



# **NVIDIA UFM Enterprise Appliance Software User Manual v1.11.2**

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## Overview

NVIDIA® UFM® Enterprise Appliance is a powerful platform for managing InfiniBand scale-out computing environments. It is based on Ubuntu 18.04 OS, where the UFM Enterprise software is deployed and running as a Docker container. UFM enables data center operators to efficiently monitor and operate the entire fabric, boost application performance and maximize fabric resource utilization.

## Software Download

To download the UFM software, please visit [NVIDIA's Licensing Portal](#).

If you do not have a valid license, please fill out the [NVIDIA Enterprise Account Registration](#) form to get a UFM evaluation license.

## Document Revision History

For the list of changes made to this document, refer to [Document Revision History](#).

## Technical Support

Customers who purchased NVIDIA products directly from NVIDIA are invited to contact us through the following methods:

- E-mail: [Enterprisesupport@nvidia.com](mailto:Enterprisesupport@nvidia.com)
- Enterprise Support page: <https://www.nvidia.com/en-us/support/enterprise>



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# Release Notes

NVIDIA UFM Enterprise Appliance is a powerful platform for managing InfiniBand scale-out computing environments. UFM enables data center operators to efficiently monitor and operate the entire fabric, boost application performance and maximize fabric resource utilization.

## Changes and New Features

**NOTE:** ConnectX-7 adapters firmware (with a new GPIO configuration) improves long-term ConnectX-7 operation, and it is strongly desired that all customers upgrade to 28.39.2702 (or later).

Feature	Description
UFM Plugins	Updated the Tools plugin image to version 2.1.0-1
UFM OS	Integrated with UFM OS version 25.02.18-1
UFM Package	Integrated with UFM Enterprise version 6.20.2

For UFM Enterprise Changes and New Features, please refer to the [UFM Enterprise User Manual](#).

## Installation Notes

### Supported Devices

### Supported NVIDIA Externally Managed Switches

Type	Model	Latest Tested Firmware Version
NDR switches	<ul style="list-style-type: none"> <li>MQ M9 790</li> </ul>	31.2021.4036
HDR switches	<ul style="list-style-type: none"> <li>MQ M8 790</li> </ul>	27.2012.4036
EDR switches	<ul style="list-style-type: none"> <li>SB7 790</li> <li>SB7 890</li> </ul>	15.2010.4402

## Supported NVIDIA Internally Managed Switches

Type	Model	Latest Tested OS Version
XDR switches	<ul style="list-style-type: none"> <li>Q3200_RA</li> </ul>	NVOS-25.02.1002
NDR switches	<ul style="list-style-type: none"> <li>MQM9700</li> </ul>	MLNX-OS 3.12.1002 NVOS 25.01.4000
HDR switches	<ul style="list-style-type: none"> <li>MQ8700</li> <li>MCS8500</li> <li>TQ8100-HS2F</li> <li>TQ8200-HS2F</li> </ul>	MLNX-OS 3.12.1002
EDR switches	<ul style="list-style-type: none"> <li>SB7700</li> <li>SB7780</li> <li>SB7800</li> <li>CS7500</li> <li>CS7510</li> <li>CS7520</li> </ul>	MLNX-OS 3.10.4400

**Note**

For supported HCAs per MLNX\_OFED version, please refer to MLNX\_OFED Release Notes.

## UFM GUI Client Requirements

The platform and GUI requirements are detailed in the following tables:

Platform	Details
Browser	Edge, Internet Explorer, Firefox, Chrome, Opera or Safari
Memory	<ul style="list-style-type: none"><li>• Minimum: 6 GB</li><li>• Recommended: 16 GB</li></ul>

## MFT Package Version

Platform	Details
MFT	Integrated with MFT version mft-4.31.0-149

## UFM SM Version

Platform	Type and Version
SM	UFM package includes SM version 5.22.11

## UFM NVIDIA SHARP Software Version

Platform	Type and Version
NVIDIA® Scalable Hierarchical Aggregation and Reduction Protocol (SHARP)™	UFM package includes NVIDIA SHARP software version 3.9.0

## Bug Fixes in This Release

Refer to UFM Enterprise v6.20.2 Release Notes for further [Bug Fixes](#).

## Known Issues in This Release

Refer to UFM Enterprise Software Release Notes for further [Known Issues](#).

## Changes and New Features History

Feature	Description
Rev 1.10.0	
CLI Commands	<p>Updated the <a href="#">nvp_set</a> CLI command. Added the following CLI commands: In <b>NVP</b>:</p> <ul style="list-style-type: none"><li>• <a href="#">nvp discard</a></li><li>• <a href="#">nvp backup</a></li><li>• <a href="#">nvp delete</a></li><li>• <a href="#">nvp fetch</a></li><li>• <a href="#">nvp upload</a></li><li>• <a href="#">nvp rollback</a></li></ul> <p>In Data Management</p> <ul style="list-style-type: none"><li>• <code>ufm migrate-ufm2-to-ufm3</code></li></ul>

Feature	Description
Tools Plugin	Updated <a href="#">Appendix - NVP</a>
UFM Migration	Updated the Post-Restore UFM Data on UFM Enterprise Appliance instructions. Refer to <a href="#">Appendix - Migrating UFM-SDN Appliance Data to UFM Enterprise Appliance</a>
UFM OS	Integrated with UFM OS version 24.11.18-2 UFM packages like OpenSM, SHARP and IButils have been removed from the host to avoid issues with MLNX_OFED installing older versions of ibdiagnet .
UFM Package	Integrated with UFM Enterprise version 6.19.1-1
UFM HA	Integrated with UFM HA version 5.7.0
MFT Package	Integrated with MFT version mft-4.30.1-8
MLNX_OFED	Integrated with MLNX_OFED version 23.10-3.2.4
Firmware	Integrated with firmware version XX.39.3700
Rev 1.9.0	
CLI Commands	<p>Added the following CLI commands:</p> <p><b>In <a href="#">NVP</a>:</b></p> <ul style="list-style-type: none"> <li>• nvp append</li> <li>• nvp reset</li> <li>• nvp apply no-restart</li> </ul> <p><b>In <a href="#">UFM Configuration Management</a>:</b></p> <ul style="list-style-type: none"> <li>• debug generate dump</li> <li>• show files debug-dump</li> <li>• file debug-dump</li> </ul> <p><b>In <a href="#">Local and Remote Logging</a>:</b></p> <ul style="list-style-type: none"> <li>• show log</li> <li>• logging</li> <li>• show logging</li> </ul> <p><b>In <a href="#">UFM Logs</a>:</b></p>

