IBM Cognos TM1 Admin Host differently for clients (user interfaces) and remote servers.

About this task

The Admin Host is the computer where the Cognos TM1 Admin Server is running.

Procedure

1. To specify the Admin Host referenced by clients such as Cognos TM1 Architect or Cognos TM1 Perspectives:
   - Change the `Tm1p.ini` file by using the Cognos TM1 **Options** menu in Server Explorer.
   - You can also manually edit the **`AdminHost`** parameter in the `Tm1p.ini` client configuration file.

   For more information, see "The Tm1p.ini client configuration file" on page 372.
2. To specify the Admin Host with which remote servers register, use one of the following methods:
   - Edit the **`AdminHost`** parameter in the `Tm1s.cfg` file.
   - Use the -v command-line parameter when you bring up the Windows version of the IBM TM1 Server.

   For information, see "The tm1s.cfg configuration file" on page 312.

Specifying multiple Cognos TM1 Admin Hosts

You can configure an IBM Cognos TM1 client to reference multiple Admin Hosts by separating host names with semicolons.

About this task

A client that specifies multiple Admin Hosts can access any TM1 servers that are registered with the Cognos TM1 Admin Servers on the specified hosts.

Procedure

To specify multiple Admin Hosts referenced by clients such as Cognos TM1 Architect or Cognos TM1 Perspectives, separate the host names with semicolons:

- Change the `Tm1p.ini` file by using the Cognos TM1 **Options** menu in Server Explorer.
- You can also manually edit the **`AdminHost`** parameter in the `Tm1p.ini` client configuration file.

For more information, see "The Tm1p.ini client configuration file" on page 372.

Changing default port numbers for TM1 Admin Server

If you change the default values for the **TM1 Admin Server host port number** or the **TM1 Admin Server SSL port number** in IBM Cognos Configuration, you need to manually update the new values in the UNIX and Microsoft Windows services file across all the affected computers in your environment. This operating system file is not updated by TM1.

About this task

Update the operating system services file on any computer running TM1 components that need to communicate with the TM1 Admin Server. For example:

- IBM TM1 Server
- TM1 desktop clients such as Cognos TM1 Architect or Cognos TM1 Perspectives
- TM1 Web (web server only)
- Custom TM1 applications created with the TM1 API

Procedure

1. Locate and open the services file for the specific operating system.
   - For UNIX, the typical location of the services file is:

     `/etc/services`
   - For Windows, the typical location of the services file is:

     `C:\WINDOWS\system32\drivers\etc\services`

2. Add or edit the following entries in the services file with the new port numbers. For example:

   ```
   tm1adminsvr 5400/tcp # Added by IBM Cognos TM1
   tm1admsrv_ssl 5403/tcp # Added by IBM Cognos TM1
   ```

3. Save and close the file.
4. Repeat these steps for each computer running TM1 components that communicate with the TM1 Admin Server.
5. Edit the `tm1web_config.xml` file to specify the port number of the Admin Server.
   - If you are using TLS, edit the AdminHostSSLPort parameter.
   - If you are not using TLS, edit the AdminHostPort parameter.

   The `tm1web_config.xml` file is located in `<TM1 install location>\webapps\tm1web\WEB-INF\configuration\`.

   For more details about the `tm1web_config.xml` file, see "Editing the TM1 Web configuration file" on page 214 and "TM1 Web configuration parameters" on page 207.

Configuring TM1 Server to use IPv6

By default, TM1 uses IPv4. To use IBM TM1 Server with internet protocol version 6 (IPv6), you configure a combination of TM1 parameters and an operating system environment variable.

About this task

You can configure TM1 to use one of the following modes to specify which internet protocol that you want TM1 to use with your network.

ipv4
Default setting. Used for IPv4 networks.

dual
Used to transition from IPv4 to IPv6. Both protocols are supported.

ipv6
Used for IPv6 networks.

Procedure

1. Configure the TM1 Admin Server:
   a) On the computer where the TM1 Admin Server is running, open Cognos Configuration.
   b) Expand the **Local Configuration** > **Environment** node and click **TM1 Admin Server**.
   c) In the **Component Properties** pane, set the **TM1 Admin Server IP support** option to either **Dual (IPv4 and IPv6)**, **IPv4**, or **IPv6**.
   d) If needed, add the IPv6 address to the `/etc/hosts` operating system file on UNIX and Microsoft Windows. In some cases, depending on your network environment and DNS configuration, you may need to perform this additional step to successfully run the TM1 Admin Server and TM1 Server in IPv6 mode.
   e) Add the **`TM1_IPVersion`** environment variable as described in step 3.
2. Configure the TM1 Server:
   a) On the computer where the TM1 Server is running, open the `tm1s.cfg` file.
   b) Set the **`IPversion`** parameter to the IP mode that you want to use.

      For example, to specify that your network uses the IPv6 protocol, add the parameter as follows:

      `IPVersion=`**`ipv6`**

      For more details, see "IPVersion" on page 339.
   c) If needed, add the IPv6 address to the `/etc/hosts` operating system file on UNIX and Microsoft Windows.

d) Add the **TM1_IPVersion** environment variable as described in step 3.

3. Add the **TM1_IPVersion** environment variable to the operating system for each computer that communicates directly with the TM1 Admin Server or TM1 Server.

   Use the following variable name and value format:

   `TM1_IPVersion=`*`ip_mode`*

   where *ip_mode* can be one of the following values:

   - `Dual`
   - `IPv6`
   - `IPv4`

   The **TM1_IPVersion** environment variable is required on any computer that is running any of the following TM1 components:

   - TM1 Admin Server
   - TM1 Server
   - TM1 administrator tools
   - TM1 Web (web server only)
   - TM1 Application server
   - TM1 clients:
     - Cognos TM1 Architect
     - Cognos TM1 Perspectives
     - Cognos TM1 Performance Modeler
     - Cognos Insight
   - Custom applications that use the Cognos TM1 API.

   Note: You do *not* need to set this environment variable on computers that use only a web browser to access TM1 Web.

4. Restart any TM1 servers that you modified.
5. Test the connection between your TM1 server and client applications.

Monitoring TM1 Server license usage

IBM TM1 Server generates IBM Software License Metric Tag (SLMT) files. Versions of IBM License Metric Tool that support SLMT files can generate License Consumption Reports that provide information about license usage for your TM1 Server.

For complete details on installing and using IBM License Metric Tool, see IBM License Metric Tool on IBM Knowledge Center.

The initial generation of SLMT files is determined by the `LicenseMetricTime` Tm1s.cfg parameter. When the generation of SMLT files is enabled with `LicenseMetricTime`, a new SLMT file is created every 24 hours.

The AUTHORIZED_USER metric

The AUTHORIZED_USER metric can have the following subtypes:

- IBM Cognos Enterprise Planning TM1 **Modeler** - Any user that is a member of the Admin, DataAdmin, or SecurityAdmin user groups on the TM1 Server.
- IBM Cognos Enterprise Planning TM1 **Contributor** - Any user that is not a Modeler, but is assigned to a group with write access to at least one cube on a TM1 Server. A group is defined to have write access for a cube if the group is assigned one of the following security permissions for the cube: Write, Lock, Reserve, or Admin.
- IBM Cognos Enterprise Planning TM1 **Explorer** - Any user that is not a Modeler or a Contributor.

For each of these subtypes, the AUTHORIZED_USER metric records the number of users who have logged on to the TM1 Server during the period identified in the SLMT file.

Location of Software License Metric Tag files

On all operating systems, the SLMT files are created in the `slmtag` directory at the same level as the `bin64` directory in the TM1 install location. For example, `C:\Program Files\IBM\cognos\tm1_64\slmtag`. All SLMT files use the .slmtag file extension.

Troubleshooting

To help you understand how the number of Modelers, Contributors, and Explorers are calculated when producing an SLMT file, the TM1 server also produces an identically named file, but with the .slmtagraw file extension. These .slmtagraw files are created in a folder named `slmtagraw`, which exists at the same level as the `slmtag` folder.

The .slmtagraw files are not consumed by the IBM License Metric Tool. They exist solely to provide you with insight regarding metric calculation. For instance, in the following excerpt from a .slmtagraw file you can see that the user named Planner is a Contributor. The user belongs to the BUDGET PLANNER group, and that group has WRITE permission on the plan_BudgetPlan cube.

```
<Metric LogTime="2016-10-18T14:45:20Z">
    <Type>GROUP_INFO</Type>
    <SubType>GROUP_DETAIL</SubType>
    <Value><![CDATA[Group BUDGET PLANNER is a contributor
              group: Group BUDGET PLANNER has
              WRITE permission on cube plan_BudgetPlan.]]>
      </Value>
    <Period>
        <StartTime>2016-10-18T14:44:50Z</StartTime>
        <EndTime>2016-10-18T14:45:20Z</EndTime>
    </Period>
</Metric>

<Metric LogTime="2016-10-18T14:45:20Z">
    <Type>USER_INFO</Type>
    <SubType>MODELER</SubType>
    <Value><![CDATA[User Planner is a Contributor.
               Belongs to group BUDGET PLANNER.
               Group BUDGET PLANNER has WRITE permission
               on cube plan_BudgetPlan.]]>
       </Value>
    <Period>
        <StartTime>2016-10-18T14:44:50Z</StartTime>
        <EndTime>2016-10-18T14:45:20Z</EndTime>
    </Period>
</Metric>
```

Cognos TM1 tools installation

Cognos tools and utilities are installed when the **TM1 Data Tier** > **TM1 Tools** component is selected during installation.

These tools are optional components that you can choose not to install by clearing the **TM1 Tools** component check box during installation. These tools are installed in *<install_location>/bin64*.

The tools that are installed in this group include:

TM1RunTI

TM1RunTI is a command line interface tool that can initiate a TM1 TurboIntegrator (TI) process from within any application capable of issuing operating system commands.

Location: *<install_location>/bin64*

Filename: `tm1runti.exe`

See the *Editing Advanced Procedures* chapter of *TM1 TurboIntegrator*.

tm1xfer
The tm1xfer utility compresses and moves IBM Cognos TM1 server objects from one platform to another platform while preserving mixed case names for objects on both Microsoft Windows and UNIX platforms.

Location: *<install_location>/bin64*

Filename: `tm1xfer.cmd` and `tm1xfer.jar`

See the *Tools and Utilities* chapter of *TM1 Operations*.

Cognos TM1 Operations Console (Deprecated in v2.0.)
The Cognos TM1 Operations Console can monitor multiple TM1 servers and provides extensive formatting capabilities for log files. See the *Using the IBM Cognos TM1 Operations Console* chapter of *TM1 Operations* for details.

TM1 Top
TM1 Top monitors a single Cognos TM1 server. Installed by default. See the *System Performance and Monitoring* chapter of *TM1 Operations* for details.

odbc_test
The odbc_test tool is used to diagnose and test an IBM Cognos TM1 ODBC connection on UNIX. See the *Tools and Utilities* chapter of *TM1 Operations* for details.

Cognos TM1 sample databases installation

IBM Cognos TM1 samples illustrate product features and technical and business best practices. You can also use them for learning the product, testing, and troubleshooting.

Cognos TM1 samples overview

Cognos TM1 samples are available for a variety of uses and are optimized for different clients. Some of the samples are ready to use right after installation while others require extra steps to use them. Cognos TM1 samples are installed in the following places:

***TM1_installation_location*\samples\tm1**
Installed by default

***TM1_installation_location*\webcontent\samples**
Optional to install. You can choose to install these when you run the installation wizard.

Important: If you are upgrading Planning Analytics Local and don't need to keep your existing Cognos TM1 samples, then delete the files in *TM1_installation_location*\samples\tm1 before you install Planning Analytics Local. If you want to keep your existing Cognos TM1 samples, see "Upgrading the samples" on page 104.

The product samples are installed as follows:

SData, Planning Sample, GO_New_Stores, GO_Scorecards, Proven_Techniques, and 24Retail

These samples are installed by default in the *TM1_installation_location*\samples\tm1 location.

SData and Planning Sample were specifically designed to be used with Cognos TM1.

To use them, start each sample database in Cognos Configuration after installation.

GO_New_Stores and Proven_Techniques are designed to highlight Cognos TM1 Performance Modeler, TM1 Applications, and Cognos Insight features.

The Proven_Techniques sample highlights cube calculations and functions. You can also import multiple applications in the portal and view them using Cognos Insight Connected mode.

The GO_Scorecards sample includes data that is optimized for use with the IBM Cognos Scorecard features found in Cognos TM1 Performance Modeler.

The 24Retail sample represents a fictitious company, named 24Retail, that sells cellphones, computers, and other widgets. Its data can be used by Planning Analytics Workspace, Planning Analytics for Microsoft Excel, Architect, and TM1 Web.

See "Using the sample databases installed by default" on page 96 for more information.

PData, Rules_Guide_Data, TI_Data

These samples are designed specifically for Cognos TM1. To use them you must first add each server in Cognos Configuration and then start them individually. They are installed into the *TM1_installation_location*\samples\tm1 location.

GO_Contributor.zip, sample_outdoors.zip, advanced_techniques.zip, greatoutdoors.zip, and GreatOutdoorsSales.zip

These samples are installed only if you select the **TM1 Samples** component in the TM1 Data Tier in the installation wizard. They are installed to the *TM1_installation_location*\webcontent\samples\datasources\cubes\amdtool directory.

The GreatOutdoorsSales.zip samples require you to restore a database and connect to the database using an OLAP data source. The database files are installed with the samples, and are provided for IBM Db2®, Microsoft SQL Server, and Oracle databases.

The other samples are based on .csv files for their content and do not require a database to be restored. See "Using the GO_Contributor and Outdoors Company sample databases" on page 97 for more information.

HumanResources.cdd, Orders.cdd and Training.cdd.

A set of .cdd and data samples have been specifically designed for use with Cognos Insight workspace builder. These samples with localized versions are available *TM1 installation location*\webcontent\samples\datasources\cubes\amdtool\Source_files\desktop. These samples are installed only if you select the **TM1 Samples** component in the TM1 Data Tier in the installation wizard.

On UNIX, use the ./startup_tm1s.sh command to start sample database servers. See" Starting a UNIX TM1 Server" and "Stopping a UNIX TM1 Server" in *TM1 Operations* for more details.

Using the sample databases installed by default

The following sample databases are installed by default and can all be started from Cognos Configuration

About this task

These databases are installed by default into the sample database location.

For example C:/Program Files/IBM/cognos/tm1/samples/tm1/SData

SData
Data designed for use with TM1.

PlanSamp
Data designed for use with the Planning clients.

GO_New_Stores
Data designed for use with TM1 Applications, Cognos Insight, and Cognos TM1 Performance Modeler.

GO_Scorecards
Data designed for use the TM1 Scorecarding in TM1 Performance Modeler.

Proven_Techniques
This sample database uses cube calculations and features from more recent releases. This database is also designed for use with the TM1 Scorecard features in Cognos TM1 Performance Modeler.

Procedure

1. In Cognos Configuration, right click the database you want to start and select **Start**.

2. To open the databases, in TM1 Architect or TM1 Performance Modeler, double-click the database and use the default username of `admin` and password of `apple`.

Using the GO_Contributor and Outdoors Company sample databases

The following GO_Contributor and Outdoors Company samples are installed as .zip files that you must unzipped in order to use them.

Procedure

1. On the computer where you installed the TM1 server component, go to the *tm1_location* `\webcontent\samples\datasources\cubes\amdtool` folder.
2. Extract the contents of the `GO_Contributor.zip` or the `Outdoors_Company.zip` file.

   Be sure to do the extraction close to the root location such as `c:` so that the file path is not too long.
3. In the folder where you extracted the filea, go to the `Data Files` folder, and open the `tm1s.cfg` file in a text editor.
   a) Ensure that the `DatabaseDirectory` location, the `LoggingDirectory` location, and the `DistributedPlanningOutputDir` use the correct path for the `Data Files` folder location where you extracted the `Go_Contributor.zip` and `Outdoors_Company.zip` files.
   b) Save and close the files.
4. Open IBM Cognos Configuration.
5. In the **Explorer** panel, under **Data Access**, right click **TM1 Server**, and click **New Resource** > **TM1 Server Instances**.
   a) In the **Name** box, enter `GO Contributor` or `Outdoor Company`.
   b) For the TM1 Server configuration path value, enter the path to the `Data Files` folder where you extracted the files.

      For example, *tm1_location*`\samples\GO_Contributor`
   c) In the **Explorer** panel, right-click **GO Contributor** or `Outdoor Company` and click **Start**.
6. Test that the new servers are available to Architect.
   a) Open Architect.
   b) Double click the server.
   c) In the **Server Login** box, enter `admin` in the **UserName** box and `apple` in the **Password** box.
7. To test that the new servers are available in the IBM Cognos Applications portal:
   a) Open the portal by typing the following: `http://`**`server_name`**`:9510/pmpsvc`.
   b) Click the **Administer IBM Cognos TM1 Application** icon.
   c) Under **Server Names**, click **Add**.
   d) Type the server name in **Admin Host** and then click the **Refresh** button.
   e) Select the sample you just added, and click **OK**.

Using the Great Outdoors Sales server samples based on the sample database

The Great Outdoors Sales sample uses data from a database. To use this sample you must restore the database, create an ODBC connection to the database, and then add the sample server to your system.

The database is provided for IBM Db2, Microsoft SQL Server, and Oracle.

The sample database and the Cognos TM1 server using the database are installed with Cognos TM1 server in the *tm1_location*`/webcontent/samples/datasources` folder.

When you create your ODBC connection, use `GOSALESDW` as the data source name. On Microsoft Windows operating systems, create the ODBC connection as a System DSN.

Restoring backup files for IBM Db2

Use the script that is provided to restore sample databases on IBM Db2.

To set up the sample database, you must extract the GS_DB tar.gz file, customize a configuration file, and run the setup script.

Procedure

1. Go to the *tm1_location*/webcontent/samples/datasources folder.
2. Extract the GS_DB.tar.gz file and retain the original directory structure.

   If you use WinZip to extract the GS_DB.tar.gz file on a Microsoft Windows operating system, ensure that the **TAR file smart CR/LF conversion** option is not selected.
3. On Linux and UNIX operating systems, modify the file permissions on the setupGSDB.sh file so that it is executable.

   For example,

   ```
   chmod u+x setupGSDB.sh
   ```
4. If you want to change the sample configuration file to use settings other than the default values, edit the GOSalesConfig file.

   The configuration file on Windows is GOSalesConfig.bat. The configuration file on Linux and UNIX is GOSalesConfig.sh.

   The GOSalesConfig configuration file contains the default configuration options that are used when creating the GOSALES data. The default configuration settings are listed in the following table

Table 14. Default configuration settings for GOSALES data

Configuration Setting	Default	Description
GOSALES_INST	GS_DB	Used to set the name or alias of the database.
GOSALES_CREATEDB		Optional: Causes an existing database with the same name to be dropped.
GOSALES_DB_TERRITORY	US	When creating a database this is the territory of the UTF-8 database that is created.
GOSALES_BP GOSALES_TS	GOSALES_BP GOSALES_TS	Optional: Enter the buffer pool and tablespace name, if these are to be created by the script.
GOSALES_GRANTEES	GOSALES, DB2ADMIN	Enter the list of users, groups or PUBLIC that will have CONTROL permissions for the GOSALES, GOSALESHR, GOSALESMR and GOSALESRT schemas. This string needs to follow the syntax of the GRANT command.
GOSALESDW_GRANTEES	GOSALESDW DB2ADMIN	Enter the list of users, groups or PUBLIC that will have CONTROL permissions for the GOSALESDW schema.

Table 14. Default configuration settings for GOSALES data (continued)		
Configuration Setting	**Default**	**Description**
GOSALES_DPF	N	Change to 'Y' if installing a database partitioned environment (DPF)
GOSALES_SCHEMA GOSALESHR_SCHEMA GOSALESMR_SCHEMA GOSALESRT_SCHEMA GOSALESDW_SCHEMA	GOSALES GOSALESHR GOSALESMR GOSALESRT GOSALESDW	Enter the names to be used for each schema.

By default, the GS_DB database name is used and permissions are granted to the DB2ADMIN (Linux, UNIX, Windows) and GOSALES users.

5. To run the `setupGSDB` script in interactive mode, run following command:
   - On Windows computers, in an IBM Db2 command window, change to the `GS_DB\win` directory and run the `setupGSDB.bat` script.
   - On UNIX computers, from a shell prompt, source the `db2profile`, change to the `GS_DB/unix` directory, and run the `setupGSDB.sh` script.

   The script displays a summary of your choices before you commit to changes to your environment. If you approve the choices, press Enter.
6. To run the `setupGSDB` script from the command line, run the following command:
   - On Windows computers, run the `setupGSDB.bat` script.
   - On UNIX computers, run the `setupGSDB.sh` script.

   You can run the `setupGSDB` script with the following options:

Option	**Description**
`-createdb`	Creates the database. This option drops any existing database with the same name. It creates the required buffer pool and table space.
`-database database name`	Specifies the name of the database. This value overrides the default value of GS_DB.
`-userid administration_user_ID`	Specifies the name of the Db2 administrator user ID that is used to create the database.
`-password administration_user_ID`	Specifies the password for the Db2 administrator user ID.
`-noprompt`	Indicates that no prompt will display. This option runs the script in silent mode. Any missing information causes the script to fail. You will not be prompted for any confirmations.

For example, if you are an IBM Db2 administrator and want to create the default GS_DB database on the local node, use the following command:

```
setupGSDB -createDB -noprompt
```

If you want to create the tables in an existing database named SAMPLE, and you want to use the administrator user ID db2admin, run the following command:

```
setupGSDB -database SAMPLE -userid db2admin
```

The script prompts you for the password when it connects to the database. The script will replace any tables that already exist in the database, unless you choose to drop the database.

7. If the GS_DB sample database is installed on a remote server in your environment, you can link to it by cataloguing the remote database on your local computer and then running the setup script locally.
   a) If the sample database does not yet exist on the remote server, create it by using **CREATE DATABASE** command.

      The database requires a UTF-8 codeset and a default table space with a pagesize of 16 KB or larger. For example, on the remote server, create the database by running the following command:

      ```
      CREATE
      DATABASE GS_DB USING CODESET UTF-8 TERRITORY US PAGESIZE 16k
      ```

   b) On your local computer, catalog the remote database by using the following command:

      ```
      db2
      catalog tcpip node nodename remote ipaddr server port_number
      db2 catalog database GS_DB as GS_DB at node nodename
      ```

   c) On your local computer, run the following command:

      ```
      setupGSDB -database GS_DB -userid administration_user_ID
      ```

      You are prompted for a password to connect to the database.

Restoring backup files for Oracle

Use the scripts that are installed with TM1 to quickly and conveniently restore backup files for sample databases in Oracle.

About this task

To set up the sample database, you must extract the `GS_DB_ORA.tar.gz,` file, customize a configuration file, and run the setup script.

Procedure

1. Go to the *tm1_location*`/webcontent/samples/datasources`.
2. Extract the `GS_DB_ORA.tar.gz` file and retain the original directory structure.
3. On Linux and UNIX operating systems, modify the file permissions on the `setupGSDB.sh` file so that it is executable:

   ```
   chmod u+x setupGSDB.sh
   ```

4. Ensure that the user ID used to set up the Oracle database has authority to create users and run the import utility.
5. Optional - If you want to change the sample configuration file to use settings other than the default values, edit the `GOSalesConfig` file.

   The configuration file on Windows is `GOSalesConfig.bat`. The configuration file on UNIX is `GOSalesConfig.sh`.

The `GOSalesConfig` configuration file contains the default configuration options that are used when creating the GOSALES data. The default configuration settings are listed in the following table

Table 15. Default configuration settings for GOSALES data

Configuration Setting	Default	Description
GOSALES_IMP_CMD	imp	If necessary can be modified to specify the complete path to the correct version of the import utility.
GOSALES_INST		Oracle host string.
GOSALES_TS	GOSALES_TS	If users are created by scripts, used to enter the tablespace name to assign to users.
GOSALES_CREATE_TS		Optional: Used to create the default tablespace for users.
GOSALES_TEMP_TS		If users are created by scripts, used to name a temporary tablespace to assign to users. Leave blank to use the default temporary tablespace.
GOSALES_SCHEMA GOSALES_SCHEMA_PW	GOSALES GOSALESPW	Used to enter the username and password for the GOSALES user. You will be prompted for a password if not entered.
GOSALESHR_SCHEMA GOSALESHR_SCHEMA_PW	GOSALESHR GOSALESHRPW	Used to enter the username and password for the GOSALESHR user. You will be prompted for a password if not entered.
GOSALESMR_SCHEMA GOSALESMR_SCHEMA_PW	GOSALESMR GOSALESMRPW	Used to enter the username and password for the GOSALESMR user. You will be prompted for a password if not entered.
GOSALESSRT_SCHEMA GOSALESRT_SCHEMA_PW	GOSALESRT GOSALESRTPW	Used to enter the username and password for the GOSALESRT user. You will be prompted for a password if not entered.
GOSALESDW_SCHEMA GOSALESDW_SCHEMA_PW	GOSALESDW GOSALESDWPW	Used to enter the username and password for the GOSALESDW user. You will be prompted for a password if not entered.

Table 15. Default configuration settings for GOSALES data (continued)		
Configuration Setting	**Default**	**Description**
GOSALES_GRANTEES	GOSALES	Used to enter the users that will have SELECT, INSERT, DELETE, UPDATE, and ALTER permissions for GOSALES, GOSALESHR, GOSALESMR and GOSALESRT schemas. **Note**: The owner of the GOSALES_SCHEMA will always be granted SELECT, INSERT, DELETE, UPDATE and ALTER privilege on all schemas.
GOSALESDW_GRANTEES	GOSALESDW	Used to enter the users that will have SELECT, INSERT, DELETE, UPDATE and ALTER permissions for GOSALESDW schema.

6. To run the `setupGSDB` script in interactive mode, run following command:
   - On Windows computers, in a DOS command window, change to the `GS_DB_ORA\win` directory and run the `setupGSDB.bat` script.
   - On UNIX computers, from a shell prompt, change to the `GS_DB_ORA/unix` directory, and run the `setupGSDB.sh` script.

   Press Enter to proceed. The script displays a summary of your choices before you commit to changes to your environment. If you approve the choices, press Enter and the script makes the changes
7. To run the `setupGSDB` script from the command line, run the following command:
   - On Windows computers, run the `setupGSDB.bat` script.
   - On UNIX computers, run the `setupGSDB.sh` script.

   You can run the `setupGSDB` script with the following options:

Option	**Description**
`-createdb`	Creates the database. This option drops any existing database with the same name. It creates the required buffer pool and table space.
`-database database name`	Specifies the name of the database. This value overrides the default value of GS_DB.
`-userid administration_user_ID`	Specifies the name of the Db2 administrator user ID that is used to create the database.
`-password administration_user_ID`	Specifies the password for the Db2 administrator user ID.

Option	Description
`-noprompt`	Indicates that no prompt will display. This option runs the script in silent mode. Any missing information causes the script to fail. You will not be prompted for any confirmations.

For example, if you are an Oracle administrator and want to create the default sample database schemas, run the following command:

```
setupGSDB -createDB -noprompt
```

You want to create the tables in the existing schemas specified in the configuration file, and you want to use the administrator user ID sys. run the following command:

```
setupGSDB -YourOracleInstance-userid sys -sysdba
```

The script prompts you for the password when it connects to the Oracle instance. The script deletes any existing tables or views in the specified schemas and replaces them.

Restoring backup files for Microsoft SQL Server

Use the Microsoft SQL Server database management tool to quickly and conveniently restore backup files for sample databases.

Procedure

1. On the computer where you installed TM1 server, go to the following directory:

   tm1_location/webcontent/samples/datasource/Source files/sqlserver
2. If required, copy the backup files for the samples databases to your database backup directory.
3. Restore the database from a device, and ensure that the restore locations are correct for the `.ldf` and `.mdf` database files.
4. Create at least one user who has select permissions for all the tables in the restored databases.

Setting up Great Outdoors Sales sample

The Great Outdoors Sales sample uses data from the database you restored.

Procedure

1. Create an ODBC data source connection to the restored database.

   Use `GOSALESDW` as the data source name. On Windows operating systems, create the ODBC connection as a System DSN.
2. On the computer where you installed the TM1 server component, go to the *tm1_location* `\webcontent\samples\datasources\cubes\amdtool` folder.
3. Extract the contents of the `GreatOutdoorsSales.zip` file.

   Be sure to do the extraction close to the root location such as `c:` so that the file path is not too long.
4. In the folder where you extracted the `GreatOutdoorsSales.zip` file, go to the `DataFiles` folder, and open the `tm1s.cfg` file in a text editor.
   a) Ensure that the `DatabaseDirectory` location and the `LoggingDirectory` location use the correct path for the location where you extracted the `GreatOutdoorsSales.zip` file.
   b) Save and close the file.
5. Open IBM Cognos Configuration.
6. In the **Explorer** panel, under **Data Access**, right click **TM1 Server**, and click **New Resource** > **TM1 Server Instances**.
   a) In the **Name** box, enter `GreatOutdoorsSales`.

b) For the TM1 Server configuration path value, enter the path to the `DataFiles` folder where you extracted the `GreatOutdoorsSales.zip` file.

For example, *tm1_location*`\webcontent\samples\datasources\cubes\amdtool\GreatOutdoorsSales\DataFiles`

c) In the **Explorer** panel, right-click **GreatOutdoorSales** and click **Start**.

7. Test that the new GreatOutdoorsSales server is available to Architect.
   a) Open Architect.
   b) Double click the GreatOutdoorsSales server.
   c) In the **Server Login** box, enter `admin` in the **UserName** box and `apple` in the **Password** box.
8. Test that the new GreatOutdoorsSales server is available in the IBM Cognos Applications portal.
   a) Open the portal by typing the following: `http://`**`server_name`**`:9510/pmpsvc`.
   b) Click the **Administer IBM Cognos Application** icon on the far right hand side
   c) Under **Server Names**, click **Add**.
   d) Type the server name in **Admin Host** and then click the **Refresh** button.
   e) Select the GreatOutdoorsSales sample you just added, and click **OK**.

Upgrading the samples

If you use the samples in IBM Planning Analytics Local version 2.0.0 or higher and you want to keep any updates that you made to them, follow these steps as part of the upgrade to a new version of IBM Planning Analytics Local.

About this task

Important: Follow these steps only if you want to carry your existing samples database forward with the upgrade. If you don't need to keep your samples database, then upgrade IBM Planning Analytics Local as described in "Upgrading from Planning Analytics version 2.0.0" on page 70.

Procedure

1. Before you start the upgrade of Planning Analytics Local, back up the following files.
   - The *\PA_installation_location*`\tm1\samples\tm1\PlanSamp\Tm1s.cfg` file.
   - The sample databases that you use, located in *\PA_installation_location*`\tm1\samples\tm1`.
2. After you finish the upgrade of IBM Planning Analytics Local, merge the `Tm1s.cfg` backup file with the newly installed `Tm1s.cfg`. When you merge the files, overwrite the values in the newly installed file with the values from the backup file.
3. Put the merged `Tm1s.cfg` file into the new installation location in *\tm1_location*`\tm1\samples\tm1\PlanSamp\`.
4. Copy the samples files that you backed up to the samples installation location in *\tm1_location*`\tm1\samples\tm1\`.
5. Start the services.

Install and configure the Planning Analytics Administration agent (local only)

If you have IBM Planning Analytics Local version 2.0.5 or later installed, you can install and configure the Planning Analytics Administration agent for Microsoft Windows or Linux operating systems.

To use IBM Planning Analytics Administration on Planning Analytics Workspace Local, you must install and configure the Planning Analytics Administration agent wherever you have installed IBM TM1 Server. The default port of the Planning Analytics Administration agent is 9012.

By default, the Planning Analytics Administration agent is selected as a component when you install Planning Analytics Local but it is not configured or started.

Note: You can upgrade your Planning Analytics Administration agent by installing a new version of Planning Analytics Local or by downloading a new version of the agent from Planning Analytics Workspace. For more information, see Planning Analytics Administration agent in Download additional components.

To upgrade an Planning Analytics Administration agent as part of a Planning Analytics Local upgrade, you must stop the Planning Analytics Administration agent service, back up your `bootstrap.properties` file, upgrade Planning Analytics Local selecting the Planning Analytics Administration agent component in the installation wizard, and then restart the Planning Analytics Administration agent. For more information, see Upgrading Planning Analytics Local.

Your changes to the `bootstrap.propertes` file are preserved when you upgrade the Planning Analytics Administration agent, however, the version of the agent is updated. On Windows, the version is updated when you upgrade using the Planning Analytics Local installation wizard. On Linux, the version is updated when you run `./startup_agent.sh install`.

After you install or upgrade the agent, you must configure it. For more information, see "Configure the agent for Windows" on page 105 or "Configure the agent for Linux" on page 105.

Configure the agent for Windows

Procedure

1. Open the Windows Services desktop application.
2. Stop the **IBM Planning Analytics Administration Agent** service if it is running.
3. Navigate to *<PA_install_location>*`/paa_agent/wlp/usr/servers/kate-agent`.
4. In a text editor, open the `bootstrap.properties` file.
5. Set the SERVERS_DIR to the full path of the directory that contains TM1 databases directories.

   Note: Multiple paths must be separated by a semicolon. For example, `SERVERS_DIR=C:/tm1/samples/tm1/;C:/prod/servers/`.
6. Save and close the `bootstrap.properties` file.
7. Navigate to *<PA_install_location>*`/paa_agent/bin`.
8. Run `PAAAgentSetJavaHome.bat` to set JAVA_HOME for your Planning Analytics Administration agent.
9. Start the **IBM Planning Analytics Administration Agent** Windows service.

   Note: You can also navigate to *<PA_install_location>*`/paa_agent/bin` and run the `PAAAgentStart.bat` script to start the Planning Analytics Administration agent Windows service.

What to do next

Navigate to Planning Analytics Administration in Planning Analytics Workspace Local and verify that the TM1 databases appear.

Note: If you change the `bootstrap.properties` file later, you must restart the **IBM Planning Analytics Administration Agent** Windows service by running `PAAAgentStart.bat` script.

Configure the agent for Linux

Before you begin

Set the RunningInBackground parameter in your `tms1.cfg` file to `RunningInBackground=T`.

Note: The `RunningInBackground` parameter is required for Linux only. It is used to suppress the prompts displayed by TM1 Server. Since Planning Analytics Administration uses scripts to start and stop databases on TM1 Server, you must set `RunningInBackground=T` on Linux.

Procedure

1. Navigate to *<PA_install_location>*/paa_agent/bin.
2. Run the ./shutdown_agent.sh command to stop the **IBM Planning Analytics Administration Agent** if it is running.
3. Navigate to *<PA_install_location>*/paa_agent/wlp/usr/servers/kate-agent.
4. In a text editor, open the bootstrap.properties file.
5. Set the full path of the directory that contains TM1 databases data directories to SERVERS_DIR.

   Note: Multiple paths must be separated by a semicolon. For example, /opt/ibm/cognos/tm1_64/samples/tm1/;/srv/prod/servers/.
6. Save and close the bootstrap.properties file.
7. Navigate to *<PA_install_location>*/paa_agent/bin.
8. Run ./set_java_home.sh <Full path to JRE> to set JAVA_HOME for your Planning Analytics Administration agent.
9. Run ./startup_agent.sh install to set up the Planning Analytics Administration agent service.

   Note: You must have root or sudo privileges to perform this step.
10. Run ./startup_agent.sh command to start the Planning Analytics Administration agent.

What to do next

Navigate to Planning Analytics Administration in Planning Analytics Workspace Local and verify that the TM1 databases appear.

Note: If you change the bootstrap.properties file later, you must restart the **IBM Planning Analytics Administration Agent** by running ./startup_agent.sh command.

Configure event notifications

About this task

To get notifications from Planning Analytics Administration for Planning Analytics Local, you must configure the following functionality:

Procedure

1. Set the following bootstrap properties for SMTP notifications:

   For example, set these properties:

   ```
   SMTP_EMAIL_PORT=587
   SMTP_EMAIL_AUTH=true
   SMTP_EMAIL_HOST=example.com
   SMTP_EMAIL_USERNAME=user@example.com
   SMTP_EMAIL_PASSWORD=Analytics123
   PAA_EMAIL_ADDRESS=noreply@example.com
   ```

   The PAA_EMAIL_ADDRESS must be a registered alias, otherwise set it to a primary alias, for example, the user name noreply@example.com.
2. Optional: Set SMTP_EMAIL_START_TLS_ENABLE=true and add the certificates to the TLS certificate store:
   a) Run the following command in a command prompt on Windows or a terminal on Linux.

   ```
   openssl s_client -showcerts -starttls smtp -crlf -connect example.com:587
   ```

   This command prints two certificates that begin with "-----BEGIN CERTIFICATE-----" and end with "-----END CERTIFICATE-----".

   b) Copy these two certificates (including the BEGIN CERTIFICATE and END CERTIFICATE lines) to Example_1.cer and Example_2.cer and remember the location.

For example, <PA install directory>/paa_agent/wlp/usr/servers/kate-agent/resources/security. You use this location in the next step.

c) Import Example_1.cer to the Planning Analytics Administration agent store by using the following command and the location of the Example_1.cer file from step "2.b" on page 106.

On Windows:

```
keytool.exe -importcert -keystore "<PA install directory>/paa_agent/wlp/usr/servers/kate-agent/resources/security/server_store.p12" -storetype PKCS12
-trustcacerts -storepassapplix -file "<PA install directory>/paa_agent/wlp/usr/servers/kate-agent/resources/security/Example_1.cer" -alias example1
```

On Linux:

```
./keytool -import -keystore "<PA install directory>/paa_agent/wlp/usr/servers/kate-agent/resources/security/server_store.p12" -storetype PKCS12
-trustcacerts -storepass applix -file "<PA install directory>/paa_agent/wlp/usr/servers/kate-agent/resources/security/Example.cer" -alias example1
```

d) Repeat the previous step to import the second certificate, Example_2.cer.

What to do next

You can get notifications for chore failures, threads that are in a run state, threads in a wait state, and more. For more information, see Set system resource thresholds and alerts in the *Planning Analytics Workspace* documentation.

Sample bootstrap.properties file

```
# General properties
SERVERS_DIR=<PA_install_location>/samples/tm1
EXE_PATH=<PA_install_location>/bin64/tm1s.exe
SERVER_INFO_PATH=<PA_install_location>/paa_agent/paaAgentCache
TM1_SAMPLES_PATH=<PA_install_location>/samples/tm1

TM1_SERVER_INFO_PROCESS_TIME_INTERVAL=20000
NOTIFICATION_MEM_USAGE_INTERVAL=30000
NOTIFICATION_SERVER_UNRESPONSIVE_INTERVAL=40000
FILE_TAILER_REFRESH_INTERVAL=86400000
PAA_EMAIL_ADDRESS=administration@planning-analytics.ibmcloud.com
MODEL_UPLOAD=model_upload
SCRIPT_TIMEOUT=15

# SMTP Properties
SMTP_EMAIL_PORT=<port>
SMTP_EMAIL_AUTH=false
SMTP_EMAIL_HOST=<host>
SMTP_EMAIL_START_TLS_ENABLE=false
SMTP_EMAIL_USERNAME=<username>
SMTP_EMAIL_PASSWORD=<encrypted_pwd>

# Logging properties
com.ibm.ws.logging.console.log.level=OFF
com.ibm.ws.logging.trace.specification="*\=audit\:com.ibm.pa.kate.agent.*\=warning"
com.ibm.ws.logging.max.file.size=10
com.ibm.ws.logging.max.files=4

VERSION=1.0.nn.nnn
```

General properties

SERVERS_DIR

The full path of the directory that contains the TM1 databases directories.

Note: Multiple paths must be separated by a semicolon. For example, SERVERS_DIR=C:/tm1/samples/tm1/;C:/prod/servers/.

You can specify the parent directory of your databases. You don't need to specify each database separately.

EXE_PATH
Internal use only. Do not change.

SERVER_INFO_PATH
Internal use only. Do not change.

TM1_SAMPLES_PATH
Internal use only. Do not change.

TM1_SERVER_INFO_PROCESS_TIME_INTERVAL
Internal use only. Do not change.

Time in milliseconds between successive task executions. Used in the scheduler that checks system health.

NOTIFICATION_MEM_USAGE_INTERVAL
Internal use only. Do not change.

Not currently used.

NOTIFICATION_SERVER_UNRESPONSIVE_INTERVAL
Internal use only. Do not change.

Time in milliseconds between successive task executions. Used in the scheduler that checks for server unresponsiveness.

FILE_TAILER_REFRESH_INTERVAL
Internal use only. Do not change.

Time in milliseconds between successive task executions. Used in scheduler that tails server logs for every TM1 Server.

PAA_EMAIL_ADDRESS
Internal use only. Do not change.

MODEL_UPLOAD
Internal use only. Do not change.

SCRIPT_TIMEOUT
Internal use only. Do not change.

SMTP properties

SMTP_EMAIL_PORT
Set to a free port. For example, `2500`.

SMTP_EMAIL_AUTH
Default is `false`.

SMTP_EMAIL_HOST
Set based on your email server. For example, `localhost`.

SMTP_EMAIL_START_TLS_ENABLE
Default is `false`. Whether you need to configure certificates and set START_TLS_ENABLE=`true` depends on your email server configuration.

SMTP_EMAIL_USERNAME
Full email address. For example, example@my domain.com.

SMTP_EMAIL_PASSWORD
Email password for SMTP_EMAIL_USERNAME.

Logging properties

com.ibm.ws.logging.console.log.level
This setting controls the granularity of messages that go to the console.

When this log is enabled, a `console.log` is generated with the agent `message.log` at *<PA_install_location>*`/paa_agent/wlp/usr/servers/kate-agent/logs`.

Valid values are: INFO, AUDIT, WARNING, ERROR, and OFF.

Default is OFF.

com.ibm.ws.logging.trace.specification="*=audit:com.ibm.pa.kate.agent.*=warning"
This setting is used to selectively enable trace.

This entry refers to the agent `message.log`.

Valid values are: INFO, AUDIT, WARNING, ERROR, and OFF.

A restart of the Planning Analytics Administration agent is required for a logging value to take effect when you change this property.

com.ibm.ws.logging.max.file.size
The maximum size (in MB) that a log file can reach before it is rolled.

Default is 10. For more information, see Logging and Trace.

com.ibm.ws.logging.max.files
If an enforced maximum file size exists, this setting is used to determine how many of each of the logs files are kept.

Default is 4. For more information, see Logging and Trace.

Chapter 8. Installing the Web Tier

You can install Web Tier components using the IBM Planning Analytics Local installation program.

You can install the following Web Tier components:

- TM1 Application Gateway
- TM1 Application Server
- Cognos Access Manager

TM1 Application Server installation

You can install the web application server components for IBM Planning Analytics on a separate, dedicated computer so that users in a network environment can access them. These components include the TM1 Application Server and the TM1 Application Gateway.

The TM1 Application Server must be deployed on a Java-based web application server. When installing TM1 Application Server, first determine which of the following web application servers you want to use:

- The WebSphere Liberty Profile application server that is provided
- Your own installation of IBM WebSphere Application Server

For more information about TM1 Application Server architecture and deployment, see:

- "TM1 Applications architecture" on page 61
- "Deploying TM1 Applications components on a single computer" on page 66
- "Deploying TM1 Applications components on separate computers" on page 67

Deploying with the provided version of WebSphere Liberty Profile server

The fastest and easiest way to install and deploy TM1 Application Server is to use the version of WebSphere Liberty Profile server that is provided and installed with the Planning Analytics installation program. This method uses Cognos Configuration to start and stop the TM1 Application Server.

For more information, see "Install TM1 Application Server" on page 112.

Deploying to your own web application server

To deploy TM1 Application Server with your own instance of a Java-based web application server, use Cognos Configuration to first create the `pmpsvc.war` web application archive file, and then manually deploy the file. For more information, see "Install TM1 Application Server with your own installation of WebSphere" on page 118.

TM1 Application Server with x64 Windows

When running TM1 Application Server on an x64 Microsoft Windows system with WebSphere Liberty Profile server, use the same 64-bit versions of the Java Runtime Environment (JRE) and WebSphere Liberty Profile web server. Do not mix platform versions. For example, if you are using the 64-bit version of JRE, then you should also use the 64-bit version of WebSphere Liberty Profile.

Integrating TM1 Application Server with Cognos Analytics and Cognos Connection portal

If your Planning Analytics installation uses Cognos security for authentication, your Cognos Analytics users can use the Cognos Connection portal to open Planning Analytics applications instead of the TM1 Applications Web portal. However, administrators still need to use TM1 Applications Web to configure and manage applications.

When you configure TM1 Application Server to use Cognos security, you also enable the Cognos Connection portal to display a folder that contains links to the available Planning Analytics applications. The exact list of displayed applications depends on the rights of the current user.

The `planning.html` file provides the information for Cognos Analytics and the Cognos Connection portal to display links to Planning Analytics applications. For more information, see "Using Cognos TM1 Applications with Cognos security" on page 257.

Install TM1 Application Server

You can install IBM TM1 Application Server on a separate computer and deploy it with the instance of WebSphere Liberty Profile that is provided with the installation. This type of installation is intended for an environment where the TM1 Admin Server and TM1 Server are running on another computer.

Installing TM1 Web Tier components

Follow these steps to install the required files for TM1 Application Server and its components on a separate computer. If you plan to use the TM1 Web client, you need an installation of TM1 Web on either the same computer or a different computer in your network.

About this task

Note: To install TM1 Web on a different computer, see "Cognos TM1 Web installation" on page 122.

Procedure

1. Right-click the `issetup.exe` file and click **Run as Administrator** to run the IBM Planning Analytics installation program.
2. In the installation program select only the following components:
   - **TM1 Application Gateway**
   - **TM1 Application Server**
   - **TM1 Web** - This component is optional. Select this to install TM1 Web on the same computer as TM1 Application Server.
3. Follow the prompts to complete the installation.

Deploying the TM1 Application Server with the provided WebSphere Liberty Profile application server

The TM1 Application Server runs in the WebSphere Liberty Profile application server that is provided with the installation. Use Cognos Configuration to deploy and start WebSphere Liberty and TM1 Application Server.

Procedure

1. Click **Start** > **All Programs** > **IBM Cognos TM1** > **IBM Cognos Configuration**.

   If you installed the product from the Program Files (x86) directory on a computer running Windows 7, start IBM Cognos Configuration as an Administrator.
2. In the Cognos Configuration **Explorer** panel, expand the **Local Configuration** > **Environment** > **IBM Cognos TM1 Services** , right-click **IBM Cognos TM1** and select **Start**.

   This will start the provided version of WebSphere Liberty Profile server and then deploy and start the TM1 Application Server.
3. Click **File** > **Save** and close **IBM Cognos Configuration**.

Configuring authentication security for TM1 Application Web

For IBM TM1 Server used with TM1 Application Web, use either TM1 standard security authentication or IBM Cognos security.

About this task

Configure the authentication login mode using the **IntegratedSecurityMode** parameter in the `Tm1s.cfg` file of each TM1 Server that you want to use.

TM1 Application Web is compatible only with the following TM1 security authentication modes:

- Authentication mode 1 - TM1 standard security authentication
- Authentication mode 5 - Cognos security

Important: Do not use a combination of different security authentication modes for the same installation of TM1 Application Web.

For best practice, determine the security mode before you configure TM1 Application Web to use a TM1 Server and use that same security mode with any additional servers you add.

For more details about security authentication and the **IntegratedSecurityMode** parameter, see:

- “Authentication security ” on page 234
- “IntegratedSecurityMode” on page 337

Procedure

1. Open the file *TM1 server data directory*`/Tm1s.cfg`
2. Set the **IntegratedSecurityMode** parameter for the TM1 Server.
   - To use TM1 standard security authentication, set `IntegratedSecurityMode=`**1**
   - To use Cognos security, set `IntegratedSecurityMode=`**5**

   For details about using Cognos security, see:
   - “Using Cognos TM1 Applications with Cognos security” on page 257
   - “Cognos security” on page 249
3. Save and close the `Tm1s.cfg` file.
4. Restart the TM1 Server.
5. Repeat these steps for any other TM1 Server you want to use with TM1 Application Web.

Configuring the server and client environment for TM1 Application Web

Before you use IBM TM1 Application Web, you need to specify the TM1 Admin Host, TM1 Server, and client user interfaces that you want to use. The first time that you start TM1 Application Web, the program prompts you to configure these options.

Before you begin

Ensure that the TM1 Admin Server and at least one TM1 Server is running on the local computer or a remote computer that you can access.

Ensure that each TM1 Server that you want to use is configured with the required parameter values. For more information, see “Configuring a TM1 Server to work with TM1 Application Web” on page 115 .

If you plan to use Cognos TM1 Application Web, ensure that you know the web server name and port number where Cognos TM1 Web is running.

Procedure

1. Start and log in to TM1 Application Web:
   a) In a web browser, type the URL for TM1 Application Web:

`http://localhost:9510/pmpsvc`

b) Replace `localhost` with the name of the computer where the TM1 Application Server is installed.

2. Open the Cognos TM1 Application Configuration page:
   - If this is the first time that TM1 Application Web has been started since the installation, the Configuration page opens.
   - If TM1 Application Web has already been configured, you are prompted for a user name and password and then you can open the configuration page by clicking the Administer IBM Cognos TM1 Applications button  on the toolbar of the Cognos TM1 Application Web main page.
3. In the **Admin Host** field, enter the name or IP address of the computer where the TM1 Admin Server is running.

   Note: The **Admin Host** and **Server Name** fields appear blank if you have not started the TM1 Admin Server and at least one TM1 Server.
4. In the **Server Name** field, enter the name of the TM1 Server that you want to use with TM1 Application Web.

   For example, you can specify the sample TM1 Server **GO_New_Stores**.

   Click the **Refresh** button to refresh the list of available servers.
5. Select the data contribution clients that you want to use with TM1 Application Web.

   These clients will be available when you create applications with TM1 Performance Modeler.
   - **Include Cognos Insight - Connected** - Cognos Insight client using real time processing with the TM1 Server.
   - **Include TM1 Application Web** - Default client. Processing is in real time with the server. This option uses the data grid and charting client infrastructure from TM1 Web and requires that you enter a value for the **TM1 Application Web URL** option.
6. If you selected the **Include TM1 Application Web** option, enter a value for the **TM1 Application Web URL** option.

   This URL points to the `Contributor.jsp` file on the web server that is hosting TM1 Web.

   For example:

   `http://`*`WebServer`*`:9510/tm1web/Contributor.jsp`

   where *WebServer* is the name of the computer where TM1 Web is installed.
7. Click **OK**.
8. If prompted, enter the **username** and **password** for the server and click **Login**.

   Tip: Use **admin** and **apple** for the user name and password if you are using one of the installed sample databases.

   The TM1 Application Web main page displays. This page appears blank until you build and deploy applications inside of TM1 Application Web.

Results

The following message indicates that the TM1 Server that you are using is not properly configured for use with TM1 Application Web:

```
The new server can be added but it may not be configured with all the options
required by IBM Cognos TM1 Applications.
```

For information on how to configure this server, see "Configuring a TM1 Server to work with TM1 Application Web" on page 115.

TM1 Application Server settings in Cognos Configuration
You can configure settings for IBM TM1 Application Server in IBM Cognos Configuration.

In Cognos Configuration, click **Environment** > **TM1 Applications**.

Session timeout (min)
Time after which if there is no activity that the TM1 Server disconnects. Default is 60 minutes.

Force qualified paths
When set to True, a machine name that is provided as the Admin Host resolves to a fully qualified domain name. When set to False, only the machine name is used.

Notifications provider

- DLS (Delivery Service): If a mail server is configured, emails are sent but no notifications display in the Cognos Inbox.
- HTS (Human Task Service): Notifications are sent to the Cognos Inbox, and emails also sent if a mail server is configured.

By default, left blank for no notifications.

Enable Business Viewpoint
True means Business Viewpoint can interact with this installation. False prevents Business Viewpoint from interacting.

Cognos Connection Folder Name
Specifies the name of the Cognos Connection folder in which hyperlinks to deployed TM1 applications are contained. Default is IBM Cognos TM1 Application - My Applications

TM1 Application Server Dispatcher URI
The URI used for the dispatcher servlet, for example `http://localhost:9510/pmpsvc/dispatcher/servlet`

User ID and Password
User ID and Password used to authenticate.

Under TM1 Applications, click **TM1 Clients**.

Provisioning URI
Specifies a URI to use to manually set the msi locations.

Allow provisioned installs
True permits users without the clients installed to provision and install them from TM1 Application Server. False blocks users from provisioning and installing client software.

Allow provisioned updates
True permits updates that are installed on the TM1 Application Server such as a Fix Pack version to be provisioned to clients when users next connect. False prevents updates from being provisioned.

Enable publish from Cognos Insight
True permits a user with Admin rights to publish from Cognos Insight. False disallows the Publish operation for all users.

Cognos Insight ping frequency (seconds)
Determines the frequency with which Cognos Insight verifies connectivity to the TM1 Application Server. Default is 30 seconds.

Configuring a TM1 Server to work with TM1 Application Web

Before you use IBM TM1 Server with IBM TM1 Application Web, edit the TM1 Server configuration file (Tm1s.cfg) to include the required parameters and values.

About this task

The following configuration parameters in the `Tm1s.cfg` file support different subcomponents of TM1 Application Web.

AllowSeparateNandCRules
Supports TM1 Performance Modeler with TM1 Application Web.

See "AllowSeparateNandCRules" on page 323.

ForceReevaluationOfFeedersForFedCellsOnDataChange
Supports TM1 Performance Modeler with TM1 Application Web. When this parameter is set, a feeder statement is forced to be re-evaluated when data changes.

See "ForceReevaluationOfFeedersForFedCellsOnDataChange" on page 336.

Procedure

1. Open the TM1 Server configuration file, `Tm1s.cfg`.
2. To support TM1 Performance Modeler, edit or add the following line:

   `AllowSeparateNandCRules=T`
3. Edit or add the `ForceReevaluationOfFeedersForFedCellsOnDataChange` parameter.
4. Save the `Tm1s.cfg` file.
5. Restart the TM1 Server.
6. Repeat these steps for any other TM1 Servers you want to use with TM1 Application Web.

Determining the URL startup link for TM1 Application Web
The exact link to start and log on to Cognos TM1 Application Web depends on which web server you are running and how it is configured.

You can see the default startup URL for TM1 Application Web in IBM Cognos Configuration.

1. Open Cognos Configuration.
2. Click to expand **Local Configuration** > **Environment** and then select **TM1 Applications**.
3. The URL is listed in the value column for the **TM1 Application Server Gateway URI** field.

   For example: `http://localhost:9510/pmpsvc`

Link Parameters

Use the following format for the URL to log in to TM1 Application Web.

`https://`*`WebServer`*`:`*`PortNumber`*`/pmpsvc`

Table 16. TM1 Application Web - URL parameters

Parameter	Description
WebServer	Can be one of the following: The keyword `localhost` if you are currently logged on to the web server that is running TM1 Application Server. The machine name or domain name of the web server hosting the TM1 Application Server. The IP address of the web server hosting the TM1 Application Server.
PortNumber	The port number you configured with web application server. IBM WebSphere - Click the **Web Server** link in the WebSphere Administrative Console to view and edit port settings.

Link Examples

Table 17. TM1 Application Web - link examples

Web Application Server	Header
WebSphere Liberty Profile provided with the installation	The default link when using the provided version of WebSphere Liberty Profile is: `http://localhost:9510/pmpsvc`
IBM WebSphere Application Server	The usual link for TM1 Application Web running on IBM WebSphere Application Server is: `https://localhost:8443/pmpsvc`

Configuring TM1 Application Web

IBM Planning Analytics Local uses IBM Cognos TM1 Web to support the Cognos TM1 Application Web client. TM1 Application Web enables users to view and edit planning application data in grid format. If you want to allow users to use TM1 Application Web, you need to configure this option.

About this task

When you install TM1 Web, the required files for TM1 Application Web are copied to the TM1 Web installation location.

The main file for TM1 Application Web is:

`Contributor.jsp`

The default install location is:

PA_install_location`\webapps\tm1web`

Configure the TM1 Application Web URL parameter in TM1 Application Web to point to the `Contributor.jsp` file in this location.

Procedure

1. Open the Configuration page in TM1 Application Web:
   - If you are running TM1 Application Web for the first time, use the Configuration page that opens when you start the program.

     For more details, see “Configuring the server and client environment for TM1 Application Web” on page 113.
   - If you are already using TM1 Application Web, you can re-open the Configuration page by clicking the Administer IBM Cognos TM1 Applications button  on the toolbar in TM1 Application Web.
2. In the **TM1 Application Web URL** field, enter the URL location of the `Contributor.jsp` file.

   Use the format:

   `http://`*WebServer:port_number*`/tm1web/Contributor.jsp`

   For example:

   `http://webserver.example.com:9510/tm1web/Contributor.jsp`
3. Click **OK**.

   The Login page for TM1 Application Web is displayed.

TM1 Application Server advanced installation and configuration

You can perform advanced installation and configuration tasks to customize your installation of the IBM TM1 Application Server components.

Install TM1 Application Server with your own installation of WebSphere

You can install IBM TM1 Application Server on a separate computer and deploy it with your own installation of IBM WebSphere.

This installation is intended for an environment where the TM1 Admin Server and TM1 Server are running on another computer.

To deploy the TM1 Application Server to WebSphere, complete these tasks:

1. Build the application files using Cognos Configuration. See "Building application files for a WebSphere server" on page 118.

   A `pmpsvc.war` file is created. The default location is `<PA_install_directory>\ibm\cognos\TM1\`.

   Note: You can use the EAR file format instead of WAR.
2. Deploy the pmsvc.war file to the WebSphere application server.

Building application files for a WebSphere server

You use IBM Cognos Configuration to build application files to deploy to an IBM WebSphere server.

About this task

You can create a web archive (WAR) file or enterprise archive (EAR) file for the following TM1 applications:

- TM1 Planning Services: `pmpsvc.war/ear`
- TM1 Web and TM1 Applications Web `tm1web.war/ear`
- TM1 Operations Console: `pmhub.war/ear` (Deprecated in v2.0.9)

You can then deploy the WAR or EAR files to WebSphere.

Procedure

1. Click **Start** > **All Programs** > **IBM Cognos TM1** > **IBM Cognos Configuration**.
2. Click **Actions** > **Build Application Files**.
3. Under Application, select **TM1 Application Server**.
4. Under Application Server Type, select **IBM WebSphere**. Click **Next**.
5. Select the file type.
6. Specify where to save the application files.

   The default location is `<PA_install_directory>\ibm\cognos\TM1\`. Click **Next**.
7. Wait for the **Build Application Wizard** to complete the process. Click **Finish**.

What to do next

You can deploy the application files to your WebSphere Application Server. See "Deploying TM1 Application Server to a WebSphere Application Server" on page 118.

Deploying TM1 Application Server to a WebSphere Application Server

You can deploy and run IBM TM1 Application Server to an IBM WebSphere Application Server.

Before you begin

- Install IBM WebSphere Application Server.
- Create a profile using the Profile Management Tool.
- Start the WebSphere Application Server using the profile that you created.

In Microsoft Windows, click **Start** > **All Programs** > **IBM WebSphere Application Server** > **Profiles** > **[Profile Name]** > **Start the server**.

A command window opens and displays the start progress. After the start process is complete, the command window displays the message, "Server started." You can minimize this command window, but do not close it. This window must remain open while WebSphere is running.

- Build the application files using Cognos Configuration. See "Building application files for a WebSphere server" on page 118.

For information about installing WebSphere and creating a profile, see the WebSphere documentation.

About this task

These steps are based on IBM WebSphere Application Server 8.5.5. The steps for version 8.5 are similar.

Note: After you start completing steps in the WebSphere application installation wizard, click **Cancel** to exit if you decide not to install the application. Do not move to another administrative console page without first clicking **Cancel** on an application installation page.

Procedure

1. Verify that you have a minimum of 6 GB of free disk space on the computer where WebSphere is installed.

   On UNIX, ensure that the disk mounted to `/tmp` has at least 6 GB available. Use **`df`** to check both the total space and percent used for `tmpfs`.

   Note: Do not deploy TM1 Application Server until you have verified that sufficient disk space is available.
2. Open the WebSphere administrative console.
   - In Windows, click **Start** > **All Programs** > **IBM WebSphere Application Server** > **Profiles** > **[Profile Name]** > **Administrative console**. Or, go to https://localhost:9043/ibm/console/.
   - In UNIX, click **Applications** > **IBM WebSphere** > **IBM WebSphere Application Server** > **Profiles** > **[Profile Name]** > **Admin Console**. Or, go to https://localhost:9043/ibm/console/.
3. Log in using the WebSphere profile that you created.

   The administrative console opens.
4. Set the JVM stack memory size.
   a) Click **Servers** > **Server Types** > **WebSphere application servers**.
   b) Click the server where you are deploying TM1 Application Server.
   c) Under Server Infrastructure, click **Java and Process Management** > **Process Definition**.
   d) Under Additional Properties, click **Java Virtual Machine**.
   e) In the **Generic JVM arguments** field, add `-Xmso512k`.

      DANGER: Do not deploy TM1 Application Server until you have set the stack memory.

      Do not use the `startServer.sh` file to set the stack memory size. WebSphere removes the `-Xmso` setting from the file when the server starts and overrides it with the default value, which is too small.
   f) Click **Apply**, and then click **OK**. Click **Save**.
5. Click **Applications** > **New Application**, and then click **New Enterprise Application**.
6. Click **Browse** to locate and select the `pmpsvc.war` file that you generated using the Build Application File command in Cognos Configuration. Click **Open**.
7. Click **Next**.
8. Click **Fast Path**, and then click **Next**.
9. Click **Step 4: Map context roots for Web modules**.

10. In the Context Root box, enter `/pmpsvc`. Click **Next**.
11. Click **Finish**.

    WebSphere installs the application. This process can take a few minutes to complete.

    When installation is complete, WebSphere displays "Application pmpsvc_war installed successfully."
12. Click **Save**.
13. Click **Applications** > **Application Types** > **WebSphere Enterprise Applications**.
14. Select the check box next to pmpsvc_war, and then click **Start**.

    WebSphere displays "Application pmpsvc_war on server *server_name* and node *node* started successfully. The collection may need to be refreshed to show the current status."

What to do next

See "What if my TM1 Application Server deployment fails with a Java heap space error?" on page 381

Configuring TM1 Application Web to use multiple TM1 Servers

When you start IBM TM1 Application Web for the first time, you can enter only one IBM TM1 Server that you want to work with.

To enter more servers, use the Configuration page in TM1 Application Web.

Important: To use multiple TM1 Servers in Cognos TM1 Application Web, the servers must all use the same security authentication (either TM1 standard authentication or Cognos Analytics security) and include the same administrator user name and password. For more information, see "Security considerations when using Cognos TM1 Applications" on page 234.

After you add multiple TM1 Servers, they are available when you use IBM TM1 Performance Modeler to design your planning applications.

For more details, see the *TM1 Performance Modeler* documentation.

Procedure

1. Log in to Cognos TM1 Application Web.
2. On the toolbar, click the Administer Cognos TM1 Applications button  .

   The **IBM Cognos TM1 Applications Configuration** page opens
3. In the **Server Names** section, click **Add**.

   The **Add Server** dialog box opens.
4. Enter the following values:
   - **Admin Host** - Specify the computer name or IP address of the Admin Host on which the Cognos TM1 Admin Server is running.

     Click the **Refresh** button to update the **Server Name** list with the available servers for the Admin Host you entered.
   - **Server Name** - Select a TM1 Server to use with Cognos TM1 Application Web. For example: Planning Sample.
5. Click **OK**.

   If you receive a warning message about the configuration of the TM1 Server, make a note of the warnings and then click **Close** to continue. For more information, see "Configuring a TM1 Server to work with TM1 Application Web" on page 115.

   The Admin Host and TM1 Server name you entered are added to the **Server Names** section.
6. To add more servers, click **Add** and repeat the steps.
7. When you are finished adding TM1 Servers, click **OK** on the **IBM Cognos TM1 Applications Configuration** page.

Results
The TM1 Servers you added can now be used to design your planning applications.

Disabling the X-Frame-Options header
The X-Frame-Options header is enabled by default to help prevent cross-frame scripting attacks. If necessary, you can disable it.

Procedure

1. Locate the `fpmsvc_config.xml` file in the *Cognos_TM1_install_location*`\webapps\pmpsvc\WEB-INF\configuration` directory.
2. Set the **value** attribute of the **httpHeader** element to empty string.
   For example, `<httpHeader name="XFrames" value=""/>`

Monitoring TM1 Application Server logs

You can monitor the activity and performance of IBM TM1 Application Server by configuring and viewing the TM1 Application Server log file.

The TM1 Application Server uses the log4j framework to control the Planning Services (pmpsvc) logging. The logging settings are dynamic. Any changes that you make to the logging properties file will be detected while the service is running.

Logging properties file

Logging is configured in the following file:

<tm1_installation_location>`\webapps\pmpsvc\WEB-INF\configuration\log4j.properties`

For example, the default installation location on a 64-bit Microsoft Windows system is:

`C:\Program Files\IBM\cognos\tm1_64\webapps\pmpsvc\WEB-INF\configuration\`

Log file output

By default, the service is configured to log only **ERROR** messages into a text file which contains all the log entries for a 24 hour period. The log file and directory are located here:

<tm1_installation_location>`\webapps\pmpsvc\WEB-INF\logs\pmpsvc.log`

Older log files for previous days are named with the format:

`pmpsvc.log.`*YYYY-MM-DD*

Log file message levels

There are four levels of detail which can be logged. Each level contains all log entries for that level and each higher level.

Table 18. Level Description

Level	Description
ERROR	Outputs exceptional events which cause the service not to be able to complete the current operation.
WARNING	Outputs conditions from which the service can continue but should be addressed by an administrator.
INFO	Outputs information for each of the service operations.
DEBUG	Outputs details tracing information for the service operations.

Examples of enabling logging

The logging level of information is controlled by changing the level under the following two roots of the service:

- `log4j.logger.com.ibm.cognos`
- `log4j.logger.com.cognos`

All the components of the service are situated beneath these trees, so changing the logging level for these will log all events at that level.

For example, to change the service to log at the **INFO** level, change these entries to the following:

```
#System logging settings
log4j.rootLogger=ERROR, TextFile
log4j.logger.com.ibm.cognos=INFO
log4j.logger.com.cognos=INFO
```

More specific logging is available by changing the logging level for classes lower than these top levels. For example, it is possible to get **WARNING** logging for everything but to log TurboIntegrator process calls at the **DEBUG** level.

```
#System logging settings
log4j.rootLogger=ERROR, TextFile
log4j.logger.com.ibm.cognos=WARNING
log4j.logger.com.cognos=WARNING
log4j.logger.com.ibm.cognos.pmpsvc.handler.util.PmtaProcessUtil=DEBUG
```

You can enable performance logging in the service by commenting out the standard logging and including the following performance entries in the properties file:

```
# System logging settings
#log4j.rootLogger=ERROR, Console, TextFile
#log4j.logger.com.ibm.cognos=DEBUG
#log4j.logger.com.cognos=DEBUG
#log4j.logger.com.cognos.org=ERROR
#log4j.logger.com.ibm.cognos.perf=ERROR

# Performance logging settings
log4j.rootLogger=ERROR, perfConsole, perfText
log4j.logger.com.ibm.cognos.perf=DEBUG
```

Cognos TM1 Web installation

You can install IBM Cognos TM1 Web on a computer that is separate from the computer where you installed the Cognos TM1 Server and other Cognos TM1 components.

Note: Starting with the 2.0.9.2 LC release of Planning Analytics Local, TM1 Web is no longer part of the web tier within the Planning Analytics Local installer. Instead, TM1 Web is installed with the IBM Planning Analytics Spreadsheet Services installer. The IBM Planning Analytics Spreadsheet Services installer is part of the 2.0.55 SC and later releases.

This documentation describing how to install TM1 Web as part of the web tier within Planning Analytics Local is provided for customers who are installing an LC release prior to 2.0.9.2 and have not yet upgraded to the 2.0.55 SC (or later) release of TM1 Web. If you need details on installing TM1 Web with the IBM Planning Analytics Spreadsheet Services installer, see Chapter 13, " IBM Planning Analytics TM1 Web installation," on page 199.

You can deploy TM1 Web on an IBM WebSphere Application Server. For more information, see "Installing TM1 Web" on page 123.

When you install TM1 Web, TM1 Applications Web is also installed. For more information, see "TM1 Web architecture" on page 60.

Note: Add the <PA_install_directory>\bin64\ directory to the library path environment variable (LD_LIBRARY_PATH). This is required only when you install IBM TM1 Web on a computer that is separate from the computer where you installed TM1 Server .

Check for changes to web.xml file

If you are upgrading IBM Planning Analytics TM1 Web with IBM Planning Analytics Local version 2.0.5, you install a new version of the web.xml file called web.xml.new and your existing web.xml file is preserved.

To take advantage of fixes applied in this release, you must use the web.xml.new file and you must reapply any changes that you made to your previous configuration settings. In particular, restore your values for **session-timeout**.

1. Back up the existing web.xml file in <PA_installation_location>/webapps/tm1web/WEB-INF. For example, rename web.xml to web.xml.old. This step backs up your current settings.
2. Rename web.xml.new to web.xml. This step uses the new version of web.xml that is supplied with IBM Planning Analytics Local version 2.0.5.
3. Replace the entry for **session-timeout** in web.xml with the entry from web.xml.old. This step restores any changes that you made to this property previously.

   For example:

```
<session-config>
    <session-timeout>20</session-timeout>
</session-config>
```

Install Cognos TM1 Web

The following items are an overall checklist for installing Cognos TM1 Web.

1. Check prerequisites. For more information, see "Check for changes to web.xml file" on page 123.
2. Install Cognos TM1 Web.
3. Use the WebSphere administrative console to start the application server.
4. Run and test Cognos TM1 Web from your network environment.
5. Edit the Cognos TM1 Web configuration file to support a multiple computer environment.
6. Configure the TM1 Web login page using AdminHostName and TM1ServerName parameters.
7. Configure authentication and data transmission security.
8. Modify CognosTM1 Web configuration parameters.
9. Configure the web browsers in your environment.

Installing TM1 Web

You can install Cognos TM1 Web on a separate computer and deploy it with the instance of WebSphere® Liberty that is provided with the installation.

The IBM Cognos TM1 installation configures Cognos TM1 Web to run with the provided version of the WebSphere® Liberty web application server.

After you have installed the Cognos TM1 Web on the separate computer, edit the Cognos TM1 Web configuration file to identify the remote computer where the Cognos TM1 Admin Server is running.

Install and configure Cognos TM1 Web on Microsoft Windows

These steps describe how to install IBM Cognos TM1 Web on a separate computer that is running Microsoft Windows. These steps apply when you are using the provided WebSphere Liberty application server.

About this task

This procedure also installs the IBM Cognos Configuration utility. You use Cognos Configuration to start and stop the application server.

When IBM Cognos TM1 Web is installed on a separate computer, edit the configuration file to identify the IBM Cognos TM1 Admin Server and IBM Cognos TM1 servers in your network that you want to use with Cognos TM1 Web.

Procedure

1. Run the installation program that matches the type of computer being used for Cognos TM1 Web:
2. Right-click the `issetup.exe` file and click **Run as Administrator**.
3. Select only the following **TM1 Web Tier** components: **TM1 Web**, **TM1 Application Server**, and **Cognos Access Manager**.

   Deselect all the other components.

   Important:

   Cognos Access Manager must be installed as part of the web tier installation. If Cognos Access Manager is not installed, then Cognos TM1 Web and the PMPSVC web application cannot connect to the Cognos TM1 Admin Server and the Cognos TM1 Server.
4. Follow the prompts in the installation wizard to complete the installation.
5. Start IBM Cognos Configuration.

   Attention: If you installed the product from the Program Files (x86) directory on a computer running Windows 7, start IBM Cognos Configuration as an Administrator.
6. In the Cognos Configuration **Explorer** panel, expand the **Local Configuration** > **Environment** node, right-click **TM1 Application Server** and select **Start**.

   This starts the provided web application server for Cognos TM1 Web.
7. Confirm that Cognos TM1 Web is running by entering the URL for Cognos TM1 Web in a web browser. For example:

   `http://localhost:9510/tm1web/`

   On a remote computer, replace `localhost` with the name or IP address of the computer where Cognos TM1 Web is running.
8. Configure Cognos TM1 Web to connect to remote Cognos TM1 servers in your network.

   If you want Cognos TM1 Web to connect to a specific Cognos TM1 Admin Server or Cognos TM1 server in your network, configure the **`AdminHostName`** and **`TM1ServerName`** parameters in the Cognos TM1 Web configuration file, `tm1web_config.xml`.

   See “Configuring the TM1 Web login page using AdminHostName and TM1ServerName parameters” on page 214.
9. Configure security options for Cognos TM1 Web.

   You can configure authentication security, such as Integrated Login or IBM Cognos Security, and data transmission security, such as TLS, depending on your system and network environment.

   See Chapter 15, “Planning Analytics Local security,” on page 233.
10. Configure additional options in the CognosTM1 Web configuration file.

    See “Modifying TM1 Web configuration parameters” on page 207.
11. Review the steps for web browser configuration.

    You can configure web browser options such as language and regional settings for your users.

    See “Configuring web browsers for Cognos TM1 Web” on page 224.

Install and configure TM1 Web on UNIX

Installing IBM TM1 Web on a UNIX system requires that you import the certificate to the Java keystore on UNIX. These steps apply if you are using the provided WebSphere® Liberty application server.

Before you begin

You must set the *JAVA_HOME* environment variable before you can start IBM Cognos Configuration. Cognos Configuration is used for starting the web application server for TM1 Web.

You must also add the <PA_install_directory>\bin64\ directory to the library path environment variable (LD_LIBRARY_PATH). This setting is required only when you install IBM TM1 Web on a Linux server, separate from where you installed TM1 Server.

About this task

Importing the certificate to the Java keystore on UNIX is required to enable TM1 Web to display the list of the available TM1 Servers.

Procedure

1. Run the installation program:
   a) Go to the location where the installation files were downloaded and extracted, or insert the product disk.
   b) Go to the operating system directory and then type

      ```
      ./issetup
      ```

   c) Advance to the **Component Selection** screen.
   d) Select the following **TM1 Web Tier** components: **TM1 Web** , **TM1 Application Server**, and **Cognos Access Manager**..

      Clear all the other components.

      Important: Cognos Access Manager must be installed as part of the web tier installation. If Cognos Access Manager is not installed, then TM1 Web and the PMPSVC web application cannot connect to the TM1 Admin Server and the TM1 Server.
   e) Follow the prompts in the installation wizard to complete the installation.
2. Import the certificate to the Java keystore on UNIX.
   a) Change directory to the bin64 location that is associated to JAVA_HOME.
   b) Run the following command:

      ```
      keytool -import -file "/bin64/ssl/applixca.pem" -keystore "/usr/
      java8/jre/lib/security/cacerts" -storepass "changeit"
      ```

3. Add the <PA_install_directory>\bin64\ directory to the library path environment variable (LD_LIBRARY_PATH).
4. Start IBM Cognos Configuration:

   Go to the *install_location*/bin64 directory and then type the following command:

   ```
   ./cogconfig.sh
   ```

5. Start the web application server for TM1 Web:

   In the Cognos Configuration **Explorer** panel, expand the **Local Configuration** > **Environment** > **IBM Cognos TM1** node, right-click **IBM Cognos TM1** and select **Start**.
6. Confirm that TM1 Web is running by entering the URL for TM1 Web in a web browser on a remote computer. For example:

   http://*<unix_web_server>*:9510/tm1web/

   Replace *<unix_web_server>* with the name or IP address of the computer where TM1 Web is running.

What to do next

Depending on your system and network environment, perform the following additional configuration steps:

- Configure TM1 Web to connect to a specific TM1 Admin Server or TM1 Server in your network.

  See "Configuring the TM1 Web login page using AdminHostName and TM1ServerName parameters" on page 214.
- Configure security options for TM1 Web.

  See Chapter 15, "Planning Analytics Local security," on page 233.
- Configure additional options in the TM1 Web configuration file.

  See "Modifying TM1 Web configuration parameters" on page 207.
- Review the steps for web browser configuration.

  See "Configuring web browsers for Cognos TM1 Web" on page 224.

Post-installation configuration

After installing TM1 Web, you can modify configuration parameters to customize TM1 Web for your specific requirements. You can also configure web browsers to optimize the use and display of TM1 Web.

For details, see:

- "Modifying TM1 Web configuration parameters" on page 207
- "Configuring web browsers for Cognos TM1 Web" on page 224

Cognos TM1 Operations Console installation

Deprecated in v2.0.9 The IBM Planning Analytics installation program installs the IBM Cognos TM1 Operations Console with the provided web application server. You can also install TM1 Operations Console with your own web application server. The TM1 Operations Console is a Java-based, optional component used to monitor the activity of Cognos TM1 servers.

Installing Cognos TM1 Operations Console using the provided WebSphere® Liberty webserver software

Deprecated in v2.0.9 The IBM Cognos TM1 Operations Console is a Java-based tool that is used to monitor the activity of TM1 Servers. The Cognos TM1 Operations Console is installed by default when you install Planning Analytics Local and uses the provided WebSphere® Liberty web server software.

Before you begin

- Ensure that the Planning Analytics Local prerequisite software is installed.
- Ensure that the TM1 Admin Server, the TM1 Application Server, the TM1 Server that you want to monitor, and the TM1 databases are installed and running.
- Ensure that you can start Cognos TM1 Architect and can log in as an administrator to the TM1 Server that you want to monitor.
- All services must be running under a single domain account. The IBM Planning Analytics Local installation wizard sets the parameters of the domain account for you, but you must create the account under which the services run before you run the installation. If services are running under different accounts, they will not be able to communicate with each other.

Before you upgrade Cognos TM1 Operations Console:

- After upgrading to Planning Analytics Local version 2.0.2, you might find that servers that were previously configured for monitoring are no longer visible in Operations Console. Similarly, Watchdog rules might not work as expected after upgrade.

  Both of these issues occur when there are spaces in a user name, either the user name used to log in to Operations Console or a user name referenced in a Watchdog rule. To resolve this issue:

1. Stop the IBM Cognos TM1 service.
2. Open the TM1OpsConsoleWatchDog.xml file.
3. Change any user names that include spaces to use a plus sign (+) in place of spaces. For example, change "joe doe" to "joe+doe".
4. Save the TM1OpsConsoleWatchDog.xml file.
5. Restart the IBM Cognos TM1 service.

For more information, see Issues when upgrading to Planning Analytics version 2.0.2 TM1 Operations Console (http://www-01.ibm.com/support/docview.wss?uid=swg27049952).

Procedure

1. On Microsoft Windows, right-click the `issetup.exe` command and click **Run as Administrator**. For other operating systems, double-click the `issetup.exe` file on the Planning Analytics Local installation disk or from the location where the TM1 installation files were downloaded and extracted.
2. Ensure the **TM1 Data Tier** and the **TM1 Web Tier** are selected.

   Remember: Install IBM TM1 components in a directory that contains only ASCII characters in the path name. Some Windows web servers do not support non-ASCII characters in directory names.

Using Cognos Configuration to deploy Cognos TM1 Operations Console

Deprecated in v2.0.9 Start the TM1 Applications Server in Cognos Configuration to deploy the WebSphere® Liberty server needed to run the TM1 Operations Console.

Before you begin

If you installed the product from the Program Files (x86) directory on a computer running Microsoft Windows 7 operating system software, start IBM Cognos Configuration as an Administrator.

Procedure

1. Click **Start** > **All Programs** > **IBM Cognos TM1** > **IBM Cognos Configuration**.
2. Right-click **TM1 Application Server** and click **Start**.

   This step starts the version of WebSphere® Liberty provided with TM1, and automatically deploys the Cognos TM1 Operations Console.
3. Save the configuration data by clicking **File** > **Save**.
4. Close Cognos Configuration by clicking **File** > **Exit**.

Advanced Cognos TM1 Operations Console installation

Deprecated in v2.0.9 The following topics provide additional information about other ways to install Cognos TM1 Operations Console.

Installing Cognos TM1 Operations Console on a separate machine

Deprecated in v2.0.9You can install only the Cognos TM1 Operations Console on a machine that is separate from the servers being monitored.

Procedure

1. Install Cognos TM1 following the usual process, but select only the TM1 Operations Console from the Web Components list.

   By default this also installs the Cognos TM1 Applications Server and other services.
2. After installation, on the separate machine stop the TM1 Application Service.
3. Delete the *installation_location*/webapps/pmpsvc directory and the *installation_location*/webapps/p2pd directories.
4. Restart the TM1 Application Service.

Installing Cognos TM1 Operations Console to IBM WebSphere

Deprecated in v2.0.9You can deploy Cognos TM1 Operations Console to IBM WebSphere Application Server.

When you deploy Cognos TM1 Operations Console, Performance Management Hub is also deployed.

This installation is intended for an environment where the TM1 Admin Server and TM1 servers are running on another computer.

To deploy Operations Console to WebSphere, complete these tasks:

- Build the application files using Cognos Configuration. See "Building application files for a WebSphere server" on page 118. A pmhub.war file is created in the same location as the tm1web.war and pmpsvc.war files. The default location is `<your installation location>\ibm\cognos\TM1\pmhub.war`.

  Note: You can use the EAR file format instead of WAR.
- Deploy the pmhub.war file to the WebSphere application server
- Retrieve certificates from the TM1 Admin Server and TM1 servers
- Configure outgoing communications from WebSphere to the TM1 Admin Server

Deploying Cognos TM1 Operations Console to use an IBM WebSphere Application Server

Deprecated in v2.0.9 Use the IBM WebSphere administrative console to deploy and run TM1 Operations Console on a WebSphere Application Server.

Before you begin

- Install IBM WebSphere Application Server.
- Create a profile using the Profile Management Tool.
- Start the WebSphere Application Server using the profile that you created.

  In Microsoft Windows, click **Start** > **All Programs** > **IBM WebSphere Application Server** > **Profiles** > **[Profile Name]** > **Start the server**.

  A command window opens and displays the start up progress. After the start up process is complete, the command window displays the message, "Server started." You can minimize this command window, but do not close it. This window must remain open while WebSphere is running.
- Build the application files using Cognos Configuration. See "Building application files for a WebSphere server" on page 118. Operations Console and Performance Management Hub are contained in the `pmhub.war` file.

For information about installing WebSphere and creating a profile, see the WebSphere documentation.

About this task

These steps are based on IBM WebSphere Application Server 8.5.5. The steps for version 8.5 are similar.

Note: After you start completing steps in the WebSphere application installation wizard, click **Cancel** to exit if you decide not to install the application. Do not simply move to another administrative console page without first clicking **Cancel** on an application installation page.

Procedure

1. Open the WebSphere administrative console.
   - In Windows, click **Start** > **All Programs** > **IBM WebSphere Application Server** > **Profiles** > **[Profile Name]** > **Administrative console**. Or, go to https://localhost:9043/ibm/console/.
   - In UNIX, click **Applications** > **IBM WebSphere** > **IBM WebSphere Application Server** > **Profiles** > **[Profile Name]** > **Admin Console**. Or, go to https://localhost:9043/ibm/console/.
2. Log in using the WebSphere profile that you created.

   The administrative console opens.

3. Set the JVM stack memory size.
   a) Click **Servers** > **Server Types** > **WebSphere application servers**.
   b) Click the server where you are deploying Operations Console.
   c) Under Server Infrastructure, click **Java and Process Management** > **Process Definition**.
   d) Under Additional Properties, click **Java Virtual Machine**.
   e) In the **Generic JVM arguments** field, add `-Xmso512k`.

      Note: Do not deploy Operations Console until you have set the stack memory. If you do so, Operations Console will be deployed but the WebSphere Application Server will not start.

      Do not use the `startServer.sh` file to set the stack memory size. WebSphere removes the `-Xmso` setting from the file when the server starts and overrides it with the default value, which is too small.
   f) Click **Apply**, and then click **OK**. Click **Save**.
4. Click **Applications** > **New Application**, and then click **New Enterprise Application**.
5. Click **Browse** to locate and select the `pmhub.war` file that you generated using the Build Application File command in Cognos Configuration. Click **Open**.
6. Click **Next**.
7. Click **Fast Path**, and then click **Next**.
8. Click **Step 4: Map context roots for Web modules**.
9. In the Context Root box, enter `/pmhub`. Click **Next**.
10. Click **Finish**.

    WebSphere installs the application. This process can take a few minutes to complete.

    When installation is complete, WebSphere displays "Application pmhub_war installed successfully."
11. Click **Save**.
12. Click **Applications** > **Application Types** > **WebSphere Enterprise Applications**.
13. Select the check box next to pmhub_war, and then click **Start**.

    WebSphere displays "Application pmhub_war on server *server_name* and node *node* started successfully. The collection may need to be refreshed to show the current status."

What to do next

The next step is to retrieve SSL certificates from the TM1 Admin Server and TM1 servers.

Retrieving SSL certificates from the TM1 Admin Server and TM1 servers

Deprecated in v2.0.9 After you have deployed the applications file, `pmhub.war`, to the IBM WebSphere Application Server, the next step is to retrieve SSL certificates from the TM1 Admin Server and TM1 servers.

Procedure

1. In the IBM WebSphere administrative console, expand **Security** and then click **SSL certificate and key management**.
2. Under Related Items, click **Key stores and certificates**.
3. Click the **NodeDefaultTrustStore** keystore.
4. Under Additional Properties, click **Signer certificates**.
5. Click **Retrieve from port**. Enter the following information:
   - In the **Host** field, enter the host name of the TM1 Admin Server.
   - In the **Port** field, enter 5498, the port number of the TM1 Admin Server.
   - In the **Alias** field, enter `TM1AdminServer_cert`.

6. Click **Retrieve signer information**. WebSphere retrieves the SSL certificate from the TM1 Admin Server.
7. Verify that the certificate information is for a certificate that you can trust.
8. Click **Apply**, and then click **Save**.
9. Repeat these steps for the TM1 servers you want to monitor with Operations Console. For example:
   - In the **Host** field, enter the host name of the TM1 server.
   - In the **Port** field, enter the port number of the TM1 server.
   - In the **Alias** field, enter `TM1ServerName_cert`.

   Tip: The port number of a TM1 server is configured in the `tm1s.cfg` file in the **`PortNumber`** parameter
10. Save your changes.

What to do next
The next step is to configure outgoing communications between WebSphere and the TM1 Admin Server.

Configuring outgoing communications to the TM1 Admin Server

Deprecated in v2.0.9 After you have deployed the applications file, `pmhub.war`, to the IBM WebSphere Application Server and retrieved SSL certificates, the next step is to set up outgoing communications from WebSphere to the TM1 Admin Server.

Procedure

1. In the WebSphere administrative console, expand Security and click **SSL certificate and key management**.
2. Under Configuration settings, click **Manage endpoint security configurations**.
3. Expand **Outbound** > **[node]Node01Cell** > **nodes**.
4. Click [**[node]Node01Cell**, where *node* is the name of the server where you are deploying Operations Console.
5. Under Related Items, click **Dynamic outbound endpoint SSL configurations**.
6. Click the **NodeDefaultTrustStore** keystore.
7. Click **New**.
8. In the **Name** field, enter `tm1admin`.
9. In the **Description** field, enter `ssl connection`.
10. Under Connection Information, enter `*,*,5498`, and then click **Add**.

    Note: The value 5498 is the SSL port number of the TM1 Admin Server as specified in Cognos Configuration.
11. Click **Apply**, and then click **OK**.
12. Save your changes.
13. Restart the WebSphere Application Server.
14. In a web browser, enter the URL to run Operations Console, `http://localhost:`*`port`*`/pmhub/pm/opsconsole/.`

    Replace *port* with the port number of the virtual host where you deployed `pmhub.war`.

    For example: `http://localhost:9080/pmhub/pm/opsconsole/`.

    The Operations Console login page is displayed.

Configuring the Cognos TM1 Operations Console

Deprecated in v2.0.9 By default the Cognos TM1 Operations Console is configured to use a sample adminhost of localhost, server of sdata, and a group called admin for authentication so you can get up and running quickly. If you prefer, you can edit these configurations to customize the authentication server.

Procedure

1. Enter `http://servername:port number/pmhub/pm/admin` to open the configuration screen.
2. To change the default adminhost, server, and group for monitoring, expand **Configurations** > **Operations Console TM1 Monitors** . Click in each setting to change it.

   If you want to use Microsoft Internet Explorer 8 with the Cognos TM1 Operations Console see the Microsoft Internet Explorer documentation and ensure these settings:

   - Enable the option to refresh web pages with every visit
   - Disable the options for script debugging

Starting and logging into the Cognos TM1 Operations Console

Deprecated in v2.0.9 To open the IBM Cognos TM1 Operations Console, enter the URL that identifies the port and server name for the component.

