



Cray Linux Environment (CLE) Software Release Overview Supplement

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Software Enhancements [1]

Cray Linux Environment (CLE) software update release packages provide bug fixes and a limited set of software enhancements or features. This chapter provides an overview of software enhancements that are introduced in each update release.

Software enhancements and features that were introduced with the initial or base CLE 5.1 release are described in *Cray Linux Environment (CLE) Software Release Overview*.

1.1 Software Enhancements in CLE 5.1.UP01

1.1.1 Direct Attached Lustre (DAL)

Cray is supporting Direct Attached Lustre (DAL) on Cray XC30 systems. Initially, Cray XC30 systems only supported external Lustre™ appliance configurations. That limitation no longer exists with service nodes configured for DAL in CLE 5.1.UP01. Service nodes that support DAL use a CentOS™ operating system running on ramdisk (i.e., **not** the traditional shared root file systems) to support Lustre service daemons. DAL nodes will still be able to communicate with the Cray high-speed and hardware supervisory networks. DAL does not support SAS in this release.

For more information, see *Installing and Configuring Direct Attached Lustre*.

1.1.2 Image Management and Provisioning System (IMPS)

IMPS is a new set of features that changes how software is installed, managed, provisioned, booted, and configured. It brings together industry standard methods used for image management and Cray proprietary technologies to produce a coherent image management and provisioning strategy. In future releases, IMPS will support the installation of other Cray products, but for this release only DAL is installed using IMPS.

For more information, see *IMPS Guide for DAL Installation*.

1.1.3 Resource Utilization Reporting (RUR) Enhancements

The RUR `taskstats` data plugin now reports application exit codes. Additionally, a new output plugin, `user`, is provided that allows administrators to configure RUR such that the RUR data for each user's application is written to the user's home directory (default) or a user-defined location.

1.1.4 DVS Periodic Sync

DVS periodic sync improves data resiliency and facilitates a degree of application resiliency so that they may continue executing in the event of a DVS server failure. Prior to periodic sync, when a DVS server failed, DVS on client nodes would unconditionally kill all processes with any open file descriptors that had written data to that server. This was done since the data written to the file system may have been in the page cache on the DVS server rather than on disk, and DVS has no knowledge of exactly when data is written to backing store. Periodic sync improves this by:

- periodically syncing dirty pages.
- tracking each time a server performed the sync and the last time written for each file.
- only killing processes that performed a `write()` after the most recent sync.

You can tune periodic sync behavior using two `/proc` files. Also, DVS `closesync` mount option is obviated by this behavior and periodic sync is more efficient since it is aware of the which files are dirty.

For more information, see *Introduction to Cray Data Virtualization Service* and the `dvs(5)` man page.

1.2 Bugs Addressed Since the Last Release

The list of customer-filed bug reports that were closed with CLE 5.1 releases is included in the *CLE 5.1 Errata* specific to this release package.

1.3 Compatibilities and Differences

The *README* document that is included with the release package describes compatibility issues and functionality changes that you should be aware of before you install a CLE 5.1 update release on a Cray system that was running an earlier version of the CLE 5.1 release.

The *README* document also includes additional documentation or changes to the documentation identified after the documentation for this release was packaged.

1.4 Comprehensive System Accounting (CSA), Mazama, and Application Completion Reporting (ACR) Deprecated in CLE and SMW Releases

With the release of RUR, Application Resource Utilization (ARU), Comprehensive System Accounting (CSA), Mazama (also known as Cray Management Services (CMS)), and Application Completion Reporting (ACR) are deprecated as the resource reporting performed by RUR is intended to replace the functionality previously found in those software features. These features will remain in Cray software but will be removed in future SMW and CLE software release packages. Users of these features should migrate to RUR. See *Managing System Software for the Cray Linux Environment* for more information on how to configure and interact with RUR.

Support Requirements [2]

2.1 Supported Cray System Hardware Platforms

The CLE 5.1.UP01 update release supports Cray XC30 series systems.

2.2 Supported Software Upgrade Path

The CLE 5.1.UP01 release supports initial system installations and upgrade installations from CLE 5.1 and CLE 5.0 release packages.

2.2.1 System Management Workstation (SMW) Requirements

You must be running the SMW 7.1.UP01 release or later before you install the CLE 5.1.UP01 update release package. For additional information, see the SMW *README* document included with the SMW release package.

2.3 Binary Compatibility

The language in the binary compatibility statement in *Cray Linux Environment (CLE) Software Release Overview* remains accurate.

2.4 Additional Software Requirements

2.4.1 Release Level Requirements for Other Cray Software Products

Note: Upgrading to the latest Cray XC30 Programming Environments Release is recommended. For release information, see the *Cray Programming Environments Installation Guide*, the *Cray Programming Environment User's Guide*, and the release notes.

Support for other Cray software products is provided in the form of updates to the latest released version only. Unless otherwise noted in the associated release documentation, Cray recommends that you continue to upgrade these releases as updates become available.

2.4.2 Third-party Software Requirements

Cray Linux Environment (CLE) Software Release Overview includes a section that lists third-party software requirements for the CLE 5.1 release; this information applies to CLE 5.1 update packages with the following exceptions:

- Updated information regarding supported and certified batch system software release levels is available on the CrayPort website at <http://crayport.cray.com>. Click on **3rd Party Batch SW** in the menu bar.

3.1 Cray-developed Books Provided with This Release

[Table 1](#) lists the books provided with the CLE 5.1.UP01 release and indicates which books are new or revised with this update release. The most recent version of each book is provided with the release package.

For information about additional documentation resources and accessing documentation, see *Cray Linux Environment (CLE) Software Release Overview* (S-2425-51), which is also provided with the release package.

Table 1. Books Provided with This Release

Book Title	Most Recent Document	Updated
<i>Cray Linux Environment (CLE) Software Release Overview Supplement</i> (this document)	S-2497-5101	Yes
<i>Cray Linux Environment (CLE) Software Release Overview</i>	S-2425-51	No
<i>Installing and Configuring Cray Linux Environment (CLE) Software</i>	S-2444-5101	Yes
<i>Managing System Software for the Cray Linux Environment</i>	S-2393-5101	Yes
<i>Managing Lustre for the Cray Linux Environment (CLE)</i>	S-0010-5001	No
<i>Introduction to Cray Data Virtualization Service</i>	S-0005-5101	Yes
<i>Writing a Node Health Checker (NHC) Plugin Test</i>	S-0023-5002	No
<i>Workload Management and Application Placement for the Cray Linux Environment</i>	S-2496-5001	No
<i>Using the GNI and DMAPP APIs</i>	S-2446-51	No
<i>Using Compute Unit Affinity on Cray Systems</i>	S-0030-5002	No
<i>Installing CLE Support Package on a Cray Development and Login (CDL) Node</i>	S-2528-51	No
<i>IMPS Guide for DAL Installation</i>	S-0049-5101	Yes
<i>Installing and Configuring Direct Attached Lustre</i>	S-2541-5101	Yes
<i>Network Resiliency for Cray XC30 Systems</i>	S-0041-A	No
<i>Modifying Your Application to Avoid Aries Network Congestion</i>	S-0048-A	No