Feature	Description
	<ul style="list-style-type: none"> <li>• show ufmhealth log</li> <li>• show ufmhealth log files</li> <li>• show ufm event log</li> <li>• show ufm event log continuous</li> <li>• show ufm event log files</li> <li>• show ufm console log</li> <li>• show ufm console log continuous</li> <li>• show ufm console log files</li> </ul> <p><b>In <u>OpenSM</u>:</b></p> <ul style="list-style-type: none"> <li>• show ib sm log</li> </ul> <p><b>In <u>NVIDIA SHARP</u>:</b></p> <ul style="list-style-type: none"> <li>• show ib sharp log</li> <li>• show ib sharp log continuous</li> <li>• show ib sharp log files</li> <li>• show ib sharp log matching</li> <li>• show ib sharp log not matching</li> </ul> <p><b>In <u>InfiniBand Utilities</u>:</b></p> <ul style="list-style-type: none"> <li>• ib ibdiagnet</li> <li>• ib ibaddr</li> <li>• ib ibhosts</li> <li>• ib iblinkinfo</li> <li>• ib ibnetdiscover</li> <li>• ib ibnodes</li> <li>• ib ibping</li> <li>• ib ibportstate</li> <li>• ib ibqueryerrors</li> <li>• ib ibroute</li> <li>• ib ibrouters</li> <li>• ib ibstat</li> <li>• ib ibstatus</li> <li>• ib ibswitches</li> <li>• ib ibsysstat</li> <li>• ib ibtracert</li> <li>• ib perfquery</li> <li>• ib saquery</li> <li>• ib sminfo</li> <li>• ib smpdump</li> <li>• ib saquery</li> </ul>

Feature	Description
	<ul style="list-style-type: none"> <li>• <code>ib smparquery</code></li> <li>• <code>ib smpquery</code></li> <li>• <code>ib vendstat</code></li> </ul> <p><b>In <u>Data Management</u>:</b></p> <ul style="list-style-type: none"> <li>• <code>ufm data backup</code></li> <li>• <code>ufm data upload</code></li> <li>• <code>ufm data fetch</code></li> <li>• <code>ufm data restore</code></li> <li>• <code>ufm data delete</code></li> </ul>
Tools Plugin	Updated <a href="#">Appendix - NVP</a>
UFM Migration	Added the ability to migrate UFM-SDN data to UFM Enterprise appliance. Refer to <a href="#">Appendix - Migrating UFM-SDN Appliance Data to UFM Enterprise Appliance</a>
UFM OS	<p>Integrated with UFM OS version 24.07.18-5</p> <p>Introduced changes to the system's GRUB ( Grand Unified Bootloader ) and Kernel behavior to improve system stability and troubleshooting. For more information, refer to <a href="#">Appendix - GRUB and Kernel Behavior</a></p>
UFM Package	Integrated with UFM Enterprise version 6.18.0-5
UFM HA	Integrated with UFM HA version 5.6.0-4
MFT Package	Integrated with MFT version mft-4.29.0-131
MLNX_OFED	Integrated with MLNX_OFED version 23.10-3.2.2
Firmware	Integrated with firmware version XX.39.3700
Rev 1.8.0	
CLI Commands	<p>Added the following CLI commands:</p> <ul style="list-style-type: none"> <li>• In <a href="#">Docker Container</a>: <ul style="list-style-type: none"> <li>◦ <code>docker exec</code></li> <li>◦ <code>docker prune image</code></li> </ul> </li> <li>• In <a href="#">User Accounts</a>: <ul style="list-style-type: none"> <li>◦ <code>username root password</code></li> </ul> </li> </ul>

Feature	Description
	<ul style="list-style-type: none"> <li>• In <a href="#">UFM Plugins</a>: <ul style="list-style-type: none"> <li>◦ ufm plugin - Updated command</li> </ul> </li> <li>• In <a href="#">NVP</a>: <ul style="list-style-type: none"> <li>◦ nvp set</li> <li>◦ nvp get</li> <li>◦ nvp dump</li> <li>◦ nvp apply</li> <li>◦ nvp apply force</li> </ul> </li> <li>• In <a href="#">Chassis Management</a>: <ul style="list-style-type: none"> <li>◦ show version - updated command output and added a note</li> </ul> </li> <li>• In Operating System License: <ul style="list-style-type: none"> <li>◦ _shell - Added a note</li> </ul> </li> </ul>
Tools Plugin	Added <a href="#">Appendix - NVP</a>
UFM OS	Integrated with UFM OS version 24.04.18-4
UFM Package	Integrated with UFM Enterprise version 6.17.0-6
UFM HA	Integrated with UFM HA version 5.5.0-9
MFT Package	Integrated with MFT version mft-4.28.0-95
MLNX_OFED	Integrated with MLNX_OFED version 23.10-1.1.9
Firmware	Integrated with firmware version XX.39.2702
Rev 1.7.0	
UFM CLI	Added tab autocompletion in UFM CLI. For more information, refer to <a href="#">Getting Help</a> .
CLI Commands	<p>Added the following CLI commands:</p> <p>In <a href="#">Docker Container</a>:</p> <ul style="list-style-type: none"> <li>• docker load &lt;image name&gt;</li> <li>• docker pull</li> <li>• docker remove image &lt;image name&gt; &lt;image version&gt;</li> <li>• show docker images</li> <li>• show docker ps</li> </ul> <p>In <a href="#">UFM Process Commands</a></p> <ul style="list-style-type: none"> <li>• ufm process health start</li> </ul>