Procedure

1. In a web browser, type the following web address: `http://servername:port_number/pmhub/pm/opsconsole`

   where

   - *servername* is the computer where the Cognos TM1 Operations Console and your web application server are installed. You can use the keyword `localhost` if you are currently logged on to the Web server that is running Cognos TM1 Application Web. Or you can use the machine name, domain name, or IP address of the Web server hosting the application.
   - *port_number* is the port number where your web application server is running. For the version of WebSphere® Liberty that is provided with the Cognos TM1 installation, the default port number is 9510.
2. On the log in page, enter values for the following fields, and then click **Log In**.

   To use the default monitoring group, enter

   - **Namespace**: Use the pull-down to select the available Namespace. If the system is a CAM-secured system, the namespace is the Cognos Analytics namespace that the TM1 system is secured against. If the system isn't CAM secured the namespace is *adminhost*/*tm1 server* for example **localhost/SData**
   - **User Name**: `admin`
   - **Password**: `apple`

   See Setting up the Cognos TM1 Operations Console to get started.

Chapter 9. Installing the Rich Tier

You can install Rich Tier components using the IBM Planning Analytics Local installation program or the TM1 client installation program.

You can install the following Rich Tier components:

- TM1 Architect
- Performance Modeler
- TM1 Perspectives
- Cognos Insight
- Cognos TM1 APIs

For information about using the TM1 APIs to enable Cognos Analytics reporting against Cognos TM1 data sources, see “TM1 as a datasource with Cognos Analytics” on page 228.

Installing Cognos TM1 Architect

You can install IBM Cognos TM1 Architect by performing the following steps.

Before you begin

Before you install Cognos TM1 Architect, complete the following tasks:

- Install the software that is necessary for you to run Cognos TM1 Architect. For more information, see “Install the prerequisite software” on page 73.
- Ensure that the Cognos TM1 Admin Server and the Cognos TM1 Server that you want to connect to are running on an accessible computer in your network. For details, see “TM1 Server installation” on page 81.
- Ensure that users have access to the Cognos TM1 servers that they need to use running under that Cognos TM1 Admin Server. As a Cognos TM1 administrator, you must set up a user name and password for each user before a user can access that server.

About this task

You can configure IBM Cognos TM1 Architect to locate a Cognos TM1 Administration Server on your network, and then connect to a server. You can also create an unattended installation.

Attention: If you are upgrading and leave your old `Tm1p.ini` client configuration files in place, you might need to update the directory path in the file for the **`AdminSvrSSLCertAuthority`** parameter. For example, if you are using the default Cognos TM1 SSL certificate, manually change the value for this parameter to the new install path `C:\Program Files\IBM\cognos\tm1\bin64\ssl\applixca.pem`.

Procedure

1. Install Cognos TM1 Architect:
   a) Right-click the `issetup.exe` file and click **Run as Administrator**.
   b) On the **Component Selection** page, expand **TM1 Rich Tier**, and select the **TM1 Architect** check box.
      Leave all the other check boxes unselected.
   c) Follow the prompts and click **Finish** to complete the installation.
2. Run Cognos TM1 Architect:
   a) Click **Start** > **IBM Cognos TM1** > **Architect**.

If the component does not start, ensure that the servers you started with Cognos Configuration are still running.

3. Configure Cognos TM1 Architect to locate a Cognos TM1 Admin Server:
   a) Open Server Explorer.
   b) Select **TM1**.
   c) Click **File** > **TM1 Options**.
   d) In the **Admin Host** field, specify the name of the computer on which the TM1 Admin Server is running. You must enter a name, not an IP address, in the Admin Host field.

      Tip: If you want to access servers registered on different Admin Servers, use a semicolon to separate the name of each Admin Host.
   e) Click **OK**.
   f) When prompted about disconnecting from currently accessed servers, click **Yes** if you want to access a new list of servers. Servers available through Admin Server on the specified Admin Host appear. If you want to continue to see the current list of remote servers during this session, click **No**.
4. Double-click a Cognos TM1 Server to log in.

   For either Planning Sample or SData, use these login credentials:

   - **User name:** `admin`
   - **Password:** `apple`
5. If you want to install Cognos TM1 Architect on multiple computers, use the previous steps to create an unattended installation. For details, see "Setting up unattended installations and configurations" on page 301.

Installing Cognos TM1 Performance Modeler

You can choose different ways to distribute and install IBM Cognos TM1 Performance Modeler across multiple computers.

The following table summarizes the different ways to distribute and install Cognos TM1 Performance Modeler across multiple computers.

Table 19. Multiple computer installation options for Cognos TM1 Performance Modeler

Installation option	Description
"Installing Cognos TM1 Performance Modeler using the installation program" on page 135	Administrators or end users can install Cognos TM1 Performance Modeler on a single computer using the IBM Cognos TM1 Client-only installation program. Optionally, use these steps to create an unattended installation to install Cognos TM1 Performance Modeler on multiple computers.
"Installing Cognos TM1 Performance Modeler from the Cognos TM1 Applications portal" on page 135	As a prerequisite, an administrator must install Planning Analytics Applications. This allows Planning Analytics users to install Cognos TM1 Performance Modeler onto their computers the first time that they launch it from the IBM Cognos Applications Portal. This is called a provisioned installation. For more information about publishing workspaces, see *IBM Cognos TM1 Performance Modeler*.

Table 19. Multiple computer installation options for Cognos TM1 Performance Modeler (continued)	
Installation option	**Description**
"Remotely installing Cognos TM1 Performance Modeler on multiple computers" on page 136	An administrator can use third-party network installation tools to push Cognos TM1 Performance Modeler out to multiple remote client systems.

Installing Cognos TM1 Performance Modeler using the installation program

You can interactively install a stand-alone version of IBM Cognos TM1 Performance Modeler on one or more computers.

Procedure

1. Right-click the `issetup.exe` file and click **Run as Administrator** to run the IBM Planning Analytics installation program.
2. On the **Component Selection** page, expand **TM1 Rich Tier**, and select the **Performance Modeler** check box.

   Leave all the other check boxes unselected.
3. Follow the prompts and click **Finish** to complete the installation.
4. To test the installation, open Cognos TM1 Performance Modeler from the toolbar of the Cognos TM1 Applications portal page.
   a) In a web browser, type the Cognos TM1 Applications URI:

      For example, `http://localhost:9510/pmpsvc`

      - Replace *localhost* with the name of the computer where the Cognos TM1 Application Server is installed.
      - If required, change the port number if you used a different value in IBM Cognos Configuration for the **TM1 Application Server Gateway URI** property.

   b) From the Cognos TM1 Applications portal, click the **Open Performance Modeler** icon.
5. If you want to install the program on multiple computers, use the previous steps to create an unattended installation. For details, see "Setting up unattended installations and configurations" on page 301.

Installing Cognos TM1 Performance Modeler from the Cognos TM1 Applications portal

You can install IBM Cognos TM1 Performance Modeler the first time you run the component from the IBM Cognos TM1 Applications portal.

Before you begin

Before you install Cognos TM1 Performance Modeler from the Cognos TM1 Applications portal, the administrator must install Cognos TM1 Applications.

Procedure

1. In a web browser, type the Cognos TM1 Applications portal URI:

   For example, `http://localhost:9510/pmpsvc`

   a) Replace *localhost* with the name of the computer where the Cognos TM1 Application Server is installed.

   b) If required, change the port number if you used a different value in IBM Cognos Configuration for the **TM1 Application Server Gateway URI** property.
2. From the Cognos TM1 Applications portal, click the **Open Performance Modeler** icon.

If this is the first time you have used Cognos TM1 Performance Modeler, the **Install Now** icon displays to indicate that you are about to install the Cognos TM1 Performance Modeler client to your computer.

3. Click **Install Now**.
4. Click **Finish** to complete the installation.

What to do next

For information on using IBM Cognos TM1 Performance Modeler, see the *TM1 Performance Modeler* documentation.

Remotely installing Cognos TM1 Performance Modeler on multiple computers

As an administrator, you can push the IBM Cognos TM1 Performance Modeler installation to users automatically. First, you make the Cognos TM1 Performance Modeler installer file available in a shared folder on your network. You can then use an application such as Microsoft Active Directory to automatically install the client application to authenticated users.

About this task

Cognos TM1 Performance Modeler is installed using an installer file that you put in a shared location. You can use Active Directory to install Cognos TM1 Performance Modeler directly to users' computers.

Use the `PerformanceModeler.msi` file to install Cognos TM1 Performance Modeler. This file is installed to the following location when you install the Cognos TM1 Application Gateway component:

`tm1 location``\webapps\pmpsvc\rcp_installs`

You can use the `PerformanceModeler.msi` file with Windows Installer command line options and also use Active Directory or other software management tools to push the install out to remote computers.

The `PerformanceModeler.msi` file is a standard Microsoft Windows Installer file. You can use the `PerformanceModeler.msi` file with Windows Installer command line options and also use Active Directory or other software management tools to push the install out to remote computers.

The following table lists some of the property values that administrators can use to install the `PerformanceModeler.msi` file. For complete details, see the Microsoft developer web site for documentation about the "Windows Installer Guide" and "Windows Installer Property Reference".

Table 20. Property values for Cognos TM1 Performance Modeler

Property	Property Value	Description
`ALLUSERS`	1	Installs Cognos TM1 Performance Modeler for all users. This property value ensures that the registry entries for Cognos TM1 Performance Modeler are located in HKEY_LOCAL_MACHINE. **Note:** You must use this property with the TARGETDIR property.
`ALLUSERS`	"" (default value)	Installs Cognos TM1 Performance Modeler only for the user who is running the installation. Only that user will have access to the application.
`TARGETDIR`	"*Performance Modeler_install location*"	Specifies the installation location for Cognos TM1 Performance Modeler. For example, `TARGETDIR="C:\Program Files"`

Table 20. Property values for Cognos TM1 Performance Modeler (continued)		
Property	**Property Value**	**Description**
TARGETDIR	"" (default value)	Sets the installation location for Cognos TM1 Performance Modeler when TARGETDIR is not specified and ALLUSERS is specified as follows: When used with ALLUSERS="": On Windows 7, the installation location is C:\Users*username*\AppData\Roaming\IBM\Cognos TM1 Performance Modeler When used with ALLUSERS=1: On Windows 7, the installation location is C:\Program Data\IBM\Cognos TM1 Performance Modeler
NOUPDATE	Yes	Prevents Cognos TM1 Performance Modeler users from receiving automatic updates. This value is recommended when end users do not have write access to the application installation location. Auto-updating requires that Cognos TM1 Performance Modeler users can write to the location specified, or defaulted to, by the TARGETDIR property.
NOUPDATE	No (default value)	Allows Cognos TM1 Performance Modeler users to receive automatic updates.

An example is shown in the following steps.

Procedure

1. Open a command prompt, and navigate to the location of the PerformanceModeler.msi file.
2. To install Cognos TM1 Performance Modeler for all users, type the following command

```
PerformanceModeler.msi TARGETDIR="install_location" ALLUSERS=1
```

Configuring logging for Cognos TM1 Performance Modeler

You can enable logging for IBM Cognos TM1 Performance Modeler using the same logging framework as other components in IBM Cognos TM1.

Procedure

1. Locate the provagent_NOT.ini and rename the file to provagent.ini.

   This file is located here:

   C:\Users\<*user_name*>\AppData\Roaming\IBM\Cognos Performance Modeler
2. Edit the provagent.ini to uncomment the following line.

   Change #app-debug=true to app-debug=true.
3. In this same directory location, open and edit the defaultLog.properties file to configure logging.

   Note: By default, logging is configured to log ERROR level messages for day-to-day purposes and typically does not need to be adjusted. This can be changed to WARNING, INFO, or DEBUG level messages to get varying levels of logging information. Work with IBM Customer Support to change the logging configuration to record more specific messages.

Results

Log files are typically written out to the following location:

%appdata%/IBM/*application_name*/logs

Installing Cognos TM1 Perspectives

You can install IBM Cognos TM1 Perspectives, which is an add-in for Microsoft Excel.

Before you begin

Before you install IBM Cognos TM1 Perspectives, complete the following tasks:

1. Install the software that is necessary for you to run Cognos TM1 Perspectives. For more information, see "Install the prerequisite software" on page 73.
2. Ensure that the Cognos TM1 Admin Server and the Cognos TM1 Server that you want to connect to are running on an accessible computer in your network. For details, see "TM1 Server installation" on page 81.
3. Ensure that users have access to the Cognos TM1 servers that they need to use running under that Cognos TM1 Admin Server. As a Cognos TM1 administrator, you must set up a user name and password for each user before a user can access that server.

About this task

The following steps install Cognos TM1 Perspectives on a single computer, configure it to locate a Cognos TM1 Administration Server on your network, and then connect to a server. You can also create an unattended installation.

Attention: If you are upgrading and leave your old `Tm1p.ini` client configuration files in place, you might need to update the directory path in the file for the **`AdminSvrSSLCertAuthority`** parameter. For example, if you are using the default Cognos TM1 SSL certificate, manually change the value for this parameter to the new install path `C:\Program Files\IBM\cognos\tm1_64\bin64\ssl\applixca.pem`.

Procedure

1. Install Cognos TM1 Perspectives:
   a) Right-click the `issetup.exe` file and click **Run as Administrator**.
   b) On the **Component Selection** page, expand **TM1 Rich Tier**, and select the **TM1 Perspectives** check box.

      Leave all the other check boxes unselected.
   c) Follow the prompts and click **Finish** to complete the installation.
2. Run Cognos TM1 Perspectives:
   a) Click **Start** > **IBM Cognos TM1** > **Perspectives for MS Excel**.

      If the component does not start, ensure that the servers you started with Cognos Configuration are still running.
   b) Click **Enable Macros** when the security warning displays.
3. Configure Cognos TM1 Perspectives to locate a Cognos TM1 Admin Server:
   a) In Microsoft Excel, click **TM1** > **Options**.

      The **TM1 Options** dialog box opens.
   b) In the **Admin Host** field, specify the name of the computer on which the Cognos TM1 Admin Server is running. If you want to access servers registered on different Admin Servers, use a semicolon to separate the name of each Admin Host. You must enter a name, not an IP address, in the Admin Host field.
   c) Click **OK**.

d) When prompted about disconnecting from currently accessed servers, click **Yes** if you want to access a new list of servers. Servers available through Admin Server on the specified Admin Host appear. If you want to continue to see the current list of remote servers during this session, click **No**.

4. Launch Server Explorer.
5. Double-click a Cognos TM1 Server to log in.

   For either Planning Sample or SData, use these login credentials:

   - **User name:** `admin`
   - **Password:** `apple`

   Tip: To load Cognos TM1 Perspectives automatically whenever you start Microsoft Excel, add *TM1_location*`/Tm1p.xla` to Microsoft Excel's add-in tool list. The default location is `C:\Program Files\IBM\cognos\tm1_64\bin64\`. After completing this step, "TM1" displays on the Microsoft Excel menu bar.
6. If you want to install Cognos TM1 Perspectives on multiple computers, use the previous steps to create an unattended installation that can. For details, see "Setting up unattended installations and configurations" on page 301.

Installing Cognos Insight

You can choose different ways to distribute and install IBM Cognos Insight across multiple computers.

Depending on your computer network environment and business needs, you can install the application, allow users to install as needed, or remotely push the application out.

The following table summarizes the different ways to distribute and install IBM Cognos Insight across multiple computers.

Table 21. Multiple computer installation options for Cognos Insight

Installation option	Description
"Installing Cognos Insight using the installation program" on page 139	Administrators or end users can install Cognos Insight on a single computer using the IBM Cognos TM1 Client-only installation program. Optionally, use these steps to create an unattended installation to install Cognos Insight on multiple computers.
"Installing Cognos Insight from the Cognos TM1 Applications portal" on page 140	As a prerequisite, an administrator must install Cognos TM1 Applications. This allows Cognos TM1 users to install Cognos Insight onto their computers the first time that they launch it from the IBM Cognos TM1 Applications portal. This is called a provisioned installation.
"Remotely installing Cognos Insight on multiple computers" on page 140	An administrator can use third-party network installation tools to push Cognos Insight out to multiple remote client systems.

Installing Cognos Insight using the installation program

You can interactively install a stand-alone version of IBM Cognos Insight on one or more computers.

Procedure

1. On Microsoft Windows, right-click the `issetup.exe` file and click **Run as Administrator**.
2. On the **Component Selection** page, expand **TM1 Rich Tier** and select the **Cognos Insight** check box.

Leave all the other check boxes unselected.

3. Follow the prompts and click **Finish** to complete the installation.
4. To test the installation, open Cognos Insight from **Start** > **Programs** > **IBM Cognos Insight** > **IBM Cognos Insight**.
5. To install the program on multiple computers, use the previous steps to create an unattended installation. For details, see "Setting up unattended installations and configurations" on page 301.

Installing Cognos Insight from the Cognos TM1 Applications portal

You can install IBM Cognos Insight the first time you run the component from the toolbar of the IBM Cognos TM1 Applications portal.

Before you begin

Before you install Cognos Insight from Cognos TM1 Applications, the administrator must install Cognos TM1 Applications.

Procedure

1. In a web browser, type the Cognos TM1 Applications portal URI:

   For example, `http://localhost:9510/pmpsvc`

   a) Replace *localhost* with the name of the computer where the Cognos TM1 Applications Portal is installed.

   b) If required, change the port number if you used a different value in IBM Cognos Configuration for the **TM1 Application Gateway URI** property.

2. From the Cognos TM1 Applications portal, click the **Open IBM Cognos Insight** icon  .

   If this is the first time you have used Cognos Insight, the **Install Now** icon displays to indicate that you are about to install the Cognos Insight client to your computer.
3. Click **Install Now**.
4. Click **Finish** to complete the installation.

What to do next

Cognos Insight is now installed in a folder on your computer. You will be able to run and use Cognos Insight in the following ways:

- You can launch Cognos Insight using the **Open Cognos Insight** icon  in Cognos TM1 Applications.
- You can launch the Cognos Insight client by right-clicking a node of an application that has been configured to use Cognos Insight.

  Cognos Insight is available as a client from an application only if you configured the client environment for Cognos TM1 Applications to use the Cognos Insight Connected client. For more information, see "Configuring the server and client environment for TM1 Application Web" on page 113.
- You can launch Cognos Insight as a stand-alone product from the Windows **Start** > **Programs** > **IBM Cognos Insight** menu.

Remotely installing Cognos Insight on multiple computers

As an administrator, you can push the IBM Cognos Insight installation to users automatically. First, you make the Cognos Insight installer file available in a shared folder on your network. Then, you can use an

application such as Microsoft Active Directory to directly install the client application to authenticated users.

About this task

Cognos Insight is installed by using the `CognosInsight.msi` file that you put in a shared location. This file is installed to the following location when you install the IBM Cognos TM1 Application Gateway component:

tm1 location\webapps\pmpsvc\rcp_installs

The `CognosInsight.msi` file is a standard Microsoft Windows Installer file. You can use the `CognosInsight.msi` file with Windows Installer command line options and also use Active Directory or other software management tools to push the install out to remote computers.

The format for the command is the Cognos Insight MSI file name followed by the property values. For example, you could enter `CognosInsight.msi TARGETDIR="C:\Program Files" USERDATADIR=%%USERNAME%%`.

You can use the following property values alone or in combination with each other.

Table 22. Property values for Cognos Insight

Property	Property Value	Description
ALLUSERS	1	Installs Cognos Insight for all users. Setting this property value sets the default installation location to `C:\Program Files`.
ALLUSERS	"" (default value)	Installs Cognos Insight only for the user who is running the installation. Only that user will have access to the application. Setting `ALLUSERS=""` or omitting the ALLUSERS property installs Cognos Insight in the user's context, and sets the TARGETDIR property to `C:\Users\`*username*`\AppData\Local\Programs\IBM\Cognos Insight`.
TARGETDIR	"*Cognos_Insight_install_location*"	Specifies the installation location for Cognos Insight. For example, `TARGETDIR="C:\Program Files"`
TARGETDIR	(default value)	Sets the installation location for Cognos Insight when TARGETDIR is not specified and ALLUSERS is specified as follows: When used with ALLUSERS="": On a Microsoft Windows 7 operating system, the installation location is `C:\Users\`*username*`\AppData\Local\Programs` When used with ALLUSERS="1": On a 64-bit Microsoft Windows operating system, the installation location is `C:\Program Files (x86)`

Table 22. Property values for Cognos Insight (continued)		
Property	**Property Value**	**Description**
NOUPDATE	Yes	Prevents Cognos Insight users from receiving automatic updates. This value is recommended when users do not have write access to the application installation location. Automatic updates require that Cognos Insight users can write to the installation location specified by the TARGETDIR property.
NOUPDATE	No (default value)	Allows Cognos Insight users to receive automatic updates.
USERDATADIR	"*location*"	Specifies the location for the .CognosInsight folder. The .CognosInsight folder contains Cognos Insight themes, IBM Cognos TM1 data that is copied to your computer when you work from a Cognos TM1 server, and the thumbnail graphics of recent workspaces that appear on the Getting Started page of Cognos Insight.
USERDATADIR	"" (default value)	When USERDATADIR is not specified, the .CognosInsight folder is located in C:\Users*username*\.CognosInsight. When ALLUSERS=1, and you want to specify the USERDATADIR, the USERDATADIR property should include an environment variable that will resolve differently for each user. For example, the command CognosInsight.msi ALLUSERS=1 USERDATADIR=^%USERPROFILE^% specifies that Cognos Insight be installed at C:\Program Files and that the .CognosInsight folder be installed in each user's user profile folder.

For complete details, see the Microsoft developer website for documentation about the Microsoft Windows Installer Guide and Microsoft Windows Installer Property Reference.

An example is shown in the following steps.

Procedure

1. Open a command prompt, and navigate to the location of the CognosInsight.msi file.
2. To install Cognos Insight for all users, type the following command

```
CognosInsight.msi TARGETDIR="install_location" ALLUSERS=1
```

Configuring Cognos TM1 TurboIntegrator function security in Cognos Insight

When you open an IBM Cognos Insight workspace that has been shared through IBM Cognos Connection, you might want to restrict the execution of some TurboIntegrator functions, especially functions that can destroy or modify data files.

Several TurboIntegrator functions exist that can write files, delete files, and execute commands. When you receive a shared Insight workspace, it is possible that TurboIntegrator processes within the workspace might include functions that perform undesirable actions. To prevent processes from performing potentially harmful actions, your Insight installation includes a configuration file that is named `TMIFunctions.cfg`, which can be used to prevent or restrict the execution of TurboIntegrator functions.

Any TurboIntegrator function can be entirely prevented from executing. The `ASCIIOutput`, `TextOutput`, and `ASCIIDelete` functions can also be configured to run in restricted mode. When a function runs in restricted mode, it is limited to acting upon files within the TM1 server data directory and its subdirectories.

When you install IBM Cognos Insight, a default version of the `TM1Functions.cfg` file is created in <*pa_install_directory*>`\tm1_64\coginsight\bins\bin_10.3.1.1514\tm1\bin`. You can modify this configuration file to further restrict function execution or allow function execution.

The default version of the `TM1Functions.cfg` file appears as follows:

```
ExecuteCommand=0
AsciiOutput=1
TextOutput=1
AsciiDelete=1
```

When a function is set to 0 in `TM1Functions.cfg`, the function is prevented from executing. Any attempt to execute that function causes TurboIntegrator to throw a security exception.

When a function is set to 1 in `TM1Functions.cfg`, the function runs in restricted mode. Only the ASCIIOutput, TextOutput, and ASCIIDelete functions can be set to run in restricted mode.

When a function is not present in `TM1Functions.cfg`, it runs completely unrestricted.

Examples of functions running in restricted mode

When a function is configured to run in restricted mode, any relative path passed as an argument to the function is assumed to be rooted in the TM1 server data directory and is allowed. Any absolute path to a directory above the TM1 server data directory prevents the function from executing and causes a security exception to be thrown at runtime.

Editing the TM1Functions.cfg file

1. Open the `TM1Functions.cfg` file in a text editor.
2. To completely prevent a function from executing, set the function name to 0. For example, `ExecuteCommand=0` or `ServerShutdown=0`.
3. To allow a function to run in restricted mode, set the function name to 1. For example, `AsciiDelete=1`.Only the `ASCIIOutput`, `TextOutput`, and `ASCIIDelete` functions can be set to run in restricted mode.
4. To allow a function to run unimpeded, delete the function name from the `TM1Functions.cfg` file.
5. Save and close the `TM1Functions.cfg` file.

Example 1

Assume `AsciiDelete=1` in `TM1Functions.cfg`. In this case, the function

`ASCIIDelete('logs\sample.log');`

is allowed and deletes the file sample.log from the logs subdirectory of the TM1 server data directory.

However, the function

```
ASCIIDelete('c:\autoexec.bat');
```

will not execute and will cause a security exception because it specifies a file at the root level of the drive, which is above the TM1 server data directory.

Example 2

Assume `TextOutput=1` in `TM1Functions.cfg`. In this case, the function

```
TextOutput('logs\sample.txt', 'this is sample text');
```

is allowed and writes a string to the `sample.txt` file in the logs subdirectory of the TM1 server data directory.

Conversely, the function

```
TextOutput('c:\autoexec.bat', 'del *.* -r –f');
```

is not allowed due to the path being specified at the root level of the drive. This function will cause a security exception to be thrown at runtime.

Configuring logging for Cognos Insight

You can enable logging for IBM Cognos Insight using the same logging framework as other components in IBM Cognos TM1.

Procedure

1. Locate the `provagent_NOT.ini` and rename the file to `provagent.ini`.

   This file is located here:

   `C:\Users\<user_name>\AppData\Local\Programs\IBM\Cognos Insight`
2. Edit the `provagent.ini` to uncomment the following line:

   Change `#app-debug=true` to `app-debug=true`.
3. In this same directory location, open and edit the `defaultLog.properties` file to configure logging.

   Note: By default, logging is configured to log ERROR level messages for day-to-day purposes and typically does not need to be adjusted. This can be changed to `WARNING`, `INFO`, or `DEBUG` level messages to get varying levels of logging information. Work with IBM Customer Support to change the logging configuration to record more specific messages.

Results

Log files are typically written out to the following location:

%appdata%`/IBM/`*application_name*`/logs`

Installing Cognos TM1 APIs

Use the TM1 API installation option to install the required files that enable programmers to work with the Cognos TM1 application programming interfaces (APIs). This installation option can also be installed on Cognos Analytics servers to enable Cognos Analytics reporting against Cognos TM1 data sources.

About this task

This option installs files for the following Cognos TM1 APIs:

TM1 API
Allows developers to create custom C, C++, and VB applications that interact with TM1.

TM1 Java API
Allows developers to create custom Java applications that interact with TM1.

TM1 .NET API

Allows developers to create custom Microsoft .NET applications that interact with TM1.

Attention: For information about using the TM1 APIs to enable Cognos Analytics reporting against Cognos TM1 data sources, see "TM1 as a datasource with Cognos Analytics" on page 228.

Procedure

1. Right-click the `issetup.exe` file and click **Run as Administrator** to run either the full IBM Planning Analytics installation program or the client-only installation program:
2. Select the installation location on the **Installation Location** page:
   - If you are planning on using the TM1 APIs for programming, accept the default installation.
   - If you are using the TM1 APIs to enable Cognos Analytics reporting against Cognos TM1 data sources, select an adjacent directory on the Cognos Analytics server that is running report services on Microsoft Windows.
3. On the **Component Selection** page:
   a) Expand the **TM1 Client Tier** and select the **TM1 APIs** option.
   b) Clear the check boxes for all the other components.
4. Follow the prompts and click **Finish** to complete the installation.

Chapter 10. Installing Planning Analytics Workspace Local

IBM Planning Analytics Workspace Local is a web-based interface for IBM Planning Analytics. It provides an interface to TM1 databases, with ways to plan, create, and analyze your content.

In IBM Planning Analytics Workspace Local version 2.0.44 or later, it is much simpler to install on Windows Server 2016. When you run the `start.ps1` script, validation checks run automatically and the host server is repaired if possible. The script checks your Windows Server version, prerequisite software, network configuration, and free ports. It also checks for unsupported anti-virus software that conflicts with Planning Analytics Workspace Local. You can jump directly to "Install Planning Analytics Workspace Local on Windows Server 2016" on page 150.

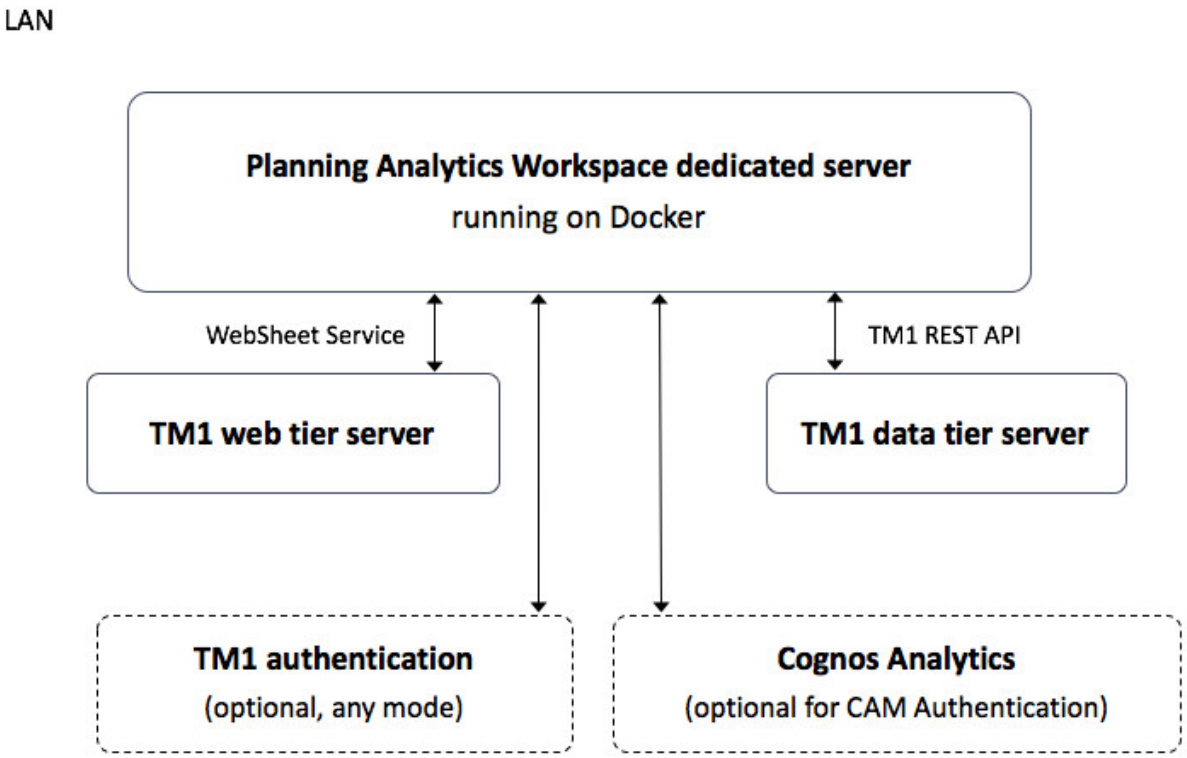
In IBM Planning Analytics Workspace Local version 2.0.45 or later, it is also simpler to install on Red Hat Enterprise Linux 7. When you run the `start.sh` script, validation checks run automatically and Docker container runtime for RHEL 7 is installed. You can jump directly to "Install Planning Analytics Workspace Local on Red Hat Enterprise Linux 7" on page 152.

For information about Planning Analytics Workspace, see the *Planning Analytics Workspace* documentation.

Planning Analytics Workspace Local architecture

IBM Planning Analytics Workspace Local can be co-located with IBM Planning Analytics Local or it can be installed on its own dedicated server. Installing Planning Analytics Workspace on its own server is recommended. In both cases, Planning Analytics Workspace must connect to the TM1 databases in your Planning Analytics Local system and to an authentication system.

The following diagram shows where Planning Analytics Workspace fits into your Planning Analytics Local architecture:



Users in Planning Analytics Workspace

The first user that logs in to IBM Planning Analytics Workspace is given the administrator role. Users that log in after the first user are given the analyst role.

For more information about managing users, see the *Planning Analytics Workspace* documentation.

Authentication modes

You can use a TM1 Server configured in any authentication mode to authenticate Planning Analytics Workspace users.

Prerequisites

Before you install IBM Planning Analytics Workspace, you must install IBM Planning Analytics Local version 2.0.0 or later.

Important: To review an up-to-date list of operating systems supported by IBM Planning Analytics Local, create a detailed system requirements report by using the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

Planning Analytics Workspace is included as part of IBM Planning Analytics Local. For more information, see the IBM Planning Analytics Local download document for instructions.

If you are using IBM Cognos Analytics as your authentication provider, then you must have IBM Cognos Analytics 10.2.2 or later installed.

Planning Analytics Workspace communicates with TM1 servers by using the TM1 REST API. In the Tm1s.cfg file for all TM1 Servers, set the `HTTPPortNumber` property to a free port on the server.

The following list contains information about requirements and the installation kit name for different operating systems that are supported by Planning Analytics Workspace.

Microsoft Windows Server 2016

- The installation kit is ipa_workspace_local_win_<version>.zip.
- When you run the `start.ps1` script, validation checks run automatically and the host server is repaired if possible. The script checks your Windows Server version, prerequisite software, network configuration, and free ports. It also checks for unsupported anti-virus software that conflicts with Planning Analytics Workspace Local. You can jump directly to "Install Planning Analytics Workspace Local on Windows Server 2016" on page 150.
- Docker runs on a physical Microsoft Windows Server 2016 or a VM with Microsoft Windows Server 2016 running under VMware or Microsoft Hyper-V..
- You must have at least 100 GB of free space on the C:\ drive for Microsoft Windows Server 2016. By default, Docker stores its images and containers in `C:\ProgramData\Docker`. You can configure Docker to store its data on another drive. For more information, see Configure Docker with a configuration file on the Docker documentation website (https://docs.microsoft.com/en-us/virtualization/windowscontainers/manage-docker/configure-docker-daemon#configure-docker-with-a-configuration-file).

Red Hat Enterprise Linux 7

- The installation kit is ipa_workspace_local_<version>.zip.
- When you run the `start.sh` script, validation checks run automatically and Docker container runtime for RHEL 7 is installed. You can jump directly to "Install Planning Analytics Workspace Local on Red Hat Enterprise Linux 7" on page 152.
- For all currently supported Linux distributions, `overlay2` is the preferred storage driver and requires no extra configuration. For more information, see *Docker storage drivers* at https://docs.docker.com/storage/storagedriver/select-storage-driver/.

- Storage requirements can vary, you need at least 100 GB for the `/var/lib/docker` directory and sufficient space for at least two Planning Analytics Workspace installation packages wherever you choose to install them.

Community Enterprise Operating System (CentOS)

CentOS is a free, community-supported, open source Linux distribution.

Planning Analytics Workspace Local on CentOS needs Docker Community Edition.

Docker Community Edition (CE) is free for anyone to use.

For more information, see Docker Engine - Community.

Free ports

The following ports are required for Planning Analytics Workspace Local.

Port	Protocols	Description
80	TCP	The PAGatewayHTTPPort is an HTTP port that is mapped to the host by pa-gateway. The default value is 80.
443	TCP	The PAGatewayHTTPSPort is an HTTPS port that is mapped to the host by pa-gateway. The default value is 443.
9012	TCP	To use IBM Planning Analytics Administration on Planning Analytics Workspace Local, you install and configure the Planning Analytics Administration agent wherever you install IBM TM1 Server. The default port of the Planning Analytics Administration agent is 9012.

Port	Protocols	Description
8888	TCP	By default, the Planning Analytics Workspace administration tool is accessible on http://127.0.0.1:8888. In IBM Planning Analytics Workspace Local version 2.0.44 or later, if port 8888 is not free, you can configure Planning Analytics Workspace Local to access the Planning Analytics Workspace administration tool remotely on Windows Server. For more information, see “Access the Planning Analytics Workspace administration tool remotely on Windows Server” on page 161. If you can't run a browser on the localhost interface, you can configure Planning Analytics Workspace Local to access the Planning Analytics Workspace administration tool on another IP address. For more information, see “Access the Planning Analytics Workspace administration tool remotely on Linux” on page 162.

Install Planning Analytics Workspace Local on Windows Server 2016

Improved v2.0.44 To install Planning Analytics Workspace Local version 2.0.44 or later directly on Windows Server 2016, run the `./Start.ps1` script.

About this task

In Planning Analytics Workspace Local version 2.0.44 or later, configuration parameters control whether validation checks are performed automatically when you install Planning Analytics Workspace Local on Windows Server 2016.

VALIDATE_HOST

Indicates whether to perform host validation and repair.

Set to "true" to validate until `Start.ps1` is successful and then don't validate when `Start.ps1` is run again. The default is "true".

Set to "always" to always validate.

Set to "false" to never validate.

Host validation runs as the first step of executing the `Start.ps1` script. Successful validation is marked by writing the `config/HostValidated` file with the current time stamp. If `$env:VALIDATE_HOST` is `true`, validation is skipped if the `confing/HostValidated` file exists. If you are upgrading, validation is performed because that file is absent in the new kit.

VALIDATE_ANTI_VIRUS

Indicates whether to check for unsupported anti-virus software while validating the host. If anti-virus software is found, the validation process fails.

Set to "true" to check for anti-virus software. The default is "true".

Set to "false" to skip checks for anti-virus software.

FREE_SPACE_REQUIRED_GB

Indicates how much free space is required (in GB) before you are notified that it might be insufficient.

Set to "0" to suppress warning messages.

Default is "50".

If free space is below this value, the script warns you but continues to load images because it is difficult to know how much space is required for the images. This check is done outside of the main container host validation because it is related to image loading instead, and it is not controlled by the `$env:VALIDATE_HOST` setting.

The start script performs the following checks:

1. Checks that you are running the `Start.ps1` script as an administrator. If the PowerShell is not running elevated, the script does not run.
2. Verifies the version of Windows Server 2016 is supported. Currently, only Windows Server 2016 LTSC (Long-Term Servicing Channel) is supported.
3. Checks for unsupported anti-virus software installed. If the script finds any unsupported software, it displays an error and exits. You must uninstall the anti-virus software and run the script again.
4. Checks to make sure that the required modules, such as HostNetworkingService PowerShell, and features, such as Hyper-V PowerShell and Containers, are installed and configured correctly on the server. If it can, the script installs the required software or updates the configuration.
5. Checks for an existing version of Docker and validates that it is a supported version. Verifies that the Docker service exists and is configured as **Automatic (Delayed Start)**. If a Docker service doesn't exist, the script extracts the Docker .zip file that is bundled with Planning Analytics Workspace into the `C:\Program Files directory`. Then, it appends the folder to the system PATH environment variable and registers the Docker service.
6. Checks that the Docker service is running, the docker.exe is on the PATH, and Docker is registered in the EventLog service. If the state of the service is not "Running", the script starts it. If it fails to start, the script displays an error and exits. If it is not on the PATH, it automatically adds it. If the service is not registered, it is repaired.
7. Verifies permission to use the Docker daemon.
8. Checks that docker-compose.exe is installed. If docker-compose.exe is not found on the PATH, the script copies it from the Planning Analytics Workspace installation location to `C:\Program Files \docker\docker-compose.exe`.
9. Validates that Windows container settings are correct and updates any that are required.
10. Checks that there are free ports available. Ensures that the defined Planning Analytics Workspace ports (80 and 443 by default) are free. If the pa-gateway container is running, these tests are not run.
11. Checks that there is sufficient space to install the required software. First, it reads the currently configured Docker storage directory. Then, it fetches the free space on its drive and converts it to GB. It outputs the amount of free space on the drive. If the free space is less than `$env:FREE_SPACE_REQUIRED_GB`, a warning is displayed that indicates you might have insufficient space to load the images. A link is displayed where you can read how to switch the *"Docker Root Dir"* to another drive.
12. Installs the Planning Analytics Workspace Docker images.
13. Opens the Planning Analytics Workspace administration tool.

Any check that results in an unrepairable error causes the script to exit and the following message to be displayed:

```
Run Start.ps1 again to revalidate your system after resolving the identified
issues.
```

Follow these steps to install Planning Analytics Workspace Local.

Procedure

1. Open a PowerShell terminal window, go to the directory where you extracted the installation kit, and type the following command:

   ```
   ./Start.ps1
   ```

2. Install the software that the validation requires and then restart your server. After a restart, run `./Start.ps1` to continue the validation and installation.

   Note: The first time that you run the start script, it automatically installs the Docker images. The next time that you run the start script, you can skip installing or updating the Docker images and go straight into the administration tool.

3. Reply "y" when you are asked whether you want to start the administration tool.

   The Planning Analytics Workspace administration tool opens in your browser.

   Note: Keep the command or terminal window open. Closing the window stops the administration tool.

What to do next

- If there are any warnings or errors that can't be resolved, view container host validation errors in the `log\validation.log` file. View Windows event logs in the `.log\docker_event_logs.csv` file.
- If the administration tool doesn't open, copy and paste the address shown in the command or terminal window into a browser window.
- If you are using a Mongo database on a system that is running Planning Analytics Workspace on Windows Server 2016, you must add the `shutdown.ps1` script to your **Windows Settings** > **Scripts (Startup/Shutdown)** > **PowerShell Scripts** configuration. For more information, see "Shut down MongoDB cleanly on Windows Server 2016" on page 160.
- If you have other issues when you connect to Planning Analytics Workspace, see "How do I fix my Planning Analytics Workspace Local installation?" on page 384

Install Planning Analytics Workspace Local on Red Hat Enterprise Linux 7

Improved v2.0.45 To install Planning Analytics Workspace Local version 2.0.45 or later directly on Red Hat Enterprise Linux 7, run the `./Start.sh` script.

About this task

The start script performs the following checks:

1. Checks the `/etc/redhat-release` directory to see if Docker is found on this path. If Docker is not found, the script tries to install it.
2. Verifies the version of Linux is Red Hat Enterprise Linux 7. If it is RHEL 8, the script prints a message stating that Docker Enterprise Edition must be installed or you can install IBM Planning Analytics Workspace Distributed with Kubernetes instead.
3. If the Docker package is available, the script continues. Otherwise, if this Red Hat system is not registered with the Red Hat subscription manager, the script displays an error and exits.
4. If this Red Hat system is subscribed, the script completes the following steps:
   - Installs the Docker package. Planning Analytics Workspace ships with docker-compose. The script appends the Planning Analytics Workspace software directory to the PATH variable.
   - Adds the Docker group.
   - Adds the user to the Docker group.
   - Starts the Docker service.
   - Configures the Docker service to start on reboot.
   - Prints the Docker version to the terminal window.

- Prints a success message and tells you that you must log off and log on again to the group membership to take effect.

5. Opens the Planning Analytics Workspace administration tool.

Follow these steps to install Planning Analytics Workspace Local.

Procedure

1. Open a terminal window, go to the directory where you extracted the installation kit, and type the following command:

   ```
   ./Start.sh
   ```

   Note: The first time you run the start script, it automatically installs the Docker images. The next time you run the start script, you can skip installing or updating the Docker images and go straight into the administration tool.
2. Reply "y" when you are asked if you want to start the administration tool.

   The Planning Analytics Workspace administration tool opens in your browser.

   Note: Keep the command or terminal window open. Closing the window stops the administration tool.

What to do next

If the administration tool doesn't open, copy and paste the address shown in the command or terminal window into a browser window. If you have issues connecting to Planning Analytics Workspace on Linux OS, see:

- “Run the Planning Analytics Workspace administration tool from the command line on Linux” on page 161
- “Access the Planning Analytics Workspace administration tool remotely on Linux” on page 162

Configuring Planning Analytics Workspace Local

Perform administration tasks to monitor, configure, and upgrade Planning Analytics Workspace Local.

Configure parameters

You can change the configuration of Planning Analytics Workspace Local by modifying a paw configuration file.

Note: When you change the paw configuration file, you must run `./scripts/paw` for your operating system or click **Start** in the Planning Analytics Workspace administration tool for your changes to take effect. Only services that are affected by the configuration change will restart.

Important: Do not change the values in `defaults.ps1`. Use `paw.ps1` to override a value in `defaults.ps1`.

Do not change the values in `defaults.env`. Use `paw.env` to override a value in `defaults.env`.

The default values for the configuration parameters are stored in `defaults.ps1` for the Microsoft Windows operating system and `defaults.env` for Linux. If you want to change any of the parameters, open the `paw.ps1` file or `paw.env` in a text editor, and add the parameters. If a parameter is specified in `paw.ps1` or `paw.env`, the value in `paw.ps1` or `paw.env` overrides the value in `defaults.ps1` or `defaults.env`.

Tip: When you specify a parameter in `paw.ps1`, use the format that is shown in `defaults.ps1`. When you specify a parameter in `paw.env`, use the format that is shown in `defaults.env`. Some parameters are specified with quotation marks and some are not, depending on your operating system.

The following list describes the parameters in `defaults.env` and `defaults.ps1`.

ADMINTOOL_PORT Added in v2.0.44

In IBM Planning Analytics Workspace Local version 2.0.44 or later, you can access the Planning Analytics Workspace administration tool remotely on Windows Server by specifying the ADMINTOOL_PORT environment variable in the `config/paw.ps1` file.

For example:

```
$env:ADMINTOOL_PORT="8888"
```

This configuration parameter applies to Planning Analytics Workspace Local installed on a Windows Server only.

API_ALLOW_ORIGINS Added in v2.0.46

This parameter allows cross-origins to access API endpoints. Set to a space-separated list of domains. You can use * for global matching. By default, only `same-origin` is allowed. For example,

```
API_ALLOW_ORIGINS="*.example.com http://*.enterprise.com"
```

This parameter is required to embed URL links to Planning Analytics Workspace within an iframe in another product such as IBM Cognos Analytics. This technique is an example of Cross-Origin Resource Sharing (CORS).

For more information, see Access-Control-Allow-Origin and Same-origin policy.

CSP_FRAME_ANCESTORS Added in v2.0.46

This parameter enables the HTTP Content Security Policy frame-ancestors directive. Enter values as the list of valid parent frame sources separated by a space. The default is `self`.

This parameter is required to embed URL links to Planning Analytics Workspace within an iframe in another product such as IBM Cognos Analytics. This technique is an example of Cross-Origin Resource Sharing (CORS).

For more information, see CSP: frame-ancestors.

EnableIPv6

Flag to enable IPV6 on the bridge network. Value is false.

ENABLE_INTENT_BAR

Set to false to disable the natural language search on the intent bar. You might want to set this parameter to false to avoid long running search processes that are created with the intent bar.

Default is `True`.

ENABLE_PASTE_SPECIAL

Set to true to enable mixed cell paste. For more information, see Paste values to a mixed range of leaves and consolidated cells (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/c_paw_paste_special.html).

Default is `False`.

EnableSSL

Set to true if you are using SSL. Default is false. Leave all other SSL options at default values if you want to run by using a self-signed test certificate.

ENABLE_USER_IMPORT

Default is `true`.

If set to `true`, when a user logs in, they are immediately added as a user in Planning Analytics Workspace. When this parameter is set to true, you cannot activate, deactivate, or delete users from the **Administer** page of Planning Analytics Workspace.

If set to false, a user must first be added to Planning Analytics Workspace before they can log in to Planning Analytics Workspace. If a user has not been added and tries to log in, they see an error message. Users are added by an administrator. For more information, see Add users (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/t_prism_administer.html).

When this parameter is set to false, an administrator can activate, deactivate, and delete users. For more information, see Activate or deactivate a user (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/t_paw_activate_deactivate_users_locally.html) and Delete a user (https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.tm1_prism_gs.2.0.0.doc/t_paw_delete_users_locally.html).

ENABLE_VIEW_EXCHANGE Added in v2.0.44

Set to `true` to enable Exploration View exchanges between Planning Analytics Workspace and Planning Analytics for Microsoft Excel in the Content Store.

For more information, see Save to the Planning Analytics Workspace Content Store(https://www.ibm.com/support/knowledgecenter/SSD29G_2.0.0/com.ibm.swg.ba.cognos.ug_cxr.2.0.0.doc/t_pax_save_commonview.html).

Note: If you are using Planning Analytics for Microsoft Excel version 2.0.43 or earlier, setting this parameter to `true` will prevent Planning Analytics for Microsoft Excel from connecting to TM1 and authentication servers with security modes 2 or 3 enabled.

FREE_SPACE_REQUIRED_GB

Indicates how much free space is required (in GB) before you are notified that it might be insufficient.

Set to "0" to suppress warning messages.

Default is "50".

If free space is below this value, the script warns you but continues to load images because it is difficult to know how much space is required for the images. This check is done outside of the main container host validation because it is related to image loading instead, and it is not controlled by the `$env:VALIDATE_HOST` setting.

LOG_DIR

Host directory for storing service logs. Ensure that services can create directories here. Value is log.

PAGatewayHTTPPort

HTTP port that is mapped to the host by pa-gateway. Value is 80.

PAGatewayHTTPSPort

HTTPS port that is mapped to the host by pa-gateway. Value is 443.

PAW_NET

Name of the PAW bridge network. Value is paw_net.

PAW_V6_SUBNET

IPV6 subnet for Docker containers. Value is fdfb:297:e511:0:d0c::/80.

ProxyTimeoutSeconds

Maximum number of seconds the gateway waits for a backend service response. Value is 120.

REGISTRY

Docker registry. Value is `pa-docker:5000/planninganalytics`.

ServerName

Domain name that is used to access Planning Analytics Workspace. This value is used by the gateway as the redirect target for non-SSL requests. Value is pa-gateway.

SessionTimeout

The amount of time a Planning Analytics Workspace login session can go unused before it is no longer valid. Specify a positive integer followed by a unit of time, which can be hours (h), minutes (m), or seconds (s).

For example, specify 30 seconds as 30s. You can include multiple values in a single entry. For example, 1m30s is equivalent to 90 seconds.

Default is 60 minutes.

For example, `export SessionTimeout="60m"`.

SslCertificateFile
Path to a PEM-encoded file that contains the private key, server certificate, and optionally, the entire certificate Trust Chain. Value is `config/ssl/pa-workspace.pem` on Microsoft Windows Server 2016 OS or `config/pa-workspace.pem` on Linux OS.

TM1APIPort
Port for the TM1 Admin Host. The value is empty, which means to use the default port.

TM1CredentialStoreKeyFile
Path to and name of the random credential store key, which is generated the first time that you start Planning Analytics Workspace. Value is `config/credential_store.key`.

VALIDATE_HOST
Indicates whether to perform host validation and repair.

Set to "true" to validate until `Start.ps1` is successful and then don't validate when `Start.ps1` is run again. The default is "true".

Set to "always" to always validate.

Set to "false" to never validate.

Host validation runs as the first step of executing the `Start.ps1` script. Successful validation is marked by writing the `config/HostValidated` file with the current time stamp. If `$env:VALIDATE_HOST` is `true`, validation is skipped if the `confing/HostValidated` file exists. If you are upgrading, validation is performed because that file is absent in the new kit.

VALIDATE_ANTI_VIRUS
Indicates whether to check for unsupported anti-virus software while validating the host. If anti-virus software is found, the validation process fails.

Set to "true" to check for anti-virus software. The default is "true".

Set to "false" to skip checks for anti-virus software.

VIRTUAL_BOX_AS_SERVICE
If you are running the VM as a service using "VBoxVmService", set this parameter to true to suppress scripts from probing or starting the VM by using VirtualBox tools. Value is false.

X_FRAME_OPTIONS Added in v2.0.46
This parameter enables the X-Frame-Options header as an alternative to Content-Security-Policy (CSP) frame-ancestors for browsers that don't support CSP (Internet Explorer). The default is `sameorigin`.

This parameter is required to embed URL links to Planning Analytics Workspace within an iframe in another product such as IBM Cognos Analytics. This technique is an example of Cross-Origin Resource Sharing (CORS).

For more information, see X-Frame-Options.

You configure the following values as part of the Planning Analytics Workspace installation process by using the Planning Analytics Workspace administration tool. After the initial installation, you can change these values by modifying the `paw.ps1` or `paw.env` file in a text editor or through the Planning Analytics Workspace administration tool. For more information about the Planning Analytics Workspace administration tool, see “Connect to TM1 and authentication servers” on page 157.

CAMLoginNamespace
IBM Cognos Analytics CAM authentication namespace ID. Specify only when *PAAuthMode* = cam.

IBMCognosGateway
Gateway URI of the IBM Cognos Analytics server. Specify only when *PAAuthMode* = cam. To enable SSO for Planning Analytics Workspace, you must enter a value in this field.

IBMCognosServlet
Dispatcher URI of your IBM Cognos Analytics server. Specify only when *PAAuthMode* = cam.

PAAuthMode
Supported authentication modes. Value must be `cam` for IBM Cognos Analytics security authentication or `tm1` for standard TM1 authentication.

TM1ApplicationsLocation
URI of the TM1 Application Server. Value is `http://tm1appshost:9510`.

TM1Location
URI of the TM1 Admin Host. Value is `https://tm1adminhost:5898`.

TM1LoginServerURL
URI of the TM1 server to be used for Planning Analytics Workspace authentication. Specify only when *PAAuthMode* = tm1.

Connect to TM1 and authentication servers

You must use the Planning Analytics Workspace administration tool to configure the TM1 URIs that point to the TM1 servers and authentication servers.

About this task

Use fully qualified host names or IP addresses for the URIs. Do not use localhost.

Important: If Planning Analytics Workspace is installed on a Microsoft Windows Server 2016 OS, then you must access it from a different computer. This is a limitation of the Microsoft NAT network driver.

Here's a short video that shows how to do the configuration:

https://youtu.be/PgFtMQTHbzI

Procedure

1. In the Planning Analytics Workspace administration tool on the **Configuration** tab, enter the following server URIs:

   TM1 Admin Server URI
   You can specify multiple URIs. Separate each entry by a semi-colon. This is useful if your system has redundant TM1 Admin Hosts or you have groups of servers managed by different Admin Hosts.

   Note: The default value for the HTTPS REST API port is 5898, and 5895 for the HTTP REST API port.

   TM1 Application Server Gateway URI
   The TM1 Application Gateway provides access to TM1 Applications.
2. Under Authentication Mode, select **TM1** or **CAM**.

   Choose **TM1** if you're using standard TM1 authentication or Integrated Windows Authentication. Choose **CAM** if you're using IBM Cognos security for authentication.

   a) If you selected **TM1**, enter the value for the **TM1 Login Server URI**.

   Planning Analytics Workspace users authenticate to the system by logging in to the TM1 Login Server. Users must have the same credentials on any other TM1 server they access. You can specify a TM1 server that uses any security mode (1 - 5) for authentication. The following security modes are commonly used:

   Security mode 1
   Standard (native) TM1 authentication

   Security mode 3
   Integrated Windows Authentication

   Security mode 2
   Security modes 1 and 3 are supported. When a user logs in to Planning Analytics Workspace, they can choose between standard TM1 authentication or Integrated Windows Authentication.

   b) If you selected **CAM**, enter the following values:

   - **IBM Cognos BI Gateway URI** To enable SSO for Planning Analytics Workspace, you must enter a value in this field.
   - **IBM Cognos BI Dispatcher URI**

- **IBM Cognos BI Authentication Namespace ID**

3. Click **Validate**.

   Planning Analytics Workspace verifies that it can communicate with the servers and that they are configured for use with it. If a server is not successfully validated, an error message is displayed.
4. Click **OK**.
5. Click **Update** and **OK** to save your configuration settings.

What to do next

- Verify that the Planning Analytics Workspace services started. For more information, see "Check the status of the services" on page 159.
- Access Planning Analytics Workspace by entering `http://<host-name>/` where *<host-name>* is the host name or IP address of your computer, in the address field of your browser.

Configure TLS for Planning Analytics Workspace Local

To configure Transport Layer Security (TLS) for IBM Planning Analytics Workspace, you create a privacy enhanced mail (pem) file that contains your security certificates.

Before you begin

You must have the private key, primary, intermediate, and root certificates from your certificate authority provider.

Procedure

1. Open a text editor and paste the body of each certificate into the file in the following order. Make sure you include the beginning and end tags on each certificate:

   private key
   <your_domain_name>.key

   primary certificate
   <your_domain_name>.crt

   intermediate certificate
   IntermediateCA.crt

   root certificate
   TrustedRoot.crt

   Here is an example:

```
-----BEGIN RSA PRIVATE KEY-----
 (Your Private Key: your_domain_name.key)
-----END RSA PRIVATE KEY-----
-----BEGIN CERTIFICATE-----
 (Your Server certificate: your_domain_name.crt)
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
 (Your Intermediate certificate: IntermediateCA.crt)
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
 (Your Root certificate: TrustedRoot.crt)
-----END CERTIFICATE-----
```

2. Save the file as `pa-workspace.pem` and then copy or move it to the following location:

   - `<paw_install_location>/config/ssl` directory for Microsoft Windows Server 2016 OS.
   - `<paw_install_location>/config` directory for Linux OS.

   If the `pa-workspace.pem` already exists in the directory, overwrite it.
3. For Microsoft Windows Server 2016 OS:

   a) Open the `<paw_install_location>/config/paw.ps1` file and add the following lines at the end:

```
$env:EnableSSL="true"
$env:ServerName="<paw-server-name>"
```

where *<paw-server-name>* is the name of the server on which Planning Analytics Workspace is installed.

b) Save the <paw_install_location>/config/paw.ps1 file.

4. For Linux OS:

a) Open the <paw_install_location>/config/paw.env file and add the following lines at the end:

```
export EnableSSL=true
export ServerName=<paw-server-name>
```

where *<paw-server-name>* is the name of the server on which Planning Analytics Workspace is installed.

b) Save the <paw_install_location>/config/paw.env file.

5. Open the Planning Analytics Workspace administration tool and restart all services.

For information about how to open the administration tool, see "Check the status of the services" on page 159.

Configure TLS between Planning Analytics Workspace Local and other servers

If you are using self-signed certificates for TM1 servers or IBM Cognos Analytics, you might need to add the certificate authority certificates for them to the list of CA certificates that are used by IBM Planning Analytics Workspace.

About this task

This task creates a file called cacerts that contains your CA certificates. The cacerts file is used by the Java services in Planning Analytics Workspace.

If you get a Java certificate chaining error when you log in to Cognos Analytics, performing these steps will resolve it.

Procedure

1. Put the certificate authority (CA) certificates files in the *paw_install_location*>/config/certs directory.
2. Run the *paw_install_location*>/scripts/process_certs.ps1 (Microsoft Windows Server 2016 OS) or process_certs.sh (Linux OS) script.
3. Open the Planning Analytics Workspace administration tool and restart all services.

For information about how to open the administration tool, see "Check the status of the services" on page 159.

What to do next

The cacerts file is created in the *<paw_install_location>*/config directory. If you need to change the set of CA certificates, put the CA certificates into the *<paw_install_location>*/config/certs directory and run the process_certs script again.

Check the status of the services

The **Status** tab in the Planning Analytics Workspace administration tool displays the status, up time, CPU usage, memory usage, and percentage of memory used for each service.

About this task

Here's a short video overview of the **Status** tab:

https://youtu.be/-hjdZIc3IdM

Procedure

1. Run the `Start.ps1` (Microsoft Windows Server 2016) or `Start.sh` (Linux) script.
2. Reply "n" when you are prompted to install the Docker images.
3. Reply "y" when you are prompted to start the administration tool.

   If the administration tool doesn't open, copy and paste the address shown in the command or terminal window into a browser window.
4. In the Planning Analytics Workspace administration tool, click the **Status** tab.
5. Click **Refresh** and then verify that all services in the list have a status of "running".

   When you are installing, wait until all services have started (the CPU % for services drops) before accessing Planning Analytics Workspace.
6. To stop, start, or restart one service, select (highlight) it in the list, and then click **Stop**, **Start**, or **Restart**.
7. To stop, start, or restart all services, make sure that no services are selected in the list, and then click **Stop**, **Start**, or **Restart**.

View logs

You can use the **Status** tab of the Planning Analytics Workspace administration tool to view logs.

About this task

The `log` directory in the installation directory contains a subdirectory for each service.

Here's a short video that shows how to access the Planning Analytics Workspace Local log files:

https://youtu.be/zKnAp1RzzJo

Procedure

1. Run one of the following scripts from the *<paw_install_location>* folder:

Operating system	Script to run
Microsoft Windows Server 2016	Start.ps1
Linux	Start.sh

2. Reply "n" when you are prompted to install the Docker images.
3. Reply "y" when you are prompted to start the administration tool.

   If the administration tool doesn't open, copy and paste the address shown in the command or terminal window into a browser window.
4. In the Planning Analytics Workspace administration tool, click the **Status** tab.
5. To see the logs of one service, select (highlight) a service in the list by clicking it, and then clicking **Logs**.

   The last 1000 lines in the log file for the service are displayed.

   Tip: If you want to see more content, you can open the file from the `log` directory in a text editor. This is also a way to view the logs without using the administration tool.

Shut down MongoDB cleanly on Windows Server 2016

When you shut down Planning Analytics Workspace on Windows 2016, you must make sure that you shut down the MongoDB container cleanly. To perform this shutdown safely, use the Local Group Policy Editor

to add the Planning Analytics Workspace shutdown.ps1 script to the scripts that are launched at shutdown.

About this task

Important: You must **not** stop the MongoDB container by using docker commands such as **`docker stop`**. Always use the Planning Analytics Workspace administration tool or the scripts/paw.ps1 script.

The scripts/paw.ps1 script calls the scripts/shutdown.ps1 script whenever an operation that might shut down MongoDB is invoked. Use the Local Group Policy Editor to add the scripts/shutdown.ps1 to the scripts that are launched at shutdown.

Procedure

1. Locate the scripts/shutdown.ps1 script in your Planning Analytics Workspace installation folder.
2. Copy the scripts/shutdown.ps1 script to a permanent location on your system.
3. In a command window, open the Group Policy Editor (GPE) by running **`gpedit.msc`**.
4. Expand **Computer Configuration** and select **Windows Settings**.
5. Double-click **Scripts (Startup/Shutdown)**.
6. Switch to the **PowerShell Scripts** tab.
7. Click **Add** and add the shutdown.ps1 script from the location in step “2” on page 161.

Run the Planning Analytics Workspace administration tool from the command line on Linux

You can access the Planning Analytics Workspace administration tool from the command line on Linux.

Here's a short video that shows how to run the Planning Analytics Workspace administration tool from the command line on Linux.

https://youtu.be/r44bsAwxXFw

Access the Planning Analytics Workspace administration tool remotely on Windows Server

On Windows Server, by default you access the Planning Analytics Workspace administration tool from the computer that it is installed on using port 8888. To access the administration tool remotely, you can set the ADMINTOOL_PORT environment variable.

About this task

This task applies to Planning Analytics Workspace Local version 2.0.44 or later installed on a Windows Server only.

Note: Accessing the Planning Analytics Workspace administration tool locally on port 8888 is the preferred configuration for security reasons.

Procedure

1. Open the <paw_install_location>/config/paw.ps1 file and add the ADMINTOOL_PORT environment variable in the file:

   ```
   $env:ADMINTOOL_PORT="<admintool_port>"
   ```

   where *<admintool_port>* is a free port on the localhost.
2. Run the `Start.ps1` script.
3. Reply "n" when you are prompted to install the Docker images.
4. Reply "y" when you are asked whether you want to start the administration tool.
   The Planning Analytics Workspace administration tool opens in your browser on the port specified.

Note: Keep the command or terminal window open. Closing the window stops the administration tool.

What to do next

- If the administration tool doesn't open, copy and paste the address shown in the command or terminal window into a browser window.

Access the Planning Analytics Workspace administration tool remotely on Linux

By default you access the Planning Analytics Workspace administration tool from the computer on which it is installed. To access the administration tool from another computer, you can set the ADMINTOOL_IP environment variable.

About this task

This task applies to Planning Analytics Workspace Local installed on a Linux OS only.

Here's a short video that shows how to access the Planning Analytics Workspace administration tool if the website does not appear on Linux.

https://youtu.be/-0tYjrNWMf8

Important: Running the Planning Analytics Workspace administration tool this way is not secure so you might want to restrict access to specific remote IP addresses using the OS firewall.

Procedure

1. In a terminal window, enter the following command:

   ```
   export ADMINTOOL_IP=<ip address>
   ```

   Where *<ip address>* is the IP address of the computer that is running Planning Analytics Workspace Local.
2. Run the `Start.sh` script.
3. Access the administration tool from the remote computer by copying and pasting the address that is shown in the command or terminal window into a browser window on the remote computer.

Back up or restore Planning Analytics Workspace Local

When you back up Planning Analytics Workspace Local, you are saving user information such as preferences, book assets, chat history, recently visited sites, and book marks.

About this task

All data is backed up or restored. You can't selectively back up or restore.

You should back up Planning Analytics Workspace Local regularly to be prepared for disaster recovery.

To perform disaster recovery, follow the steps to install Planning Analytics Workspace Local on a new system. Then follow the steps to restore the application from a backup.

Important: You must perform this task during a system maintenance window because services are stopped and started.

Procedure

To back up:

1. Run one of the following scripts from the *<paw_install_location>*`/scripts` folder:
   - For Microsoft Windows Server 2016, use the `backup.ps1` *<folder-name>* script.
   - For Linux, use the `backup.sh` *<folder-name>* script.

where *<folder-name>* is the file path and name of the folder to back up to. If you omit *<folder-name>*, a folder with the current time is created in the `backup` directory.

To restore:

2. Run one of the following scripts from the *<paw_install_location>*`/scripts` folder:
   - For Microsoft Windows Server 2016, use the `restore.ps1` *<folder-name>* script.
   - For Linux, use the `restore.sh` *<folder-name>* script.

   where *<folder-name>* is the path and name that contains the data to restore.

Upgrade Planning Analytics Workspace Local

To upgrade Planning Analytics Workspace Local, you install a new version of Planning Analytics Workspace Local in a new location.

Before you begin

Go to Fix Central (https://www.ibm.com/support/fixcentral/) and download the version of Planning Analytics Workspace Local software that you want to upgrade to. Put the ipa_workspace_local_<version>.zip file in a directory that is different from your current installation and extract it.

Important: You must upgrade during a system maintenance window because services are stopped and started.

Procedure

1. Copy the <paw_install_location>`/config/paw.ps1` file from your current installation to the new installation location.
2. Copy the <paw_install_location>`/config/certs` directory from your current installation to the new installation location.
3. Optional: If you configured SSL, copy the <paw_install_location>`/config/ssl` directory from your current installation to the new installation location.
4. Install Planning Analytics Workspace Local in the new installation location. See Chapter 10, “Installing Planning Analytics Workspace Local,” on page 147.

   Reply "y" when you are prompted to install the Docker images. Reply "y" when you are prompted to open the administration tool.
5. In the Planning Analytics Workspace administration tool, verify that all of the TM1 URIs are defined correctly, and restart all the services.

What to do next

Planning Analytics Workspace Local includes a `/clean` script in the <paw_install_location>`/scripts` folder. Running the `/clean.ps1` or `/clean.sh` script removes images for the release in which it is run. After you upgrade, you can run this script to remove images from the installation location of the previous release.

Uninstall Planning Analytics Workspace Local

When you follow these steps to uninstall Planning Analytics Workspace Local, you delete all Docker containers, databases, images, networks, and volumes that were created for Planning Analytics Workspace Local.

Procedure

1. If you are uninstalling Planning Analytics Workspace Local from a Microsoft Windows Server 2016 OS, open a command window, go to the directory where you extracted the installation kit, and enter the following command:

```
scripts/paw.ps1 down --rmi all -v
```

2. If you are uninstalling Planning Analytics Workspace Local from a Linux OS, open a terminal window, go to the directory where you extracted the installation kit, and enter the following command:

```
scripts/paw.sh down --rmi all -v
```

3. Some utility containers and images might remain. You can remove them individually by using the following commands:
   a) Show all containers: `docker ps -a`
   b) Remove a specific container: `docker rm <container-id>`
   c) Show all images: `docker images`
   d) Remove a specific image: `docker rmi <image-id>`
   e) Show all networks: `docker network ls`
   f) Remove a specific network: `docker network rm <network-id>`

   Note: On recent versions of Docker, the command `docker system prune -a` can be used to remove all unused items.
4. Delete the files in the directory where you extracted the installation kit.

Chapter 11. Planning Analytics Workspace Distributed

IBM Planning Analytics Workspace Distributed is an installation of IBM Planning Analytics Workspace that can be deployed in a container orchestration engine for high availability, fail-over, scalability, and fault tolerance. In a production system, you can use a load balancer in front of each Planning Analytics Workspace instance to provide a common endpoint to users.

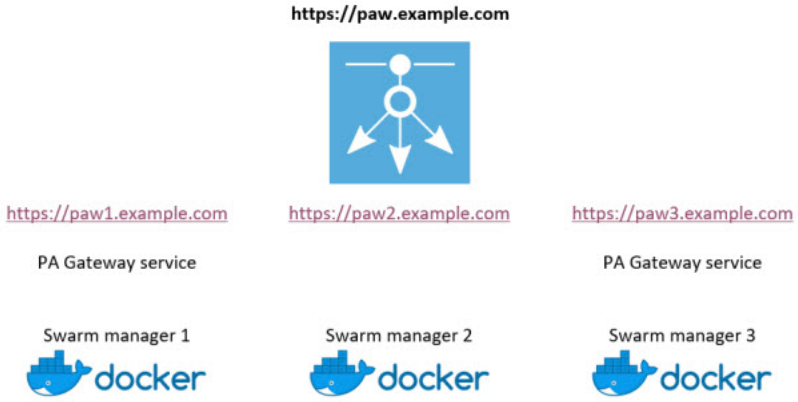
What is an orchestration engine?

- Deploys and manages containers on a cluster of computers
- Declare resources and their configuration
- Obeys specified constraints (CPU, memory, labels) of the deployment
- Monitors the cluster continuously and ensures its state converges to your declaration
- Popular orchestration engines include Kubernetes and Docker Swarm

When you run start.sh to install Planning Analytics Workspace Distributed, you are prompted to select your orchestration engine. You can choose `[K]ubernetes` or `[S]warm`.

Install on Docker Swarm

Docker Swarm is an orchestration engine that is built into the Docker Engine. An orchestration engine manages a cluster of nodes that are running Docker Engine.



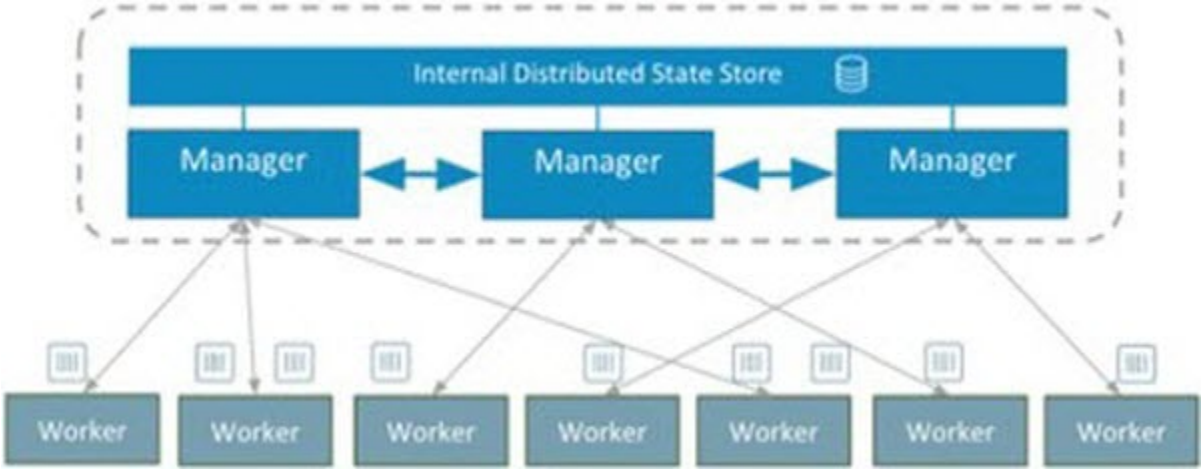
For more information, see *Docker: Enterprise Container Platform for High-Velocity Innovation* at https://www.docker.com.

Note: Planning Analytics Workspace Distributed on Docker Swarm is supported on Red Hat Enterprise Linux (RHEL) and Community Enterprise Operating System (CentOS). CentOS is a free, community-supported, open source Linux distribution. Planning Analytics Workspace Distributed on CentOS needs Docker Community Edition.

To review an up-to-date list of environments supported by Planning Analytics Workspace Distributed, create a detailed system requirements report by using the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

Docker Swarm architecture

The Planning Analytics Workspace Distributed application is defined using a declarative service model that specifies details of the Planning Analytics Workspace Distributed microservices. Docker Swarm ensures that tasks run to match the service declarations.



Docker Swarm benefits

Running Planning Analytics Workspace Distributed under the Docker Swarm orchestration engine offers benefits that include cluster management, scaling, automatic fail-over and more.

See *Swam mode overview* at https://docs.docker.com/engine/swarm/ for more details.

Cluster management integrated with Docker Engine
Creating a Docker Swarm cluster does not require any additional software to be installed. It is simple to create a Swarm.

Scaling
Stateless services can be easily scaled by setting the desired number of replicas. Swarm automatically runs the desired number of service replicas.

Automatic fail-over
If the state of the Swarm does not match the service declarations, Docker Swarm automatically reconciles any differences. For instance, if a service instance crashes, Swarm automatically starts a new instance.

Multi-host networking
Swarm supports multi-host virtual networks, called overlay networks. Planning Analytics Workspace Distributed enables IPsec encryption on overlay networks. Services belong to only those networks they require to improve service isolation.

Service discovery
Service discovery is built into the Swarm using DNS.

Load balancing
Swarm load balances to service replicas via virtual IP address or DNS round robin.

Secure communication
Swarm nodes use mutual TLS authentication and encryption.

Swarm configuration

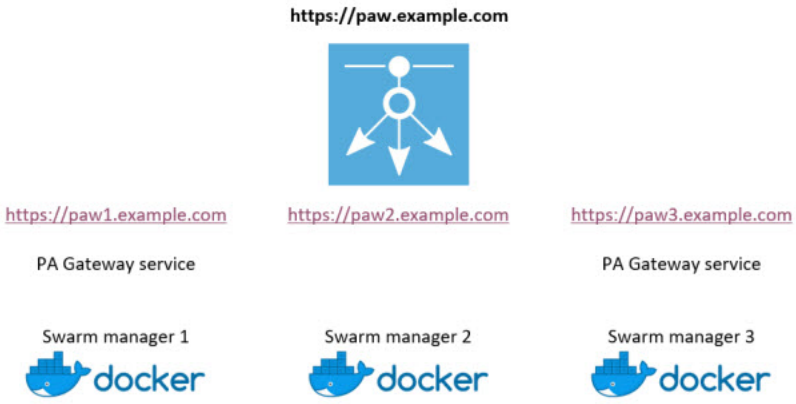
Planning Analytics Workspace Distributed is designed to tolerate failure of a single node in the cluster.

In the event of a failure, Planning Analytics Workspace Distributed will continue to run and be operational until you recover the node.

To achieve this fault tolerance, Swarm requires deployment of a cluster with three manager nodes (you may optionally add any number of worker nodes for performance reasons). Planning Analytics Workspace Distributed configures its database services to use replication or clustering to achieve the same level of fault tolerance. Planning Analytics Workspace Distributed does not require a distributed filesystem.

Planning Analytics Workspace Distributed services are exposed via the PA Gateway service on port 80 (HTTP) and 443 (HTTPS) through the Swarm routing mesh. All Swarm nodes accept connections on these ports and route traffic to a node with an active PA Gateway service replica. To expose Planning Analytics Workspace Distributed to your users as a single endpoint you can use a load balancer, virtual IP address, DNS or other mechanisms.

The diagram below illustrates a typical Planning Analytics Workspace Distributed deployment using a three manager Swarm cluster fronted by a load balancer. The load balancer forwards inbound connections to `https://paw.example.com` to any node in the cluster. Even though an instance of the PA Gateway service is not running on paw2.example.com, Docker Swarm's ingress routing mesh will forward traffic to a node running the service.



Services

The services that are used in Planning Analytics Workspace Distributed are shown in the following table with a description of their use in the application.

Service name	Description
paw_bss	Manages accounts, tenants, users, roles, capabilities
paw_bss-init	Provides initial configuration of BSS
paw_cdn3p	Apache proxy serves up static files to browser clients
paw_couchdb1/2	Instances of CouchDB replicated database
paw_glass	Manages components in the Planning Analytics Workspace user interface
paw_mongo1/2/3	Instances of MongoDB replicated database
paw_mysql-data1/2	Instances of MySQL NDB Cluster Data Nodes
paw_mysql-mgmt	MySQL NDB Cluster Management Server
paw_mysql-server	MySQL Server instances
paw_neo-idviz	Planning Analytics Workspace Content Store to store books, and views.
paw_neo-provision	Planning Analytics Workspace Content Store configuration agent
paw_pa-gateway	Main Apache gateway into Planning Analytics Workspace
paw_monitor	TM1 database administration

Service name	Description
paw_tm1proxy	Used by Planning Analytics for Microsoft Excel
paw_prism-app	Dashboard service
paw_prism-platform	Query engine, modeling support, and ancillary services
paw_prism-proxy	Apache proxy in front of paw_prism-app and paw_prism-platform
paw_redis1/2/3	Instances of Redis replicated database
paw_sentinel1/2/3	Instances of Redis sentinels to manage fail-over
paw_share-app	Share UX service
paw_share-platform	Share core service
paw_share-proxy	Apache proxy in front of paw_share-app and paw_share-platform
paw_social	Chat service
paw_user-admin	User administration service
paw_wa-proxy	Planning Analytics Workspace proxy
paw_welcome	Welcome page service

Networks
Planning Analytics Workspace Distributed is a multi-tier application that uses a variety of Docker Swarm encrypted overlay networks for its services.

The different networks are described as follows.

web
The PA Gateway service resides in the web network. It passes requests to the Planning Analytics Workspace Distributed Proxy service. Only the PA Gateway service exposes ports on the Swarm ingress routing mesh.

app
The Planning Analytics Workspace Distributed Proxy service is also a member of the "app" network, along with most other services. Inter-service communication occurs in the application tier.

couchdb, mongo, mysql, mysql_ndb, redis
Each database resides in its own network. Only those services that need to communicate directly with a database also belong to the respective network. For MySQL, only MySQL servers are on the storage engine mysql_ndb network.

Databases
Planning Analytics Workspace Distributed uses several different databases to store assets.

Each database is automatically configured for replication. Replicas are pinned to specific nodes in the Swarm (and hence their data volumes on local disk) by labeling Swarm nodes as discussed in “Create the Docker Swarm” on page 170.

MySQL
MySQL relational database is used to store accounts, tenants, users, roles, and capabilities. MySQL is configured to use the NDB Cluster storage backend. This database is a high-availability, high-redundancy version of MySQL.

Redis
Redis is an in-memory key/value store used by Planning Analytics Workspace Distributed to persist user settings, favorites, and bookmarks. Redis Sentinel instances elect a master from among the

three Redis instances. Sentinels monitor the health of the Redis servers and promote one to master in event of failure.

MongoDB
MongoDB is a document-oriented database. Assets such as books and views are stored here. Planning Analytics Workspace Distributed deploys a three-member replica set to survive most system failures.

CouchDB
CouchDB is a highly available document-centric database that is used to store user chats. Planning Analytics Workspace Distributed configures two nodes. Because CouchDB supports master-master replication, this configuration is sufficient to tolerate single node failure.

Docker Registry

You can configure Planning Analytics Workspace Distributed to use your own private registry.

By default, Planning Analytics Workspace Distributed starts a private Docker Registry in the Swarm for image distribution.

Refer to settings in the `defaults.env` file in your Planning Analytics Workspace Distributed release.

If you configure Planning Analytics Workspace Distributed against your own registry, the `start.sh` script automatically retags Planning Analytics Workspace Distributed images and pushes them to your registry.

Typical Planning Analytics Workspace Distributed deployment

Distribution of service replicas among nodes in the Swarm can vary because Swarm is free to distribute workloads according to the constraints specified in the service specification.

The following diagram shows a typical distribution of service instances. Services that are pinned to nodes by label are marked with a *. Do not configure more replicas of these services as they are databases that cannot be arbitrarily scaled.

You can change the number of replicas for stateless services (services that are not marked with a * in the image). Consider increasing the number of replicas only to address a performance bottleneck.

Monitoring Planning Analytics Workspace Distributed

You can monitor Planning Analytics Workspace Distributed by using the Docker CLI.

Many third-party monitoring tools for Docker Engine and Docker Swarm are available, including free and commercial options.

Create the Docker Swarm

The following instructions provide the basic steps to configure Docker Swarm. You must install Docker Swarm on an operating system that is supported by IBM Planning Analytics Local.

To review an up-to-date list of environments supported by Planning Analytics Local, create a detailed system requirements report using the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

For more information and deployment options for Docker Swarm, see *Swarm mode overview* at https://docs.docker.com/engine/swarm/.

Check Swarm prerequisites

A minimum of three nodes must be available to build the Swarm. A minimum of 16 GB of memory and 4 CPUs is recommended for each node.

- Minimum hardware: 4 core / 8 GB RAM / 200 GB hard disk for three nodes
- Recommended hardware: 8 core / 16 GB RAM / 200 GB hard disk for three nodes
- Optional hardware: 8 core+ / 16 GB RAM+ / 200 GB+ hard disk for six nodes

1. Place these nodes in different availability zones according to your requirements. A three node Swarm can tolerate failure of a single node. Manager nodes must use fixed IP addresses.

   For test or development purposes, you can install Planning Analytics Workspace Distributed on a single node Swarm configuration. This configuration will lack the fail-over characteristics of a multi-host Docker Swarm.
2. To access Planning Analytics Workspace Distributed through a single address or host name, configure a load balancer, virtual IP, or other mechanism against the Swarm nodes that you configure.
3. Install Docker Engine on each node. Follow the instructions for your operating system. For more information, see *About Docker Enterprise* at https://docs.docker.com/ee/supported-platforms/.
4. Validate your Docker installation with the following command:

   ```
   docker info
   ```

Verify free ports for Swarm

You must open ports for Swarm and Planning Analytics Workspace Distributed to operate.

The following ports/protocols must be open for the Swarm to operate:

Port	Protocols	Description
2377	TCP	Cluster management communications
7946	TCP, UDP	Inter-node communication
4789	UDP	Overlay network traffic
50	ESP	Encrypted IPsec overlay network (ESP) traffic

The following ports/protocols must be open for Planning Analytics Workspace Distributed to operate:

Port	Protocols	Description
80	TCP	Planning Analytics Workspace Distributed Gateway port
443	TCP	Planning Analytics Workspace Distributed Gateway SSL port

Additionally, Planning Analytics Workspace Distributed must be able to make outbound connections to any external systems you configure (for example, TM1 Servers and TM1 Admin Server).

Initialize the Swarm
Select one node to initialize the Swarm.

Enter the following command:

```
docker swarm init
```

Add managers to the Swarm
You can add two more managers to the Swarm to configure a three node Swarm that supports fail-over.

On the first node, get the command to join other managers to the swarm:

```
docker swarm join-token manager
```

Copy the output of that command and run it on the other two nodes:

```
docker swarm join --token SWMTKN-1-
3p1xj2bq2kuyuenqp9b3yx0tob1snwr6uoayljbifq90cxu9qu-3p1t9aqjiwj6v8b03d2iqrx58
10.31.18.35:2377
```

You can review the Swarm with the command:

```
docker node ls
```

Label Swarm nodes
You must label Swarm nodes to control placement of various database containers in the Swarm.

1. Use the following command to list the Swarm node IDs:

   ```
   docker node ls
   ```

   Note: Backup and restore scripts are designed to run on the node labeled `pa.replica1`. Assign that label with this in mind.
2. Run the following commands to label each node according to your requirements:

   ```
   docker node update --label-add pa.replica1=true [node id]
   docker node update --label-add pa.replica2=true [node id]
   docker node update --label-add pa.replica3=true [node id]
   ```
3. If you are building a single node Swarm for testing or development purposes apply all three labels to the same node.
4. If you have chosen to add additional worker nodes to your Swarm, label the nodes according to your deployment design.

Lock the Swarm
You can enable autolock for the Swarm to provide extra security.

For more information, see *Enable or disable autolock on an existing swarm* at https://docs.docker.com/engine/swarm/swarm_manager_locking/#enable-or-disable-autolock-on-an-existing-swarm.

Install Planning Analytics Workspace Distributed

Follow these steps to install Planning Analytics Workspace Distributed on a Swarm manager node.

Before you can install Planning Analytics Workspace Distributed, you must complete the steps to create a Docker Swarm.

Note: You must install Planning Analytics Workspace Distributed to a Swarm manager node. For more information, see “Add managers to the Swarm” on page 171.

Unzip the Planning Analytics Workspace Distributed archive
To unzip the Planning Analytics Workspace Distributed archive, enter the following command in a terminal.

```
unzip ipa_workspace_local_dist_<version>.zip -d <destination folder>
```

To unzip and upgrade, enter the following command in a terminal.

```
unzip -o <archive-name>.zip -d <destination-folder>
```

The **unzip** command creates the destination folder if it does not exist.

Configure a private registry
Optionally, you can configure Planning Analytics Workspace Distributed against an existing private Docker registry. If you do not have an existing registry, skip this step.

Before you start Planning Analytics Workspace Distributed, add the following to the `paw.env` file (create it if it does not exist):

```
export RUN_PRIVATE_REGISTRY=false
export REGISTRY="my-registry:5000"
export REPO_NAME="planninganalytics"
```

Replace *my-registry:5000* with the name and port of your private registry.

If your registry requires authentication, make sure that you are logged in and add the following line to the `paw.env` file:

```
export WITH_REGISTRY_AUTH="--with-registry-auth"
```

Start Planning Analytics Workspace Distributed
Follow these steps to start Planning Analytics Workspace Distributed.

1. Run the `start.sh` script:

   ```
   ./start.sh
   ```

   The script checks your environment. If any prerequisites are not satisfied, review the output and update your environment.
2. Next, the script loads all the release's Docker images into the local image cache. After they are loaded, they are pushed to the Docker registry.
3. After the images are pushed to the registry, you will be prompted to start the Planning Analytics Workspace administration tool. For more information, see “Connect to TM1 and authentication servers” on page 157.
4. By default, the Planning Analytics Workspace administration tool is accessible only on `http://127.0.0.1:8888`. If you are not able to run a browser on the localhost interface, press CTRL+C and add the following setting to the `config/paw.env` file and run `start.sh` again:

   ```
   export ADMINTOOL_IP=<externally accessible IP address>
   ```
5. After you validate and update your configuration settings, close the browser and press CTRL+C in the terminal.

   The script then creates Docker configuration and services if they do not exist.
6. The script creates all the Planning Analytics Workspace Distributed services and notifies you when Planning Analytics Workspace Distributed is configured and ready to access. You can monitor the container activity on each node with the **docker stats** command or a Swarm monitoring tool of your choice.
7. To access Planning Analytics Workspace Distributed, navigate to any of the Swarm nodes in your browser. Alternatively, if you configured a load balancer or virtual IP address, navigate to that address.

Contents of the Planning Analytics Workspace Distributed installation

Learn more about the directories in your Planning Analytics Workspace Distributed installation folder.

Top level

`config` directory
This directory is explained in detail in "config directory" on page 173.

`release` directory
The top level directory contains a directory with a name that corresponds to the Planning Analytics Workspace Distributed release you installed.

This directory is named with the format *<paw_2.0.nn>*.

This directory is explained in detail in "release <paw_2.0.nn> directory" on page 173.

`tools` directory
This directory is explained in detail in "tools directory" on page 174.

`start.sh` script
The `start.sh` script is at the top level of the installation. This script installs and runs Planning Analytics Workspace Distributed.

`start.log` file
The `start.log` is also located in this directory.

The `start.log` is generated every time you run `start.sh`.

config directory

The `config` directory contains user-defined configuration settings. When you configure Planning Analytics Workspace Distributed through the Planning Analytics Workspace administration tool, your settings are stored in the `paw.env` file in this folder.

`auth.env.sample` file

`certs` directory
The certs directory contains `.pem` files with SSL certificates to be trusted by Planning Analytics Workspace Distributed when it connects to TM1 or Cognos Analytics servers. As part of the `start.sh` script, Planning Analytics Workspace Distributed creates a Java keystore to store the certificates. If you are using your own SSL certificates, put your `.pem` files in this directory so Planning Analytics Workspace Distributed can validate its access to your servers.

`current` file
The `current` file defines an environment variable that points to the version of Planning Analytics Workspace Distributed to run. When you upgrade Planning Analytics Workspace Distributed, this file is updated to the newer release folder.

`nodes.env.sample` file

oe file

`paw.env` file
Contains settings that you have overridden to be different from the `defaults.env` file.

`paw.env.sample` file
The `paw.env.sample` contains entries that are typically generated by running the Planning Analytics Workspace administration tool. You can choose to create the `paw.env` file by hand and use the `paw.env.sample` file as a starting point.

release *<paw_2.0.nn>* directory

This release directory contains all the Planning Analytics Workspace Distributed release-specific files.

`config` folder
The `config` folder contains deployment specifications that are used by Docker Swarm to define the Planning Analytics Workspace Distributed services. You normally don't need to edit these files.

This folder also contains the `defaults.env` file. This file contains default values for Planning Analytics Workspace Distributed for this release.

`images` folder
The `images` folder contains the `images.env` file and the `images.tar` file.

The `images.env` file specifies Docker image versions for this release of Planning Analytics Workspace Distributed. It is processed by the `start.sh` script.

The `images.tar` file contains all the Docker images for this release of Planning Analytics Workspace Distributed. The `start.sh` script automatically loads these images into the local image cache and pushes them to a registry that is accessible to the Swarm.

The `push.sh` and `tag.sh` scripts are automatically run by the `start.sh` script. They are used to retag Docker images if they are required and push them to the registry.

`kubernetes` folder

`licenseAccepted` file
This file is generated when you accept the license for this release in the Planning Analytics Workspace administration tool to record your acceptance.

`licenses` folder
The `licenses` folder contains language-localized licenses as displayed in the Planning Analytics Workspace administration tool. You must read and accept these license agreements for each Planning Analytics Workspace Distributed release.

`swarm` folder
The swarm folder contains the `defaults.env` file.

The `defaults.env` file specifies default configuration settings for this release. If you want to customize any settings, add entries to the `config/paw.env` file to override the defaults.

`swidtag` folder

`version.env` file
The `version.env` file contains release version information.

tools directory

This directory contains some utility scripts for maintaining your Planning Analytics Workspace Distributed installation.

`admintool.sh` script
The `admintool.sh` script starts the Planning Analytics Workspace administration tool. Normally you do not need to run this script directly because the Planning Analytics Workspace administration tool starts automatically when the `start.sh` script is run.

`backup.sh` script
The `backup.sh` script is run to take a backup of your Planning Analytics Workspace Distributed installation. For more information, see "Back up and restore Planning Analytics Workspace Distributed" on page 175.

`clusterInfo.sh`

`restore.sh` script
The `restore.sh` script is run to restore a Planning Analytics Workspace Distributed installation from a backup. For more information, see "Back up and restore Planning Analytics Workspace Distributed" on page 175.

`validateEnvironment.sh` script
The `validateEnvironemnt.sh` script checks Planning Analytics Workspace Distributed prerequisites. Normally you do not need to run this script directly because it runs automatically when the `start.sh` script is run.

`zipLogs.sh` script
This script captures logs for all Planning Analytics Workspace Distributed services, writes them to the a `./logs` folder, and creates a timestamped archive file. Use this script to capture logs for support.

Enable TLS for Planning Analytics Workspace Distributed

By default, Planning Analytics Workspace Distributed creates a self-signed certificate. You can configure Transport Layer Security (TLS) to use your own certificate.

Use your own certificate

To use your own certificate, first prepare a `.pem` file with the following contents.

```
-----BEGIN RSA PRIVATE KEY-----
 (Your Private Key: your_domain_name.key)
-----END RSA PRIVATE KEY-----
-----BEGIN CERTIFICATE-----
 (Your Server certificate: your_domain_name.crt)
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
 (Your Intermediate certificate: IntermediateCA.crt)
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
 (Your Root certificate: TrustedRoot.crt)
-----END CERTIFICATE-----
```

Remove the `paw_pa-gateway` service so the existing secret can be removed.

Note: Planning Analytics Workspace Distributed becomes inaccessible during this time.

```
docker service rm paw_pa-gateway
```

Remove any existing secret file:

```
docker secret rm pa_gateway_pem
```

Specify the path to your `.pem` file:

```
export PA_GATEWAY_PEM_FILE=[absolute path to .pem file]
```

Configure TLS

To configure TLS, edit the `config/paw.env` file and add the following entries and then run `start.sh` for the changes to take effect.

```
export EnableSSL=true
export ServerName=<your server's FQDN>
```

The **`ServerName`** setting is used to redirect clients to the HTTPS endpoint.

Important: When these settings are updated, run the **`start.sh`** script for the changes to Planning Analytics Workspace Distributed to take effect.

If you used your own `.pem` file you can now delete it. The information is securely managed by Docker Swarm.

Migrate to Planning Analytics Workspace Distributed

Migration to Planning Analytics Workspace Distributed by using Planning Analytics Workspace Local backup is a seamless upgrade.

1. Back up Planning Analytics Workspace Local.
2. Then, follow the instructions to restore on Planning Analytics Workspace Distributed.

Back up and restore Planning Analytics Workspace Distributed

You must manage your Docker Swarm appropriately. Restore should only be performed for disaster recovery purposes on a newly installed Planning Analytics Workspace Distributed.

Review *Administer and maintain a swarm of Docker Engines* at https://docs.docker.com/engine/swarm/admin_guide/ for detailed information on managing your Swarm.

Back up

Backups are performed online and do not disrupt the availability of Planning Analytics Workspace Distributed.

To back up the Planning Analytics Workspace Distributed databases, run the **tools/backup.sh** script:

```
tools/backup.sh
```

If no parameters are supplied, the script creates a folder that is called backup in the current working directory and stores the backup data in a folder with a name generated based on the current date and time.

You can also supply a folder path for the backup. If the folder exists, it must be empty. If the path does not exist, the script creates it.

```
tools/backup.sh my/backup/folder
```

Schedule backups according to your business requirements. You might want to compress and encrypt the contents of the backup folder before you archive it.

Restore

You can rebuild and restore a failed Docker swarm or restore Planning Analytics Workspace Distributed.

Attention: Restore should only be performed for disaster recovery purposes on a newly installed Planning Analytics Workspace Distributed.

Restore a failed Swarm

Follow the steps in *Recover from disaster* at https://docs.docker.com/engine/swarm/admin_guide/#recover-from-disaster to rebuild your Swarm.

When the swarm is recovered, install Planning Analytics Workspace Distributed. If the configuration settings from your backup are applicable to your recovered Planning Analytics Workspace Distributed instance, you can copy the relevant files such as paw.env to the config directory before you start Planning Analytics Workspace Distributed. Start Planning Analytics Workspace Distributed as usual and then restore your Planning Analytics Workspace Distributed databases.

Restore Planning Analytics Workspace Distributed databases

When Planning Analytics Workspace Distributed is running, to restore Planning Analytics Workspace Distributed databases, run the **tools/restore.sh** script:

```
tools/restore.sh path-to-backup-folder
```

Remove Planning Analytics Workspace Distributed

You can completely remove Planning Analytics Workspace Distributed by following these steps.

Procedure

1. Remove the paw-related stacks.

   ```
   docker stack rm paw
   docker stack rm paw_image_pull
   docker stack rm paw_registry
   ```

2. Wait for all services and networks to be removed.
3. Remove the paw-related secrets and configs.

   ```
   docker secret rm $(docker secret ls -f name=pa_ -q)
   docker config rm $(docker config ls -f name=pa_ -q)
   ```

4. For each node with databases, follow these steps:

a) Remove stopped containers.

```
docker rm $(docker ps -a -q -f "name=paw")
```

b) Remove volumes.

```
docker volume rm $(docker volume ls -q -f "name=paw")
```

Upgrade Planning Analytics Workspace Distributed

You can upgrade Planning Analytics Workspace Distributed without uninstalling.

Unzip the new release of Planning Analytics Workspace Distributed to the same directory as your existing installation.

```
unzip -o <archive-name>.zip -d <destination-folder>
```

Your custom settings in the `config` folder are not overwritten.

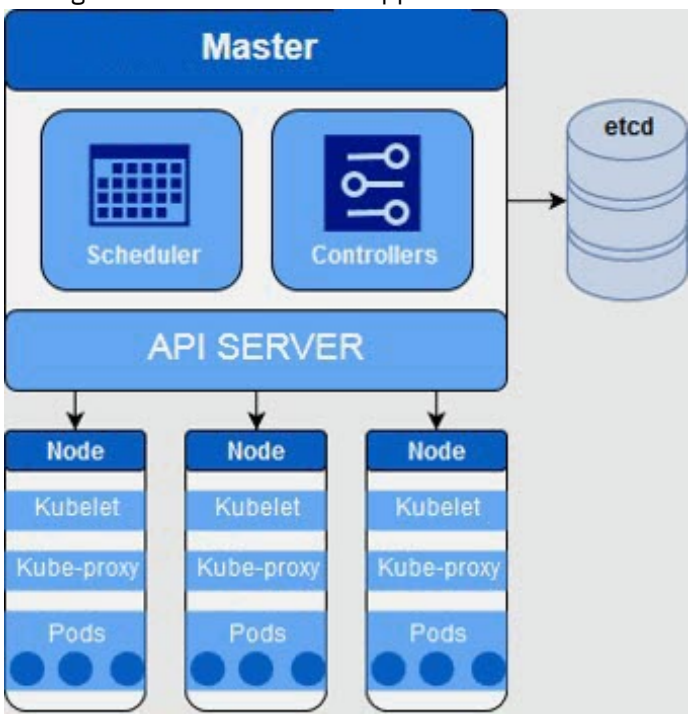
Run the `start.sh` script to update the services and switch to the new release:

```
./start.sh
```

When you are satisfied with the upgrade, you can delete the folder for the previous release. If you need to roll back you can either edit the `config/current` file to point to an older release, or extract the previous release again.

Install on OpenShift

Planning Analytics Workspace Distributed supports deployment on Red Hat OpenShift Container Platform, a container orchestration system for automating application deployment, scaling, and management of containerized applications..



An OpenShift environment can have one or more of the following features activated:

- A private docker registry for the OpenShift deployment
- An active helm within the OpenShift deployment
- An ingress controller configured for the OpenShift environment

Install OpenShift prerequisites

Before you install Planning Analytics Workspace Distributed on OpenShift, make sure that you have the following prerequisites.

OpenShift
You must use OpenShift version 3.11.

Docker
You must use Docker version 1.13 or higher. Podman is not currently supported.

Worker node requirements
Planning Analytics Workspace Distributed requires worker nodes that meet or exceed the following capacities.

- 4 CPUs
- 8 Gb of random-access memory (RAM)
- 400 Gb of storage

The install script automatically detects worker nodes in the cluster if they are assigned one of the following labels:

- `node-role.kubernetes.io/compute`
- `node-role.kubernetes.io/worker`

If you want the start script to automatically detect the worker nodes to use, make sure that one of these labels is specified for the worker node.

Or, you can manually configure the OpenShift node configuration file.

Environment
The following utilities must be available on the system where you run the deployment scripts:

- Bash version 3 or higher must be present on the system where the deployment scripts run.
- The *sed* utility must be present on the system.
- If the *tee* utility is on your system, then the deployment scripts display the output from the initialization job on the screen. Otherwise, it waits until initialization finishes.

If your environment employs a docker registry for image management, you must also install the docker client on your system. Otherwise, the following utilities must be available:

- scp
- ssh

If you don't have this configuration, see “Configure advanced OpenShift settings” on page 182 to configure the installation so that it does not assume these options.

Extract the Planning Analytics Workspace Distributed archive

To extract the Planning Analytics Workspace Distributed archive, enter the following command in a terminal.

```
unzip -o <archive-name>.zip -d <destination-folder>
```

The **unzip** creates the destination folder if it does not exist.

Configure basic OpenShift settings

In most cases, the default configuration settings are sufficient for your OpenShift cluster. All default configuration settings can be found in `kubernetes/config/defaults.env`. If the default configuration settings are not sufficient, you can override any settings in a `config/paw.env` file.

Note: Do not change the values in `kubernetes/config/defaults.env`. Use `config/paw.env` to override a value in `defaults.env`.

Other advanced options also exist that allow different configuration. For more information, see “More basic configuration settings” on page 185.

Configure the OpenShift project
By default, the start script configures an OpenShift project named paw. If you wish to use a different name, add **export PA_KUBE_NAMESPACE=<project>** to paw.env.

For example: **export PA_KUBE_NAMESPACE=myns**

Important: Do not specify the default project, or any of the OpenShift system projects as the value of **PA_KUBE_NAMESPACE**.

Configure deployment of images
You can configure Planning Analytics Workspace Distributed to copy the docker image files to all worker nodes or employ a private docker registry if one is configured for the OpenShift cluster.

The start script asks whether you want to use a private registry. If you don't want to use a private registry, the start script uses *ssh* and *scp* to copy the image archive to all designated worker and storage nodes.

Note: A worker node must have at least 5 Gb of space for the image copy to succeed.

By default, the scripts assume that the same ssh user is to be used on all nodes. If your cluster uses different ssh users, set SSH_SAME_USER to false in config/paw.env.

If you want to use a private registry, then the docker command is used to push the images to the configured private registry. The start script prompts for the host name and port of the private registry. You are prompted for the registry user name and password when applicable.

You can use more configuration settings to change the image copy path, tag prefix, and to support unattended installs. For more information, see “Advanced image deployment settings” on page 186.

Configure an ingress controller
By default, an ingress controller is assumed to be configured for the OpenShift deployment. A TLS certificate is generated for the ingress controller to use.

If you have your own key and certificate that you want to use instead, see “Advanced ingress controller configuration settings” on page 187.

Configure storage
The storage services in Planning Analytics Workspace Distributed employ OpenShift persistent volume claims to persist data.

Three storage types are supported:

- local
- shared
- dedicated

The desired storage type is configured by specifying local, shared, or dedicated as the value for **PA_KUBE_STORAGE_TYPE** in paw.env. If **PA_KUBE_STORAGE_TYPE** is not specified, the start script prompts you for the desired storage type.

Configure local storage
By default, Planning Analytics Workspace Distributed uses the local storage type. The local storage type uses OpenShift local persistent storage that is pinned to three worker nodes, as specified by the **PA_KUBE_STORAGE_NODES** environment variable in paw.env.

The storage containers are also pinned to these same nodes, allowing the application to continue to function if one of the nodes becomes inactive. If **PA_KUBE_STORAGE_NODES** is not specified, then the start script selects three worker nodes to act as the storage nodes.

Local storage employs three persistent volume claims, one for each of the three storage nodes. Storage containers are grouped into three sets: storage-node1, storage-node2, and storage-node3.

For local persistent storage to work properly, the root location on each storage node must exist before the node can be used. The start script asks you whether you would like the script to configure the storage location on each storage node automatically. Note that this requires ssh access to the three storage nodes. If you do not have ssh access to the storage nodes, or wish to configure the storage nodes manually, specify n when prompted.

Configure shared storage

Shared storage employs a single persistent volume claim that is shared by all storage containers. If you are planning to use NFS or another shared storage provider such as Portworx, select `shared` when prompted. **PA_KUBE_STORAGE_NODES** is not used with shared storage.

Shared storage supports two types of volumes: NFS and `other`. The volume type is configurable via the **PA_KUBE_VOLUME_TYPE** environment variable in `paw.env`. If **PA_KUBE_VOLUME_TYPE** is not specified, you are prompted to select the desired type. Shared storage employs a single persistent volume claim, and all storage services reference the single volume claim.

Configure dedicated storage

Dedicated storage employs a separate persistent volume claim for each storage container. This allows for a finer grain of persistence to be specified, allowing storage providers to make optimal decisions regarding placement.

Dedicated storage supports three types of volumes: `local`, NFS, and `other`. The volume type is configured with the **PA_KUBE_VOLUME_TYPE** environment variable in `paw.env`.

If **PA_KUBE_VOLUME_TYPE** is not specified, you are prompted to select the desired type. If `local` is specified for the volume type, then storage exhibits the same semantics as if **PA_KUBE_STORAGE_TYPE** was set to `local`. Storage is pinned to three worker nodes, as specified by the **PA_KUBE_STORAGE_NODES** environment variable in `paw.env`. The storage containers are also pinned to these same nodes, allowing the application to continue to function if one of the nodes becomes inactive.

Set the desired storage class

Some storage providers expose storage classes that need to be specified in any persistent volume claims.

If the storage provider configured for your cluster employs such storage-classes, **PA_KUBE_STORAGE_CLASS** can be set to specify the desired storage class. If **PA_KUBE_STORAGE_CLASS** is not specified in `paw.env`, you are prompted to specify the desired storage class.

Storage providers and init container execution

Some storage providers may require that the ownership of the mounted volumes be changed within the pods. If the storage class that you are using requires this action, set **PA_KUBE_INIT_CONTAINERS** to `true` within `paw.env`.

Note that this also requires that your cluster be configured to allow the init containers to run as root. To minimize the security exposure, the installation configures a service account called `pa-allow-rootuid` that is used for all storage pods. The `pa-allow-rootuid` service account must be added to the appropriate security context object in your cluster that allows containers to run as root.

Set OpenShift resource limits

By default, all Planning Analytics Workspace Distributed containers execute without any limits on the amount of CPU and memory that they consume. However, some environments may require that explicit limits be specified for all containers running in the cluster.

If your deployment has such a requirement, set **PA_KUBE_EXPLICIT_LIMITS** to `true` in `paw.env`. The default configuration values can be found in `kubernetes/config/defaults.env`. If you need to increase the values, override the appropriate environment variable in `paw.env`.

Deferred deployment

If your environment employs a DevOps pipeline environment, you may want to deploy Planning Analytics Workspace Distributed via the pipeline, as opposed to executing `start.sh`. To support such

environments, Planning Analytics Workspace Distributed contains two scripts: `push.sh` and `configure.sh`.

The `push.sh` script lets you push container images as an independent operation.

The `configure.sh` scripts performs the same operations as `start.sh`, but it does not deploy the application. It simply prepares the Helm chart or standalone YAML files (depending on configuration), so that the objects can be deployed by another process. The `configure.sh` script may also generate a `predeploy.sh script`, which contains commands that must be executed before deploying the application.

Standard YAML files are generated by configuration. Use the following standard OpenShift or Helm commands to deploy the application:

- `oc apply`
- `helm install`

Configure Red Hat OpenShift deployment

For Red Hat OpenShift, the following configuration settings must be performed on the deployment.

Log in with a user that has the `cluster-admin` role, then execute the following commands:

```
oc new-project paw
oc adm policy add-scc-to-user nonroot -z pa-config-secret -n paw
oc adm policy add-scc-to-user nonroot -z default -n paw
```

If the storage provider configured for your cluster requires that the ownership of the mounted volumes be changed within the pods, then execute the following additional commands:

```
oc create serviceaccount pa-allow-rootuid -n paw
oc adm policy add-scc-to-user anyuid -z pa-allow-rootuid -n paw
```

Note: Replace *paw* in the above commands if you have overridden the default project value.

Start Planning Analytics Workspace Distributed

Follow these steps to start Planning Analytics Workspace Distributed.

Procedure

1. Run the `start.sh` script:

   ```
   ./start.sh
   ```

   The script checks your cluster environment. If any prerequisites are not satisfied, review the output, update your environment, and rerun the script.
2. Provide values for the configuration prompts that the start script presents:

   ```
   Enter the host name of your master node: myhost.com
       Helm detected - configuring install to use helm for deployment
       Would you like to use a private docker registry? (default 'n'):
       Worker nodes configuration successfully validated
       Kubernetes version successfully validated
       Storage class (default: 'paw-storageclass'):
       Storage type - dedicated | local | shared (default: 'local'):
       Storage root for local persistent volumes (default: '/opt/ibm/planninganalytics/paw'):
       Storage nodes configuration successfully validated
       Ingress type - controller | nodeport | none (default: 'controller'):
       Ingress host (default: ‘myhost.com'):
   ```
3. Verify that the script created all Planning Analytics Workspace Distributed services. Wait a few minutes for the system to complete its initial configuration.

Reinstall or uninstall Planning Analytics Workspace Distributed

To reinstall or uninstall Planning Analytics Workspace Distributed, run the `./paw_x.x.xx/kubernetes/scripts/uninstall.sh` script.

The script asks whether you want to clean up the persistent storage used by the installation. If you are reinstalling and want to reuse your existing content, answer 'n' to the prompt.

The script also asks whether you want to remove the project configuration from the cluster. If you want to completely uninstall Planning Analytics Workspace Distributed from your cluster, answer 'y' to the prompt.

Configure advanced OpenShift settings

You can used advanced configuration settings to customize your installation of Planning Analytics Workspace Distributed.

Node configuration

The node configuration file, found at `config/paw.env`, specifies information about the OpenShift nodes that the installation needs.

The configuration file contains four environment variables: COPY_NODE, WORKER_NODES, STORAGE_NODES, and NFS_SERVER:

Example node configuration

```
#
        # If you are not employing a docker registry, specify the
        # host portion of the master node URI returned from the
        # clusterInfo.sh script.
        #
        export COPY_NODE=()

        #
        # Specify the values of all worker nodes returned from the clusterInfo.sh script.
        # Space separated. e.g. (value1 value2 value3) where value is hostname of each worker.
        #
        export WORKER_NODES=()

        #
        # Specify the values of three of the nodes listed in the above WORKER_NODES variable.
        # Space separated. e.g. (value1 value2 value3) where value is hostname of each worker.
        #
        export STORAGE_NODES=()

        #
        # Specify the IP address of the nfs server if employing nfs
        # based persistent volumes
        #
        export NFS_SERVER=()
```

Configure the persistent volume locations on the storage nodes

By default, the storage services use OpenShift local persistent volumes within the designated storage nodes. The start script asks you whether you would like the script to configure the storage locations automatically.

About this task

Note: If you changed the value of **PA_KUBE_STORAGE_ROOT**, replace `/opt/ibm/planninganalytics/paw` in these commands with the new value.

Procedure

1. If you have ssh access to the storage nodes, specify y when you are prompted. The start script will ask you to log in to each storage node and will configure the storage folders for you.
2. If you do not have ssh access to the storage nodes, an administrator must complete the following steps:

a) Log on to first storage node that you have specified in the `config/paw.env` file and run the following command:

```
sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node1
```

b) Log on to the second storage node and run the following command:

```
sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node2
```

c) Log on to the third storage node and run the following command:

```
sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node3
```

What to do next

If you want to use another volume type, see "Configure a different storage type" on page 183.

Configure the NFS persistent volume locations

If you decide to use a Network File System (NFS) server for storage, you must perform the following operations.

About this task

Note: If you changed the value of **PA_KUBE_STORAGE_ROOT**, replace `/opt/ibm/planninganalytics/paw` in these commands with the new value.

Procedure

1. Add the following lines to `config/paw.env`:

```
export PA_KUBE_STORAGE_TYPE=shared
export PA_KUBE_VOLUME_TYPE=nfs
```

2. 2. Add the IP address of the NFS server to `config/paw.env`.
3. 3. Configure the storage folders on the NFS server.
4. If the OpenShift cluster does not support dynamic provisioning for NFS persistent volumes, log on to the NFS server and execute the following commands:

```
sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node1
sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node2
sudo mkdir -p /opt/ibm/planninganalytics/paw/storage-node3
```

5. Configure your NFS server to export the following location:

```
/opt/ibm/planninganalytics/paw
```

6. On each of the three storage nodes, mount the following NFS directory:

```
/opt/ibm/planninganalytics/paw
```

Configure a different storage type

If your deployment uses a different storage type, for example, GlusterFS, you must modify the contents of the `other.yaml` file in the `kubernetes/templates/volumes` directory.

Before you begin

The `other.yaml` file contains all persistent volume definitions that are required for the storage services. You can update the persistent volume definitions; however, the metadata section of each persistent volume definition must remain as specified.

Procedure

1. Add the following line to `config/paw.env`:

```
export PA_KUBE_STORAGE_TYPE=shared
export PA_KUBE_VOLUME_TYPE=other
```

2. Configure the volume definitions in `templates/volumes/other.yaml`. Each persistent volume definition in `templates/volumes/other.yaml` contains a comment block. Replace the comment block with details associated with the storage type.

```
#
# Place your volume configuration here
#
```

Configure Red Hat OpenShift security

To enable the OpenShift cluster to create Planning Analytics Workspace Distributed secrets, the installation configures the `pa-config-secret` service account.

If your storage provider requires that the ownership of mounted volumes be changed within the container, the installation configures a service account called `pa-allow-rootuid` that is used for all storage pods. The `pa-allow-rootuid` service account must be added to the appropriate security context object in your cluster that allows containers to run as root.

Both of these service accounts are restricted to the Planning Analytics Workspace Distributed project, which is `paw` by default. These service accounts are used only by the containers that are associated with Planning Analytics Workspace Distributed.

1. The `pa-allow-rootuid` service account allows the Planning Analytics Workspace Distributed storage services to temporarily run as root so that correct file permissions can be set. After this step completes, the storage services run as a non-root user.
2. The `pa-config-secret` service accounts allow the installation to create secrets in the cluster. Secrets are created in the cluster by a configuration container that is run during the installation of Planning Analytics Workspace Distributed. The installation also configures `pa-config-secret` role and role-binding objects that restrict the service account to manage only secrets within the Planning Analytics Workspace Distributed project.

   Note: Secrets configuration runs during the installation, it does not run as part of Planning Analytics Workspace Distributed itself.

Configure the master node and worker nodes

Use the **`tools/clusterInfo.sh`** command to determine the values to specify within each section of `config/paw.env`.

Procedure

1. Run the **`tools/clusterInfo.sh`** command to determine the values for each section of the `config/paw.env`.

   The command returns information on the master node and worker nodes in the OpenShift cluster.

   For example:

```
Kubernetes master is running at https://9.245.133.29:8001

Worker nodes:
10.31.100.101
10.31.100.102
10.31.100.103
10.31.100.104
```

2. Configure the host of the master node that is returned from step “1” on page 184 in the COPY_NODE environment variable so that image archives are placed on the worker nodes.

For example:

```
export COPY_NODE=(9.245.133.29)
```

3. Copy the list of returned worker nodes that are returned from step “1” on page 184 to the WORKER_NODES environment variable to specify the addresses of all worker nodes in the deployment..

   For example:

   ```
   export WORKER_NODES=(10.31.100.101 10.31.100.102 10.31.100.103 10.31.100.104)
   ```

4. Select three worker nodes to act as storage nodes and specify them within the STORAGE_NODES environment variable.

   Planning Analytics Workspace Distributed pins the storage services to three worker nodes. All other services are distributed across all worker nodes as OpenShift determines.

   For example:

   ```
   export STORAGE_NODES=(10.31.100.101 10.31.100.102 10.31.100.103)
   ```

More basic configuration settings
You can use more basic configuration options to customize projects, logging, and backup capabilities for Planning Analytics Workspace Distributed.

KUBERNETES_CMD
Possible values: any valid path

Default value: `kubectl`

Name of `kubectl` command. Specify a fully qualified path if `kubectl` is not already within your path.

PA_KUBE_CHART
Possible values: any

Default value: `pa-workspace`

Helm chart name. Must not be blank.

PA_KUBE_HOST
Possible values: any

Default value: none

Hostname of external access point for Planning Analytics Workspace.

This value is typically the hostname of your proxy node, or an external load balancer. Must not be blank.

If not specified, you are prompted for a value.

PA_KUBE_INGRESS_CONTROLLER
Possible values: `true` | `false`

Default value: ()

Indicates whether an ingress controller is configured for the OpenShift cluster.

If not specified, the deployment script automatically tries to detect the existence of an ingress controller.

PA_KUBE_INGRESS_HOST
Possible values: any

Default value: The value of PA_KUBE_HOST

Allows for the specification of an ingress host for your application.

If not specified, you are prompted whether you would like an ingress host, and if so, what the host value should be.

PA_KUBE_NAMESPACE
Possible values: ()

Default value: paw

Specifies the OpenShift project.

PA_LOG_MODE
Possible values: `file` | `console`

Default value: `file`

Indicates whether the deployment script writes logs to the console or to a file.

PA_ZIP_BACKUP
Possible values: `true` | `false`

Default value: `false`

Indicates whether backups are to be stored as a compressed file.

Advanced image deployment settings
If ssh and scp are not already within your path, you can update the following settings to point to their locations.

PA_KUBE_USE_PRIVATE_REGISTRY
Possible values: `true | false`

Default value: none

Indicates whether to use a private docker registry.

If not specified, you are prompted for a value.

PA_KUBE_PRIVATE_REGISTRY_SECRET
Possible values: any

Default value: `pa-registry-secret`

Indicates the name of the private registry secret that is used to pull images. If the specified value is the default, then you are prompted to create the secret, otherwise it is assumed to already exist.

SCP_CMD
Possible values: any valid path

Default value: `scp`

Name of scp command. Specify a fully qualified path if scp is not already within your path.

SCP_PATH
Possible values: any valid path

Default value: .

Location on worker node where to place image archives. Can either be an absolute or relative path.

SSH_CMD
Possible values: any valid path

Default value: ssh

Name of ssh command. Specify a fully qualified path if ssh is not already within your path.

SSH_SAME_USER
Possible values: `true` | `false`

Default value: `true`

Indicates whether the ssh user is the same on all worker and storage nodes.

If docker is not already within your path, update the DOCKER_CMD setting:

DOCKER_CMD
Possible values: any valid path

Default value: `docker`

Name of docker command. Specify a fully qualified path if docker is not already within your path.

For unattended installs, you can specify the user name, password, and email address of the docker private registry user:

REGISTRY
Possible values: (any)

Default value: `127.0.0.1:5000`

Docker private registry host and port. Must not be blank.

REGISTRY_USER
Possible values: any

Default value: none

Docker private registry user. If blank, you are prompted for the value.

REGISTRY_PASSWORD
Possible values: any

Default value: none

Docker private registry password. If blank, you are prompted for the value.

REGISTRY_EMAIL
Possible values: any

Default value: none

Docker private registry user email address. If blank, you are prompted for the value.

The shipped images are predefined to use an image tag prefix of `planninganalytics`. If you want to change the default value, update the following setting:

REPO_NAME
Possible values: any

Default value: `planninganalytics`

Image tag prefix. Must not be blank.

Advanced helm configuration settings
If the helm command is not already on your path, you can update the following settings.

HELM_CMD
Possible values: any valid path

Default value: `helm`

Name of helm command. Specify a fully qualified path if helm is not already within your path.

HELM_CONFIGURED
Possible values: `true | false`

Default value: `true`

Indicates whether helm is configured for the deployment.

HELM_TLS
Possible values: `true` | `false`

Default value: `true`

Indicates whether helm uses HTTPS/TLS.

Advanced ingress controller configuration settings
By default, a TLS certificate is generated for the ingress controller to use. If you have your own TLS key and certificate that you want to use instead, update the following settings.

PA_KUBE_INGRESS_KEY
Possible values: any valid path

Default value: none

Path to key to be used by the ingress controller.

PA_KUBE_INGRESS_CERT
Possible values: any valid path

Default value: none

Path to certificate to be used by the ingress controller.

Advanced storage service configuration settings
You can use the following settings to customize storage requirements for Planning Analytics Workspace Distributed.

PA_KUBE_INIT_CONTAINERS
Possible values: `true` | `false`

Default value: `false`

Indicates whether storage provider requires ownership of mounted volumes be changed by the pods.

PA_KUBE_NUM_STORAGE_NODES
Possible values: 1-3

Default value: 3

Number of nodes in the cluster that are to be used for storage nodes. All storage services are pinned to run only on these nodes.

PA_KUBE_STORAGE_CLASS
Possible values: any

Default value: `pa-local-storage`

OpenShift storage class.

PA_KUBE_STORAGE_DYNAMIC_PROVISIONING
Possible values: `true` | `false`

Default value: `false`

Indicates whether the storage type supports dynamic provisioning.

PA_KUBE_STORAGE_ROOT
Possible values: any

Default value: `/opt/ibm/planninganalytics/paw`

Path to local storage on each worker node that runs the storage services. Can either be an absolute or relative path.

PA_KUBE_ STORAGE_SIZE
Possible values: > 1Gi

Default value: `10Gi`

Space requirements for the storage services configured on each storage node. The value must be of the format 'xxGi', where xx is an integer value.

PA_KUBE_STORAGE_TYPE
Possible values: `dedicated` | `local` | `shared`

Default value: `local`

Indicates whether storage is local or shared.

PA_KUBE_VOLUME_TYPE
Possible values: `local` | `nfs` | `other`

The value `local` is only valid when **PA_KUBE_STORAGE_TYPE** is set to `shared`.

Default value: none

Indicates which OpenShift volume type to use when **PA_KUBE_STORAGE_TYPE** is set to `shared`.

Chapter 12. Installing and configuring Planning Analytics for Microsoft Excel

IBM Planning Analytics for Microsoft Excel is a Microsoft Excel-based tool that professional report authors use to build sophisticated, multiple-sheet, multiple-query reports against multiple databases.

Users can build sophisticated multiple-sheet, multiple-query reports in Excel from different kinds of data sources, and analyze and explore IBM Cognos dimensionally modeled data. The application provides formula-based data access so that users can solve business problems and present key results in a format that is most convenient to them.

For IBM Cognos Analytics, this application is used to analyze enterprise data to identify trends, opportunities, problems, or project characteristics.

For IBM Planning Analytics, this application is used by financial analysts and planners who plan and measure business and operational data.

What's new?

This section contains a list of new or changed features for this release. It helps you to plan your upgrade and application deployment strategies and the training requirements for your users.

New features in version 2.0.0

- IBM Planning Analytics for Microsoft Excel requires Microsoft .NET Framework 4.6.1 or later to be installed.
- IBM Planning Analytics for Microsoft Excel supports security authentication modes 1, 2, 3, 4, 5. Previous versions supported modes 1 and 5.

  However, when connecting to IBM Planning Analytics Workspace, only security authentication modes 1 and 5 can be used.

  Forms based authentication is no longer supported for IBM Planning Analytics servers in IBM Planning Analytics for Microsoft Excel.

New features in version 10.3.0

- If your servers use Transport Layer Security (TLS), you must use Microsoft .NET Framework 4.5 or later with IBM Cognos Analysis for Microsoft Excel. New servers, and servers that have been patched to address the POODLE security vulnerability in SSL use TLS.

New features in version 10.2.0

- IBM Cognos Office products, such as IBM Cognos Analysis for Microsoft Excel and IBM Cognos BI for Microsoft Office now require the use of Microsoft .NET Framework 4.

  This updated conformance has implications for upgrading systems. If you are a current user of an IBM Cognos Office product and installed only Microsoft .NET Framework 2, you must also install .NET Framework 4. You must install the updated .NET Framework before installing IBM Cognos Office products. Microsoft .NET Framework versions can work along side each other. You do not need to uninstall previous versions.
- The following additional languages are available for IBM Cognos Office products: Croatian, Danish, Kazakh, Slovenian, and Thai.

Installation overview

To use IBM Planning Analytics for Microsoft Excel, you must install Microsoft .NET Framework and the IBM Planning Analytics for Microsoft Excel components.

IBM Cognos TM1 includes samples that you can use with IBM Planning Analytics for Microsoft Excel. The samples illustrate product features and technical and business best practices using fictitious data. You can also use the samples to experiment with and share report design techniques, and for troubleshooting. To use the samples, your administrator must set up and configure them. Contact your administrator to find out where they are installed.

Uninstall older versions of IBM Planning Analytics for Microsoft Excel before you install a new version.

Procedure

1. Complete the prerequisite tasks.
   a) Install Microsoft.NET Framework.

      For more information, see Installing Microsoft .NET Framework.
   b) Install Primary Interop Assemblies.

      For more information, see Installing Primary Interop Assemblies.
   c) Uninstall previous versions of IBM Planning Analytics for Microsoft Excel.

      For more information, see “Uninstall previous versions of IBM Cognos Analysis for Microsoft Excel” on page 192.
   d) “Connect to IBM Planning Analytics Workspace” on page 193.
   e) Configure your antivirus software to allow connections from Microsoft .NET Runtime and Microsoft Excel.
   f) “Ensure that you are using IBMid” on page 193.
   g) “Use Cognos security” on page 194.
2. Install IBM Planning Analytics for Microsoft Excel components.

   For more information, see Installing IBM Cognos Analysis for Microsoft Excel components.
3. Test IBM Planning Analytics for Microsoft Excel.

   For more information, see Testing IBM Cognos Analysis for Microsoft Excel.

Prerequisites for installing Planning Analytics for Microsoft Excel

You must complete the tasks in this section before you install Planning Analytics for Microsoft Excel.

Find the version information for IBM Planning Analytics for Microsoft Excel

You can find the version information for Planning Analytics for Microsoft Excel in the IBM Planning Analytics ribbon.

Procedure

1. Click the IBM Planning Analytics tab to open the IBM Planning Analytics ribbon.
2. Click the **Help** drop down, located in the **Getting Started** group.
3. Click **About**.
4. Click **Show Version...** to open the version text file.
5. The `CORCSP_version` line contains the version number for your installation of Planning Analytics for Microsoft Excel.

Example

If the value of `CORCSP_version` is `COR-AW64-ML-RTM-2.0.47.4-0`, the version number is `47.4`.

Install Microsoft .NET Framework

IBM Planning Analytics for Microsoft Excel requires Microsoft .NET Framework version 4.6.1 or later to be installed on all user computers.

For a list of supported versions of Microsoft .NET Framework, see the IBM Software Product Compatibility Reports (https://www.ibm.com/software/reports/compatibility/clarity/index.html).

When you install Microsoft .NET Framework on a non-English operating system, Microsoft .NET error messages, shortcuts, and utilities appear in English.

For a language other than English, you can apply the Microsoft .NET Framework Language Pack to view error messages, shortcuts, and utilities in the language of your operating system. For example, if your operating system is French and you installed Microsoft .NET Framework, you must also apply Microsoft .NET French Language Pack.

Procedure

1. Go to the Microsoft download website.
2. Search for .NET Framework 4.6.1 or later, select the redistributable package, and follow the instructions to download it.
3. Check for other security updates that relate to your version of .NET Framework and download them.

Primary interop assemblies (PIAs) for Microsoft Excel

To use the features of IBM Planning Analytics for Microsoft Excel, you must have installed the primary interop assemblies (PIAs) for Excel. Typically, the PIAs are installed automatically when you install Microsoft Office on the computer. However, in some cases you might need to install the PIAs separately.

Computer workstations must have the PIAs installed and registered in the global assembly cache to run Office solutions that target .NET Framework.

You can install the complete set of PIAs in the global assembly cache in two ways:

- Modify the Microsoft Office setup.

  If you did not install .NET Framework before you installed the Office system, the PIAs are not installed with your Office installation. If you installed .NET Framework after you installed the Office system, you can install the PIAs by modifying the Office setup.
- Install them from the redistributable PIA package.

The Microsoft Office PIAs are installed in the global assembly cache in *drive*:/WINDOWS/assembly or *drive*:/WINNT/assembly.

Modify the Microsoft Office setup to install primary interop assemblies for Excel

If you did not install .NET Framework before you installed the Office system, the PIAs are not installed with your Office installation. If you installed .NET Framework after you installed the Office system, you can install the PIAs by modifying the Office setup.

Before you begin

The Microsoft Office PIAs are installed in the global assembly cache in *drive*:/WINDOWS/assembly or *drive*:/WINNT/assembly.

You must be an administrator on the computer to install the .NET Framework and the Microsoft Office PIAs.

Procedure

1. From the **Start** menu, click **Control Panel**, and then click **Programs and Features**.
2. In the list of programs, click the Microsoft Office version, and then click **Change**.
3. In the **Microsoft Office Setup** wizard, select **Add or Remove Features**, and then click **Continue**.
4. In the **Installation Options** page, expand **Microsoft Excel**.

5. Click the symbol next to the **.Net Programmability Support** feature, and then click **Run from my computer**.
6. Click **Continue**.
7. Click **Close**.

Install PIAs for Microsoft Excel
If you did not install .NET Framework before you installed the Office system, the PIAs are not installed with your Office installation. You can install them from the redistributable PIA package.

Before you begin

Computer workstations must have the PIAs installed and registered in the global assembly cache to run Office solutions that target the .NET Framework 4.5 or later.

The Microsoft Office PIAs are installed in the global assembly cache in *drive*:/WINDOWS/assembly or *drive*:/WINNT/assembly.

You must be an administrator on the computer to install .NET Framework and the Microsoft Office PIAs.

Procedure

1. Ensure that .NET Framework is installed. For more information, see "Install Microsoft .NET Framework" on page 191.
2. Go to the Microsoft download website.
3. Follow the instructions in the download page to install the primary interop assemblies.

Uninstall previous versions of IBM Cognos Analysis for Microsoft Excel

Previous versions of IBM Planning Analytics for Microsoft Excel were called IBM Cognos Analysis for Microsoft Excel. If you have a version of Cognos Analysis for Microsoft Excel, you must uninstall it before you can install the new version of IBM Planning Analytics for Microsoft Excel.

The uninstall does not completely remove all application files or directories during the uninstall process; therefore, you may have to perform this action manually.

If you installed more than one component in the same location, you can choose the packages to uninstall using the uninstall wizard. All components of the package will be uninstalled.

Before you begin

Before uninstalling, close all Microsoft Office applications.

Procedure

1. From the **Start** menu, click **Programs**, **IBM Cognos for Microsoft Office**, **Uninstall IBM Cognos**, **Uninstall IBM Cognos**.

   The **Uninstall** wizard appears.

   Tip: IBM Cognos for Microsoft Office was the default name of the Program Folder that was created during previous installations. If you chose another name, go to that folder to find the program.
2. Follow the instructions to uninstall the component.

   The cognos_uninst_log.txt file records the activities that the Uninstall wizard performs while uninstalling files.

   Tip: To find the log file, look in the Temp directory.
3. If you are upgrading to Planning Analytics for Microsoft Excel or migrating another version of Cognos Analysis for Microsoft Excel, you must ensure that the `Office Connection` directory is removed before installation. The `Office Connection` directory can be found at the following location:

```
C:\Users\<user name>\AppData\Local\Cognos\Office Connection
```

Connect to IBM Planning Analytics Workspace

Before users run Planning Analytics for Microsoft Excel, they must connect to an instance of Planning Analytics Workspace.

Planning Analytics Workspace is required in order to use the set editor and the cube viewer.

Install TM1 Server

Some features of IBM Planning Analytics for Microsoft Excel require the use of TM1 Server. Install TM1 Server to ensure that you are getting the best experience with Planning Analytics for Microsoft Excel.

For information on installing TM1 Server, see "TM1 Server installation" on page 81.

Note: Planning Analytics for Microsoft Excel version 2.0.30 or later require TM1 Server version 2.0.3 or later.

Set up connections for TM1 REST APIs

IBM Planning Analytics for Microsoft Excel requires the use of TM1 REST APIs. To enable these APIs in IBM TM1 Server, an administrator may need to configure the HTTP port number in the IBM TM1 Server configuration files for each TM1 Server.

Before you begin

When an IBM TM1 Server is created, the HTTP port number may not be set by default. This task requires you to edit the configuration file for each IBM TM1 Server and set the HTTP port number. Contact your administrator if you do not have access to the configuration file.

Procedure

1. Stop the TM1 Server
2. Locate the tm1s.cfg file. The location of the file may differ depending on the type of server you are using.
3. Open the tm1s.cfg file in an editor.
4. Locate the line containing the following: `HTTPPortNumber = XXXX`.
5. Replace XXXX with a valid port number which is not currently in use.
6. Save the tm1s.cfg file.
7. Restart IBM TM1 Server

Results

IBM Planning Analytics for Microsoft Excel will have access to TM1 Server data through the TM1 REST APIs.

Configure your antivirus software

To run Planning Analytics for Microsoft Excel, you must first configure your antivirus software to allow connections from both Microsoft .NET Runtime and Microsoft Excel.

If you do not configure your antivirus software to allow these two connections, an error message may appear, as described in "COI-ERR-2019 Connection failed" on page 396.

Ensure that you are using IBMid

To use Planning Analytics for Microsoft Excel, you must enter your IBMid to authenticate yourself.

Tip: To register for your IBMid, go to the IBMid registration page (https://www.ibm.com/account).

Use Cognos security

(Deprecated in v2.0.9) To log in to Planning Analytics for Microsoft Excel with Cognos security authentication enabled, you must meet certain requirements.

- Ensure that Planning Analytics for Microsoft Excel is pointing to the same Planning Analytics Workspace URL as in the Cognos TM1 Operations Console.
- Update the `pmhub.html` and `planning.html` files to include the Planning Analytics Workspace URL.
- Ensure that the settings in the Cognos TM1 Operations Console are correct. For more information, see "Configuring Cognos TM1 Operations Console to use Cognos security" on page 256.

If you do not configure Planning Analytics for Microsoft Excel for use with Cognos security, you might not be able to log in to Planning Analytics for Microsoft Excel.

Installation tasks

Perform the tasks in this section to install Planning Analytics for Microsoft Excel.

Installing IBM Planning Analytics for Microsoft Excel

Installing IBM Planning Analytics for Microsoft Excel is fast and easy. You can download and run an installation program to help you with this process.

IBM Cognos TM1 includes sample data, which you can use in Planning Analytics for Microsoft Excel. If you want to use the samples, your IBM Cognos administrator must install the samples on the IBM Cognos system.

Before you begin

Planning Analytics for Microsoft Excel is available as a 32-bit or 64-bit installation. The corresponding installation must be installed on either the 32-bit or 64-bit version of Microsoft Office.

Tip: Consider using the 64-bit version of Microsoft Office and Planning Analytics for Microsoft Excel if you anticipate performing large reporting activities.

Before you update and install components, ensure that the following statements are true:

- You have administrative privileges on the computer.
- Microsoft .NET Framework 4.6.1 or later is installed.
- Any previous version of IBM Planning Analytics for Microsoft Excel is uninstalled.
- If you are installing a version of Planning Analytics for Microsoft Excel that is older than the version currently installed, back up your connection data. Replacing a newer version of Planning Analytics for Microsoft Excel with an older version might cause your connection data to be lost.
- Acquire the appropriate license to use your IBM Cognos for Microsoft Office product.
- Configure your antivirus software to allow or unblock connections from the following two applications:
  - Microsoft .NET Runtime
  - Microsoft Excel

Procedure

1. Close all Microsoft Excel windows.
2. Download and extract the installation program.
3. If you have the 32-bit version of Microsoft Office, browse to the `win32` folder. If you have the 64-bit version of Microsoft Office, browse to the `winx64h` folder.
4. Right-click the `issetup.exe` file and select **Run as Administrator**.

   The **Welcome** page appears in a new window.
5. Select the language to use for the installation.

The language that you select determines the language of the installation user interface. The language of the product user interface is defined by the display/primary language settings in Microsoft Windows.

6. In the **Component Selection** page, select Planning Analytics for Microsoft Excel.
7. Follow the directions in the installation wizard to copy the necessary files to your computer.

Test IBM Planning Analytics for Microsoft Excel

You can test the installation of the client components by starting the application.

Before you begin

For full access to IBM Planning Analytics for Microsoft Excel, you should be a member of the Express Authors or Report Administrators role in IBM Cognos Analytics. An administrator must configure these privileges using IBM Cognos Administration.

Procedure

1. Start Microsoft Excel or open a Microsoft Excel spreadsheet.
2. Confirm that IBM Planning Analytics appears in the ribbon.

   If the IBM Planning Analytics tab is not displayed on the ribbon, see "The Cognos Office interface fails to initialize in Microsoft Office " on page 389.
3. Click the IBM Planning Analytics tab, and then click **Task Pane**.

   The IBM pane is displayed.

What to do next

To start working with IBM Planning Analytics for Microsoft Excel, you must configure connections to IBM Planning Analytics servers. See the *IBM Planning Analytics for Microsoft Excel User Guide*.

Uninstall IBM Planning Analytics for Microsoft Excel

This topic describes how you can uninstall the current version of IBM Planning Analytics for Microsoft Excel.

If you installed more than one component in the same location, you can choose the packages to uninstall using the uninstall wizard. All components of the package will be uninstalled.

Before you begin

Before uninstalling, close all Microsoft Office applications.

Procedure

1. From the **Start** menu, click **Programs**, **IBM Planning Analytics for Microsoft Office**, **Uninstall IBM Office Addins**, **Uninstall IBM Office Addins**.

   The **Uninstall** wizard appears.

   Tip: IBM Planning Analytics for Microsoft Office is the default name of the Program Folder that is created during the installation. If you chose another name, go to that folder to find the program.
2. Follow the instructions to uninstall the component.

   You can find log files that record the uninstall process in the *install_location*/ibm/cognos/IBM for Microsoft Office/instlog/ directory

Results

Planning Analytics for Microsoft Excel is uninstalled.

Note: The uninstall may not completely remove all application files or directories during the uninstall process. You can remove the application files or directories manually, or edit the \uninstall

\uninst.ini file and set the **RemoveAllCompsFlag** parameter to **1** before running the uninstall wizard.

Register the IBM Cognos Office Reporting TM1 Addin using a script

You can use a script to register the IBM Cognos Office Reporting TM1 Addin (CognosOfficeTM1.xll) with Microsoft Excel. You can use a registry command or you can modify and then use the Register Cognos XLL.vbs script.

Register the IBM Cognos Office Reporting TM1 Addin using a registry command

You can use a registry command to register the IBM Cognos Office Reporting TM1 Addin (CognosOfficeTM1.xll) with Microsoft Excel.

The following sample script shows the basic registry command to add the CognosOfficeTM1.xll reference to Microsoft Excel.

```
[HKEY_CURRENT_USER\Software\Microsoft\Office\15.0\Excel\Options]
"OPEN"="/R \"C:\\Program Files\\IBM\\cognos\\Cognos for Microsoft
Office\\CognosOfficeTM1.xll\""
```

Note: This is a sample only. You must modify the command to use the appropriate path and key for your environment.

Register the IBM Cognos Office Reporting TM1 Addin using the Register Cognos XLL.vbs script

Cognos Analysis for Microsoft Excel provides a VBS script called Register Cognos XLL.vbs. By default, this script is set up to register CognosOfficeBI.xll, which is the Cognos for Microsoft Office Addin. You can modify this script to register the IBM Cognos Office Reporting TM1 Addin. You can then run the script directly or include it in a deployment script.

Procedure

1. Go to the location where Cognos Analysis for Microsoft Excel is installed.

   On Windows 7, the default installation location is C:\Program Files (x86)\IBM\cognos \Cognos for Microsoft Office.
2. Create a backup copy of Register Cognos XLL.vbs.
3. Open the file Register Cognos XLL.vbs in a text editor.
4. On line 19, set the path to the location of the CognosOfficeTM1.xll file.
   For example:

   ```
   path = "C:\Program Files (x86)\IBM\cognos\Cognos for Microsoft Office\”
   ```
5. On line 20, replace CognosOfficeBI.xll with CognosOfficeTM1.xll.
   For example:

   ```
   file = "CognosOfficeTM1.xll "
   ```
6. Save the file.

Configure IBM Planning Analytics for Microsoft Excel for use with high DPI displays

If you are using IBM Planning Analytics for Microsoft Excel version 2.0.53 or earlier, you may need to configure your display settings to ensure that elements are rendered properly on high DPI displays.

About this task

Missing elements can include but are not limited to the IBM Task Pane and the Overview Area. For more information, see Office support for high definition displays. The **Optimize for compatibility** option is enabled by default, starting in Planning Analytics for Microsoft Excel version 2.0.54.

Procedure

1. Open Microsoft Office.

2. Click **File** > **Option** > **General**.
3. Select **Optimize for compatilitiy**.
4. Click **OK**.
5. Restart the application.

Configure Planning Analytics for Microsoft Excel single sign-on

Planning Analytics for Microsoft Excel allows you to use single sign-on for your convenience. This topic shows you how to configure Planning Analytics for Microsoft Excel to use single sign-on.

About this task

Planning Analytics for Microsoft Excel supports single sign-on modes 2,3, and 5. You may have to configure Planning Analytics for Microsoft Excel differently, depending on the single sign-on mode you use.

Mode 2

Single sign-on mode 2 allows you to choose between native or Windows login.

Single sign-on mode 2 is configured in Planning Analytics Workspace. See the following topic to configure single sign-on mode 2: “Connect to TM1 and authentication servers” on page 157

Mode 3

Single sign-on mode 3 uses Windows login by default.

Single sign-on mode 3 is configured in Planning Analytics Workspace. See the following topic to configure single sign-on mode 3: “Connect to TM1 and authentication servers” on page 157

Mode 5

Single sign-on mode 5 uses CAM. Use mode 5 if you're using IBM® Cognos security for authentication.

Planning Analytics for Microsoft Excel single sign-on mode 5 requires some files to be dropped into the IBM Cognos Analytics Gateway installation location and some configuration settings to be implemented. Planning Analytics for Microsoft Excel requires an instance of Cognos Analytics Gateway for a dedicated entry point. This Cognos Analytics Gateway instance must be enabled according to the steps described in . This ensures that the Gateway installation is supplemented by the three files that are required (pmhub.html, planning.html, and variables_plan.xml).

The required files are included in the bi_interop.zip file that is located in the directory <TM1 `installation location>\bi_interop`.

Procedure:

1. On the Cognos Analytics Gateway installation that is selected for the Planning Analytics for Microsoft Excel entry point, navigate to `Cognos_root\templates\ps\portal\` where Cognos_root is the installation location of Cognos Analytics.
2. Open the file variables_plan.xml.
3. Verify that the `<url>../pmhub.html</url> tag exists below <url>../planning.html</url>`.

   The following text is an example of the variables_plan.xml file:

```
<?xml version="1.0" encoding="UTF-8"?>
<CRNenv>
<urls>
<url>../planning.html</url>
<url>../pmhub.html</url>
</urls>
<cookies>
<param name="cam_passport"/>
<param name="CRN"/>
</cookies>
</CRNenv>
```

4. Close the file.
5. Navigate to Cognos_root\webcontent where Cognos_root is the installation location of Cognos Analytics.
6. Open pmhub.html to edit it.
7. Add the fully qualified Planning Analytics Workspace domain name and port number (if applicable). This enables SSO to operate.
8. Make sure that the user account that is running the web server has permission to access pmhub.html. If you cannot access the pmhub.html in a web browser, check the pmhub.html file properties.

Troubleshoot

Use troubleshooting information as a resource to help you solve specific problems you may encounter during or after the installation of IBM Planning Analytics for Microsoft Excel.

For more information, see "What are some common errors when installing Planning Analytics for Microsoft Excel?" on page 388

Chapter 13. IBM Planning Analytics TM1 Web installation

You can install IBM Planning Analytics TM1 Web on a computer that is separate from the computer where you installed the TM1 database and other TM1 or Planning Analytics components.

Note: As of the 2.0.55 SC release of IBM Planning Analytics in July 2020, TM1 Web is installed with the IBM Planning Analytics Spreadsheet Services installer. TM1 Web is no longer part of the web tier within the Planning Analytics Local installer.

This documentation describes how to install TM1 Web with the IBM Planning Analytics Spreadsheet Services installer. If you need details on installing TM1 Web as part of the web tier within the Planning Analytics Local 2.0.9.1 LC or earlier, see Chapter 8, “Installing the Web Tier,” on page 111.

For a list of frequently asked questions about the TM1 Web deployment introduced with the 2.0.55 SC release, see Changes to TM1 Web deployment.

For conformance documentation that describes compatibility between versions of Planning Analytics TM1 Web, Planning Analytics for Microsoft Excel, and Planning Analytics Workspace, see IBM Planning Analytics TM1 Web conformance requirements.

Check for changes to `web.xml` file

If you are upgrading IBM Planning Analytics TM1 Web to a new version, you install a new version of the `web.xml` file called `web.xml.new` and your existing `web.xml` file is preserved.

To take advantage of fixes applied in the new release, you must use the `web.xml.new` file and you must reapply any changes that you made to your previous configuration settings. In particular, restore your values for **`session-timeout`**.

1. Back up the existing `web.xml` file in `<installation_location>/webapps/tm1web/WEB-INF`. For example, rename `web.xml` to `web.xml.old`. This step backs up your current settings.
2. Rename `web.xml.new` to `web.xml`. This step uses the new version of `web.xml` that is supplied with the latest version of TM1 Web.
3. Replace the entry for **`session-timeout`** in `web.xml` with the entry from `web.xml.old`. This step restores any changes that you made to this property previously.

   For example:

```
<session-config>
    <session-timeout>20</session-timeout>
</session-config>
```

Install TM1 Web

The following items are an overall checklist for installing TM1 Web.

1. Check prerequisites.
2. Install TM1 Web.
3. Use the WebSphere administrative console to start the application server.
4. Run and test TM1 Web from your network environment.
5. Edit the TM1 Web configuration file to support a multiple computer environment.
6. Configure the TM1 Web login page using AdminHostName and TM1ServerName parameters.
7. Configure authentication and data transmission security.
8. Modify TM1 Web configuration parameters.
9. Configure the web browsers in your environment.

10. Configure JVM settings for TM1 Web/Planning Analytics Spreadsheet Services.

Installing TM1 Web

You can install TM1 Web on a separate computer and deploy it with the instance of WebSphere® Liberty web application server that is provided with the installation.

After you have installed TM1 Web on the separate computer, edit the TM1 Web configuration file to identify the remote computer where the TM1 Admin Server is running.

Install and configure TM1 Web on Microsoft Windows

These steps describe how to install TM1 Web on a separate computer that is running Microsoft Windows. These steps apply when you are using the provided WebSphere Liberty application server.

Procedure

1. The IBM Planning Analytics Spreadsheet Services installer for TM1 Web is delivered in a .zip archive.

   The zip archive contains two files: the repository for TM1 Web and the IBM Planning Analytics Spreadsheet Services installer.

   Extract the contents of the zip file into a single separate directory.
2. Run the IBM Planning Analytics Spreadsheet Services installer.
3. Select your installation language and click **Next**.
4. Select **IBM Planning Analytics Spreadsheet Services** and click **Next**.
5. Accept the license agreement and click **Next**.
6. Specify the **Installation location** and **Shortcut folder**, then click **Next**.

   The default installation location is `C:\Program Files\ibm\cognos\tm1web`.

   The default shortcut folder is IBM Planning Analytics Spreadsheet Services. You can optionally choose to make the shortcut visible to user on the Windows **Start** menu.
7. Review the **Pre-installation Summary**, then click **Install**.
8. Click **OK** when you view the **Pre-Installation Action message**.
9. Click Done when installation is complete.
10. Click **OK** when you view the **Post-Installation Action message**.

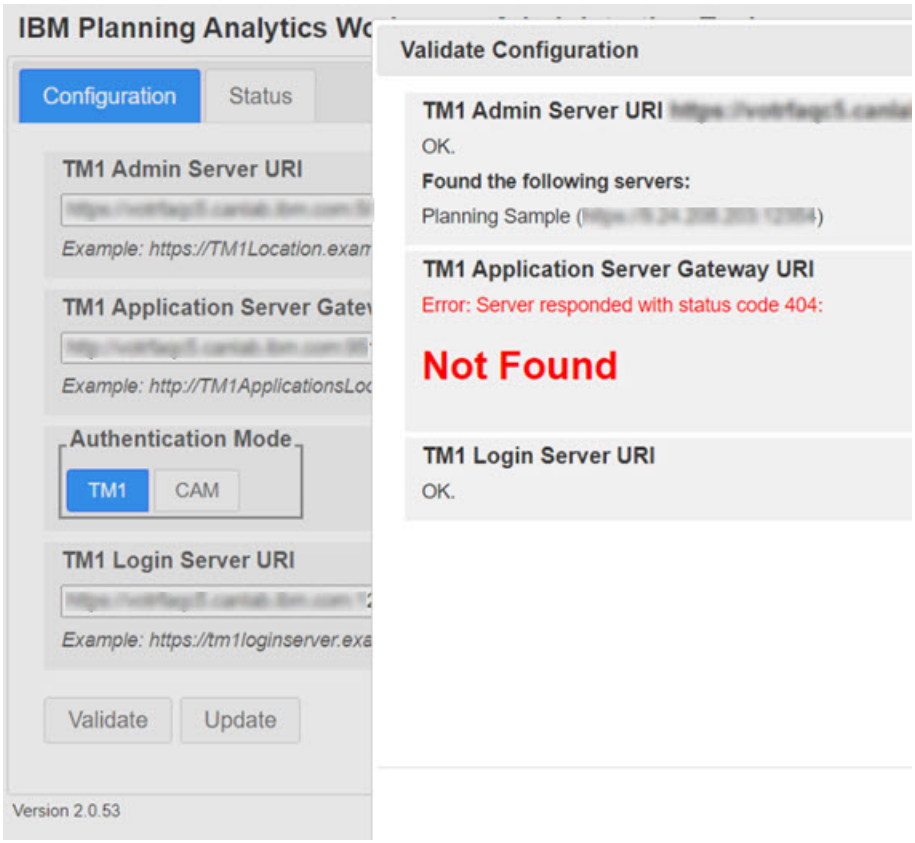
Results

If you had previously installed TM1 Web as part of a Planning Analytics web tier installation, the `tm1web_config.xml` file is copied to the new installation location, preserving your configuration settings.

The installation creates a new service named IBM Planning Analytics Spreadsheet Services. The service is configured with an Automatic startup type, but is **not** started as part of the installation process. You should review the `tm1web_config.xml` file and confirm configuration before starting the IBM Planning Analytics Spreadsheet Services service and using TM1 Web.

If you had previously installed TM1 Web as part of a Planning Analytics web tier installation, the TM1 Web service was named IBM Cognos TM1. This service is disabled and set to Manual startup when you install a new version of TM1 Web with the IBM Planning Analytics Spreadsheet Services installer.

Note: After installing TM1 Web, you might receive an error when validating your configuration with the IBM Planning Analytics Workspace Administration tool. The error indicates that the TM1 Application Server Gateway cannot be found.



This error is the result of an attempt to verify the presence of pmhub. As TM1 Web does not use pmhub, you can dismiss this error and continue using your applications.

Configure and run unattended TM1 Web installations on Windows

You can set up an unattended installation and configuration to install an identical configuration of TM1 Web across several computers on your network.

About this task

An unattended installation requires you to create a response file, which is generated based on your responses to a regular graphic installer. The responses you provide during the graphic installation are applied to all unattended installations.

Procedure

1. Create a response file to be used for unattended installations by running the IBM Planning Analytics Spreadsheet Services graphic installer from a command line with this command: `analytics-installer-`*`version`*`-win.exe -DREPO=<TM1 Web repository name> -r <FullPathOfYourResponseFile>`.
2. Complete all steps required to complete the installation.
3. To run an unattended installation, run this command from a command line: `analytics-installer-`*`version`*`-win.exe -DREPO=<TM1 Web repository name> -r <FullPathOfYourResponseFile> -i silent`.

Install and configure TM1 Web on Linux

These steps describe how to install TM1 Web on a separate computer that is running Linux. These steps apply when you are using the provided WebSphere Liberty application server.

Procedure

1. The IBM Planning Analytics Spreadsheet Services installer for TM1 Web is delivered in a .gz archive.

The .gz archive contains two files: the repository for TM1 Web and the IBM Planning Analytics Spreadsheet Services installer.

Extract the contents of the .gz archive into a single separate directory.

2. Run the IBM Planning Analytics Spreadsheet Services installer, `analytics-installer-nnnn-linuxx86.bin`.
3. Select your installation language and click **Next**.
4. Select **IBM Planning Analytics Spreadsheet Services** and click **Next**.
5. Accept the license agreement and click **Next**.
6. Specify the **Installation location**, then click **Next**.

   The default installation location is `/opt/ibm/cognos/tm1web`.

   Note: If you have previously installed TM1 Web as part of the web tier in a multi-component Planning Analytics installation, you must install to a different location when initially installing TM1 Web with the IBM Planning Analytics Spreadsheet Services installer.
7. Review the **Pre-installation Summary**, then click **Install**.
8. Click **OK** when you view the **Pre-Installation Action message**.
9. Click **Done** when installation is complete.
10. Click **OK** when you view the **Post-Installation Action message**.

Configure SSL for new deployments of Planning Analytics TM1 Web/Spreadsheet Services

You can configure the SSL settings for new deployments of Planning Analytics TM1 Web/Spreadsheet Services.

Planning Analytics TM1 Web/Spreadsheet Services does not include a user interface for generating and configuring SSL. To configure the SSL for a new deployment of Planning Analytics, you need to enable SSL communication in WebSphere Liberty and your associated JRE. For more information, see Enabling SSL communication in Liberty. You can also see Configuring the Java Runtime Environment to use SSL for an example of JRE configuration.

You can copy the default or generated materials, such as the keystore file or key stash file, from your TM1 deployment environment. Alternatively you can also install IBM Cognos TM1 Web 2.0.9.1, generate or configure the SSL using the included UI tools, and then update that installation to Planning Analytics Spreadsheet Services.

For more information on configuring SSL in Planning Analytics, see the following links:

- How to Configure SSL on Planning Analytics Data Tier using GSKit (New Certificate Signing Request)
- How to Configure SSL on Planning Analytics Web Tier using GSKit (Using Existing Signed Certificate)
- How to Configure Custom SSL Certificates for Planning Analytics 2.0 and 2.0.1
- Configure the Web Tier to use custom TLS

Configure SSL for Planning Analytics TM1 Web/Spreadsheet Services with an existing keystore

These procedures let you secure TM1 Web/IBM Planning Analytics Spreadsheet Services using a custom keystore.

About this task

The following conditions must be met before you can configure SSL for TM1 Web/IBM Planning Analytics Spreadsheet Services:

- Your keystore/certificate file must already be in PKCS12/PFX format and contain the complete certificate chain.
- You will also need the password for the PKCS12/PFX file you are using.

- In this document, the file name `customKeystore.pfx` is used to refer to your existing keystore file. Your actual file name will differ.
- The file must be placed in the `<install_dir>\tm1web\bin64\ssl\` directory.
- The IBM Planning Analytics Spreadsheet Service must be stopped before you can proceed with configuration.

Procedure

1. Configure the Planning Analytics Spreadsheet Services service with a custom keystore.
   a) Open Windows Services and check the status of your IBM Planning Analytics Spreadsheet Services. If the service is running, stop it before you proceed to the next step.

   b) Open `<install_dir>\tm1web\wlp\usr\servers\tm1web\server.xml` in a text editor.
   c) Update the **`httpPort`** and **`httpsPort`** parameters to reflect the ports you would like to use. To disable HTTP altogether, set **`httpPort="-1"`**. For example,

```
<httpEndpoint id="defaultHttpEndpoint"  httpPort="-1"  httpsPort="9510"  host="*"
removeServerHeader="true"
</httpEndpoint>
```

   d) Remove the following lines from the `server.xml` file:

```
<config/>
<sslDefault/>
<ssl/>
<keyStore/>
```

   e) Add the following line immediately following the last **`<application>`** tag in `server.xml`:

```
<keyStore id="defaultKeyStore" location="${wlp.user.dir}/../../bin64/ssl/
customKeystore.pfx" password="your_password" />
```

   f) Save and close the `server.xml` file.
   g) Open a Command Prompt as an administrator, then go to `<install_dir>\tm1web\jre\bin\`.
   h) Because TM1 Web is using a new keystore, you must include the TM1 Server certificates in the keystore file. If the TM1 Server certificates are not present, you can't see your TM1 Servers in TM1 Web. Execute the following command:

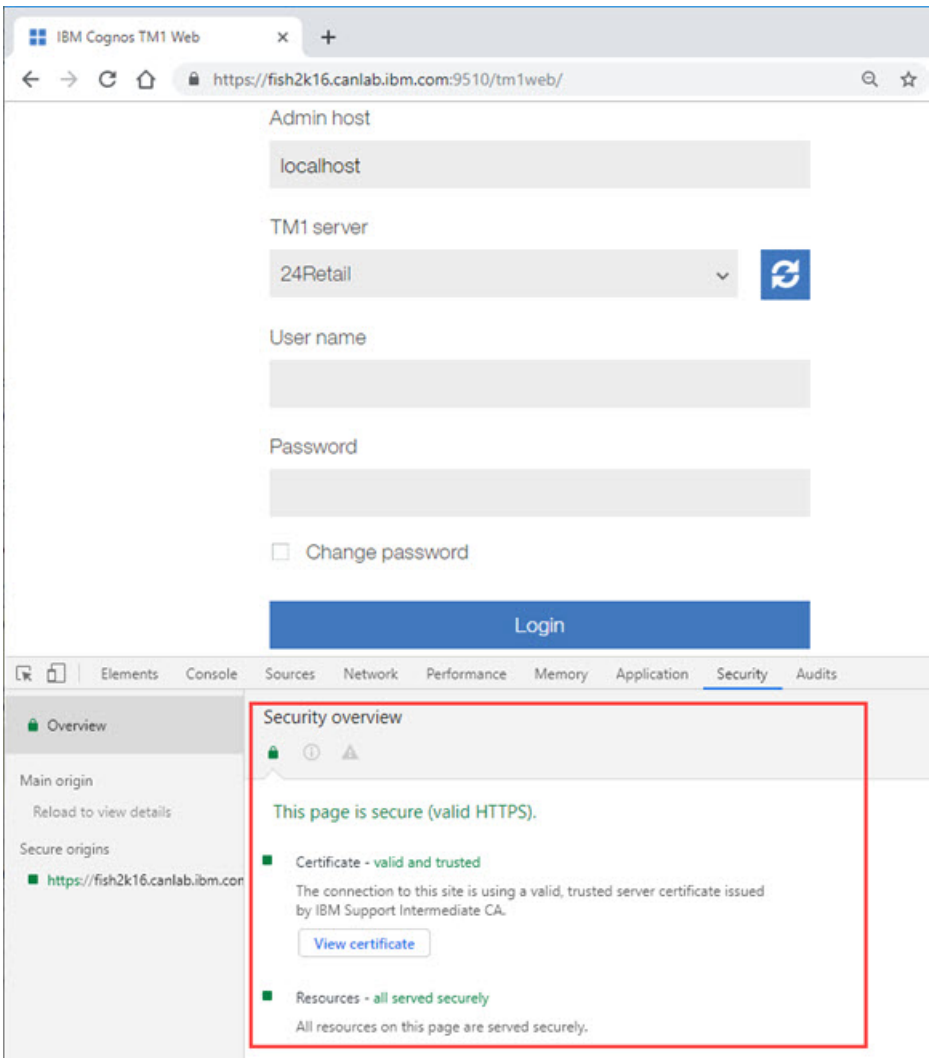
```
keytool -importcert -keystore ..\..\bin64\ssl\customKeystore.pfx -storepass your_password
-storetype pkcs12 -noprompt -alias ibmtm1 -file ..\..\bin64\ssl\ibmtm1.arm
```

   i) If you communicate with any other TM1 Servers or applications that use different certificates, you must repeat the previous step, importing any additional certificates you require.
   j) Restart IBM Planning Analytics Spreadsheet Services in Windows Services.
2. Validate your SSL configuration.

   The following validation steps apply to the Chrome web browser. If you are using another browser, you'll need to adjust the steps as necessary.

   a) After the IBM Planning Analytics Spreadsheet Services service starts, access your TM1 Web URL using Chrome, for example: `http://machine_name:9510/tm1web`.

      You may encounter a warning. If you do, it is likely because you haven't told your computer to trust the Root Certificate Authority and Intermediate Certificate Authority that are used to sign the Planning Analytics certificate. To resolve the untrusted certificate warning, see the following technote: http://www.ibm.com/support/docview.wss?uid=ibm10879929.
   b) If your certificates are valid and trusted, you should see something similar to this on the **Security** tab of the Chrome developer tools:



c) If you don't see a particular TM1 Server in your list of servers in TM1 Web, you may not have imported the TM1 Server certificate in to your keystore. Please see step 1h above for details on importing TM1 Server certificates to your keystore.

Configure and run unattended TM1 Web installations on Windows

You can set up an unattended installation and configuration to install an identical configuration of TM1 Web across several computers on your network.

About this task

An unattended installation requires you to create a response file, which is generated based on your responses to a regular graphic installer. The responses you provide during the graphic installation are applied to all unattended installations.

Procedure

1. Create a response file to be used for unattended installations by running the IBM Planning Analytics Spreadsheet Services graphic installer from a command line with this command: `analytics-installer-`*`version`*`-win.exe -DREPO=<TM1 Web repository name> -r <FullPathOfYourResponseFile>`.
2. Complete all steps required to complete the installation.
3. To run an unattended installation, run this command from a command line: `analytics-installer-`*`version`*`-win.exe -DREPO=<TM1 Web repository name> -r <FullPathOfYourResponseFile> -i silent`.

Upgrade IBM Planning Analytics TM1 Web

Whether you have never installed TM1 Web before or are performing an upgrade, the installation procedure is identical.

However, you should be aware of these issues when performing an upgrade.

Upgrading from a previous Planning Analytics web tier installation

If you had previously installed TM1 Web as part of a Planning Analytics web tier installation, the TM1 Web service was named IBM Cognos TM1. This service is disabled and set to Manual startup when you install a new version of TM1 Web with the IBM Planning Analytics Spreadsheet Services installer.

If you had previously installed TM1 Web as part of a Planning Analytics web tier installation, the `tm1web_config.xml` file is copied to the new installation location, preserving your configuration setting.

TM1 Application Web (pmpsvc) configuration

The IBM Planning Analytics Spreadsheet Services installer includes only TM1 Web and the evaluation service. If you use TM1 Application Web, you must configure it to use the correct ports to connect to TM1 Web. See "Configure TM1 Application Web to connect to TM1 Web on Windows" on page 205 or "Configure TM1 Application Web to connect to TM1 Web on Linux" on page 206, depending on your environment.

Configure TM1 Application Web to connect to TM1 Web on Windows

If you upgrade to TM1 Web 2.0.54 SC or later from a previous version of TM1 Web that was installed as part of the web tier in a multi-component Planning Analytics installation, you must configure TM1 Application Web (`pmpsvc`) to maintain the connection between TM1 Application Web and the TM1 Web server. This configuration is not necessary if you don't use TM1 Application Web.

About this task

Previously, TM1 Web was released coincidental with the Planning Analytics TM1 Server. In this scenario, TM1 Web was installed as part of the web tier in a large, multi-component Planning Analytics installation.

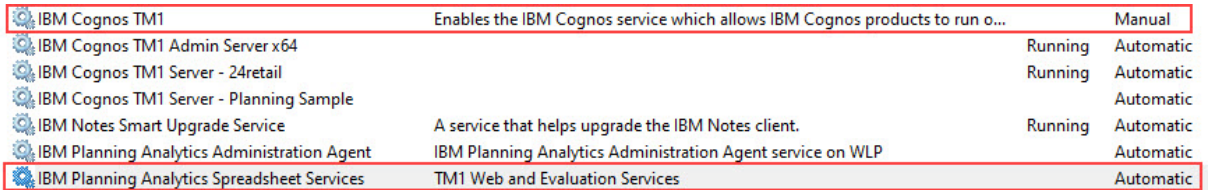
As of Planning Analytics 2.0.55 SC, TM1 Web is installed independent of other components using the IBM Planning Analytics Spreadsheet Services installer.

This configuration is necessary only when you upgrade from a large, multi-component Planning Analytics installation to a new version of TM1 Web using the IBM Planning Analytics Spreadsheet Services installer.

The configuration described here is not necessary when upgrading from one Planning Analytics TM1 Web 2.0.xx SC version to a later 2.0.xx SC version.

Procedure

1. After you complete your TM1 Web installation, open Windows Services.



   The **IBM Cognos TM1** service is the old version of TM1 Web that was installed with a prior multi-component Planning Analytics installation. Note that this service is disabled and the startup type is Manual.

   The **IBM Planning Analytics Spreadsheet Services** service is the new version of TM1 Web that was installed using the IBM Planning Analytics Spreadsheet Services installer. This service is not running and the startup type is Automatic.

   Note: If the **IBM Planning Analytics Spreadsheet Services** service **is** running, stop it before proceeding. Keep the Windows Services open, you'll return to it shortly.

2. Open the `server.xml` file located in the `C:\Program Files\ibm\cognos\tm1web\wlp\usr\servers\tm1web` directory.

   Note: You must open and save the `server.xml` file as an administrator.
3. Change the `httpPort` attribute value within the `httpEndpoint` element from 9510 to 9511, then save the `server.xml` file.

   Note: If your `httpPort` attribute value is other than 9510, change it to a different unique value and take note of the port number. You'll need it later in the configuration process.
4. In Windows Services, start both the **IBM Planning Analytics Spreadsheet Services** and **IBM Cognos TM1** services.
5. Log in to IBM TM1 Application Web.
6. Click the Settings icon on the My Applications screen.
7. Click the **General** tab.
8. Select **tm1web** under **Clients** and click **Edit**.
9. Change the URL to `http://localhost:9511/tm1web/Contributor.jsp`. If you set the `httpPort` attribute to a value other than 9511 in step 3, substitute that value for the `localhost:` port number.
10. Click **OK**.
11. Log out of IBM TM1 Application Web.
12. Log in to IBM TM1 Application Web again.

Configure TM1 Application Web to connect to TM1 Web on Linux

If you upgrade to TM1 Web 2.0.54 SC or later from a previous version of TM1 Web that was installed as part of the web tier in a multi-component Planning Analytics installation, you must configure TM1 Application Web (`pmpsvc`) to maintain the connection between TM1 Application Web and the TM1 Web server. This configuration is not necessary if you don't use TM1 Application Web.

About this task

Previously, TM1 Web was released coincidental with the Planning Analytics TM1 Server. In this scenario, TM1 Web was installed as part of the web tier in a large, multi-component Planning Analytics installation.

As of Planning Analytics 2.0.55 SC, TM1 Web is installed independent of other components using the IBM Planning Analytics Spreadsheet Services installer.

This configuration is necessary only when you upgrade from a large, multi-component Planning Analytics installation to a new version of TM1 Web using the IBM Planning Analytics Spreadsheet Services installer.

The configuration described here is not necessary when upgrading from one Planning Analytics TM1 Web 2.0.xx SC version to a later 2.0.xx SC version.

Procedure

1. After you complete your TM1 Web installation, go to the `/opt/ibm/cognos/tm1web/bin64` directory.
2. Run `./shutdown.sh`.
3. Open the `server.xml` file located in the `/opt/ibm/cognos/tm1web/wlp/usr/servers/tm1web` directory.

   Note: You must open and save the `server.xml` file as an administrator.
4. Change the `httpPort` attribute value within the `httpEndpoint` element from 9510 to 9511, then save the `server.xml` file.

   Note: If your `httpPort` attribute value is other than 9510, change it to a different unique value and take note of the port number. You'll need it later in the configuration process.
5. In `/opt/ibm/cognos/tm1web/bin64`, run `./startup.sh`.
6. Log in to IBM TM1 Application Web.

7. Click the Settings icon on the My Applications screen.
8. Click the **General** tab.
9. Click **Add** under **Server Names**.
10. Enter `http://localhost:9510/pmpsvc` in the **Admin Host** box, then click **OK**.
11. Select **tm1web** under **Clients** and click **Edit**.
12. Change the URL to `http://localhost:9511/tm1web`. If you set the `httpPort` attribute to a value other than 9511 in step 4, substitute that value for the `localhost:` port number.
13. Click **OK**.
14. Log out of IBM TM1 Application Web.
15. Log in to IBM TM1 Application Web again.

Results
You can now connect to the new installation of TM1 Web from TM1 Application Web.

Modifying TM1 Web configuration parameters

The `tm1web_config.xml` file is an XML file that contains configuration parameters for TM1 Web.

The parameters in this file control the following IBM TM1 Web features.

- View node
- Cube Viewer page size
- Number of sheets to export from a Cube Viewer
- IBM TM1 Web startup and appearance settings
- Session timeouts

TM1 Web configuration parameters

The configuration parameters for IBM Planning Analytics TM1 Web are stored in the `tm1web_config.xml` file.

The `tm1web_config.xml` file is located in the following location:

<TM1 install location>`\webapps\tm1web\WEB-INF\configuration\`

The following parameters are available.

ActionButtonFullRecalculationEnabled

Determines the level of recalculation that occurs as part of the execution of an action button. This parameter is only applicable to action buttons that use **Automatically Recalculate Sheet** as the **Calculation** type.

If set to true, a full recalculation occurs on the target workbook.

If set to false, a partial recalculation occurs on the target workbook. Only the visible portions of the target workbook are recalculated. This recalculation includes any Active Forms, DBS/DBSW/DBR/DBRW/DBRA/DBSA formulas, and dependencies of cells in the visible area. Any portions beyond the scrolling boundary of the target workbook are *not* recalculated. False is the default value, which can result in improved performance, especially in large workbooks.

AdminHostName

If set, users are not asked to enter a value for Admin Host during login.

See "Configuring the TM1 Web login page using AdminHostName and TM1ServerName parameters" on page 214.

AdminHostPort

If set, the client tries to use this port instead of the default Admin Host port.

AdminHostSSLPort
If set, the client tries to use this port instead of the default Admin SSL Host port.

CamLoginApiRedirectEnabled

Default value is `false`.

When enabled, CAM authentication from the TM1 Web API (either URL API or JavaScript Library) performs a redirect to the CAM login page of Cognos Analytics. This behavior differs from the default behavior of showing CAM login page of Cognos Analytics in a dialog box. This parameter must be enabled in cases where Cognos Analytics includes an `X-Frame-Options` header with a value of `SAMEORIGIN` or `DENY`, which is used to improve protection against Click-jacking attacks.

CleanDimensionMetaDataCache

During websheet calculation, the CleanDimensionMetaDataCache parameter specifies whether dimension elements are retrieved from the TM1 Server or by using cached elements from TM1 Web.

Default value: `false`

- If CleanDimensionMetaDataCache is set to false, elements from the tm1web cache are used.
- If CleanDimensionMetaDataCache is set to true: tm1web dimension elements are cleaned from the cache and the elements are retrieved directly from the TM1 Server.

CrossDomainAccessList

Specifies a list of cross-domain URLs that are allowed to access TM1 Web.

You can use this parameter to specify the domain where IBM Cognos Workspace is running, if it's running on a domain separate from TM1 Web.

Use an asterisk (*) to allow any domain to access TM1 Web.

If you specify multiple URLs, separate each one by using a comma.

If this parameter is not set or the parameter value is empty, no cross-domain access to TM1 Web is allowed.

CubeViewerColumnPageSize
Specifies the number of columns to fetch in a page of Cubeviewer.

See “Changing the Cube Viewer page size” on page 221.

CubeViewerHiddenDimensionsEnabled
Hides dimensions in the TM1 Web cube viewer.

Hidden dimensions are part of the context of a view, but do not show up as context dimensions in the TM1 Web cube viewer. Instead, they reside in a region of the dimension bar labeled **Hidden**.

To use hidden dimensions in the TM1 Web cube viewer, you must set `CubeViewerHiddenDimensionsEnabled" ="true"` in the `tm1web_config.xml` file. When the feature is enabled, the **Hidden** region appears on the cube viewer.

You can drag dimensions to and from the **Hidden** region just as you can for the **Rows**, **Columns**, and **Context** regions.

When a view includes hidden dimensions, the number of hidden dimensions is displayed below the **Hidden** label. When you click the **Hidden** region, you can see which dimensions and elements are hidden.

You cannot change the element for a hidden dimension. If you want to change an element, you must show the dimensions by dragging it to the **Rows**, **Columns**, or **Context** region, and then change the element. You can then return the dimension to the hidden region.

CubeViewerRowPageSize
Specifies the number of rows to fetch in a page of Cubeviewer.

See “Changing the Cube Viewer page size” on page 221.

CubeviewerStringWrap
Settings for string cell wrapping in the Cubeviewer.

See "Wrapping string values in cube views" on page 222.

CustomCAMLogoutUrl

Specifies the URL of a dedicated Logout page for CA SiteMinder when TM1 Server is configured to use CAM security (mode 4 or 5). This Logout page must be accessed on logout so that the SiteMinder session cookie can be invalidated.

When a user clicks **Logoff** in TM1 Web, the CAM logout occurs first. Then, the SiteMinder Logout page is called.

EvaluationServiceURL
Specifies the location of the evaluation service. The evaluation service is included with IBM Planning Analytics Spreadsheet Services. It is used for rendering quick reports within TM1 Web and Planning Analytics websheets.

Valid value is *hostname*:*port_number*.

If no value is assigned, the default value is assumed to be `http://localhost:9510`.

ExportCellsThreshold
Specifies the maximum number of cells that an export of a websheet or a cube view can contain. If the number of selected cells exceeds the threshold, a warning message is displayed and the export does not start.

As of IBM Planning Analytics version 2.0.7, the default value is **1000000**.

Edit the **ExportCellsThreshold** parameter in the `tm1web_config.xml` file by using the following format:

```
<add key="ExportCellsThreshold" value="CellsThreshold" />
```

where *CellsThreshold* is the cell count threshold that is determined by multiplying the number of rows by the number of columns per sheet, and then multiplying that result by the number of iterations and context members that the export is selected for.

For example, if a websheet has two sheets and each sheet has 1000 rows and 25 columns, and the export is selected for four context members, the cell count is calculated as 25,000 * 2 sheets * 4 context members = 200,000 cells. If the <CellsThreshold> is 150, 000, this websheet export would be rejected.

ExternalUrl

Set the ExternalUrl parameter if you are using TM1 Web and Cognos security (CAM) authentication with an external load balancer that modifies the original startup URL for TM1 Web. The ExternalUrl parameter provides the correct URL so that Cognos security can successfully redirect back to TM1 Web.

Set the value to the same URL that you use to start TM1 Web, for example

```
<add key="ExternalUrl" value="http://mycomputer/TM1Web" />
```

GzipCompressionEnabled
Determines whether the web server responses will be compressed. Valid values are `true`/`false`.

HideCubeviewerToolBar
If set to true, all Cubeviewer toolbars are not displayed.

See "HideCubeviewerToolBar parameter" on page 220.

HideTabBar
If set to true, multiple tabs are not displayed.

See "HideTabBar parameter" on page 220.

HideWebsheetToolBar
If set to true, all websheet toolbars are not displayed.

See "HideWebsheetToolBar parameter" on page 220.

HomePageObject
If set, the object of type of websheet, Cubeviewer, or URL will be displayed after a user logs in.

See "Configuring a global homepage for all users" on page 216.

HttpSessionTimeout
This parameter defines the session timeout (in minutes) of the HTTP session for TM1 Web. If the parameter is missing, the value is less than 1, blank, or not a numerical value, the default session timeout that is defined for TM1 Web in the `web.xml` file is used.

See "Setting the TM1 Web session timeout" on page 223.

Note: As of IBM Planning Analytics Local version 2.0.6, you should not change the `session-timeout` value in the `web.xml` file.

LegacyUrlApiSessionDiscoveryEnabled
Use the **LegacyUrlApiSessionDiscoveryEnabled** configuration parameter to control how the TM1 Web URL API handles login sessions. Configure this parameter to specify whether the URL API tracks separate unique login sessions.

This parameter enables the URL API session to be reused based on the specified admin host, TM1 Server, and (optional) user name.

If you are using the session token login approach with the URL API, you must set the **LegacyUrlApiSessionDiscoveryEnabled** configuration parameter in the `tm1web_config.xml` file to `False`.

See TM1 Web API session login.

Use this format:

```
<add key="LegacyUrlApiSessionDiscoveryEnabled" value=True or False/>
```

For example:

```
<add key="LegacyUrlApiSessionDiscoveryEnabled" value="False"/>
```

The default value is `True`.

- **True**

  TM1 Web tries to match new login request with an existing login session based on the provided information (TM1 Admin host, TM1 Server, user name).

  This parameter should be set to `True` only if a single login will occur for a unique TM1 Admin Host, TM1 Server, and user name combination.

- **False**

  Specifies that a session token must be provided every time that you open a TM1 Web object with the TM1 Web URL API. Otherwise, the user is prompted.

  Set this parameter to `False` if you plan to use multiple login sessions with TM1 Web URL API. You also use this configuration if you are using multiple login sessions with the URL API and other TM1 Web clients such as TM1 Web and TM1 Application Web. This configuration uses the session token to keep the user sessions separate and unique.

MaximumConcurrentExports
Specifies the maximum number of concurrent exports that can be executed from TM1 Web. The default value is 5.

Before IBM Planning Analytics version 2.0.7, the default value is 5.

As of IBM Planning Analytics version 2.0.7, the default value is **4**.

You can set MaximumConcurrentExports to 0 to allow an unlimited number of concurrent exports. This setting is analogous to export behavior in TM1 Web before version 10.3.

If the maximum number of concurrent exports is reached, and more exports are then initiated, the additional exports are queued until an export slot is available. The initiator of a queued export does not receive notification of queuing.

The optimal parameter setting depends on your RAM capacity and your user requirements. Generally, the more RAM you have available to TM1 Web, the higher the parameter setting can be. Increasing the value results in increased memory consumption, but reduces export queuing. (Setting the parameter to 0 eliminates export queuing.) Conversely, decreasing the parameter value reduces memory consumption that results from exports, but can result in more frequent export queuing.

MaximumSheetsForExport

Specifies the maximum number of sheets that are allowed to export.

Before IBM Planning Analytics version 2.0.7, the default value is 100.

As of IBM Planning Analytics version 2.0.7, the default value is **50**.

See "Setting the maximum number of sheets to export from a websheet" on page 222.

MixedCellPaste

If the MixedCellPaste parameter is set to true, when you copy values to a mixed range of leaves and consolidated values in a websheet, the pasted values match exactly. The default value is `False`.