Feature	Description
	<ul style="list-style-type: none"> <li>• ufm process model start</li> <li>• ufm process telemetry start</li> <li>• ufm process sharp start</li> <li>• ufm process telemetry start</li> <li>• ufm process sm start</li> </ul> <p>In <a href="#">UFM Plugins</a>:</p> <ul style="list-style-type: none"> <li>• ufm plugin</li> <li>• show ufm plugin</li> </ul>
UFM OS	Integrated with UFM OS version 24.01.18-4
UFM Package	Integrated with UFM Enterprise version 6.16.0-4
UFM HA	Integrated with UFM HA version 5.4.0-9
MFT Package	Integrated with MFT version mft-4.27.0-83
MLNX_OFED	Integrated with MLNX_OFED version 23.10-1.1.9
Firmware	Integrated with firmware version XX.39.2702
Rev 1.6.2	
UFM SM	New routing algorithm for asymmetric QFT topologies
UFM OS	Integrated with UFM OS version 23.11.18-2
Rev 1.6.1	
AAA TACACS+ Support	Added support for AAA TACACS+. For more information, please refer to <a href="#">Authentication, Authorization and Accounting - AAA</a> .
	Added support for three TACACS+ servers for AAA - with fallback or weighted priority.
	Added per command authorization AAA TACACS+ support
	Added IPv6 TACACS server support
	Added TACACS+ CLI command to allow the TACACS+ functionality. For more information, refer to <a href="#">TACACS+</a> .

Feature	Description
CLI Commands	<p>Added the following CLI commands:</p> <ul style="list-style-type: none"> <li>• In <a href="#">Routing</a>: <ul style="list-style-type: none"> <li>◦ show {ip   ipv6} route</li> <li>◦ show {ip   ipv6} default-gateway</li> </ul> </li> <li>• In <a href="#">AAA Methods</a> : <ul style="list-style-type: none"> <li>◦ aaa authentication login default</li> <li>◦ show aaa</li> </ul> </li> <li>• In <a href="#">TACACAS+</a> : <ul style="list-style-type: none"> <li>◦ tacacs-server</li> <li>◦ tacacs-server host</li> <li>◦ show tacacs</li> </ul> </li> <li>• In <a href="#">Chassis Management</a>: <ul style="list-style-type: none"> <li>◦ show files system</li> <li>◦ show resources</li> </ul> </li> <li>• In <a href="#">UFM License</a> : <ul style="list-style-type: none"> <li>◦ ufm license install</li> <li>◦ ufm license delete</li> <li>◦ show ufm license</li> <li>◦ show files ufm-license</li> </ul> </li> <li>• In <a href="#">UFM Configuration Management</a> : <ul style="list-style-type: none"> <li>◦ ufm configuration delete</li> <li>◦ ufm configuration export</li> <li>◦ ufm configuration fetch</li> <li>◦ ufm configuration import</li> <li>◦ ufm configuration upload</li> <li>◦ show files ufm-configuration</li> </ul> </li> <li>• <a href="#">High-Availability</a> <ul style="list-style-type: none"> <li>◦ ufm ha configure</li> </ul> </li> <li>• In <a href="#">UFM Multi-Port SM</a>: <ul style="list-style-type: none"> <li>◦ ufm multi-port-sm</li> <li>◦ show ufm multi-port-sm</li> <li>◦ ufm additional-fabric-interfaces</li> <li>◦ show ufm additional-fabric-interfaces</li> </ul> </li> <li>• <a href="#">HCA Commands</a> <ul style="list-style-type: none"> <li>◦ ib hca-vl15-window</li> <li>◦ show ib hca-vl15-window</li> </ul> </li> <li>• In <a href="#">NVIDIA SHARP</a> : <ul style="list-style-type: none"> <li>◦ ib sharp dump-files-generation enable</li> <li>◦ ib sharp dynamic-tree-allocation enable</li> </ul> </li> </ul>

Feature	Description
	<ul style="list-style-type: none"> <li>◦ ib sharp dynamic-tree-algorithm</li> <li>◦ ib sharp ib-qpc-sl &lt;0-15&gt;</li> <li>◦ ib sharp ib-sat-qpc-sl &lt;0-15&gt;</li> <li>◦ ib sharp allocation enable</li> </ul>
Client Certificate Authentication	Added support for pinning SAN with RegEx.
UFM Package	Integrated with UFM version 5.3.0-17
UFM HA Package	Integrated with UFM HA version 6.15.0
UFM OS	Integrated with UFM OS version 23.10.18-9
MFT Package	Integrated with MFT version mft-4.26.0-93
MLNX_OFED	Integrated with MLNX_OFED version 23.07-0.5.1
Firmware	Integrated with firmware version XX.38.2104 to resolve HCA overheating issue
Rev 1.5.1	
UFM Package	Integrated with UFM version 6.14.1
MFT Package	Integrated with MFT version mft-4.25.0-200
Cable and Transceivers Burning	UFM supports second-source cable transceivers burn.
Rev 1.5.0	
Command Line Interface (CLI)	<p>Enhanced CLI commands in the following chapters:</p> <ul style="list-style-type: none"> <li>• In-Service Upgrade</li> <li>• IP Management</li> <li>• UFM data reset</li> <li>• UFM HA nodes</li> </ul>
In-Service Upgrade	Added support for in-service upgrade in HA configuration. For more information, refer to <a href="#">In-Service Upgrade</a> .
UFM Factory Reset	Added support for UFM Factory Reset. For more information, refer to <a href="#">Appendix - UFM Factory Reset</a> .
UFM Package	Integrated with UFM version 6.14.0