Note: This parameter applies to websheets only; it does not apply to CubeViewer.

NavTreeCollapsedOnStart

Determines whether the navigation panel will be collapsed or expanded after a user logs in.

See "NavTreeCollapsedOnStart parameter" on page 219.

NavTreeDisplayServerView

Specifies whether to display the Server View node in the navigation tree. Valid values are Y and N.

See "Displaying or hiding the Views node in the navigation pane" on page 221.

NavTreeHidden

Determines whether the navigation panel will be displayed after a user logs in.

See "NavTreeHidden parameter" on page 219.

RecalcOnActivate

If RecalcOnActivate is set to true, a recalculation is performed each time a websheet or cubeview is activated in TM1 Web, for example, when you switch tabs.

Valid values are `true` or `false`.

RecalcOnDataValidationChange

Specifies whether the default recalculation behavior will be overridden when you change the value of a data validation list.

If set to true, a recalculation will be triggered when a value in a data validation list is changed.

If set to false, a recalculation will not be triggered when a value in a data validation list is changed.

RecalcOnPicklistChange

Specifies whether the default recalculation behavior will be overridden when you change the value of a picklist.

If set to true, a recalculation will be triggered when a value in a picklist is changed.

If set to false, a recalculation will not be triggered when a value in a picklist is changed.

RelationalResultMaxRows
If a value greater than -1 is specified, then relational query ResultSets are limited to returning the specified number of rows.

TM1DatabaseLabel
If set to "Y", the name of the database is displayed beside the user on the TM1 Web banner. For example, "Welcome: Admin / Planning Sample". The default is "N". When this option is set to "N", nothing is displayed beside the user.

See "TM1DatabaseLabel parameter" on page 221 in *Configuring IBM TM1 Web Startup and Appearance Settings*.

TM1ServerName
If set, users will not be asked to select a TM1 Server to connect to during login.

See "Configuring the TM1 Web login page using AdminHostName and TM1ServerName parameters" on page 214.

UseBookRecalcSetting

The UseBookRecalcSetting parameter is included in the `tm1web_config.xml` file. When set to true, the web server honors the mode in which the Excel sheet was published. If the Excel sheet was published in Manual recalc mode, websheet data is not resent to the client until a recalculation is performed.

The UseBookRecalcSetting parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="UseBookRecalcSetting" value="false" />
```

where value is either "false" or "true"

If you set UseBookRecalcSetting to true, TM1 Web honors the recalculation settings in the Excel worksheet.

When Calculation Options is set to Automatic:

- If you set `UseBookRecalcSetting = "true"`, the websheet is recalculated automatically when you change the SUBNM function.
- If you set `UseBookRecalcSetting = "false"`, the websheet is recalculated automatically when you change the SUBNM function.

When Calculation Options is set to Manual:

- If you set `UseBookRecalcSetting = "true"`, the websheet is not recalculated automatically. To recalculate, you must manually click the **recalc** button.
- If you set `UseBookRecalcSetting = "false"`, the websheet is recalculated automatically when you change the SUBNM function.

WebsheetBackgroundRecalculationMode

Specifies the level of background recalculation that occurs for a websheet.

WebSheetService.scrollWebSheet calls can take several seconds because the data is not readily available. Use the WebsheetBackgroundRecalculationMode parameter to recalculate the book in the background so that the necessary data is ready when it is requested.

If set to 0 (default value), only the buffered (visible) area is calculated on a refresh of a sheet.

If set to 1, the area that is adjacent to the buffered area is calculated, in addition to the buffered area. This improves wait times if the user scrolls slightly away from the initially visible area.

If set to 2, the entire current worksheet is calculated. This improves wait times if the user scrolls to any area of the current sheet.

If set to 3, the entire current workbook is calculated. This improves wait times if the user moves to any area of the current worksheet or to another worksheet.

Note: The higher the setting number, the more cells are calculated meaning that there would be a higher load on the web server.

WorkbookMaxCellCount

Specifies the maximum cell count of a workbook as a number with no thousands separators.

The TM1Web application server validates the size of a workbook that is published to TM1 Server. Workbooks that contain ActiveForms might be uploaded only with their master row. At publish time, the workbook can have multiple rows but when it is opened and rebuilt it can display many more rows. You can use WorkbookMaxCellCount to avoid issues when you open workbooks with many cells.

If this parameter is present in `tm1web_config.xml` and it is not the default, when the user opens a workbook, the server validates its cell count against WorkbookMaxCellCount. If the cell count of the workbook exceeds WorkbookMaxCellCount, an error message is logged and the workbook is not opened. The user sees the *<book_name> exceeds maximum cell count* error message in the `tm1web.log` file.

See Using IBM Planning Analytics TM1 Web Logging.

- Leaving this parameter blank or setting it to less than 0 indicates that an unlimited cell count for workbooks is allowed.
- Before IBM Planning Analytics version 2.0.7, the default value is -1, which indicates an unlimited number of cells are allowed in a workbook.
- As of IBM Planning Analytics version 2.0.7, the default value is **500000**.
- Setting this parameter to 0 indicates that workbooks cannot have any cells. Therefore, anything above 0 is recommended.

Note: Changes to this parameter require a restart of the application server.

X-Frame-Options

The X-Frame-Options parameter sets the `X-Frame-Options` response header value. The parameter (and the response header value) specifies whether a browser should be allowed to render a TM1 Web page in a <frame>, <iframe>, or <object>. Use this parameter to prevent Click-jacking attacks and ensure that TM1 Web content is not embedded into other sites. There are three possible parameter values.

- **0** corresponds to the DENY response header value, which prevents *any* domain from framing TM1 Web content.
- **1** corresponds to the SAMEORIGIN response header value, which allows only the current domain to frame TM1 Web content.
- **2** corresponds to the ALLOW-FROM response header value. In this case, TM1 Web checks the CrossDomainAccessList parameter in `tm1web_config.xml` for the list of cross-domain URLs that are allowed to access and frame TM1Web content.

  The ALLOW-FROM response header does not have universal browser support. TM1 Web uses the values in CrossDomainAccessList to determine whether the domain is allowed or not. If not, TM1 Web includes the DENY response header value, which prevents framing. In certain circumstances, TM1 Web might be unable to determine the requesting domain. In this case, the SAMEORIGIN response header value is included.

If the X-Frame-Options parameter is missing or empty, 2 is the default value.

The .jsp files in TM1Web include the response header `X-Frame-Options` only for the DENY and SAMEORIGIN values. If the domain is confirmed to be allowed, then no `X-Frame-Options` header is included.

Editing the TM1 Web configuration file

You can edit the IBM TM1 Web configuration file to configure different parameters.

The TM1 Web configuration file is an xml file and should be opened only with an XML-type editor. Opening it using a regular text editor such as Microsoft Wordpad can result in incorrect characters being added that may corrupt the file.

As of TM1 Web version 10.2, the new `tm1web_config.xml` file replaces the `web.config` file from previous TM1 Web versions.

Procedure

1. Locate and open the `tm1web_config.xml` file in the following location:

   <TM1 install location>`\webapps\tm1web\WEB-INF\configuration\`

   Note: The `tm1web_config.xml` file is an xml file and should be opened only with an XML-type editor. Opening it using a regular text editor such as Microsoft Word Pad can result in incorrect characters being added that may corrupt the file.
2. Edit the parameters and save your changes.
3. Log in to IBM TM1 Web to see the result of your edits.

Configuring the TM1 Web login page using AdminHostName and TM1ServerName parameters

The **AdminHostName** and **TM1ServerName** parameters control whether the IBM TM1 Web login page prompts the user to enter values for the TM1 Admin Host and TM1 server.

If you set a value for either of these parameters in the `tm1web_config.xml` file, then the login process uses the specified value and does not prompt the user for this information.

AdminHostName Parameter

This parameter specifies the name of the Admin Host on which a TM1 Admin Server is running. Edit the **AdminHostName** parameter in the `tm1web_config.xml` file using the following format:

```
<add key="AdminHostName" value="HostName"/>
```

where *HostName* can be one of the following values:

- If *HostName* is blank (default value), then the login page displays the Admin Host prompt.
- If *HostName* is set to the name of a valid TM1 Admin Host, then IBM TM1 Web uses that Admin Host for the login process and does not prompt the user.

TM1ServerName Parameter

This parameter sets the name of the TM1 server. Edit the **TM1ServerName** parameter in the `tm1web_config.xml` file using the following format:

```
<add key="TM1ServerName" value="ServerName"/>
```

where *ServerName* can be one of the following values:

- If *ServerName* is blank (default value), then the TM1 server prompt is displayed on the IBM TM1 Web login page.
- If *ServerName* is set to a valid TM1 server name, then the login page does not display a prompt for either the Admin Host or the TM1 server.
- If the **AdminSvrSSLCertID** parameter is incorrectly configured, the server name pull-down displays as empty and an error is logged in the TM1 Web log file. For more information, see *Running TM1 in Secure Mode using SSL* in *TM1 Operation*.

After the user enters a valid User Name and Password, IBM TM1 Web will log in to the TM1 server specified by the **TM1ServerName** parameter in the `tm1web_config.xml` file.

For example, the **TM1ServerName** parameter could be set to planning sample, as shown in the following code.

```
<add key="TM1ServerName" value="planning sample" />
```

Configuring a custom homepage for TM1 Web

You can configure a custom homepage for IBM TM1 Web to display a websheet, cube view, or a URL after users have successfully logged into IBM TM1 Web. This homepage can provide users with a starting point for accessing and working with TM1 data.

A homepage can be configured globally for all IBM TM1 Web users or assigned individually for different users or sets of users. For example, if you configure the homepage option to display an HTML file or other type of web page, then you can provide users with instructions, tasks, links, or any other content that can be displayed in a web page.

If a homepage is configured, it displays on the first tab in IBM TM1 Web and cannot be closed by users. When configured, a Home link is displayed in the header area of IBM TM1 Web that allows users to easily return to the homepage.

An IBM TM1 Web homepage can be configured in one of the following two ways:

Different homepage for different IBM TM1 Web users
Use the Client Settings dialog in TM1 Architect and Server Explorer to configure a startup homepage for different clients (users) of IBM TM1 Web.

Global homepage for all IBM TM1 Web users
Use the HomePageObject parameter in the `tm1web_config.xml` file to configure a homepage that applies globally to all IBM TM1 Web users.

Note: Any homepage assignment you make with the Client Settings dialog can override the global setting in the `tm1web_config.xml` file if you set `AllowOverwrite=true` in the `HomePageObject` parameter of the `tm1web_config.xml` file.

Configuring different homepages for individual users

The Client Settings dialog box, in Architect and Server Explorer, configures a startup homepage for different IBM TM1 Web clients (users).

For example, you can assign one homepage for TM1 Web users in the Sales department and another homepage for users in the Finance department.

Note: You can use the **Client Settings** dialog box to assign homepages for specific users, over-riding the global homepage setting for the **HomePageObject** parameter in the `tm1web_config.xml` file.

Procedure

1. In Architect or Server Explorer, right click the server and select **Security**, **Clients/Groups**.

   The Clients/Groups dialog box opens.
2. Click **Settings**.

   The Client Settings dialog box opens.
3. Select the client from the **Current Client** list for which the homepage setting will apply.
4. Enter a websheet, cube view, or URL for the homepage as follows:
   - To display a URL, type the URL address, including the http:// protocol, into the Homepage box. You can enter a URL for either a website or an individual file.
   - To select a websheet or cube view as the homepage, click **Browse**. The Select an TM1 Web Homepage dialog box opens where you can select a reference to a websheet or cube view from the Application tree.

After selecting a websheet or cube view reference, click **OK** to return to the Client Settings dialog box.

5. Select the settings that control the appearance of the Navigation pane.

   Note: The Navigation pane settings you set here will only apply if the corresponding parameter in the `tm1web_config.xml` file is set to `AllowOverwrite=true`. For more information, see "Configuring TM1 Web startup and appearance settings" on page 219.

   The available settings for controlling the appearance of the Navigation pane include:

   - **Include the Navigation Pane** - Determines whether the Navigation pane is displayed or not displayed when the selected client logs in to TM1 Web.
   - **Open pane on Login** - Sets the Navigation pane to display in the expanded mode when the selected client logs in to TM1 Web.
   - **Close pane on Login** - Sets the Navigation pane to display in its minimized mode when the selected client logs in to TM1 Web.
   - **Save Client's Navigation Pane Settings** - Determines whether the personal settings for the Navigation pane are saved when the client logs out of TM1 Web.
6. Select one of the options from the **Apply To** list to configure which client or clients will be able to view the homepage.

   The available options include:

   - **Current Client** - Applies the homepage setting for only the client selected in the current Client list.
   - **Selected Clients** - Enables the Select button so you can open the Subset Editor to select a collection of clients that will use the same homepage setting.

     If you choose **Selected Clients**, and then click **Select**, the Subset Editor opens so you can select a subset of TM1 clients that can use the homepage.

     Use the Subset Editor to select a subset of clients and then click **OK** to return to the Client Settings dialog box. The number of clients selected in the Subset Editor is summarized in the Client Settings dialog box.
   - **All Clients** - Applies the same homepage setting to all TM1 clients.
7. Click **Apply Settings** to configure the homepage for the client or clients that you selected in the Apply To list.
8. Repeat steps 4, 5, 6, and 7 to configure a homepage for a different set of TM1 clients.
9. Click **OK** to close the Client Settings dialog box.

   You have now configured a homepage for TM1 Web. The selected TM1 Web clients will see the assigned homepage the next time they successfully log in to TM1 Web.

Configuring a global homepage for all users
The `HomePageObject` parameter, in the `tm1web_config.xml` file, enables a global homepage that displays for all IBM TM1 Web users.

Note: You can override the global `HomePageObject` parameter by using the Client Settings dialog to assign different homepage's for individual TM1 users. For more information, see "Configuring different homepages for individual users" on page 215

The `HomePageObject` parameter works for three types of objects:

- Cubeviewer
- Websheet
- URL

The homepage object displays after the user successfully logs in to TM1 Web.

Using the HomePageObject parameter
How to use the HomePageObject parameter.

The **HomePageObject** parameter uses the following format:

<add key="HomePageObject" value="*ObjectPath* ;Type= *ObjectType* ;Description= *ObjectTitle* ; *AllowOverwrite* =true" />

where:

- *ObjectPath* is the path to the websheet, cube view, or URL object that you want to open. The exact format of the path depends on the type of object.
- *ObjectType* is the keyword for the object you want to open; websheet, cubeviewer, or URL.
- *ObjectTitle* is a brief title you assign to the object that displays in the title bar of the web browser and on the homepage tab in IBM Cognos TM1 Web.
- *AllowOverwrite* can be set to a value of true or false as follows:

If you set AllowOverwrite=true then the HomePageObject parameter can be overridden by setting a different homepage for individual clients using the Client Settings dialog in Architect and Server Explorer.

If you set AllowOverwrite=false then the HomePageObject parameter applies globally to all TM1 users and can not be individually configured with the Client Settings dialog in Architect and Server Explorer.

The following sections describe using the HomePageObject parameter for websheets, cube views, and URLs.

Setting a global TM1 Web homepage to a Cube View

Use the following format to set a cube view as the homepage for IBM TM1 Web.

```
value=CubeName$$ViewName$$Status
```

where the following arguments are separated by $$ characters:

- *CubeName* is the name of cube to which the view belongs.
- *ViewName* is the name of the cube view to display.
- Status is the public or private status of the cube view.

Note: You must include a value of either PUBLIC or PRIVATE to correctly identify the specific cube view that you want to open.

For example, to open a public view named Price from the SalesCube:

```
&ltadd key="HomePageObject" value="SalesCube$$Price$$Public;Type=cubeviewer;
Description=MyStartCube;AllowOverwrite=true"
/>
```

Setting a global TM1 Web homepage to a websheet

You can assign a websheet as the IBM TM1 Web homepage, depending on how the Excel file was added to TM1.

Opening a websheet that references an Excel file outside of TM1

You can open a websheet that references an Excel file.

Procedure

Use the format:

```
value="WebsheetPath
```

where WebsheetPath is the location and name of the Excel file. This can be either a path for a local file, or a UNC path for a file located on a network.

For example, to set a UNC network path for websheet:

```
value=//MySystem/Samples/classic_slice.xls
```

Results
The complete HomePageObject parameter looks like this:

```
<add key="HomePageObject" value="//MySystem/Samples/classic_slice.xls;Type=websheet;
```

```
Description=MyWebsheet;AllowOverwrite=true"/>
```

Opening a websheet object that was uploaded to the TM1 server
You can open a websheet object that was uploaded.

Procedure

1. In Server Explorer, use the Properties pane to find the TM1 assigned name for the uploaded Excel file.

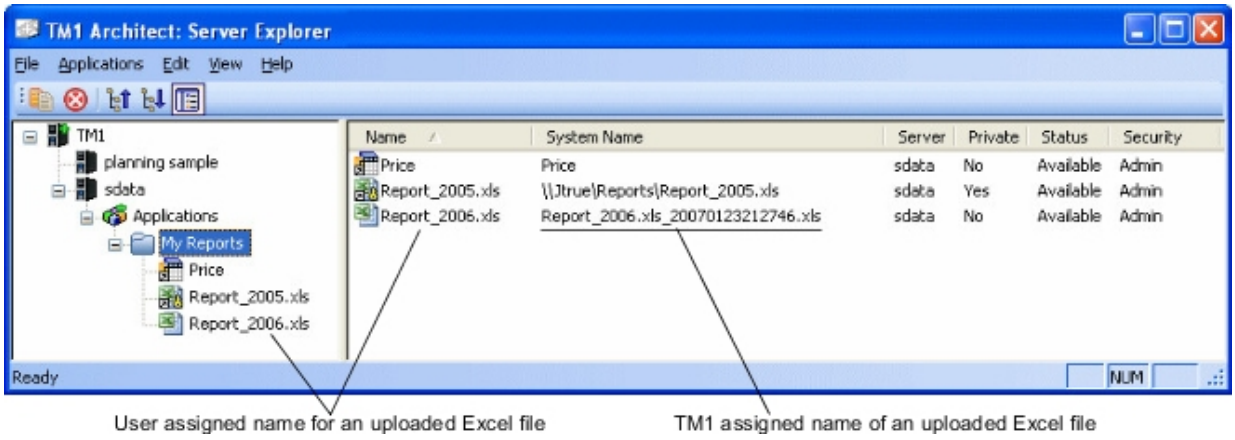


Figure 3. Example of an assigned name for an uploaded Excel file in Server Explorer

2. Set the value parameter using the following format:

```
value="TM1://ServerName/blob/PUBLIC/.\}Externals\
TM1_Filename
```

where:

- *ServerName* is the name of the TM1 sever where the Excel file is located.
- *TM1_Filename* is the name that TM1 assigned to the uploaded Excel file.

For example:

```
value="TM1://sdata/blob/PUBLIC/.\}Externals\Report_2006.xls_20070123212746.xls
```

The complete HomePageObject parameter line looks like this:

```
<add key="HomePageObject" value="TM1://sdata/blob/PUBLIC/.\}Externals\
Report_2006.xls_20070123212746.xls;Type=websheet;Description=My
Uploaded Websheet;AllowOverwrite=true" />
```

Setting a global TM1 Web homepage to a URL

You can set the `HomePageObject` parameter to a URL.

Use this format:

```
value="URL_Path
```

Where *URL_Path* can point to a web site or an individual web page file.

For example:

- To set the homepage to a URL that points to a file:

```
<addkey="HomePageObject" value="homepage.html;Type=URL;

Description=MyStart Page;AllowOverwrite=true"
/>
```

- To set the homepage to a URL that points to a web site:

```
<addkey="HomePageObject" value="http://www.ibm.com;Type=URL;

Description=IBM;AllowOverwrite=true"/>
```

Configuring TM1 Web startup and appearance settings

You can control the appearance of the Navigation pane, tab bar, and websheet and Cubeviewer toolbars when users log in to IBM TM1 Web.

These parameters are located in the `tm1web_config.xml` file and apply globally to all users of TM1 Web.

Note: For more information on using the HomePageObject parameter to set a custom homepage, see "Configuring a custom homepage for TM1 Web" on page 215.

NavTreeHidden parameter

The NavTreeHidden parameter determines if the Navigation pane displays when users log in to IBM TM1 Web.

This can be helpful if you are displaying a custom homepage for users and you want to completely hide the Navigation pane.

The NavTreeHidden parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="NavTreeHidden" value="false;AllowOverwrite=true"
/>
```

where:

value can be either true or false

- If set to false, the Navigation pane will be displayed when user's log in to TM1 Web.
- If set to true, the Navigation pane will not be displayed when user's log in to TM1 Web.

AllowOverwrite can be set to true or false as follows:

- If you set `AllowOverwrite=true`, the NavTreeHidden parameter is assigned globally to all users, but can be overridden for individual clients using the Client Settings dialog in Architect and Server Explorer.
- If you set `AllowOverwrite=false`, the NavTreeHidden parameter applies globally to all TM1 users and can not be overridden for individual clients using the Client Settings dialog in Architect and Server Explorer.

NavTreeCollapsedOnStart parameter

The NavTreeCollapsedOnStart parameter determines if the Navigation pane will be minimized or expanded when users log in. If collapsed, a small vertical bar displays to provide the user with a way to restore the pane.

The NavTreeCollapsedOnStart parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="NavTreeCollapsedOnStart" value="false;AllowOverwrite=true"
/>
```

where:

value can be either true or false.

- If value is set to false, the Navigation pane will be expanded and display in its default mode when user's log in to TM1 Web.
- If value is set to true, the Navigation pane will be collapsed when user's log in to TM1 Web.

AllowOverwrite can be set to true or false as follows:

- If you set `AllowOverwrite=true`, the NavTreeCollapsedOnStart parameter is assigned globally to all users, but can be overridden for individual clients using the Client Settings dialog in TM1 Architect and Server Explorer.
- If you set `AllowOverwrite=false`, the NavTreeCollapsedOnStart parameter applies globally to all TM1 users and cannot be overridden for individual clients using the Client Settings dialog in TM1 Architect and Server Explorer.

HideTabBar parameter
The HideTabBar parameter determines if IBM TM1 Web can display multiple tabs when a user opens multiple TM1 Web objects, or if only one view is displayed.

This can be useful if you want to limit users to one view at a time.

The HideTabBar parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="HideTabBar" value="false;AllowOverwrite=true"/>
```

where value can be either true or false.

- If value is set to false, multiple tabs can be displayed. This is the default behavior of TM1 Web.
- If value is set to true, multiple tabs are not displayed and only one object can be opened at a time.

The AllowOverwrite option is not currently used for this parameter.

HideWebsheetToolBar parameter
The HideWebsheetToolBar parameter determines if the websheet toolbar is displayed when users open a websheet.

The HideWebsheetToolBar parameter uses the following format in the `tm1web_config.xml` file:

```
<add key="HideWebsheetToolBar" value="false;AllowOverwrite=true"
/>
```

where value can be either true or false.

- If value is set to false, the websheet toolbar will display in TM1 Web.
- If value is set to true, the websheet toolbar will not display in TM1 Web.

The AllowOverwrite option is not currently used for this parameter.

HideCubeviewerToolBar parameter
The HideCubeviewerToolBar parameter determines if the Cubeviewer toolbar is displayed when users open a cube view.

The HideCubeviewerToolBar parameter uses the following format in the tm1web_config.xml file:

```
<add key="HideCubeviewerToolBar" value="false;AllowOverwrite=true"
/>
```

where value can be either true or false.

- If value is set to false, the websheet toolbar will display in TM1 Web.
- If value is set to true, the websheet toolbar will not display in TM1 Web.

The AllowOverwrite option is not currently used for this parameter.

Displaying or hiding the Views node in the navigation pane
You can display or hide the Views node in the Navigation pane.

Procedure

1. Edit tm1web_config.xml in the TM1 Web virtual directory.
2. Locate the NavTreeDisplayServerView, which controls the display of the **Server View** node. The default value, Y, displays the **Views** node in the Navigation pane.

   ```
   <!--NavTreeDisplayServerView: Y/N - Wether to display
   "Server View" node in navigation tree -->
   ```

   ```
   <add key="NavTreeDisplayServerView" value="Y" />
   ```
3. To hide the Views node, change the NavTreeDisplayServerView value to N.
4. Save tm1web_config.xml.
5. Log in to TM1 Web.

   Now the Navigation pane displays without the View node.

TM1DatabaseLabel parameter
This parameter displays the TM1 database label in the banner beside the user name.

Edit the **TM1DatabaseLabel** parameter in the tm1web_config.xml file using the following format:

```
<add key="TM1DatabaseLabel" value="Y"/>
```

where *TM1DatabaseLabel* can be either N or Y.

- If *TM1DatabaseLabel* is set to N, the database label is not displayed. This is the default behavior of TM1 Web.
- If *TM1DatabaseLabel* is set to Y, the database label appears in beside the logged in user name in the banner as "Welcome: <user name> / <TM1 database label>".

Changing the Cube Viewer page size

You can change the number of rows and columns displayed in the Cube Viewer of IBM TM1 Web.

By default, Web Cube Viewer displays pages of TM1 data with 20 columns and 100 rows, and includes the dimensions list in the row count.

Procedure

1. Edit tm1web_config.xml.
2. Locate the following code:

   CubeViewerRowPageSize

   CubeViewerColumnPageSize
3. Change the value for the row and/or column page size.
4. Save tm1web_config.xml.

5. Log in to TM1 Web.

   For example, if you set the row page size to 10, the Cube Viewer displays nine rows of data, plus the row of dimensions.

Setting the maximum number of sheets to export from a websheet

By default, the maximum number of sheets you can export from a websheet to a printer is 100. You can configure IBM TM1 Web to export more sheets.

Procedure

1. Edit `tm1web_config.xml`.
2. Locate the following code:

```
MaximumSheetsForExport
```

3. Change the value for the maximum number of sheets to export.
4. Save `tm1web_config.xml`.
5. Log in to TM1 Web.

Wrapping string values in cube views

Use CubeviewerStringWrap to set the parameters used when viewing string element cells in a Web Cube View.

To control the way a view is displayed and wrapped, set the values using the CubeviewerStringWrap parameter and save the web configuration file. Cells that are not displayed are still editable in a scrollable area by clicking in the wrapped region.

Enabled
Turn wrapping of string cells in this view on or off. When set to "False" the column width is as wide as the longest string for any row in the current view. Set to "True" by default to turn on wrapping using these default parameters.

MinCharactersToWrap
Set the minimum number of characters needed before wrapping. For instance, string values with less than 50 characters will not wrap within a cell. Set to 50 by default.

MaxDisplayCharacters
Set the maximum number of characters to display within the string cell. The cell may contain more than this number of characters, but they will only be displayed when double-clicking on the cell. If the MinCharactersToWrap is 50 and the MaxDisplayCharacters is 200, string cells containing 200 or more characters will consume approximately 4 lines. Set to 200 by default.

WidthOfWrapCell
Set the number of characters used in the wrapped portion of the display. Set to 240 by default.

Use the following format in the `tm1web_config.xml` file (the following listing has a return in it for clarity but you should not enter a return).

```
<add key="CubeviewerStringWrap" value="Enabled=true;MinCharactersToWrap=50;
MaxDisplayCharacters=200;WidthOfWrapCell=240" />
```

Remember: CubeviewerStringWrap does not apply to websheets.

Setting the TM1 Web session timeout

The default TM1 Web session timeout is 20 minutes. When TM1 websheets are deployed to IBM Planning Analytics Workspace, you might encounter TM1 Web session timeouts. You can modify this setting in your environment.

About this task

When TM1 websheets are deployed to Planning Analytics Workspace, the recommended session timeout is 60 minutes.

Note: As of IBM Planning Analytics Local version 2.0.6, you must **not** change the `session-timeout` value in the `web.xml` file.

In IBM Planning Analytics Local version 2.0.6, there is a parameter in the `tm1web_config.xml` file called `HttpSessionTimeout`. You can use this parameter to customize the session timeout (in minutes) of the HTTP session for TM1 Web.

If the `HttpSessionTimeout` parameter is not specified (missing or blank), the value is less than 1 or not a numerical value, the default `session-timeout` that is defined in the `web.xml` file is used.

If you are using IBM Planning Analytics Local version 2.0.6 or later, to customize the session timeout for TM1 Web, set the `HttpSessionTimeout` parameter in `tm1web_config.xml`. See step "1" on page 223.

If you are using IBM Planning Analytics Local version 2.0.5 or earlier, to change the default session timeout, set the `<session-timeout>` parameter in `web.xml`. See step "2" on page 223.

Procedure

1. To customize the session timeout, follow these steps.
   a) Open the`tm1web_config.xml` in a text editor.

      The `tm1web_config.xml` file is located in your `<pa_installation_directory>\webapps\tm1web\WEB-INF\configuration` directory.

      For example, `C:\Program Files\IBM\cognos\tm1_64\webapps\tm1web\WEB-INF\configuration`.

   b) Change the `HttpSessionTimeout` to 60 or a value that is required by your environment.

      ```
      <add key="HttpSessionTimeout" value="60" />
      ```

   c) Save and close the `tm1web_config.xml`.
2. If you are using IBM Planning Analytics Local version 2.0.5 or earlier, to change the default session timeout, follow these steps.
   a) Open `web.xml` in a text editor.

      The `web.xml` file is located in your `<pa_installation_directory>\webapps\tm1web\WEB-INF` directory.

      For example, `C:\Program Files\IBM\cognos\tm1_64\webapps\tm1web\WEB-INF`.

   b) Change the `<session-timeout>` value to 60 or a value that is required by your environment.

      ```
      <session-config>
          <session-timeout>20</session-timeout>
      </session-config>
      ```

   c) Save and close `web.xml`.
3. Restart the IBM TM1 Application Server service.

Configuring web browsers for Cognos TM1 Web

This section describes web browser configuration steps for IBM Cognos TM1 Web that may be needed for your environment after you complete the initial installation.

Users connect to Cognos TM1 Web using one of the supported web browsers running on their own computers. Some additional configuration may be required.

Configuring web browser language for TM1 Web

The language settings in your web browser determine which language is used in the IBM TM1 Web interface.

About this task

Follow these general steps to configure Microsoft Internet Explorer and Mozilla Firefox to display IBM TM1 Web in your primary language. For more detailed information, see the documentation for your web browser.

Procedure

1. Depending on which web browser you are using, use the available language options to select and configure your primary language.
   - In Internet Explorer, the language options are typically located under Tools menu > Internet Options > General > Languages.
   - In Firefox, the language options are typically located under Tools menu > Options > Content > Languages.
2. Add your language to the language list.
3. Organize the list so that your preferred language is at the top of the list.

Displaying and entering numbers in Cognos TM1 Web based on Regional Settings

If you are running the IBM Cognos TM1 Web client in a language other than the language of your operating system, you must ensure that your web browser language and Microsoft Windows regional setting are set to the same value.

This will enable you to display and enter numbers in Cognos TM1 Web based on a specific regional setting.

For example, if you have an English OS, but want to run Cognos TM1 Web in French, your browser language must be set to French and your computer's regional setting language must be set to French.

Windows Regional and Language Settings

Access the Windows regional settings by opening the **Regional and Language Options** feature in the Windows Control Panel.

Web Browser Language Settings

Access the web browser language setting as described in the section “Configuring web browser language for TM1 Web” on page 224.

Configuring Internet Explorer for Cognos TM1 Web

If you are using IBM Cognos TM1 Web with Microsoft Internet Explorer, make sure you have this security setting enabled to allow Cognos TM1 Web dialog windows to display correctly.

Change the security settings as follows:

- Allow websites to open windows without address bars or status bars.
- Allow script-initiated windows without size or position constraints.

If Internet Explorer is not configured correctly, some Cognos TM1 Web dialogs can appear truncated.

Running Cognos TM1 Web on a WAN Server and exporting Excel and PDF files
If you are running IBM Cognos TM1 Web on a WAN (Wide Area Network) server and want to allow users to export Microsoft Excel and PDF files from Cognos TM1 Web, you need to configure specific security settings in Microsoft Internet Explorer.

Because a WAN server resides in the Internet zone, Internet Explorer applies a different security profile as compared to servers in the Local Intranet zone. To successfully export files from Cognos TM1 Web in a WAN environment, you must add the Cognos TM1 Web server as a trusted site in the security settings for Internet Explorer.

Adding Cognos TM1 Web as a trusted site in Internet Explorer
If you are using Microsoft Internet Explorer and running IBM Cognos TM1 Web on a WAN server, you must add the Cognos TM1 Web server as a trusted site and then customize the security settings for trusted sites.

Procedure

1. Open Microsoft Internet Explorer.
2. Click **Tools** >**Internet Options**.

   The Internet Options dialog opens.
3. Click the **Security** tab.
4. Click **Trusted Sites** and then click the **Sites** button.
5. Enter the URL of the Cognos TM1 Web server in the **Add this Web site to the zone** box.
6. Click **Add**.
7. Close the Trusted Sites dialog box.
8. On the Security tab of the Internet Options dialog, click **Trusted sites** and then click the **Custom Level** button.

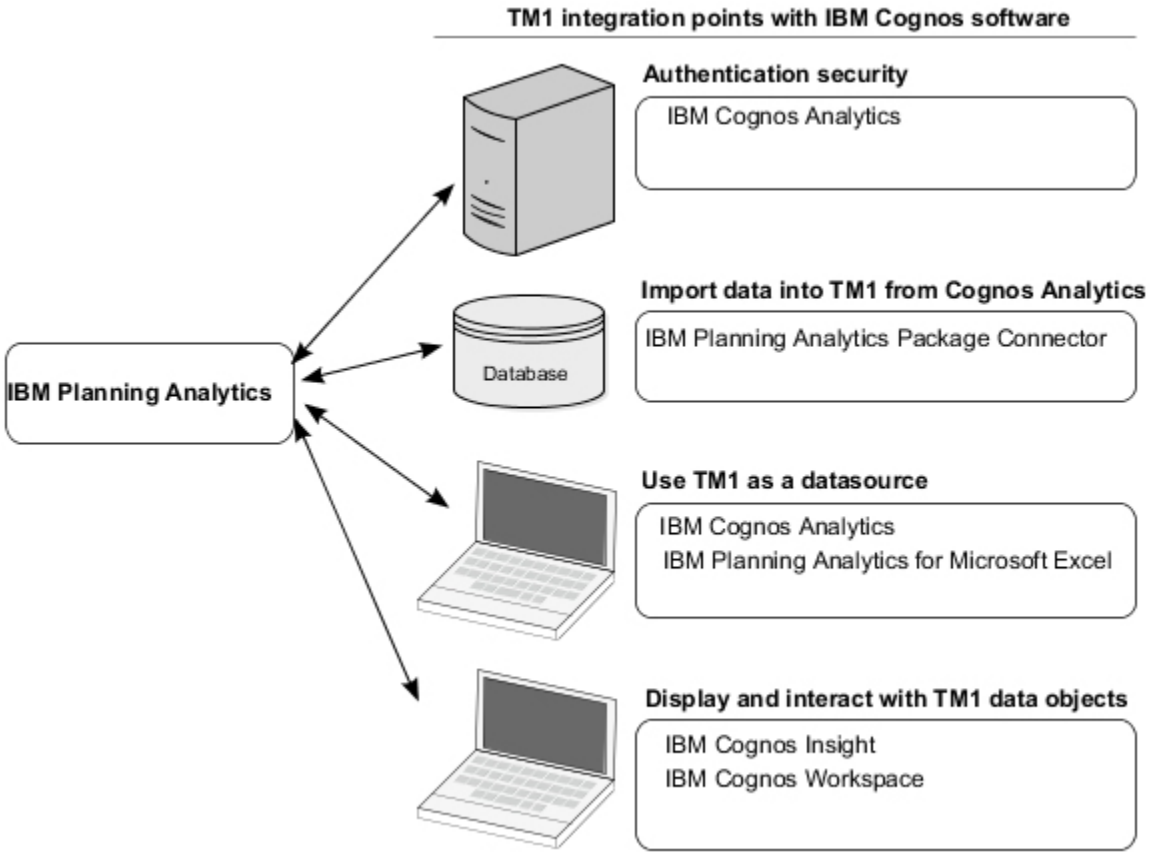
   The Security Settings - Trusted Sites Zone dialog opens.
9. Locate the settings for **Downloads** and click **Enable** for the **Automatic prompting for file downloads** option.
10. Click **OK**.

Chapter 14. Integrating Planning Analytics Local with IBM Cognos software

You can integrate IBM Planning Analytics with IBM Cognos Analytics and IBM Cognos applications. This topic summarizes some of the most typical integration approaches and includes links to the related documentation.

The main options for integrating Planning Analytics with Cognos software include authentication security, data reporting, and data/object interaction. Configuring integration between Planning Analytics and Cognos Analytics involves a combination of installation and configuration tasks on the computers hosting the server and web server components. In some cases, installation and configuration is required on individual end-user computers.

The following image illustrates an overview of Planning Analytics integration with IBM Cognos applications.



Authentication Security

You can configure the IBM TM1 Server to authenticate users using Cognos Analytics security. With this configuration, any TM1 user interface or other custom application must use a valid user name and password from the Cognos Analytics server to access TM1 data.

Importing Cognos Analytics data into Planning Analytics

Deprecated in v2.0.8 The IBM Cognos TM1 Package Connector is supported in Planning Analytics version 2.0.7 and earlier for use with IBM Cognos Analytics packages against SAP Business Warehouse and other relational and ODBC data sources. You can use the Cognos TM1 Package Connector to import data from these sources into Planning Analytics using a Cognos TM1 TurboIntegrator process.

Using TM1 as a datasource with Cognos software

You can configure IBM Cognos Analytics to access TM1 servers and cubes from Cognos Analytics applications such as Cognos Report Studio and Cognos Query Studio.

You can also access TM1 data inside of IBM Planning Analytics for Microsoft Excel.

Displaying and interacting with TM1 data objects

You can access, view, and interact with the following TM1 data objects in IBM Cognos Workspace and IBM Cognos Insight:

- TM1 cube views and charts
- TM1 Websheets
- TM1 Scorecarding cubes and diagrams

TM1 as a datasource with Cognos Analytics

You can configure IBM Cognos Analytics to access IBM TM1 Server and cubes from Cognos Reporting and Dashboards.

To enable Cognos Analytics reporting against TM1 data sources, configure a Planning Analytics data source and publish a package .

For more details about Cognos Analytics, see the following resources:

- *IBM Cognos Analytics 11.0 documentation* on IBM Knowledge Center (https://www.ibm.com/support/knowledgecenter/SSEP7J_11.0.0).
- *Administration Guide* > "Data Sources and Connections" > "TM1 Data Sources"

Import Cognos Analytics data into Planning Analytics Local with the TM1 Package Connector

Removed in v2.0.8 The IBM TM1 Package Connector is supported for use with IBM Cognos Analytics packages against SAP Business Warehouse and other relational and ODBC data sources. You can use the TM1 Package Connector to import data from these sources into Planning Analytics Local by using a TM1 TurboIntegrator process.

Note: The IBM TM1 Package Connector was removed as an optional component in IBM Planning Analytics Local version 2.0.8.

This component must be installed on both the TM1 server and the administrative client machines where TurboIntegrator processes are being created against a BW package.

- For more information, see "Importing Data Using the IBM TM1 Package Connector" chapter in *IBM TM1 TurboIntegrator*.
- See also, Cognos Analytics documentation.
- See also, *IBM Cognos Framework Manager* about creating packages.
- See your SAP documentation for SAP related topics.
- See also, Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html) for specifics on supported software.

TM1 Package Connector requirements

Removed in v2.0.8 Refer to the IBM Cognos Analytics and IBM Planning Analytics Knowledge Centers for more details on the supported platforms, versions, and requirements.

The TM1 Package Connector requires the following components:

- TM1 10.1 or later. The TM1 Package Connector must be installed on both the TM1 server and the administrative client machines where TurboIntegrator processes are being created for any datasource you are using.

- For an updated list of environments that are supported by TM1 including information about operating systems, Cognos servers, and databases, create a detailed system requirements report using the Software Product Compatibility Reports tool (https://www.ibm.com/software/reports/compatibility/clarity/index.html).
- IBM Cognos Analytics Server. For information about the specific supported versions, see *IBM Cognos Analytics 11.0 documentation* on IBM Knowledge Center (http://www.ibm.com/support/knowledgecenter/SSEP7J_11.0.0).
- IBM Cognos Framework Manager for package creation.
- If your datasource is SAP, then SAP Business Warehouse is required.
- 32-bit database client software is required on all platforms where the TM1 Package Connector is installed for the specific data source being used. For SAP BW, this requires the SAP GUI or the SAP RFCSDK library files and DLLs.

  To obtain these files on Microsoft Windows, install the SAP GUI. For UNIX see "Installing the TM1 Package Connector on UNIX " on page 231.

  .

Installing the TM1 Package Connector

Removed in v2.0.8 Follow these steps to install the IBM TM1 Package Connector:

About this task

Microsoft Windows 7 applications are not allowed to write in the Program Files location. This can result in an error when choosing the TM1 Package Connector from TM1 Perspectives on Windows 7.

Tip: To avoid this problem, choose **Run as Administrator** when running Microsoft Excel. Or, in the Cognos Configuration for TM1 Package Connector you can change the `Temporary files location` setting to a directory that is writable by the user.

Procedure

1. Insert the TM1 Package Connector disc into the IBM TM1 Server machine.
2. Run `issetup.exe` found in the system folder for your operating system, for example win64.

   This launches the Cognos Installer.
3. Complete the installation prompts as appropriate for your installation.

   Install the TM1 Package Connector into its own directory. Do not install it into an existing Cognos Analytics folder.
4. On the Finish screen, select the **Start IBM Cognos Configuration** check box to launch the configuration window automatically. If you prefer, you can leave this box unchecked and launch the Cognos Configuration manually after you have installed.

Configuring the TM1 Package Connector

Removed in v2.0.8 When you have installed the IBM Cognos Analytics TM1 Package Connector, you have access to the IBM Configuration tool.

If the Cognos Configuration tool did not launch automatically, you can use the **Start Menu** > **IBM Cognos** > **IBM Cognos Configuration** option to launch it.

Procedure

1. Launch or open Cognos Configuration.
2. Select the **Environment** node on the Local Configuration Explorer window. The current settings for URI display.
3. Set the **Gateway URI** to point to the Cognos Analytics server where packages are deployed.

The Gateway URI is in the form of

```
http[s]://<host IP address>:<port>/<BI_SERVER_virtual_dir>/cgi-bin/cognos.cgi.
```

See the *TM1 Operations* documentation or the Cognos Analytics documentation for more information on URIs.

4. Enter the URI in the Value column of the **Other URI settings** node.

   The Dispatch URI is in the form of

   ```
   http[s]://<host IP address>:<port>/p2pd/servlet/dispatch.
   ```

5. Once the URI is set, **Save** the configuration.

   The configuration progress window checks the status of your entries. When it is complete, click **Close**. If you encountered an error, check your settings and re-enter the values.

6. Close the Cognos Configuration window.

Setting the environment variable

Removed in v2.0.8 On Microsoft Windows, after you have installed the IBM TM1 Package Connector, the `TM1_PACKAGE_CONNECTOR` system environment variable is set to the installation directory specified in the installation, for example `C:\Program Files\ibm\Cognos\c10\bin`.

You can change this location if necessary by editing the variable or creating a system environment variable.

The system variable is created by the most recent installation of the TM1 Package Connector.

The default Microsoft Windows installation location for TM1 Package Connector10 is `C:\program Files\ibm\cognos\c10`.

Setting the TM1 server configuration parameter (optional)

Removed in v2.0.8 For the IBM TM1 TurboIntegrator process to run on the IBM TM1 Server, add the `CognosTM1InterfacePath` parameter to the TM1 Server configuration file (`tm1s.cfg`) for the TM1 Server where your data will reside after the import from the Cognos Analytics package.

Attention: The following information applies only when using a MIcrosoft Windows operating system.

The value of `CognosTM1InterfacePath` tells the TM1 Server where to find the TM1 Package Connector. This is not needed if the TM1_PACKAGE_CONNECTOR environment variable is defined. If this parameter is defined, it overrides the TM1_PACKAGE_CONNECTOR environment variable.

Enter the TM1 Package Connector location into the TM1 server `tm1s.cfg` file where the TM1 Package Connector is installed, for example:

```
CognosTM1InterfacePath=C:\Program Files\ibm\cognos\c10\bin
```

Remember:

The `CognosTM1InterfacePath` variable is required only when using the TM1 Package Connector on UNIX.

The TM1_Package_CONNECTOR is a system environmental variable that identifies the TM1 Package Connector installation location on a Windows operating system.

The `CognosTM1InterfacePath` variable is used in the TM1 server's `tm1s.cfg` on UNIX, however if it is added to a TM1server's tm1s.cfg file on *Windows*, it can overwrite the value set in TM1_Package_Connector.

TM1 Package Connector on the client computer
Removed in v2.0.8 After you have installed and configured the IBM TM1 Package Connector on the IBM TM1 Server, install and configure another copy on the admin client computer. Use the same settings for both installations.

Running the TM1 Package Connector

Removed in v2.0.8 See "Importing Data Using the IBM TM1 Package Connector" in the *TM1 TurboIntegrator* documentation for details on how to run the TM1 Package Connector.

Installing the TM1 Package Connector on UNIX

Removed in v2.0.8 To install the IBM TM1 Package Connector on UNIX, follow the same instructions as for the Microsoft Windows installation making the following adjustments:

Procedure

1. Use 32 bit Java Standard Edition 6 (or 32-bit Java SE 6).
2. Set the environment variable `JAVA_HOME=<java_location>` where *<java_location>* is the 32-bit Java installation location.
3. Copy the files at `<Package_Connector_install_location>/bin/jre/6.0/lib/ext*` to `JAVA_HOME/jre/lib/ext`.
4. Start `cogconfig.sh` from the `<Package_Connector_install_location>/bin`.
5. Place the 32-bit SAP RFCSDK library files and DLLs on the UNIX machine.
6. Set a locale that uses the UTF-8 code page to handle Unicode data. This is optional.
7. Configure the IBM TM1 Server by adding the parameter to the `tm1s.cfg` file:

   ```
   CognosTM1InterfacePath=/<Package_Connector_install_location>/bin
   ```

8. Configure your environment to use the SAP DLLs and the TM1 Package Connector:
   a) Include RFCSDK's lib directory in the search path of:, $LD_LIBRARY_PATH or $LIBPATH
   b) Export (make public) these variables: $LIBPATH and $LD_LIBRARY_PATH
      - Where the libraries are found is different on various UNIX platforms:

        Solaris and Linux: `LD_LIBRARY_PATH`

        HPUX: `SHLIB_PATH`

Planning Analytics and Cognos Analytics security

You can configure the IBM TM1 Server to authenticate users using Cognos Analytics security.

With this configuration, any TM1 user interface or other custom application must use a valid user name and password from the Cognos Analytics server to access TM1 data. You can also configure IBM Cognos TM1 Applications to use Cognos Analytics security.

For more information, see the following topics:

- “Cognos security” on page 249
- “Using Cognos TM1 Applications with Cognos security” on page 257

Integrate SAP BW with Planning Analytics

You can use Cognos Integration Server to integrate SAP Business Warehouse (BW) with IBM Planning Analytics.

About this task

IBM Cognos Integration Server integrates with both SAP BW and IBM Planning Analytics by using APIs. It is bidirectional and supports both the cloud and local versions of IBM Planning Analytics.

Cognos Integration Server supports regular SAP BW InfoCubes and SAP BW InfoQuerys and SAP BW 4HANA.

To integrate SAP BW with Planning Analytics, you need to create a Selection in Cognos Integration Server. For more information, see Creating a Selection.

You can view this video to learn how to use Cognos Integration Server to integrate SAP Business Warehouse (BW) with IBM Planning Analytics.

https://youtu.be/m4RKrBCIzNw

Cognos TM1 Applications integration with Cognos Analytics and the Cognos Connection portal

If your TM1 installation uses Cognos security for authentication, your Cognos Analytics users can use the Cognos Connection portal to open TM1 applications instead of the TM1 Applications portal. However, administrators still need to use TM1 Applications to configure and manage applications.

When you configure TM1 Applications to use Cognos security, you also enable the Cognos Connection portal to display a folder that contains links to the available TM1 applications. The exact list of displayed applications depends on the rights of the current user.

The `planning.html` file provides the information for Cognos Analytics and the Cognos Connection portal to display links to TM1 Applications. For more information, see "Using Cognos TM1 Applications with Cognos security" on page 257.

Note: You must have the TM1_PATH environment variable specified before connecting to Cognos TM1 under a UNIX environment.

Chapter 15. Planning Analytics Local security

After you install IBM Planning Analytics Local, you can configure the specific authentication and security modes that you want to use.

Configuration of authentication and data transmission security is part of the installation and configuration process. The steps for setting user, group, and object security are typically done after the initial installation and configuration process and are described in separate documentation.

Authentication security

Authentication or login security configuration includes selecting the type of login security that controls user access to the different Planning Analytics components.

For information about users in Planning Analytics Workspace, see Administer users in *Planning Analytics Workspace*.

Data transmission security

Security configuration includes configuring Planning Analytics to use an encrypted communication protocol for secure data transmission. The Planning Analytics Data Tier is deployed to IBM WebSphere Liberty Profile (WLP). Properties of encrypted communication for WLP such as protocols, ciphers, and the location and password of a keystore that contains required server key and certificates, must be configured through Cognos Configuration.

User and Group security

Planning Analytics manages security by organizing users into groups. Planning Analytics includes a set of three predefined administrative groups. You can create your own custom groups. Users can belong to one or multiple groups.

For information about configuring Planning Analytics user and group security, see Managing Users and Groups in *TM1 Operations*.

Object security

Another level of Planning Analytics security is object security. You can use this type of security to control access to the specific TM1 objects in your data model, but it is not configured during the initial installation and configuration process.

For more information about setting security for TM1 objects, see Controlling Access to TM1 Objects in *TM1 Developer*.

For more information about setting security for Planning Analytics Workspace objects, Security in *Planning Analytics Workspace*.

Related topics:

"TM1 Application Server advanced installation and configuration" on page 118
You can perform advanced installation and configuration tasks to customize your installation of the IBM TM1 Application Server components.

"Configuring authentication security for TM1 Application Web" on page 113
For IBM TM1 Server used with TM1 Application Web, use either TM1 standard security authentication or IBM Cognos security.

"Configure TLS for Planning Analytics Workspace Local" on page 158
To configure Transport Layer Security (TLS) for IBM Planning Analytics Workspace, you create a privacy enhanced mail (pem) file that contains your security certificates.

"Configure TLS between Planning Analytics Workspace Local and other servers" on page 159

If you are using self-signed certificates for TM1 servers or IBM Cognos Analytics, you might need to add the certificate authority certificates for them to the list of CA certificates that are used by IBM Planning Analytics Workspace.

Using Cognos security in Planning Analytics for Microsoft Excel

Authentication security

Authentication or login security configuration includes selecting the type of login security that will control user access to the different IBM TM1 components.

You can configure IBM TM1 Server to use a specific authentication mode to control user login access.

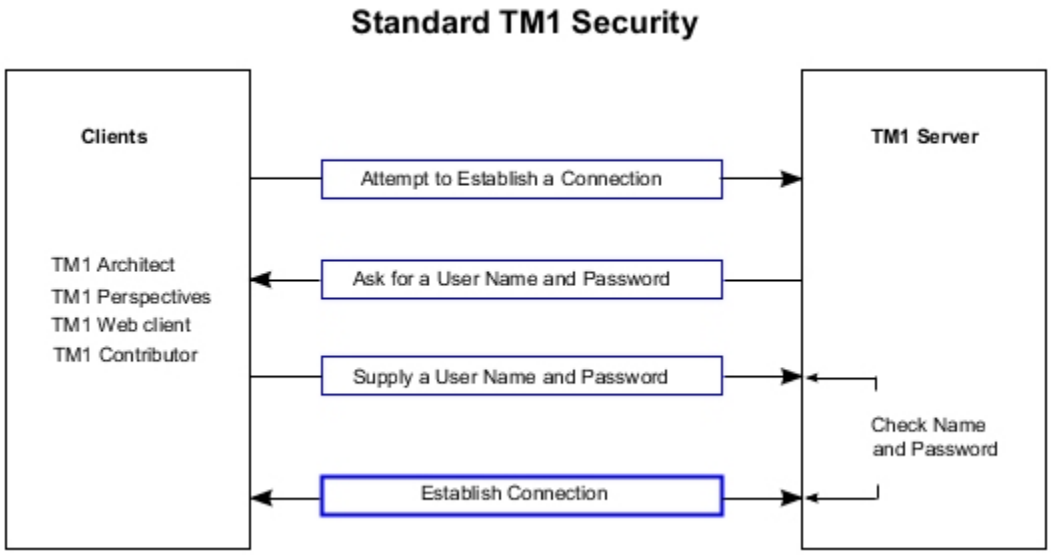
By default, when you install the TM1 Server it is configured to use the standard Cognos TM1 authentication.

After you install the TM1 Server, you can change the authentication method by changing the parameters in the TM1 configuration files.

Standard Cognos TM1 authentication

With IBM Cognos TM1 authentication, the Cognos TM1 server checks the user name and password against the user names and passwords in the Cognos TM1 database.

The following image shows the process of authenticating with the TM1 server.



TM1 Server asks you for a user name and password, and validates the login information against the security cube login information.

Security considerations when using Cognos TM1 Applications

You can use either IBM Cognos TM1 standard security authentication or IBM Cognos security for the TM1 servers you use with Cognos TM1 Applications.

Do not use a combination of different security authentication modes for the same installation of Cognos TM1 Applications.

Determine the security mode before you configure Cognos TM1 Applications to use a TM1 Server and use that same security mode with any additional servers you add.

For details about using Cognos security, see: “Using Cognos TM1 Applications with Cognos security” on page 257.

Using the IntegratedSecurityMode parameter with Cognos TM1 Applications

To set the Cognos TM1 security authentication mode use the `IntegratedSecurityMode` parameter in the Tm1s.cfg file of each TM1 Server you want to use.

Important: The Cognos TM1 Applications component is compatible only with Cognos TM1 security authentication modes 1 and 5.

For example, to use Cognos TM1 standard security authentication, set the `IntegratedSecurityMode` parameter to 1 for each server.

```
IntegratedSecurityMode=1
```

To use IBM Cognos security, set the `IntegratedSecurityMode` parameter to 5.

```
IntegratedSecurityMode=5
```

For more details about the `IntegratedSecurityMode` parameter, see the "TM1 System Configuration" section in *TM1 Operations*.

If `IntegratedSecurityMode=5` is used for the TM1 Server and IBM Cognos TM1 Applications, it is not possible to assign rights to native TM1 groups within the **Manage rights** dialog. Only Cognos Groups imported into the TM1 Server, are available. This means you cannot use native TM1 groups and Cognos groups in parallel because the **SecMode** is limiting which groups can be used

Configuring Cognos TM1 Applications security for multiple TM1 Servers

If you want to use multiple TM1 servers with Cognos TM1 Applications, they must all be configured to use the same security authentication (either Cognos TM1 standard authentication or Cognos security) and include the same administrator user name and password.

For more details, see “Configuring TM1 Application Web to use multiple TM1 Servers” on page 120.

Integrated login

Integrated login enables you to use Microsoft Integrated Windows Authentication (IWA) and control access to IBM TM1 data based on Users and Groups defined in Microsoft Active Directory (AD).

Note: Integrated login is supported on Microsoft Windows only. You cannot use integrated login to access TM1 Server running on UNIX.

In integrated login mode (security mode 3), TM1 authentication compares the user's domain-qualified Microsoft Windows login name to the contents of the `UniqueID` element of the `}ClientProperties` cube.

If there is a match, the user is authenticated to TM1. If Active Directory groups have been imported into the TM1 Server, Active Directory group memberships are honored.

If no match is found, TM1 displays an error message stating that the client name does not exist. TM1 Server does not prompt for login information.

To populate the `UniqueID` elements and import groups from Microsoft Active Directory, you can use the “ETLDAP utility” on page 261, TurboIntegrator jobs, or manual steps. For more information, see “Configure integrated login for the IBM TM1 Server” on page 237.

Users who want to access TM1 data in a server that is configured for integrated login must authenticate to Microsoft Windows first and then use TM1 clients to access the TM1 Server.

Example

Suppose a user with the user name "Robert", which is defined in the Windows domain "emea.company.com", logs in to his Windows workstation. When Robert uses a TM1 client that uses integrated login, such as TM1 Architect, to access a TM1 Server configured for security mode 3, the TM1 client forwards Robert's Windows login information to the TM1 Server using Integrated Windows

Authentication. The TM1 Server looks for a match to "Robert@EMEA" in the UniqueID elements of the }ClientProperties cube. If there is a match, Robert is authenticated by TM1 successfully.

Note: Only the name of the actual domain that the user is defined in can be used. Using the fully qualified domain name (for example, "EMEA.COMPANY.COM") will fail.

Integrated login prerequisites

Use the following checklist as guidelines to configure IBM Planning Analytics components for integrated login.

1. Complete the installation of the IBM TM1 Server and make sure that you are able to run and log in to it.
2. Run the ETLDAP Utility to extract the user and group login data from your LDAP directory and load that data into the TM1 security cube. ETLDAP creates TM1 users from the LDAP data that you specify. These users are members of the same group to which they were assigned in your LDAP directory.

   For more information, see "Running ETLDAP" on page 263.
3. Configure the TM1 Server and client components to use integrated login.

Table 23. Integrated login configuration for Planning Analytics components

Component	Configuration
TM1 Server	Configure the integrated login parameters in the `tm1s.cfg` file for any TM1 database that you want to use with integrated login. For more information, see "Configure integrated login for the IBM TM1 Server" on page 237.
IBM Planning Analytics Workspace Local	Configure the URIs that point to the authentication servers. For more information, see "Connect to TM1 and authentication servers" on page 157.
IBM Planning Analytics for Microsoft Excel	Configure files the IBM® Cognos® Analytics Gateway installation location and enable single sign-on configuration settings. For more information, see "Configure Planning Analytics for Microsoft Excel single sign-on" on page 197.
TM1 Web	Configure parameters in the `tm1web_config.xml` file that enable integrated login. For more information, see "Configure integrated login for TM1 Web" on page 237 and "Enable web browsers for integrated login" on page 245.
Other Planning Analytics clients	Enable the **Use Integrated Login** option for Cognos TM1 Architect and Cognos TM1 Perspectives. For more information, see "Configure Cognos TM1 Perspectives to use integrated login" on page 245 and "Configure Cognos TM1 Architect to use integrated login" on page 245.

4. Set access permissions for TM1 users.

   For more information, see "Configure access rights for Cognos TM1 users" on page 246.

Configure integrated login for the IBM TM1 Server

You can modify an IBM Planning Analytics installation to use integrated login without re-installing IBM TM1 Server. To do so, run ETLDAP and modify several TM1 configuration files.

Procedure

1. Run ETLDAP and import the user and group information from your LDAP server, as described in "Running ETLDAP" on page 263.
2. Shut down the TM1 Server.
3. Edit the following parameters in the `tm1s.cfg` file located in your TM1 Server data directory:
   - Set the `IntegratedSecurityMode` parameter to 3.
   - Set the `SecurityPackageName` parameter to the security protocol you use for integrated login.

   In the following example, the server is configured to use Kerberos.

   ```
   [TM1S]
   SecurityPackagename=Kerberos
   IntegratedSecurityMode=3
   Servername=myserver
   DatabaseDirectory=C:\Program Files\
   ```
4. Save and close the `tm1s.cfg` file.
5. Restart the TM1 Server.
6. Optional: Configure the TM1 clients to use integrated login by setting the **Use Integrated Login** option in the associated user interface.

What to do next

- Connect Planning Analytics Workspace to authentication servers.
- "Configure Planning Analytics for Microsoft Excel single sign-on" on page 197.
- "Configure integrated login for TM1 Web" on page 237.
- "Configure Cognos TM1 Architect to use integrated login" on page 245.
- "Configure Cognos TM1 Perspectives to use integrated login" on page 245.

Configure integrated login for TM1 Web

You can configure TM1 Web for integrated login. You can also set up single sign-on (SSO) for HTTP-based clients by using Integrated Windows Authentication (IWA) using the Kerberos protocol.

Overview

TM1 Web does not authenticate users but defers to TM1 Server for authentication. When you log in to TM1 Web, you are prompted for credentials based on the security mode that is configured on the IBM TM1 Server. When a user provides credentials, TM1 Web uses TM1 Server authentication on the user's behalf with the provided credentials. For integrated login, the server that is being accessed by TM1 Web must be configured for integrated login.

Integrated login works without any configuration in TM1 Web. You can select a server that is configured for integrated login and TM1 Web prompts for your credentials. When you enter your credentials, TM1 Web sends them to the TM1 Server for authentication.

Important: If you set up TM1 Server, TM1 Web, and Planning Analytics Workspace Local using security mode 2 or 3 (integrated login), websheets cannot be used in Planning Analytics Workspace. For more information, see "Configure security mode 2 or 3 to use websheets in Planning Analytics Workspace" on page 243.

You might want to configure single sign-on so that users are not prompted for credentials when they access TM1 Web. For this approach to work, TM1 Web must be configured to integrate with Windows Authentication (Kerberos) to accept a user's forwarded Windows credentials and then perform an integrated login to a TM1 Server on the user's behalf with those credentials. Since TM1 Web does not

support Kerberos for authentication directly, you must set up the security features of the WebSphere Liberty Profile server that TM1 Web is deployed to.

The setup process requires the following double-hop authentication:

Single sign-on from the client to IBM WebSphere Liberty Profile

First, you must enable the IBM WebSphere Liberty Profile (WLP) application server's security. Next, a user registry must be configured for WebSphere Liberty Profile to authenticate users against it. Last, WebSphere Liberty Profile must be configured to allow SSO to it.

For Integrated Windows Authentication, you must use the Simple and Protected GSS-API Negotiation Mechanism (SPNEGO) web authentication provider. This provider allows Kerberos enabled clients to achieve single sign-on to WebSphere Liberty Profile. A user who is logged in to Windows using a client that supports Integrated Windows Authentication can authenticate to WebSphere Liberty Profile without getting prompted because of the Kerberos protocol.

Single sign-on from IBM WebSphere Liberty Profile to TM1 Server using TM1 Web

Single sign-on from IBM WebSphere Liberty Profile to each TM1 Server that is configured for integrated login uses the Java Generic Security Services API (JGSS) and Java Authentication and Authorization Services (JAAS) to delegate the received Kerberos user credentials to TM1 Web. TM1 Web performs a Kerberos-based authentication with TM1 Server on the user's behalf.

After you implement this setup successfully, users who are using browsers that are enabled for Integrated Windows Authentication can authenticate to TM1 Web configured to access a TM1 Server that is running security mode 2 or 3 (integrated login) with their Windows user credentials.

Before you begin

Make sure that the following prerequisites are configured:

- All computers that participate in the setup are running Microsoft Windows and are joined to a Windows domain.
- Mutual trust is set up between all domains that any computer from the setup is registered to.
- All computers in the setup can resolve the fully qualified domain name of all other computers and Windows domain controllers that are used in the configuration.
- An instance of TM1 Server is configured for integrated login. For more information, see “Configure integrated login for the IBM TM1 Server” on page 237. The following settings must be configured:
  - A Service Principal Name (SPN) is registered to a Windows account that runs the Windows service for the TM1 Server instance.
  - The SPN is specified in the `ServicePrincipalName` parameter in the `tm1s.cfg` file.
  - The `IntegratedSecurityMode` in the `tm1s.cfg` file is set to 2 or 3.
  - The `SecurityPackageName` is set to Kerberos.
  - For all users who access the TM1 Server, the `UniqueID` element in the `}ClientProperties` dimension is set to a string with the syntax `<sAMAccountName>@<DOMAIN>`.
- An instance of TM1 Application Server is installed on a computer in the setup.
- A domain user can log in to a client computer that is different from the computer that the TM1 Application Server components are installed on. The user must be able to run a supported browser to access TM1 Web. For more information, see “Enable web browsers for integrated login” on page 245.

Conventions

The setup uses the following conventions:

<PA>
The Planning Analytics installation root folder.

<PA_APP_DOMAIN>
The name of the Microsoft Windows domain, for example, `mydomain.sample.com`.

<PA_APP_REALM>
The *<PA_APP_DOMAIN>* in uppercase, for example, `MYDOMAIN.SAMPLE.COM`.

<PA_APP_HOST>
The fully qualified host name of the computer where TM1 Application Server is installed, for example, `appsrv1.mydomain.sample.com`.

<PA_APP_ACCOUNT>
A user account from a Windows domain that is used to run TM1 Application Server.

<PA_SPN>
A string composed of "HTTP" (in uppercase), the "/" delimiter, and the *<PA_APP_HOST>*. For example, "HTTP/appsrv1.mydomain.sample.com".

Set up an account for the TM1 Application Server

1. As a domain administrator, create a domain user account or find an existing domain user account that will be used to run the TM1 Application Server service. This user account is referred to as *<PA_APP_ACCOUNT>*. For example, `mydomain/pa11`.
2. Ensure *<PA_APP_ACCOUNT>* has sufficient file system permissions on *<PA_APP_HOST>*. In particular, the account requires **modify** permission on the following folders:
   - *<PA>*`/wlp`
   - *<PA>*`/logs`
   - *<PA>*`/temp`
3. On *<PA_APP_HOST>*, make sure the "IBM Cognos TM1" service that runs the TM1 Application Server (WLP) is started by *<PA_APP_ACCOUNT>*. (See “1” on page 239).
   a. Using the Windows Services control pane, right-click the "IBM Cognos TM1" service and click **Properties**.
   b. On the **Log On** tab, add the *<PA_APP_ACCOUNT>* and password.
   c. Click **OK**.
4. On *<PA_APP_HOST>*, get a domain Administrator to create a Kerberos keytab file by using the Microsoft `ktpass` tool.

   Note: WebSphere Liberty Profile requires server credentials for supporting Kerberos authentication to it. These credentials are stored in a keytab file. To create this file, you must use the Microsoft `ktpass` tool.

   In a CMD window, type the following command:

   ```
   ktpass -out <keytab_file> -princ <PA_SPN>@<PA_APP_REALM>
   -mapuser <PA_APP_ACCOUNT> -pass <password> -mapOp set
   -ptype KRB5_NT_PRINCIPAL
   ```

   For example:

   ```
   ktpass -out pa.keytab -princ HTTP/appsrv1.mydomain.sample.com@MYDOMAIN.SAMPLE.COM
   -mapUser mydomain\pa11 -pass pssw0rd -mapOp set -ptype KRB5_NT_PRINCIPAL
   ```

   This command creates a `pa.keytab` file in the current folder that contains the Kerberos server credentials.

   Note: The keytab contains keys that are encrypted using a specific encryption scheme called "encryption type" in Windows. The Active Directory administrator knows which ones are supported by the Active Directory infrastructure. If in doubt, put keys into the keytab for all supported encryption types by using the `append -crypt all` option.

   When you use the `ktpass` tool, several things happen:

   - The principal specified in the `-princ` parameter will be registered as an SPN to the account specified for the `-mapuser` parameter.

- The `UserPrincipalName (=User Login Name)` of the account will be changed in Active Directory to the SPN specified for the `-princ` parameter. This is intended and required and must not be reverted manually.
- The output of this command is a binary keytab file. The file can be moved. It does not depend on a host or host name.

CAUTION: The keytab contents can get invalidated if changes are applied to the PA_APP_ACCOUNT in Active Directory after the keytab has been created. If the supported encryption types for the Active Directory account or the User Login Name get changed, re-create the keytab.

Tip:

You can use the JRE `klist` tool in *<PA>*`\jre\bin\` to view the contents of the keytab file. For example:

```
klist -k -t <PA>/pa.keytab
```

5. Ensure that the account is trusted for delegation.
   a. Ask an Active Directory administrator use the **Active Directory Users and Computers** tool to investigate the account's properties.
   b. Navigate to the **Delegation** tab.
   c. Ensure that the account is set to **Trust this user for delegation to any service (Kerberos)**.

Configure SPNEGO/Kerberos web authentication for WebSphere Liberty Profile

1. On *<PA_APP_HOST>*, create a Kerberos configuration file for WebSphere Liberty Profile.
   - Using a text editor, create a text file in the *<PA>* folder named `krb5.conf`.
   - Copy and paste the following lines into the `krb5.conf` file.

```
[libdefaults]
    default_realm = <PA_APP_REALM>
    default_keytab_name = FILE:<keytab_file>
    default_tkt_enctypes = aes128-cts-hmac-sha1-96
    default_tgs_enctypes = aes128-cts-hmac-sha1-96
    forwardable = true
    renewable = true
    noaddresses = true
    clockskew = 300
    udp_preference_limit = 1
[realms] <PA_APP_REALM> =
    {
        kdc = <PA_APP_DOMAIN>:88
        default_domain = <PA_APP_DOMAIN>
    }
[domain_realm]
    .<PA_APP_DOMAIN> = <PA_APP_REALM>
```

   - Replace the variables with actual values in your environment and save the file as `krb5.conf`.

Note:

- The entry for `default_keytab_name =` must refer to the keytab file that is created in “4” on page 239.
- The entry for `default_tkt_enctypes = aes128-cts-hmac-sha1-96` is an example from Windows 2012 R2. You must use the encryption types that are supported in your environment. Refer to your Active Directory Administrator for that information.
- Depending on the structure of the domain trees in the Active Directory forest, the Kerberos configuration file might require more entries in the `[realms]` and `[domain_realm]` sections. Contact your Active Directory Administrator to learn about your domain structure. For more information about the Kerberos configuration file, see The Kerberos configuration file in the *WebSphere Application Server Network Deployment* documentation.

A configuration based on the example values might look like the following example:

```
[libdefaults]
    default_realm = MYDOMAIN.SAMPLE.COM
    default_keytab_name = FILE:<PA>\pa.keytab
    default_tkt_enctypes = aes128-cts-hmac-sha1-96
    default_tgs_enctypes = aes128-cts-hmac-sha1-96
    forwardable = true
    renewable = true
    noaddresses = true
    clockskew = 300
    udp_preference_limit = 1
[realms]
    MYDOMAIN.SAMPLE.COM =
    {
        kdc = mydomain.sample.com:88
        default_domain = mydomain.sample.com
    }
[domain_realm]
     .mydomain.sample.com = MYDOMAIN.SAMPLE.COM
```

2. **Optional:** Use the `kinit` tool in *<PA>*`\jre\bin\` to verify the Kerberos configuration file:
   a. Copy the `krb5.conf` file to *<PA>*`\jre\lib\security` folder. The file must be named `krb5.conf` for this test. When the test is complete, you will remove the file.
   b. Request a Kerberos ticket for *<PA_SPN>*:

      ```
      kinit -k -t <keytab_file> HTTP/<PA_APP_HOST>
      ```

      For example:

      ```
      kinit -k -t <PA>\pa.keytab HTTP/appsrv1.mydomain.sample.com
      ```

      The tool confirms that a ticket has been stored to the default ticket cache.
   c. **Optional:** Use the JRE `klist` tool in *<PA>*`\jre\bin\` to view the Kerberos ticket.

      For example:

      ```
      klist
      ```

   d. Remove the `krb5.conf` file from *<PA>*`\jre\lib\security` folder to prevent confusion. It is not required in this location anymore.

Modify WebSphere Liberty Profile configuration

The following steps change the WebSphere Liberty Profile configuration file manually. These manual changes are reverted when you make any other changes that require regenerating the application server configuration file in Cognos Configuration. Therefore, you must back up the `server.xml` file when these manual configuration changes are complete and potentially restore it when Cognos Configuration overwrites the file.

1. Stop the TM1 Application service.
2. In a text editor, open the *<PA>*`/wlp/usr/server/tm1/server.xml` file.
3. Add the following feature elements before the `</featureManager>` element:

   ```
   <feature>appSecurity-2.0</feature>
   <feature>ldapRegistry-3.0</feature>
   <feature>spnego-1.0</feature>
   ```

4. Before the `<application id="tm1"...>` tag, add the following element:

   ```
   <ldapRegistry
       id="ldap"
       realm="<PA_APP_DOMAIN>"
       host="<PA_APP_DOMAIN>"
       port="389"
       ignoreCase="true"
       baseDN="<base_DN>"
   ```

```
    bindDN="<binduser_accountDN>"
    bindPassword="<binduser_password>"
    ldapType="Microsoft Active Directory"
/>
```

Tip: You can use the IBM WebSphere `securityUtility` to encode passwords in the `server.xml` file.

By using the domain name for `host`, the Microsoft DNS locator feature is used, which prevents a single point of failure in case the referenced Domain Controller becomes unavailable. The `baseDN` is generally composed of the string `cn=Users` and a comma-separated list of dc elements that represent each part of the domain name.

For example:

```
Domain: mydomain.sample.com
BaseDN: cn=Users,dc=mydomain,dc=sample,dc=com
```

The `binduser_accountDN` must be the Distinguished Name of a user account from the referenced domain, which has browsing privileges to all user entries in that domain.

Tip: You can also use the User Principal Name syntax.

For example:

```
cn=admin1,cn=Users,dc=mydomain,dc=sample,dc=com
```

Or

```
bindDN="admin1@mydomain.sample.com"
```

The LDAP registry element tells WebSphere Liberty Profile where to look up information for the user who tries to authenticate. Therefore, the LDAP registry must reference the domain that the authenticating user is from. For users from multiple domains to be able to authenticate, you must define one LDAP registry for each domain. Multiple LDAP registries will automatically become federated without explicit configuration. Add multiple <ldapRegistry> elements as required.

5. **Optional:** If user names in Active Directory contain the" /" character (forward slash), you must add another configuration element because the forward slash is a special character in WebSphere security realms.

   After the last <ldapRegistry> element, add the following <federatedRepository> element, which will configure WebSphere Liberty Profile to use the pipe character "|" instead so that it can tolerate the forward slash in user names.

```
<federatedRepository>
    <primaryRealm name="TM1Web Kerberized" delimiter="|" allowOpIfRepoDown="true">
        <participatingBaseEntry name="<baseDN_ofRegistry>"/>
        <uniqueUserIdMapping inputProperty="uniqueName" outputProperty="uniqueName"/>
        <userSecurityNameMapping inputProperty="principalName"
outputProperty="principalName"/>
        <userDisplayNameMapping inputProperty="principalName"
outputProperty="principalName"/>
    </primaryRealm>
</federatedRepository>
```

   Remember: Adjust the <baseDN_of_Registry> value in the <participatingBaseEntry> element to the value of the baseDN setting of your <ldapRegistry>. If you are using multiple <ldapRegistry> entries, add a <participatingBaseEntry> element for each <ldapRegistry> with the correct value set.

   For more information, see Configuring LDAP user registries in Liberty in the IBM Knowledge Center.

6. To enable SPNEGO/Kerberos based authentication for the WebSphere Liberty Profile, add the following element after the <ldapRegistry> element:

```
<spnego
    id="mySpnego"
```

```
    krb5Config="<krb5.conf>"
    krb5Keytab="<keytab_file>"
    servicePrincipalNames="HTTP/<PA_APP_HOST>@<PA_APP_REALM>"
    canonicalHostName="true"
    disableFailOverToAppAuthType="false"
/>
```

Remember: Replace <krb5.conf> and <keytab_file> with the path to the respective files created earlier.

Configure TM1 Web for WebSphere Liberty Profile security

1. In the server.xml file, find the TM1 Web application entry and modify it as shown in the following example:

```
<application id="tm1web"
    location="${wlp.user.dir}/../../webapps/tm1web"
    name="tm1web"
    type="war" context-root="tm1web">
    <application-bnd>
        <security-role name="AllAuthenticated">
            <special-subject type="ALL_AUTHENTICATED_USERS" />
        </security-role>
    </application-bnd>
</application>
```

2. Save the server.xml file and back it up.
3. Add security constraints in the web.xml file of TM1 Web.

   On the *<PA_APP_HOST>*, use a text editor to edit the *<PA>*/webapps/tm1web/WEB-INF/web.xml file.

   Before the first <filter> element, add the following content:

```
<login-config>
    <auth-method>BASIC</auth-method>
    <realm-name>MYTM1SERVER.EXAMPLE.COM</realm-name>
</login-config>
<security-role>
    <role-name>AllAuthenticated</role-name>
</security-role>
<security-constraint>
    <web-resource-collection>
        <web-resource-name>tm1web</web-resource-name>
        <url-pattern>/*</url-pattern>
        <url-pattern>/</url-pattern>
        <http-method>POST</http-method>
        <http-method>GET</http-method>
    </web-resource-collection>
    <auth-constraint>
        <role-name>AllAuthenticated</role-name>
    </auth-constraint>
</security-constraint>
```

4. Save the file.
5. Start the TM1 Application server service.
6. In a browser on a remote computer (not on *<PA_APP_HOST>*), open a Kerberos enabled browser and access the following address:

```
HTTP://<PA_APP_HOST>:9510/tm1web
```

   When the TM1 Server instance is selected, you are authenticated without being prompted.

Configure security mode 2 or 3 to use websheets in Planning Analytics Workspace

If you set up TM1 Server, TM1 Web, and Planning Analytics Workspace Local using security mode 2 or 3 (integrated login), websheets cannot be used in Planning Analytics Workspace.

Note: Websheets will still work when accessed directly in TM1 Web.

To work around this limitation, you can choose to set up another instance of TM1 Web that is not configured for integrated login.

There are three possible scenarios:

- If you plan to consume websheets only in Planning Analytics Workspace, you can use a single instance of TM1 Web that is not configured for integrated login.
- If you plan to consume websheets only in TM1 Web and not Planning Analytics Workspace, you should set up a single instance of TM1 Web that is configured for integrated login.
- If you need to consume websheets in both TM1 Web and Planning Analytics Workspace, you must set up two instances of TM1 Web as follows.
  - One instance of TM1 Web must be configured for integrated login that will be accessed directly by users who use TM1 Web.
  - A second instance of TM1 Web must be configured without integrated login, and Planning Analytics Workspace must be configured to use this instance of TM1 Web with the Planning Analytics Workspace administration tool or directly in the `paw.env` file. For more information, see "Connect to TM1 and authentication servers" on page 157. You must not provide this URL directly to users.

Troubleshoot

- Make sure that your browser is correctly configured for SPNEGO/Kerberos. For more information, see "Enable web browsers for integrated login" on page 245 and Configuring the client browser to use SPNEGO.
- Access TM1 Web by host name. Accessing by IP address prevents Kerberos or SPNEGO authentication.
- Make sure that the Windows user that you are testing with is not a domain administrator. Domain administrators cannot be delegated through Kerberos.
- Make sure that testing is performed on a remote computer. If the browser is run on the same computer as TM1 Web, SPNEGO might fail.
- **Optional:** Edit the logging settings to add output for WebSphere authentication and SPNEGO to WebSphere logs.

  Edit the `<logging>` element in the WebSphere Liberty Profile `server.xml` file.

  For example:

```
<logging
    consoleLogLevel="WARNING"
    traceSpecification="*=info:com.ibm.ws.security.spnego.
                        *=all:com.ibm.ws.security.wim.
                        *=all:com.ibm.websphere.security.wim.
                        *=all"
    logDirectory="${wlp.user.dir}/../../logs"
    messageFileName="tm1_messages.log"
    maxFiles="2"
    maxFileSize="20"
/>
```

  1. Stop the TM1 Application service.
  2. Empty the `/logs` folder.
  3. Start the TM1 Application server to reproduce the issue.
- Enable Kerberos logging for the JRE that is running WebSphere Liberty Profile.
  1. Stop the TM1 Application Service.
  2. In a text editor, open the *<PA>*`/wlp/usr/server/tm1/jvm.options` file.
  3. Append the following lines:

```
-Dcom.ibm.security.jgss.debug=all
-Dcom.ibm.security.krb5.Krb5Debug=all
```

  4. Save the file.

5. Restart TM1 Application Service and reproduce the issue.

- Investigate errors with the `kinit` tool:
  - Ensure `krb5.conf` is copied to the specified location.
  - Run `ping -4 <PA_APP_HOST>` to learn the IP address returned by DNS. Then, run `ping -4 -a <IP>` to ensure that the IP resolves to the same host name used in PA_SPN.
  - Ensure that the keytab file is showing the correct host name.
  - Ensure the account that PA_SPN is mapped to was not altered (encryption modes, user login name). If it was altered, re-create keytab and try again.

Enable web browsers for integrated login

You must enable web browsers to forward Microsoft Windows authentication information to Planning Analytics components that support integrated login.

Procedure

1. If you are using Microsoft Internet Explorer or Edge, specify that the TM1 Web URL is a trusted site and enable **Automatic logon** with current `username` and `password` option and the **Enable Integrated Windows Authentication** option in Internet Explorer.

   For more information, see your Microsoft documentation.
2. If you are using Chrome or Firefox, locate and edit the following preferences so they include a comma-separated list of URL prefixes or domains for the location of your TM1 Web server.

   ```
   network.automatic-ntlm-auth.trusted-uris
   ```

   ```
   network.negotiate-auth.delegation-uris
   ```

   ```
   network.negotiate-auth.trusted-uris
   ```

   Enter `localhost` if you are running TM1 Web locally or enter the server name if you are running TM1 Web on a dedicated web server.

   For more information, see your Chrome or Firefox documentation.

Configure Cognos TM1 Architect to use integrated login

After you set up integrated login for IBM TM1 Server, you can use it to access your TM1 data in TM1 Architect.

Procedure

1. Run Cognos TM1 Architect.
2. Click **File** > **Options**.
3. Verify that the **Use Integrated Login** check box is selected.
4. Click **OK**.
5. In the Tree pane of the Server Explorer, double-click to open the list of servers.
6. Double-click the server into which you exported your LDAP user and group information.

   You should be logged in without being prompted to enter a user name or password.

Configure Cognos TM1 Perspectives to use integrated login

After you set up integrated login for IBM TM1 Server, you can use it to access your TM1 data in TM1 Perspectives.

Procedure

1. Run Microsoft Excel.
2. Click **TM1** > **Server Explorer**.

The TM1 Server Explorer displays.

3. Click **File** > **Options**.
4. Verify that the **Use Integrated Login** check box is selected.
5. Click **OK**.
6. In the Tree pane of the Server Explorer, double-click to open the list of servers.
7. Double-click the server into which you exported your LDAP user and group information.

   You should be logged in without being prompted to enter a user name or password.

Configure access rights for Cognos TM1 users

For an IBM Cognos TM1 user to access any data, you might have to assign that user to other Cognos TM1 groups.

About this task

You can add a user to the Admin group. For example, for a user to publish public objects to the Web through Cognos TM1 Web, the user must be a member of the Cognos TM1 Admin group.

Procedure

1. Start Cognos TM1 Architect.
2. Click **File** > **Options**.
3. Clear the **Use Integrated Login** option.
4. Click **OK**.
5. In the Tree pane of Server Explorer, double-click **TM1** to open the list of servers.
6. Double-click a server name.
7. Log in using your administrator login ID and password.
   - **Administrator name (default)** - admin
   - **Administrator password (default)** - apple
8. Right-click the server name, and click **Security** > **Clients and Groups**.
9. Select a user to add to the admin group. Use the scroll bar to scroll to the left, where the list of groups displays.
10. To add the user to the Admin group, select the check box in the ADMIN column for that user.
11. Click **OK**.

LDAP Authentication

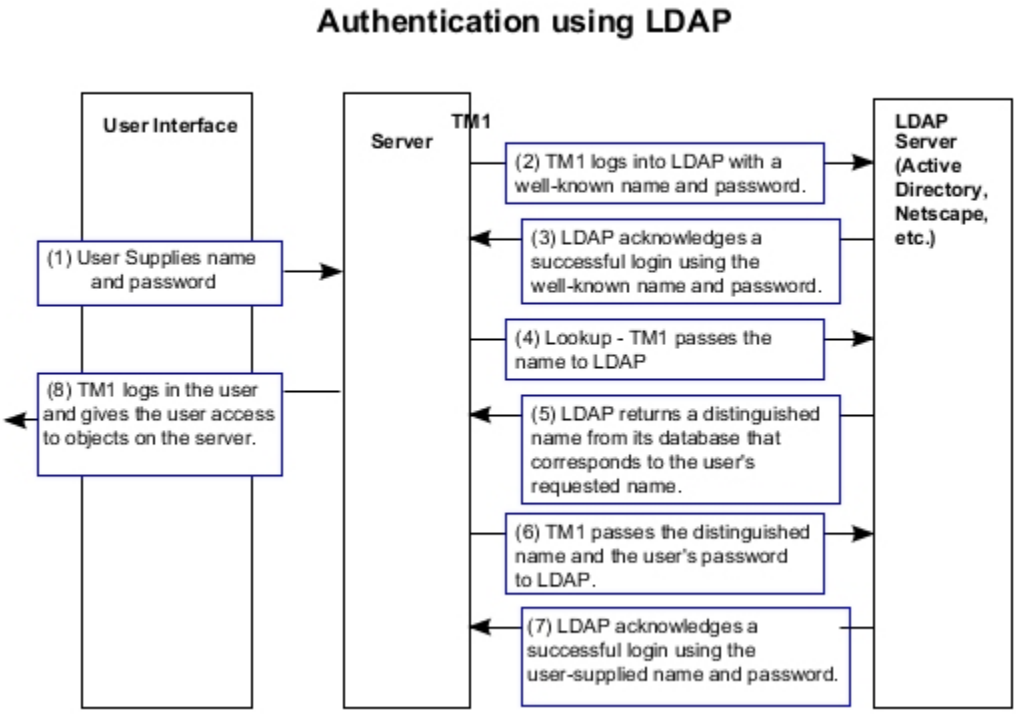
TM1 Server asks you for a user name and password, and validates the login information against an external LDAP server.

Planning Analytics supports LDAP authentication for TM1 Server on Microsoft Windows. LDAP authentication is **not** supported for TM1 Server on Linux or other platforms.

LDAP Authentication overview

With LDAP authentication, an LDAP security service that is external to IBM TM1 authenticates a login. You can add, modify, and delete user security information from one location - the LDAP server or Microsoft Windows Active Directory.

The following image illustrates the process of authenticating by using LDAP.



Validating users with an LDAP server

LDAP validation allows you to centralize all of your user passwords in an external LDAP server.

When your TM1 users log in, the user name and password they provide is validated against the information held in your LDAP server. You can specify a password and key to use before the server connects for LDAP authentication, or the server can directly connect without the use of a password.

As a prerequisite to setting up LDAP authentication, you must have significant knowledge of LDAP and its role in your network security structure. If you are not the LDAP administrator for your network, consult with your LDAP administrator to properly set up TM1 Server to use LDAP authentication.

Note: Your LDAP server must be configured to use SSL to successfully communicate with TM1 Server.

LDAP authentication parameters

Use the following parameters in the tm1s.cfg file to configure and support LDAP authentication.

- "PasswordSource" on page 356
- "LDAPHost" on page 341
- "LDAPPasswordFile" on page 342
- "LDAPPasswordKeyFile" on page 342
- "LDAPPort" on page 342
- "LDAPSearchBase" on page 342
- "LDAPSearchField" on page 342
- "LDAPSkipSSLCertVerification" on page 342
- "LDAPSkipSSLCRLVerification" on page 343
- "LDAPUseServerAccount" on page 343
- "LDAPVerifyCertServerName" on page 343
- "LDAPVerifyServerSSLCert" on page 343
- "LDAPWellKnownUserName" on page 344

Configuring LDAP validation

To configure LDAP validation, you will change the password in the TM1s.cfg file so that you can then import names from your LDAP directory and modify group assignments for new users. Then change the password back to the LDAP credentials.

Before you begin

To configure LDAP validation, you need the following information:

- A name that the TM1 Server can use to log in to LDAP. You can test the validity of this name using ETLDAP.
- The SSL port on which your LDAP server is running. The default is 636.
- The name or IP address of the LDAP server you want to use for validation.

Procedure

1. To use your TM1 credentials to log in, change the password parameter in TM1s.cfg by completing these actions:
   a) Edit TM1s.cfg in your TM1 Server data directory.
   b) Modify `PasswordSource=LDAP` to read `PasswordSource=TM1`
   c) Save and exit TM1s.cfg.
   d) Restart your TM1 Server.
2. To import names from your LDAP directory into TM1 Server, complete these actions:
   a) Use the procedure described in "ETLDAP utility" on page 261.
   b) Use the following TM1 login information:
      - **Admin user (default)** - Admin
      - **Admin password (default)** - apple

      Use the user that you specified during the installation to log in to LDAP.
3. To modify group assignments for new users, complete the following actions:
   a) Log in to TM1 Server as an administrator.
   b) Right-click the server name in Server Explorer and click **Security**, **Clients and Groups**.
   c) Modify the groups assignments for your new users as required.

      For each TM1 user ETLDAP added to your database, you must assign that user to the same group they belong to in the LDAP directory. For example, if NadiaC is a member of the group gymnasts in your LDAP directory, ETLDAP creates the user Nadiac, and creates the group gymnasts within TM1. Nadiac displays in the Clients/groups dialog box as a member of gymnasts.
4. To change the password back to the LDAP credentials, complete these actions:
   a) Edit TM1s.cfg in your TM1 Server data directory.
   b) Modify `PasswordSource=TM1` to read `PasswordSource=LDAP`
   c) Define the connection status:
      - To directly connect to the server, add the following line:

        ```
        LDAPUseServerAccount=T
        ```

      - To use a password before connecting to the server, add the following lines:

        `LDAPPasswordFile=` *file*

        `LDAPPasswordKey=` *key*
   d) Save and exit TM1s.cfg file.
   e) Restart your TM1 Server.

You should now be able to log in to TM1 Server with a name that you added from your LDAP directory.

Troubleshooting LDAP authentication

This topic describes error log messages that can arise when LDAPVerifyServerSSLCert=T in the tm1s.cfg file.

The following message indicates that the certificate does not match any of the names that are listed in LDAPVerifyCertServerName. Verify the certificate name and ensure that it has a LDAPVerifyCertServerName entry in the tm1s.cfg file.

```
LDAP ERROR: 0x800b0109 - Error verifying server certificate chain validity
LDAP ERROR: Error verifying server certificate no match for <server>
LDAP ERROR: 0x51 - ldap_connect failed.
```

The following message indicates an issue with the trust of the LDAP server certificate by Microsoft Windows. Ensure that the certificate has been imported into the Microsoft Windows Certificate Store.

```
LDAP ERROR: 0x800b010f - Error verifying server certificate chain validity
LDAP ERROR: Error verifying server certificate no match for <server>
LDAP ERROR: 0x51  - ldap_connect failed.
```

The following message indicates that either the certificate is revoked or TM1 is looking for the CRL certificate but cannot find it in the Microsoft Windows Certificate Store. To correct the error, skip the CRL check (set LDAPSkipSSLCRLVerification=T) or import the CRL certificate from the CA into the Microsoft Windows Certificate Store.

```
LDAP ERROR: 0x80092012 - Error verifying server certificate chain validity
LDAP ERROR: Error verifying server certificate no match for <server>
LDAP ERROR: 0x51 - ldap_connect failed.
```

Cognos security

The IBM TM1 Server can authenticate users using IBM Cognos security.

Cognos security is a component of the IBM Cognos framework that manages user access to data. Cognos security manages authorization and authentication through third-party security providers, such as LDAP or Active Directory.

When a user is authenticated through Cognos security, they are provided with a Cognos security passport. This passport is used by TM1 applications to determine the user's permissions (role and group membership) and identity.

Overview to Cognos security

The IBM Cognos TM1 server can authenticate users using IBM Cognos security.

When you use Cognos security, a Cognos passport is required to connect to Cognos TM1. A user is presented with a logon screen requiring a namespace, a user name, and a password when first logging in to Cognos TM1 or any other Cognos security-enabled components. A passport is issued to the user when they are authenticated by Cognos security. This passport automatically provides the user's credentials when accessing any other Cognos security-enabled application (including Cognos TM1). When a user connects to the Cognos TM1 server using a specific Cognos server that is configured for common logon, no direct user input is required to access additional Cognos TM1 servers (or other Cognos applications) that are configured to reference the same Cognos server.

When a user attempts to access the Cognos TM1 server, the server validates the passport to authenticate the user. This is done by querying a Cognos server for the identity of the passport. If the passport is valid, the query returns a collection of security and authentication information for the user. This information contains the roles and groups that the user has membership to, and the account (user name) associated with the passport. If the user name exists in Cognos TM1, their existing membership is validated against the existing Cognos TM1 groups. If the user does not exist, they are added and assigned to the appropriate user groups on the Cognos TM1 server.

If a user runs the client program as an administrator (by right-clicking on the program file name and selecting **Run as administrator**), two new folders are created after the client connects to CAM:

- *installation_location*\configuration

  This folder contains the C8ITK.ini file.

- *installation_location*\logs

  This folder contains the file C8ITK.log, if applicable.

By default, the C8ITK.ini file specifies that no log files are created in the logs folder, unless an error occurs. You can edit the C8ITK.ini file if you want to have log files. You can also change the name of the log file by editing the LogFilePath section. Before your changes can take effect, you must restart your Cognos services.

Verifying the configuration of IIS for Cognos Analytics 11.0
To configure TM1 CAM authentication using Cognos Analytics 11.0, you must verify your configuration of Microsoft Internet Information Service (IIS).

You can use the CA_IIS_config.bat script found in the technical note *Automate the configuration of Microsoft Internet Information Service to support IBM Cognos Analytics* or manually complete the IIS configuration that is described in *Configuring IIS in Cognos Analytics 11.0.4 and later versions*.

Remember: Take note of the alias name set in the CA_IIS_config.bat file before the script is run.

You should also verify the following items:

- The URLs in Cognos Configuration for Cognos Analtyics 11 must use the fully qualified domain name (FQDN).
- The Gateway URL in Cognos Configuration for Cognos Analytics must be configured as follows:

  ```
  http://gateway.domain.com:80/<alias name>/bi/v1/disp
  ```

  Where *gateway.domain.com* is the FQDN for the Cognos Analytics gateway server and *<alias name>* is the alias that was set in CA_IIS_config.bat before running the script.

- The .\<cognos analytics 11>\webcontent\default.htm and .\<cognos analytics 11>\webcontent\index.html files must be verified. If necessary, update the line that starts with <meta http-equiv="refresh" as follows:

  ```
  <meta http-equiv="refresh" content="0; URL=/<alias name>/bi/">
  ```

  Where *<alias name>* is the alias used in the CA_IIS_config.bat script file.

Configuring the TM1 Server to use Cognos security
You can configure the IBM TM1 Server to use IBM Cognos security for authentication instead of the default standard TM1 authentication.

Before you begin

To successfully complete these procedures, your IBM TM1 Server **must not** be configured to allow anonymous access. If anonymous access is enabled on the TM1 Server, you cannot log on to a namespace from TM1 when you import Cognos groups into TM1.

About this task

To enable IBM Cognos security authentication on the IBM TM1 Server, you must add or modify several configuration parameters in the server's tm1s.cfg configuration file.

Note: If you want to reconfigure a TM1 Server that is already using Cognos security to use a different instance of Cognos, you must remove any existing Cognos users and groups that were imported from the first Cognos instance and then import users and groups from the new Cognos instance.

The Cognos Analytics gateway is optional. You can set up Cognos Analytics without the gateway for CAM authentication. Some configuration steps different when the Cognos Analytics gateway is used. See also step "3" on page 252.

Procedure

1. Open the `tm1s.cfg` configuration file in a text editor.

   The `tm1s.cfg` file is located in the TM1 Server data directory. For more information, see "The tm1s.cfg configuration file" on page 312.
2. Edit or add the following parameters in the `tm1s.cfg` configuration file.
   a) Configure the **ServerCAMURI** parameter.

      The URI for the internal dispatcher that the TM1 Server should use to connect to IBM Cognos security. The URI is specified in the form:

      `http[s]://`*`host IP address`*`:`*`port`*`/p2pd/servlet/dispatch`

      Note: To find the URI, ask your IBM Cognos administrator to perform the following steps:

      1) On the system hosting IBM Cognos, open IBM Cognos Configuration.
      2) Click to expand the **Environment** node.
      3) In the **Properties** pane, locate the **Dispatcher Settings** section and use the value from either the **External dispatcher URI** or the **Internal dispatcher URI** property.

      Note: In Planning Analytics version 2.0.9 or later, you can configure your TM1 Server CAM URI with a Server Name Indication (SNI). The SNI can be set using the existing ServerCAMURI parameter in the format of SNI;URI.

      For example, without a Cognos Analytics gateway:

      ```
      ServerCAMURI=http://cognos-analytics.ibm.com:9300/p2pd/servlet/dispatch
      ```

      For example, with a Cognos Analytics gateway:

      ```
      ServerCAMURI=http://cognos-analytics.ibm.com:9300/p2pd/servlet/dispatch
      ```

   b) Configure the **ClientCAMURI** parameter.

      The value for the IBM Cognos Analytics Gateway URI used to authenticate TM1 clients. The URI is specified in the form:

      `http[s]://`*`host`*`:port/`*`ibmcognos`*`/bi/v1/disp` or `http[s]://`*`host`*`:port/bi/v1/disp`

      Note: The values for *host* and *ibmcognos* are variables and depend on the exact settings that are used. Contact your IBM Cognos administrator for more information about these settings.

      For example, without a Cognos Analytics gateway:

      ```
      ClientCAMURI=http://cognos-analytics.ibm.com:9300/bi/v1/disp
      ```

      For example, with a Cognos Analytics gateway:

      ```
      ClientCAMURI=http://cognos-analytics.ibm.com:80/analytics/bi/v1/disp
      ```

      For example, if your Cognos system is using Microsoft Internet Information Services (IIS):

      ```
      ClientCAMURI=http://10.121.25.121/ibmcognos/bi/v1/disp
      ```

   c) Configure the **ClientPingCAMPassport** parameter.

      Indicates the interval, in seconds, that a client should ping the IBM TM1 Server to keep their passport alive.

      If an error occurs or the passport expires, the user will be disconnected from the TM1 Server.

For example:

```
ClientPingCAMPassport=900
```

d) Configure the **CAMPortalVariableFile** parameter.

The path to the `variables_TM1.xml` file in your installation. In most cases, the path will be:

```
CAMPortalVariableFile = <portal>\variables_TM1.xml
```

The `CAMPortalVariableFile` parameter is required only when running TM1 Web.

```
CAMPortalVariableFile=templates\ps\portal\variables_TM1.xml
```

3. Take note of configuration differences with or without a Cognos Analytics gateway.

Without a Cognos Analytics gateway

The `tm1s.cfg` file would typically be configured as follows:

```
ServerCAMURI=http://cognos-analytics.ibm.com:9300/p2pd/servlet/dispatch
ClientCAMURI=http://cognos-analytics.ibm.com:9300/bi/v1/disp
```

In the Cognos Analytics **app tier** install, the `planning.html` and `pmhub.html` files are stored in the `<Cognos Analytics>/webcontent` directory. The `tm1web.html` file is stored in the `<Cognos Analytics>/webcontent/tm1/web/` directory.

With a Cognos Analytics gateway

The `tm1s.cfg` file would typically be configured as follows:

```
ServerCAMURI=http://cognos-analytics.ibm.com:9300/p2pd/servlet/dispatch
ClientCAMURI=http://cognos-analytics.ibm.com:80/analytics/bi/v1/disp
```

In the Cognos Analytics **gateway** install, the `planning.html` and `pmhub.html` file are stored in the `<Cognos Analytics>/webcontent/bi/` directory. The `tm1web.html` file is stored in the `<Cognos Analytics>/webcontent/bi/tm1/web/` directory

4. Set the **IntegratedSecurityMode** parameter to the default mode of 1.

Note: Setting the **IntegratedSecurityMode** parameter to 1 allows you to complete additional configuration steps in TM1 using standard TM1 security before switching to Cognos security. After you complete these additional steps, you can change this parameter to either 4 or 5 to use Cognos security.

For example:

```
IntegratedSecurityMode=1
```

5. Save and close the `tm1s.cfg` file.
6. Restart the TM1 Server.
7. Perform the required steps for your Cognos Analytics installation.
   a) Define a Cognos user to function as a Planning Analytics administrator.
   b) Import Cognos groups into Planning Analytics.

   For more information, see “Managing TM1 users, groups, and objects when using Cognos security” on page 253.
8. Configure the TM1 Server to start using Cognos authentication.
   a) Shut down the TM1 Server.
   b) Open the `tm1s.cfg` configuration file in a text editor.
   c) Set the **IntegratedSecurityMode** parameter to indicate that the server should use Cognos authentication.

   The exact parameter value depends on the specific TM1 components you are using:

- If you are not using the TM1 Applications component, set the parameter to 4.

  ```
  IntegratedSecurityMode=4
  ```

- If you are using TM1 Applications with Cognos security, set the parameter to 5 to support user groups from both Planning Analytics and Cognos.

  IntegratedSecurityMode=**5**

d) Save and close the `tm1s.cfg` file.

e) Restart the TM1 Server.

What to do next

See the following configuration topics to complete the configuration:

- "Configuring Cognos TM1 clients to use Cognos security" on page 255
- "Configuring Cognos TM1 Web to use Cognos security" on page 255
- "Using Cognos TM1 Applications with Cognos security" on page 257

Managing TM1 users, groups, and objects when using Cognos security

To successfully administer IBM Cognos TM1 while using IBM Cognos Analytics security for authentication, an existing Cognos user must be added to the Cognos TM1 ADMIN group.

Defining a Cognos user to function as a Cognos TM1 administrator

You must define a Cognos user as the Cognos TM1 administrator who will be used to import Cognos groups into Cognos TM1.

Important: The initial steps for this configuration must be done with the Cognos TM1 `IntegratedSecurityMode` parameter set to 1. You then change this parameter to use Cognos Analytics security at a later point in the steps.

Procedure

1. Log in to Cognos TM1 as an administrator.
2. From the Server Explorer, click **Server** > **Security** > **Clients/Groups**.
3. From the **Clients/Groups** dialog box, click **Clients** > **Add New Client**.

   The **Cognos logon** dialog box appears.
4. Enter your Cognos user ID and password, then click **OK**.
5. In the **Name** box, click the namespace to which you are currently logged in.

   Note: Only users from the namespace to which you are logged in can be imported into Cognos TM1. Other namespaces may appear in the **Name** box, but you cannot import users from them.

   The contents of the **Name** box update to display the directories available on the selected namespace.
6. Enable the **Show users in the list** option.
7. Navigate to the directory containing the Cognos user you want to define as a Cognos TM1 administrator. In most circumstances, you will define your own Cognos user as a Cognos TM1 administrator, as you must know the Cognos user's ID and password to complete administrative tasks.
8. Select the user.
9. Click the green arrow icon  to move the selected user to the **Selected Entries** list.
10. Click **OK** to import the Cognos user into Cognos TM1.

    The user appears as a new client in the Client/Groups window, but is not assigned to any Cognos TM1 groups.
11. Assign the new user to the ADMIN group and click **OK**.
12. Shut down the Cognos TM1 server.

13. Open the Tm1s.cfg configuration file in a text editor.
14. Set the IntegratedSecurityMode parameter to indicate that the server should use IBM Cognos authentication. The exact parameter value depends on the specific Cognos TM1 components you are using:
    - If you are not using the Cognos TM1 Applications component, set the parameter to 4.

      ```
      IntegratedSecurityMode=4
      ```

    - If you are using Cognos TM1 Applications with Cognos security, set the parameter to 5 to support user groups from both Cognos TM1 and Cognos.

      ```
      IntegratedSecurityMode=5
      ```
15. Save and close Tm1s.cfg.
16. Restart the Cognos TM1 server.

Importing Cognos groups into Cognos TM1

After an IBM Cognos user is defined as the Cognos TM1 administrator, that user can import Cognos groups into Cognos TM1.

You should import only the Cognos groups that you want to allow to access the Cognos TM1 server.

Procedure

1. In the Server Explorer, double-click your Cognos TM1 server.

   The **Cognos logon** dialog box appears.
2. Log on as the Cognos user that you have defined as the Cognos TM1 administrator.
3. From the Server Explorer, click **Server**, then **Security**, then **Clients/Groups**.
4. From the **Clients/Groups** window, click **Groups**, then **Add New Groups**.
5. In the **Names** box, click the namespace to which you are currently connected.

   Note: Only groups from the namespace to which you are connected can be imported into Cognos TM1. Other namespaces may appear in the **Name** box, but you cannot import groups from them.
6. Navigate through the directory structure and select the Cognos groups you want to import into Cognos TM1.
7. Click the green arrow icon  to move the selected user to the **Selected Entries** list.
8. Click **OK** to import the Cognos groups into Cognos TM1.

   If you review the User Group Assignment section of the Clients/Groups window, you should see the Cognos groups added to your server.

Creating TM1 users when using Cognos security

When the IBM Cognos TM1 server is configured to use Cognos authentication, you cannot create new clients directly on the Cognos TM1 server.

Instead, all client administration is performed in Cognos security.

When a Cognos user accesses Cognos TM1, the user is validated and automatically assigned to the appropriate Cognos TM1 groups. There is no need to manually assign users to groups in Cognos TM1.

Administering Cognos TM1 object security when using Cognos authentication security

While IBM Cognos authentication automatically manages users on the IBM Cognos TM1 server, the Cognos TM1 administrator must still manage object security to allow Cognos users to view and use Cognos TM1 objects.

For details on administering Cognos TM1 object security, see Cognos security in the *TM1 Developer* documentation.

Configuring Cognos TM1 clients to use Cognos security

You must add two parameters to your `Tm1p.ini` file to allow you to perform IBM Cognos security-related administrative tasks from your Cognos TM1 client.

Procedure

1. Open the `Tm1p.ini` configuration file in a text editor.

   For information on the location of the `Tm1p.ini` file, see "Location of the Tm1p.ini File" on page 372.
2. Add the following parameters to the `Tm1p.ini` file.

Table 24. Parameters for the Tm1p.ini file

Parameter Name	Description
CognosGatewayURI	The URI for the Cognos Analytics Gateway. The URI is specified in the form http[s]://host:port/bi/v1/disp or (with a web server) http[s]://host:port/ibmcognos/bi/v1/disp For example:`http://10.121.25.121/bi/v1/disp` or `http://10.121.25.121/ibmcognos/bi/v1/disp`.
AllowImportCAMClients	Determines if Cognos clients can be imported into Cognos TM1. This parameter must be set to T when setting up Cognos security in Cognos TM1.

   Your `Tm1p.ini` file should include parameters similar to the following:

```
AllowImportCAMClients = T
```

```
CognosGatewayURI = http://10.111.25.121:9300/bi/v1/disp
```

   or

```
CognosGatewayURI = http://10.111.25.121:80/ibmcognos/bi/v1/disp
```

3. Save and close `Tm1p.ini`.
4. Restart your Cognos TM1 client.

Configuring Cognos TM1 Web to use Cognos security

Follow these steps to configure IBM Cognos TM1 Web to use IBM Cognos authentication security.

Before you begin

Note: If you applied a Cognos Analytics updater kit to your Analytics installation, you might need to make specific updates to the `tm1web.html` file.

The `tm1web.html` file supports Cognos TM1 Web to use IBM Cognos authentication security. However, it does not get updated when you apply a Cognos Analytics updater kit. Instead, an updated file that is called `tm1web.html.new` is placed in the same Cognos Analytics `...\webcontent\tm1\web` directory as the original file. Use the newer version of `tm1web.html` and update it with any changes you made in the original `tm1web.html` file.

About this task

These steps include editing configuration files on your Cognos TM1 Web system and copying them over to your Cognos Analytics system.

Procedure

1. Locate and extract the following Cognos TM1 Web gateway files in your Cognos TM1 Web installation directory.

   variables_TM1.xml
   This file is located in `templates\ps\portal`.

   tm1web.html
   This file is located in `webcontent\tm1\web`.

   These files are compressed into the `bi_interop.zip` file here:

   `\<TM1 installation location>\bi_interop\`

   For example:

   `C:\Program Files\IBM\cognos\tm1_64\bi_interop\`
2. Copy the files to your IBM Cognos Analytics installation.

   variables_TM1.xml
   Copy this file to *<Cognos location>*`\templates\ps\portal` on every server where the TM1 Web Tier is running on your IBM Cognos Analytics system.

   tm1web.html
   Copy this file to *<Cognos location>*`\webcontent\bi\tm1\web` on every server where the Cognos Analytics Gateway is running on your IBM Cognos Analytics system.
3. Edit the `tm1web.html` file to point to where Cognos TM1 Web is running.

   `var tm1webServices = ["http://SystemName:PortNumber"];`

   For example:

   `var tm1webServices = ["http://mysystem:9510"];`

Configuring Cognos TM1 Operations Console to use Cognos security

Deprecated in v2.0.9 You can configure IBM Cognos TM1 Operations Console to use IBM Cognos Analytics security, also called Cognos Access Manager (CAM) authentication.

Before you begin

At least one TM1 server must be configured for IBM Cognos Analytics security. This is required in order to store the Operations Console user group information. You must know the name of this TM1 server to complete the steps in this topic. For complete details and configuration steps, see "Cognos security" on page 249 and "Configuring the TM1 Server to use Cognos security" on page 250

About this task

To configure Operations Console to use IBM Cognos Analytics security, you work with files on the computers hosting these two components.

Procedure

1. Open Performance Management Hub by going to `http://<host>:9510/pmhub/pm/admin`
2. Expand **Configurations** > **Operations Console TM1 Monitors**.
3. Verify the values in the **DefaultAdminHost**, **DefaultGroup**, and **DefaultServer** fields. See "Configuring the Cognos TM1 Operations Console" on page 131.
4. Expand **PMHub Security**.
5. Set **CAMBIURL** to the Cognos Analytics Server dispatcher URL.

   You can find this value in Cognos Configuration under **Environment** > **External dispatcher URI**. The value in the **ServerCAMURI** parameter of the `tm1s.cfg` file should be similar.

   For example: `http://host.domain.com:9300/p2pd/servlet/dispatch`
6. Set **CAMGatewayURL** to the Cognos Analytics Server gateway.

You can find this value in Cognos Configuration under **Environment** > **Gateway URI**. The value in the **ClientCAMURI** parameter of the `tm1s.cfg` file should be similar.

For example: `http://host.domain.com/ibmcognos/cgi-bin/cognos.cgi`

7. Copy the `..\tm1_64\bi_interop\bi_interop.zip` file from the TM1 installation location to the root of the Cognos Analytics Server installation directory (the `..\c10_64 directory`).

   If you are using a distributed Cognos Analytics server environment, copy the file to the computer that is running the TM1 Data Tier or TM1 Web tier.
8. Extract `bi_interop.zip` so the directory structure is maintained.

   The `pmhub.html` file should be in the `..\c10_64\webcontent` directory.
9. Edit line 51 in the `pmhub.html` file to include the fully qualified domain name and port number of the IBM Cognos TM1 Applications Service that runs the TM1 Operations Console.

   - If you are using the WebSphere Liberty Profile web server provided with TM1, this is the server where TM1 Application Server is running.
   - If you are using your own web server, this is the server where you deployed `pmhub.war`.

   For example:

   ```
   var pmhubURLs = ["http://tm1appshost.domain.com:9510"];
   ```

   You can also include multiple URLs if the TM1 Operations Console is used on multiple systems. For example:

   ```
   var pmhubURLs = ["http://tm1appshost1.domain.com:9510",
   "http://tm1appshost2.domain.com:9510"];
   ```

Using Cognos TM1 Applications with Cognos security

You can configure IBM Cognos TM1 Applications to use IBM Cognos Analytics security. This configuration requires users to log in to Cognos TM1 Applications as a valid user that exists in the Cognos Analytics server. This configuration also integrates Cognos TM1 Applications with Cognos Analytics by displaying links to Cognos TM1 Applications in the IBM Cognos Connection portal.

When you use Cognos TM1 Applications with Cognos Analytics Security, the Cognos TM1 Application Server can be hosted on a web application server in one of the following ways:

- On a different computer with the WebSphere® Liberty server that was provided with the Cognos TM1 installation
- On a different computer with your own installation of IBM WebSphere

In all cases, you must edit the `planning.html` file and copy this file to the Cognos Analytics server so that the Cognos Analytics server knows the location of the Cognos TM1 Application Server.

Note: You must have the `TM1_PATH` environment variable specified before connecting to Cognos TM1 under a UNIX environment.

Configuring Cognos TM1 Applications to use Cognos Analytics Security

To configure IBM Cognos TM1 Applications to use IBM Cognos Analytics security, you work with files on the computers hosting these two components, plus the computer where the Cognos TM1 Server is running. This configuration also enables the IBM Cognos Connection portal to show links to Cognos TM1 Applications so that users can open the applications that they rights to from within the Cognos Connection portal.

Before you begin

The Cognos TM1 server must be configured to use Cognos Analytics security.

To use Cognos TM1 Applications with Cognos Analytics security, the **IntegratedSecurityMode** parameter in the Cognos TM1 `Tm1s.cfg` configuration file must be set to 5 to support user groups from both Cognos TM1 and Cognos Analytics.

For complete details and configuration steps, see "Cognos security" on page 249 and "Configuring the TM1 Server to use Cognos security" on page 250.

Note: You must configure the TM1_PATH environment variable before you can connect to Cognos TM1 under a UNIX environment.

Procedure

1. Extract the content of the `bi_interop.zip` file into your existing Cognos Analytics installation.

   Note: As of Cognos TM1 version 10.2.2, the `bi_interop.zip` replaces the `planning_gateway.zip` file that was provided with previous versions of Cognos TM1.

   a) Locate the `bi_interop.zip` file that is provided with the Cognos TM1 installation in the following location.

   Cognos TM1 location`\bi_interop\`

   b) Extract and merge the content of the `bi_interop.zip` file into the root directory of your existing Cognos Analytics installation.

   For example: `C:\Program Files\IBM\cognos\ca_64\`

   Note: The `bi_interop.zip` file contains a directory structure that merges files into the `\templates` and `\webcontent` subdirectories.

   c) To manually extract and copy the files to your Cognos Analytics installation, copy the files as follows:

   If you are using a distributed Cognos Analytics server environment, copy these files to the computer that is running the TM1 Data Tier or TM1 Web Tier as follows.

   planning.html
   Copy `planning.html` to *CA Install Dir*`\webcontent` and to *CA Install Dir* `\webcontent\bi` where the Cognos Analytics Gateway is installed.

   icon_active_application.gif
   Copy `icon_active_application.gif` to *CA Install Dir*`\webcontent\ps\portal \images` where the Cognos Analytics Gateway is installed.

   variables_plan.xml
   Copy `variables_plan.xml` to *CA Install Dir*`\templates\ps\portal` wherever the presentation service (Application tier) is running in a Cognos Analytics server.

   Note: These files are also installed with newer Cognos Analytics installations. If the files exist on your Cognos Analytics server, then you only need to edit them as explained in these steps.

2. Edit the `planning.html` file.

   Important: The values for the **`planningServices`** parameter in this file are required to ensure that the Cognos Analytics server redirects users to only approved locations. The location of the Cognos TM1 Application Server from where the user logs in must be validated to be one of the approved locations in this file. Otherwise, the Cognos Analytics server will not redirect the user.

   a) Open the `planning.html` file and locate the following lines:

   ```
   // Update the following to point to the location of the planning
   service(s)

   var planningServices = ["http://machine.company.com:9510"];
   ```

   b) Set the **`planningServices`** parameter to the location and port number for the Cognos TM1 Application Server.

   ```
   var planningServices = ["http://web_server_address:port_number"];
   ```

   Replace *web_server_address* with the fully qualified domain name (FQDN) for the computer where the Cognos TM1 Application Server is running. For example, `myhost.example.com`

- If you are running the Cognos TM1 Application Server with the WebSphere® Liberty server that is provided with the Cognos TM1 installation:

  ```
  var planningServices = ["http://web_server_address:9510"];
  ```

- If you are running the Cognos TM1 Application Server with your own web application server, use the location and port number for that system.

Tip: If you are using the same Cognos Analytics server to authenticate different instances of Cognos TM1 Applications that are running on multiple computers, use a comma-separated list with the fully qualified domain name (FQDN) for each computer. For example:

```
var planningServices = ["http://machine1.example.com:port_number","http://
machine2.example.com:port_number"];
```

Tip: If the Cognos TM1 Application Server is running on a web server that belongs to multiple domains, use a comma-separated list to enter the fully qualified domain name for each domain. For example:

```
var planningServices = ["http://computer_A.domain_1:port_number","http://
computer_A.domain_2:port_number","http://
computer_A.domain_3:port_number"];
```

c) Save and close the `planning.html` file.

3. Configure the session timeout parameters for Cognos TM1 Applications and Cognos Analytics security to ensure the proper timeout detection.

   For details, see "Configuring session timeout values for Cognos TM1 Applications and Cognos Analytics Security" on page 260.

4. Restart the Cognos Analytics server.
5. Configure Cognos TM1 Applications with values for the **IBM Cognos Gateway URI** and **IBM Cognos Dispatcher URI** .

   a) Open Cognos TM1 Applications using the format of the following link:

   `http://web_server_name:port_number/pmpsvc`

   For example: `http://localhost:9510/pmpsvc`

   b) Log in and open the Cognos TM1 Applications Configuration page:

   - If you are running Cognos TM1 Applications for the first time, the Configuration page opens after you log in.
   - If you already configured Cognos TM1 Applications, open the Configuration page by clicking the **Administer IBM Cognos TM1 Applications** icon on the toolbar of the TM1 Applications portal page.

   c) On the **TM1 Applications Configuration** page, enter values for the following Cognos TM1 and Cognos Analytics parameters:

   - Enter values in the **TM1 Admin Host** and **Server Name** fields and configure the options for the data contribution clients that you want to use. For details, see "Configuring the server and client environment for TM1 Application Web" on page 113.
   - Set the **IBM Cognos Gateway URI** parameter. For example:

     `http://CognosServerName/ibmcognos/bi/v1/disp`

   - Set the **IBM Cognos Dispatcher URI** parameter. For example:

     `http://CognosServerName:9300/p2pd/servlet/dispatch`

     Replace *CognosServerName* with the name of the system where the Cognos Analytics web server is running.

6. To test the configuration, log in to Cognos TM1 Applications using a web browser on a remote computer.

If you see the following error, review your settings for the **planningServices** parameter in the `planning.html` file on the Cognos Analytics server.

```
The planning service parameter was not specified or is not
one of the configured locations
```

Configuring session timeout values for Cognos TM1 Applications and Cognos Analytics Security

When using IBM Cognos TM1 Applications with IBM Cognos Analytics security, set the pmpsvc session timeout to a value higher than the CAM session timeout to ensure the proper timeout detection. If the Cognos TM1 Applications (pmpsvc) session timeout is set to a value lower than the Cognos Analytics security (CAM) session timeout, then Cognos TM1 Applications will not properly detect a CAM session termination and will not timeout.

About this task

To ensure that Cognos TM1 Applications can properly detect a CAM session termination, set the pmpsvc session timeout to a value higher than the CAM session timeout.

- The pmpsvc session timeout is the number of minutes of inactivity after which Cognos TM1 Applications terminates a user session. The default value is 60 minutes (1 hour).
- The CAM session timeout is the number of seconds of inactivity after which Cognos security terminates a user session. The default value is 3600 seconds (1 hour).

Procedure

1. Configure the pmpsvc session timeout parameter.
   a) Locate the `fpmsvc_config.xml` file in the `WEB-INF/configuration` directory.
      - When Cognos TM1 Applications is deployed with the WebSphere® Liberty server that is provided with the Cognos TM1 installation, the `fpmsvc_config.xml` file is here:

        Cognos_TM1_install_location\webapps\pmpsvc\WEB-INF\configuration

   b) Enter a value for the **timeout** attribute of the **service** / **session** element.

      Use the format for the **service** / **session** / **timeout** attribute as defined in the XML schema definition file `fpmsvc_config.xsd` located in the same directory.

      For example:

      ```
      <session timeout="60"/>
      ```
2. On your Cognos Analytics system, configure the CAM session timeout using IBM Cognos Configuration.

   Enter a value in the **Inactivity timeout in seconds** field in the Security/Authentication section of Cognos Configuration.

Administrator considerations when using Cognos authentication

IBM Cognos TM1 administrators should be aware of the some issues when configuring the Cognos TM1 server to use IBM Cognos authentication.

The issues are as follows:

- Review the description of Cognos TM1 security modes 4 and 5 for the `IntegratedSecurityMode` parameter. You should understand how these different modes control whether or not Cognos users can belong to Cognos TM1 user groups. For details, see the description of the `IntegratedSecurityMode` parameter in *TM1 Operations*.
- You cannot use Cognos TM1 to permanently assign a Cognos user to another Cognos group. Any user assignment you make in Cognos TM1 to a Cognos group is not saved back to Cognos. When a Cognos user logs in to Cognos TM1, the group assignments in Cognos override any Cognos group assignments made in Cognos TM1.
- If you rename a Cognos user after importing that user to Cognos TM1, you must then delete the user in Cognos TM1 in order to update Cognos TM1 with the new user name. After deleting the user in Cognos TM1, the new name will appear the next time the user logs in.

User considerations when using Cognos authentication
IBM Cognos TM1 users should be aware of issues that may arise when accessing the Cognos TM1 server configured to use IBM Cognos authentication.

Authentication behavior
Rules govern authentication behavior when logging on to the IBM Cognos TM1 server that uses IBM Cognos authentication.

The rules are as follows:

- If common logon is enabled in IBM Cognos and you have previously logged in to an IBM Cognos application and maintain an active session, you are not prompted for credentials when logging on to the Cognos TM1 server.
- If common logon is enabled in IBM Cognos and you have not previously logged in to an IBM Cognos application, you are prompted for credentials when logging on to the Cognos TM1 server.
- If common logon is not enabled in IBM Cognos, you are prompted for credentials when logging on to the Cognos TM1 server, even if the server is configured to use IBM Cognos authentication.

Private Cognos Security sessions
When an IBM Cognos server is configured to use common logon, you will be challenged only once for credentials.

Any subsequent connections to other IBM Cognos security-enabled applications (including Cognos TM1) which are configured to reference the same IBM Cognos server will automatically occur, provided your Cognos security passport is valid.

For example, if you have three available Cognos TM1 servers, all configured to use the same IBM Cognos server, once you connect to the first server as user X in namespace Y, all connections to the other Cognos TM1 servers will automatically occur using the passport of user X from namespace Y.

In some circumstances, you might want to log on to the Cognos TM1 server as a user other than the one identified by your Cognos security passport. To accommodate this, the **Logon As** option lets you override the automatic authentication that usually occurs with a passport, while maintaining the validity of the passport for later use. When you log on to the Cognos TM1 server using the **Logon As** option, a private session is established. The credentials used to establish the private session are not stored in a passport and are not shared with any other application. Any existing passport remains valid and can be used to access other IBM Cognos security-enabled applications.

Procedure

1. From the Server Explorer, click **Server**, then **Logon As**.
2. In the Cognos Logon window, enter the **User ID** and **Password** you want to use to log on to the Cognos TM1 server.
3. Click **OK**.

Establishing a replication with Cognos security
When establishing a replication connection to the IBM Cognos TM1 server that uses IBM Cognos authentication, you must provide the IBM Cognos Namespace ID of the namespace.

Do not provide the descriptive name of the namespace.

ETLDAP utility
You can use the ETLDAP utility to add LDAP (Lightweight Directory Access Protocol) users to IBM TM1 Server when you use TM1 Server with Integrated Login and LDAP authentication.

Note: You can only use the ETLDAP utility to add new LDAP users to TM1 Server. ETLDAP does not modify, update or delete existing users in TM1 Server.

ETLDAP, an LDAP load tool, provides the following functionality:

- Extracts user information from an LDAP or Active Directory server.

- Creates the element UniqueID in the }ClientProperties dimension.
- Adds users to the }ClientProperties cube.
- Populates the UniqueID field in the }ClientProperties cube with the domain-qualified user name of the user you add to TM1 database. For example, ETLDAP writes the name robert@company.com to the }ClientProperties cube.

As the TM1 administrator, you can perform these tasks using ETLDAP:

- Add many user names from an LDAP server to the TM1 database quickly.
- Migrate information from a legacy LDAP database to TM1.
- Perform one or more queries to specify the users you want to create in TM1 Server, and then export the users into the TM1 security cubes.
- Update TM1 with new users that have been added to the LDAP server since the initial load of user data into TM1.

Note: The ETLDAP utility is not available when the IBM TM1 Server is configured to use one of the following Integrated Security Modes:

- Integrated Security Mode 3 - Integrated Login
- Integrated Security Mode 5 - IBM Cognos Analytics authentication

However, you *can* use ETLDAP to prepare your user and security data for Integrated Security Mode 3 server operation. In this case, you must configure your server to use Integrated Security Mode 1 or 2 while using the ETLDAP utility. Then, after all user and security data has been prepared, you must reconfigure your server to use Integrated Security Mode 3 during normal operation.

See "IntegratedSecurityMode" on page 337 for more information about Integrated Security Mode options.

Modifying LDAP attributes

The value of an attribute you retrieve from an LDAP directory may not precisely match what you want to enter in the TM1 security cube.

If so, you must modify certain LDAP attributes before you can run ETLDAP.

For example, you could combine all users from the R&D, Quality Assurance, and Documentation LDAP groups into a single TM1 group named Engineering. To support these requirements, you can extend a Java class with a single method you need to override.

The `stringFilter` class contains one method with the following signature:

```
String filterString(String attrName, String value)
```

At run time, this method is passed the name of each LDAP attribute that matches a mapping entry and its value. The String it returns is added to the TM1 database.

The following code demonstrates the implementation of the `stringFilter` class, combining all users from the R&D, Quality Assurance, and Documentation LDAP groups into a single TM1 group named Engineering.

The stringFilter class looks for instances of the LDAP **ou** attribute, which is the TM1 Group names field. If the value is **R&D**, **Quality Assurance**, or **Documentation**, it returns **Engineering**. The users from any of the 3 LDAP groups are added to a single TM1 **Engineering** group. Any other group value remains unchanged.

```
// The stringFilter class provides the ability to transform strings
// which are read from the LDAP database before they are inserted into
// TM1's datastore.
//
// To implement this feature, create a class which extends stringFilter
// and contains a method 'filterString' with the following signature:
//
// String filterString(String attrName, String value)
//
```

```
//
public class myStringFilter extends stringFilter
{
    public String filterString(String attrName, String value)
    {
    if (attrName.equals("ou"))
        {
        if ( (attrName.equals("R&D")) ||
           (attrName.equals("Quality Assurance")) ||
           (attrName.equals("Documentation")) )
            return "Engineering";
        else
            return value;
        }
    else
        return value;
    }
}
```

After you write and compile the Java code, put the class somewhere in your Classpath. Then click **Edit** > **Options** and enter its name in the **Class Name** field.

Running ETLDAP

You can run ETLDAP from the Microsoft Windows operating system or the DOS command window with command-line parameters.

Procedure

1. If you want to run ETLDAP from the Microsoft Windows operating system, complete the following actions:
   - Click **Start** > **Programs** > **IBM Cognos** > **TM1** > **Administration** > **ETLDAP**.
   - Set the elements that you require.

Table 25. Elements in the LDAP Load Tool dialog box.

Field or Button	Description
Search DN	Displays the LDAP node at which the search originates. ETLDAP does not search for entries above this level in the tree.
Filter	Displays the query string that filters the entries in the directory and generates the matching records.
Attributes	Displays the attribute values for LDAP entries that assist in validating the records returned by the search. When you export the LDAP information to TM1, ETLDAP retrieve the attributes required to create valid TM1 users. **Note**: The attributes are for display purposes only.
Search Scope	Specifies the starting point of the search, and the search level. Select **One level** to specify all entries one level below the base Search DN, but not the base DN itself. Select **Sub-tree level** to search all entries beneath the base DN, including the base DN.
Results Table	Displays the search results. Click the column headers to sort the data, or right-click in a row and click **View Entry** to examine all attributes for that entry.
Search Button	Performs the search using the parameters you select.

Table 25. Elements in the LDAP Load Tool dialog box. (continued)	
Field or Button	**Description**
Export Button	Exports the displayed set of users to TM1 based on the settings in the **Options** dialog box.

2. If you want to run ETLDAP from the DOS command window, complete the following actions:
   - Click **Start** > **Programs** > **Accessories** >**Command Prompt**.
   - Enter the following command line:

     `java etldap` *`options`*
   - Add the parameters that you require.

Table 26. Supported command-line parameters	
Parameter	**Description**
-f *filename*	Passes the name of a saved session file to load all configuration settings from a previous session. When you run ETLDAP in unattended (batch) mode, you must include a name for the session save file. If this file does not contain the passwords necessary to connect to the LDAP and IBM TM1 Server, an error message is written to the log file and the session is terminated.
-batch	Runs ETLDAP in command-line mode with no user interface. Requires the -f option.
-secure	When you run ETLDAP in batch mode, passing this flag removes all passwords from the session file referenced by the -f flag after they have been read. This parameter reads the save file at the beginning of the session, and then re-writes the file with the passwords removed. While in use, you would run ETLDAP and specify the passwords with the user interface. Then you would exit ETLDAP and run the command line version specifying the '-secure' option. This would insure that the passwords were only available for the short period of time it takes for the utility to initialize.
-help	Displays online Help for these command-line parameters.

Configuring the LDAP login parameters
You can configure the LDAP login parameters.

Procedure

1. In the LDAP Load Tool dialog box, click **File** > **Connect**.
2. Enter the following host and user information.

Panel	**Field**	**Description**
Host Info	**Host**	Enter the host name or IP address of the machine where the LDAP server is running.

Panel	Field	Description
	Port	The port on which the LDAP server is running. If a port is not specified, 636 is used. Cognos TM1 attempts to bind to an LDAP server on the specified secure port. If you do not enter an LDAPPort value, Cognos TM1 uses the default value of port 636.
	Version	ETLDAP will most likely ignore the version number. Most LDAP servers support version 2 or version 3 type connections, ETLDAP does not use any functionality specific to either version.
	SSL option	Determines whether the communication between the LDAP server and ETLDAP happens over a secure encrypted channel. Unless you are viewing secure information over an insecure network, leave this option turned off.
	Anonymous option	Most LDAP servers have some layer of security configuration that requires you to authenticate as a known user. In some systems, anonymous users can browse the directory, but not retrieve the schema. In other systems, an anonymous user might have access to certain insecure areas of the directory, but not others.
User Info	**User DSN**	In many cases, your LDAP directory prevents Anonymous users from accessing or modifying data. In this case, you may need a Distinguished Name (DN) and password to complete the extraction of your LDAP security information. For example, the name Norm Lodin might refer to a person who works at Blodget, Inc. Inside LDAP, he has a Distinguished Name that uniquely distinguishes him from all other entities in the network. Norm might enter the following information in the User Info field. uid=nlodin, ou=People, o=Blodget.com
	Password	Enter a password that corresponds to the User DN.

3. To see if the connection is successful, click **Test**.
4. Click **OK**.

   You have established a connection to your LDAP server with the parameters you specified.

Building an LDAP query

Use an LDAP query to add LDAP users and groups to IBM Cognos TM1.

Before you begin

An LDAP query consists of the following major elements:

- **Search DN** - An LDAP directory is organized as a tree structure, with a root node and a number of branches off this root. The Search DN specifies at which node the search originates. Entries above this level in the tree are searched. You must specify the correct base DN to obtain the results you want.
- **Filter** - A query string that filters the entries in the LDAP directory and generates the matching records. You can create complex filters by using a combination of the following symbols:

  & (AND)

  | (OR)

  ! (NOT)

  * wildcard character

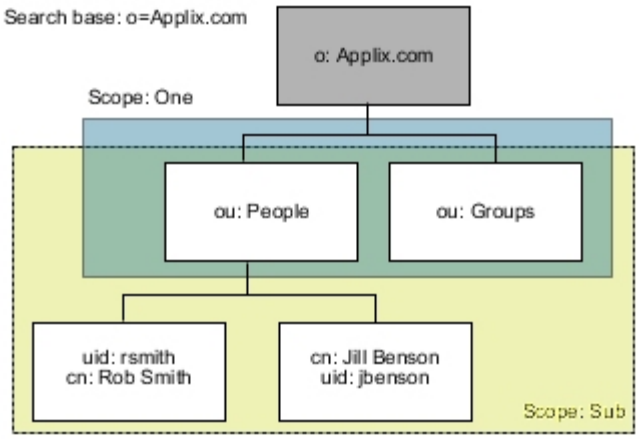
  ( ) parentheses for nesting

  For instructions on building LDAP filter strings, refer to LDAP books and online resources, including the LDAP standard, RFC 2254, *The String Representation of LDAP Search Filters*.
- **Scope** - While the Search DN specifies the starting point of the search, the Scope attribute indicate the level of depth to which the search occurs. There are two Scope levels:

  One Level - Specifies that LDAP search all entries one level below the base DN, but does not include the base DN itself.

  Sub-Tree Level - Indicates that LDAP search all records at all levels including the base DN.

  The following diagram illustrates the effect that the Scope setting has on a search.



- **Attributes** - Describe every LDAP entry and their values. Includes a comma-separated list of values to return for the records that match the filter string. There are two LDAP attributes:

  User attribute - You add this attribute to the LDAP directory. For example, cn or mail.

  Operational attribute - The LDAP server creates and maintains this attribute. For example, numSubordinates.

  The attributes for an entry could include:

  Present with no value

  Present with one or more values

  Not present. If an attribute is optional, the attribute may not exist for an entry.

  Note: Be sure to request only the attributes you need. If you request all attributes, a large result set can significantly increase processing time on the LDAP server and memory requirements on both the server and the client.

Procedure

1. Specify the Search DN, Filter String, Attributes, and Scope for your query.
2. Click **Search**.

   You see a list of entries in the table, unless there are syntax errors or if the filter string does not match any records in the directory.
3. Examine the result set.
   - Does it include names that you do not want to see?
   - Are important entries missing?
   - Do you need to build multiple queries to capture the list of records you are interested in?
4. Make your changes to the filter string.
5. Click **Search**.
6. Examine the result set.
7. Repeat steps 3 through 6 until you have a list of valuable records.
8. Click **File**, **Save As** to save your LDAP query as a text file.

   Note: You can use the saved LDAP query at a later time. To do so, click **File** > **Open** in the LDAP Load Tool dialog box. ETLDAP fills in the DN, Filter String, Attributes, and Scope for your LDAP query.

Connecting to the IBM TM1 Server

Follow these steps to connect to the IBM TM1 Server server.

Procedure

1. Click **Edit** > **Login** > **TM1**.
2. Enter the following server information:

Field	Description
Host	The machine name of the server on which your TM1 Admin Server is running.
SSL port	Enter the port number configure which the admin server will use. The default is 5498
Server	The name of the TM1 server to which you want to connect. Click **Server** and then the **Browse** button to select a server from the Server list.
Username	The name of a user with Admin privileges on the target TM1 server.
Password	The password of the admin user.

3. To see if the connection is successful, click **Test**.
4. Click **OK**.

Mapping LDAP attributes to Cognos TM1 fields

LDAP directories contain many attributes, some of which you standardize, and others which you add or customize for your environment. You must specify the relationship between the LDAP attributes and the required IBM Cognos TM1 fields manually.

Before you begin

You should be familiar with your LDAP schema.

Procedure

1. Click **Edit** > **Mapping** > **TM1**.
2. For each required (red) Cognos TM1 field, select an LDAP schema attribute.

   For each user, Cognos TM1 requires a unique name and group name. For example, you could map the name attribute in your LDAP schema to the Cognos TM1 user, and map the department attribute to the Cognos TM1 group.
3. Click **OK**.

Specifying the ETLDAP export options

You can specify the ETLDAP export options.

Procedure

1. Click **Edit** > **Options**.
2. Select **Enable Integrated Login**.
3. Enter the realm name that contains the users you want to transfer.
4. Clear **Save Passwords**.

   When you clear Save Passwords, ETLDAP removes all passwords necessary to connect to the servers before the session save file is written. The next time you run ETLDAP, you would have to enter the passwords again.
5. Set **Maximum Search Results** and **Search Time Limit** to 0.
6. Click **OK**.

Exporting LDAP information to Cognos TM1

You can export LDAP information to IBM Cognos TM1.

Procedure

1. Click **Export**.

   ETLDAP moves the records you retrieved from the LDAP directory into TM1, and logs the data export activity in a log file.

   Note: You can open the log before you export records to track the export progress.
2. Click **View**, **Log** to open the Session Log.

   The Session Log shows a summary of the LDAP users that ETLDAP exported and created in Cognos TM1. ETLDAP randomly generates the Cognos TM1 user passwords and adds them to the Cognos TM1 database.

   Note: If you use Integrated Login, Cognos TM1 users do not use the Cognos TM1 passwords, and you do not have to coordinate passwords between Cognos TM1 and Microsoft Windows. If you do not use Integrated Login, Cognos TM1 users must change their password during their first login session. For details, see “Integrated login” on page 235.

Running ETLDAP in Update mode to add new LDAP users

You can run ETLDAP in Update mode to update IBM Cognos TM1 with new LDAP users that do not already exist in Cognos TM1. To do this, you specify a date in the Filter section of your LDAP query.

About this task

When you run ETLDAP the first time, you must retrieve all records from the LDAP server that meet your organizational requirements. You define these requirements using the Filter parameter. After you retrieve all user and group records, you load them into the IBM Cognos TM1 database.

After using ETLDAP to initially load LDAP users into Cognos TM1, you can then only use the tool to retrieve and add new LDAP users that do not already exist in Cognos TM1. You cannot use the ETLDAP utility to update or delete existing users in Cognos TM1 based on changes in the LDAP directory.

As new users are added to your LDAP server, you can add them to Cognos TM1 by specifying a date in the Filter section of your LDAP query. Using a date in the Filter section runs ETLDAP in Update mode. You can edit your LDAP Filter to select only new user records that meet your original search requirements since the last time you ran ETLDAP.

Note: Running ETLDAP in Update mode only adds new LDAP users that do not already exist in Cognos TM1. ETLDAP does not update user attributes or delete existing Cognos TM1 users.

Procedure

1. Determine the last modified record attribute to specify a date in the Filter section of your LDAP query.

   All LDAP servers support a last modified record attribute, which includes these timestamp attributes:

   - **Standard LDAP** - modifytimestamp
   - **Microsoft Active Directory** - whenChanged

   During an export session, ETLDAP examines all records as it processes them and stores the date of the most recently changed record in the Session Log file, as shown in the following sample:

   ```
   newest record modified: Thu Jan 23 07:00:42 EST 2003(20030123070042.0Z)
   ```

2. Locate the newest record line in the LDAP Session Log.
3. Copy the timestamp portion of the string in parentheses from the LDAP Session Log into the Filter section of your LDAP query.

   Note: Be sure to adhere to the syntax supported by LDAP Filters. For more information, see the Internet standards protocol document, RFC 2254, "The String Representation of LDAP Search Filters".

   The following table shows a sample Filter string without any changes, and after modification for both LDAP and Active Directory servers.

   - A standard LDAP server uses the `modifytimestamp` attribute.
   - An LDAP server with Microsoft Active Directory uses the `whenChanged` attribute.

Sample Filter String	Filter String After Modification
Initial string	`(&(objectclass=person)(|(department=R&D)(department=Documentation)))`
Modified for standard LDAP	`(&(objectclass=person)(modifytimestamp>=20030515162433Z)(|(department=R&D*)(department=QA)))`
Modified for Active Directory	`(&(objectclass=person)(whenChanged>=20030515162433.0Z)(|(department=R&D*)(department=QA)))`

4. After you make the necessary changes to the Filter line, save the session data with a name that clearly identifies it as an incremental update query.
5. Run ETLDAP using the new session data.

Data transmission security

You can configure IBM Planning Analytics Local to use secure data transmission between clients and servers with the Transport Layer Security (TLS) protocol.

Planning Analytics provides a default configuration that services use to create a 2048-bit RSA key pair and issue a certificate to the configured subject, which is signed using SHA-256 by a built-in certificate authority (CA).

The server key and certificates are stored in a PKCS12 keystore named `CAMKeystore` in the configured keystore location (`<PA_install_directory>/configuration/certs/`) of the Planning Analytics data tier installation.

Overview

All IBM Planning Analytics Local components can communicate with the Cognos TM1 Admin Server by using Transport Layer Security (TLS).

Note: Though a standard Planning Analytics Local installation is configured to use TLS by relying on the certificates that are installed in the `<PA_install_directory>\bin64\ssl` directory, you should use your own certificates to maximize security.

The following diagram illustrates how IBM TM1 Server interacts with the components of the Data Tier, Web Tier, Rich Tier, and other Planning Analytics clients.

To learn more, follow this legend.

1. The IBM TM1 Server is configured to use Transport Layer Security (TLS) by default. When the TM1 Server registers with the Admin Server, the TM1 Server specifies whether it is using TLS or not. To replace the provided TLS certificates, see “Configure the TM1 Server to use custom TLS” on page 271.
2. The TM1 Admin Server is configured to use TLS by default. To replace the provided TLS certificates, see “Configure the Cognos TM1 Admin Server to use custom TLS” on page 275.
3. “Configure the Web Tier to use custom TLS” on page 278. For TM1RunTI configuration to TM1 Server, see Using TM1RunTI in *TM1 TurboIntegrator*.
4. If you are using custom TLS certificates, see “Configure Cognos TM1 Architect or Perspectives to use custom certificates” on page 288.
5. If you are using custom TLS certificates, see “Configure Cognos TM1 Performance Modeler to use custom certificates” on page 289.
6. If you are using custom TLS certificates, see “Configure Cognos Insight to use custom certificates” on page 290.
7. If you are using custom TLS certificates, see “Configure the TM1 C API to use custom certificates” on page 291.
8. This configuration depends on the REST API client. Assuming the REST API client is using a web browser, there is no configuration required unless the default TLS certificates from the TM1 Server are used. For more information, see Authentication and session security.
9. “Configure the TM1 Server and a Cognos Analytics dispatcher with SSL enabled” on page 276.
10. “Configure TLS for Planning Analytics Workspace Local” on page 158.
11. If you are using custom TLS certificates, see “Configure TLS between Planning Analytics Workspace Local and other servers” on page 159.
12. For information about IBM Planning Analytics for Microsoft Excel connections, see “Set up connections for TM1 REST APIs” on page 193.

Default configuration

When you install IBM Planning Analytics Local, all certificates and other files required to configure TLS are placed in the <*PA_install_directory*>\bin64\ssl directory.

When you install Planning Analytics Local, the Admin Server, TM1 Server, and TM1 clients are all configured to use TLS, relying on the certificates installed in the <*PA_install_directory*>\bin64\ssl directory. Although these certificates allow you to configure a TLS implementation, you should replace these certificates with your own certificates (as well as a certificate revocation list) if you want to maximize security.

For TM1 Web, all root certificates must be installed in the certificate store on the machine that the servers are using to run TM1 Web.

The <*PA_install_directory*>\bin64\ssl directory contains the following certificates and files. Files with a .pem extension are Privacy Enhanced Mail format. Files with a .der extension are Distinguished Encoding Rules.

applixca.der
The original default certificate in DER format used for Java certificate stores.

applixca.pem
The original root authority certificate.

ibmtm1.arm
The default certificate file.

ibmtm1.crl
The certificate revocation list.

ibmtm1.kdb
The key database file, which contains the server certificate and trusted certificate authorities.

ibmtm1.rdb
The requested key pair and the certificate request data.

ibmtm1.sth
The key store, which contains passwords to the key database file.

tm1ca_v2.der
The updated default certificate.

tm1ca_v2.pem
The updated default root authority certificate.

tm1store
The Java certificate store containing the public root authority certificate.

Configure the Data Tier to use custom TLS

These steps provide an overview of the process to configure encrypted communication using Transport Layer Security (TLS) for TM1 Admin Server and TM1 Server in IBM Planning Analytics Local.

Configure the TM1 Server to use custom TLS

To configure an IBM TM1 Server to use Transport Layer Security (TLS), you must set several parameters in the Tm1s.cfg file and configure the Data tier to use custom certificates.

Generate the custom SSL keystore and certificate

IBM Planning Analytics includes the **gsk8capicmd_64.exe** program in the <*PA_install_directory*>\bin64\ directory. This tool can be used to create and populate a keystore database that is used by the TM1 Admin Server and TM1 Server.

1. Create a keystore database file by using the following command.

```
gsk8capicmd_64 -keydb -create -populate
-db PA_install_directory\bin64\ssl\custom.kdb
-type cms -pw changeit -stash
```

2. Request a certificate from the keystore database that was created in step "1" on page 271.

```
gsk8capicmd_64 -certreq -create -db PA_install_directory\bin64\ssl\custom.kdb
-stashed -label tm1server -dn "CN=tm1server.canlab.ibm.com,O=IBM"
-file PA_install_directory\bin64\ssl\cert_request.arm –size 2048
```

   Note: The `cn` value must match the fully qualified domain name of the system that is running the Planning Analytics Data tier.

3. Provide the certificate request (`cert_request.arm` file) to the Certificate Authority for signing.

   The certificate authority provides both an issued certificate (`tm1server.cer` in this example) and a CA certificate (`ca.cer` in this example). Multiple CA certificates are usually stored in a single file. It is common for a certificate authority to provide both the issued certificate and CA certificates in a single file.

4. Add the CA certificates into the keystore.

```
gsk8capicmd_64 -cert -add -db PA_install_directory\bin64\ssl\custom.kdb
-stashed -label tm1serverca -file PA_install_directory\bin64\ssl\ca.cer
-format ascii -trust enable
```

5. Receive the issued certificate into the keystore.

```
gsk8capicmd_64 -cert -receive -db PA_install_directory\bin64\ssl\custom.kdb
-stashed -file .\ssl\tm1server.cer -default_cert yes
```

Complete the following steps for UNIX and Linux environments.

1. Add the <*PA_install_directory*>\bin64\ directory to the library path environment variable (LD_LIBRARY_PATH) before you run **gsk8capicmd_64**.

```
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/opt/ibm/cognos/bin64
```

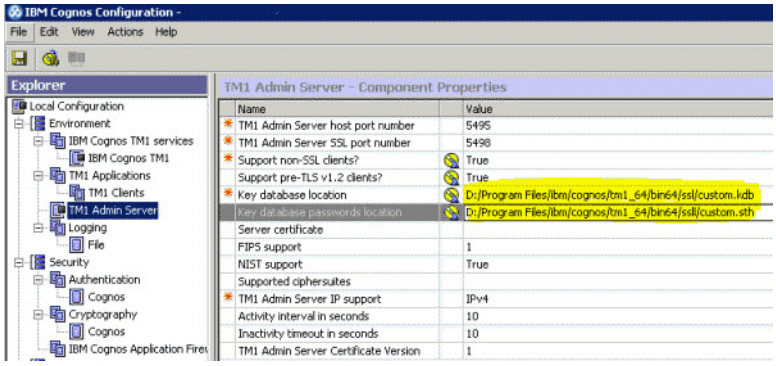
   Note: The **gsk8capicmd_64** program fails with a missing library error if the library path variable is not set correctly.

2. The **gsk8capicmd_64** file in the <*PA_install_directory*>\bin64\ is missing the execute permission by default. Add the missing execute permissions by running the following command from the bin64 directory.

```
chmod +x gsk8capicmd_64
```

Configure the TM1 Admin Server to use the custom TLS certificate

1. Point the following TM1 Admin Server settings to the `custom.kdb` and `custom.sth` files in Cognos Configuration.



2. Restart the TM1 Admin Server service.

The **Server certificate** parameter in the settings might be incorrectly referenced in the <*PA_install_directory*>\configuration\cogstartup.xml file. To correct this problem, manually edit the cogstartup.xml file to change this line:

```
<crn:parameter name="tm1AdminKeyLabel">
    <crn:value xsi:type="xsd:filePath">tm1server</crn:value>
</crn:parameter>
```

To the following line:

```
<crn:parameter name="tm1AdminKeyLabel">
    <crn:value xsi:type="xsd:string">tm1server</crn:value>
</crn:parameter>
```

Note: Saving your changes in Cognos Configuration resets the above line to the incorrect value. You must ensure that the certificate being used is the default certificate in the key database and leave the **Server certificate** parameter empty in Cognos Configuration.

Configure the TM1 Server to use the custom TLS certificate

1. Edit the tm1s.cfg file to include the following lines.

   ```
   keyfile=PA_install_directory\bin64\ssl\custom.kdb
   keystashfile=PA_install_directory\bin64\ssl\custom.sth
   ```

2. Restart the TM1 Server service.

Configure TM1 Architect and TM1 Perspectives to use the custom TLS certificate

1. Create a file named tm1api.config in the <TM1 Client>\bin\ or <TM1 Client>\bin64\ directory of the TM1 client installation depending on your client installation.
2. Update the contents of the tm1api.config file with the following lines:

   ```
   [tm1api]
   keystorefile=PA_install_directory\bin64\ssl\custom.kdb
   keystashfile=PA_install_directory\bin64\ssl\custom.sth
   ```

You don't need to make any changes in the options for Cognos TM1 Architect or TM1 Perspectives.

Configure TM1Web to use the Custom TLS certificate

1. The CA certificates must be imported into the <*PA_install_directory*>\bin64\ssl\ttm1store certificate store file in the TM1Web installation.

   To import the CA certificates, use the Java **keytool** command found in the <*PA_install_directory*>\jre\bin\ directory as follows.

   ```
   keytool.exe -import -trustcacerts file "PA_install_directory\bin64\ssl\ca.cer"
   -keystore "PA_install_directory\bin64\ssl\tm1store" -alias tm1cacert
   -storepass applix
   ```

   Note: This command assumes that all CA certificates are in a file named ca.cer that is already copied into the <*PA_install_directory*>\bin64\ssl\ directory.

2. Restart the IBM Cognos TM1 service from the Windows services list or Cognos Configuration.

Configure TM1 Applications (pmpsvc) to use the custom TLS certificate

1. Make sure the custom.kdb and custom.sth file are copied into the <*PA_install_directory*>\bin64\ssl\ directory of the TM1 Server install that includes the pmpsvc web application.
2. Create a file named tm1api.config in the <*PA_install_directory*>\bin64\ directory of the TM1 Server install containing the pmpsvc web applications.

3. Update the contents of the `tm1api.config` file:

```
[tm1api]
keystorefile=PA_install_directory\bin64\ssl\custom.kdb
keystashfile=PA_install_directory\bin64\ssl\custom.sth
```

4. Update the <*PA_install_directory*>\wlp\usr\servers\tm1\jvm.options file to include the following line:

```
-Dcom.ibm.cognos.tm1.certificate.dir=PA_install_directory\bin64
```

5. Restart the IBM Cognos TM1 service (WebSphere Liberty Profile).

Configuration parameters

The following table describes parameters that are related to secure connections, which can be set in the Tm1s.cfg configuration file. All Tm1s.cfg parameters are described in "Parameters in the tm1s.cfg file" on page 322.

Parameter	Description
UseSSL	Enables or disables secure connections on the TM1 Server. This parameter is enabled by default. Set UseSSL=F to disable secure connections. With this setting, clients can connect to the server in insecure mode.
SSLCertAuthority	The name of the TM1 Server's certificate authority file. This file must be on the computer where the TM1 Server is installed.
SSLCertificate	The full path of the certificate file that contains the public/private key pair.
SSLCertificateID	The name of the principal to whom the TM1 Server's certificate is issued.
SvrSSLExportKeyID	The identity key that is used to export the TM1 Server's certificate from the Microsoft Windows certificate store. This parameter is required only if you choose to use the certificate store by setting ExportSvrSSLCert=T.
ClientExportSSLSvrCert	Specifies whether the TM1 client must retrieve the certificate authority certificate, which was originally used to issue the TM1 Server's certificate, from the Microsoft Windows certificate store. If ClientExportSSLSvrCert=T, the certificate authority certificate is exported from the certificate store on the client computer when requested by the TM1 client.

Parameter	Description
ClientExportSSLSvrKeyID	The identity key that is used by the TM1 client to export the certificate authority certificate, which was originally used to issue the TM1 Server's certificate, from the Windows certificate store.

Configure the Cognos TM1 Admin Server to use custom TLS

To configure the IBM TM1 Admin Server to use Transport Layer Security (TLS), use IBM Cognos Configuration.

The following table describes properties that are related to secure connections, which can be set in IBM Cognos Configuration.

Property	Description
Support non-SSL clients?	This property determines if the Admin Server supports non-SSL TM1 clients. Set this property to `True` to configure the Admin Server to support non-SSL clients and to listen for client connections on both secured and unsecured ports. Set this property to `False` to configure the Admin Server to support only secure client connections on a single secured port.
Support pre-TLS v1.2 clients?	As of TM1 10.2.2 Fix Pack 6 (10.2.2.6), all secured communication between clients and servers in TM1 uses Transport Layer Security (TLS) 1.2. This property determines whether TM1 clients and TM1 servers prior to 10.2.2 Fix Pack 6 can connect to the 10.2.2.6 or later Admin Server. Set this property to `True` to allow TM1 clients and TM1 servers prior to 10.2.2.6 to connect to the Admin Server. When such a connection is established, TLS 1.0 is used instead of TLS 1.2. Set this property to `False` to prevent TM1 clients and TM1 servers prior to 10.2.2.6 from connecting to the Admin Server.
TM1 Admin Server certificate authority file location	The full path and name of the Cognos TM1 Admin Server's certificate authority file.
Certificate file location	The full path of the Cognos TM1 Admin Server's certificate file, which contains the public/private key pair.
TM1 Admin Server private key password file location	The full path of the file that contains the encrypted password for the Cognos TM1 Admin Server's private key.
TM1 Admin Server password key file location	The full path of the file that contains the key used to encrypt and decrypt the password for the private key.
Certificate revocation file location	The full path of the Cognos TM1 Admin Server's certificate revocation file. A certificate revocation file will only exist in the event that a certificate has been revoked.

Property	Description
TM1 Admin Server Certificate Version	Specifies which version of the TM1 generated certificates to use. By default, the 1024-bit encryption version of the TM1 generated certificates is used. Change this property only if you want to use the new 2048-bit encryption version of the default certificates. You can use the new version with old and new TM1 clients, but you must configure the clients to use the new certificate authority file. **Note:** This property does not apply if you are using your own certificates. Valid values include: • 1 - Enables certificate authority for 1024-bit encryption with sha-1 (default value) • 2 - Enables certificate authority for 2048-bit encryption with sha-256

Configure the TM1 Server and a Cognos Analytics dispatcher with SSL enabled
You can configure TM1 Server for CAM Authentication when using a Cognos Analytics dispatcher with SSL enabled.

Procedure

1. Add the following parameter to the `tm1s.cfg` file.
   `CAMUseSSL=T`
2. Find the root and any intermediate CA (signing) certificates for the Cognos Analytics dispatcher.
   By default this key database file is <*PA_install_directory*>`\bin64\ssl\ibmtm1.kdb`.
   a) Browse to the Cognos Analytics dispatcher URL.
   For example, `https://cognosbi.ibm.com:9300/p2pd/servlet/dispatch`.
   b) Using Internet Explorer, click the lock icon to the right of the URL.
   c) Click **View certificates**.
3. Export the certificates to a Base-64 encoded `cer` file.
4. Import the certificates into the key database used by the TM1 Server by running the following command from the <*PA_install_directory*>`\bin64\` directory.

```
gsk8capicmd_64 -cert -add -db .\ssl\ibmtm1.kdb -stashed -label cognosbi
-file .\ssl\cognosbica.cer -format ascii -trust enable
```

   This command assumes that the certificates are in a file named `cognosbica.cer` that has already been copied into the <*PA_install_directory*>`\bin64\ssl\` directory.
5. Restart the TM1 Server.

Edit parameters in the tm1s.cfg file to use independent certificates
After adding your certificate to the Microsoft Windows Certificate Store, add the required parameters to the `tm1s.cfg` file.

Table 27. Parameters for the Tm1s.cfg file

Parameter	Value
AdminSvrSSLCertID	Specifies the name of the principal to whom the IBM Cognos TM1 Admin Server's certificate is issued.

Table 27. Parameters for the Tm1s.cfg file (continued)	
Parameter	**Value**
AdminSvrSSLExportKeyID	Specifies the identity key used to export the Admin Server's certificate from the Microsoft Windows Certificate Store.
ClientExportSSLSvrCert	Specifies whether the TM1 client should retrieve the certificate authority certificate, which was originally used to issue the TM1 Server's certificate, from the Microsoft Windows Certificate Store. If `ClientExportSSLSvrCert=T`, the certificate authority certificate is exported from the certificate store when requested by the TM1 client.
ClientExportSSLSvrKeyID	The identity key used by the TM1 client to export the certificate authority certificate, which was originally used to issue the TM1 Server's certificate, from the Microsoft Windows Certificate Store.
ExportAdminSvrSSLCert	Specifies whether the Cognos TM1 Admin Server's certificate should be exported from the Microsoft Windows Certificate Store. If `ExportAdminSvrSSLCert=T`, the Admin Server's certificate is exported from the Microsoft Windows Certificate Store when the certificate is requested by the TM1 Server.
ExportSvrSSLCert	This parameter must be set to T to enable the TM1 Server to retrieve the certificate from the Microsoft Windows Certificate Store. `ExportSvrSSLCert=T`
SSLCertAuthority	The name of the authority that issued your certificate. You can determine this value by referring to the Microsoft Management Console and clicking **Certificates** > **Personal** > **Certificates**. The authority name is displayed in the **Issued By** column of the Properties pane.
SSLCertificateID	The name of the principal to whom the TM1 Server's certificate is issued. You can determine this value by referring to the Microsoft Management Console and clicking **Certificates** > **Personal** > **Certificates**. The principal name is displayed in the **Issued To** column of the Properties pane.
SSLPrivateKeyPwdFile	The full path to the .dat file that contains the encrypted password for the private key. **Note:** The name of this file is specified by the `-outfile` parameter when you run the TM1Crypt utility. For example, if you run the TM1Crypt utility from the following command: `tm1crypt.exe -pwd abc123 -keyfile btkey.dat -outfile btprk.dat -validate` the correct parameter value is `SSLPrivateKeyPwdFile=C:\Program Files\Cognos\TM1\bin\btprk.dat`

Table 27. Parameters for the Tm1s.cfg file (continued)	
Parameter	**Value**
SSLPwdKeyFile	The full path to the .dat file that contains the key used to encrypt and decrypt the password for the private key. **Note:** The name of this file is specified by the `-keyfile` parameter when you run the TM1Crypt utility. For example, if you run the TM1Crypt utility from the following command: `tm1crypt.exe -pwd abc123 -keyfile btkey.dat -outfile btprk.dat -validate` the correct parameter value is `SSLPwdKeyFile=C:\Program Files\Cognos\TM1\bin\btkey.dat`
SvrSSLExportKeyID	Specifies the identity key used to export the TM1 Server's certificate from the Microsoft Windows certificate store. In most cases, the value for SvrSSLExportKeyID will be identical to the value for SSLCertificateID.

Configure the Web Tier to use custom TLS

These steps provide an overview of the process to configure encrypted communication using Transport Layer Security (TLS) for TM1 Web, TM1 Applications, and TM1 Application Gateway in IBM Planning Analytics Local.

All secured communication between clients and servers in Planning Analytics Local uses Transport Layer Security (TLS) 1.2.

When Planning Analytics is configured to use TLS, you access TM1Web, TM1 Applications, and TM1 Application Gateway by using HTTPS instead of HTTP. Planning Analytics provides a default configuration that gets stored in the `CAMKeystore` file in the `/configuration/certs/` directory of the Planning Analytics installation.

You can configure encrypted communication with the default configuration for development and testing. However, you should configure custom certificates for production systems.

Custom certificates need to be signed by a third-party certificate authority (CA). You can use the IBM Key Management tool to create a certificate and import the certificate back into Planning Analytics after it is signed by a third-party CA. You can also import an existing keystore that contains a server key and matching certificates that are already signed by a CA that is external to Planning Analytics.

Important: Before you follow these steps, stop the IBM Cognos TM1 service and back up the `CAMKeystore` and `cogstartup.xml` files, or back up the configuration directory of your Planning Analytics installation.

Use the default configuration

You can use the standard, default certificates that are included as part of your Planning Analytics Local installation.

About this task

You must change the default settings for Planning Analytics and import the certificate to establish trust for TM1 Web.

Because you are changing Planning Analytics Data Tier configuration for supporting encrypted communication, the keystore that TM1 Web uses to establish trust with the Planning Analytics Web Tier and Planning Analytics Data Tier has changed.

The keystore that is configured in Cognos Configuration is used to look up CA certificates whenever trust needs to be established. Therefore, you must add the CA certificate that signed the server certificates of the TM1 Servers in the Planning Analytics Data Tier to the configured keystore.

Procedure

1. In IBM Cognos Configuration, navigate to **Local Configuration** > **Security** > **Cryptography** > **Cognos** and enter the following parameters:
   - Server common name - Enter the fully qualified hostname of the server that hosts the Planning Analytics Data Tier that is used in URLs by clients.
   - Organization name - Enter your company or organization name.
   - Country or region code - Enter the two-letter country region code.
   - **Optional:** Certificate location - Enter the folder to store the `CAMKeystore` file.
   - **Optional:** Keystore password - Enter a password for the keystore.
   - **Optional:** Supported cipher suites - Configure the cipher suites supported by the Planning Analytics Data Tier that are offered to clients connecting to the Data Tier.

     Note: This setting does not affect ciphers that are used by the Planning Analytics Data Tier.
2. In IBM Cognos Configuration, navigate to **Local Configuration** > **Environment** > **TM1 Applications** and change the URLs for the following parameters to use the HTTPS prefix:
   - TM1 Application Server Gateway URI - For example, `https://system_name.mydomain.com:9514/pmpsvc`
   - External server URI - For example, `https://system_name.mydomain.com:9514`
   - TM1 Application Server Dispatcher URI - For example, `https://system_name.mydomain.com:9514/pmpsvc/dispatcher/servlet`
   - Business Viewpoint URI - For example, `https://system_name.mydomain.com:9514/bv`

   Note: Enter the fully qualified `system_name.mydomain.com` and port numbers for your specific configuration.
3. Open a command prompt and change to the bin folder of your Planning Analytics Local installation,

   ```
   cd C:\\Program Files\ibm\cognos\tm1_64\bin
   ```
4. Run the following command to import the certificate into the keystore.

   ```
   keytool -import -trustcacerts -file "<path to the certificate>\<CA_file>"
   -keystore ..\lib\security\cacerts -storepass changeit -alias TM1ServerCert
   ```

   Where *<CA_file>* is the PEM encoded file that contains the CA (chain) used to sign the TM1 Server's certificate.

   By default, all TM1 Servers use the self-signed certificate that is stored in *<PA_install_directory>*`\bin64\ssl\ibmtm1.arm`. Enter this file name for *<CA_file>* unless the TM1 Servers in Planning Analytics Data Tier are configured to use custom certificates.

   And <Keystore_Password> is the password that specified in **Local Configuration** > **Security** > **Cryptography** > **Cognos Key store password** in Cognos Configuration. The default keystore password is `NoPassWordSet`.
5. Enter `yes` when prompted to trust or add the certificate. You can ignore messages about logging.

   The following message displays: **Certificate was added to keystore**.
6. Add the TM1 Server CA certificate to the `CAMKeystore` keystore file.

   Note: If this step is missed, TM1Web cannot connect to TM1 Server. This step must be completed even if the TM1 Server is not using custom certificates.

   a) Use IBM Key Management to open the `CAMKeystore` file, and switch to the **Signer Certificates** section.

b) Click **Add** and select the `./tm1_64/bin64/ssl/ibmtm1.arm` file (the certificate that is provided by IBM).

There is no requirement for a specific label for certificates that are added to the **Signer Certificates** section of IBM Key Management.

7. Restart the IBM Cognos TM1 service from IBM Cognos Configuration.

Remember: Re-add certificates anytime you reinstall Cognos TM1.

What to do next

Log in to TM1 Web with the secure HTTPS URL to confirm that you can connect to TM1 with this configuration.

For example, log in using `https://`*`system_name`*`:9514/tm1web`.

The browser might show a certificate warning because the CA certificate that signed the WebSphere Liberty Profile server certificate is from the built-in CA service and is not trusted by the browser. You can either import that certificate into the browser (refer to your browser documentation) or safely ignore the warning and continue.

If the warning is because of a different reason, check that the hostname of the URL exactly matches the hostname that is specified for Server Common Name in Cognos Configuration and verify you're using a supported browser.

Use IBM Key Management to configure custom certificates

You can generate a certificate request and import a certificate with the IBM Key Management tool.

About this task

If a signed certificate is already available for the system that is running the Planning Analytics web tier, start at step "3" on page 282. This signed certificate must be in the form of a `pkcs12` or `jks` file. This file is password-protected.

Procedure

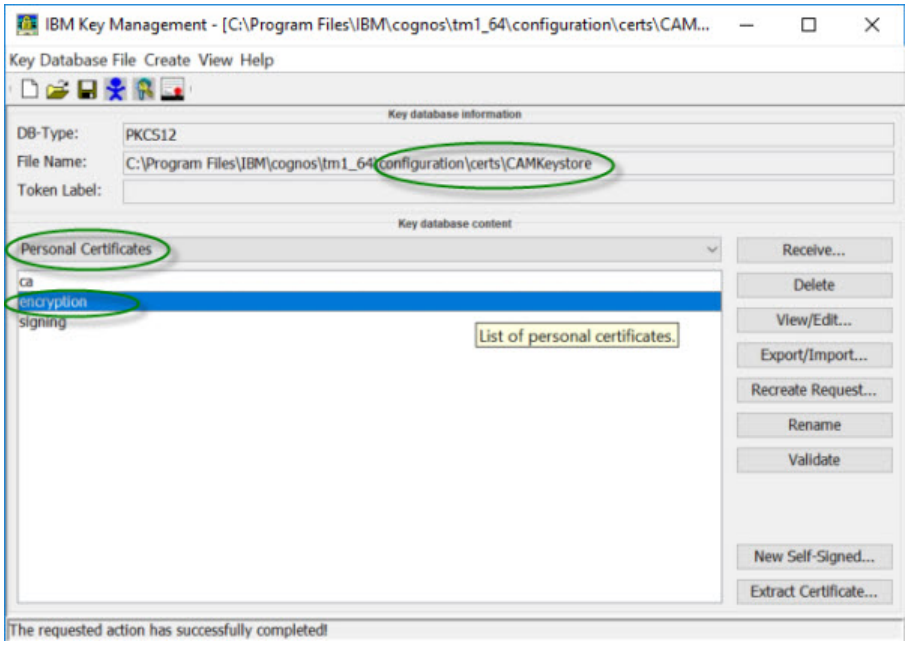
1. Use the IBM Key Management tool (`ikeyman.exe`) to access the CAMKeystore file and generate a certificate request.

   The `ikeyman.exe` program is found in the <*`PA_install_directory`*>`\jre\bin` directory of the Planning Analytics installation or in the IBM JRE installation if Linux used. The `CAMKeystore` file is found in the `\configuration\certs\` directory. The default certificate created by the built-in services is issued to CN=CAMUSER and issued by CN=CA

   a) Click  to open a key database file and select the file.

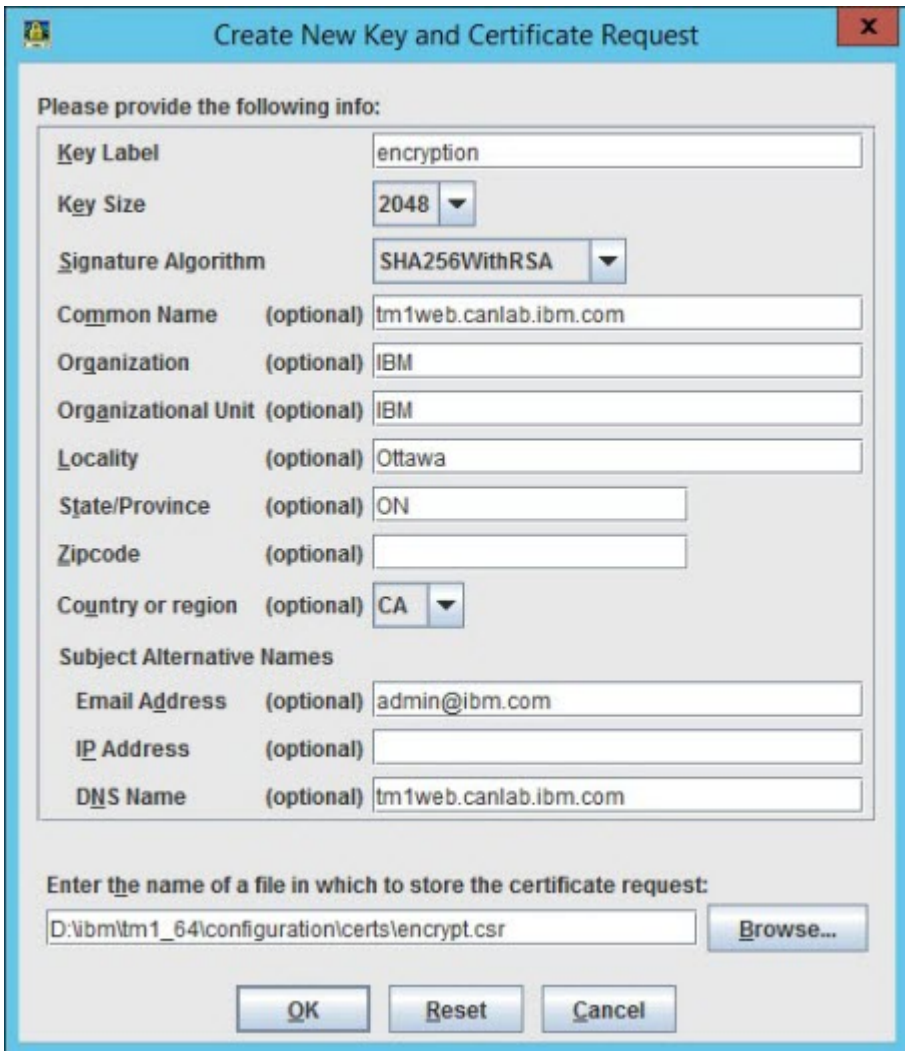
   The key database file type must be PKCS12. The default password for the CAMKeystore file is NoPassWordSet.

   b) In the **Personal Certificates** section, select the certificate with the label **encryption** and click **Delete**.



You must replace this certificate with your own certificate that will be issued to the name of the server running TM1Web.

c) In the **Personal Certificates** section and click **Create** > **New Certificate Request** or click in the **IBM Key Management** toolbar. Fill in the details as follows:



The **Key Label** must be encryption, **Key Size** 2048, and **Signature Algorithm** SHA256WithRSA. Setting a **Subject Alternative Name: DNS Name** is also strongly recommended because web browsers might require a proper Subject Alternative Name (SAN) to validate the certificate.

d) Enter the location and name of the certificate request file and click **OK**.

2. Get the certificate request signed by a Certificate Authority (CA).

   The certificate request file must be provided to the CA. The CA will provide one or more files that contain a signed certificate and the CA certificates in the chain.

3. Import a server key and certificates from an external keystore or replace the encryption certificate with one that was created with IBM Key Management.

   a) Use IBM Key Management to open the `CAMKeystore` file. See step "1" on page 280.

   b) In the **Personal Certificates** section, select the **encryption** certificate and click **Delete** if it has not been removed yet.

   c) In the **Personal Certificates** section, click **Receive** to import the new certificate and select the certificate file that contains the certificate to be used.

   This file should typically contain the signed certificate and the certificate authority chain certificate (root and intermediate certificates). During the import, IBM Key Management prompts for a label for the signed certificate. This label must be **encryption**. All certificates will be imported into `CAMKeystore` during the import action. If the file being imported does not contain the full certificate chain, the CA certificates must be added separately to the **Signer Certificates** section.

   d) In the **Signer Certificates** section, click **Add** and select the file or files containing the CA certificates.

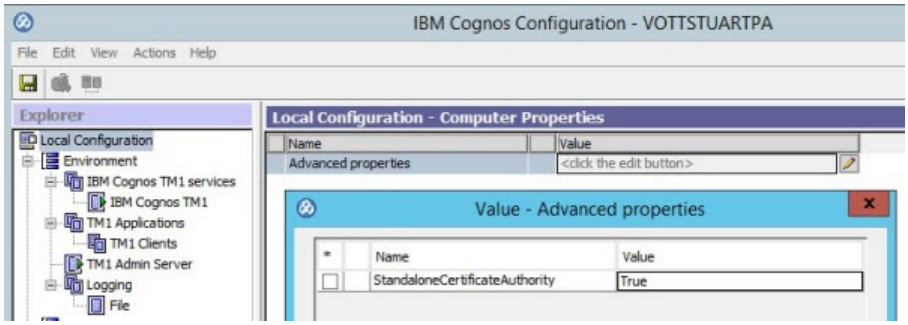
If a single file contains multiple CA certificates (for example, a root and multiple intermediate certificates) then multiple certificates can be selected for import. IBM Key Management prompts for a label for these certificate. A specific label is not required for the CA certificates.

e) After the CA certificates have been added to the **Signer Certificates** section, switch back to the **Personal Certificates** section and click **Receive** to receive the signed encryption certificate.

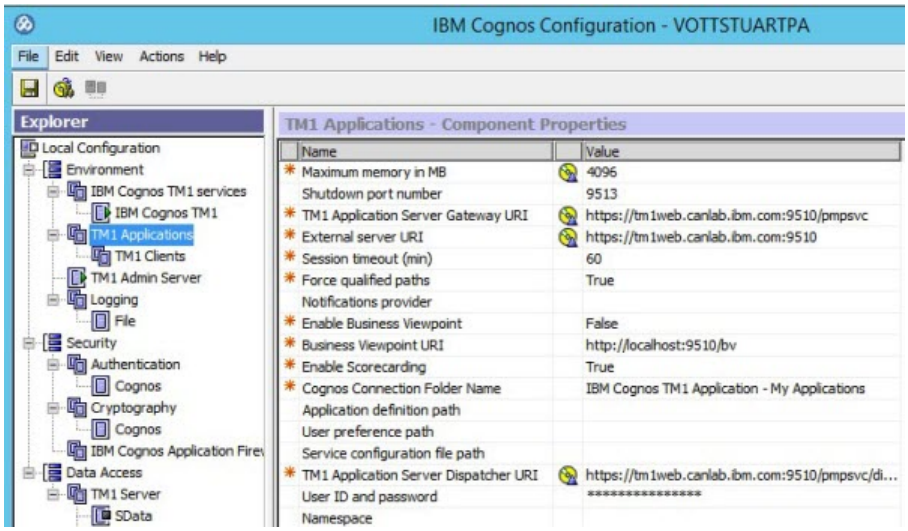
When the signed **encryption** certificate has been received into the keystore, double-click the **encryption** certificate to see the details and verify that the certificate is issued to the system running TM1Web, and issued by one of the CA certs in the chain.

4. Enable TLS in IBM Cognos Configuration.

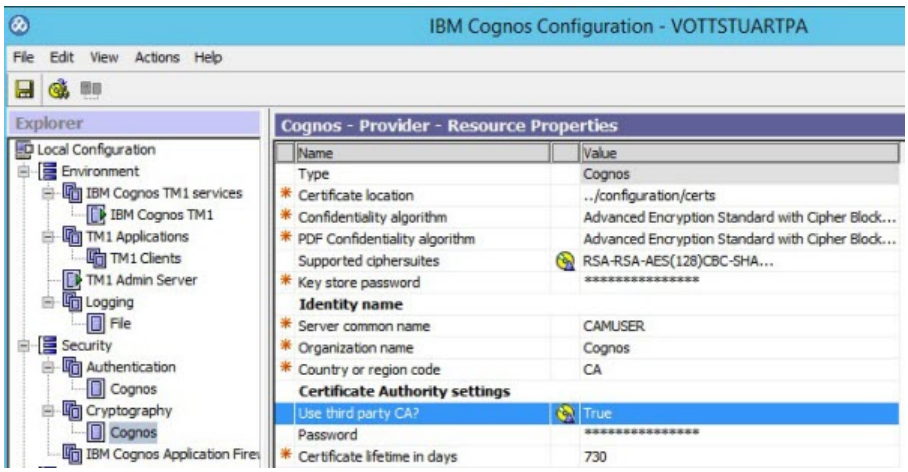
a) Add the StandaloneCertificateAuthority property under the **Local Configuration** > **Advanced Properties** section and set it to **True**.



b) Update the **TM1 Applications** settings in Cognos Configuration to specify HTTPS.



c) Set **Use third party CA?** to **True** in the **Security** > **Cryptography** > **Cognos** section of Cognos Configuration.



5. Add the TM1 Server CA certificate to the `CAMKeystore` keystore file.

   Note: If this step is missed, TM1Web cannot connect to TM1 Server. This step must be completed even if the TM1 Server is not using custom certificates.

   a) Use IBM Key Management to open the `CAMKeystore` file, and switch to the **Signer Certificates** section.

   b) Click **Add** and select the `./tm1_64/bin64/ssl/ibmtm1.arm` file (assuming the TM1 Server uses the certificate provided by IBM, otherwise select your own file containing your CA certificate).

   There is no requirement for a specific label for certificates added to the **Signer Certificates** section of IBM Key Management.

6. Restart the IBM Cognos TM1 service from either Cognos Configuration or the list of Windows services.

What to do next

Log in to Cognos TM1 Web using the secure HTTPS URL to confirm that you can connect to Cognos TM1 with this configuration. For example, log in using `https://`*`system_name`*`:9514/tm1web`. Verify that you are not presented with any certificate warnings.

Use ThirdPartyCertificateTool to create custom certificates

Not supported in v2.0.6 You can use the **`ThirdPartyCertificateTool`** to configure custom certificates.

About this task

Note: The ThirdPartyCertificateTool requires Java 7 and is not supported in Planning Analytics version 2.0.6 or later.