Feature	Description
UFM HA Package	Integrated with UFM HA version 5.1.1-6
UFM OS Package	Integrated with UFM OS version 23.07.18-3
MFT Package	Integrated with MFT version mft-4.25.0-63
Rev 1.4.1	
Command Line Interface (CLI)	Enhanced CLI commands in the following chapters: <ul style="list-style-type: none"> <li>• <a href="#">System Management</a></li> <li>• <a href="#">UFM Commands</a></li> <li>• <a href="#">InfiniBand Commands</a></li> </ul>
UFM Package	Integrated with UFM version 6.13.2
UFM HA Package	Integrated with UFM HA version 5.1.1
	Added support for configuring high-availability with dual-link connectivity for improving the high availability robustness
UFM OS Package	Integrated with UFM OS version 2.1.11
MFT Package	Integrated with MFT version mft-4.24.0-72
Appliance OS License	Added appliance OS license mechanism to allow accessing the Shell with "root" permissions
Rev 1.3.1	
Command Line Interface (CLI)	Added support for <a href="#">Command Line Interface (CLI)</a> for initial configuration of the appliance
UFM Initial Settings	Removed the requirement to set the IPoIB address to the main IB interface used by UFM/SM (gv.cfg → fabric_interface). Refer to <a href="#">Configuring the Fabric Interface</a>
UFM Package	Integrated with UFM version 6.12.1
UFM HA Package	Integrated with UFM HA version 5.0.1
	Improved UFM HA configuration by setting UFM HA nodes using IP addresses only (removed the need of using hostnames and sync interface names)

Feature	Description
UFM Logical Elements	UFM Logical Elements (Environments, Logical Servers, Networks) views are no longer available
UFM OS Package	Integrated with UFM HA version 2.1.7
MFT Package	Integrated with MFT version 4.23.0-104
Rev 1.2.0	
NVIDIA SHARP Software	Updated NVIDIA SHARP software version to v3.1.1.
UFM Package	Integrated with UFM version 6.11.0
UFM HA Package	Integrated with UFM HA version 4.0.0
UFM Logical Elements	UFM Logical Elements (Environments, Logical Servers, Networks) views are deprecated and will no longer be available starting from UFM v1.3.0(January 2023 release)
Rev 1.1.0	
UFM Package	Integrated with UFM version 6.10.0
UFM HA Package	Integrated with UFM HA version 3.0.0
Chassis Health	Added support for chassis health monitoring
Rev 1.0.0	
UFM Package	Integrate with UFM version 6.9.0
UFM HA Package	Integrate with UFM HA version 2.0.0
UFM Plugins	Pluggable platform for advanced functionality and third-party plugins.

## Bug Fixes History

Ref#	Description
4161386	<p><b>Description:</b> Fixed issue where automatic failover did not occur due to previous failed actions.</p> <p><b>Keywords:</b> Automatic Failover, HA</p>

Ref#	Description
	<b>Discovered in Release:</b> v1.8.1
4143960	<p><b>Description:</b> Fixed the issue where "marking ringid 1 interface FAULTY" appeared in the syslog due to insufficient network bandwidth.</p> <p><b>Keywords:</b> ringid, syslog, HA</p> <p><b>Discovered in Release:</b> 1.8.1</p>
4159001	<p><b>Description:</b> Fixed issue where OFED installs older versions of ibdiagnet</p> <p><b>Keywords:</b> OFED, ibdiagnet</p> <p><b>Discovered in Release:</b> 1.10.0</p>
3754940	<p><b>Description:</b> UFM upgrade and ufm_ha_cluster configuration wiped the operating system</p> <p><b>Keywords:</b> UFM Upgrade, ufm_ha_cluster, OS, Wipe</p> <p><b>Discovered in Release:</b> 1.6.2</p>
3752196	<p><b>Description:</b> Intermittent UFM REST API Failures</p> <p><b>Keywords:</b> REST API, Failure</p> <p><b>Discovered in Release:</b> 1.6.1</p>
3758874	<p><b>Description:</b> manage_the_unmanaged tool failure</p> <p><b>Keywords:</b> manage_the_unmanaged, Failure</p> <p><b>Discovered in Release:</b> 1.6.2</p>
3672810	<p><b>Description:</b> TACACS+ authorization encounter failure when attempting to execute a command with arguments that are exclusively allowed in the configuration file.</p> <p><b>Keywords:</b> TACACS+; Per command Authorization</p>

Ref#	Description
	<b>Discovered in release:</b> 1.6.0
3673626	<b>Description:</b> Accessing the CLI requires the entry of the sudo password.
	<b>Keywords:</b> CLI; Login; Sudo; Password
	<b>Discovered in release:</b> 1.6.0
3629287	<b>Description:</b> UFM3.x unstable HCA due to overheating of transceiver
	<b>Keywords:</b> HCA overheating
	<b>Discovered in release:</b> v1.5.0
3575882	<b>Description:</b> UFM event is not generated for a switch down
	<b>Keywords:</b> UFM Event, Switch Down
	<b>Discovered in release:</b> v1.4.1
3565820	<b>Description:</b> The UFM start command does not reflect fabric-related issues (such as "no IB interface is running")
	<b>Keywords:</b> UFM start
	<b>Discovered in release:</b> v1.4.3
3590777	<b>Description:</b> After upgrading UFM new telemetry data is not being collected and presented in UI Telemetry tab.
	<b>Keywords:</b> Telemetry, Coredump
	<b>Discovered in release:</b> 1.15.0
3549795	<b>Description:</b> Fixed ufm_ha_cluster status to show DRBD sync status.
	<b>Keywords:</b> ufm_ha_cluster, DRBD, Sync Status
	<b>Discovered in Release:</b> 1.4.1
3547517	<b>Description:</b> Fixed UFM logs REST API returning empty result when SM logs exist on the disk.
	<b>Keywords:</b> Logs, SM logs, Empty