The following steps configure custom certificates for TM1 Applications that run in WebSphere Liberty Profile for IBM Planning Analytics Local. These steps use a command-line tool named `ThirdPartyCertificateTool`. This tool is located in <*`PA_install_directory`*>`\bin\`. For more information about this tool, see “ThirdPartyCertificateTool command-line reference” on page 292.

Procedure

1. From the <*`PA_install_directory`*>`\bin\` directory, run the following **`ThirdPartyCertificateTool`** command to generate a new key pair and associated certificate signing request (CSR) for the encryption entry in the CAMKeyStore store.

   ```
   ThirdPartyCertificateTool.bat -java:local -c -e -d "cn=tm1server.ibm.cognos.com" -p
   NoPassWordSet
   ```

   Note: The `cn` value must match the fully qualified domain name of the system that is running the Planning Analytics Data tier.

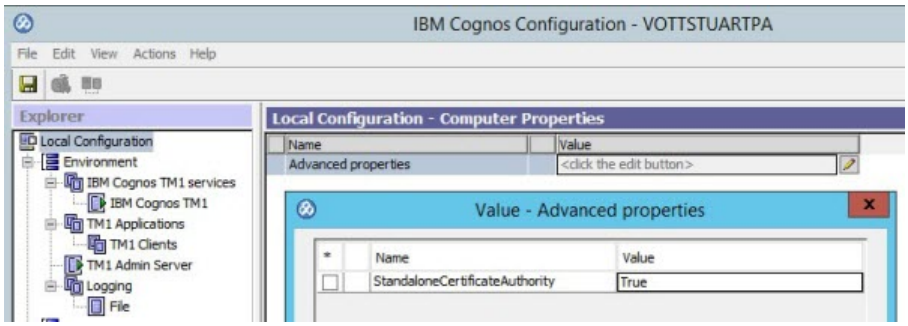
2. Back up the <*PA_install_directory*>\configuration\certs\ directory and the <*PA_install_directory*>\configuration\cogstartup.xml file.
3. Get the certificate request signed by a certificate authority.

   The CA provides a signed certificate and any CA certificates. The certificate authority usually provides both the issued certificate and CA certificates in a single file.

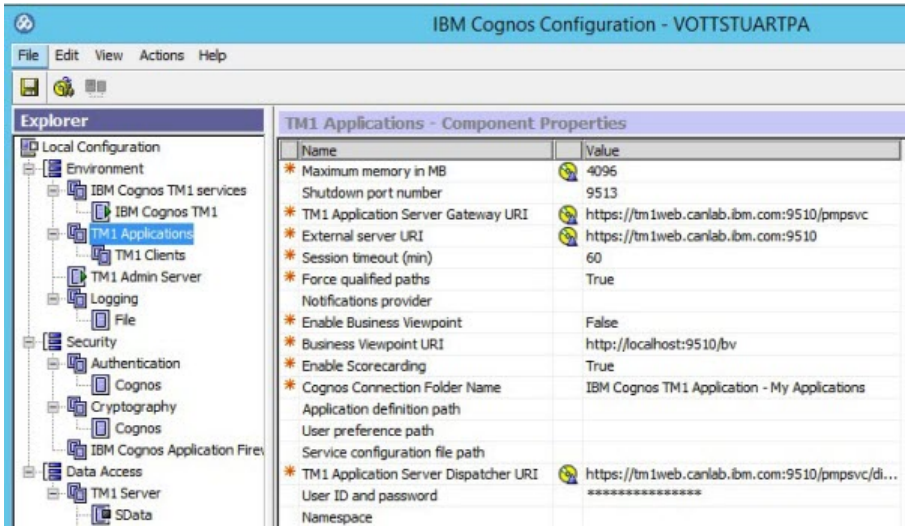
   - The issued certificate must be copied into its own file (encrypt.cer) and all CA certificates should be placed in a single file (ca.cer).
   - If the provided certificates are in base64 format, you can use a text editor to split the certificates into the files that are required by the **ThirdPartyCertificateTool** command.
   - If the files provided by the CA are not in base64 format, the Windows certificate utility can be used to convert to base64 format.
4. From the <*PA_install_directory*>\bin\ directory, run the following commands to import the encryption and CA certificates:

```
ThirdPartyCertificateTool.bat -java:local -i -e
-r "<PA_install_directory>\bin64\ssl\encrypt.cer"
-p NoPassWordSet -t "<PA_install_directory>\bin64\ssl\ca.cer"
```

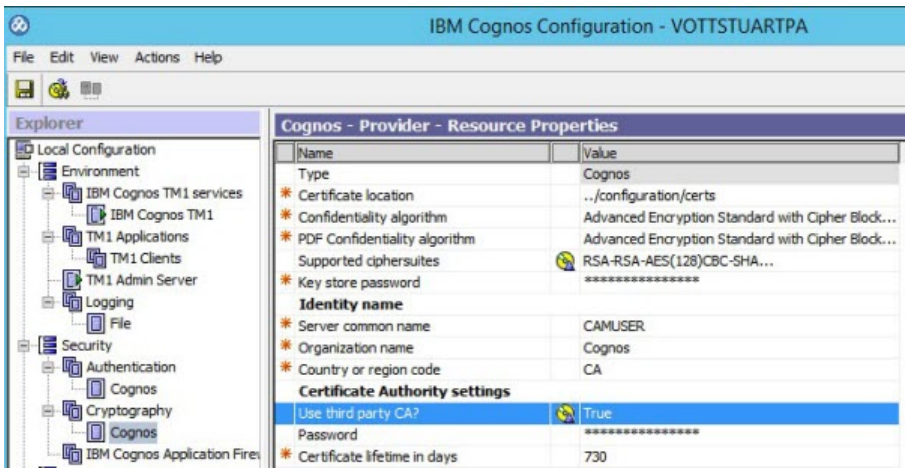
5. Set up Cognos Configuration to use the custom certificate.
   a) Add the StandaloneCertificateAuthority property under the **Local Configuration** > **Advanced Properties** section and set it to **True**.



   b) Update the **TM1 Applications** settings in Cognos Configuration to specify HTTPS.



   c) Set **Use third party CA?** to **True** in the **Security** > **Cryptography** > **Cognos** section of Cognos Configuration.



6. Restart the IBM Cognos TM1 service from either Cognos Configuration or the list of Windows services.
7. Run the following command to import the certificate into the keystore.

   Important: After you configure TLS for TM1Web, you must import the certificate for the TM1 Server and TM1 Admin Server into the CAMKeystore. You must do this step in the Planning Analytics installation directory on the system that runs TM1Web. If this step is missed, you can access TM1Web using HTTPS, but TM1Web cannot connect to any TM1 Servers.

   Windows:

   ```
   ThirdPartyCertificateTool.bat -java:local -i -T -r <CA_file>
   -p <Keystore_Password>
   ```

   Linux:

   ```
   ./ThirdPartyCertificateTool.sh -java:local -i -T -r <CA_file>
   -p <Keystore_Password>
   ```

   Where <CA_file> is the PEM encoded file containing the CA (chain) used to sign the TM1 Server's certificate.

   And <Keystore_Password> is the password that specified in **Local Configuration** > **Security** > **Cryptography** > **Cognos Key store password** in Cognos Configuration. The default key store password is `NoPassWordSet`.

   Windows:

   ```
   ThirdPartyCertificateTool.bat -java:local -i -T -r ..\bin64\ssl\ibmtm1.arm
   -p NoPassWordSet
   ```

   Linux:

   ```
   ./ThirdPartyCertificateTool.sh -java:local -i -T -r ../bin64/ssl/ibmtm1.arm
   -p NoPassWordSet
   ```

What to do next

Log in to Cognos TM1 Web using the secure HTTPS URL to confirm that you can connect to Cognos TM1 with this configuration. For example, log in using `https://`*`system_name`*`:9514/tm1web`. Verify that you are not presented with any certificate warnings.

Edit parameters in Cognos Configuration to use independent certificates

After adding your certificate to the Microsoft Windows Certificate Store, use IBM Cognos Configuration to update the parameters for the Cognos TM1 Admin Server.

Table 28. TLS Parameters in Cognos Configuration that support independent certificates	
Parameter	**Description**
Export TM1 Admin Server certificate?	This parameter must be set to `True` to enable the Admin Server to retrieve the certificate from the Certificate Store.
TM1 Admin Server certificate authority file location	The full path and name of the certificate authority file that issued the TM1 Admin Server's certificate. You can determine this value by referring to the Microsoft Management Console and clicking Certificates > Personal > Certificates. The authority name displays in the Issued By column of the Properties pane.
TM1 Admin Server certificate ID	The name of the principal to whom the IBM Cognos TM1 Admin Server's certificate is issued. You can determine this value by referring to the Microsoft Management Console and clicking Certificates > Personal > Certificates. The principal name displays in the Issued To column of the Properties pane.

TM1 Admin Server private key password file location	The full path to the .dat file that contains the encrypted password for the private key.
	Note: The name of this file is specified by the `-outfile` parameter when you run the TM1Crypt utility.
	For example, if you run the TM1Crypt utility from the following command:
	`tm1crypt.exe -pwd abc123 -keyfile btkey.dat -outfile btprk.dat -validate`
	the correct parameter value is:
	`C:\Program Files\Cognos\TM1\bin\btprk.dat`

TM1 Admin Server password key file location	The full path to the .dat file that contains the key used to encrypt and decrypt the password for the private key.
	Note: The name of this file is specified by the `-keyfile` parameter when you run the TM1Crypt utility.
	For example, if you run the TM1Crypt utility from the following command:
	`tm1crypt.exe -pwd abc123 -keyfile btkey.dat -outfile btprk.dat -validate`
	the correct parameter value is:
	`C:\Program Files\Cognos\TM1\bin\btkey.dat`

TM1 Admin Server export key ID	Specifies the identity key used to export the Admin Server's certificate from the Windows certificate store. In most cases, the value for **TM1 Admin Server export key ID** will be identical to the value for **TM1 Admin Server certificate ID**.

Configure the Rich Tier to use TLS

To configure IBM Cognos TM1 Performance Modeler, IBM Cognos Insight, and other Rich Tier components to use custom certificates, you must place the certificates in several locations.

TM1 clients connect to the Admin Server using a secured port. When a TM1 client contacts the Admin Server, the Admin Server responds with a list of all TM1 Servers available on the network.

The TM1 client establishes a secure connection with the TM1 Server that is configured to use TLS and establishes an insecure connection with TM1 Servers that are not configured to use TLS.

Configure Cognos TM1 Architect or Perspectives to use custom certificates

To configure IBM Cognos TM1 Architect or TM1 Perspectives clients to use custom certificates, you must set several options on the Cognos TM1 Options dialog box.

TM1 Architect and TM1 Perspectives communicate with the Data Tier only.

The tm1p.ini file

1. Open Cognos TM1 Architect or Cognos TM1 Perspectives, Server Explorer.
2. In Server Explorer, click **File** > **Options**.
3. Edit the following options in the **Admin Server Secure Socket Layer (SSL)** section.

The following table describes all options that can be set in the TM1 Options dialog box and lists the corresponding tm1p.ini parameters.

Option Name	Corresponding Tm1p.ini Parameter	Description
Certificate Authority	AdminSvrSSLCertAuthority	The full path of the certificate authority file that issued the Cognos TM1 Admin Server's certificate.
Certificate Revocation List	AdminSvrSSLCertRevList	The full path of the certificate revocation file issued by the certificate authority that originally issued the Cognos TM1 Admin Server's certificate. A certificate revocation file will only exist in the event a certificate had been revoked.
Certificate ID	AdminSvrSSLCertID	**Note:** The name of the principal to whom the Cognos TM1 Admin Server's certificate is issued. The value of this parameter should be identical to the SSLCertificateID parameter for the IBM Cognos TM1 Admin Server as set in IBM Cognos Configuration.
Use Certificate Store	ExportAdminSvrSSLCert	Select this option if you want the certificate authority certificate that originally issued the Cognos TM1 Admin Server's certificate to be exported from the Microsoft Windows certificate store at runtime. Selecting this option in the Cognos TM1 Options dialog box is equivalent to setting ExportAdminSvrSSLCert=T in the Tm1p.ini file. When this option is selected, you must also set a value for Export Certificate ID in the Cognos TM1 Options dialog box.

Option Name	Corresponding Tm1p.ini Parameter	Description
Export Certificate ID	AdminSvrSSLExportKeyID	The identity key used to export the certificate authority certificate, which originally issued the Cognos TM1 Admin Server's certificate, from the certificate store. This parameter is required only if you choose to use the certificate store by setting ExportAdminSvrSSLCert=T.

The tm1api.config file

Create a configuration file named `tm1api.config` with the following format:

```
[tm1api]
### Path to GSKit store
#keystorefile=

### Path to GSKit stash file
#keystashfile=

### Comma delimited string of TLS ciphers
#tlsCipherList=

### FIPS_MODE = 1 (default), FIPS_APPROVED = 2, FIPS_NONE = 3
#FIPSOperationMode=1

#NIST_SP800_131A_MODE=T
```

This configuration file allows TM1 Architect or Perspectives clients to configure the GSKit options. The file contains a section named tm1api and supports comments using the # character. The file must reside where the tm1api.dll resides. For example, place tm1api.config under `C:\Program Files\IBM \cognos\tm1_64\webapps\pmpsvc\WEB-INF\bin64` then restart the Application Server.

The following is a sample configuration file.

```
[tm1api]
keystorefile=C:\TM1Install_Dir\x64\Debug\ssl\ibmtm1.kdb
keystashfile=C:TM1Install_Dir\x64\Debug\ssl\ibmtm1.sth
tlsCipherList=TLS_RSA_WITH_AES_128_CBC_SHA,
    TLS_RSA_WITH_RC4_128_MD5,
    TLS_RSA_WITH_AES_128_CBC_SHA256
keylabel=ibmtm1_client
FIPSOperationMode=1
NIST_SP800_131A_MODE=T
```

Configure Cognos TM1 Performance Modeler to use custom certificates

If the Data Tier is configured to use custom certificates, you can enable custom certificates for IBM Cognos TM1 Performance Modeler.

About this task

The following setup is assumed:

- TM1 Performance Modeler is installed in *<pa_install_directory>*`/perfmodeler`.
- <CMS_Keystore> is the name of the CMS keystore containing all CA certificates, intermediate and root, which form the chain of trust for any certificate presented by TM1 Admin servers and TM1 Server instances.

  The keystore can be created using the `gsk8capicmd` tool, or copied from a Data Tier install. Typically this keystore will consist of at least two files, *<CMS_Keystore>*`.kdb` and *<CMS_Keystore>*.sth. The file *<CMS_Keystore>*`.crl` is optional and depends on how the keystore was created.

- The machine where TM1 Performance Modeler is installed can connect to the Application Tier URL and the Data Tier.

Procedure

1. Close TM1 Performance Modeler if it is running.
2. Copy the CMS keytore file *<CMS_Keystore>*.* to a location on the PM computer.

   A best practice is to use a custom name for the keystore and store it outside of *<pa_install_directory>*/perfmodeler to prevent unintended overwriting. Create a separate folder such as c:\pa_certs. <PA_CERTS> denotes the absolute path to this folder in the following steps.
3. In <PA_CERTS>, create a text file named of tm1api.config and paste the following contents:

   ```
   [tm1api]
   keystorefile=<PA_CERTS>\<CMS_Keystore>.kdb
   keystashfile=<PA_CERTS>\<CMS_Keystore>.sth
   ```

   For example:

   ```
   [tm1api]
   keystorefile=c:\pa_certs\PA2.kdb
   keystashfile=c:\pa_certs\PA2.sth
   ```

   Important: Ensure the local users group has read and execute permission on the file referenced in keystashfile. By default, this file is readable only for the account that created it.
4. Copy the *<PA_CERTS>*\tm1api.config file to the following locations, where *xxxx* denotes a version number.
   - <pa_install_directory>\perfmodeler\bins\bin_xxxx\tm1\bin
   - <pa_install_directory>\perfmodeler\bins\bin_xxxx\tm1\bin\tm1api101
   - <pa_install_directory>\perfmodeler\bins\bin_xxxx\tm1\bin\tm1api102
   - <pa_install_directory>\perfmodeler\plugins \com.cognos.pmta.tm1.distributed.bin.win32.x86_64_xxxx\extract_bin\tm1\bin
   - <pa_install_directory>\perfmodeler\plugins \com.cognos.pmta.tm1.distributed.bin.win32.x86_64_xxxx\extract_bin\tm1\bin \tm1api101
   - <pa_install_directory>\perfmodeler\plugins \com.cognos.pmta.tm1.distributed.bin.win32.x86_64_xxxx\extract_bin\tm1\bin \tm1api102
5. Start Cognos TM1 Performance Modeler.
6. Enter the URL for the IBM Cognos TM1 system and click **Log on as**.
7. When you are prompted for the security certificate, select **Trust this certificate** and click **OK**.

   Connect to the TM1 Server.

   For example, Planning Sample.

Configure Cognos Insight to use custom certificates

You can enable custom certificates for IBM Cognos Insight.

Procedure

1. Stop the IBM Cognos service.
2. Rename the custom certificate files from *new_cert_name*.* to ibmtm1.*.
3. Copy the files to the following locations:
   - *ci_install_directory*\bins\bin_10.xxxx\tm1\bin\ssl
   - *ci_install_directory*\bins\bin_10.xxxx\tm1\bin\tm1api101\ssl

- *ci_install_directory*\bins\bin_10.xxxx\tm1\bin\tm1api102\ssl
- *ci_install_directory*\plugins\com.cognos.pmta.tm1.distributed.bin.win32.x86_64_xxxx\extract_bin\tm1\bin\ssl
- *ci_install_directory*\plugins\com.cognos.pmta.tm1.distributed.bin.win32.x86_64_xxxx\extract_bin\tm1\bin\tm1api101\ssl
- *ci_install_directory*\plugins\com.cognos.pmta.tm1.distributed.bin.win32.x86_64_xxxx\extract_bin\tm1\bin\tm1api102\ssl

4. Restart the IBM Cognos service.
5. Start Cognos Insight and select **Connect to IBM Cognos TM1**.
6. Enter the URL for the IBM Cognos TM1 system and click **Next**.
7. When you are prompted for the security certificate, select **Trust this certificate** and click **OK**.

   Connect to the TM1 Server.

   For example, Planning Sample.

Configure the TM1 C API to use custom certificates

Several public routines are available as part of the TM1 C API. You can use these routines to configure a client to communicate with the Admin Server using TLS.

TM1 C APIs communicate with the Data Tier only.

For more information, see *Configuring the TM1 C API to Use SSL* in the *TM1 API* documentation.

Configure the Cognos TM1 Java API to use TLS

The certificates used by a Java client to validate the server must reside in either the Java system cacerts truststore file or be specified on the application command line.

The Java system cacerts truststore resides in the Java \lib\security directory.

The default password for cacerts is "changeit". Java provides an executable named keytool.exe to change it. For example:

```
keytool -keystore ..\lib\security\cacerts -alias Company -import
-file Companyca.der
```

Optionally, if access is restricted to the system cacerts truststore, a truststore can be created. For example:

```
keytool -keystore tm1store -alias Companyca -import -file ACompanyca.der
```

When starting the Java application this keystore must be specified. If a password is required it must be provided as well. For example:

```
java -Djavax.net.ssl.trustStore=bin\ssl\tm1store
-Djavax.net.ssl.trustStorePassword=<password>
```

Further information is provided in the API specification for the Java 2 Platform Standard Edition. The minimum Java version supported is 1.4.2.

Configure the Cognos TM1 ETLDAP Utility to use TLS

Before you can connect to the LDAP server using TLS, you must run the following command to add your certificate to the IBM Cognos TM1 keystore in the <*PA_install_directory*>bin64\jre\8.0\bin directory:

Example:

```
keytool -keystore "C:\Program Files\IBM\cognos\tm1_64\bin64\ssl\tm1store"
-alias Applixldapca -import -file c:\temp\certificate_name.cer
```

In this command, substitute the name of your certificate file for *certificate_name*.cer.

When prompted for the keystore password, enter 'applix'.

You will receive confirmation that the certificate was added to the Cognos TM1 keystore.

When connecting to the LDAP server, you must select the **SSL** option. If you do not select the SSL option, the LDAP server will not be able to authenticate your user information.

When running the ETLDAP utility from a command line, you must use the following two parameters to enable TLS.

Parameter	Description
-Djavax.net.sll.truststore	Use this parameter to specify the full path to the Java certificate store containing the public root authority certificate. For example, to use the Java certificate store installed with TM1, use the parameter **-Djavax.net.sll.truststore= C:\Program Files\IBM\cognos\tm1_64\bin\ssl \tm1store**
-Djavax.net.ssl.trustStorePassword	Use this parameter to specify the password used to create the Java certificate store. For example, to specify the password used to create the Java certificate store installed withTM1, use the parameter **-Djavax.net.ssl.trustStorePassword=applix**

ThirdPartyCertificateTool command-line reference

Not supported in v2.0.6 Some of the tasks to use a certificate from another certificate authority use a command-line tool named `ThirdPartyCertificateTool`.

Note: The ThirdPartyCertificateTool requires Java 7 and is not supported in Planning Analytics version 2.0.6 or later.

This tool is located in the following <*PA_install_directory*>`\bin` location.

On UNIX or Linux operating systems, use the following format:

`ThirdPartyCertificateTool.sh` *parameters*

On Microsoft Windows operating systems, use the following format:

`ThirdPartyCertificateTool.bat` *parameters*

The following tables list the options for this command-line tool.

Table 29. Main operation modes

Command	Description
`-c`	Create a certificate signing request.
`-i`	Import a certificate.
`-E`	Export a certificate.

Table 30. Operation modifiers	
Command	**Description**
`-s`	Work with the signing identity.
`-e`	Work with the encryption identity.
`-T`	Work with the trust store (only with -i and -E operation modes).

Table 31. Information flags	
Command	**Description**
`-d`	DN to use for certificate.
`-r`	CSR or certificate file location (depends on mode).
`-t`	Certificate authority chain file (PEM or binary PKCS#7 certificate authority chain or single DER-format certificate authority)
`-p`	Key Store password. If missing, use the default password.
`-a`	Key pair algorithm: Either RSA or DSA. RSA is the default value.
`-P`	Create a certificate authority keystore including the certificate authorities trusted by the current JRE.
`-N`	Set the certificate authority trust store to NIST SP800-131a standard.
`-R`	Restore non-Nist SP800-131a certificates back to trust store.

These parameters create a signing key pair and PKCS#10 CSR:

```
-c -s -d cn=Me,o=MyCompany,c=CA -r sign.csr -a DSA -p password
```

These parameters import the third-party CA generated encryption certificate and PKCS#7 CA certificate chain:

```
-i -e -r encr.cer -p password -t cacert.p7b
```

These parameters import the third-party CA generated signing certificate and PEM CA certificate chain:

```
-i -s -r sign.cer -p password -t cacert.pem
```

These parameters add `ca.cer` as a trusted certificate:

```
-i -T -r ca.cer -p password -t cacert.cer
```

These parameters export the signing certificate to `sign.cer`:

```
-E -s -r sign.cer -p password
```

These parameters export the IBM Cognos CA certificate to `ca.cer` (when you are not using a third-party certificate authority):

```
-E -T -r ca.cer -p password
```

These parameters remove all non-NIST SP800-131a CA certificates and set the CA trust store to NIST SP800-131a standard:

```
-N -D ../configuration -p password
```

These parameters restore JRE non-NIST SP800-131a certificates back to the CA trust store:

```
-R -D ../configuration -p password
```

TM1 Server data encryption

You can configure the IBM TM1 Server to encrypt data when it is written to disk.

Note:

TM1 Server data encryption is only available for Planning Analytics Local users.Planning Analytics on Cloud and distributed TM1 Servers do not support TM1 Server data encryption.

Although TM1 Server data encryption is not supported in Planning Analytics on Cloud, the Planning Analytics on Cloud offering does provide Encryption at Rest.

TM1 Server uses a two-tier key management system to encrypt/decrypt server data. The first tier includes a data encryption key (DEK) to encrypt data. The DEK is stored on-disk in a directory (within the model) called }key. The second tier uses a master key (MK) to encrypt the DEK. The master key is stored in an IBM Global Security Kit (GSKit) store and can be rotated regularly for added security.

CAUTION: You must back up your master key as part of your regular TM1 backup and restore procedure. If you lose your master key, you cannot restore the master key. You will be unable to access data on your TM1 server.

When a master key is rotated, the DEK is decrypted by using the previous master key and then encrypted with the new master key. During a rotation, the DEK is backed up in a }key_backup subdirectory; located in the }key directory. Older master keys are persisted in the keystore in case a model restoration is required later.

Note: Encryption is not supported on a TM1 Server that is using replication and sync.

Key generation and rotation are performed by the TM1 server. Using the TM1 API, a TM1 Admin user can enable and disable server encryption. An API method can also be used to perform an MK rotation.

Users have limited control over the keys that are generated by the TM1 Server. However, the user will still have control over the GSKit store by using the command line utility that is provided by the GSKit. A user must use care when they manage the keys in the GSKit store.

When the TM1 Server generates an MK and a DEK, the keys use the following format for identification and allow the server to associate master keys to their appropriate DEKs.

- ibm_tm1_mk_version_model_name_time_stamp (For example, ibm_tm1_mk_v1_planning_sample_2016031510211514)
- ibm_tm1_dek_version_model_name_time_stamp (For example, ibm_tm1_dek_v1_planning_sample_2016031510211514)

The TM1 Server includes a command line utility, which provides a (**-K**) option to perform a master key rotation. The order of operation is as follows:

1. New names (time stamps) are generated for the data encryption and master keys.
2. A new master key is generated in the GSKit store.
3. The existing DEK is encrypted with the new master key and saved to disk with the new DEK name.
4. The existing DEK is moved to the }key_backup folder.
5. The TM1 Server is shut down.

Note: You cannot perform a key rotation on a model that is not configured for encryption.

If another instance of the TM1 Server is running when a key rotation is performed, an error indicates that the TM1 server log is locked by another server instance.

During startup, the server performs a model conversion based on the existence or absence of a DEK in the model directory. The following table outlines the server actions based on these conditions.

Table 32. TM1 server data encryption behavior	
DEK Presence	**TM1 Server Behavior**
No	TM1 Server operates without data encryption.
Yes	TM1 Server uses the existing DEK to encrypt or decrypt the model files. When the server decrypts a model, the DEK is moved to the backup folder and the server completes the process of loading the model.

TM1 model conversion

The server converts only files that were generated by TM1 processes. The following table lists the files that are converted.

Table 33. TM1 object file extensions	
Extension	**Description**
.dim	Dimension
.hie	Hierarchy
.sub	Subsets can be located in a user's private folder
.cub	Cubes
.tab	Old cube format
.set	Sets can be located in a user's private folder
.vue	Views can be located in a user's private folder
.xbv	Expression-based views can be located in a user's private folder
.pro	Processes
.rux	Rules
.cho	Chores
.namemap	Sandbox
.dr	Data reservation
tm1s*.log	Server transaction logs
tm1s*.rej	Rejected server transaction logs
tm1rawstore.*	Pending audit event entries
tm1auditstore*.log	Process audit event entries
.cube	located under the }Applications folder
.chore	located under the }Applications folder
.dimension	located under the }Applications folder
.process	located under the }Applications folder
.extr	located under the }Applications folder
.view	located under the }Applications folder
.subset	located under the }Applications folder

Note: Binary large objects (BLOBs) used with data import, or Websheets stored as BLOBs under the }Applications folder of any file with a .blb extension, are not encrypted when the TM1 Server is

enabled with encryption at rest. These files are out of the control of the TM1 Server, which makes it difficult to track their location and content accurately. For data safety, binary large objects (BLOBs) are not encrypted.

TM1 APIs

You can use TM1 APIs to enable and disable encryption, and rotate the server key. You must be a member of the TM1 Admin group. You can also move data objects manually between two servers.

For example, a user might create a process that they would like to move into their production server. The file can be decrypted by the development server, and encrypted by the production server. The file is then ready to be loaded into the production server.

The following methods perform a server shutdown and then convert the model.

```
TM1V TM1API TM1EncryptDataModel( TM1P hPool, TM1V hServer, TM1V iMinutesBeforeShutDown );
```

```
TM1V TM1API TM1DecryptDataModel( TM1P hPool, TM1V hServer, TM1V iMinutesBeforeShutDown );
```

The following method performs a key MK rotation.

```
TM1V TM1API TM1RotateDataModelKey( TM1P hPool, TM1V hServer );
```

The following methods encrypt and then decrypt a file.

```
TM1V TM1API TM1EncryptDataFile( TM1P hPool,
    TM1V hServer, TM1V sFileSrc, TM1V sDestPath, TM1V fileType );
```

```
TM1V TM1API TM1DecryptDataFile( TM1P hPool,
    TM1V hServer, TM1V sFileSrc, TM1V sDestPath, TM1V fileType );
```

These methods convert a file. Optionally, you can provide a destination path. If omitted, the source file is overwritten. The files must be accessible by the TM1 server and paths must be specified as relative to the TM1 server.

The following file types are valid:

- TYPE_OBJECT_FILE (1)
- TYPE_TRANSACTION_LOG_FILE (2)
- TYPE_AUDIT_LOG_FILE (3)

TM1Crypt utility

The TM1Crypt utility allows users to manage the server for data encryption. The utility can also be used to convert files.

This command demonstrates a key rotation example:

```
tm1crypt -i tm1crypt.config -action rotate
```

This command demonstrates a decryption example:

```
tm1crypt -i tm1crypt.config -action decrypt
-filesrc C:\DataModel\tm1s20160330182631.log
-filetype 2 -filedest C:\Temp\LogDir
```

Details:

```
tm1crypt -?
or tm1crypt -help
or tm1crypt [<cmd_parm>...]
     where <cmd_parm> is one of:
          -i <filespec>
          -logpath <string>
```

```
          -connect <string>
          -action <string>
          -keyfile <string>
          -outfile <string>
          -filesrc <string>
          -filedest <string>
          -filetype <string>
          -minsbeforeshutdown <string>
          -validate
          -<connect_parm>...

     where <connect_parm> is one of:
          -adminhost <string>
          -server <string>
          -user <string>
          -securitymode
          -retryattempts
          -retryinterval
          <password_parm>
          -keystorefile <filespec>
          -keystashfile <filespec>
          -FIPSOperationMode <1|2|3>
          -CAMNamespace <string>

     where <password_parm> is one of:
          -pwd <string>
          -passwordfile <filespec>
          -passwordkeyfile <filespec>
```

For more information, see “Run the TM1Crypt utility” on page 297.

Run the TM1Crypt utility

The TM1Crypt utility (tm1crypt.exe) is a command prompt that encrypts the password that the IBM TM1 Server needs to access the private key. The utility can be used to convert a model or a file.

The password is encrypted with Advanced Encryption Standard, 256 bit, Cipher Block Chaining (AES-256-CBC).

Location

The TM1Crypt utility, `tm1crypt.exe`, is installed in the directory:

PA_install_directory\bin

Syntax

Run the TM1Crypt utility from a command prompt with the following syntax:

```
tm1crypt.exe [<cmd_parm> <connect_parm> <password_parm>]
```

You can provide parameters with constant values in a configuration file when you run tm1crypt.

Command parameters

Parameter	Value	Description
i	*filespec*	Name of the file that contains default configuration parameters. Parameters specified in this file are used, unless overridden by parameters provided on the command prompt. If no path is specified, the TM1 Server directory is assumed. If `-i` is not specified, then other parameters must be specified to provide the process name, TM1 Server, and so on.

Parameter	Value	Description
`connect`	*string*	This parameter can be used to specify a section in the configuration file that contains parameters used to make server connections, such as user, pwd, or CAMnamespace.
`logpath`	*string*	Enables logging and specifies location of log.
`action`	*string*	1 [default] - Generate encrypted password and key file 2 - Encrypt server model 3 - Decrypt server model 4 - Encrypt file using server key 5 - Decrypt file using server key 6 - Rotate server key
`keyfile`	*string*	Name of the file generated containing key. If no `keyfile` is specified the default is tm1key.dat.
`outfile`	*string*	Name of file generated encrypted password. If no `outfile` is specified the default is tm1cipher.dat.
`filesrc`	*string*	Source file to perform conversion. Source is replaced with converted data unless file destination is provided.
`filedest`	*string*	Source file to perform conversion. Source is replaced with converted data unless file destination is provided.
`filetype`	*string*	1 [default] - TM1 object file 2 - Transaction log 3 - Audit log
`minsbeforeshutdown`		Time before performing a shutdown when encrypting or decrypting a server model.
`validate`		Validate key file.
`help`		Display help documentation including parameters and descriptions.
`?`		Display a synopsis of command line parameters.

Connect Parameters

Connect parameters are common across TM1 components and can be defined in their own section of a configuration file to reuse them.

Parameter	Value	Description
`-adminhost`	*string*	TM1 admin host
`-server`	*string*	TM1 Server name
`-user`	*string*	TM1 or Cognos Access Manager (CAM) username, depending on the type of authentication that is used by the TM1 Server.

Parameter	Value	Description
-securitymode		Security mode used to connect to the TM1 Server. The mode must match the value in the TM1 Server configuration file.
-retryattempts		Number of attempts to connect to the TM1 Server.
-retryinterval		Time in seconds to retry connection to the TM1 Server.
-keystorefile	*filespec*	The full path of the key database file that contains the trusted certificate authorities.
-keystashfile	*filespec*	The full path of the file that contains the password that is used to access the key database file.
-FIPSOperationMode	*1*|*2*|*3*	Indicates FIPS mode of operation. FIPS_MODE = 1 (default) FIPS_APPROVED = 2 FIPS_NONE = 3
CAMNamespace	*id*	The ID of the Cognos Access Manager (CAM) namespace. This parameter is the namespace ID, not the namespace name.

Password Parameters

Passwords are either prompted for on the command line or supplied by using an encrypted file provided by the passwordfile parameter.

Parameter	Value	Description
pwd	*string*	Password for the username given in the -user parameter, in clear text. For greater security, the password can be specified in an encrypted file using the -passwordfile parameter. This parameter is ignored on the command line. You are prompted for the password.
passwordfile	*filespec*	Filename of the file containing the encrypted password for the user specified by -user. If no path is specified, the TM1 Server directory will be assumed. When this option is used, you cannot use -pwd.
-passwordkeyfile	*filespec*	If the passwordfile parameter is given, a key file is also required to decrypt the password. The password file and key file can be created using the TM1Crypt tool.

Example

For example, the command

```
tm1crypt.exe -keyfile btkey.dat -outfile btprk.dat -validate
```

Generates two files:

- btkey.dat contains the key that is used to encrypt/decrypt the password for the private key.

- `btprk.dat` contains the encrypted password for the private key.

The generated files are written to the *PA_install_directory*\bin directory.

Note: The use of the pwd parameter on the command line does not display an error but the pwd parameter is ignored. You are prompted for the password and must verify it.

TM1Crypt configuration file

```
[tm1crypt]
#connect=ConnectParams
#retryattempts=3
#retryinterval=3

### Actions ###
##1 – OPERATION_CRYPT_PWD
##2 - OPERATION_ENCRYPT_MODEL
##3 - OPERATION_DECRYPT_MODEL
##4 - OPERATION_ENCRYPT_FILE
##5 - OPERATION_DECRYPT_FILE
##6 - OPERATION_ROTATE_KEY
###
#action=

### File Types
##1 - Object File //default
##2 - Transaction Log
##3 - Audit Log
###
#filetype=

### Valid path for logs files
#logpath=

### Path to file source and destination
#filesrc=
#filedest=

#adminhost=
#server=
#user=
#pwd=
#camnamespace=

[Connect - ConnectParams]
#adminhost=
#server=
#user=
#pwd=
#camnamespace=
#passwordfile=
#passwordkeyfile=
```

Chapter 16. Configuring and maintaining Planning Analytics Local

The following topics describe advanced topics in setup, maintenance, and configuration.

Setting up unattended installations and configurations

You can set up an unattended installation and configuration to install an identical configuration across several computers on your network. You can automate the installation and configuration process by specifying options and settings for users.

Before you set up an unattended installation and configuration, ensure that all the system requirements and prerequisites are met and that all third-party products are installed and configured.

Procedure

1. Configure a transfer specification file (`.ats`) to specify installation options.
2. Run the installation tool in silent mode.
3. Use a pre-configured configuration file from another computer.
4. Run the configuration tool in silent mode.

Set up an unattended installation for IBM Cognos components

Use a transfer specification file (`.ats`) to copy IBM Cognos components to your computer without being prompted for information. Use the following TM1 product codes for an unattended installation.

By default, each time you install IBM Cognos components with the installation wizard, the options you select are recorded in a transfer specification file. Therefore, if you already installed IBM Cognos components on a sample computer, you can use the generated transfer specification file as a template for unattended installations on different computers.

If you do not use the installation wizard to install components, you can use the default transfer specification file named `response.ats` that is available on the disk. You must modify the `response.ats` file for your environment before you can use it for an unattended installation.

You can check whether the unattended installation was successful by checking the return status. A value of 0 indicates success and all other values indicate that an error occurred.

Procedure

1. Use the installation wizard to install IBM Planning Analytics components on one computer.
2. After the installation is complete, go to *tm1_location*`/instlog` to locate the transfer specification file (`.ats`) that was generated during the installation. The file name format is ts-product_code-version-yyyymmdd_hhmm.ats.

   Where *product_code* is as listed in the following table:

Table 34. TM1 product codes for an unattended installation

Product Code	Product
TM1APPTIER_APP=1	TM1 Data Tier
TM1SERVER_APP=1	TM1 Server
TM1ADMINSERVER_APP=1	TM1 Admin Server
TM1TOOLS_APP=1	TM1 Tools

Table 34. TM1 product codes for an unattended installation (continued)	
Product Code	**Product**
TM1WEBAPPTIER_APP=1	TM1 Web Tier
TM1CONTRIBGATEWAY_APP=1	TM1 Applications Gateway
TM1CONTRIBSERVICE_APP=1	TM1 Application Server
TM1WEB_APP=1	TM1 Web
TM1OPERATIONSCONSOLE_APP=1 Deprecated in v2.0.9	TM1 Operations Console Deprecated in v2.0.9
TM1CLIENTTIER_APP=1	TM1 Rich Tier
TM1PERSPECTIVES_APP=1	TM1 Perspectives
TM1COGNOSINSIGHT_APP=1	Cognos Insight
TM1APIS_APP=1	TM1 API
TM1DEVTIER_APP=1	TM1 Rich Tier
TM1ARCHITECT_APP=1	TM1 Architect
TM1PERFMOD_APP=1	TM1 Performance Modeler
TM1SAMPLETIER_APP=1	TM1 Samples

3. Copy the generated transfer specification file to the computer where you plan to install IBM Planning Analytics.
4. On the computer where you plan to install the software, do one of the following:
   - Insert the appropriate product installation disk, and copy the contents of the disk to your computer.
   - Copy the product installation files you downloaded to your computer.
5. Open the transfer specification file in a text editor.
6. In the License Agreement dialogs, change the `I Agree` property to `y`. This action means that you are accepting the license agreement. To read the terms of the license agreement, see the LA_language_code and notices files in either of these locations:
   - On the product disk in the root installation directory for the operating system
   - On the computer from which you copied the transfer specification file in the *`tm1_location`*`/instlog` directory
7. Save the transfer specification file in the directory where you copied the installation files.
8. In a command or terminal window, go to the operating system directory where you copied the installation files.
9. Enter the following command:
   - On Windows, type the following, where location is the directory where you copied the filename.ats file:

     ```
     issetup -s location\filename.ats
     ```

   - On UNIX or Linux, type:

     ```
     ./issetup -s location/filename.ats
     ```

   - On UNIX or Linux where you do not have XWindows, type:

     ```
     ./issetupnx -s location/filename.ats
     ```

Results

If a return status other than 0 is returned, check the log files for error messages. Errors are recorded in the *tm1_location*/instlog in a summary error log file. The file name format is tl-product_code-version-yyyymmdd-hhmm_summary-error.txt.

If errors occur before sufficient initialization occurs, log messages are sent to a log file in the Temp directory. The file name format is tl-product_code-version-yyyymmdd-hhmm.txt.

After all errors are resolved, you can set up an unattended configuration.

Set up unattended installations for IBM Planning Analytics for Microsoft Excel

Set up an unattended installation and configuration when you want to install an identical configuration across several computers on your network or to automate the installation process by specifying options and settings for users.

There are two ways to set up an unattended installation. Both methods use a transfer specification file (.ats) to copy IBM Planning Analytics for Microsoft Excel to your computer without you being prompted for information.

- "Set up the installation using a file generated from the Installation wizard" on page 303
- "Set up the installation using the response.ats file" on page 304

One method allows you to run the installation wizard on your computer. The selections that you make are recorded in a transfer specification file (.ats). You can use the generated .ats file to perform an unattended installation across other computers on your network. Alternatively, you can use the default response.ats file to automate the installation. The installer uses the values in the response file rather than requiring you to interact with it.

Before you set up an unattended installation and configuration, ensure that all the system requirements and prerequisites are met and that all third-party products are installed and configured.

For more information, see "Installation overview" on page 190.

Set up the installation using a file generated from the Installation wizard

By default, each time you install IBM Planning Analytics for Microsoft Excel using the installation wizard, the options that you select are recorded in a transfer specification file. Therefore, if you already installed Planning Analytics for Microsoft Excel on a deployment computer, you can use the generated transfer specification file as a template for unattended installations on different computers. You can do this by starting the installer from the command line and passing the response file in as an argument.

You can check if the unattended installation was successful by checking the return status. A value of zero (0) indicates success and all other values indicate that an error occurred.

Procedure

1. Use the installation wizard to install Planning Analytics for Microsoft Excel on your computer.
2. Go to [installation_location]/instlog.
3. Locate the transfer specification file (.ats) that was generated:
   - If you installed Planning Analytics for Microsoft Excel, the file name is ts-COR-*version-yyyymmdd_hhmm*.ats.
4. Copy the transfer specification file to the computer where you plan to install Planning Analytics for Microsoft Excel.
5. On the computer where you plan to install the software, download and extract the installation package.
6. In a text editor, open the transfer specification file (.ats) that you copied.
7. In the section named License Agreement, change the **I AGREE=** property to y.

   This action means that you are accepting the license agreement. To read the terms of the license agreement, see the LA_*language_code* and notices files in either of these locations:

- in the installation package - in the root installation directory for the operating system
- on the computer from which you copied the `response.ats` file - in the *c10_location*\license *product* directory

8. Save the transfer specification file in the directory where you extracted the contents of the installation package, and in the same folder that contains the installer executable file, `issetup.exe`.
9. Open a **Command Prompt** window, and then change to the directory in which the installer, `issetup.exe`, is located.
10. Type the following command, where *location* is the file path location of the transfer specification file:

    `issetup -s location/filename.ats`

    The progress of the installation appears in the Windows task bar.

    A value of zero (0) indicates success and all other values indicate that an error occurred. Errors are recorded in the installation directory in the tl-COR-*version-yyyymmdd-hhmm*_summary-error.text log file.

    If errors occur before sufficient initialization occurs, log messages are sent to the tl-COR-*version-yyyymmdd-hhmm*.txt log file, in the Temp directory.

Set up the installation using the response.ats file

If you do not use the installation wizard to install components, you can use the default transfer specification file named `response.ats` that is available in the installation package. Use the `response.ats` file to copy IBM Planning Analytics for Microsoft Excel to several computers without being prompted for information.

You must modify the `response.ats` file for your environment before you can use it for an unattended installation.

You can check if the unattended installation was successful by checking the return status. A value of zero (0) indicates success and all other values indicate that an error occurred.

Procedure

1. On the target computer, download and extract the contents of the installation package.
2. In a text editor, go to the operating system directory in the file structure that you extracted and open the `response.ats` file.

   Each section in the `response.ats` file corresponds to a dialog box in the installation wizard.
3. In the section named License Agreement, change the **I AGREE=** property to `y`.

   This action means that you are accepting the license agreement. To read the terms of the license agreement, see the LA_*language_code* and notices files in the root installation directory for the operating system in the installation package.
4. In the **APPDIR=** *location*, type the path of the installation location folder.

   Note: Ensure that there are no spaces on either side of the equal sign (=).
5. For the **APPFOLDER=** property, type the name of the **Start** menu folder that contains your program shortcuts.

   Note: To ensure that the shortcut folder is visible to all users, for the **ALLUSERS_FLAG=** property, type `1`.
6. In the section named **[Component List]**, next to each component:
   - To install the component, type `1`.
   - To not install the component, type `0`.

     For example, COR_APP=0.
7. In the **[Install Conditions]** section:
   - To specify that the condition is true, type `1`.

- To specify that the condition is false, type `0`.

8. After you make the necessary changes, save the `response.ats` file to a local directory.
9. Open a **Command Prompt** window, and then navigate to the directory in which the installer, `issetup.exe`, is located.
10. Type the following command, where *location* is the file path location of the transfer specification file:
    `issetup -s location/response.ats`

    The progress of the installation appears in the Windows task bar.

    A value of zero (0) indicates success and all other values indicate that an error occurred. Errors are recorded in the installation directory in the tl-COR-*version-yyyymmdd-hhmm*_summary-error.text log file.
11. If errors occur before sufficient initialization occurs, log messages are sent to the tl-COR-*version-yyyymmdd-hhmm*.text log file, in the Temp directory.

Set up an unattended configuration for IBM Cognos components

Before you set up an unattended configuration, you must export a configuration from another computer that has the same IBM Cognos TM1 components installed. You can then run IBM Cognos Configuration in silent mode.

The exported configuration contains the properties of the Cognos TM1 components that you installed on the source computer. If you made changes to the global configuration, you must also copy the global configuration file from the source computer to the computer where you plan to run an unattended configuration.

Before you begin

Ensure that the configuration settings on the local computer are appropriate to use to configure another computer with the same installed components.

Procedure

1. In IBM Cognos Configuration, from the **File** menu, click **Export as**.
2. If you want to export the current configuration to a different folder, in the **Look in** box, locate and open the folder.
3. In the **File name** box, type a name for the configuration file.
4. Click **Save**.
5. Copy the exported configuration file from the source computer or network location to the *install_location*`/configuration` directory on the computer where you plan to do an unattended configuration.
6. Rename the file to `cogstartup.xml`.
7. If you changed the global configuration on the source computer, copy the `coglocale.xml` file from the source computer to the *install_location*`/configuration` directory on the computer where you plan to do an unattended configuration.
8. Go to *install_location*`/bin64` directory.
9. Type the configuration command:

   ```
   cogconfig.bat -s
   ```

   To view log messages that were generated during an unattended configuration, see the `cogconfig_response.csv` file in the *install_location*`/logs` directory.

Results

You can check if the unattended configuration was successful by checking the return status. A value of zero (0) indicates success and all other values indicate that an error occurred.

Cognos Configuration applies the configuration settings specified in the local copy of `cogstartup.xml`, encrypts credentials, generates digital certificates, and if applicable, starts the IBM Cognos service or process.

Set up an unattended uninstallation for IBM Cognos components

You can set up an unattended uninstallation to automate the removal of components on several computers that have the same components or to remove components on a UNIX or Linux environment that does not have Microsoft Windows.

Procedure

1. Go to *tm1_locaton*/instlog.
2. Open the transfer specification .ats file for the product in a text editor.

   The filename format of the transfer specification .ats file is `ts-`*`product_code-version-yyyymmdd_hhmm`*`.ats`

   See "Set up an unattended installation for IBM Cognos components" on page 301 for a list of the TM1 product codes.

   You need to edit only one .ats file per product.
3. In the section named [Component List], specify the components to remove.
   - To remove the component, type 1
   - To leave the component installed, type `0`

   By default, all installed components are set to be removed.
4. Save and close the file.
5. Repeat steps 2 to 4 for each installed product.
6. From the operating system command line, change to the *tm1_location*`/uninstall directory`.
7. At the command prompt, type the following command:
   - On Windows,

     ```
     uninst -u -s
     ```
   - On UNIX or Linux,

     ```
     ./uninst -u -s
     ```
   - On UNIX or Linux without XWindows,

     ```
     ./uninstnx -u -s
     ```

Maintaining your IBM Planning Analytics Local installation

After successfully installing IBM Planning Analytics Local, you can perform maintenance tasks such as installing additional components, backing up and restoring your data and configuration files, and uninstalling the current version.

Installing additional components
You can return to the Planning Analytics Wizard to install additional components that are not installed.

Backing up data and configuration files
You should regularly back up your data and configuration files, especially before you upgrade to a new version of Planning Analytics.

Uninstalling the current version
Depending on which Planning Analytics components you installed, you might have to perform separate steps to remove them. For example, IBM Cognos Insight and IBM Cognos TM1 Performance Modeler are uninstalled differently than the other Planning Analytics components.

Backing up data and configuration files for IBM Planning Analytics Local

This topic describes how to back up your data and configuration files for IBM Planning Analytics Local.

About this task

Each Planning Analytics component has its own set of related data and configuration files. Review and follow the steps below to backup the data and configuration information for the components you are using.

For example:

- For each IBM TM1 Server you are running, backup your TM1 data directory and configuration files.
- If you are using Cognos TM1 Web, you should back up the related data and configuration files for that component.
- If you are using Cognos TM1 Applications, you should export your applications and backup any other related files.

Procedure

1. Export configuration settings from IBM Cognos Configuration:

   If you used the Cognos Configuration utility to run and manage your TM1 components, such as the TM1 Admin Server, TM1 servers, or the TM1 Application Server, you can save an XML file of your configuration information.

   a) Open Cognos Configuration.

   b) Click **File > Export As**.

   c) Select a location and enter a file name for the XML file.

   d) Click **Save**.
2. Back up TM1 Server databases:

   Save a copy of the contents of your IBM TM1 database data directories and subdirectories to a secure location. These directories contain both data and configuration files. For example, the TM1 sample database directories and subdirectories are located here:

   `<TM1_Install>\samples\tm1`
3. Back up additional TM1 configuration files:

   Save a copy of any TM1 configuration files you may want to retain, such as the TM1 Admin Server logging properties file, `tm1admsrv-log.properties`, located in the `<TM1_Install>\bin\` directory.
4. Back up TM1 Web:

   If you use Cognos TM1 Web, backup the `tm1web_config.xml` file and any custom Cognos TM1 Web server pages to a secure location. The default location for these files is:

   `<TM1_Install>\webapps\tm1web\`

   `<TM1_Install>\webapps\tm1web\web-inf\configuration\`
5. Back up Cognos TM1 Architect and Cognos TM1 Perspectives:

   If you are using Cognos TM1 Architect or Cognos TM1 Perspectives, save the `Tm1p.ini` client configuration file from:

   - `%ALLUSERSPROFILE%\Application Data\Applix\TM1\`
   - `%USERPROFILE%\Application Data\Applix\TM1\`

   In most cases, the full paths to these files are:

   - `C:\Documents and Settings\All Users\Application Data\Applix\TM1\Tm1p.ini`
   - `C:\Documents and Settings\<username>\Application Data\Applix\TM1\Tm1p.ini`

Modifying Cognos TM1 installed components

You can modify your current installation by reinstalling components or adding components that are not already installed.

About this task

You can only install components using the install wizard, you cannot remove components using this method.

Note: Program maintenance does not include changing the location of the Cognos TM1 installation directory. To change the location of the installation directory, remove all Cognos TM1 files and reinstall Cognos TM1 in another location.

Procedure

1. To start the installation:
   - Go to the download location for the Cognos TM1 installation program.
   - Or, insert the IBM Cognos TM1 product disk.

     If the installation wizard does not open automatically, go to the operating system directory to locate the `issetup.exe` file.
2. Right-click the `issetup.exe` command and click **Run as Administrator**.
3. Click **Next** to advance to the **Component Selection** screen.

   If prompted, respond to the following questions:
   - Confirm that you want to install to the same location as a previous installation.
   - Confirm whether or not you want to create a backup of all files from the existing installation.
4. On the **Component Selection** screen, select the Cognos TM1 components you want to install and click **Next**.

   The Component Selection screen shows the current state of your Cognos TM1 installation.
   - Items that are currently installed display with a red X icon next to the component name.
   - Items that are *not* currently installed display with a green check mark next to the name. These items are automatically selected for installation.
5. Click **Next** to start the modifications.
6. Click **Finish** when the modifications are completed.

Uninstalling IBM Planning Analytics

To remove and uninstall all components of IBM Planning Analytics, follow these steps.

Before you begin

Before you start to uninstall Planning Analytics, you must have completed the backup of all Planning Analytics data.

For details, see:

- "Backing up data and configuration files for IBM Planning Analytics Local" on page 307.

About this task

Depending on which components you installed, you might have to perform separate steps to remove them. For example, IBM Cognos Insight and IBM Cognos TM1 Performance Modeler are uninstalled differently than the other IBM Cognos TM1 components.

Procedure

1. Uninstall Cognos Insight:

a) From the Windows Control Panel, choose **Add or Remove Programs**.

b) In the list of currently installed programs, select **IBM Cognos TM1 Insight**.

c) Click **Remove** and follow the instructions to complete the process

d) Check program files directory to see if any files remain. If so delete them manually.

2. Uninstall Cognos TM1 Performance Modeler:

a) From the Windows Control Panel, choose **Add or Remove Programs**.

b) In the list of currently installed programs, select **IBM Cognos Performance Modeler.**

c) Click **Remove** and follow the instructions to complete the process

d) Check program files directory to see if any files remain. If so delete them manually.

3. Uninstall core TM1 components:

These steps uninstall all of the following components in a single procedure:

- IBM TM1 Server
- Cognos TM1 Admin Server
- Cognos Configuration
- Cognos TM1 Web
- Cognos TM1 Architect
- Cognos TM1 Perspectives
- Cognos TM1 Applications
- Cognos TM1 Operations Console (Deprecated in v2.0.9)

a) From the Microsoft Windows Start menu, click **Programs** > **IBM Planning Analytics** > **Uninstall IBM Planning Analytics** > **Uninstall IBM Planning Analytics**.

b) Select the language for the uninstall wizard and click **Next**.

c) On the **Select the packages you wish to uninstall** screen, click the check box for the **IBM Planning Analytics** option, then select **Next**.

The uninstall program removes the components and may take some time. When completed, you will be prompted to restart your computer.

d) Choose to restart now or later, then click **Finish**.

e) Check the TM1 installation directory to see if any files or sub-directories remain. If so delete them manually.

For example, check `C:\Program Files\IBM\cognos\tm1`.

Restoring data and configuration files in IBM Planning Analytics version 2.0.0

After installing the newer version of IBM Planning Analytics, complete these steps to restore your previous Cognos TM1 configuration and data files.

Before you begin

Install the new version of the product.

About this task

These steps apply only to restoring data and configuration files for IBM Cognos TM1 version 10.x.x.

Procedure

1. Restore TM1 Server data:

For each TM1 server that you want to restore, copy its data directory and subdirectories to the new location for data: *<TM1_Install>*`\samples\tm1`.

2. Restore configuration information in IBM Cognos Configuration:

This includes configuration information for TM1 Admin Server, TM1 Application Server, and each TM1 Server you want to run.

a) Open IBM Cognos Configuration.

b) In the Cognos Configuration **Explorer** pane, expand **Local Configuration** > **Environment** .

c) Click **TM1 Admin Server** and update the parameters in the **Properties** pane.

d) Expand **IBM Cognos TM1 services** and click **IBM Cognos TM1** and update the parameters in the **Properties** pane.

e) Click **Data Access** > **TM1 Server** and add an entry for each TM1 server that you want to use.

For details, see "Adding an existing TM1 Server in Cognos Configuration" on page 90.

f) Click **File** > **Save**.

3. Restore Cognos TM1 Architect and Cognos TM1 Perspectives configuration files:

If you want to restore any settings from your previous installation of Cognos TM1 Architect or Cognos TM1 Perspectives, copy the values from your old `Tm1p.ini` file into the new `Tm1p.ini` file.

Attention: If you leave your old `Tm1p.ini` files in place, you might need to update the directory path in the file for the **`AdminSvrSSLCertAuthority`** parameter. For example, if you are using the default Cognos TM1 SSL certificate, manually change the value for this parameter to the new install path `C:\Program Files\IBM\cognos\tm1\bin\ssl\applixca.pem`.

a) Update the new system default `Tm1p.ini` file located here:

%ALLUSERSPROFILE%`\Application Data\Applix\TM1\Tm1p.ini`

For example: `C:\Documents and Settings\All Users\Application Data\Applix\TM1\Tm1p.ini`

b) Update the new user-specific `Tm1p.ini` file located here:

%APPDATA%`\Applix\TM1\Tm1p.ini`

For example: `C:\Documents and Settings\`*`user name`*`\ApplicationData\Applix\TM1\Tm1p.ini`

4. Restore your TM1 Web files:

Note: As of IBM Cognos TM1 version 10.2.0, the default installation directory for TM1 Web is *<TM1_Install>*`\webapps\tm1web\`.

- Restoring files from Cognos TM1 Web version 10.2.0 or newer:

  Open your old `tm1web_config.xml` file and selectively merge the lines and parameters that you want to use into the new `tm1web_config.xml` file located in *<TM1_Install>*`\webapps\tm1web\web-inf\configuration`.

- Restoring files from a pre-10.2.0 version of Cognos TM1 Web:

  Note: Cognos TM1 Web version 10.2.0 uses a new configuration file named `tm1web_config.xml`. This file replaces the `web.config` file from previous TM1 Web versions. For more information, see "Modifying TM1 Web configuration parameters" on page 207.

  Open your old `Web.config` file and selectively merge the lines and parameters that you want to use into the new `tm1web_config.xml` file located in *<TM1_install>*`\webapps\tm1web\web-inf\configuration`.

5. Restore your application and configuration files in Cognos TM1 Applications:

For details, see:

- "Restoring application and configuration files in Cognos TM1 Applications" on page 311
- "Importing an application definition in Cognos TM1 Applications" on page 311

Restoring application and configuration files in Cognos TM1 Applications

You can manually restore backup copies of your application and configuration files into an existing version of IBM Cognos TM1 Applications.

Before you begin

The Cognos TM1 server that your application depends on must be restored and running before you restore the application files for Cognos TM1 Applications.

Procedure

1. Restore your applications for Cognos TM1 Applications:

   Copy your application files here:

   <TM1_Install>\webapps\pmpsvc\WEB-INF\applications
2. Restore your configuration files for Cognos TM1 Applications:

   Copy your backup copies of the `pmpsvc_config.xml` and `fpmsvc_config.xml` configuration files to here:

   - *<TM1_Install>*\webapps\pmpsvc\WEB-INF\configuration\pmpsvc_config.xml
   - *<TM1_Install>*\webapps\pmpsvc\WEB-INF\configuration\fpmsvc_config.xml
3. In Cognos Configuration:
   a) Start the TM1 Application server.
   b) Start the TM1 servers that are related to your application.
4. Log in to the Cognos TM1 Applications portal and add the related TM1 server to the configuration page if it is not already listed.
   a) Click the **Administer IBM Cognos TM1 Applications** icon on the toolbar of the Cognos TM1 Applications main page.
   b) Under the **Server Names** section, click **Add** and enter the information for the related TM1 server.
   c) Click **OK**.

      The applications in the `webapps/pmpsvc/WEB-INF/application` folder will be upgraded and added to Cognos TM1 Applications.

      Note: The upgrade process may take some time depending on the amount of rights that need to be applied in the application. For more information, see "How do I save security rights when importing or restoring a Cognos TM1 10.2.x application?" on page 382.

Importing an application definition in Cognos TM1 Applications

You can import an application definition that was exported from IBM Cognos TM1 Applications back into IBM Cognos TM1 Applications.

Procedure

1. Open the **Cognos TM1 Applications** portal.
2. Click the **Import Application** button.
3. Select the Cognos TM1 server onto which you want to import the application.
4. Next to the **Application file** field, click **Browse**.
5. Navigate to the application (.zip) file, then click **Open**.
6. Select the **Import application security** option if you want to import security settings with the application.

   Note: If you import security settings, the rights-saving operation may take longer to process depending on the amount of rights that need to be applied in the application. For more information,

see “How do I save security rights when importing or restoring a Cognos TM1 10.2.x application?” on page 382.

7. Select the **Import application properties** option if you want to import property settings with the application.
8. Click **Import**.

The tm1s.cfg configuration file

The tm1s.cfg file is an ASCII file that specifies environment information for an IBM TM1 Server.

A default tm1s.cfg file is created in the TM1 Server data directory when you install a copy of the TM1 Server. Most of the available parameters are documented in the configuration file. If a parameter is not installed by default, the parameter is commented out in the configuration file. You can edit the tm1s.cfg file to reflect the environment of the associated remote server by uncommenting the parameter that you want to use and setting the correct value.

Note: IBM TM1 Server on IBM POWER8 little endian (LE) uses a subset of the TM1 Server configuration parameters in the cogstartup.xml file. For more information, see “Sample cogstartup.xml file” on page 319.

For an alphabetical listing of all the parameters in the server configuration file, see “Parameters in the tm1s.cfg file” on page 322.

Location of the tm1s.cfg file

The location of the tm1s.cfg file depends on the type of server you are using.

- If you are using the IBM Cognos Configuration tool to start and stop your IBM TM1 Server, you can view the configuration path for a TM1 Server by clicking the server name in the Explorer tree of Cognos Configuration.
- If you are running the TM1 Server remotely as a Microsoft Windows service (Tm1sd.exe), and you used the TM1 installation program to install the server, the system uses the tm1s.cfg file that is located in the server data directory you specified during installation.
- If you are running the TM1 Server remotely as a Windows application (Tm1s.exe), you specify the location of the tm1s.cfg file by using the -z parameter in the command line when you start the server, either from a shortcut or from a command prompt.

  For example, this command specifies that TM1 uses the tm1s.cfg file located in the c:\salesdata directory:

  ```
  c:\Program
  Files\Cognos\TM1\bin\tm1s.exe
  -z c:\salesdata
  ```

  If the -z parameter points to a directory containing spaces, you must enclose the directory in double quotation marks. For example, -z "c:\sales data".
- If you are running a TM1 Server on UNIX, and you used the TM1 installation program to install the server, the system uses the tm1s.cfg file that is located in the server data directory you specified during installation.
- If you are running a TM1 Server on IBM POWER8 LE, the system uses the cogstartup.xml file that is located in the *<install_location>*/configuration directory, where *<install_location>* is the server data directory you specified during the installation.

Sample tm1s.cfg file

This is a sample tm1s.cfg file.

Your tm1s.cfg file might also include comments that describe the parameters.

```
## Licensed Materials - Property of IBM
##
## IBM Cognos Products: TM1
```

```
##
## (C) Copyright IBM Corp. 2007, 2017
##
## US Government Users Restricted Rights - Use, duplication or
## disclosure restricted by GSA ADP Schedule Contract with IBM Corp.


[TM1S]
# ServerLogging
# Generates a log with the security activity details on the TM1 server that are associated with
Integrated Login. The log file, named Tm1server.log, is saved to the TM1 server data directory.
The ServerLogging parameter is useful only if your TM1 server is configured to use Integrated
Login.
# Type: Optional, Static
#
# Set ServerLogging to T in Tm1s.cfg. Note also that if ServerLogging=T is set, you must rename
the TM1 server message logfile tm1server.log by editing the corresponding parameter in the
logger configuration file tm1s-log.properties file.
ServerLogging=F


# Security package name
# If you configure the TM1 server to use Integrated Login, the SecurityPackageName parameter
defines the security package that authenticates your user name and password in Windows.
# Type: Optional, Static
#
# Valid values are:
#  * Kerberos (default) - Windows 2000 or later.
#  * NTLM - Older Windows installations, such as Windows NT.
SecurityPackageName=Kerberos


# Security mode
# Type: optional, static
#
#
# If IntegratedSecurityMode is set to 1. All clients must provide a database
# username and password. This is traditionally done through a login screen.
#
# If IntegratedSecurityMode is set to 2. The clients will have the choice
# to connect provide a database username and password or use the single-login
# mechanism for authentication.
#
# If IntegratedSecurityMode is set to 3. All clients must use the single-login
# mechanism for authentication.
#
# If IntegratedSecurityMode is set to 4. The server uses IBM Cognos 8 security authentication.
#
# If IntegratedSecurityMode is set to 5. The server uses IBM Cognos 8 security authentication
and supports user groups from both TM1 and Cognos 8.
#
# If this is not set the parameter will be set to 1 by default.
IntegratedSecurityMode=1


# UseSSL
# Enables or disables SSL on the TM1 server.
# Type: Optional/Required to use SSL, Static
# Set UseSSL=T to enable SSL. With this setting, only TM1 9.1 and later clients will be able to
securely connect to the server.
# Set UseSSL=F to disable SSL. With this setting, all TM1 clients, including older clients that
do not support SSL, will be able to connect to the server in insecure mode.
# When UseSSL=T, you must set several other Tm1s.cfg parameters that manage SSL implementation.
For details on these parameters, see Running TM1 in Secure Mode Using SSL.
# Default is UseSSL=T
UseSSL=T


# Server name to register with the Admin Server. If you do not supply this parameter, TM1 names
the server Local and treats it as a local server.
# Type: Optional, Static
ServerName=SData


# Location of TM1 database
# Type: Required, static
# Specifies the data directory from which the server loads cubes, dimensions, and other
objects. You can list multiple data directories by separating them with semicolons.
#
# Example:
# DataBaseDirectory=C:\Program Files\Cognos\TM1\Custom\TM1Data\PlanSamp\
DataBaseDirectory=.
```

```
# AdminHost
# Specifies the computer name or IP address of the Admin Host on which an Admin Server is
running
# Type: Required, Static
# You can specify multiple Admin Hosts by separating each host name with a semicolon on a
Windows TM1 server, or a colon on a UNIX TM1 server. For example:
#  * Use the format AdminHost=hostname1;hostname2 on a Windows TM1 server.
#  * Use the format AdminHost=hostname1:hostname2 on a UNIX TM1 server.
#
# Some examples include:
#  * AdminHost=boston;newyork
#  * AdminHost=192.168.1.17;192.168.1.22
#  * AdminHost=boston;192.168.1.17;192.168.1.22;myserver;192.168.1.40
#
#Note: The string specifying the admin host(s) is limited to 1020 characters or bytes.
# If set to empty than use localhost
AdminHost=


# TM1 Server Port
# Sets the server port number used to distinguish between multiple servers running on the same
computer. When multiple TM1 servers are installed on a single computer, each server must use a
unique port number.
# Type: Optional, Static
# When you install a TM1 server, the default port number is 12345. Valid port values are
between 5000 and 65535
#
# If the Tm1s.cfg file does not contain the PortNumber parameter, the TM1 server uses port
5000. Local TM1 servers use port 5000. The port used for Client Messages must also be a unique
port number and is set to 5001 by default when the ClientMessagePortNumberparameter is used.
PortNumber=12346


# ClientMessagePortNumber
# Identifies a secondary port used to accept client messages concerning the progress and
ultimate cancellation of a lengthy operation without tying up thread reserves.
# Type: optional, dynamically set/Sstatic for changes
# This additional port ensures that other server requests can continue to process while waiting
for a cancellation from the user.
#
# By default, this port number is automatically and dynamically assigned when the TM1 server
starts. You do not have to set ClientMessagePortNumber to a specific number unless firewalls or
other network issues require the listener port to be a well-known number.
#
# Note: Be sure to assign unique port numbers for the server and client message ports. If you
have two servers running on the same machine with the same port number, the message activity
may cause a system failure.
ClientMessagePortNumber=


# Language
# Sets the language used in the TM1 interface for the IBM Cognos TM1 server.You can use this to
override the current locale settings
# This parameter applies to messages generated by the server and is also used in the user
interface
# of the server dialog box when you run the server as an application instead of a Windows
service.
# Type: Optional, Static
#
# Valid values are:
# eng   English
# bra   Brazilian Portuguese
# hrv   Croatian
# csy   Czech
# sch   Chinese (Simplified)
# tch   Chinese (Traditional)
# dan   Danish
# nld   Dutch
# deu   German
# fin   Finnish
# fra   French
# hun   Hungarian
# ita   Italian
# jpn   Japanese
# kaz   Kazakh
# kor   Korean
# nor   Norwegian
# pol   Polish
# rom   Romanian
# rus   Russian
```

```
# esp   Spanish
# sky   Slovak
# slv   Slovenian
# sve   Swedish
# tha   Thai
# trk   Turkish
#Language=eng


# Savetime
# Sets the time of day to execute an automatic save of server data; saves the cubes every
succeeding day at the same time. As with a regular shutdown, SaveTime renames the log file,
opens a new log file, and continues to run after the save.
# The Savetime parameter is not available when running the TM1 server as a Windows service.
# The format of the SaveTime parameter is dd:hh:mm where:
#  * dd is the number of days from today that the system will start automatically saving data.
For example, 00 is today, 01 is tomorrow.
#  * hh:mm is the time of day in 24-hour format.
# Type: optional, dynamic
Savetime=


# Downtime
# Specifies a time when the server will come down automatically.
# The Downtime parameter is not available when running the TM1 server as a Windows service.
# The format of the Downtime parameter is dd:hh:mm where:
#  * dd is the number of days from today that the system will start automatically saving data.
For example, 00 is today, 01 is tomorrow.
#  * hh:mm is the time of day in 24-hour format.
# When you use the DownTime parameter on the UNIX TM1 server, you must set the
RunningInBackground parameter to T. If RunningInBackground=F, the server prompts for
confirmation before shutting down and cannot shut down without manual confirmation from an
administrator.
# Type: optional, dynamic
Downtime=


# LicenseMetricTime
# Sets the time of day the TM1 server will generate a License Metric Tag file.
# A License Metric Tag file is an XML file which contains information about license metrics
consumed by software product instances.
# In the case of TM1 server, the reported authorized user metrics are the number of Modelers,
Contributors and Explorers.
# The License Metric Tag files produced by various instances of TM1 servers are collected by
the IBM License Metric Tool (ILMT) agent and aggregated to produce final metrics based on the
TM1 product version.
#
# The format of the LicenseMetricTime parameter is dd:hh:mm where:
#  * dd is the number of days from today that the system will start automatically producing
License Metric tag files. For example, 00 is today, 01 is tomorrow.
#  * hh:mm is the time of day in 24-hour format.
# Type: optional, dynamic
LicenseMetricTime=


# ProgressMessage
# This parameter determines whether users have the option to cancel lengthy view calculations.
When a user opens a view that takes a significant amount of time to calculate (usually a view
with high levels of consolidation or complex rules), TM1 monitors the progress of the process.
When ProgressMessage=T a dialog box opens that allows the user to Stop Building View.
# Type: Optional, Static
#
# If the user clicks Stop Building View, the view is discarded on the client, but view
calculation continues on the server. In some instances, this can tie up the server.
# If ProgressMessage=F, the Stop Building View option is not offered and the user cannot cancel
lengthy operations. This setting helps avoid potential server tie ups in versions 9.1 SP3
through 9.4.
# When ProgressMessage=T or is not present in the Tm1s.cfg file, the Stop Building View option
opens during lengthy view calculations so the user can cancel the process if necessary. For
versions 9.4 or later, the user can assign a unique Port Number using ClientMessagePortNumber.
This additional port allows these progress messages to travel via a secondary port so that
server processing can continue without tying up thread reserves.
# Note: To avoid potentially tying up servers, TM1 9.1 SP3 through 9.4 have ProgressMessage=F
inserted into the Tm1s.cfg file during server installation. As of TM1 9.4, progress messages
can travel via the secondary port assigned by ClientMessagePortNumber so TM1 9.4 and later have
ProgressMessage=T set by default. This parameter has been tested with Citrix when this feature
was redesigned.
ProgressMessage=True


# AuditLogOn
# Turns audit logging on (T) or off (F).
```

```
# Type: Optional, Static
AuditLogOn=F


# AuditLogMaxFileSize
# Indicates the maximum file size that an audit log file can grow to before it is closed and a
new file is created.
# Type: Optional, Dynamic
# This value must include units of KB (kilobytes), MB (megabytes), or GB (gigabytes).
# Default value: 100 MB
# Minimum value: 1 KB
# Maximum value: 2 GB
AuditLogMaxFileSize= 100 MB


# AuditLogUpdateInterval
# Indicates the maximum amount of time, in minutes, that TM1 waits before moving the events
from the temporary audit file into the final audit log.
# Type: Optional, Dynamic
# This value must include units of KB (kilobytes), MB (megabytes), or GB (gigabytes).
# Default value: 60 (sixty minutes)
# Minimum value: 1  (one minute)
AuditLogUpdateInterval=60


#PersistentFeeders
# Turn on Persistent Feeders to make TM1 models load faster
# Type: Optional, Static
PersistentFeeders=F


# ServerCAMURI
# Specifies the URI for the internal dispatcher that the TM1 server should use to connect to
CAM. The URI is specified in the form http[s]://host IP address:port/p2pd/servlet/dispatch.
# Type: Optional, Static
# No default
# For example,
#
# http://10.121.25.121:9300/p2pd/servlet/dispatch
# or
# https://10.121.25.121:9300/p2pd/servlet/dispatch
#ServerCAMURI=http://localhost:9300/p2pd/servlet/dispatch


# ClientCAMURI
# The URI for the IBM Cognos Server IBM Cognos Connection used to authenticate TM1 clients. The
URI is specified in the form http[s]://host/cognos8/cgi-bin/cognos.cgi.
# Type: Optional, Static
# No default
# Example: http://10.121.25.121/cognos8/cgi-bin/cognos.cgi
#ClientCAMURI=http://localhost/ibmcognos/cgi-bin/cognos.cgi


# ClientPingCAMPassport
# Indicates the interval, in seconds, that a client should ping the CAM server to keep their
passport alive.
# Type: Optional, Static
# If an error occurs or the passport expires the user will be disconnected from the TM1 server.
#ClientPingCAMPassport=900


## Optional CAM parameters

# CAMSSLCertificate
# Type: Optional/Required only when CAM server is configured with SSL, Static
# The full path and name of the SSL certificate to be used when connecting to the internal
dispatcher. For example, C:\AxTM1\Install_Dir\ssl\CognosCert.cer.
#CAMSSLCertificate=


# CAMSSLCertRevList
# CAM SSL Certificate Rev List
#CAMSSLCertRevList=


# Skip SSL CAM Host Check
# Indicates whether the SSL certificate ID confirmation process can be skipped. The default is
FALSE.
# Type: Optional, Static
# Important: This parameter should be set to TRUE only if using a generic certificate for
demonstration purposes.
#SkipSSLCAMHostCheck=TRUE
```

```
## Optional LDAP Settings

# PasswordSource
# Determines the source of authentication
# Type: Optional, Static
# Two options:
#   * TM1 (default) - Compares the user-entered password to the password in the TM1 database.
#   * LDAP - Compares the user-entered password to the password stored in on the LDAP server.
#PasswordSource=LDAP


# LDAPPort
# TM1 attempts to bind to an LDAP server on the specified secure port. If you do not enter an
LDAPPort value, TM1 uses the default value, port 636
# Type: Optional, Static
# This must be a secure (SSL) port.
#LDAPPort=636


# LDAPHost
# Uses the domain name or dotted string representation of the IP address of the LDAP server
host. If you do enter a value for LDAPHost, TM1 uses the default value, localhost.
# Type: Optional, Static
#LDAPHost=localhost


# LDAPUseServerAccount
# Determines if a password is required to connect to the server when using LDAP authentication.
# Type: Optional
# To connect directly to the LDAP server using integrated authentication, set this parameter to
T. Set this parameter to T whenever the IBM Cognos TM1 server and LDAP server exist on the same
domain.
# To use a password before connecting, set this parameter to F. When LDAPUseServerAccount is
set to F, you must also set the LDAPPasswordFile and LDAPPasswordKeyFile to successfully
connect to the LDAP server using SSL.
#LDAPUseServerAccount=T


# LDAPSearchBase
# A base distinguished name (DN) in the LDAP directory. For example:
# ou=people,o=company.com
# Specifies the node in the LDAP tree at which the search for the TM1 user being validated
begins. For example, if the distinguished names are of the form:
# uid-bjensen, ou-people, o=company.com
#
# then the search base would be:
# ou-people, o=company.com
# This is a required field if using LDAP Authentication.
#LDAPSearchBase=cn=users,dc=company,dc=com


# LDAPSearchField
# cn
# The name of the LDAP attribute that is expected to contain the name of the TM1 user being
validated. If you do not enter an LDAPSearchField value, the default value is cn, which is also
the default value for Microsoft Active Directory.
#LDAPSearchField=cn=user


# IPVersion
# Select IPv4 or IPv6
# Sets IP protocol.
# Type: Optional, Static
#
# Three options:
#   * ipv4 - use ipv4 (default)
#   * ipv6 - use ipv6
#   * dual - use ipv6 with support for ipv4
IPVersion=ipv4


# ServerCAMIPVersion
# Server CAM Internet Protocol Version
# Select IPv4 or IPv6
# Sets IP protocol.
# Type: Optional, Static
#
# Two options:
#   * ipv4 - use ipv4 (default)
#   * ipv6 - use ipv6
```

```
ServerCAMIPVersion=ipv4


# AllowSeparateNandCRules
# Specifies expressions for N: and C: levels on separate lines using identical AREA
definitions, maintaining the rules conventions of TM1.
# Type: Optional, Static
#
# For example,
#
# ['Budget','Argentina']=N:Expression;
#
# ['Budget','Argentina']=C:Expression;
#
# are both valid rules statements when you include the AllowSeparateNandCRules parameter in the
Tm1s.cfg file and set to T.
#
# This parameter also effects how numeric and string rules are applied to cells. Without this
parameter, the first rule statement that is encountered for a given AREA definition is applied
to the cells within the scope of that definition. If any cell within the AREA definition is
numeric and the rule is a string rule, then the cell is considered not rule-derived because
there was a match that did not apply to the cell.
#
# For example, consider the statements:
#
# ['1 Quarter']=s:'str_value';Not following.
#
# ['1 Quarter']=n:77;
#
# If the AllowSeparateNandCRules parameter is not set (or is set to F), then the first rule
statement will match any cell that uses '1 Quarter' as one of its elements. If the cell is a
string cell, the value of the cell will be set to “str_value”. If the cell is a numeric cell,
the cell will not be considered rule derived, since a match was found (the first rule) but the
rule itself did not apply.
#
# If the AllowSeparateNandCRules parameter is set to T, then string cells which use '1 Quarter'
will be set to "str_value" and numeric cells which use '1 Quarter' will be set to 77.
AllowSeparateNandCRules=T


# DistributedPlanningOutputDir
# Type: Optional, Static
# Cognos Insight distributed clients need information called "tunits".
# This data is created when an application is deployed and is updated as the TM1 server runs.
# The location of the directory used for this purpose is set using this parameter.
# In order to deploy Cognos Insight distributed client applications using this database,
uncomment or add this parameter as DistributedPlanningOutputDir=<location of the tunit
directory>.
# The pathname specified can be absolute, or relative to the TM1 server data directory.
#
# Examples:
#
DistributedPlanningOutputDir=tunit
    creates a directory "tunit" under the TM1 server data directory
#
DistributedPlanningOutputDir=..\tunit
   creates a directory "tunit" as a sibling to the TM1 server data directory
# DistributedPlanningOutputDir=C:\Program Files\IBM\cognos\tm1\samples\tm1\GO_New_Stores
\tunit      creates a directory "tunit"  at the specified location.
#DistributedPlanningOutputDir=.\tunit


# ForceReevaluationOfFeedersForFedCellsOnDataChange
# Type: Optional, Static
# When this parameter is set, a feeder statement is forced to be re-evaluated when data changes.
# When the IBM Cognos TM1 server computes feeders, the process can be a "chain" of feeders,
where cell A feeds cell B, and there is a feeder rule for cell B, so that rule runs and feeds
cell C, etc. Feeders for numeric cells are only evaluated when a cell goes from empty to some
non-zero value since any non-zero value in the cell would already have set any feeders.
# There is no need to re-evaluate the feeders when a cell changes from one non-zero value to
another.
# Normally, when evaluating feeders, if a feeder rule is evaluated and the target cell is
already fed, the feeding process stops.
# Feeder rules are not processed any further since the presence of the feeder in the target
cell indicates that the feeder rules for the target cell have already been run, and there is no
need to run them again.
# Consider the following feeder rules:
# ['A']=>['B'];
# The feeder rule for cell B depends on some cube data value:
# [B]=>DB(cube-name,!dim1,DB(cube2-name, ...),!dim2);['C']=>['D'];['X']=>['B'];
# When the feeder rule for B is initially evaluated, the DB(cube2-name, ...) is evaluated to
produce an element name, such as C. Therefore B feeds C and then C feeds D. When that cell X
```

```
goes from zero to non-zero. This change also feeds B. But B is already fed, so the feeding
process stops, and the feeder rule for B never evaluates, so any "change" in the output of the
rule, which may come about because of an underlying data change targeted by the DB(…) statement
will not be evaluated. If the config parameter
ForceReevaluationOfFeedersForFedCellsOnDataChange is set, then the presence of a feeder in cell
B will not terminate feeder processing. Rather, the feeder rule for B will run. Because the
feeder rule for B is data dependent, the target for the feeder may be the former C, or may be
some other cell, and that cell will be fed. Note that setting this parameter will force more
feeder evaluations, which may have a performance impact.
# To turn on this parameter set ForceReevaluationOfFeedersForFedCellsOnDataChange=T.
ForceReevaluationOfFeedersForFedCellsOnDataChange=T

#Specifies whether multiple hierarchy creation is enabled or disabled.
#Parameter type: optional (required for multiple hierarchies)
#By default, the EnableNewHierarchyCreation parameter is set to F (false). If you are working
with multiple hierarchies, change the parameter setting to T (true). TM1 Reference lists the
TurboIntegrator functions to manage dimensions and equivalent functions to manage specific
hierarchies within dimensions.
EnableNewHierarchyCreation=T

# TM1 Server HTTP Port
# Sets the server port number for HTTP access. Like PortNumber above, it is used to distinguish
between multiple servers running on the same computer. When multiple TM1 servers are installed
on a single computer, each server must use unique values for port number and HTTP port number.
# Type: Optional, Static
# When you install a TM1 server, the default HTTP port number is 12354. Valid port values are
between 5000 and 49151
#
# If the Tm1s.cfg file does not contain the HTTPPortNumber parameter, then you can not use the
OData v4 Compliant REST API.
HTTPPortNumber=8010

#Specifies whether TurboIntegrator debugging capabilities are enabled or disabled.
#Parameter type: optional, dynamic
#By default, the EnableTIDebugging parameter is set to F (false).
#Setting the parameter to T (true) allows you to use any of the TurboIntegrator process
debugging capabilities of the TM1 REST API.
EnableTIDebugging=T
```

Sample cogstartup.xml file

This is a sample cogstartup.xml file for IBM POWER8 LE.

```
<crn:parameters
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    xmlns:cfg="http://developer.cognos.com/schemas/configparams/XMLSchema/1/"
    xmlns:crn="http://developer.cognos.com/schemas/crconfig/1/"
    xsi:schemaLocation="http://developer.cognos.com/schemas/crconfig/1/ cogstartup.xsd"
    version="166.0">
  <!--tm1AdminServer:Defines a group of properties for the TM1 Admin Server.-->
    <crn:parameter
        name="tm1AdminServer"
        opaque="true">
        <crn:value>
      <!--tm1AdminNonSSLPortNumber:Specifies the TCP port number used by TM1 Admin Server for
unsecured communication.-->
            <crn:parameter
                name="tm1AdminNonSSLPortNumber">
                <crn:value
                    xsi:type="xsd:unsignedShort">5495</crn:value>
            </crn:parameter>
      <!--tm1AdminSSLPortNumber:Specifies the TCP port number used by TM1 Admin Server for
secured (SSL) communication.-->
            <crn:parameter
                name="tm1AdminSSLPortNumber">
                <crn:value
                    xsi:type="xsd:unsignedShort">5498</crn:value>
            </crn:parameter>
      <!--tm1AdminHTTPPortNumber:Specifies the HTTP port number used by TM1 Admin Server for
unsecured communication.-->
            <crn:parameter
                name="tm1AdminHTTPPortNumber">
                <crn:value
                    xsi:type="xsd:unsignedShort">5895</crn:value>
            </crn:parameter>
      <!--tm1AdminHTTPSPortNumber:Specifies the HTTPS port number used by TM1 Admin Server for
secured (SSL) communication.-->
            <crn:parameter
                name="tm1AdminHTTPSPortNumber">
```

```
                <crn:value
                    xsi:type="xsd:unsignedShort">5898</crn:value>
            </crn:parameter>
      <!--tm1AdminSupportNonSSLClients:Specifies if the TM1 Admin Server supports non-SSL TM1
clients.-->
      <!--Set the parameter to true to configure TM1 Admin Server to support non-SSL clients
and to listen for client connections on both secured (SSL) and unsecured ports. If set to false
TM1 Admin Server will support only SSL client connections on the secured port.-->
            <crn:parameter
                name="tm1AdminSupportNonSSLClients">
                <crn:value
                    xsi:type="xsd:boolean">false</crn:value>
            </crn:parameter>
      <!--tm1AdminSupportPreTLSv12Clients:Specifies if the TM1 Admin Server will supports pre
TLS v1.2 SSL protocols from TM1 clients.-->
      <!--Set the parameter to true to allow TM1 clients to connect with TM1 Admin Server using
SSL protocols earlier than TLS v1.2. If set to false (default), TM1 Admin Server will accept
only TLS v1.2 or later SSL protocols.-->
            <crn:parameter
                name="tm1AdminSupportPreTLSv12Clients">
                <crn:value
                    xsi:type="xsd:boolean">false</crn:value>
            </crn:parameter>
      <!--tm1AdminKeyFile:Specifies the file path to the key database file.-->
      <!--The key database file which contains the server certificate and trusted certificate
authorities.-->
            <crn:parameter
                name="tm1AdminKeyFile">
                <crn:value
                    xsi:type="cfg:filePath">./ssl/ibmtm1.kdb</crn:value>
            </crn:parameter>
      <!--tm1AdminKeyStashFile:Specifies the file path to the key database password file.-->
      <!--The key store containing passwords to the key database file.-->
            <crn:parameter
                name="tm1AdminKeyStashFile">
                <crn:value
                    xsi:type="cfg:filePath">./ssl/ibmtm1.sth</crn:value>
            </crn:parameter>
      <!--tm1AdminKeyLabel:Specifies label of the server certificate.-->
      <!--The label of the server certificate in key database file. A certificate may be marked
as the default.-->
            <crn:parameter
                name="tm1AdminKeyLabel">
                <crn:value
                    xsi:type="xsd:string">ibmtm1_server</crn:value>
            </crn:parameter>
      <!--tm1AdminFIPSOperationMode:Specifies the FIPS mode of operation.-->
      <!--Controls the level of support for Federal Information Processing Standards (FIPS).
Default is 'enabled'.  \n\tEnabled is basic, FIPS 140-2 level 1 support. \n\tApproved is FIPS
140-2 level 2 support. \n\tDisabled is no FIPS support at all.-->
            <crn:parameter
                name="tm1AdminFIPSOperationMode">
                <crn:value
                    xsi:type="xsd:int">1</crn:value>
            </crn:parameter>
      <!--tm1AdminNIST_SP800_131A_MODE:Indicates server should operate in compliance of the SP
800-131A standard. Default is true.-->
            <crn:parameter
                name="tm1AdminNIST_SP800_131A_MODE">
                <crn:value
                    xsi:type="xsd:boolean">true</crn:value>
            </crn:parameter>
      <!--tlsCipherList:Specifies a list of supported ciphersuites in priority sequence.-->
      <!--Use this property to specify what ciphersuites are acceptable in this install. The
comma-delimited string values are defined by RFC 2246, 4346, 5246, 4492 and 5289. The named
ciphersuites are presented to the SSL negotiation in specified order for both client and server
sides of the negotiation. At least one of the selected ciphersuites between configured client
and server platforms must match.-->
            <crn:parameter
                name="tlsCipherList">
                <crn:value
                    xsi:type="xsd:string"/>
            </crn:parameter>
      <!--tm1AdminIPVersion:Specifies the Internet Protocol(s) which the TM1 Admin Server will
support.-->
            <crn:parameter
                name="tm1AdminIPVersion">
                <crn:value
                    xsi:type="xsd:string">IPv4</crn:value>
            </crn:parameter>
      <!--tm1AdminActivityInterval:Specifies the interval in seconds wherein the TM1 Server
will notify the TM1 Admin Server that it is active.-->
```

```
            <crn:parameter
                name="tm1AdminActivityInterval">
                <crn:value
                    xsi:type="xsd:positiveInteger">10</crn:value>
            </crn:parameter>
      <!--tm1AdminInactivityTimeout:Specifies the interval in seconds that the TM1 Server is
allowed to be inactive before it is removed from the TM1 Admin Server.-->
            <crn:parameter
                name="tm1AdminInactivityTimeout">
                <crn:value
                    xsi:type="xsd:positiveInteger">10</crn:value>
            </crn:parameter>
      <!--tm1AdminSvrCertificateVersion:Specifies which version of the TM1 generated SSL
certificates to use.-->
      <!--By default, the 1024-bit encryption version of the TM1 generated certificates is
used. Change this parameter only if you want to use the new 2048-bit encryption version of the
default certificates. You can use the new version with old and new TM1 clients, but you must
configure the clients to use the new certificate authority file. This parameter does not apply
if you are using your own SSL certificates. Valid values include: 1 = certificate authority to
enable 1024-bit encryption with sha-1 (default value); 2 = certificate authority to enable 2048-
bit encryption with sha-256.-->
            <crn:parameter
                name="tm1AdminSvrCertificateVersion">
                <crn:value
                    xsi:type="xsd:int">1</crn:value>
            </crn:parameter>
        </crn:value>
    </crn:parameter>
  <!--tm1Server:Defines a group of properties for the TM1 Server.-->
    <crn:parameter
        name="tm1Server"
        opaque="true">
        <crn:value>
            <crn:instances
                name="tm1ServerInstances">
        <!--24 Retail:Defines a group of properties for a TM1 Server instance.-->
                <crn:instance
                    name="24 Retail"
                    class="tm1ServerInstance">
                    <crn:parameter
                        name="tm1sConfigDirectory">
                        <crn:value
                            xsi:type="cfg:folderPath">../samples/tm1/24Retail</crn:value>
                    </crn:parameter>
                </crn:instance>
        <!--SData:Defines a group of properties for a TM1 Server instance.-->
                <crn:instance
                    name="SData"
                    class="tm1ServerInstance">
                    <crn:parameter
                        name="tm1sConfigDirectory">
                        <crn:value
                            xsi:type="cfg:folderPath">../samples/tm1/SData</crn:value>
                    </crn:parameter>
                </crn:instance>
        <!--Planning Sample:Defines a group of properties for a TM1 Server instance.-->
                <crn:instance
                    name="Planning Sample"
                    class="tm1ServerInstance">
                    <crn:parameter
                        name="tm1sConfigDirectory">
                        <crn:value
                            xsi:type="cfg:folderPath">../samples/tm1/PlanSamp</crn:value>
                    </crn:parameter>
                </crn:instance>
        <!--GO_New_Stores:Defines a group of properties for a TM1 Server instance.-->
                <crn:instance
                    name="GO_New_Stores"
                    class="tm1ServerInstance">
                    <crn:parameter
                        name="tm1sConfigDirectory">
                        <crn:value
                            xsi:type="cfg:folderPath">../samples/tm1/GO_New_Stores</crn:value>
                    </crn:parameter>
                </crn:instance>
        <!--GO_Scorecards:Defines a group of properties for a TM1 Server instance.-->
                <crn:instance
                    name="GO_Scorecards"
                    class="tm1ServerInstance">
                    <crn:parameter
                        name="tm1sConfigDirectory">
                        <crn:value
```

```
                            xsi:type="cfg:folderPath">../samples/tm1/GO_scorecards</crn:value>
                    </crn:parameter>
                </crn:instance>
        <!--Proven_Techniques:Defines a group of properties for a TM1 Server instance.-->
                <crn:instance
                    name="Proven_Techniques"
                    class="tm1ServerInstance">
                    <crn:parameter
                        name="tm1sConfigDirectory">
                        <crn:value
                            xsi:type="cfg:folderPath">../samples/tm1/Proven_Techniques</
crn:value>
                    </crn:parameter>
                </crn:instance>
            </crn:instances>
        </crn:value>
    </crn:parameter>
</crn:parameters>
```

Parameters in the tm1s.cfg file

The parameters in the tm1s.cfg file are described here.

Dynamic parameter

Dynamic parameter values can be edited while the IBM TM1 Server is running.

The TM1 Server continuously polls the tm1s.cfg file at 60 second intervals to determine if any dynamic parameter values have changed. If the server detects a parameter value change, the new value is applied immediately. Dynamic parameters are identified with a statement describing them as dynamic in this list.

Static parameter

Static parameter values are read from the tm1s.cfg file only when the TM1 Server starts. If you want to change a static parameter value, you must shut down the TM1 Server, edit the value in the tm1s.cfg file, and then restart the server.

Most parameters in the tm1s.cfg file are static.

Spaces in values

If a parameter value contains spaces, enclose the parameter values within double quotes.

AdminHost

Specifies the computer name or IP address of the Admin Host on which an Admin Server is running.

Parameter type: required, static

To specify multiple Admin Hosts, separate each host name with a semicolon when running on Microsoft Windows or with a colon when running on a UNIX. For example:

- Use the format `AdminHost=`*`hostname1;hostname2`* on a Windows IBM TM1 Server.
- Use the format `AdminHost=`*`hostname1:hostname2`* on a UNIX IBM TM1 Server.

Some other examples include:

- `AdminHost=boston;newyork`
- `AdminHost=192.168.1.17;192.168.1.22`
- `AdminHost=boston;192.168.1.17;192.168.1.22;myserver;192.168.1.40`

Note: The string specifying the admin host or hosts is limited to 1020 characters or bytes.

AllowReadOnlyChoreReschedule

Provides users with READ access to a chore, and the ability to activate, deactivate, and reschedule chores.

Parameter type: optional, static

When the line AllowReadOnlyChoreReschedule=T is added to the Tm1s.cfg file for a server, users with READ access to a chore can right-click a chore in Server Explorer, and toggle the Activate Schedule option or choose the Edit Chore option. The Edit Chore option is available only when a chore is not activated.

When a user with READ access to a chore selects the Edit Chore option, only the scheduling screen of the Chore Setup Wizard opens.

The scheduling screen lets the user set scheduling parameters for the chore, but does not allow the user to edit the list of processes that compose the chore.

AllowSeparateNandCRules
When enabled, this parameter lets you specify rule expressions for N: and C: levels on separate lines using identical AREA definitions.

Parameter type: optional, static

For example,

```
['Budget','Argentina']=N:Expression;
```

```
['Budget','Argentina']=C:Expression;
```

are both valid rules statements when you include the AllowSeparateNandCRules parameter in the Tm1s.cfg file and set to T.

This parameter also effects how numeric and string rules are applied to cells. Without this parameter, the first rule statement that is encountered for a given AREA definition is applied to the cells within the scope of that definition. If any cell within the AREA definition is numeric and the rule is a string rule, then the cell is considered not rule-derived because there was a match that did not apply to the cell.

For example, consider the statements:

```
['1 Quarter']=s:'str_value';Not following.
```

```
['1 Quarter']=n:77;
```

If the AllowSeparateNandCRules parameter is not set (or is set to F), then the first rule statement will match any cell that uses '1 Quarter' as one of its elements. If the cell is a string cell, the value of the cell will be set to 'str_value'. If the cell is a numeric cell, the cell will not be considered rule derived, since a match was found (the first rule) but the rule itself did not apply.

If the AllowSeparateNandCRules parameter is set to T, then string cells which use '1 Quarter' will be set to 'str_value' and numeric cells which use '1 Quarter' will be set to 77.

To set the parameter to T, add the following line to Tm1s.cfg:

```
AllowSeparateNandCRules=T
```

AllRuleCalcStargateOptimization
The AllRuleCalcStargateOptimization parameter can improve performance in calculating views that contain only rule-calculated values.

Parameter type: optional, static

Typically, TM1 performs calculations for standard consolidations and then calculates values for rule-based consolidations, which may end up overriding values in the standard consolidations. The AllRuleCalcStargateOptimization parameter provides optimization that first checks if every value in the view is rule-calculated and then proceeds as follows:

- If every value in the view is rule-calculated, then TM1 skips the unnecessary calculations for standard consolidations and just performs the rule-calculated consolidations.
- If the view contains even a single value which is not rule-calculated, then this optimization parameter will have no effect.

When this parameter is set to True, some additional processing will take place for every view that is requested to first check if the view contains only rule-calculated values. For most views, this additional processing is minimal since the optimization is stopped after the first value in the view is found to be not rule-calculated.

To enable this parameter, set the parameter's value to T in the TM1 server configuration file, Tm1s.cfg, as follows:

```
AllRuleCalcStargateOptimization=T
```

The default setting is disabled (F).

ApplyMaximumViewSizeToEntireTransaction
Applies MaximumViewSize to the entire transaction instead of to individual calculations.

Parameter type: optional, dynamic

By default MaximumViewSize checks individual view processing. For example, if 10 views are processed in a single transaction, the threshold is crossed only if the processing of any single view crosses the threshold. See "MaximumViewSize " on page 349.

With this parameter set to True, the cumulative memory usage of all views processed in a single transaction is compared against the threshold value. This allows the memory size threshold to catch more transactions that consume large amounts of memory.

Note: TI process execution counts as a single transaction, including all child TI processes.

```
ApplyMaximumViewSizeToEntireTransaction=T
```

Default value is F.

AuditLogMaxFileSize
Indicates the maximum file size that an audit log file can grow to before it is closed and a new file is created.

Parameter type: optional, dynamic

This value must include units of KB (kilobytes), MB (megabytes), or GB (gigabytes). For example, to limit the log file size to 100 MB, enter the following:

```
AuditLogMaxFileSize=100 MB
```

The range of values include:

- Default value: 100 MB
- Minimum value: 1 KB
- Maximum value: 2 GB

AuditLogMaxQueryMemory
Indicates the maximum amount of memory that IBM TM1 Server can use when running an audit log query and retrieving the set of results.

Parameter type: optional, dynamic

This value must include units of KB (kilobytes), MB (megabytes), or GB (gigabytes). For example:

```
AuditLogMaxQueryMemory=100 MB
```

The range of values include:

- Default value: 100 MB
- Minimum value: 1 KB
- Maximum value: 2 GB

AuditLogOn
Turns audit logging on (T) or off (F).

Parameter type: optional, dynamic

For example:

- To enable audit logging, set `AuditLogOn=T`
- To disable audit logging, set `AuditLogOn=F`

The default setting is F.

AuditLogUpdateInterval
Indicates the maximum amount of time, in minutes, that IBM TM1 Server waits before moving the events from the temporary audit file into the final audit log.

Parameter type: optional, dynamic

For example:

`AuditLogUpdateInterval=60`

The default value is 60 (sixty minutes).

The minimum value is 1 (one minute).

Note: You can manually update the audit log with the latest events anytime you want by using the Process Audit Log Events command in Server Explorer. For details, see "Updating the Audit Log with the Latest Events" in *TM1 Operations*.

AutomaticallyAddCubeDependencies
Determines if cube dependencies are set automatically or if you must manually identify the cube dependencies for each cube.

Parameter type: optional, static

The IBM Cognos TM1 server establishes dependencies so it can properly invalidate cube calculation caches when data in cubes is changed. For more details, see "Understanding Cube Dependency" in *TM1 Operations*.

When set to true (the default), rule-based inter-cube DB(...) dependencies are detected and set automatically at server startup time. Further, after a rule edit, save, or recompile, the dependencies expressed in that rule, whether from DB(), ATTRS(), or ATTRN() functions, are automatically re-established.

When set to false, rule based inter-cube DB(...) dependencies are not detected and are set at server startup time. Dependencies are established when a query is run. This can cause a query to block others because of a new dependency.

```
AutomaticallyAddCubeDependencies=F
```

Default value: T

CacheFriendlyMalloc
Allows for memory alignment that is specific to the IBM Power Platform.

Parameter type: optional, static

Testing has shown that enabling this parameter provides the most benefit for high user count usage scenarios. Single or low user count usage scenarios may see little to no benefit. By default, CacheFriendlyMalloc=F.

To enable the option, add the following line to your tm1s.cfg file:

```
CacheFriendlyMalloc=T
```

CalculationThresholdForStorage
Defines a minimum number of rule calculations required for a single cell or Stargate view, beyond which the IBM TM1 Server stores the calculations for use during the current server session.

Parameter type: optional, dynamic

For example, when a user requests rule-derived values from the IBM TM1 Server, either from a single cell or a Stargate view, the server usually has to perform multiple rule calculations to arrive at the requested rule-derived values.

CalculationThresholdForStorage has a direct effect on memory consumption and performance. A high parameter value results in decreased memory consumption and slower performance. A low parameter value results in increased memory consumption and faster performance.

If you do not include CalculationThresholdForStorage in Tm1s.cfg, the default calculation threshold is 50.

CAMPortalVariableFile
The path to the `variables_TM1.xml` file in your IBM Cognos installation.

Parameter type: Required for IBM Cognos interoperability, static.

The CAMPortalVariableField parameter is required only when using IBM Cognos Analytics with Cognos TM1 Web and the Cognos TM1 Server.

Set this parameter with a relative path as follows:

`CAMPortalVariableFile=`**`portal\variables_TM1.xml`**

Note: The exact file location on the IBM Cognos Analytics server is: *`Cognos_location`*`\templates\ps\portal\variables_TM1.xml`.

CAMUseSSL
Specifies that all communications between TM1 and the IBM Cognos Analytics server must use SSL.

Parameter type: optional, static

Default value: False

CheckFeedersMaximumCells
Limits the number of cells checked by the Check Feeders option in the Cube Viewer.

The CheckFeedersMaximumCells is an optional parameter that you can add to Tm1s.cfg. If you do not include this parameter in Tm1s.cfg, Check Feeders checks 3,000,000 cells, by default.

Parameter type: optional, dynamic

When TM1 Server checks feeders from a highly consolidated cell, it must check all intersections that apply to the cell. In large applications, the TM1 Server will be unavailable for a significant amount of time while TM1 Server is checking all intersections.

To limit the number of cells checked when using Check Feeders (which in turn limits the amount of time the TM1 Server is unavailable), add CheckFeedersMaximumCells to Tm1s.cfg and set the parameter to the number of cells you want to check.

For example, to limit Check Feeders to 1,000,000 cells, enter the following line:

`CheckFeedersMaximumCells=1,000,000`

ClientCAMURI
The URI for the IBM Cognos Server IBM Cognos Connection used to authenticate TM1 clients.

Parameter type: optional, dynamic

The URI is specified in the form `http[s]://<host>/<cognos_location>/cgi-bin/cognos.cgi`.

For example, `http://10.121.25.121/ibmcognos/cgi-bin/cognos.cgi`

ClientExportSSLSvrCert
Specifies whether an IBM Cognos TM1 client should retrieve the certificate authority certificate, which was originally used to issue the TM1 server's certificate, from the Microsoft Windows certificate store.

Parameter type: optional (required for SSL), static

If `ClientExportSSLSvrCert=T`, the certificate authority certificate is exported from the certificate store on the client computer when requested by the TM1 client.

Default value: F

ClientExportSSLSvrKeyID
Specifies the identity key used by an IBM Cognos TM1 client to export the certificate authority certificate, which was originally used to issue the TM1 server's certificate, from the Microsoft Windows certificate store.

Parameter type: optional (required for SSL), static

ClientMessagePortNumber
Identifies a secondary port used to accept client messages concerning the progress and ultimate cancellation of a lengthy operation without tying up thread reserves.

Parameter type: optional, static for changes, dynamically set

If no port number is specified in the configuration file, the port number is dynamically chosen and set at server startup. However, it cannot be changed while the server is running.

This additional port ensures that other server requests can continue to process while waiting for a cancellation from the user.

By default, this port number is automatically and dynamically assigned when the IBM TM1 Server starts. You do not have to set ClientMessagePortNumber to a specific number unless firewalls or other network issues require the listener port to be a well-known number.

CAUTION: If you choose to set a specific value for the ClientMessagePortNumber parameter, instead of having it dynamically assigned, be sure to assign unique port numbers for all the TM1 Server and client message ports you are using. If you have two servers running on the same machine using the same port number, the message activity may cause a system conflict or hang.

See also, "PortNumber" on page 357 and "ProgressMessage" on page 358.

ClientPingCAMPassport
Indicates the interval, in seconds, that a client should ping the Cognos Authentication Management server to keep their passport alive.

Parameter type: optional, dynamic

If an error occurs or the passport expires the user will be disconnected from the IBM TM1 Server.

Default value: 900

ClientPropertiesSyncInterval
Specifies the frequency (in seconds) at which client properties are updated in the `}ClientProperties` control cube. Set to 1800 seconds to update cube every 30 minutes.

Frequent updating can cause unnecessary consumption of CPU time and may cause users from connecting/disconnecting until operation completes.

Parameter type: optional, dynamic

ClientVersionMaximum
Specifies the maximum client version that can connect to the IBM TM1 Server.

Parameter type: optional, dynamic

The ClientVersionMaximum parameter value is expressed as a version string using the following format:

m.n.tffhh

m = major release number,

n = minor release number

t = maintenance release number

ff = fix pack number

hh = hot fix number

Using this format, setting `ClientVersionMaximum = 9.4.10305` specifies that the maximum client version that can connect to the server is 9.4.1.

If your Tm1s.cfg file does not include a ClientVersionPrecision parameter value, only the major release number, minor release number, and maintenance release number are used to enforce compatability between client and server. Using the above example,

If ClientVersionMaximum is not explicitly set, the default value is equal to the currently installed server version.

Valid parameter values fall within the range x`00` up to the currently installed server version, where x is the major release number of the currently installed TM1 Server. For example, valid parameter values for TM1 Server 9.0 SP3 fall within the range 900 - 903.

You cannot set ClientVersionMaximum to a value greater than the currently installed server version. You cannot connect newer client versions to older server versions.

ClientVersionMinimum
Specifies the minimum client version that can connect to the IBM TM1 Server.

Parameter type: optional, dynamic

The ClientVersionMinimum parameter value is expressed as a version string using the following format:

m.n.tffhh

m = major release number,

n = minor release number

t = maintenance release number

ff = fix pack number

hh = hot fix number

Using this format, setting `ClientVersionMinimum = 9.4.10305` specifies that the minimum client version that can connect to the server is 9.4.1.

If your Tm1s.cfg file does not include a ClientVersionPrecision parameter value, only the major release number, minor release number, and maintenance release number are used to enforce compatability between client and server.

If the ClientVersionMinimum parameter is not explicitly set, the default value is 8.4.00000, which corresponds to version 8.4.

You should not set ClientVersionMinimum to a value lower than the major release number of the currently installed TM1 Server. There is no upper limit for ClientVersionMinimum. However, if ClientVersionMinimum is larger than ClientVersionMaximum, only clients with a version number equal to ClientVersionMaximum can connect to the server.

ClientVersionPrecision
This parameter lets you more precisely identify the minimum and maximum versions of clients that can connect to the IBM TM1 Server.

Parameter type: optional, dynamic

The ClientVersionMinimum and ClientVersionMaximum parameter values are expressed as a version string using the following format:

m.n.tffhh

m = major release number,

n = minor release number

t = maintenance release number

ff = fix pack number

hh = hot fix number

Using this format, the version string 9.4.10305 indicates major release 9, minor release 4, maintenance release 1, fix pack 3, and hot fix 5.

If ClientVersionPrecision is not set in Tm1s.cfg or if it is set to 0, only the major release number, minor release number, and maintenance release number are used to enforce compatability between client and server. In this case, any client from major release 9, minor release 4, maintenance release 1 and more recent can connect to the server.

You can enforce more precise server and client version compatability by adding ClientVersionPrecision to the Tm1s.cfg file and setting the parameter to one of the following values.

- 1 - Indicates that the fix pack number will be enforced, but not the hot fix number.
- 2 - Indicates that both the fix pack number and hot fix number will be enforced.

Examples

If ClientVersionMinumum = 9.4.10305 and ClientVersionPrecision = 1, only clients from major release 9, minor release 4, maintenance pack 1, fix pack 3 or later can connect to the server. In this case, the hot fix number is not enforced when determining server/client compatability.

If ClientVersionMinumum = 9.4.10305 and ClientVersionPrecision = 2, only clients from major release 9, minor release 4, maintenance pack 1, fix pack 3, hot fix 5 or later can connect to the server. In this case, both the fix pack and hot fix numbers are enforced when determining server/client compatability.

CognosMDX.AggregateByAncestorRef
When possible, replaces aggregation over a member set with a reference to an ancestor, if the aggregated member set comprises a complete set of descendants and all members have the weight 1.

For example, the aggregation `aggregate(children(<Member>))` might be replaced with a reference to `<Member>`.

Parameter type: optional, static

This parameter is applicable only when using TM1 with IBM Cognos Analytics.

To enable **`CognosMDX.AggregateByAncestorRef`**, add the following line to the `tm1s.cfg` file:

```
CognosMDX.AggregateByAncestorRef=true
```

Default value: false

CognosMDX.CellCacheEnable
Allows the IBM Cognos MDX engine to modify TM1 consolidation and calculation cell cache strategies.

Parameter type: optional, static

This parameter is applicable only when using TM1 with Cognos Analytics.

Default value: true

CognosMDX.PrefilterWithPXJ
Expands the data source provider cross join approach to nested filtered sets.

Parameter type: optional, static

This parameter is applicable only when using TM1 with IBM Cognos Analytics.

This parameter is active only in the following cases: ·

- CognosMDX.UseProviderCrossJoinThreshold has a value greater than 0 in the `tm1s.cfg` file
- **UseProviderCrossJoinThreshold** has a value greater than 0 in the Cognos Analytics `qfs_config.xml` configuration file.

To enable **CognosMDX.PrefilterWithPXJ**, add the following line to the`tm1s.cfg` file:

```
CognosMDX.PrefilterWithPXJ=true
```

Default value: false

CognosMDX.SimpleCellsUseOPTSDK
Applies IBM Cognos MDX engine consolidation and calculation cell cache strategies to all cells in query results.

Parameter type: optional, static

This parameter is applicable only when using TM1 with Cognos Analytics.

When CognosMDX.SimpleCellsUseOPTSDK is not enabled, consolidation and calculation cell cache strategies are applied only to query result cells associated with calculated members.

Default value: true

CognosMDX.UseProviderCrossJoinThreshold
Applies the data source provider cross join strategy, even if it is not explicitly enabled in IBM Cognos Analytics.

Parameter type: optional, static

This parameter is applicable only when using TM1 with Cognos Analytics.

When you enable **CognosMDX.UseProviderCrossJoinThreshold**, this has the same effect as enabling the **UseProviderCrossJoinThreshold** parameter in the `qfs_config.xml` file of Cognos Analytics.

UseProviderCrossJoinThreshold controls whether combinations of members on an edge, which have no measure values, are retrieved from the TM1 server. **UseProviderCrossJoinThreshold** is enabled when it has a value greater than 0.

Note: If **UseProviderCrossJoinThreshold** is enabled in the Cognos Analytics `qfs_config.xml`, it takes precedence over the **CognosMDX.UseProviderCrossJoinThreshold** parameter in the `tm1s.cfg` file.

To enable **CognosMDX.UseProviderCrossJoinThreshold**, add it to the `tm1s.cfg` file and specify a value greater than 0, for example:

```
CognosMDX.UseProviderCrossJoinThreshold=1000
```

Default value: 0

CognosTM1InterfacePath
Specifies the location of the IBM Cognos Analytics server to use when importing data from a Cognos Package to Cognos TM1 using the Cognos TM1 Package Connector.

See the *TM1 TurboIntegrator* guide for more information.

Parameter type: optional except when using the Cognos TM1 Package Connector, static

CreateNewCAMClients
The CreateNewCAMClients server configuration parameter determines how the TM1 server handles an attempt to log on to the server with CAM credentials in the absence of a corresponding TM1 client.

Parameter type: optional, dynamic

When `CreateNewCAMClients=T` and a logon is attempted with a valid set of CAM credentials, but a corresponding TM1 client does not exist, the TM1 client is created during the logon. This is the default behavior when CreateNewCAMClients is not set in the `Tm1s.cfg` file.

When `CreateNewCAMClients=F` and a logon is attempted with a valid set of CAM credentials, but a corresponding TM1 client does not exist, the TM1 client is *not* created and the logon is rejected.

Through the C API, the error code is SystemServerClientNotFound. Through the HTTP endpoint, a 401 Unauthorized error is returned, with authentication information dependent on server configuration settings. Additionally, when the logon is rejected a log message is printed to the CAMSecurity.ClientCreation logger at the WARN level, if this level of logging is enabled. The log message includes the text "CAM Client not found, and not created due to CreateNewCAMClients config setting."

DataBaseDirectory
Specifies the data directory from which the server loads cubes, dimensions, and other objects.

You can list multiple data directories by separating them with semicolons.

Parameter type: required, static

For details, see “Data directory overview” on page 58.

DefaultMeasuresDimension
Identifies if a measures dimension is created. IBM TM1 Server does not require that a measures dimension be defined for a cube. You can optionally define a measures dimension by modifying the cube properties.

For more information, see the topic, "`}CubeProperties`", in *TM1 Operations*.

Parameter type: optional but some OLAP applications may require this parameter (see description below for details),static

Some OLAP applications do require that a measures dimension be present in all cubes, and may fail if such a dimension is not present. To accommodate these applications, set `DefaultMeasureDimension=T` to instruct the TM1 Server to automatically define the last dimension in a cube as the measures dimension when a new cube is created on the TM1 Server.

If DefaultMeasureDimension is set to F or is omitted from Tm1s.cfg, a measures dimension is not defined for when a cube is created.

DisableMemoryCache
Disables the memory cache used by IBM Cognos TM1 memory manager.

Parameter type: optional, static

Enable this parameter only to debug memory leaks. When you enable this parameter, there might be a decrease in server performance.

For example, when `DisableMemoryCache=T` is set it disables the memory cache used by IBM Cognos TM1 memory manager. The default setting is `DisableMemoryCache=F`.

DisableSandboxing
Determines if users have the ability to use sandboxes across the server.

Parameter type: optional, dynamic

By default, this parameter is not present in the configuration file which enables the sandbox capability for all users.

```
DisableSandboxing=F
```

When sandboxing is turned on in this way, administrators can Deny or Grant the use of Personal Workspaces or multiple sandboxes on a per usergroup basis using Capability Assignments. For more details, see "Capability Assignments" in *TM1 Operations*.

To put all usergroups into Direct Writeback mode, add the following line to Tm1s.cfg:

```
DisableSandboxing=T
```

When `DisableSandboxing=T`, the Capability Assignments are ignored.

Important: Do not use `DisableSandboxing=T` in the TM1 Server configuration file for any TM1 Server that deploys and supports TM1 Applications. TM1 Servers that deploy and support TM1 Applications require that the sandbox feature is enabled in the TM1 Server configuration file.

Display_Info_DBType_R8
Display_Info_DBType_R8 instructs the IBM TM1 Server to store DISPLAY_INFO column data as DBTYPE_R8.

Parameter type: optional, static

Important: Contact customer support to determine if this parameter is applicable to your TM1 Server.

By default, TM1 Server stores the DISPLAY_INFO as DBTYPE_UI4. When the TM1 Server OLE DB provider processes a request from ADO 2.7 for the DISPLAY_INFO column data, the provider has to convert column data from DBTYPE_UI4 to a DBTYPE_R8. The TM1 Server OLE DB provider then returns the converted column data to the OLE DB client (ADO in this case).

ADO 2.7 expects IRowset::GetData to return an integer, and uses only the first 4 bytes of the converted column data. However, the returned data is an 8-byte real number, and as a result, all information in the last 4 bytes is lost. This causes ADO 2.7 to return zeroes for all the items of the DISPLAY_INFO column.

When you include the Display_Info_DBType_R8 parameter in the Tm1s.cfg file and set the parameter to T, the TM1 Server stores DISPLAY_INFO column data as DBTYPE_R8 with the relevant 4 bytes of information in the first 4 bytes. The Display_Info_DBType_R8 parameter ensures that the information is not lost when ADO converts the data back to an integer of 4 bytes. The parameter also ensures that ADO 2.7 returns the correct values for the properties of an axis rowset member. Additionally, the parameter ensures that any OLE DB client (such as ADO 2.6) requesting the DISPLAY_INFO property as a 4 byte value, gets the correct values.

DownTime
Specifies a time when the server will come down automatically.

Parameter type: optional, dynamic

The format of the DownTime parameter is *dd:hh:mm* where:

- *dd* is the number of days from today. (For example, 00 is today, and 01 is tomorrow.)
- *hhmm* is the time of day in 24-hour format.

For example, `DownTime = 01:03:30` specifies that you want to bring the server down on the following day at 3:30 in the morning.

The DownTime parameter is not available when you run the IBM TM1 Server as a Windows service.

When you use the DownTime parameter on a TM1 Server on UNIX, you must set the RunningInBackground parameter to T. If `RunningInBackground=F`, the server prompts for confirmation before shutting down and cannot shut down without manual confirmation from an administrator.

EnableNewHierarchyCreation
Specifies whether multiple hierarchy creation is enabled or disabled.

Parameter type: optional (required for multiple hierarchies), static

By default, the **EnableNewHierarchyCreation** parameter is set to F (false). If you are working with multiple hierarchies, change the parameter setting to T (true). *TM1 Reference* lists the TurboIntegrator functions to manage dimensions and equivalent functions to manage specific hierarchies within dimensions.

EnableSandboxDimension
Specifies whether the virtual sandbox dimension feature is enabled.

Parameter type: optional, dynamic

By default, the **EnableSandboxDimension** parameter is set to `False`.

A sandbox property (**IncludeInSandboxDimension**) was introduced to specify whether a sandbox is included in the virtual sandbox dimension. For older sandboxes, the value of the **IncludeInSandboxDimension** property is false. Including sandboxes in the virtual sandbox dimension allows users to compare multiple sandbox scenarios in a single view. For more information, see **IncludeInSandboxDimension** in the Sandbox entity in the *TM1 REST API* documentation on IBM Knowledge Center.

EnableTIDebugging
Specifies whether TurboIntegrator debugging capabilities are enabled or disabled.

Parameter type: optional, dynamic

By default, the **EnableTIDebugging** parameter is set to F (false).

If you want to use any of the TurboIntegrator process debugging capabilities of the TM1 REST API, you must change the parameter setting to T (true). Similarly, you must set the parameter to T if you want to use the TurboIntegrator Debugger utility, which is currently available in preview release on IBM developerWorks.

Important: Debugging TurboIntegrator processes can consume significant system resources. It is recommended that you set **EnableTIDebugging=T** only while debugging processes in a development environment and that the parameter not be enabled in a production environment.

EventLogging
Indicates whether the event logger is turned on.

Critical events are logged in the event log file. The file is expected to be consumed by third-party tools.

Parameter type: optional, dynamic

Default: T

If the `EventLogging` parameter is set to F, then the event log file is not written to.

To set the parameter to T, add the following line to Tm1s.cfg:

```
EventLogging=T
```

EventScanFrequency
Specifies the period to check the collection of threads, where 1 is the minimum number and 0 disables the scan.

Parameter type: optional, dynamic

Default: 1(s)

To disable event scanning, add the following line to Tm1s.cfg:

```
EventScanFrequency=0
```

EventThreshold.PooledMemoryInMB
Specifies the threshold for which a message is printed for the event that the server's pooled memory exceeds a certain value.

Parameter type: optional, dynamic

The memory footprint of every model is different. This parameter is set to 0 (disabled) by default and must be adjusted by the administrator of the TM1 server.

Default: 0

To enable the threshold, add the following line to Tm1s.cfg:

```
EventThreshold.PooledMemoryInMB=0
```

EventThreshold.ThreadBlockingNumber
Indicates that a warning is printed when a thread blocks at least the specified number of threads.

Parameter type: optional, dynamic

Default: 5

To set the number of threads, add the following line to Tm1s.cfg:

```
EventThreshold.ThreadBlockingNumber=5
```

EventThreshold.ThreadRunningTime
Indicates that a warning is printed when a thread has been running for the specified length of time.

Parameter type: optional, dynamic

Default: 600 (s)

To set the number of threads, add the following line to Tm1s.cfg:

```
EventThreshold.ThreadRunningTime=600
```

EventThreshold.ThreadWaitingTime
Indicates that a warning is printed when a thread has been blocked by another thread for the specified length of time.

Parameter type: optional, dynamic

Default: 20 (s)

To set the waiting time, add the following line to Tm1s.cfg:

```
EventThreshold.ThreadWaitingTime=20
```

ExcelWebPublishEnabled
Enables the publication of Microsoft Excel files to IBM Cognos TM1 Web, as well as the export of Microsoft Excel files from TM1 Web, when Microsoft Excel is not installed on the web server. Enable the ExcelWebPublishEnabled parameter when you have TM1 10.1 clients that connect to TM1 10.2.2 servers.

Parameter type: optional, dynamic

If `ExcelWebPublishEnabled=T`, Microsoft Excel files in Cognos TM1 Applications can be published to TM1 Web without using Microsoft Excel on the web server. Similarly, Websheets and Cube View can be exported from TM1 Web without using Microsoft Excel on the web server.

When Microsoft Excel is not available on the web server, Microsoft Excel files in TM1 Applications must be explicitly published to TM1 Web.

For details about the procedure required to publish Microsoft Excel files, see *TM1 Developer*.

For details about limitations exporting from TM1 Web without using Microsoft Excel on the web server, see *TM1 Perspectives, TM1 Architect, and TM1 Web*.

Restriction: You cannot publish Microsoft Excel 2007 .xlsx files to TM1 Web when Microsoft Excel is not available on the web server. These files must be saved in Microsoft Excel 2003 .xls format if you want to publish them to TM1 Web.

Default value: F

FileRetry.Count
Specifies the number of retry attempts.

Parameter type: optional, dynamic

By default, TM1 server will shutdown when transaction log updates fail. Specifying **FileRetry.FileSpec** defers the server shutdown while the server attempts to reestablish a connection. **FileRetry.Count** defines the number of retry attempts as an integer value. If the network failure persists after the specified number of retries, TM1 server will self-terminate.

Default value: 5

FileRetry.Delay
Specifies the time delay between retry attempts.

Parameter type: optional, dynamic

By default, TM1 server will shutdown when transaction log updates fail. Specifying **FileRetry.FileSpec** defers the server shutdown while the server attempts to reestablish a connection. **FileRetry.Delay** defines the delay (in milliseconds) between retry attempts. If the network failure persists after the specified number of retries, TM1 server will self-terminate.

Default value: 2000

FileRetry.FileSpec
Network issues can cause transaction log updates to fail, which might force a TM1 server shutdown. This configuration parameter specifies the directory paths of the affected log files.

Parameter type: optional, dynamic

By default, TM1 server shuts down when transaction log updates fail. Specifying **FileRetry.FileSpec** defers the server shutdown while the server attempts to reestablish a connection.

The number of retry attempts and delay between attempts is determined by **FileRetry.Count** and **FileRetry.Delay**, respectively. If the network failure persists after the specified number of retries, TM1 server will self-terminate.

As of IBM Planning Analytics Local version 2.0.3, if this setting is not specified in the tms1.cfg file (default), the retry logic is applied to all files in the logs directory only.

To turn off the retry logic, specify one of the following options in the tms1.cfg file:

- `FileRetry.FileSpec=""` (explicitly setting the value to the empty value)
- `FileRetry.Count=0`

Use a semi-colon delimiter to specify multiple paths. For example,

1. FileRetry.FileSpec=c:\production\model\Logs

   On a write failure, the retry logic is applied to all files in the "c:\production\model\Logs" directory and below.

2. FileRetry.FileSpec=c:\production\model\Logs;\\network.ibm.com\production\Logs

   On a write failure, the retry logic is applied to all files in the "c:\production\model\Logs" directory and the network share of \\network.ibm.com\production\Logs and below.

Note: Messages are written to the server log at the WARN level when this logic is enabled.

- "Error writing to <FILENAME>, retry in progress." is written when a write operation fails and a retry attempt is in progress.
- "Error writing to <FILENAME>, retry attempt failed." is written when the retry attempt fails.

FIPSOperationMode
Controls the level of support for Federal Information Processing Standards (FIPS).

Parameter type: optional, static

Allowed values:

- 1: FIPS 140-2 level 1 approved ciphers and operation
- 2: FIPS 140-2 level 1 approved ciphers
- 3: Disabled

Default value: 1

To change the level of support for FIPS to level 1 approved ciphers, for example, add the following line to the `tm1s.cfg` file:

```
FIPSOperationMode=2
```

ForceReevaluationOfFeedersForFedCellsOnDataChange
When this parameter is set, a feeder statement is forced to be re-evaluated when data changes.

Parameter type: optional, static

When the IBM Cognos TM1 server computes feeders, the process can be a "chain" of feeders, where cell A feeds cell B, and there is a feeder rule for cell B, so that rule runs and feeds cell C, etc. Feeders for numeric cells are evaluated only when a cell goes from empty to some non-zero value since any non-zero value in the cell would already have set any feeders.

There is no need to re-evaluate the feeders when a cell changes from one non-zero value to another.

Normally, when evaluating feeders, if a feeder rule is evaluated and the target cell is already fed, the feeding process stops.

Feeder rules are not processed any further since the presence of the feeder in the target cell indicates that the feeder rules for the target cell have already been run, and there is no need to run them again.

Consider the following feeder rules:

```
['A']=>['B'];
```

The feeder rule for cell B depends on some cube data value:

```
[B]=>DB(cube-name,!dim1,DB(cube2-name,…),!dim2);['C']=>['D'];['X']=>['B'];
```

When the feeder rule for B is initially evaluated, the `DB(cube2-name,…)` is evaluated to produce an element name, such as C. Therefore B feeds C and then C feeds D. When that cell X goes from zero to non-zero, this change also feeds B. But B is already fed, so the feeding process stops, and the feeder rule for B never evaluates, so any "change" in the output of the rule, which may come about because of an underlying data change targeted by the `DB(…)` statement will not be evaluated. If the parameter `ForceReevaluationOfFeedersForFedCellsOnDataChange` is set, then the presence of a feeder in cell B will not terminate feeder processing. Rather, the feeder rule for B will run. Because the feeder rule for B is data dependent, the target for the feeder may be the former C, or may be some other cell, and that cell will be fed. Note that setting this parameter will force more feeder evaluations, which may have a performance impact.

To turn on this parameter set `ForceReevaluationOfFeedersForFedCellsOnDataChange=T`.

HTTPPortNumber
Sets the port number on which the TM1 Server listens for incoming HTTP(S) requests.

Parameter type: required, static

The IBM Planning Analytics TM1 Server services the REST API using this HTTP(S) channel. The server accepts either standard HTTP or SSL secured HTTPS connections depending on the UseSSL parameter

(see “UseSSL” on page 371). If UseSSL is set to T, switching the use of SSL on, then the server will accept only HTTPS connections. If UseSSL is set to F, the server will accept unsecured, HTTP connections.

If **HTTPPortNumber** is not defined in your tm1s.cfg file, then port number "5001" will be assigned automatically.

Note: Port numbers must be unique across *all* services running on a computer, not just across TM1 servers and not just across the HTTP ports of TM1 servers.

HTTPSessionTimeoutMinutes
Sets the timeout value for authentication sessions for the TM1 REST API.

Parameter type: optional, dynamic

When you use the TM1 REST API, your application needs to authenticate with the TM1 Server. This parameter sets the timeout, in minutes, for this authentication. If a session times out, requests made with the old session ID return `401 Unauthorized`.

The default value is 20.

IdleConnectionTimeOutSeconds
Specifies a timeout limit for idle client connections, in seconds.

Parameter type: optional, dynamic

For example, if you include the following line in Tm1s.cfg, the server disconnects idle client connections after 900 seconds.

```
IdleConnectionTimeOutSeconds=900
```

IndexStoreDirectory
Added in v2.0.5 Designates a folder to store index files, including bookmark files.

Parameter type: optional, static

By default, this parameter is undefined and bookmark (*.bm) files will appear in the same folder as its corresponding main file.

IntegratedSecurityMode
This parameter sets the user authentication mode to be used by the IBM TM1 Server.

Parameter type: optional, dynamic

Although the parameter name focuses on Integrated Security Mode, the security modes are used to set other kinds of security.

Note: If you change the security mode without restarting the TM1 Server, the change applies only to new client connections. If you want to ensure that all clients are authenticated with the new security mode, all clients must be logged off by the administrator.

Use the following format to set this parameter:

`IntegratedSecurityMode=`*x*

where *x* can be a value for one of the following security modes.

Security Mode	Description
1	The server uses secure mode (standard TM1 security). With this authentication, the TM1 Server checks the user name and password against the user names and passwords in the TM1 database.
2	This mode allows you to switch back and forth between integrated login and native TM1 security.

Security Mode	Description
3	The server uses Integrated Login. Integrated Login uses Microsoft Windows network authentication to control access to TM1 data. If you use this security mode, you must also set the “SecurityPackageName” on page 361 parameter. For more details, see “Integrated login” on page 235.
4	The server uses IBM Cognos Analytics security authentication. Considerations when using this mode: In TM1 Server, Cognos Analytics users can belong only to Cognos Analytics groups and any of these predefined TM1 administrator groups (ADMIN, DataAdmin, SecurityAdmin, and OperationsAdmin). Membership in TM1 user (non-administrator) groups is not supported for Cognos Analytics users when they log in to TM1 Server. You can not use TM1 Server to permanently assign a Cognos Analytics user to another Cognos Analytics group. Any user assignment you make in TM1 Server to a Cognos Analytics group is not saved back to Cognos Analytics. When a Cognos Analytics user logs in to TM1 Server, the group assignments in Cognos Analytics override any Cognos Analytics group assignments made in TM1 Server.
5	The server uses Cognos Analytics security authentication and supports user groups from both TM1 Server and Cognos Analytics. Use security mode 5 when you are running IBM Cognos TM1 Applications with Cognos Analytics security. Considerations when using this mode: • In TM1 Server, Cognos Analytics users can belong to both Cognos Analytics and TM1 groups. • You can not use TM1 Server to permanently assign a Cognos Analytics user to another Cognos Analytics group. Any user assignment you make in TM1 Server to a Cognos Analytics group is not saved back to Cognos Analytics. When a Cognos Analytics user logs in to TM1 Server, the group assignments in Cognos Analytics override any Cognos Analytics group assignments made in TM1 Server. • If IntegratedSecurityMode=5 is used for the TM1 Server and IBM Cognos TM1 Applications, it is not possible to assign rights to native TM1 groups within the Manage rights dialog. Only Cognos Groups, imported into the TM1 Server, are available.

IPAddressV4
This parameter lets you specify the IPv4 address for an individual IBM TM1 Server.

Parameter type: optional, static

A physical server/host can have one internal IP address for clients within a firewall and a different external IP address for clients outside the firewall. By default, all TM1 client requests are routed through the external (public) adapter, which would require updates to firewall profiles. By assigning the internal IP address of TM1 Server to the **IPAddressV4** parameter, traffic is routed through the private adapter and firewall profiles do not require updates.

For example:

```
IPAddressV4="10.109.241.121"
```

Note: This parameter replaces the old **IPAddress** parameters, which is now obsolete.

IPAddressV6
This parameter lets you specify the IPv6 address for an individual IBM TM1 Server.

Parameter type: optional, static

A physical server/host can have one internal IP address for clients within a firewall and a different external IP address for clients outside the firewall. By default, all TM1 client requests are routed through the external (public) adapter, which would require updates to firewall profiles. By assigning the internal IP address of TM1 Server to the **IPAddressV6** parameter, traffic is routed through the private adapter and firewall profiles do not require updates.

For example:

```
IPAddressV6="0ff1:aa00:4125:2:a05:f7b1:61c2:a341"
```

Note: This parameter replaces the old **IPAddress** parameters, which is now obsolete.

IPVersion
This parameter indicates the Internet protocol used by the IBM TM1 Server to identify IP addresses on the network.

For example, to specify that your network uses the IPV6 protocol, add the parameter `IPVersion=ipv6` to the `tm1s.cfg` file.

Parameter type: optional, static

Valid settings are:

- `ipv4`

  Default setting. Used for IPv4 networks.
- `dual`

  Used to transition from IPv4 to IPv6. Both protocols are supported.
- `ipv6`

  Used for IPv6 networks.

Configuration notes

If you set this parameter to `ipv6` or `dual`, use the Cognos Configuration tool to change the **TM1 Admin Server IP support** option to reflect the change.

To allow clients to recognize this change, add and set the **TM1_IPVersion** environment variable in the operating system to `ipv6` or `dual`.

Setting this parameter to dual or IPV6 without having the appropriate network running can result in performance degradation.

Note: In some cases, depending on your network environment and DNS configuration, you may need to also add the IPv6 address to the `/etc/hosts` operating system file on UNIX and Microsoft Windows to successfully run the Cognos TM1 Admin Server and Cognos TM1 Server in IPv6 mode.

For complete details on configuring all Cognos TM1 components to use IPv6, see "Configuring TM1 Server to use IPv6" on page 92.

JavaClassPath
Use this parameter to make third-party Java libraries available to the IBM Cognos TM1 Server.

Parameter type: optional, static

For example, to allow a Java extension to use classes inside a file called db2cc4.jar file (a Db2 JDBC driver), use the following:

```
JavaClassPath=C:\Development\Java\DB2JDBC\db2jcc4.jar
```

You can specify multiple references by separating them with semicolons.

JavaJVMArgs
Specifies a list of arguments to pass to the Java Virtual Machine (JVM). Arguments are separated by a space and the dash character. For example, `JavaJVMArgs=-argument1=xxx -argument2=yyy`.

Parameter type: optional, static

If you want to debug a process, you might specify these arguments:

```
JavaJVMArgs=-Xrunjdwp:transport=dt_socket -server=y -suspend=n -address=1044
```

The arguments you can use depend on the specific JVM you are using.

JavaJVMPath
This parameter sets the path to the Java Virtual Machine .dll file (jvm.dll), which is required to run Java from IBM Cognos TM1 TurboIntegrator.

Parameter type: optional, static

By default, this parameter is not present in the tm1s.cfg file.

To enable Java integration with TurboIntegrator, add the following line to your tm1s.cfg file:

`JavaJVMPath=<full_path_to_jvm.dll>`

keyfile
Specifies the file path to the key database file. The key database file contains the server certificate and trusted certificate authorities. The server certificate is used by the TM1 server and the TM1 Admin server.

Parameter type: optional, static

The key database file that is provided with TM1 is `[installation_location]/ssl/ibmtm1.kdb`

To specify a different key database file, add the keyfile parameter to the `tm1s.cfg` file and specify the relative or absolute path to the `.kdb` file.

For example:

```
keyfile=./ssl/filename.kdb
```

keylabel
Specifies the label of the server certificate in the key database file.

Parameter type: optional, static

For example:

```
keylabel=TM1_Certificate
```

keystashfile
Specifies the file path to the key database password file. The key database password file is the key store that contains the password to the key database file.

Parameter type: optional, static

The key database password file that is provided with TM1 is `[installation_location]/ssl/ibmtm1.sth`

To specify a different key database password file, add the keystashfile parameter to the `tm1s.cfg` file and specify the relative or absolute path to the `.sth` file.

For example:

```
keystashfile=./ssl/filename.sth
```

Language
Sets the language used for the IBM TM1 Server. This parameter applies to messages generated by the server and is also used in the user interface of the server dialog box when you run the server as an application instead of a Windows service.

Parameter type: optional, static

Valid values currently are:

Language	Code
Brazilian Portuguese	bra
Croatian	hrv
Czech	csy
Chinese (Simplified)	sch
Chinese (Traditional)	tch
Danish	dan
Dutch	nld
German	deu
Finnish	fin
French	fra
Hungarian	hun
Italian	ita
Japanese	jpn
Kazakh	kaz
Korean	kor
Norwegian	nor
Polish	pol
Romanian	rom
Russian	rus
Spanish	esp
Slovenian	slv
Swedish	sve
Thai	tha
Turkish	trk

LDAPHost
Specifies the domain name or dotted string representation of the IP address of the LDAP server host.

Parameter type: optional, static

If you do not enter a value for LDAPHost, TM1 Server uses the default value, localhost.

LDAPPasswordFile
Defines the password file used when LDAPUseServerAccount is not used. This is the full path of the .dat file that contains the encrypted password for the IBM TM1 Server Admin Server's private key.

Parameter type: optional unless “LDAPUseServerAccount” on page 343=F, static

This parameter uses the full path to a .dat file.

LDAPPasswordKeyFile
Defines the password key used when LDAPUseServerAccount is not used.

Parameter type: optional unless “LDAPUseServerAccount” on page 343=F, static

This parameter uses the full path of the .dat file that contains the key used to encrypt and decrypt the password for the private key.

This file must be generated using the tm1crypt utility, as described in “Run the TM1Crypt utility” on page 297.

LDAPPort
Specifies the port IBM TM1 Server uses to bind to an LDAP server.

Parameter type: optional, static

Specify a secure (SSL) port, for example, 636.

Default value: 389 (an unsecured port)

LDAPSearchBase
Specifies the node in the LDAP tree where TM1 Server begins searching for valid users.

Parameter type: optional, static

A base distinguished name (DN) in the LDAP directory. For example:

```
ou=people,o=company.com
```

For example, if the distinguished names are of the form:

```
uid-bjensen, ou-people, o=company.com
```

Then the search base would be:

```
ou-people, o=company.com
```

LDAPSearchField
The name of the LDAP attribute that is expected to contain the name of the TM1 user being validated.

Parameter type: optional, static

If you do not enter an LDAPSearchField value, the default value is cn, which is also the default value for Microsoft Active Directory.

LDAPSkipSSLCertVerification
Skips the certificate trust verification step for the SSL certificate used to authenticate to an LDAP server. This parameter is applicable only when LDAPVerifyServerSSLCert=T.

Parameter type: optional, static

If trust verification does not work, you can skip the trust verification step by specifying `LDAPSkipSSLCertVerification=T`. In this case, TM1 does not verify the server certificate at all but simply accepts it.

Note: Before working with this parameter, you should be familiar with SSL and LDAP.

Default value: F

LDAPSkipSSLCRLVerification
Skips CRL checking for the SSL certificate used to authenticate to an LDAP server. This parameter is applicable only when LDAPVerifyServerSSLCert=T.

Parameter type: optional, static

This parameter is not required if LDAPVerifyServerSSLCert=F. The Microsoft Windows API can tolerate an empty or non-existent CRL certificate.

Note: Before working with this parameter, you should be familiar with SSL and LDAP.

Default value: F

LDAPUseServerAccount
Determines if a password is required to connect to the server when using LDAP authentication.

Parameter type: optional, static

- To connect directly to the LDAP server using integrated authentication, set this parameter to T. Set this parameter to T whenever the IBM TM1 Server and LDAP server exist on the same domain.
- To use a password before connecting, set this parameter to F. When LDAPUseServerAccount is set to F, you must also set the "LDAPPasswordFile" on page 342 and "LDAPPasswordKeyFile" on page 342 to successfully connect to the LDAP server using SSL.

LDAPVerifyCertServerName
Specifies a server to use during the SSL certificate verification process for LDAP server authentication. This parameter is applicable only when LDAPVerifyServerSSLCert=T.

Parameter type: optional, static

Note: Before working with this parameter, you should be familiar with SSL and LDAP.

Use this parameter to specify the servers TM1 should use to verify the received SSL certificate.

All of the server names you want to use for certificate verification must be listed in separate LDAPVerifyCertServerName entries. The entries must exactly match the name (subject) of the certificate presented to TM1 in the SSL handshake by the server on the other end.

Specify LDAPVerifyCertServerName in the tm1s.cfg file of each TM1 server that is using LDAP.

```
LDAPVerifyCertServerName=<server_cert_subject>
```

Replace `server_cert_subject` with a server name or IP addresses. Create an entry for each server you want to use For example:

```
LDAPVerifyCertServerName=abc99.mydomain.com
LDAPVerifyCertServerName=xyz99.mydomain.com
```

Default value: F

LDAPVerifyServerSSLCert
Delegates the verification of the SSL certificate to TM1. This parameter is useful, for example, when you are using LDAP with a proxy server.

Parameter type: optional, static

Note: Before working with this parameter, you should be familiar with SSL and LDAP.

Typically, TM1 leverages the Microsoft Windows API to verify SSL certificates. For this process to succeed, the certificate name and the LDAP server host name must match. If you are using a proxy, however, these names may not match, causing the verification to fail. In this case, you can set `LDAPVerifyServerSSLCert=T` to have TM1 perform the certificate verification.

When `LDAPVerifyServerSSLCert=T`, TM1 performs the two steps of verification (verifying the trust relationship to the certificate and checking the CRL) like the Windows API would have done, but with a slightly different approach.

1. Instead of verifying the received certificate against the configured host name, TM1 looks at the list of server names specified by LDAPVerifyCertServerName.
2. If the certificate name matches one of the servers specified by LDAPVerifyCertServerName, TM1 calls the Microsoft Windows API and requests it to verify this single certificate only.

   Note: The correct trusted root certificate authority (CA) must already have been imported to the Microsoft Windows Certificate Store.

   You can skip the trust verification step by specifying LDAPSkipSSLCertVerification=T. In this case, TM1 does not verify the server certificate at all but simply accepts it.
3. Once the trust verification is confirmed (or skipped), TM1 calls the Microsoft Windows API to check the CRL.

   Note: The CRL certificate for the trusted root must already have been imported to the Microsoft Windows Certificate Store.

   If the CRL certificate does not exist in the Microsoft Windows Certificate Store, the process will fail. You can skip the CRL step by specifying LDAPSkipSSLCRLVerification=T.
4. If all the previous steps finish successfully, the SSL handshake is complete. TM1 now attempts to authenticate to the LDAP server.

For troubleshooting information, see "Troubleshooting LDAP authentication" on page 249.

LDAPWellKnownUserName
Specifies the user name used by the IBM TM1 Server to log in to LDAP and look up the name submitted by the user.

Parameter type: optional unless "LDAPUseServerAccount" on page 343=F,, static

The value of this parameter can be any LDAP distinguished name.

For example:

```
uid=bjensen,ou=people,o=company.com
```

LoadPrivateSubsetsOnStartup
This configuration parameter determines if private subsets are loaded when the TM1 server starts.

Parameter type: optional, static

Lock contention issues can occur when private subsets are loaded on-demand (when a user requests the subset). You can avoid lock contention by loading all private subsets from all users into memory upon server startup, by adding

```
LoadPrivateSubsetsOnStartup=T
```

to the `Tm1s.cfg` file for your server.

If `LoadPrivateSubsetsOnStartup=F`, or is not present in `Tm1s.cfg`, private subsets are loaded on-demand.

LoadPublicViewsAndSubsetsAtStartup
Added in v2.0.8 This configuration parameter enables whether public subsets and views are loaded when the TM1 Server starts and keeps them loaded to avoid lock contention during the first use.

Parameter type: optional, static

Default: `LoadPublicViewsAndSubsetsAtStartup=T`

If `LoadPublicViewsAndSubsetsAtStartup=F`, public views subsets are loaded on-demand for your TM1 Server.

Lock contention issues can occur when public views and subsets are loaded on-demand (when a user requests the subset). You can avoid lock contention on server startup by loading all public views and

subsets from all users into memory and keeping them loaded to avoid lock contention during the first use. Add the following setting to the `tm1s.cfg` file for your TM1 Server.

```
LoadPublicViewsAndSubsetsAtStartup=T
```

LockPagesInMemory
When this parameter is enabled, memory pages used by the IBM TM1 Server process are held in memory (locked) and do not page out to disk under any circumstances. This retains the pages in memory over an idle period, making access to TM1 data faster after the idle period.

This parameter is applicable only to TM1® Servers running on a Microsoft® Windows 64-bit operating system.

Parameter type: optional, static

If a TM1 Server running on a Windows 64-bit operating system is idle for a long period of time, physical memory taken up by the TM1 Server will page out to disk. This is a function of the Windows 64-bit operating system and not TM1 Server. This can cause performance degradation in large TM1 Server databases when trying to access data after an idle period.

To maximize performance when running a largeTM1 Server database on 64-bit Windows, set `LockPagesInMemory=T` in the Tm1s.cfg file. If you change this parameter value, restart the TM1 Server to apply the new value.

Note: This parameter has no effect on performance for an actively running TM1 system, in which TM1 data is regularly accessed.

When this parameter is enabled, Windows still trims pages from the TM1 Server process space, but does not page them to disk. This benefits TM1 Server performance because objects are no longer placed in virtual memory, but instead remain in physical RAM.

When LockPagesInMemory is not present in Tm1s.cfg, or if the parameter is set to F, the following behavior is expected:

When a TM1 Server running on a Windows 64-bit operating system is idle for a period of time, physical memory taken up by the TM1 Server is paged out to disk. This paging to disk happens even if there are no other processes contending for the memory pages. Essentially, Windows leaves the memory pages vacant and available. This is a function of the Windows 64-bit operating system and not TM1 Server.

This background paging by the Windows operating system can cause initial performance degradation in large TM1 databases when trying to access TM1 data after an idle period. For example, when the TM1 system has been inactive overnight the first access in the morning will take longer, as the required memory pages containing TM1 data are read from disk back into memory. Also, if the TM1 model is such that there are large cube data areas that are accessed infrequently, the memory holding that cube information may page out to disk. When a request is made for that cube data the request will take longer, as these infrequently used pages must be read back into memory.

When `LockPagesInMemory=T` in Tm1s.cfg, the memory pages containing TM1 data are locked into memory and are not available for use at any time by any other process. This can make the system overall perform poorly if there are other tasks that need to run on the TM1 machine. For example, if the machine has 48 GB of physical memory, and the TM1 server takes 38 GB to fully load, then there are only 10 GB of physical memory to run any and all other processes, including system processes. These other processes may perform poorly because they may force extensive paging activity as the system tries to run them all in what would then essentially be a 10 GB machine. If a second TM1 server is started with the same `LockPagesInMemory=T` configuration setting, and that second TM1 instance would normally take 12 GB to load, the load will fail since that TM1 server can not lock 12 GB of memory, as there is only 10 GB available.

LoggingDirectory
Specifies the directory to which the server saves its log files.

If you do not supply this parameter, the log files are saved to the first data directory specified by the DataBaseDirectory parameter.

Parameter type: optional,static.

Note: The value of parameter LoggingDirectory must be encapsulated by quotes if it uses spaces, for example `LoggingDirectory=C:/Data Files/Logfiles`. The IBM TM1 Server startup will fail if quotes are not used in that case. Note also that other parameters, such as DataBaseDirectory, do not necessarily require quotes when a value contains spaces.

LogReleaseLineCount
Sets the number of lines that a search of the Transaction Log will accumulate in a locked state before releasing temporarily so that other Transaction Log activity can proceed.

Parameter type: optional, dynamic

Default value: 5000 lines

MagnitudeDifferenceToBeZero
Sets the order of magnitude of the numerator relative to the denominator, above which the denominator equals zero when using a safe division operator.

Parameter type: optional, static

In rules and TurboIntegrator, there is a safe division operator (the backslash). With this, if you try to divide by zero, the result is zero, not undefined. If the denominator to the division is a calculated quantity, the result can be very close to zero, but not exactly zero, for example, .0000000000000004. By setting the **`MagnitudeDifferenceToBeZero`** parameter, you can specify how close a number can be to zero, relative to the magnitude of the numerator, to be considered as zero for the safe division operator.

Consider this example:

- In the file Tm1s.cfg, set MagnitudeDifferenceToBeZero=14
- The operation is A \ B

  Note: Backslash (\) is the safe division operator in TurboIntegrator.
- A = 1000 B = 1.5e-15
- B is 18 orders of magnitude less than A
- 18 > 14, therefore the save division operator returns B=0

MaskUserNameInServerTools
Determines whether usernames in server administration tools are masked until a user is explicitly verified as having administrator access.

Parameter type: optional, static

When MaskUserNameInServerTools is set to TRUE, usernames are masked in server administration tools until the user who is working in the administration tool is explicitly verified as an administrator. For example, when MaskUserNameInServerTools is set to TRUE, usernames are masked in TM1Top.

When MaskUserNameInServerTools is set to FALSE, usernames are displayed in server administration tools to all users regardless of administrator status.

Default value: true

MaximumCubeLoadThreads
Specifies whether the cube load and feeder calculation phases of server loading are multi-threaded, so multiple processor cores can be used in parallel.

This results in decreased server load times.

Parameter type: optional, static

To run in multi-threaded mode, you must set MaximumCubeLoadThreads to the number of processor cores on the Cognos TM1 server that you want to dedicate to cube loading and feeder processing.

Generally, the best performance is achieved when the parameter is set to a value equal to (*number of available processor cores*) - 1. For example, if the Cognos TM1 server is running on a computer with four processor cores, MaximumCubeLoadThreads must be set to 3. This ensures that one processor core is available to run other applications while the Cognos TM1 server is loading.

Note:

The maximum value for MaximumCubeLoadThreads is 32.

When MaximumCubeLoadThreads is set to 0, cube loading and feeder processing are not multi-threaded. This is the default behavior when MaximumCubeLoadThreads is not explicitly set in the Tm1s.cfg file.

Conditional feeders

When **`MaximumCubeLoadThreads`** is enabled, Cognos TM1 cannot manage the order in which feeders are calculated. There might be cases where processing order has an adverse effect on your application due to some order-of-evaluation dependencies in the multi-threaded environment.

If your Cognos TM1 model uses conditional feeders where the condition clause contains a fed value, you **must** disable the use of multiple threads at load time. Set `MaximumCubeLoadThreads=0` or exclude the parameter from the Tm1s.cfg file.

MaximumLoginAttempts
Sets the maximum number of failed user login attempts permissible on the server.

If you do not include MaximumLoginAttempts in Tm1s.cfg, by default, the server allows three login attempts.

Parameter type: optional, dynamic

For example, if you add the line MaximumLoginAttempts=5 to Tm1s.cfg, the server enforces a limit of five failed login attempts per user. If a user does not successfully log in to the TM1 Server within the specified number of attempts, the server issues an error.

After a user has exceeded the specified maximum number of failed login attempts, the TM1 Server rejects any subsequent login attempts by the user.

The MaximumLoginAttempts parameter is enforced per server session. If a user exceeds the maximum number of attempts, he cannot log in to the current TM1 Server session, unless the administrator changes his password. However, after the TM1 Server recycles, the user can log in with his existing password.

MaximumMemoryForSubsetUndo
Sets the maximum amount of memory, in kilobytes, to be dedicated to storing the Undo/Redo stack for the Subset Editor.

For example, adding the line MaximumMemoryForSubsetUndo=20480 to the configuration file instructs the server to allot 20480 kilobytes (20 MB) of memory for the Undo/Redo stack.

Parameter type: optional, dynamic

Generally, larger subsets require greater amounts of memory to store a usable Undo/Redo stack. If you find that the TM1 Server is not storing a sufficient number of Undo/Redo steps for your subsets, increase the value of MaximumMemoryForSubsetUndo.

If this parameter is not explicitly set in the Tm1s.cfg file, the maximum amount of memory dedicated to the Undo/Redo feature of the Subset Editor is 10240 kilobytes (10 MB).

MaximumSynchAttempts
Sets the maximum number of times a synchronization process on a planet server will attempt to reconnect to a network before the process fails.

Parameter type: optional, static

You can use the MaximumSynchAttempts parameter to improve the stability of a synchronization process that is running over an unstable network connection such as a long distance wide area network (WAN) with high latency, poor bandwidth and poor transmission quality.

To specify the maximum number of times a synchronization process should attempt to make a network connection, add the following line to Tm1s.cfg for the planet server:

`MaximumSynchAttempts=`*n*

where n represents the number of network connection attempts that the synchronization process should make a before the process fails.

The default value is 1 which means the synchronization process will only attempt to connect once and will not attempt to reconnect if the connection is lost.

A value of 0 means unlimited network connection attempts.

You can configure this parameter to work with the SyncUnitSize parameter. For more information, see "SyncUnitSize" on page 367.

The following example shows how to use the MaximumSynchAttempts parameter with the SyncUnitSize parameter:

```
SyncUnitSize=2000
```

```
MaximumSynchAttempts=100
```

MaximumTILockObjects
A server configuration parameter that sets the maximum lock objects for a TurboIntegrator process. Used by the synchronized() TurboIntegrator function.

The server maintains a list of created TurboIntegrator lock objects. Every time the user calls the synchronized() function on a lock object, the server first checks to see if the lock object is already in the list. If not, the server creates a new lock object and inserts it into the list.

For more details, see the topic "Serializing TurboIntegrator processes using synchronized()" in *IBM Cognos TM1 TurboIntegrator*.

Even after all the TurboIntegrator processes that have referenced a lock object have exited, the lock object may not be removed from the list to free the memory immediately. This is because it is likely that sometime later, either the same process or some other process may call the synchronized() function on that same lock object.

The server configuration parameter `MaximumTILockObjects` in tm1s.cfg controls the growth of the list of created TurboIntegrator lock objects. When the number of lock objects in the list has reached MaximumTILockObjects, the server starts a cleanup operation. It removes some lock objects from the list if they are not used by any TurboIntegrator process at that moment.

If the MaximumTILockObjects parameter is not explicitly set in tm1s.cfg, a default value of 2000 is assumed.

Parameter type: optional, static

MaximumUserSandboxSize
Sets the maximum amount of RAM memory (in MB) to be allocated per user for personal workspaces or sandboxes.

If you do not set the MaximumUserSandboxSize parameter, the default maximum size is 500 MB on a 64-bit system.

Parameter type: optional, dynamic

To specify a maximum amount of memory allocation for personal workspaces or sandboxes, add the following line to Tm1s.cfg:

```
MaximumUserSandboxSize=n
```

where n represents the amount of memory in MB to be allocated.

MaximumViewSize
Sets the maximum amount of memory (in MB) to be allocated when a user accesses a view.

If you do not set the MaximumViewSize parameter, the default maximum view size is 500 MB on a 64-bit system.

Parameter type: optional, dynamic

To specify a maximum amount of memory allocation for views, add the following line to tm1s.cfg:

```
MaximumViewSize=n
```

where n represents the amount of memory in MB to be allocated.

See also "ApplyMaximumViewSizeToEntireTransaction" on page 324.

MDXSelectCalculatedMemberInputs
Changes the way in which calculated members in MDX expressions are handled when zero suppression is enabled.

Parameter type: required, dynamic

MDXSelectCalculatedMemberInputs addresses an issue with calculated members in an MDX expression when zero suppression is enabled. When zero suppression is enabled on a query axis, calculated members might be dropped from the query or might cause zero suppression to be turned off.

The issue arises because zero suppression is based on the actual data in a cube. Calculated members do not have an actual member in the cube—calculated members are derived from other members.

For example, suppose a cube has a calculated member, C, that is a sum of the members A and B.

```
      C (A+B)
A                B
```

The members A and B are actual members in the cube, while C is derived. When you run a query with A, B, and C in the columns, {A,B,C}, you see A, B, and C in the columns and you see that C is the sum of A and B. When you turn on zero suppression, only non-null rows of data are displayed for A, B, and C, as expected.

Now, suppose you restrict the columns to C only, {C}. When zero suppression is turned off, C is displayed in the columns. But if you turn on zero suppression, C might be dropped from the columns because C does not reference any actual member in the cube.

MDXSelectCalculatedMemberInputs addresses this issue. When MDXSelectCalculatedMemberInputs is enabled, TM1 assumes that if the inputs to the calculated member have data (the A and B in the example), then the calculated member (C) also has data and must be retained when zero suppression is turned on.

The processing occurs as follows:

1. Do a fast check of the calculated member to detect what specific actual members it references.
2. Consider these actual members as inputs to the calculated member.
3. Make sure that these inputs are included in the stargate data underlying the view.

With the inputs included in the Stargate data, the suppression algorithm sees Stargate data at A and B, notices that A and B are inputs to C, and keeps C when zero suppression is enabled.

MDXSelectCalculatedMemberInputs works well for simple formulas, like C=A+B. If you use complex formulas, such as data-dependent formulas that contain conditional expression like IIF, enabling MDXSelectCalculatedMemberInputs might not resolve issues with zero suppression.

Note: Enabling MDXSelectCalculatedMemberInputs can increase the size of Stargate views. This can provide faster access times for cube data but can consume more system resources.

To enable MDXSelectCalculatedMemberInputs, add the following to the tm1s.cfg file.

```
MDXSelectCalculatedMemberInputs=True
```

To disable MDXSelectCalculatedMemberInputs, add the following to the tm1s.cfg file.

```
MDXSelectCalculatedMemberInputs=False
```

Default value: True

It is recommended to set the MaximumViewSize to be higher than the default 500MB.

MemoryCache.LockFree
Switches global garbage collection to use lock free structures.

Parameter type: optional, dynamic

Default value: False

MessageCompression
Enables message compression for large messages that significantly reduces network traffic.

The parameter is enabled by default.

Parameter type: optional, static

To disable message compression, add the following line to Tm1s.cfg:

```
MessageCompression=F
```

MTCubeLoad
Enables multi-threaded loading of individual cubes.

Note: To enable multi-threaded loading of individual cubes, you must have IBM Planning Analytics version 2.0.5 or later installed.

Parameter type: optional, dynamic

Default value: F (disabled)

MTCubeLoad uses the MTQ multi-threaded framework to achieve improved speeds when compared to the previous approach using **MaximumCubeLoadThreads**. Configuration settings **MTCubeLoad.MinFileSize**, **MTCubeLoad.Weight**, **MTCubeLoad.UseBookmarkFiles**, and **IndexStoreDirectory** are used to optimize performance.

MTCubeLoad also eliminates the risk of changing feeder generation sequences. When **MTCubeLoad** is enabled, the **MaximumCubeLoadThreads** configuration option is ignored. Since **MTCubeLoad** leverages the MTQ framework, it still relies on the **MTQ** configuration to set the number of concurrent threads.

Note: Setting **MTCubeLoad=T** does not work in all cases. When issues are detected, you **must** disable the multi-threaded loading of individual cubes.

TM1 server administrators can use the **PreallocatedMemory.Size**, **PreallocatedMemory.ThreadNumber**, and **PreallocatedMemory.BeforeLoad** settings to configure preallocation memory and optimize scale-up and performance results. Allocating memory for a TM1 server can help avoid contention effects related to varying operating system memory allocation. For best results, consider the amount of RAM consumed by TM1 server to configure the preallocation memory settings.

CAUTION: Setting **MTCubeLoad=T** increases memory usage significantly.

Example

The following `tm1s.cfg` file illustrates the configuration of multi-threaded cube loading:

```
MTCubeLoad=T
MTQ=All
MTCubeLoad.UseBookmarkFiles=T
IndexStoreDirectory=c:\Cubes\CubeFolder\indexStore
```

```
# 30GB of RAM to preallocate
PreallocatedMemory.Size=30000
# Run preallocation in parallel to cube cell/feeder loading
PreallocatedMemory.BeforeLoad=F
# Window 2012 patches as of Dec 2016 worked most efficiently with a single thread
PreallocatedMemory.ThreadNumber=1

# Disable TM1 performance counters to speed up MTQ.
PerfMonIsActive=F
```

Logging

To enable logging for multi-threaded loading of individual cubes, enter the following lines in the `tm1s-log.properties` file located in the same location as your `tm1s.cfg` file:

log4j.logger.TM1.Server.Loading=DEBUG
Captures individual timing of TM1 Server loading stages: DeSerializeDimensions, DeSerializeAttributeCubes, DeSerializeRegularCubes, GenerateServerSecurity.

log4j.logger.TM1.Cube.Loading=DEBUG
Captures cube loading time, separately for `.cub` and `.feeder` files.

MTCubeLoad.MinFileSize
Sets the minimum size for cube files to be loaded on multiple threads.

Parameter type: optional, dynamic

The value must be specified in units of KB (kilobytes). Specifying a value of "0" will apply MTCubeLoad to files of any size.

Default value: 10KB

MTCubeLoad.UseBookmarkFiles
Enables the persisting of bookmarks on disk.

Parameter type: optional, dynamic

Bookmarks store information that allow cube loading to start reading cells/feeders from the middle of `.cub` and `.feeder` files. Bookmarks can be read from the files where they persist. If a bookmark file is not present, or is out-of-sync with the main file it corresponds to, bookmarks are generated on-the-fly in parallel for the rest of the cube loading logic. Bookmark files are stored in the folder specified by the **`IndexStoreDirectory`** configuration option. For example:

```
<IndexStoreDirectory>\<path-to-main-file-relative-to-data-folder>\<main-filename>.bm
```

Bookmark files incorporate the timestamp of their corresponding main file. When it does not match the actual timestamp of the main file, bookmark files are ignored and bookmarks are regenerated on-the-fly. When bookmark synchronization is in doubt, the bookmark folder contents should be cleaned. The content is regenerated after restarting the server. Bookmark files are also updated during SaveDataAll and CubeSaveData calls when the main files that the bookmarks are associated with are updated.

Default value: F (disabled)

MTCubeLoad.Weight
Defines the number of atomic operations needed to load a single cell.

Parameter type: optional, dynamic

The "atomic operation" is the unit used in the **`MTQ.OperationProgressCheckSkipLoopSize`** configuration option. **`MTCubeLoad.Weight`** provides a relative heuristics of how much slower cell loading is when compared to visiting a cell during a read operation.

Default value: 10

MTFeeders
Applies multi-threaded query parallelization techniques to the following processes: the `CubeProcessFeeders` TurboIntegrator function, cube rule updates, and construction of multi-threaded (MT) feeders at start-up.

Parameter type: optional, dynamic

The default setting is disabled (F). Enable this parameter to improve the processing of feeders. Set **`MTFeeders=T`** to obtain the following benefits:

- Process optimization when you use the `CubeProcessFeeders( <cube_name>)` TurboIntegrator function.
- When a rule update involves updating feeder cubes, the process is optimized by running in parallel. Rules are updated manually or by using the `RuleLoadFromFile (Cube, TextFile)` TurboIntegrator function.
- When used `MTFeeders=T` **and** `MTFeeders.AtStartup=T` in `Tm1s.cfg`, multi-threaded (MT) feeders are constructed at start-up. See "MTFeeders.AtStartup" on page 352 for details on using the `MTFeeders.AtStartup` configuration parameter.

CAUTION: Setting MTFeeders=T increases memory usage significantly.

Conditional feeders

When `MTFeeders` is enabled, TM1® cannot manage the order in which feeders are calculated. There might be cases where processing order has an adverse effect on your application due to some order-of-evaluation dependencies in the multi-threaded environment.

Enabling `MTFeeders` to apply feeder construction during server startup is not supported when your TM1 model uses conditional feeders. Set `MTFeeders=F` or exclude the parameter from the `Tm1s.cfg` file.

MTFeeders.AtStartup
If the MTFEEDERS configuration option is enabled, enabling `MTFeeders.AtStartup` applies multi-threaded (MT) feeder construction during server start-up.

Parameter type: optional dynamic

The default setting is disabled (F).

When this configuration option is enabled, it prevents the load threads (set with the `MaximumCubeLoadThreads` configuration parameter) from taking over parallel feeder construction. However, `MTFeeders.AtStartup` will not disable `MaximumCubeLoadThreads` impact on other model load phases.

Conditional feeders

When `MTFeeders.AtStartup` is enabled, TM1 cannot manage the order in which feeders are calculated. There might be cases where processing order has an adverse effect on your application due to some order-of-evaluation dependencies in the multi-threaded environment.

Enabling `MTFeeders.AtStartup` to apply multi-threaded feeder construction during server startup is not supported when your model uses conditional feeders. Set `MTFeeders.AtStartup=F` or exclude the parameter from the `Tm1s.cfg` file.

MTFeeders.AtomicWeight
Defines the number of required atomic operations to process feeders of a single cell.

Parameter type: optional, dynamic

The "atomic operation" is the unit used in the **`MTQ.OperationProgressCheckSkipLoopSize`** configuration option. Essentially, **`MTFeeders.AtomicWeight`** provides a relative heuristics of how much slower a feeder construction is when compared to visiting a cell during a read operation. The ratio

MTQ.OperationProgressCheckSkipLoopSize/ **MTFeeders.AtomicWeight** approximates the number of cells triggering parallel execution when processing feeder updates.

The default value is 10.

MTQ
Sets the maximum number of threads per single-user connection, when multi-threaded optimization is applied. Used when processing queries, and in batch feeder and cube load operations.

Parameter type: optional, dynamic

Default value: -1

To specify a maximum number of threads for the multi-threaded optimization, add the following line to `Tm1s.cfg`:

```
MTQ=n
```

where *n* represents the number of threads to be used for a single operation.

If you set MTQ equal to a negative number, that is, `MTQ=-N`, the number of threads that will be used is defined by the following equation: `T=M-N+1`, where T= the number of threads to be used by the system and M= the number of threads on the server.

For example, if your server has 64 cores and you set MTQ=-10, the system will use 55 threads.

```
T=64-(10)+1
```

By default, `MTQ=-1`, which sets the value to the maximum number of threads available to a server. The result is a dynamic system setting that consumes all threads.

If you set `MTQ=1` or `MTQ=0`, multi-threaded optimization is turned off.

For more information, see "Improving processing performance with Multi-threaded Queries" in *TM1 Operations*.

Note: Multi-threaded optimizations can improve performance on numeric cubes, where consolidation is optimized. Since TM1 does not consolidate string values, the MTQ parameter has no impact on the performance of string cubes.

MTQ.OperationProgressCheckSkipLoopSize
Use this parameter to fine-tune multi-threaded query processing.

Parameter type: optional, dynamic

This parameter specifies the number of cells to be processed before checking whether multi-threaded splits are needed.

Default value is 10000.

MTQ.SingleCellConsolidation
Use this parameter to fine-tune multi-threaded query processing.

Parameter type: optional, dynamic

Set this parameter to False to disallow multi-threaded query processing for single cell consolidations. This is applicable, for example, if your model contains complex rules (rules that have cross-cube references with a recursive depth greater than two).

Single cell consolidation is often invoked for the computation of rules that reference consolidated values as arguments. Single cell consolidation is also used to compute title only views.

Default value is True.

MTQQuery
Use this parameter to enable multi-threaded query processing when calculating a view to be used as a TI datasource.

Parameter type: optional, dynamic

If the value of the MTQ parameter is 1 (or OFF), this functionality is turned off entirely and cannot be overridden.

The value of MTQQuery can be overridden on a per-TI basis by calling the EnableMTQViewConstruct and DisableMTQViewConstruct TI functions.

If MTQQuery=F, EnableMTQViewConstruct() can be called to override this value on a per-TI basis.

If MTQQuery=T (the default), DisableMTQViewConstruct() can be called to disable the functionality for individual TIs.

Default value is True.

NetRecvBlockingWaitLimitSeconds
Use this parameter to have the server perform the wait period for a client to send the next request as a series of shorter wait periods. This parameter changes the wait from one long wait period to shorter wait periods, so that a thread can be canceled if needed.

Parameter type: optional, static

The parameter is enabled by default.

By default the server can wait for a long time for input, which can result in long-held threads and other problems.

This parameter instructs the Cognos TM1 server to perform the wait as a series of repeated shorter waits and gives the server the opportunity to cancel or pause the thread. When set to zero (the default) the legacy behavior of one long wait is used.

Default value: 0

NetRecvMaxClientIOWaitWithinAPIsSeconds
Specifies the maximum time for a client to do I/O within the time interval between the arrival of the first packet of data for a set of APIs through processing until a response has been sent.

Parameter type: optional, static

This parameter requires the client to handle I/O in a reasonably timely fashion after initiating API requests. This parameter is designed to protect against connections that go dead but do not raise a socket error or create other possibilities such as a hung client.

Default value is 0, which means no time limit.

NIST_SP800_131A_MODE
Indicates that the server must operate in compliance with the SP800-131A encryption standard.

Parameter type: optional, static

When SP800-131 encryption is enforced, the signed certificate must comply with the standard as defined by the National Institute of Standards and Technology (NIST) Special Publication SP800-131. This standard requires a minimum key size of 2048 bits and a signature algorithm of RSA with SHA-224 or higher.

To turn off SP800-131 compliance, add the following line to the tm1s.cfg file:

```
NIST_SP800_131A_MODE=False
```

Default value: True

ODBCLibraryPath
Specifies the name and location of the ODBC interface library (.so file) on UNIX.

Parameter type: optional (required to support ODBC on UNIX), static

This parameter is applicable only to TM1 running on UNIX or Linux.

In the tm1s.cfg file, add the following line:

```
ODBCLibraryPath= location/file
```

Replace location/file with the absolute path and filename of the library.

For example:

```
ODBCLibraryPath=/usr/local/lib/unixODBC/lib/libodbc.so
```

ODBCTimeoutInSeconds
Specifies the timeout value that is sent to the ODBC driver using the SQL_ATTR_QUERY_TIMEOUT and SQL_ATTR_CONNECTION_TIMEOUT connection attributes.

Parameter type: optional, dynamic

Note: The ODBC driver must respect the request and implement the timeout.

This parameter defaults to zero. A zero value indicates legacy behavior of no timeout.

For example, in the tm1s.cfg file, add the following line:

```
ODBCTimeoutInSeconds= 10
```

OptimizeClient
Added in v2.0.7 This parameter determines whether private objects are loaded when the user authenticates during TM1 Server startup.

Parameter type: optional, dynamic

Note: A new user that was dynamically added, who logs in with CAM authentication, is still subject to lock contention because a new element must be added to the `}clients` dimension.

Organizations with many users can set this parameter to improve startup times for particular users. Users with many private objects can set this parameter to improve startup times. Currently, private objects include a user's private directory, private sandboxes, private subsets, and private views. Loading these private objects affects the server load and potentially the amount of memory that is consumed at startup. Depending on the number of users, the private objects, and the memory that each consumes, setting this parameter can improve server startup times.

`OptimizeClient` can be set as follows:

- None = 0
- OperationsAdmin = 1
- Admin = 2
- All = 3

For example, to load all private objects for all users when TM1 Server starts up, you can set `OptimizeClient` to All:

```
OptimizeClient=3
```

The default setting is 0 (None).

OracleErrorForceRowStatus
Use this parameter to ensure the correct interaction between IBM Cognos TM1 TurboIntegrator processes and Oracle ODBC data sources.

Parameter type: optional, static

The format of the parameter is as follows:

```
OracleErrorForceRowStatus=x
```

Replace *x* with one of the following values:

0
Planning Analytics auto-detects the version of Oracle you are connecting to.

1
Planning Analytics handles the connection to Oracle the same way as other drivers.

2
Planning Analytics connects to Oracle and uses SQLULEN instead of SQLUSMALLINT.

The default is 0.

PasswordMinimumLength
Specifies a minimum password length for clients accessing the server.

Parameter type: optional, dynamic

For example, set `PasswordMinimumLength=8` to enforce a minimum password length of 8 characters.

Note: This parameter only affects passwords set or changed after the parameter had been set. It has no effect on old, unchanged passwords having less characters as enforced by PasswordMinimumLength

PasswordSource
Compares user-entered password to the stored password.

Parameter type: optional, static

Cognos TM1 (Default): Compares the user-entered password to the password in the TM1 database.

LDAP: Compares the user-entered password to the password stored in on the LDAP server.

PerfMonIsActive
Use this parameter to turn updates to TM1 performance counters on or off.

Parameter type: optional, dynamic

You can view performance counters using the TM1 PerfMon utility or the Microsoft Windows Performance Monitor. For more details, see "Using TM1 Performance Counters" in *TM1 Operations*.

Capturing performance counters in TM1 can impact performance under a heavy multi-user workload (with 100 or more active users). Use this parameter to turn off updates to performance counters if performance is an issue.

```
PerfMonIsActive=F
```

Default value is T.

PerformanceMonitorOn
Automatically starts populating the `}Stats` control cubes when a server starts.

The control cubes contain statistics that you can review to monitor the system performance. For details on control cubes, see "Control Cubes" in *IBM Cognos TM1 Operations*.

Parameter type: optional, dynamic

For example, to enable Performance Monitor set `PerformanceMonitorOn=T`. To disable the Performance Monitor set `PerformanceMonitorOn=F`

PersistentFeeders
To improve reload time of cubes with feeders, set the PersistentFeeders configuration parameter to true (T) to store the calculated feeders to a .feeders file.

Any installation with server load times of over 5 minutes can probably improve their performance using this parameter.

Parameter type: optional, static

When this parameter is set to T and the server encounters a persistent feeder file, it loads the saved feeders which reduces the time normally taken to recalculate those feeders. Feeders are saved when the data is saved or rules are edited. You do not explicitly save the feeders

For installations with many complex feeder calculations persisting feeders and then re-loading them at server startup will improve performance. For simple feeders, the time taken to read feeders from disk may exceed the time to re-calculate the feeders but most installations will benefit.

Using the Persistent Feeders feature will increase your system size on disk only. Memory size is not affected by the use of this parameter.

```
PersistentFeeders=T
```

For more information, see "Using Persistent Feeders" in *IBM Cognos TM1 Operations*.

PortNumber
Sets the server port number used to distinguish between multiple servers running on the same computer.

When multiple IBM TM1 Servers are installed on a single computer, each server must use a unique port number.

Parameter type: optional, static

When you install a TM1 Server, the default port number is 12345. Valid port numbers are between 5001 and 65535.

If the Tm1s.cfg file does not contain the PortNumber parameter, the TM1 Server uses port 5000. Local TM1 Servers use port 5000. The port used for Client Messages must also be a unique port number and is set to 5001 by default when the ClientMessagePortNumberparameter is used.

PreallocatedMemory.BeforeLoad
Added in v2.0.5 Specifies whether the preallocation of memory occurs before server loading or in parallel.

Parameter type: optional, dynamic

Default value: F (disabled)

When **`PreallocatedMemory.BeforeLoad=T`** (enabled), preallocation of memory is performed before server loading. With this setting is disabled, preallocation occurs in parallel to a server loading process. Overall server load time improvements vary by operating system allocation speeds and the memory consumption speeds of the server loading logic. TM1 server administrators can modify the preallocation memory settings to obtain optimal results for their environment.

PreallocatedMemory.Size
Added in v2.0.5 Triggers the preallocation of pooled TM1 server memory.

Parameter type: optional, dynamic

Default value: 0

Allocated memory is specified in units of MB (megabytes).

PreallocatedMemory.ThreadNumber
Added in v2.0.5 Specifies the number of threads used for preallocation memory in multi-threaded cube loading.

Parameter type: optional, dynamic

Default value: 4

PrivilegeGenerationOptimization
When the IBM TM1 Server generates security privileges from a security control cube, it reads every cell from that cube.

If the security control cube is sparsely populated, this results in unnecessary processing and a longer loading time. An example of a sparsely populated security cube would be one that has a greater ratio of default security settings compared to defined security settings.

Parameter type: optional, static

To address this issue, the PrivilegeGenerationOptimization parameter can be added to the Tm1s.cfg file as follows:

```
PrivilegeGenerationOptimization=T
```

When this parameter is set to T, the TM1 Server will read only the populated cells in security cubes. In the case of a sparsely populated security cube, this will dramatically shorten the load time of the TM1 Server.

Note: If you populate the security settings via rules and want to use this parameter, you must write feeders for the rules that populate your security cubes. Because security settings are stored as strings, the rules that populate your security cubes must include the FeedStrings function.

ProgressMessage
This parameter determines whether users have the option to cancel lengthy view calculations.

When a user opens a view that takes a significant amount of time to calculate (usually a view with high levels of consolidation or complex rules), IBM TM1 Server monitors the progress of the process. When ProgressMessage=T a dialog box opens that allows the user to Stop Building View.

Parameter type: optional, static

If the user clicks Stop Building View, the view is discarded on the client, but view calculation continues on the server. In some instances, this can tie up the server.

- If ProgressMessage=F, the Stop Building View option is not offered and the user cannot cancel lengthy operations.
- When ProgressMessage=T or is not present in the Tm1s.cfg file, the Stop Building View option opens during lengthy view calculations so the user can cancel the process if necessary. You can assign a unique Port Number using ClientMessagePortNumber. This additional port allows these progress messages to travel via a secondary port so that server processing can continue without tying up thread reserves.

Note: As of Cognos TM1 10.1, progress messages can travel via the secondary port assigned by ClientMessagePortNumber so Cognos TM1 10.1 and later have `ProgressMessage=T` set by default.

ProportionSpreadToZeroCells
Allows you to perform a proportional spread from a consolidation without generating an error when all the leaf cells contain zero values.

In this case, Cognos TM1 applies an equal spread to the empty cells when the ProportionSpreadToZeroCells parameter is enabled. This functionality is enabled by default.

Parameter type: optional, static

Behavior when ProportionSpreadToZeroCells is enabled

This parameter and functionality are enabled by default, allowing you to complete a spread operation without an error when you perform a proportional spread on a consolidation where all the leaf cells are zero. In this scenario, Cognos TM1 converts the typed entry of "P###" to "LS*###" and applies the spread as an equal spread.

When this parameter is enabled *and* data *exists* in any of the leaf cells, the behavior is the same as previous versions of Cognos TM1 when performing a proportional spread.

This parameter is on by default and it is not necessary to enable it. However, if you want to explicitly configure it, set the ProportionSpreadToZeroCells parameter to T (True) in the Tm1s.cfg configuration file as follows.

```
ProportionSpreadToZeroCells=T
```

Behavior when ProportionSpreadToZeroCells is disabled

Setting this parameter to F (False) disables this feature. An error displays when you try to perform one of the following proportional spreading operations:

- In TM1 Contributor - Enter a number in a consolidated cell where all of the leaf cells for that consolidation contain zeros.
- In TM1 Contributor and other TM1 clients - Perform a proportional spread operation by either entering a spreading code and number such as "P###" in a cell, or access a proportional spread from the right-click menu or TM1 menu (TM1 Perspectives only) when the leaf cells for that consolidation all contain zeros.