Ref#	Description
	<b>Discovered in Release:</b> 1.2.0
3469639	<b>Description:</b> Fixed REST RDMA server failure every couple of days, causing inability to retrieve ibdiagnet data.
	<b>Keywords:</b> REST RDMA, ibdiagnet
	<b>Discovered in Release:</b> 1.3.1
3499668	<b>Description:</b> Fixed the replacement or overwriting of the IPv4 default gateway when specifying an IPv6 default gateway
	<b>Keywords:</b> IPv4, IPv6, Default Gateway, overwrite
	<b>Discovered in Release:</b> 1.4.2
3499983	<b>Description:</b> Fixed inability to fetch bootstrap certificate when the user is set to "admin"
	<b>Keywords:</b> Bootstrap certificate, "admin"
	<b>Discovered in Release:</b> 1.4.1
3486980	<b>Description:</b> Rectified inability to upload an image or certificate using user admin
	<b>Keywords:</b> Image, Certificate, SCP
	<b>Discovered in Release:</b> 1.4.0
3486981	<b>Description:</b> Rectified inability to add multiple NTP servers.
	<b>Keywords:</b> NTP Server
	<b>Discovered in Release:</b> 1.4.0
3468783	<b>Description:</b> Fixed UFM version update in /etc/ufm-release upon manual upgrade of UFM CLI
	<b>Keywords:</b> UFM CLI version, Update
	<b>Discovered in Release:</b> 1.4.0
3410826	<b>Description:</b> Rectified inability to modify UFM user password



Ref#	Description
	<p><b>Keywords:</b> User Password, Update, Fail</p> <p><b>Discovered in Release:</b> 1.3.1</p>
3461058	<p><b>Description:</b> When using the Dynamic Telemetry API to create a new telemetry instance, the log rotation mechanism will not be applied for the newly generated logs of the UFM Telemetry instance</p> <p><b>Keywords:</b> Dynamic, Telemetry, Log-rotate</p> <p><b>Discovered in Release:</b> 1.4.0</p>
3383916	<p><b>Description:</b> Fixed Client CTRL+C server disruption</p> <p><b>Keywords:</b> Client CTRL+C, Server functionality</p> <p><b>Discovered in Release:</b> Rest Over RDMA Image 1.0.0-21</p>
3375414	<p><b>Description:</b> Fixed improper functionality of UFM UI Dashboard</p> <p><b>Keywords:</b> UI Dashboard</p> <p><b>Discovered in Release:</b> 1.2.0</p>
3342713	<p><b>Description:</b> Fixed UFM Health configuration for periodic restarts of the telemetry</p> <p><b>Keywords:</b> UFM Health, Telemetry, Periodic restarts</p> <p><b>Discovered in Release:</b> 1.2.1</p>
3459431	<p><b>Description:</b> UFM System Dump cannot be extracted from UFM 3.0 Enterprise Appliance host when running in high-availability mode.</p> <p><b>Keywords:</b> System Dump, High-Availability</p> <p><b>Discovered in Release:</b> 1.3.1</p>
3461658	<p><b>Description:</b> The network fast recovery configuration (</p>

Ref#	Description
	<p><code>/opt/ufm/files/conf/opensm/fast_recovery.conf</code></p> <p>) is missing when UFM is deployed in Docker Container mode.</p> <p><b>Keywords:</b> Network Fast Recovery; Docket Container; Missing Configuration</p> <p><b>Discovered in Release:</b> 1.4.0</p>
3361160	<p><b>Description:</b> Resolved the prolonged UFM upgrade time caused by a large historical Telemetry database table</p> <p><b>Keywords:</b> Long Upgrade Time, Historical Telemetry, Database File</p> <p><b>Discovered in Release:</b> 1.2.0</p>
3228547	<p><b>Description:</b> Client certificate authentication is not working on UFM Docker container after a Docker container restart</p> <p><b>Keywords:</b> Client Certificate Authentication, Ubuntu, Docker</p> <p><b>Discovered in Release:</b> 1.1.0</p>
3143391	<p><b>Description:</b> UFM agent port 6306 is blocked</p> <p><b>Keywords:</b> UFM Agent</p> <p><b>Discovered in Release:</b> 1.0.0</p>
3116018	<p><b>Description:</b> ufm-ha-watcher is not working</p> <p><b>Keywords:</b> UFM-HA</p> <p><b>Discovered in Release:</b> 1.0.0</p>

## Known Issue History

Ref #	Issue
3991974	<p><b>Description:</b> PCI speed degradation warning for UFM Enterprise Appliance (NDR)</p> <p><b>Keywords:</b> PCI Degradation, Speed Warning</p> <p><b>Workaround:</b> This UFM event can be ignored, as the ConnectX-7 HCAs on UFM Enterprise Appliance are connected to PCIe Gen4 instead of PCIe Gen5</p> <p><b>Discovered in Release:</b> 1.7.0</p>
4290702	<p><b>Description:</b> The NVP list of files is not available in CLI command auto-completion after adding the NVP plugin</p> <p><b>Keywords:</b> NVP Plugin, CLI</p> <p><b>Workaround:</b> Re-login to the UFM CLI</p> <p><b>Discovered in Release:</b> v1.10.0</p>
3773902	<p><b>Description:</b> In congestion control, the cc-policy.conf file remains unchanged following the upgrade of the container version (with no changes made by the user)</p> <p><b>Keywords:</b> Congestion Control, cc-policy.conf, Upgrade, Container</p> <p><b>Workaround:</b> On the host, run the command:</p> <pre data-bbox="797 1276 1463 1633">docker exec -it ufm cp /opt/ufm/skeleton/conf/opensm/ cc-policy.conf /opt/ufm/files/conf/opensm/cc- policy.conf</pre> <p><b>Discovered in Release:</b> 1.7.0</p>
3775405	<p><b>Description:</b> : Upon UFM startup, an empty temporary folder will be created at /tmp folder every 10 minutes (due to periodic telemetry status check)</p> <p><b>Keywords:</b> Empty folder, temporary, /tmp</p>