These operations make the TM1 server perform a proportional spread, but the operation fails because all of the leaf cells contain zeros.

To disable this functionality, set the ProportionSpreadToZeroCells parameter to F (False) in the Tm1s.cfg configuration file as follows.

```
ProportionSpreadToZeroCells=F
```

PullInvalidationSubsets
Reduces metadata locking by not requiring an R-lock (read lock) on the dimension during subset creation, deletion, or loading from disk.

Parameter type: optional, dynamic

Default value: T (enabled)

When a user logs in, the system loads the user's unregistered subsets from disk. At the same time, a TurboIntegrator process that edits a dimension will hold an IX (intent-to-write) lock on the dimension for the process duration. In previous releases, or when this parameter is set to F (disabled), logging in could be blocked for the entire duration of a long-running TurboIntegrator process. TM1 lock types are incompatible with each other.

RawStoreDirectory
Indicates the location of the temporary, unprocessed log file for audit logging if logging takes place in a directory other than the data directory.

Parameter type: optional, dynamic

If this parameter is not entered, by default the unprocessed audit log file is saved in the directory listed in the DataBaseDirectory parameter.

For details on other audit logging parameters, see “AuditLogMaxFileSize” on page 324, “AuditLogMaxQueryMemory ” on page 324, “AuditLogOn” on page 325, and “AuditLogUpdateInterval” on page 325.

ReceiveProgressResponseTimeoutSecs
The ReceiveProgressResponseTimeoutSecs parameter configures the server to sever the client connection and release resources during a long wait for a Cancel action.

Parameter type: optional, dynamic

When the IBM TM1 Server is performing lengthy operations for a client, periodic "progress" messages are sent to the TM1 client application. The client responds to these messages with an indication of whether the user has pressed the Cancel button, in which case the lengthy operation is terminated. These

responses are generated automatically by the network code in the client application; there is no user interaction involved. After sending the progress message the server waits for a response from the client application. As the server is waiting, the client's thread will continue to hold resource locks on the TM1 Server, preventing other users from making other server requests which require the same resource locks.

In some particular situations, most notably running TM1 clients under a Citrix environment, the response from the client application never arrives back at theTM1 Server, causing the server to wait for an infinite amount of time. This results in a system lockup, because the client's thread holds resource locks that are never released.

The ReceiveProgressResponseTimeoutSecs parameter lets you configure your server to detect this situation and to sever the client connection, releasing the resources. When the parameter is set to a valid interval (in seconds), the server process will terminate the client connection, releasing any resource locks, if the server does not detect the client application's response within the specified interval.

For example, if ReceiveProgressResponseTimeoutSecs=20 and the client application does not respond to the progress message sent from the server within 20 seconds, the client connection is terminated. Again, no user action is required to generate this response. The response is automatically generated by the client application, so that if the response does not arrive within 20 seconds, it is an indication that there is something seriously wrong with the client or the underlying network.

ReceiveProgressResponseTimeoutSecs is an optional Tm1s.cfg parameter. If the parameter is not present in the Tm1s.cfg file, processes are not terminated when a client does not respond to a progress message from the TM1 Server.

For some TM1 Server installations, the ClientMessagePortNumber defines a separate thread to use for cancellation messages without tying up reserves. When ClientMessagePortNumber is available, ReceiveProgressResponseTimeoutSecs is not used.

ReduceCubeLockingOnDimensionUpdate
Reduces the occurrence of cube locking during dimension updates.

Parameter type: optional, static

Default value: F (disabled)

You can use this parameter to reduce cube locking during dimension updates.

Previously, whenever a dimension was updated, all cubes that used this dimension had to be locked IX so that their rules could be recompiled and checked. This approach meant that if two dimensions used the same cube, they could not be modified simultaneously. Often, updating a dimension does not change the existing rules. For example, adding an element that is not yet referenced by the rules.

Now, you can use this parameter to maintain dimension to cube consistency and coherency. When `ReduceCubeLockingOnDimensionUpdate=T`, the same coherency is maintained by using only a RO lock, which is less prone to causing contention.

Instead of IX locking the cube, the server first makes a copy of the rule to recompile it to the side to see whether an IX lock is necessary; often it is not.

To enable this functionality, add the following line to the tms1.cfg file:

```
ReduceCubeLockingOnDimensionUpdate=T
```

RulesOverwriteCellsOnLoad
Prevents cells from being overwritten on server load in rule-derived data.

Parameter type: optional, static

During the processing of feeders for a cube, a cube's value can be wiped out if there is a rule for that cell. When the cube that had a cell wiped out is saved, the value is gone so the action has no effect on the cube. However, if the rule is edited but the cube is not modified later, the cube is not saved to disk. In that case, real cell values might be wiped out when the rules run.

The RulesOverwriteCellsOnLoad parameter can be used to prevent the zeroing out action after a rule is edited.

If you are changing rules and the rules might cause some cells that have data to become rule-derived because of edits, set RulesOverwriteCellsOnLoad=F in the configuration file.

If this parameter is set to T, rule-derived cells are wiped to zero whenever the server loads. The data value in those cells is lost even if the rule is changed later so that the cell is no longer rule-derived.

```
RulesOverwriteCellsOnLoad=F
```

Important:

In IBM Planning Analytics version 2.0.7 or later, if this parameter is not present in the configuration file then it is assumed to be False by default.

In IBM Planning Analytics version 2.0.6 or earlier, if this parameter is not present in the configuration file then it is assumed to be True by default.

RunningInBackground
When you add the line `RunningInBackground=T` to tm1s.cfg, the IBM TM1 Server on UNIX runs in background mode.

Parameter type: optional, static

If you use the startup_tm1s.sh and shutdown_tm1s.sh scripts to start and stop your TM1 Server, set `RunningInBackground=T`.

SaveFeedersOnRuleAttach
When set to False, postpones writing to feeder files until SaveDataAll and CubeDataSave are called, instead of updating the files right after rules are changed and feeders are generated at the server start time.

Parameter type: optional, dynamic

Default value: True

SaveTime
Sets the time of day to execute an automatic save of server data; saves the cubes every succeeding day at the same time. As with a regular shutdown, SaveTime renames the log file, opens a new log file, and continues to run after the save.

Parameter type: optional, dynamic

The SaveTime parameter is not available when running the TM1 Server as a Windows service.

The format of the SaveTime parameter is *dd:hh:mm* where:

- dd is the number of days from today that the system will start automatically saving data. For example, 00 is today, 01 is tomorrow.
- hh:mm is the time of day in 24-hour format.

SecurityPackageName
If you configure the IBM TM1 Server to use Integrated Login, the SecurityPackageName parameter defines the security package that authenticates your user name and password in Microsoft Windows.

Parameter type: optional, static

Valid values are:

- Kerberos
- NTLM
- Negotiate

Use `Kerberos` unless you are running TM1 locally. If you are running locally, use `Negotiate` or `NTLM`. `Negotiate` selects Kerberos unless it cannot be used by one of the systems involved in the authentication.

For complete descriptions of all login security modes, including Integrated Login, see "Integrated login" on page 235.

ServerCAMURI
Specifies the URI for the internal dispatcher that the IBM TM1 Server should use to connect to Cognos Authentication Manager (CAM).

The URI is specified in the form

```
http[s]://fully-qualified host IP address:port/p2pd/servlet/dispatch
```

Note: In Planning Analytics version 2.0.9 or later, you can configure your TM1 Server CAM URI with a Server Name Indication (SNI). The SNI can be set using the existing ServerCAMURI parameter in the format of SNI;URI.

Parameter type: optional, dynamic

For example,

```
https://vottbies005.ent.ad.cognos.com:9443/p2pd/servlet/dispatch
```

For CAM authentication this setting must include the fully-qualified name for the server that the Cognos Analytics certificate was created for.

To determine the server that the certificate was issued for:

1. Enter the SSL URI to the Cognos Analytics dispatcher in a browser.
2. Update the `ServerCAMURI` setting in the tm1s.cfg with the fully-qualified name of that server.

   For example:

   ```
   ServerCAMURI=https://vottbies005.ent.ad.cognos.com:9443/p2pd/servlet/dispatch.
   ```

To configure the Cognos TM1 Applications Server to work with CAM SSL,

1. Ensure the following settings are made in Cognos Configuration:
   - **Force Qualified Paths** set to **False**.
   - **Use Mutual Authentication** set to **True**
2. Accept the certificate when saving.

ServerCAMURIRetryAttempts
Specifies the number of attempts made before moving on to the next ServerCAMURI entry in the tm1s.cfg file.

Parameter type: optional, static

This parameter is applicable if you are using IBM TM1 Server with Cognos Analytics security and you have defined multiple dispatchers in the tm1s.cfg file. Dispatchers are defined using the ServerCAMURI parameter.

For example, suppose you have three **`ServerCAMURI`** parameters specified in the tm1s.cfg file and `ServerCAMURIRetryAttempts=7`.

```
ServerCAMURI=http://server1:9300/p2pd/servlet/dispatch
ServerCAMURI=http://server2:9300/p2pd/servlet/dispatch
ServerCAMURI=http://server3:9300/p2pd/servlet/dispatch
ServerCAMURIRetryAttempts=7
```

The first dispatcher (http://server1:9300/p2pd/servlet/dispatch) is used and tried seven times. If it does not respond, the second one is then used and tried seven times. If it does not respond, the third dispatcher is then tried seven times. If the third one does not respond, the login fails.

Default value: 3

ServerLogging
Generates a log with the security activity details on the IBM TM1 Server that are associated with Integrated Login.

Parameter type: optional, dynamic

The log file, named Tm1server.log, is saved to the TM1 Server data directory. The ServerLogging parameter is useful only if your TM1 Server is configured to use Integrated Login.

Set ServerLogging to T in Tm1s.cfg. Note also that if `ServerLogging=T` is set, you must rename the TM1 Server message logfile tm1server.log by editing the corresponding parameter in the logger configuration file tm1s-log.properties.

Note: If you change this parameter dynamically (without restarting the TM1 Server), logging occurs only for new client sessions.

ServerName
Sets the name of the IBM TM1 Server. If you do not supply this parameter, TM1 Server names the server Local and treats it as a local server.

Parameter type: optional, static

ServicePrincipalName
Specifies the service principal name (SPN) when using Integrated Login with TM1 Web and constrained delegation.

Parameter type: optional, static

Use the following format to add the parameter to the Tm1s.cfg file:

```
ServicePrincipalName=SPN
```

The value you set here must match the service name that has also been mapped to a domain account on the Active Directory domain controller using the Microsoft command-line tool, setspn.exe.

For example, if you use setspn.exe to add an SPN as follows:

```
setspn -a FPM/TM1 WbSvr_Account
```

then you need to set the ServicePrincipalName parameter like this:

```
ServicePrincipalName=FPM/TM1
```

For more information about constrained delegation and SPN configuration, search the Microsoft website for the topic "Kerberos Technical Supplement for Windows".

SkipLoadingAliases
Use SkipLoadingAliases to speed up the loading of the server and updating of views by skipping the loading of aliases.

Parameter type: optional, static

Important: Contact customer support to determine if this parameter is applicable to your IBM TM1 Server.

Valid values are:

- T - Aliases skipped
- F - Aliases loaded

SpreadErrorInTIDiscardsAllChanges
If SpreadErrorInTIDiscardsAllChanges is enabled and a spreading error occurs as part of a running TurboIntegrator script, all changes that were made by that TurboIntegrator script are discarded.

Parameter type: optional, static

To enable SpreadErrorInTIDiscardsAllChanges, add the following line to the `tm1s.cfg` file:

```
SpreadErrorInTIDiscardsAllChanges=T
```

Default value: F

SpreadingPrecision
Use the SpreadingPrecision parameter to increase or decrease the margin of error for spreading calculations. The SpreadingPrecision parameter value is specified with scientific (exponential) notation.

Parameter type: optional, dynamic

Floating point arithmetic on computers is not 100% precise. When a computer calculates very small numbers, a margin of error is applied to the calculation. If the computer adds a set of numbers, and the resulting sum is close to the target value within the margin of error, the sum is considered accurate.

The margin of error for certain TM1 Server calculations is controlled through the SpreadingPrecision parameter. The default value is SpreadingPrecision=1e-8. This value is used in the following spreading scenarios:

- Spreading from a consolidated cell.
- Spreading in leaf cells whose consolidated value has a hold applied.

Spreading from a Consolidation

When you execute a proportional data spread from a consolidated cell, TM1 Server writes the numbers to each cell in the range, and rolls up the total to recalculate the consolidation. The total of all cells in the consolidation is then compared to the original value you provided for the spread function. The total might be different from the target value because of the rules applied to the n-level elements or the consolidated cell itself.

If the rules are such that the resultant value does not match the spread desired value, an error will be generated and the spread operation will not be done.

If SpreadingPrecision=1e-8, the total calculated by TM1 Server for the consolidation must be within 0.000001% of the target value (99.999999% accurate), or TM1 Server displays an error. An error of more than US$0.01 on a consolidated spread of US$1,000,000 results in an error.

You can increase or decrease the margin of error for these types of calculations using the SpreadingPrecision parameter.

The following examples include valid values for the SpreadingPrecision parameter:

- `SpreadingPrecision=1e-4`
- `SpreadingPrecision=1e-8`
- `SpreadingPrecision=1e-99`

The exponent value in the notation must be two digits or less. For example, `SpreadingPrecision=1e-123` is not a valid parameter value, as the exponent contains three digits.

Spreading and Consolidation Holds

The SpreadingPrecision parameter also has an effect under these conditions:

- When you spread values to some leaf cells that roll up into a consolidation
- A consolidation with a hold applied to it

For example, suppose you have the consolidation Q1 with values Jan, Feb, and Mar.

If Q1- has a consolidated hold applied, and you spread values to Jan and Feb, TM1 Server does the following:

- Applies the spreading to Jan and Feb.
- Adjusts Mar.
- Adds the three n-level elements together.
- Compares the sum of the n-level elements to the value of Q1.

If the sum is accurate to within the margin of error specified by the SpreadingPrecision parameter, the spread succeeds. If the sum falls outside the margin of error specified by the SpreadingPrecision parameter,TM1 Server generates an error.

SQLRowsetSize
Added in v2.0.3 Specifies the maximum number of rows to retrieve per ODBC request.

This parameter can be used to improve execution time for long-running processes that are caused by slow Microsoft SQL queries. It can benefit any users that use an ODBC driver that does not have a fetch setting, such as MS SQL and Db2. It does not affect Oracle database users.

Parameter type: optional, dynamic

Note: This parameter applies to all data sources even if you are pulling data from multiple different data sources.

To set this parameter, add the following line to the Tm1s.cfg file for the server:

```
SQLRowsetSize=nn
```

Where nn is any positive integer that represents the maximum number of ODBC requests to make.

The minimum value is 50 (default).

For cloud only customers, the default value is 500. The entry `SQLRowsetSize=500` is added to the Tm1s.cfg file for any new provision in IBM Planning Analytics on Cloud. If the setting exists in the Tm1s.cfg file, it is not changed.

The recommended value depends on the long-running process that you are trying to improve processing for. You can double the values (100, 200, and so on) to test for the best results. Increasing the value of `SQLRowsetSize` fetches more results per ODBC request and incurs network latency fewer times.

A larger value means that more memory is used per fetch. You need to look at memory consumption to see whether the increase in memory usage is acceptable (it might be noticeable if you have lots of data per row).

SSLCertAuthority
Specifies the name of the IBM Cognos TM1 server's certificate authority file. This file must reside on the computer where the TM1 server is installed.

Parameter type: optional (required for SSL), static

If you are using your own SSL certificates with TM1, you can determine this value by referring to the Microsoft Management Console. Click **Certificates** > **Personal** > **Certificates**. The principal name is displayed in the Issued By column of the Properties pane.

SSLCertificate
Specifies the full path of the IBM Cognos TM1 server's certificate file, which contains the public/private key pair.

Parameter type: optional (required for SSL), static

SSLCertificateID
Specifies the name of the principal to whom the IBM Cognos TM1 server's certificate is issued.

Parameter type: optional (required for SSL), static

If you are using your own SSL certificates with TM1, you can determine this value by referring to the Microsoft Management Console. Click **Certificates** > **Personal** > **Certificates**. The principal name is displayed in the Issued To column of the Properties pane.

StartupChores
StartupChores is a configuration parameter that identifies a list of chores that run at server startup.

Parameter type: optional, static

To run a chore at startup before users login or other scheduled chores run, add this parameter with the names of the chores to run separated by a colon, for example:

```
StartupChores=ChoreName1:ChoreName2:ChoreName3:ChoreNameN
```

If this parameter is not specified, then no Chores will be run. If the name specified does not match an existing Chore then an error is written to the server log and execution continues to the next Chore.

The value of the configuration parameter can be retrieved by a client application as a Server property called StartupChores using the existing TM1ObjectPropertyGet call.

This is a read-only property and set operations are rejected. The value of the property can be changed only by editing the configuration file and restarting the server.

SubsetElementBreatherCount
This parameter manages the wayIBM TM1 Server handles locking behavior for subsets.

Parameter type: optional, dynamic

When

```
SubsetElementBreatherCount=-1
```

The TM1 Server never releases the lock on subsets when other requests for the subset are pending. This setting is the default. It can optimize view performance for a single user, but at the cost of multi-user concurreny.

When `SubsetElementBreatherCount` is set to any value greater than zero (0), the TM1 server releases the lock on subsets when other requests for the subset are pending, then reacquires the lock after pending requests are processed. This setting improves performance when multiple users attempt to access the same subset, particularly when the subset contain more than 100 elements.

SupportPreTLSv12Clients
As of TM1 10.2.2 Fix Pack 6 (10.2.2.6), all SSL-secured communication between clients and servers in TM1 uses Transport Layer Security (TLS) 1.2. This parameter determines whether clients prior to 10.2.2.6 can connect to the 10.2.2.6 or later TM1 server.

Parameter type: optional, static

Default is F (False).

To allow clients prior to 10.2.2.6 to connect to the 10.2.2.6 (or later) TM1 server, add the following line to Tm1s.cfg:

```
SupportPreTLSv12Clients=T
```

When the TM1 server is configured to allow connections from pre-TLS v1.2 clients, the connection with such clients is established using TLS 1.0.

If `SupportPreTLSv12Clients` is not present in the Tm1s.cfg file, or if `SupportPreTLSv12Clients=F`, clients prior to 10.2.2.6 **cannot** connect to a 10.2.2.6 or later TM1 Server.

SvrSSLExportKeyID
Specifies the identity key used to export the IBM Cognos TM1 server's certificate from the Microsoft Windows certificate store.

Parameter type: optional, static

In most cases, the value for **SvrSSLExportKeyID** will be identical to the value for SSLCertificate.

SyncUnitSize
Sets the frequency of saving a check point during a synchronization process in case there is a network connection failure.

Parameter type: optional, static

Note: When you use SyncUnitSize, you must also configure the MaximumSynchAttempts parameter. For more information, see "MaximumSynchAttempts" on page 347.

If you configure both the SyncUnitSize and MaximumSynchAttempts parameters and a synchronization process is interrupted by a network connection failure, the process will attempt to reconnect and complete the synchronization starting from the last check point.

To set this parameter, add the following line to the Tm1s.cfg file for the planet server:

```
SyncUnitSize=n
```

where n represents the number of synchronization records written to the transaction log file, Tm1s.log, after which a check point will be saved.

The default value is 1000.

The minimum recommended value is 500.

TM1ConnectorforSAP
Set this parameter to T to use the IBM Cognos TM1 Connector for SAP software.

Parameter type: optional, static

Note: This functionality is available only to customers who purchased the IBM Cognos TM1 Connector for SAP software. That software was previously available separately from the IBM Cognos TM1 software. This software is no longer available for sale.

If you have previously purchased this functionality, you must add `TM1ConnectorforSAP=T` and `UseNewConnectorforSAP=T` to the tm1s.cfg file to make the software available.

The default value is F.

tlsCipherList
Specifies a comma-separated list of supported cipher suites in priority sequence.

Parameter type: optional, static

Use tlsCipherList to specify what cipher suites are acceptable for your TM1 system. The listed cipher suites are presented to the SSL negotiation in the order in which they are listed, for both the client and server sides of the negotiation. At least one of the listed cipher suites for the client and server must match.

The following cipher suites are supported:

- RFC 2246: "The TLS Protocol Version 1.0 " (http://www.ietf.org/rfc/rfc2246.txt)
- RFC 4346: "The Transport Layer Security (TLS) Protocol Version 1.1" (http://www.ietf.org/rfc/rfc4346.txt)
- RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2" (http://www.ietf.org/rfc/rfc5246.txt)
- RFC 4492: "Elliptic Curve Cryptography (ECC) Cipher Suites for Transport Layer Security (TLS)" (http://www.ietf.org/rfc/rfc4492.txt)

- RFC 5289, TLS Elliptic Curve Cipher Suites with SHA-256/384 and AES Galois Counter Mode (GCM) (http://www.ietf.org/rfc/rfc5289.txt)

For example:

```
tlsCipherList=TLS_RSA_WITH_AES_128_CBC_SHA,
TLS_RSA_WITH_RC4_128_MD5, TLS_RSA_WITH_AES_128_CBC_SHA256
```

TopLogging
Added in v2.0.7 Enables dynamic logging of the threads that are running in an instance of the TM1 Server.

Parameter type: Boolean, optional, dynamic

By default, the **TopLogging** parameter is set to `False`.

Note: You must add `TopLogging=T` to the `tm1s.cfg` file before you start your TM1 Server to enable logging.

TopScanFrequency
Added in v2.0.7 Specifies the logging frequency (interval) in seconds for the **TopLogging** logger, which enables dynamic logging of the threads that are running in an instance of the TM1 Server.

Parameter type: Integer, optional, dynamic

By default, the **TopScanFrequency** parameter is set to 5 seconds. Setting this parameter to 0 disables the logger.

See also **TopLogging**.

TopScanMode.Sandboxes
Added in v2.0.7 Enables logging of the active sandboxes for the current server, the total memory that is consumed for all sandboxes by a user, and the number of sandboxes for this user.

Parameter type: optional, dynamic

By default, the **TopScanMode.Sandboxes** parameter is set to F (False).

See also **TopLogging**.

TopScanMode.SandboxQueueMetrics
Added in v2.0.7 Enables logging of sandbox queue metrics. The name of the node for the sandbox, the status of the sandbox in the queue, and the length of time the sandbox was in the queue before it was processed is logged for each sandbox in the queue.

Parameter type: optional, dynamic

By default, the **TopScanMode.SandboxQueueMetrics** parameter is set to F (False).

See also **TopLogging**.

TopScanMode.Threads
Added in v2.0.7 Enables logging of the current processing state of each thread. This information includes the name of the user or process that started the thread, the API function that the thread is executing, the lock status of the last object that was locked, the number of objects that are used by the thread, and the total time, in seconds, that the current API function or chore process has been processing.

Parameter type: optional, dynamic

By default, the **TopScanMode.Threads** parameter is set to T (True).

See also **TopLogging**.

UnicodeUpperLowerCase
This configuration parameter instructs the TM1 server to identify and handle Unicode object names, preventing the creation of identical Unicode object names that vary only in case.

Parameter type:

- Optional
- Static

  If you change this parameter value, restart the TM1 server to apply the new value.

TM1 treats ASCII object names as case-insensitive; the element name SALES is equivalent to sales. A reference to either SALES, sales, or even SaLeS is considered to be a reference to a single element. Similarly, the cube name Projections is equivalent to PROJECTIONS.

However, Unicode object names are **not** treated as case-insensitive. Consequently, a server can contain two identically named objects that varied only in case. For example, the elements NEMÈIJA and nemèija can exist in a single dimension, and each is considered a unique element.

Include the parameter `UnicodeUpperLowerCase=T` in your TM1s.cfg file to prevent the creation of identically named Unicode object names that vary only in case. When `UnicodeUpperLowerCase=T`, Unicode object names are handled just as ASCII object names, and are case-insensitive.

If you have developed applications that rely on Unicode object names that vary only in case, and want to maintain such functionality, you should not add the UnicodeUpperLowerCase configuration parameter to your Tm1s.cfg file. If this parameter is not present in Tm1s.cfg (or is set to F) TM1 will continue to treat Unicode object names as case-sensitive.

UseExcelSerialDate
Enables the use of Microsoft Excel serial dates instead of TM1 serial dates.

Parameter type: optional, static

When UseExcelSerialDate is enabled, TM1 rule functions and TurboIntegrator functions use Jan 1, 1900 as a base date for serial dates instead of Jan 1, 1960.

In the past, TM1 rule functions used serial dates that represent the number of days elapsed since Jan 1, 1960. This conflicts with Microsoft Excel serial dates, which represent the number of days elapsed since Jan 1, 1900. The number formatting features in TM1 expect cube data to use Microsoft Excel serial dates rather than TM1 serial dates.

To avoid the need to convert dates, enable UseExcelSerialDate to have rule functions use Microsoft Excel dates rather than legacy TM1 dates.

```
UseExcelSerialDate=T
```

Default value: F

Example

You can see the serial date issue in this example.

The following rule returns May 26, 2015 as a serial date.

```
[]= N:(DAYNO('2015-05-26'));
```

The unformatted result is 20234, which indicates that 20234 days have elapsed since Jan 1, 1960. The rule function is using legacy TM1 serial dates.

When you set the display format in TM1 to a date format, such as `mmmm dd, yyyy`, the result is May 25, 1955, because May 25, 1955 is 20234 days away from Jan 1, 1900. The value is being interpreted as a Microsoft Excel serial date.

After you add `UseExcelSerialDate=T` to the `tm1s.cfg` file and restart the TM1 server, you see the expected result, May 26, 2015, in TM1. The rule function is now using Jan 1, 1900 as the base date for serial dates.

UseLocalCopiesforPublicDynamicSubsets
Allows public dynamic subsets to improve performance and reduce locking by using local copies of the subset when possible.

Parameter type: optional, dynamic

By default, or if the parameter is not present in the tm1s.cfg file, **UseLocalCopiesforPublicDynamicSubsets** is enabled. To restore the earlier method of saving dynamic subsets, set this parameter to F.

UseNewConnectorforSAP
Set this parameter to T to use the IBM Cognos TM1 Connector for SAP software.

Parameter type: optional, static

Note: This functionality is available only to customers who purchased the IBM Cognos TM1 Connector for SAP software. That software was previously available separately from the IBM Cognos TM1 software. This software is no longer available for sale.

If you have previously purchased this functionality, you must add UseNewConnectorforSAP=T and TM1ConnectorforSAP=T to the tm1s.cfg file to make the software available.

The default value is F.

UserDefinedCalculations
Enables the **Rollup** and **Insert Subset** options to create user-defined consolidations in the Subset Editor in IBM Cognos TM1(r) Perspectives and Architect, and enables the **Create Custom Consolidation** button in TM1(r)Web clients.

Parameter type: optional, dynamic

By default, UserDefinedCalculations is enabled.

To disable user-defined consolidations TM1 Perspectives, Architect, and TM1 Web clients, add the following line to tm1s.cfg:

```
UserDefinedCalculations=F
```

Note: When set to F, users will see the following:

- In Architect and Perspectives, when users click the **Rollup** or **Insert Subset** option, they will get an error message stating that user defined calculations are not enabled.
- In TM1 Web, the **Create Custom Consolidation** button will be grayed-out.

UseSQLFetch UseSQLFetchScroll UseSQLExtendedFetch
These parameters instruct IBM TM1 Server to use a particular fetch call.

Parameter type: optional, dynamic

When you run TurboIntegrator process that extracts information from an ODBC data source, TM1 Server tries to use the most efficient SQL fetch call possible.TM1 Server queries the ODBC driver to determine which of the following SQL Fetch calls to use to extract the data:

SQLFetch(), an ODBC 1 function

SQLExtendedFetch(), an ODBC 2function

SQLFetchScroll(), an ODBC 3 function

These parameters are all dynamic.

If TM1 Server receives no response when it queries the ODBC driver, your TM1 Server process will result in an error unless one of the following parameters is set to T in your Tm1s.cfg file:

UseSQLFetch

UseSQLFetchScroll

UseSQLExtendedFetch

These parameters instruct TM1 Server to use a particular fetch call. You must ensure that the call specified in Tm1s.cfg is appropriate for the ODBC driver being accessed, and you can specify only one of these parameters in Tm1s.cfg.

For example, to instruct the TM1 Server to use the SQLExtendedFetch() call to extract data from an ODBC source, add the following line to Tm1s.cfg:

```
UseSQLExtendedFetch=T
```

UseSSL
Enables or disables SSL on the IBM TM1 Server.

Parameter type: optional (required for SSL), static

This parameter is enabled by default.

To disable SSL, set UseSSL=F.

Default value: T

When UseSSL=T, you must set several other tm1s.cfg parameters that manage SSL implementation. For details on these parameters, see “Data transmission security ” on page 270.

UseStargateForRules
Indicates if a rule uses the Stargate view.

Parameter type: optional, static

By default, any time a rule references a calculated value, the value is retrieved from a Stargate view stored in memory (if available). Using the Stargate view for rules, in most cases, results in a significant improvement in performance. It is more efficient to retrieve a calculated value from memory than to request and retrieve a calculation from the server.

In some unique instances that are difficult, if not impossible, to determine in advance and can only be determined through trial and error, retrieving a calculated value from a Stargate view is actually slower than requesting and retrieving the value from the server. In these instances, add the following line to Tm1s.cfg to instruct the TM1 rules to always retrieve the calculated values from the server and improve performance.

```
UseStargateForRules=F
```

Contact customer support before adding the UseStargateForRules parameter.

VersionedListControlDimensions
Removes contention on control dimensions such as }Cubes, }Dimensions, }Groups, }Clients. Allows creation of new objects without IX locking the dimension.

Parameter type: optional, static

Default value: T (enabled)

Set to F (False) to disable versioned list control dimensions.

ViewConsolidationOptimization
Enables or disables view consolidation optimization on the IBM TM1 Server.

Parameter type: optional, static

Using this parameter improves the performance of calculating consolidated elements. By default, ViewConsolidationOptimization is enabled on the TM1 Server.

View consolidation optimization stores the consolidated values that use leaf element components on either the row or column axis. For example, consider the dimension structure Year, 1Quarter with values Jan, Feb, and Mar.

When either a row or column subset uses the Jan element, both the 1 Quarter and Year consolidations are calculated and stored for future reference. This improves performance but increases the amount of memory required for a given view.

To disable view consolidation optimization, add the following line to Tm1s.cfg:

```
ViewConsolidationOptimization=F
```

ViewConsolidationOptimizationMethod
This parameter defines the method used to achieve view consolidation optimization when the ViewConsolidationOptimization parameter is enabled on the IBM TM1 Server.

Parameter type: optional, static

There are two methods that ViewConsolidationOptimization can use to calculate and store consolidations: ARRAY or TREE. The ARRAY method stores consolidations in a temporary array. The TREE method stores consolidations in a tree.

ViewConsolidationOptimizationMethod should be set to TREE in most circumstances. This setting provides the best performance in normal operations.

In rare instances, using the TREE method can result in a degradation of performance. In such an instance, try setting the parameter to ARRAY. For example, in the uncommon circumstance when dimensions have just a few leaf elements rolling up to many consolidations, ViewConsolidationOptimizationMethod should be set to ARRAY.

To set this parameter, add the appropriate line to your configuration file:

```
ViewConsolidationOptimizationMethod=TREE
```

or

```
ViewConsolidationOptimizationMethod=ARRAY
```

If ViewConsolidationOptimizationMethod is not explicitly set in the `Tm1s.cfg` file, the TREE method is used by default.

ZeroWeightOptimization
Determines whether consolidated members with a weight of 0 are factored into the computation of consolidated cell values or consolidation functions. Consolidation functions include ConsolidatedCount, ConsolidatedMax, ConsolidatedMin, ConsolidatedAvg, ConsolidatedCount, and ConsolidatedCountUnique.

Parameter type: optional, static

When set to `true`, members for which the weighting is zero are eliminated from the consolidation list, and are therefore not processed when calculating values for consolidated cells or consolidation functions. This is the default behavior.

When set to `false`, members for which the weighting is zero are included in the consolidation list, and are therefore factored into the calculations.

Default value: true

The Tm1p.ini client configuration file

The Tm1p.ini file specifies the environment information for the IBM Cognos TM1 clients (Cognos TM1 Perspectives, Cognos TM1 Architect, and Cognos TM1 Clients).

Location of the Tm1p.ini File

IBM Cognos TM1 installs a system default version of the `Tm1p.ini` file and also creates a user-specific version of the file.

The two versions of the `Tm1p.ini` file are stored in different locations.

System default Tm1p.ini file

The system default version of `Tm1p.ini` allows multiple users to use Cognos TM1 on a given computer. The `Tm1p.ini` file must be present the first time a user starts Cognos TM1 on the computer, as the parameters in the system default version govern the behavior of the initial startup of the Cognos TM1 client for each user.

The installation location of the system default version of the `Tm1p.ini` file is determined by the `%ProgramData%` setting.

%ProgramData%`\Applix\TM1\`

For example:

`C:\ProgramData\Applix\TM1\Tm1p.ini`

Tip: Run `echo %ProgramData%` from a command line to see the exact location.

User-specific Tm1p.ini file

After a user starts Cognos TM1 on the computer, a user-specific copy of the `Tm1p.ini` file is created in their `%USERPROFILE%` location.

The user-specific copy of `Tm1p.ini` accepts all parameters settings and changes for the user and governs the behavior of the Cognos TM1 client for all subsequent user sessions of the Cognos TM1 client.

The Cognos TM1 Options dialog box also stores many of these settings. You can change these settings using either the TM1 Options dialog box or by editing the `Tm1p.ini` file. The `Tm1p.ini` parameters and TM1 Options are described here.

The exact location for `%USERPROFILE%` is located here:

%USERPROFILE%`\`*user name*`\AppData\Roaming\Applix\TM1\`

For example:

`C:\Users\ADMIN\AppData\Roaming\Applix\TM1\Tm1p.ini`

Tip: Run `echo %USERPROFILE%` from a command line to see the exact location.

Parameters in the Tm1p.ini file

The following parameters can be used in the Tm1p.ini file.

AdminHost
Displays the Admin Host name on which an Admin Server is running. On IBM Cognos TM1 Options, use Login Parameters Admin Host.

AdminSvrSSLCertAuthority
The full path of the certificate authority file that issued the certificate for IBM TM1 Server.

On Cognos TM1 Options, use Certificate Authority.

AdminSvrSSLCertID
The name of the principal to whom the IBM Cognos TM1 Admin Server's certificate is issued.

Note: The value of this parameter should be identical to the **`SSLCertificateIDparameter`** for the Cognos TM1 Admin Server as set in IBM Cognos Configuration.

This parameter can also be set for clients in the Cognos TM1 Options window > **Certificate ID** field.

AdminSvrSSLCertRevList
The full path of the certificate revocation file issued by the certificate authority that issued the IBM Cognos TM1 Admin Server's certificate.

A certificate revocation file will only exist in the event a certificate had been revoked. On Cognos TM1 Options, use Certificate Revocation List.

AdminSvrSSLExportKeyID
The identity key used to export the certificate authority certificate, which originally issued the IBM Cognos TM1 Admin Server's certificate, from the certificate store.

This parameter is required only if you choose to use the certificate store by setting ExportAdminSvrSSLCert=T.

On Cognos TM1 Options, use Export Certificate ID.

AdvancedRulesEditor
Deprecated in v2.0.7 Indicates the type of rules editor used.

Note: As of Planning Analytics version 2.0.7, the **AdvancedRulesEditor** parameter in the `tm1p.ini` file is ignored. The advanced rules editor does not launch in TM1 Architect and TM1 Perspectives, only the basic rule editor launches.

The advanced rules editor has an enhanced interface.

- T - The advanced rules editor is used.
- F (Default)- The basic rules editor is used.

AllowImportCamClients
This parameter is required only when configuring IBM TM1 Server to use CAM authentication.

It must be set to T when importing an administrative user from CAM into TM1 Server.

If your TM1 Server is not configured to use CAM authentication, this parameter should be set to F or omitted from the Tm1p.ini file.

For details, see "Configuring the TM1 Server to use Cognos security" on page 250.

BrowseDisplayReadsRightToLeft
Indicates how data is oriented in the Cube Viewer.

Data can display right to left or left to right.

- T - Data is oriented right to left.
- F (Default) - Data is oriented left to right.

ClassicSliceMode
Indicates whether the Slice option in the Cube Viewer generates classic slices or dynamic slices.

- T - Slice option generates classic slices.
- F - Slice option generates dynamic slices.

CognosGatewayURI
This parameter is required only when configuring IBM TM1 Server to use IBM Cognos security (CAM) authentication.

It must be set to the URI of your IBM Cognos gateway. The URI is specified in the form `http[s]:/<host>/cognos`*x*`/cgi-bin/cognos.cgi` or `http[s]:/<host>/ibmcognos/cgi-bin/cognos.cgi`.

For example, `http://win2003test/ibmcognos/cgi-bin/cognos.cgi`.

If your TM1 Server is not configured to use CAM authentication, this parameter should be omitted from the Tm1p.ini file.

For details, see "Configuring the TM1 Server to use Cognos security" on page 250.

ConnectLocalAtStartup
Indicates whether IBM Cognos TM1 Architect or IBM Cognos TM1 Perspectives automatically connects to the local server at startup.

- T (Default) - TM1 Server connects to the local server at startup.

- F - TM1 Server does not connect to the local server at startup.

DataBaseDirectory
Uses the full path to the local server data directory.

You can specify multiple data directories by separating the directory names with semicolons.

DimensionDownloadMaxSize
A threshold value of the number of elements in a dimension, beyond which the dimension is downloaded and cached on the IBM TM1 client.

The DimensionDownloadMaxSize parameter is applicable to older version of TM1. The parameter is not applicable to 10.2.2.

To improve performance when you work with large dimensions, add DimensionDownloadMaxSize so that large dimensions will cache on the client.

DisableAdminHostEntry
When enabled in the `Tm1p.ini` file, the **`DisableAdminHostEntry`** parameter prevents users from modifying the Admin Host setting on the **TM1 Options** dialog box.

When **`DisableAdminHostEntry=T`**, the **Admin Host** option on the **TM1 Options** dialog box is disabled. This prevents a user from modifying the Admin Host setting and seeing other TM1 servers in your environment. If **`DisableAdminHostEntry=F`**, or if the parameter is not present in the `Tm1p.ini` file, the Admin Host setting can be edited.

`DisableAdminHostEntry` must be present in the user-specific version of the `Tm1p.ini` file. When the **`DisableAdminHostEntry`** parameter is added in the system default `Tm1p.ini` file, the parameter and setting is copied to the user-specific version of `Tm1p.ini` the first time a user starts Architect or Perspectives.

If a user starts Architect or Perspectives and the **`DisableAdminHostEntry`** parameter is not present in the system default version of `Tm1p.ini`, **`DisableAdminHostEntry=F`** is added to the user-specific version of `Tm1p.ini`.

DisableWritebackOnDisconnect
When **`DisableWritebackOnDisconnect`** is enabled in the `Tm1p.ini` file, worksheet cells containing TM1 formulas that write to the TM1 server remain active and write to the server as long as an active server connection is available.

However, when this parameter is enabled and the TM1 Perspectives client is not connected to a TM1 server, cells containing TM1 formulas that write to the server are no longer protected. In this case, entering a value in any worksheet cell containing a TM1 formula that writes to the TM1 server results in the TM1 formula being overwritten.

TM1 formulas that write to the server include DBR, DBRW, DBRA, DBS, DBSA, DBSS, and DBSW.

Setting `DisableWritebackOnDisconnect=T` also restores multiple level undo/redo and multiple copy/paste operations in a worksheet containing TM1 formulas when there is no active server connection.

`DisableWritebackOnDisconnect` has a similar effect as DisableWritebackOnTM1Formulas. The important distinction between these two parameters is that **`DisableWritebackOnDisconnect`** applies only when there is no active server connection, while **`DisableWritebackOnTM1Formulas`** applies at all times.

DisableWritebackOnTM1Formulas
When enabled in the `Tm1p.ini` file, the **`DisableWritebackOnTM1Formula`** parameter prevents writeback to the TM1 server when you enter a value in a cell containing a TM1 worksheet formula.

When you set `DisableWritebackOnTM1Formula=T` in the `Tm1p.ini` file, entering a value in any worksheet cell containing a TM1 formula that writes to the TM1 server results in the TM1 formula being overwritten.

TM1 formulas that write to the server include DBR, DBRW, DBRA, DBS, DBSA, DBSS, and DBSW.

Setting `DisableWritebackOnTM1Formula=T` also restores multiple level undo/redo and multiple copy/paste operations in a worksheet containing TM1 formulas.

DisplayApplications
Indicates whether the Applications group is visible in Server Explorer on startup.

- T - Applications group is visible in Server Explorer.
- F - Applications group does not appear in Server Explorer.

DisplayChores
Indicates whether the Chores group is visible in Server Explorer on startup.

- T - Chores group is visible in Server Explorer.
- F - Chores group does not appear in Server Explorer.

DisplayControlCubes
Indicates whether the Control Cube group is visible in Server Explorer on startup.

- T - ControlCube group is visible in Server Explorer.
- F - ControlCube group does not appear in Server Explorer.

DisplayCubes
Indicates whether the Cubes group is visible in Server Explorer on startup.

- T - Cubes group is visible in Server Explorer.
- F - Cubes group does not appear in Server Explorer.

DisplayDimensions
Indicates whether the Dimensions group is visible in Server Explorer on startup.

- T - Dimensions group is visible in Server Explorer.
- F - Dimensions group does not appear in Server Explorer.

DisplayExplorerPropertiesWindow
Indicates whether the Properties pane is visible in Server Explorer on startup.

- T - Properties pane is visible.
- F (Default) - Properties pane does not appear.

DisplayProcesses
Indicates whether the Processes group is visible in Server Explorer at startup.

- T - Processes group is visible in Server Explorer.
- F - Processes group does not appear in Server Explorer.

DisplayReplications
Indicates whether the Replications group is visible in Server Explorer at startup.

- T - Replications group is visible in Server Explorer.
- F - Replications group does not appear in Server Explorer.

ExpandRowHeaderWidth
Indicates if the Row Headers will automatically expand to accommodate the width of the longest entry in the column.

- T(Default) - Row headers auto-expand.
- F - Row header must be manually expanded when necessary.

ExportAdminSvrSSLCert
Select this option if you want the certificate authority certificate which originally issued the IBM Cognos TM1 Admin Server's certificate to be exported from the Microsoft Windows certificate store at runtime.

- T (Default) - Original certificate is exported from the Windows certificate store.
- F - Original certificate is not exported.

In Cognos TM1 Options, select Use Certificate Store.

When this option is selected, you must also set a value for Export Certificate ID in the Cognos TM1 Options dialog box or AdminSvrSSLExportKeyID.

InSpreadsheetBrowser
Indicates if the In-Spreadsheet Browser or the Cube Viewer is the default browser.

- T - In-Spreadsheet Browser is the default browser. When you double-click a cube or view, it opens in an Excel document.
- F (Default) - Cube Viewer is the default browser. When you double-click a cube or view, it opens in the Cube Viewer.

IntegratedLogin
Indicates if your TM1 client uses Integrated Login or the standard TM1 security to log in to the IBM TM1 Server and other TM1 components.

- T - Client uses Integrated login, where your Microsoft Windows login username and password are used to access the TM1 Server and other components.
- F (Default) - Client uses standard TM1 Server security, where a username and password must be explicitly provided, when logging in to the TM1 Server and other components.

Before you enable this parameter, consult with your TM1 administrator to determine if Integrated Login is implemented on your TM1 Server.

On Cognos TM1 Options, use Integrated Login.

Language
Indicates the language used in the IBM TM1 Server client interface.

Clients will try to read from the locale and use that to set the language. That language will be used if it matches one of the supported languages. If the language entered does not match a supported language, English is used.

To override the default you can set the Language explicitly in the tm1p.ini using the following codes:

Language	Code
Brazilian Portuguese	bra
Croatian	hrv
Czech	csy
Chinese (Simplified)	sch
Chinese (Traditional)	tch
Danish	dan
Dutch	nld
German	deu
Finnish	fin
French	fra
Hungarian	hun
Italian	ita
Japanese	jpn

Language	Code
Kazakh	kaz
Korean	kor
Norwegian	nor
Polish	pol
Romanian	rom
Russian	rus
Spanish	esp
Slovenian	slv
Swedish	sve
Thai	tha
Turkish	trk

LocalServerNetworkProtocol
Determines the protocol that the local IBM TM1 Server uses to communicate with clients. Currently, the only valid setting is TCP.

MainWindowLayoutInfo
Generates dimension and position coordinates for the Server Explorer window; allows Server Explorer dimensions and position to be maintained between sessions.

The coordinates are automatically generated when you move or resize the Server Explorer window.

PreviousAdminHosts
Lists up to six of the most recently accessed Admin Hosts from the IBM Cognos TM1 Options Admin Host list.

PreviousDataDirectories
Lists up to six of the most recently accessed data directories in the Local Server Data Directory list from the IBM Cognos TM1 Options window.

The directories accessed within a single session are separated by semicolons. The directories accessed in different sessions are separated by commas.

SecurityAssignmentWindowLayoutInfo
Generates dimension and position coordinates for the Clients/Groups window; allows Clients/Groups dimensions and position to be maintained between sessions.

The coordinates are automatically generated when you move or resize the Clients/Groups window.

SentMsgsToServerCountWarning
The SentMsgsToServerCountWarning parameter is for development use only. The parameter is set to F by default.

Be sure not to change the default setting.

ShowAdminHostChangeWarning
Between session storage of whether to display or suppress a warning when the AdminHost is changed.

- T (Default)- When an AdminHost is changed, a warning message displays.
- F - No message is displayed when the AdminHost is changed.

ShowAliasAttributeWarning
Between session storage of whether to display or suppress a warning when the Alias Attribute is changed.

- T (Default)- When an Alias Attribute is changed, a warning message displays.
- F - No message is displayed when the Alias Attribute is changed.

ShowChoresSchedulingWarning
Between session storage of whether to display or suppress a warning when a chore schedule is changed.

- T (Default)- When a chore schedule is changed, a warning message displays.
- F - No message is displayed when a chore schedule is changed.

ShowCubeReplicationWarning
Between session storage of whether to display or suppress a warning when a cube is replicated.

- T (Default)- When a cube is replicated, a warning message displays.
- F - No message is displayed when a cube is replicated.

ShowDimDeleteElementWarning
Between session storage of whether to display or suppress a warning when a dimension element is deleted.

- T (Default)- When a dimension element is deleted, a warning message displays.
- F - No message is displayed when a dimension element is deleted.

ShowDimensionAccessWarning
Between session storage of whether to display or suppress a warning when a dimension is accessed.

- T (Default)- When a dimension is accessed, a warning message displays.
- F - No message is displayed when a dimension is accessed.

ShowDynamicSubsetWarning
Between session storage of whether to display or suppress a warning when a Dynamic Subset is changed.

- T (Default)- When a Dynamic Subset is changed, a warning message displays.
- F - No message is displayed when a Dynamic Subset is changed.

ShowPickOperationWarning
Between session storage of whether to display or suppress a warning when data is copied using the Pick Elements option.

- T (Default)- A warning message displays any time data is copied using the Pick Elements option.
- F - No message displays when data is copied using the Pick Elements option.

ShowProcessUNASCIIWarning
Between session storage of whether to display or suppress a warning when an ASCII datasource is processed.

- T (Default)- When an ASCII datasource is processed, a warning message displays.
- F - No message is displayed when an ASCII datasource is processed.

ShowProcessUNODBCWarning
Between session storage of whether to display or suppress a warning when an ODBC datasource is processed.

- T (Default)- Any time an ODBC datasource is processed, a warning message displays.
- F - No message displays when an ODBC datasource is processed.

SliceNewWorkbook
Determines how slices are generated from the Cube Viewer.

- T - Inserts slices in a new workbook.
- F (Default) - Inserts slices in a new sheet of the current workbook.

SubsetWindowLayoutInfo
Generates dimension and position coordinates for the Subset Editor window; allows Subset Editor dimensions and position to be maintained between sessions.

The coordinates are automatically generated when you move or resize the Subset Editor window.

TM1RebuildDefault
Determines if worksheets recalculate on opening by default

By default, when you slice a view into Microsoft Excel from IBM Cognos TM1, the workbook contains a workbook level named variable, TM1RebuildOption, that is set to 1 by default. This causes the worksheets in the book to be rebuilt on opening (which forces a recalculation to happen on each sheet in the book). This action is necessary if the sheets contain Active Forms. If you are not working with Active Forms, you may not want all workbooks to use this default behavior.

All worksheets recalculate when a Cognos TM1 workbook is opened. The workbook was created by slicing from Cognos TM1 Perspectives and contains the workbook level named variable `TM1RebuildOption = 1`.

By default, all new books created by slicing have a workbook level named variable `TM1RebuildOption=1` in them. This makes the workbook rebuild on open, causing a recalculation of all sheets, which is important for Active Forms but may not be the desired behavior if you are primarily working with non-Active Form worksheets.

To prevent sheets from using the default to always rebuild when slicing, change TM1RebuildDefault from T to F (or add `TM1RebuildDefault=F` if it doesn't already exist) in your tm1p.ini file. When `TM1RebuildDefault=F` the books get the workbook level named variable set to `TM1RebuildOption=0 on slicing`. This is equivalent to how Cognos TM1 worked prior to the introduction of Active Forms.

If this option is set to T or doesn't exist, slicing from a view in Cognos TM1 Perspectives sets the TM1RebuildOption workbook level named variable to 1 which forces a rebuild on open. If this option is F, the name variable TM1RebuildOption is set to 0, which does not rebuild. For a particular report, for example, an Active Form, you can set the name variable to 1 instead of the default 0.

By default, a new install does not have the TM1RebuildDefault parameter at all which provides the default behavior of slicing with `TM1RebuildOption=1.`

Chapter 17. Troubleshooting Planning Analytics Local

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and how to resolve the problem.

Gathering information

Before contacting IBM Support, collect diagnostic data, such as system information, symptoms, log files, and traces, that are required to resolve a problem. Gathering this information saves time.

IBM Support

You can access IBM support resources from the IBM Support community. Sign in to get help or to open a case.

Fix Central

Fix Central provides fixes and updates for your software, hardware, and operating system.

IBM Planning Analytics community

Visit the IBM Planning Analytics community to share ideas and solutions with your peers.

What if my TM1 Application Server deployment fails with a Java heap space error?

If the TM1 Application Server (pmpsvc.war) deployment fails with a Java heap space error message, try adjusting the Java parameters in the WebSphere administrative console.

Note: You may have to reapply this change if you upgrade or modify your installation of WebSphere at a later date.

Procedure

1. Open the WebSphere administrative console.
   - In Windows, click **Start** > **All Programs** > **IBM WebSphere Application Server** > **Profiles** > **[Profile Name]** > **Administrative console**. Or, go to https://localhost:9043/ibm/console/.
   - In UNIX, click **Applications** > **IBM WebSphere** > **IBM WebSphere Application Server** > **Profiles** > **[Profile Name]** > **Admin Console**. Or, go to https://localhost:9043/ibm/console/.
2. Log in using the WebSphere profile that you used to deploy TM1 Application Server.

   The administrative console opens.
3. Click **Servers** > **Server Types** > **WebSphere application servers**.
4. Click the server where you deployed TM1 Application Server.
5. Under Server Infrastructure, click **Java and Process Management** > **Process Definition**.
6. Under Additional Properties, click **Java Virtual Machine**.
7. In the **Initial heap** size field, type 1024.
8. In the **Maximum heap size** field, type 2048.
9. Click **Apply**, and then click **OK**. Click **Save**.
10. Restart WebSphere.

What if I use Microsoft Excel 2007 or earlier .xls worksheets?

IBM TM1 Web versions 10.2.0 and later use the Open XML file formats for Microsoft Excel worksheets created using Excel 2007 or later.

If you are using existing Microsoft Excel files in the older .xls format, use the TM1 conversion tool to convert the files. If your original file contained macros, the TM1 conversion tool converts the original file into a macro-enabled .xlsm file, otherwise it is converted into a standard .xslx file.

The **Convert Excel files to OpenXML Excel format** option in Cognos TM1 Architect Server Explorer converts a single .xls worksheet or all worksheets in a folder. Only administrative users have this option available. The conversion renames the files to preserve as many links as possible after the conversion. Some links and action buttons need to be updated depending on permissions that may have changed as a result of the move to cell-based security that occurred in version 10.2.0.

In some cases, the Named Ranges from the original file could be renamed in the converted file during the conversion process.

By default a backup of the pre-converted worksheets is saved. By default a log file is also generated.

How do I save security rights when importing or restoring a Cognos TM1 10.2.x application?

In IBM Cognos TM1 Applications 10.2, the operation to save security rights in a Cognos TM1 Application for the very first time may be significantly slower than in previous releases. You may experience this delay when performing an upgrade and either manually restoring application files or importing an application and the related security rights.

This is a known effect of a new security design for TM1 Applications that provides greater application design flexibility. Specifically, the ability to share an Approval Hierarchy dimension across more than one application has been added to Cognos TM1 Applications 10.2. Cognos TM1 Applications now also allows you to deploy multiple applications, independently secured, for different cycles of your business process. For example, to operate a Budgeting application and a Forecasting application at the same time, based on the same underlying cube, permitting real-time Budget versus Forecast variances.

It is important to note that the significant performance delay is only seen the very first time that rights are saved for an application. The rights-saving operation is also performed when manually restoring application files or when an application is imported in the Cognos TM1 Applications portal and you select the option to include security rights during the import process.

On subsequent saving of the rights, a differential analysis is performed to ensure that the time taken to process the rights is a function of the degree of change being made. For example, a small change to the rights will be processed quickly. This is the key factor in the day-to-day operation of a TM1 Application, where you are likely to routinely update rights to reflect incremental changes to your business. Large-scale changes are unusual after an application is in production, so you will see routine changes to the rights processed quickly.

Note: You previously had to change these rights manually from the Cognos TM1 Performance Modeler or Cognos TM1 Applications portal user interface. However, the Cognos TM1 10.2 release gives you the ability to automate these changes from the command line for the first time.

How do I configure client computers to export TM1 data in PDF format?

To export IBM TM1 data to Adobe PDF format from IBM Planning Analytics client applications running in Microsoft Windows, set PDFCamp as your default printer. These steps apply to IBM Cognos TM1 Perspectives, IBM Cognos TM1 Architect, and IBM Cognos TM1 Web.

Before you begin

Verify that PDFCamp is installed correctly by confirming that **PDFCamp Printer Driver** exists in the Windows **Printers and Faxes** configuration.

Procedure

1. In Windows, open the **Printers and Faxes** configuration window.
2. Right-click **PDFCamp Printer Driver** and select **Set as Default Printer**.

What timeout settings can I set?

The following list shows timeout settings that you can set in IBM Planning Analytics. Timeout settings allow the server to clean up inactive sessions, which frees up resources and memory from services that are used by active users. Timeouts that are set too high might have a negative impact on your environment.

TM1 SERVER IDLE

Default: 900 seconds (15 minutes)

Location: tm1s.cfg

Setting: IdleConnectionTimeOutSeconds=900

"IdleConnectionTimeOutSeconds" on page 337

TM1 SERVER REST/HTTP

Default: 20 minutes

Location: `tm1s.cfg`

Setting: HTTPSessionTimeoutMinutes=20

"HTTPSessionTimeoutMinutes" on page 337

CAM SECURITY

Default: 3600 seconds (60 minutes)

Location: **Cognos Configuration** > **Security** > **Authentication**

Setting: Inactivity timeout in seconds

"Configuring session timeout values for Cognos TM1 Applications and Cognos Analytics Security" on page 260

TM1 WEB (2.0.5 or earlier):

Default: 20 minutes

Location: `\tm1_64\webapps\tm1web\WEB-INF\web.xml`

Setting `<session-timeout>20</session-timeout>`

Setting the TM1 Web session timeout

TM1 WEB (2.0.6 or later):

Default: 20 minutes

Location: `\tm1_64\webapps\tm1web\WEB-INF\configuration\tm1web_config.xml`

Setting `<add key="HttpSessionTimeout" value="60" />`

Setting the TM1 Web session timeout

PMPSVC

Default: 60 minutes

Location: **Cognos Configuration** > **TM1 Applications**

Setting: Session timeout (min)

This setting updates the `\tm1_64\webapps\pmpsvc\WEB-INF\configuration\fpmsvc_config.xml session-timeout`.

"Configuring session timeout values for Cognos TM1 Applications and Cognos Analytics Security" on page 260

PLANNING ANALYTICS WORKSPACE PROXY TIMEOUT

Default: 120 seconds (2 minutes)

Location: `<paw install>/config/paw.env`

Setting: ProxyTimeoutSeconds

“Configure parameters” on page 153

PLANNING ANALYTICS WORKSPACE IDLE TIMEOUT

Default: 60m (60 minutes)

Location: `<paw install>/config/paw.env`

Setting: SessionTimeout

“Configure parameters” on page 153

How do I fix my Planning Analytics Workspace Local installation?

This section lists the most common errors that you might encounter when you install IBM Planning Analytics Workspace Local.

Why can't I open Planning Analytics Workspace in a browser?

If you can't access Planning Analytics Workspace in a browser or your Planning Analytics Workspace services aren't starting up, check your browser for one of the following messages.

Symptoms

One of the following messages appears in your web browser:

- `"Planning Analytics Workspace is unavailable. Try again in a few minutes"`
- `"This site can't be reached"`

What to do

Note: All PowerShell commands must be run from an elevated PowerShell session.

1. Make sure that Docker is up and running. Type the following command in a PowerShell window:

   ```
   - start-service docker
   ```

2. Check your Windows Services to make sure "Docker Engine" is running.
3. In a PowerShell window, navigate to the Planning Analytics Workspace installation directory, and type in the following command.

   ```
   ./scripts/paw.ps1
   ```

What to do next

If the issue persists or if the script returns an error, see “How do I handle errors when I run the start script?” on page 385.

Why doesn't the Planning Analytics Workspace administration tool start?

If you can't launch the Planning Analytics Workspace administration tool or the administration tool exits unexpectedly, check the `/log/admintool/up.log` for one of the following messages.

Symptoms

One of the following messages appears when the `./scripts/paw.ps1` script runs.

- `"Something went wrong at step 'Starting IBM Planning Analytics Administration Tool' Execution failed with exit code 1"`
- `"Cannot start service admintool: failed to create endpoint admintool on network nat: HNS failed with error : Element not found. Encountered errors while bringing up the project."`

What to do

Note: All PowerShell commands must be run from an elevated PowerShell session.

1. Navigate to the Planning Analytics Workspace installation directory, and open the `/log/admintool/up.log` file.
2. If the error message mentions HNS, see "How do I handle errors with the Host Network Service (HNS)?" on page 386.
3. If the error message doesn't mention HNS, run the following command from a PowerShell window:

```
./scripts/paw.ps1
```

What to do next

If the issue persists, see "How do I handle errors when I run the start script?" on page 385.

How do I handle errors when I run the start script?

If running the `./scripts/paw.ps1` script doesn't restart services or returns Host Network Service (HNS) errors, Windows filter errors, or pa-gateway errors, you can try the following solutions.

Symptoms

One of the following messages appears when the `./scripts/paw.ps1` script runs.

- `"C:\Program Files\Docker\docker.exe: failed to register layer: re-exec error: exit status 1: output: ProcessUtilityVMImage C:\ProgramData\docker \windowsfilter\<id>\UtilityVM: The process cannot access the file because it is being used by another process"`
- `"Recreating 32bf8925a845_32bf8925a845_32bf8925a845_admintool Error: for <service-Name> Cannot start <service-Name>: hcsshim: PrepareLayer failed in Win32: The handle is invalid. (0x6) layerId=<ID> flavour=1"`
- `"For pa-gateway Cannot start service pa-gateway: failed to create endpoint pa-gateway on network nat: HNS failed"`
- `"HNS failed with error: The file cannot be opened because it is in the process of being deleted.".`
- `"Cannot start service <service-Name>: failed to create endpoint <service-name> on network nat: HNS failed with error: The object already exists." .`
- `"Cannot Start service <service-name>: Container is marked for removal and cannot be started"`

What to do

Note: All PowerShell commands must be run from an elevated PowerShell session.

1. If you see a `windowsfilter` error, it is possible that anti-virus software is preventing your Windows containers from starting. For more information, see Docker for Windows Server fails to pull image or start container. It is also recommended that you get confirmation from your anti-virus vendor that the anti-virus software does support Windows containers. If you need to add exclusions to your anti-virus scanning protocols, the following locations are recommended:
   - `C:\ProgramData\docker` (Or the docker-root location in the daemon.json file)
   - `C:\ProgramData\Microsoft\Windows\HNS`
   - *`<Planning Analytics Workspace install location>`*
2. If the pa-gateway is not starting, make sure that nothing is running on port 80. If port 80 is free and the issue persists or other containers don't start, try the following commands in a PowerShell window:
   - `docker container rm <container-name>`

- `./scripts/paw.ps1`

3. If you see HNS errors, see "How do I handle errors with the Host Network Service (HNS)?" on page 386.

How do I handle errors with the Host Network Service (HNS)?

Sometimes the Docker network gets corrupted and the Host Network Service is affected. You must use the Microsoft Network cleanup script to resolve your issues.

What to do

Note: All PowerShell commands must be run from an elevated PowerShell session.

1. Get the Microsoft Network Cleanup Script from the MicrosoftDocs Virtualization documentation.
2. Run the cleanup script with the following syntax:

```
.\WindowsContainerNetworking-LoggingAndCleanupAide.ps1 -Cleanup -ForceDeleteAllSwitches
```

3. If the cleanup script runs successfully, restart your computer and then run the `./scripts/paw.ps1` script.
4. If the cleanup script fails, run the following commands from PowerShell window:
   - `docker container run hello-world:nanoserver`
   - `docker run -p 80:80 hello-world:nanoserver`
5. If neither of the previous steps resolve the issue, contact Microsoft support for Docker issues. For more information, see How to get help with your Windows container issues.

What to do next

In some cases, you might need to re-image the server because of a Docker network corruption at the registry level. Contact IBM Support to discuss available options or any further troubleshooting.

Why can't I access Planning Analytics Workspace on Windows Server 2016?

If Planning Analytics Workspace is installed on a Microsoft Windows Server 2016 OS, then you must access it from a different computer. This issue is a limitation of the Microsoft NAT network driver.

Procedure

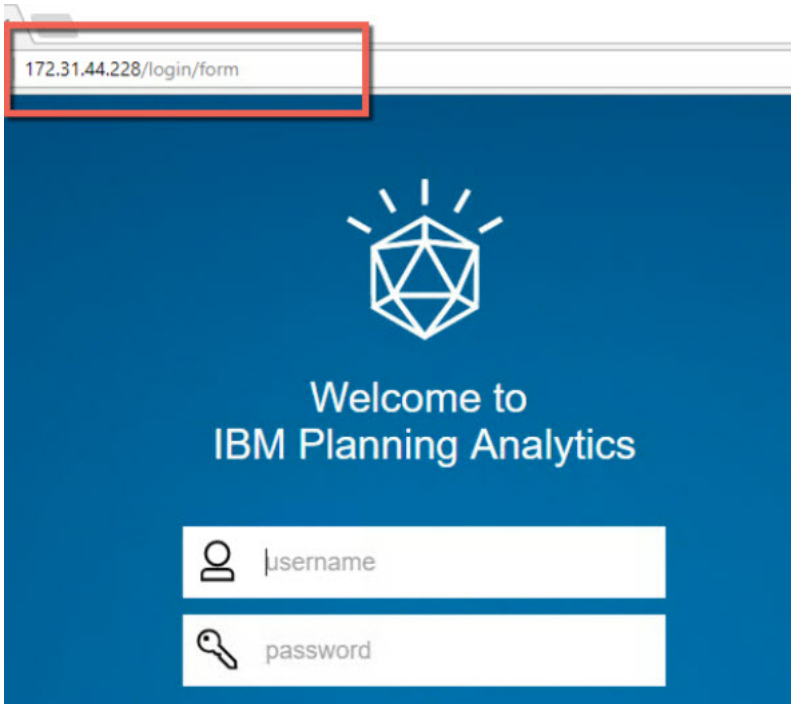
1. Start a PowerShell Window when Planning Analytics Workspace is running and type the following command:

```
docker inspect pa-gateway -f' {{.NetworkSettings.Networks.nat.IPAddress}}'
```

   This gives you the internal IP address of your PA-gateway container. For example:

```
172.31.44.228
```

2. Access Planning Analytics Workspace from your browser.



This is a dynamic IP address and a new IP address is assigned every time Planning Analytics Workspace is restarted.

3. To assign a static IP to the PA-gateway container, open a command window and run the following:

```
scripts/launch.ps1
```

What do I do if Docker for Planning Analytics Workspace hangs?

The virus protection software that you use must fully support Windows Server 2016 and Docker.

Apply the latest updates to your virus protection software. For more information, see Antivirus software and Docker (https://docs.docker.com/engine/security/antivirus/)

How do I resolve Planning Analytics Workspace connection issues on Windows Server 2016?

You might need to resolve issues that can prevent connections from Planning Analytics databases to Planning Analytics Workspace Local.

Here's a short video that shows you how to resolve issues connecting to Planning Analytics Workspace.

https://youtu.be/mdd8RWEuzKc

How do I change default port numbers for Planning Analytics Workspace on Windows Server 2016?

You can change default HTTP (80) and HTTPS (443) ports that Planning Analytics Workspace uses on Windows Server 2016 if you're using them for other services.

Here's a video that shows how to change default HTTP (80) and HTTPS (443) ports for Planning Analytics Workspace on Windows Server 2016.

https://youtu.be/0902O6cgGPM

Procedure

1. Open the `config/paw.ps1` file in a text editor.
2. Add the following lines, substituting your preferred ports:

```
$env:PAGatewayHTTPPort="80"
$env:PAGatewayHTTPSPort="443"
```

3. Restart Planning Analytics Workspace.

For more information, see “Configure parameters” on page 153.

How do I change the IP configuration of Planning Analytics Workspace Local?

If you can't access Planning Analytics Workspace Local over a VPN connection, it might be because they are using the same IP address. You can change the Planning Analytics Workspace Local IP address for the paw_net network to avoid conflicts.

What to do

To change the subnet for the paw_net network, run the following docker commands:

On Windows 2016

1. `stop-service docker`
2. `get-containernetwork | remove-containernetwork`
3. Create the file: `C:\ProgramData\docker\config\daemon.json` with the following contents:

```
{
    "fixed-cidr": "192.168.80.0/24"
}
```

   Where you substitute the desired subnet for paw_net.

4. `start-service docker`

For more information, see Customize the docker0 bridge.

On Linux

1. `docker network rm paw_net`
2. `docker network create -d bridge --subnet 10.12.0.0/16 paw_net`

   Where you substitute the desired subnet for paw_net.

   The script `scripts/create_network.sh` creates the initial paw_net network.

For more information, see Use bridge networks.

What are some common errors when installing Planning Analytics for Microsoft Excel?

This section lists the most common errors that you might encounter.

Configuration Issues

These issues are related to configuration and setup.

Convert to Formulas does not show value
You can create an Exploration View without experiencing an error, but when you convert that exploration sheet to formulas, cells no longer display values properly. In one of the cells that has no value, you click the cell and it shows the COGVAL formula, such as =COGVAL(C1, C2, $B10, C$8, B8). Attempting to do this on another workstation you find that values are displayed correctly. If a user with administrative rights to the workstation attempts to convert to formulas, the values are displayed correctly in the cells of the worksheet.

The user did not use Microsoft Excel before IBM Planning Analytics for Microsoft Excel was installed and did not get registered properly. There are two ways to resolve this problem. You can give the affected user

local administration rights to the workstation or you can run the file **Register Cognos XLL.vbs**, which will add the proper registry entries for the new user.

For the **Register Cognos XLL.vbs** file process to work (both during the installation of the software or when run separately to add a new user) the Microsoft Excel registry entries must have been created by Microsoft Excel itself. You must ensure that the user run Microsoft Excel first, before attempting to add registry entries for IBM Planning Analytics for Microsoft Excel. You can examine the ntuser.dat that the script writes to check whether the user has been properly added.

Update server and package designations to make a server available
After changing the gateway alias or switching from a test to a production environment you receive the following error message advising you that the server is not available and that the Cognos gateway is unable to connect to the IBM Cognos Analytics server.

SERVER_NOT_AVAILABLE: The Cognos gateway is unable to connect to the Cognos Analytics server. The server may be unavailable or the gateway may not be correctly configured.

This is probably caused by a change in the gateway URI.

Update the server and package designation in a workbook to switch from a test to a production environment or to access information from a different set of financial data, such as a submission.

Procedure

1. Optionally, you can update information in cell references.
   - From the worksheet you want to update, open the new server and package.
   - From the Information folder, drag the updated server and package metadata to the server or package cell.
2. Optionally, you can update information in embedded text.
   - Use the Microsoft Excel search and replace function to update embedded references in the text of cell formulas.

The Cognos Office interface fails to initialize in Microsoft Office
IBM Cognos Office may not initialize when the Microsoft .NET Framework is not installed or the version is not correct. The required Microsoft .NET Framework version is 4.6.1 or later. Another possible reason for this condition is that the add-in is either not installed or not registered.

If you are running the wrong version of Microsoft .NET Framework, uninstall it and then reinstall Microsoft .NET Framework.

To install the IBM Cognos add-in, run the installation program.

Before you attempt to install Microsoft .NET Programmability Support, you must have installed Microsoft .NET Framework.

Cognos for Microsoft Office Fails to Initialize
If you use Internet Explorer to browse IBM Cognos Analytics and open a workbook, document, or presentation published by IBM Cognos for Microsoft Office, the document launches in Microsoft Office, but without full functionality.

To configure Internet Explorer to open Microsoft Office files in Microsoft Office instead of in Internet Explorer, you must use the Folder Options tool to update browse options. It is also possible to do this in Windows Registry.

Procedure

1. Open **My Computer**.
2. From the **Tools** menu, click **Folder Options**.
3. On the **File Types** tab, under **Registered file types**, click **Microsoft Excel Worksheet**, and then click **Advanced**.

The **Edit File Type** dialog box appears.

4. Clear the **Browse in same window** check box and click **OK**.
5. Complete the same steps for Microsoft Office PowerPoint presentations and Microsoft Office Word documents.

Microsoft Office does not open a Microsoft Office document published from Cognos Office
If you observe Microsoft Office trying to open a published document twice when you double-click the workbook, document, or presentation from Microsoft Windows Explorer, the file association is either corrupted or not installed properly.

There are two options to resolve this issue. You can start the Microsoft Office application first, and then open the document using the **Open** command from the **File** menu, or you can reregister the file type.

Re-register file types with a Microsoft Office program

When you are not able to open a Microsoft Office document even though it is associated with the correct file type, you must re-register the file type with the appropriate Microsoft Office program, such as Excel, Word, or PowerPoint.

About this task

In these steps, program.exe is a placeholder for the executable file for the Microsoft Office program that you want to re-register. If you installed Microsoft Office to another location, use the path that is correct for that location.

Note: If you are using the command line on version 7 of Microsoft Windows operating system, you must elevate the rights of the command line to perform certain tasks, such as re-registering file types. To open an elevated command prompt, or a command prompt in Administrator mode, right-click the command prompt shortcut, and select **Run as Administrator**.

Procedure

1. From the **Start** menu, click **Run**.
2. To disassociate the program version, in the **Open** box, type the following command, and then click **OK**:

   ```
   program.exe/regserver
   ```
3. To specify the default version, from the **Start** menu, click **Run**.
4. In the **Open** box, type the following command, and then click **OK**:

   ```
   program.exe/regserver
   ```

Unable to Open Published Microsoft Office Documents from Cognos Connection
If the browser does not prompt you to open or save the workbook, document, or presentation, it may mean that the option to prompt before opening was cleared. Reset this option.

You must enable the **File Download** and **Automatic prompting for file downloads** in Internet Explorer.

Confirm opening of documents

The procedure to confirm opening of documents is as follows.

Procedure

1. Start the **Windows Control Panel**.
2. Double-click **Folder Options**.
3. From the **File Types** tab, in the **Registered file types** list, click **Microsoft Excel Worksheet**, and then click **Advanced**.
4. Ensure that the **Confirm open after download** check box is selected and click **OK**.
5. Repeat steps 3 and 4 for other Microsoft Office documents that are supported in IBM Cognos Office, such as **Microsoft Office Excel Template**, **Microsoft PowerPoint Presentation**, **Microsoft Office PowerPoint Template**, **Microsoft Word Document**, and **Microsoft Office Word Template**.

6. Click **Close**.

Reset internet security options

The procedure to reset internet security options is as follows.

Procedure

1. Start **Internet Explorer**.
2. From the **Tools** menu, click **Internet Options**.
3. From the **Security** tab, click the Web content zone for which you are updating these options, and then click **Custom Level**.
4. Scroll down to the **Downloads** section and click **Enable** for the **File download** and **Automatic prompting for file downloads** options.
5. Click **OK** twice.

.NET Messages are not in the installed .NET Framework language

When you install a non-English version of .NET Framework in a non-English operating system, you will notice that the error messages, .NET shortcut, and .NET Console are in English.

To solve this issue, you must apply the .NET Framework Language Pack for your language.

The subkey numbers relate to the language. For example, English, French, German, and Japanese are listed here: 1033=en-en, 1036=fr-fr, 1031=de-de, and 1041=ja. Refer to the Microsoft Support Site to obtain subkey numbers for other languages.

If you are missing the language pack subkeys, you must install the .NET language pack, which is available from the Microsoft support Web site.

Workbook closes unexpectedly

If you install the COM add-in and your Microsoft Excel workbook name contains a square bracket, Excel stops responding or closes unexpectedly after opening.

To resolve this problem, rename the workbook so that it does not contain square brackets.

Reports unavailable in Cognos Connection jobs after using Save As command in Cognos Report Studio

After opening a report in IBM Cognos Report Studio and saving a copy using the **Save As** command, you may find that if the report is included in a job, it is not available in the IBM Cognos Connection portal.

Do not use the **Save As** command in IBM Cognos Report Studio to save changes when a report is included in a job. Instead, make a copy of the report, make changes to the copy, and then copy the updated report to the IBM Cognos Connection portal. Use this method to overwrite the report in the job without breaking the report links.

The content of the Custom Report shows #NAME?

When building a Custom Report, the content of the cells shows #NAME?

When you drag items from the source tree directly to a cell of a worksheet, you are creating a COGNAME or COGVAL formula that references the item in the database. This functionality is available only when the CognosOfficeUDF.Connect automation add-in is loaded.

If #NAME? appears in the contents of the cell, it means that the add-in was not loaded and the **CognosOfficeUDF.Connect** check box in the **Add-in** dialog box (**Tools**, **Add-Ins**) is not selected.

To resolve this issue and ensure that the add-in is always properly loaded, you must verify that the value of the OPEN registry key is set to `/A "CognosOfficeUDF.Connect"`. If you use version 7 of Microsoft Windows operating system, you must use Run in XP from the command prompt to reregister file types.

Procedure

1. From the Windows **Start** menu, click **Run**.
2. In the **Open** box, type `Regedit`, and then click **OK**.
3. In the **Registry Editor**, go to the Registry branch:

   HKEY_CURRENT_USER\SOFTWARE\Microsoft\Office*version*\Excel\Options
4. In the topic area, right-click the **OPEN** entry, and then click **Modify**.
5. In the **Value Data** box, type

   ```
   /A "CognosOfficeUDF.Connect"
   ```
6. Click **OK**, and then close the **Registry Editor**.

Processing issues

The following issues are related to processing and rendering reports.

Improve performance for TM1 data
If you experience unacceptable performance when you work with TM1 data, the administrator of the TM1 system might be able to change cube or system settings to improve performance. To help the TM1 administrator evaluate the performance issue, provide the administrator with the details of the data you are using and a description of actions that result in unacceptable performance.

The following are examples of TM1 settings that affect performance.

VMM (}CubeProperties)
: For each cube, this property determines the amount of RAM reserved on the server for the storage of stargate views. The more memory made available for stargate views, the better performance will be. Sufficient memory must be available for the TM1 server to load all cubes.

VMT (}CubeProperties)
: If the time required to calculate a cube view surpasses the specified threshold, TM1 attempts to store a stargate view. If there is not enough memory available to store the stargate view, TM1 purges the oldest stargate view that is not currently in use, and continues to purge views in this manner until sufficient memory is made available.

The *IBM Cognos TM1 Operation* documentation includes more information about the CubeProperties and other tuning options.

DPR-ERR-2079 Firewall Security Rejection
If you run a report after your session has expired and then try to navigate away from the first page of the report, you encounter an error.

DPR-ERR-2079 Firewall Security Rejection. Your request was rejected by the security firewall. CAF rejection details are available in the log. Please contact your administrator.

When the DPR-ERR-2079 error occurs after an expired session, you must log on again to resolve the problem.

Procedure

1. In the report list, right-click the node item, which appears before other items.
2. Click **Log On**.
3. Provide your authentication credentials as prompted and click **OK**.

Item cannot be expanded
Microsoft Excel has reached the maximum number of rows or columns for this worksheet. The number of rows and columns is limited in Microsoft Excel. Expanding the current item is not possible because it would shift rows or columns beyond this worksheet limit. Microsoft Excel cannot shift nonblank cells off the worksheet.

Manually move items so that the row or column item can expand without reaching the limit, or move your Exploration View, list, or report to another worksheet. Or, you can move the data to a new location and try again.

Results have exceeded the Excel row or column limit
Microsoft Excel has reached the maximum number of rows or columns for this worksheet. The number of rows and columns is limited in Microsoft Excel. Items are truncated.

Filter items so that the row or column items can be displayed without reaching the limit. Consider creating additional Exploration Views, lists, or reports to spread the data over more than one worksheet. Consider using a new version of Microsoft Excel that has larger limits for rows and columns.

Error: Exception from HRESULT:<location>
If you import a data item where the path to the data item exceeds 256 characters it results in the error: Exception from HRESULT.

You must create names and unique data identifiers that keep to the 256-character limit inside Microsoft Excel.

Error refreshing exploration saved in earlier version of Microsoft Excel
This workbook may have been created with an older version of Microsoft Excel that has a set maximum number of rows or columns. Rows or columns that go beyond the maximum limits are truncated.

Although you are no longer using that version, the application is working within the limits of the older version of Excel. You might encounter this situation when you are expanding items or when you are refreshing items that have grown in size since the workbook was created.

To correct the problem, you must save the workbook with the .xlsx extension. Opening the workbook that contains the exploration in a more recent version of Excel does not convert it to the new format. Saving the workbook with the .xlsx extension converts the workbook to the new format.

Microsoft Excel limits
There are specifications and limits in Microsoft Excel 2013-2016 that may affect the performance of Planning Analytics for Microsoft Excel.

The following tables group the specifications and limits into categories:

- Worksheet and workbook
- Calculation

Table 35. Specifications and limits that apply to worksheets and workbooks

Specification	Maximum limit / restrictions	Notes
Column width	255 characters	If the data that you enter or receive exceeds the column limits of Microsoft Excel, the result is truncated.
Row height	409 points	If the data that you enter or receive exceeds the row limits of Microsoft Excel, the result is truncated.
Total number of characters that a cell can contain	32,767 characters	If the data that you enter or receive exceeds the cell character limits of Microsoft Excel, the result is truncated.

Table 35. Specifications and limits that apply to worksheets and workbooks (continued)		
Specification	**Maximum limit / restrictions**	**Notes**
Maximum limits of memory storage and file size for Data Model workbooks	32-bit environment is subject to 2 gigabytes (GB) of virtual address space, shared by Excel, the workbook, and add-ins that run in the same process. A data model's share of the address space might run up to 500 – 700 megabytes (MB), but could be less if other data models and add-ins are loaded. 64-bit environment imposes no hard limits on file size. Workbook size is limited only by available memory and system resources.	Due to the limitations with add-ins, users can only copy and paste once on top of a DBRW formula. Adding tables to the Data Model increases the file size. If you don't plan to create complex Data Model relationships using many data sources and data types in your workbook, uncheck the Add this data to the Data Model box when you import or create tables, pivot tables, or data connections.

Table 36. Specifications and limits that apply to calculations		
Specification	**Maximum limit / restrictions**	**Notes**
Length of formula contents	8,192 characters	If the formula that you enter exceeds the formula content limit of Microsoft Excel, the result is truncated.
Internal length of formula	16,384 bytes	If the formula that you enter exceeds the internal length of formula limit of Microsoft Excel, the result is truncated.

Security Issues

The following issues are related to security setup.

Cognos Office Unable to Create Trust Relationship
If you are using HTTPS to Report Data Service and you receive an error in IBM Cognos Office about being unable to trust the relationship, the Certificate Authority (CA) certificate that was issued by the Web server is not trusted on the client workstation.

To resolve this problem, you must ensure that the Certificate Authority (CA) that issued the Web server certificate is also trusted on the client workstation. If the certificate is not from an authority that is already trusted on the client, such as Verisign, you must install the CA certificate in the trust store on the client.

Procedure

1. Retrieve the CA certificate from the issuing authority.

   The file has a .cer extension. This is not the same certificate as the one used by the Web server. It is the certificate for the issuing authority itself.
2. Double-click the .cer file, click **Install Certificate**, and then click **Next**.
3. Click **Place all certificates in the following store**.
4. Click **Browse**, click **Trusted Root Certification Authorities**, and then click **Next**.
5. Click **Finish**.

Unable to View Reports After Clicking View Report
IBM Cognos for Microsoft Office is functioning normally, but you cannot use the View Report option to view reports. The client machine, running IBM Cognos for Microsoft Office, cannot connect to the gateway

URL as configured in IBM Cognos Analytics. This may be because it is behind a firewall, the hostname/DNS is not known to this client machine, or the client machine has proxy issues.

To resolve the connectivity issues, work with your system administrator.

Cognos Office Numbered Error Messages

The following error messages may appear in a dialog box and are recorded in the IBM Cognos Office log.

COI-ERR-2002 Block type is not valid
An internal processing error occurred. The block object was not able to be processed.

Contact IBM Cognos Resource Center. Be ready to supply all relevant logs and details related to this error.

COI-ERR-2003 Unexpected type: *stacked block*
An internal processing error occurred. The data object was not of the expected type and could not be processed.

Contact IBM Cognos Resource Center. Be ready to supply all relevant logs and details related to this error.

COI-ERR-2005 This version of Microsoft Office is not supported
IBM Cognos Office supports only specific versions of Microsoft Office applications.

Load the report content into one of the supported applications and environments.

To review an up-to-date list of environments supported by IBM Cognos Office products, including operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, go to the IBM Support Portal for IBM Cognos Analysis for Microsoft Excel or the IBM Support Portal for IBM Cognos for Microsoft Office.

COI-ERR-2006 This Microsoft Office product is not supported
IBM Cognos Office supports only specific Microsoft Office applications, such as Microsoft Excel, Microsoft Word, and Microsoft PowerPoint. You cannot load IBM Cognos Office content to another Microsoft Office application, such as Microsoft Access even when there is an add-in that enables these applications to interoperate.

Load the report content into one of the supported applications and environments.

To review an up-to-date list of environments supported by IBM Cognos Office products, including operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, go to the IBM Support Portal for IBM Cognos Analysis for Microsoft Excel or the IBM Support Portal for IBM Cognos for Microsoft Office.

COI-ERR-2008 Unable to Retrieve from Resources. Tried '{0}'
An internal processing error occurred.

Contact IBM Cognos Resource Center. Be ready to supply all relevant logs and details related to this error.

COI-ERR-2009 Unable to Perform This Operation Because Microsoft Excel is in Edit Mode
Report content cannot be refreshed while one of the cells of the workbook is being edited.

Click outside the active cell to return it to a non-edit mode and try again.

COI-ERR-2010 The name {0} is not valid. A name must not contain both a quote (") character and an apostrophe (') character
When you create a folder, rename a folder, or publish a document, the name can contain an apostrophe or a quote, but not both.

To resolve this problem, rename the folder or document. Exclude the apostrophe or quote character from the name.

COI-ERR-2011 The server did not return the expected response. Check that the gateway is valid.
This error message is displayed if the value entered in the System Gateway URI box of the Options dialog box is not a valid IBM Cognos Analytics server.

To resolve this problem, reenter the **System Gateway URI** with the gateway address for a valid IBM Cognos Analytics server.

COI-ERR-2013 Unable to load metadata
You may be unable to load metadata because you do not have security rights to all of the items in the worksheet or because the items were removed or changed on the server.

Ensure that you have security rights to all of the items that you are trying to view. If this does not fix the problem, ensure that the server and package information are correct and that any items that have been removed from the source database are also removed from the worksheet.

COI-ERR-2015 There was a problem parsing the MIME encoded server response. Tried to find the boundary [{0}] but found the boundary [{1}] instead
While using GZip compression, an option for compressing data that is retrieved from the server, an error occurred. The codes to decompress the data are missing or unrecognized by IBM Cognos Office.

Turn compression off. Although compression is turned on by default, it can be turned off by setting the UseGzipCompression property to false in the CommManagerSettings.xml file, which, by default, is located in the Office Connection directory, such as C:\Documents and Settings*user name*\Local Settings \Application Data\Cognos\Office Connection or C:\Users*user name*\AppData\Local\Cognos\Office Connection.

Turn compression off if you need to run tests or perform troubleshooting.

To turn gzip compression off set the following attribute:

<setting name="UseGzipCompression">False</setting>

COI-ERR-2016 Worksheet protected, IBM Cognos styles cannot be populated
If the worksheet is protected, the IBM Cognos styles cannot be applied.

You must unprotect the worksheet for the styles to be applied during a refresh of the data.

COI-ERR-2019 Connection failed
In Planning Analytics for Microsoft Excel, when you try to connect to a IBM Planning Analytics server, the following error message appears:

COI-ERR-2019 Connection failed. Connection returned an error. Verify that the connection string, including the server name and port number, is correct.

To resolve this issue, you must configure your antivirus software to allow connections from both Microsoft .NET Runtime and Microsoft Excel.

COI-ERR-2305 Unable to perform this operation because Microsoft Excel is in edit mode
Report content cannot be refreshed while one of the cells of the workbook is being edited.

Click outside the active cell to return it to a non-edit mode and try again.

COI-ERR-2307 Login failed
Your user name and password are not correct.

Ensure that you typed a valid user name and password.

IBM Planning Analytics for Microsoft Excel numbered error messages

The following error messages may appear in a dialog box and are recorded in the IBM Cognos Office log.

COR-ERR-2004 Axis specification is not valid
The workbook specification is not capable of being generated because of an anomaly.

To fix the problem, you may attempt to do any of the following:

- Click **Undo**.
- Click **Clear All Data**.

- Close the workbook and open it again.

The workbook should now accept data from the source tree.

COR-ERR-2007 Error retrieving from resources. Tried '{0}'
The exploration sheet experienced a bad state.

Contact IBM Cognos Resource Center.

COR-ERR-2009 Name formula is not valid
The COGNAME formula did not parse correctly. It may have been altered manually and may have a missing argument.

Check the COGNAME formula in the active cell and ensure that it is in the correct format, or optionally, insert the member from the source tree.

COR-ERR-2010 Formula is not valid
If an argument to a COGNAME or COGVAL formula references a cell and that cell does not contain the expected string formula you receive this error.

Check the cell and its dependents. Look for #REF or #VALUE in the cell. The contents of the cell may have accidentally been deleted.

COR-ERR-2011 Invalid range: Please enter a valid range for crosstab or list
The range is not valid or is outside of the range of the data type.

To avoid this limitation, limit your data selections.

COR-ERR-2013 Exploration cannot be converted to formula based because at least one context item contains a selection
With more than one item in the Context drop zone there is no way for the multiple items to be rendered into the cells of the worksheet.

Remove one dimension from the Context drop zone. You must have one item per dimension to convert to a formula-based analysis.

COR-ERR-2014 Due to Excel worksheet limitations the results may be truncated
If the data that you receive back exceeds the row or column limits of Microsoft Excel, the result is truncated. You receive this message to make you aware of the truncation.

To avoid this limitation, limit your data selections.

COR-ERR-2015 The current exploration cannot be rendered at this location on the worksheet
The exploration cannot write data outside the limits of the current worksheet. Either the exploration is too large for Microsoft Excel or you have designated a starting location too close to the limit.

Try to move your start location. If that fails to fix the problem, try creating an Exploration View with fewer rows or columns.

COR-ERR-2016 Unable to retrieve package <Name>
After you selected a package using the **Open Package** dialog box, an error occurred when trying to download the package from the server.

This is an internal error.

Contact IBM Cognos Resource Center.

ValueNotInPickList (243)
The value you are trying to commit is not an available option in the picklist.

When entering a value into a report cell, ensure that the value is an available option in the picklist.

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Index

Special Characters

Numerics

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Z