Ref #	Issue
	<p><b>Workaround:</b> Change instances_sessions_compatibility_interval parameter in gv.cfg to 30 minutes</p> <p><b>Discovered in Release:</b> v1.6.0</p>
3560659	<p><b>Description:</b> Modifying the <code>mtu_limit</code> parameter for [MngNetwork] in gv.cfg does not accurately reflect changes upon restarting UFM.</p> <p><b>Keywords:</b> <code>mtu_limit</code>, MngNetwork, gv.cfg, UFM restart</p> <p><b>Workaround:</b> UFM needs to be restarted twice in order for the changes to take effect.</p> <p><b>Discovered in Release:</b> v1.6.0</p>
3729822	<p><b>Description:</b> The Logs API temporarily returns an empty response when SM log file contains messages from both previous year (2023) and current year (2024).</p> <p><b>Keywords:</b> Logs API, Empty response, Logs file</p> <p><b>Workaround:</b> N/A (issue will be automatically resolved after the problematic SM log file, which include messages from 2023 and 2024 years, will be rotated)</p> <p><b>Discovered in Release:</b> v1.6.0</p>
3699419	<p><b>Description:</b> After remanufacturing the UFM Enterprise Appliance from an ISO file as described in <a href="#">Appendix - Deploying UFM Appliance from an ISO File</a>, rebooting or power cycling the host in High-Availability (HA) mode results in the unsuccessful start of the HA services.</p> <p><b>Workaround:</b> Change the crontab option in UFM Enterprise Appliance via the OS shell <code>#crontab -e</code>:</p>

Ref #	Issue
	<pre data-bbox="857 275 1422 310">@reboot /usr/sbin/netplan apply</pre> <p data-bbox="797 373 841 405">to:</p> <pre data-bbox="857 474 1369 554">@reboot sleep 240 &amp;&amp; /sbin/ip link set up dev idrac</pre> <p data-bbox="797 638 1318 674"><b>Keywords:</b> Reboot; HA; Power Cycle</p> <p data-bbox="797 699 1211 735"><b>Discovered in Release:</b> 1.6.0</p>
N/A	<p data-bbox="797 762 1458 995"><b>Description:</b> Execution of UFM Fabric Health Report (via UFM Web UI / REST API) will trigger ibdiagnet to use SLRG register, which might cause some of the Switch and HCA's firmware to get stuck and cause the HCA's ports to stay at "Init" state.</p> <p data-bbox="797 1024 1446 1094"><b>Keywords:</b> UFM Fabric Health Report; SLRG; Stuckness</p> <p data-bbox="797 1123 1211 1159"><b>Discovered in Release:</b> 1.5.0</p>
3511410	<p data-bbox="797 1186 1438 1297"><b>Description:</b> Collect system dump for DGX host does not work due to missing sshpass utility.</p> <p data-bbox="797 1327 1409 1396"><b>Workaround:</b> Install sshpass utility on the DGX.</p> <p data-bbox="797 1425 1385 1495"><b>Keywords:</b> System Dump, DGX, sshpass utility</p>
3432385	<p data-bbox="797 1530 1443 1682"><b>Description:</b> UFM does not support HDR switch configured with hybrid split mode, where some of the ports are split and some are not.</p> <p data-bbox="797 1711 1463 1822"><b>Workaround:</b> UFM can properly operate when <b>all</b> or <b>none</b> of the HDR switch ports are configured as split.</p> <p data-bbox="797 1852 1417 1921"><b>Keywords:</b> HDR Switch, Ports, Hybrid Split Mode</p>

Ref #	Issue
3461658	<p><b>Description:</b> After the upgrade from UFM Enterprise Appliance v1.4.0 GA to UFM Enterprise Appliance v1.4.1 FUR, the network fast recovery path in <code>opensm.conf</code> is not automatically updated and remains with a null value (<code>fast_recovery_conf_file (null)</code>)</p> <p><b>Workaround:</b> If you wish to enable the network fast recovery feature in UFM, make sure to set the appropriate path for the current fast recovery configuration file (<code>/opt/ufm/files/conf/opensm/fast_recovery.conf</code>) in the <code>opensm.conf</code> file located at <code>/opt/ufm/files/conf/opensm</code>, before starting UFM.</p> <p><b>Keywords:</b> Network fast recovery, Missing, Configuration</p>
N/A	<p><b>Description:</b> Upgrading the UFM Enterprise Appliance SW while upgrading the UFM Enterprise Appliance OS is not supported.</p> <p><b>Workaround:</b> Do not use the <code>--appliance-sw-upgrade</code> flag while upgrading the UFM Enterprise Appliance OS. Alternatively, upgrade the UFM Enterprise Appliance SW as described in Software Upgrade</p> <p><b>Keywords:</b> SW Upgrade; OS Upgrade, <code>--appliance-sw-upgrade</code></p>
3473600	<p><b>Description:</b> The UFM Enterprise service is enabled while upgrading the UFM Enterprise Appliance SW on HA mode.</p> <p><b>Workaround:</b> Disable the UFM Enterprise service after the upgrade in HA mode by running the following command:</p>

Ref #	Issue
	<pre data-bbox="797 218 1466 426">systemctl disable ufm- enterprise.service</pre> <p data-bbox="797 436 1466 485"><b>Keywords:</b> SW Upgrade, HA Mode</p>
3361160	<p data-bbox="797 506 1466 751"><b>Description:</b> Upgrading UFM Enterprise Appliance from versions 1.3.0, 1.2.0 and 1.1.0 results in cleanup of UFM historical telemetry database (due to schema change). This means that the new telemetry data will be stored based on the new schema.</p> <p data-bbox="797 762 1466 1171"><b>Workaround:</b> To preserve the historical telemetry database data while upgrading from UFM Enterprise Appliance version 1.3.0, 1.2.0 and 1.1.0, perform the upgrade in two phases. First, upgrade to UFM Enterprise Appliance v1.2.0, and then upgrade to the latest UFM version (UFM v1.3.0 or newer). It is important to note that the upgrade process may take longer depending on the size of the historical telemetry database.</p> <p data-bbox="797 1182 1466 1262"><b>Keywords:</b> UFM Historical Telemetry Database, Cleanup, Upgrade</p>
3346321	<p data-bbox="797 1287 1466 1451"><b>Description:</b> In some cases, when multiport SM is configured in UFM, a failover to the secondary node might be triggered instead of failover to the local available port</p> <p data-bbox="797 1461 1466 1514"><b>Workaround:</b> N/A</p> <p data-bbox="797 1524 1466 1604"><b>Keywords:</b> Multiport SM, Failover, Secondary port</p>
N/A	<p data-bbox="797 1633 1466 1833"><b>Description:</b> Enabling a port for a managed switch fails in case that port is not disabled in a persistent way (this may occur in ports that were disabled in previous versions of UFM Enterprise Appliance v1.3.0)</p> <p data-bbox="797 1843 1466 1934"><b>Workaround:</b> Set "persistent_port_operation=false" in</p>

Ref #	Issue
	<p data-bbox="797 218 1382 338"><code>gv.cfg</code> to use non-persistent (legacy) disabling or enabling of the port. UFM restart is required.</p> <p data-bbox="797 365 1422 401"><b>Keywords:</b> Disable, Enable, Port, Persistent</p>
3346321	<p data-bbox="797 428 1446 548"><b>Description:</b> Failover to another port (multi-port SM) will not work as expected in case UFM was deployed as a docker container</p> <p data-bbox="797 569 1451 688"><b>Workaround:</b> Failover to another port (multi-port SM) works properly on UFM Bare-metal deployments</p> <p data-bbox="797 709 1409 787"><b>Keywords:</b> Failover to another port, Multi-port SM</p>
348587	<p data-bbox="797 812 1463 932"><b>Description:</b> Replacement of defected nodes in the HA cluster does not work when PCS version is 0.9.x</p> <p data-bbox="797 953 1052 989"><b>Workaround:</b> N/A</p> <p data-bbox="797 1010 1422 1087"><b>Keywords:</b> Defected Node, HA Cluster, pcs version</p>
3336769	<p data-bbox="797 1113 1463 1316"><b>Description:</b> UFM-HA: If the back-to-back interface is disabled or disconnected, the HA cluster will enter a split-brain state, and the "ufm_ha_cluster status" command will stop functioning properly.</p> <p data-bbox="797 1337 1295 1373"><b>Workaround:</b> To resolve the issue:</p> <ol data-bbox="846 1409 1414 1528" style="list-style-type: none"> <li data-bbox="846 1409 1414 1486">1. Connect or enable the back-to-back interface</li> <li data-bbox="846 1486 1414 1528">2. Run</li> </ol> <div data-bbox="873 1528 1463 1682" style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre data-bbox="938 1583 1382 1619">pcs cluster start --all</pre> </div> <ol data-bbox="846 1682 1354 1759" style="list-style-type: none"> <li data-bbox="846 1682 1354 1759">3. Follow instructions in <a href="#">Split-Brain Recovery in HA Installation</a>.</li> </ol> <p data-bbox="797 1814 1365 1850"><b>Keywords:</b> HA, Back-to-back Interface</p>



Ref #	Issue
N/A	<b>Description:</b> Running UFM software with external UFM-SM is no longer supported
	<b>Workaround:</b> N/A
	<b>Keywords:</b> External UFM-SM

---

# Introduction

This manual is intended for system administrators responsible for the installation, configuration, management and maintenance of the software and hardware of UFM Enterprise Appliance. NVIDIA® UFM® Enterprise Appliance is a powerful platform for managing InfiniBand scale-out computing environments.

## Key Features

UFM provides a central management console, including the following main features:

- Pluggable platform for advanced functionality and third-party plugins
- Fabric dashboard including congestion detection and analysis
- Advanced real-time health and performance monitoring
- Fabric health reports
- Threshold-based alerts
- Fabric segmentation/isolation
- Quality of Service (QoS)
- Routing optimizations
- Central device management
- Task automation
- Logging
- High availability
- Daily Report: Statistical information of the fabric during the last 24 hours
- Event management
- Client certificate authentication

- Chassis health monitoring

---

# Getting Started

The procedures described on this section assume that you have already installed and powered on your UFM Enterprise appliance according to the instructions in the Hardware Installation Guide.

- [Obtaining the License](#)
- [Activating the License](#)
- [Configuring the Appliance for the First Time](#)
- [Starting UFM](#)

## Obtaining the License

UFM Enterprise Appliance is licensed per managed servers according to the UFM license agreement.

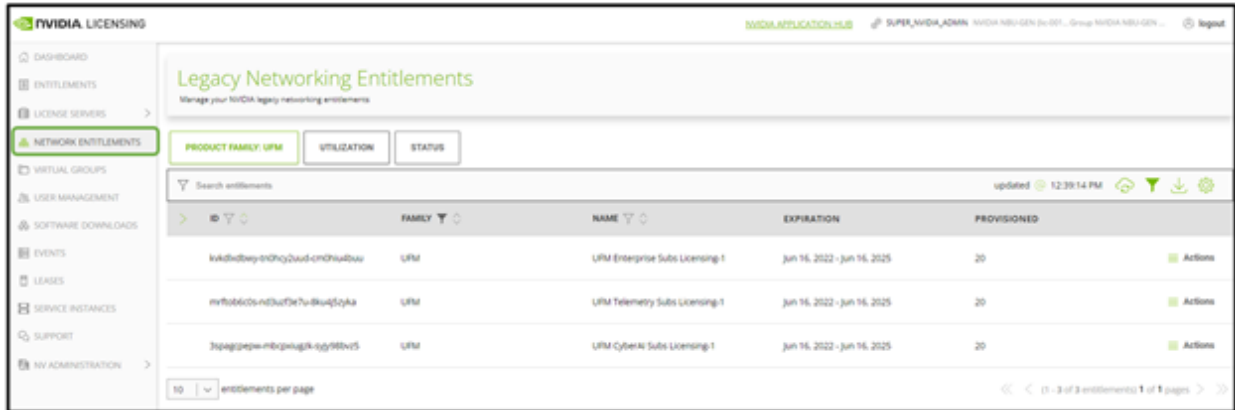
When you purchase UFM Enterprise Appliance, you will receive an email with instructions on obtaining your product license. A valid license is a prerequisite for the installation and operation of UFM Enterprise Appliance.

UFM licenses are per managed node and are aggregative. If you install an additional license, the system adds the previous node number and the new node number and manages the sum of the nodes. For example, if you install a license for 10 managed nodes and an additional license for 15 nodes, UFM will be licensed for up to 25 managed nodes.

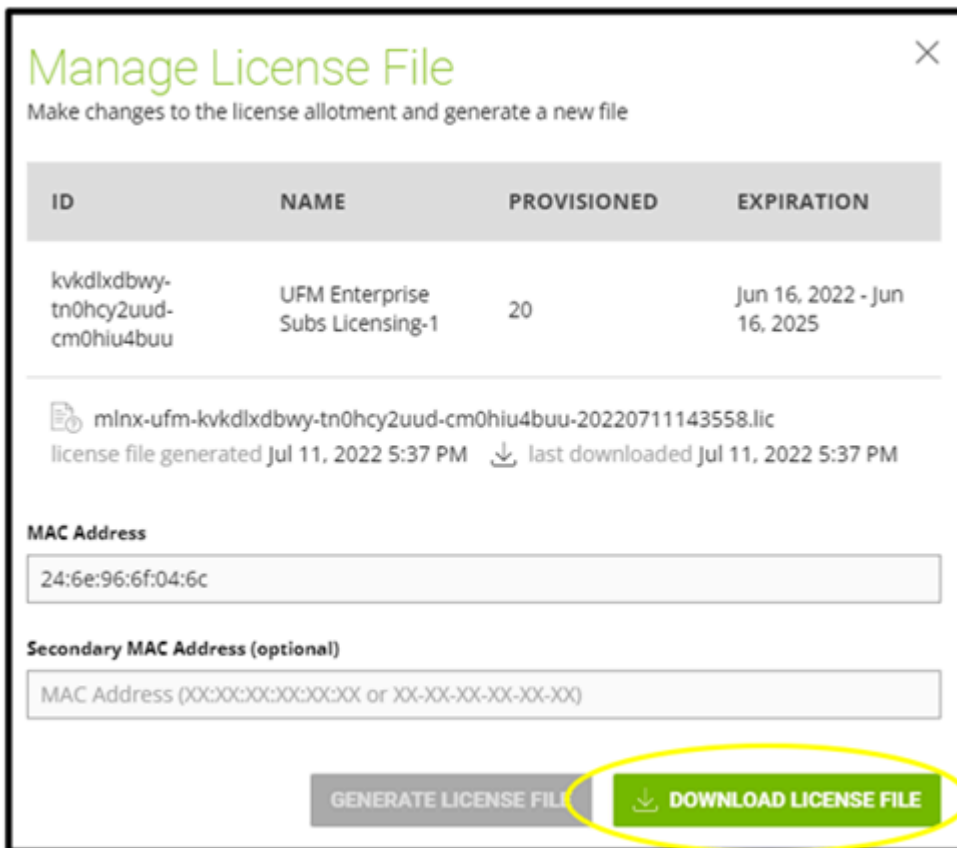
To obtain the license:

1. Go to NVIDIA's [Licensing and Download Portal](#) and log in as specified in the licensing email you received.
  - If you did not receive your NVIDIA Licensing and Download Portal login information, contact your product reseller.
2. If you purchased UFM directly from NVIDIA and you did not receive the login information, contact [enterprisesupport@nvidia.com](mailto:enterprisesupport@nvidia.com). Click on the Network

Entitlements tab. You'll see a list with the serial licenses of all your software products and software product license information and status.



3. Select the license you want to activate and click on the “Actions” button.
4. In the MAC Address field, enter the MAC address of the delegated license-registered host. If applicable, in the HA MAC Address field, enter your High Availability (HA) server MAC address. If you have more than one NIC installed on a UFM Server, use any of the MAC addresses.



5. Click on Generate License File to create the license key file for the software.
6. Click on Download License File and save it on your local computer.

If you replace your NIC or UFM server, repeat the process of generating the license to set new MAC addresses. You can only regenerate a license two times. To regenerate the license after that, contact NVIDIA Sales Administration at [enterprisesupport@nvidia.com](mailto:enterprisesupport@nvidia.com).

## Activating the License

Before starting the UFM software, copy your license file downloaded from NVIDIA's Licensing and Download Portal to the `/opt/ufm/files/licenses` directory.

We recommend that you back up the license file.

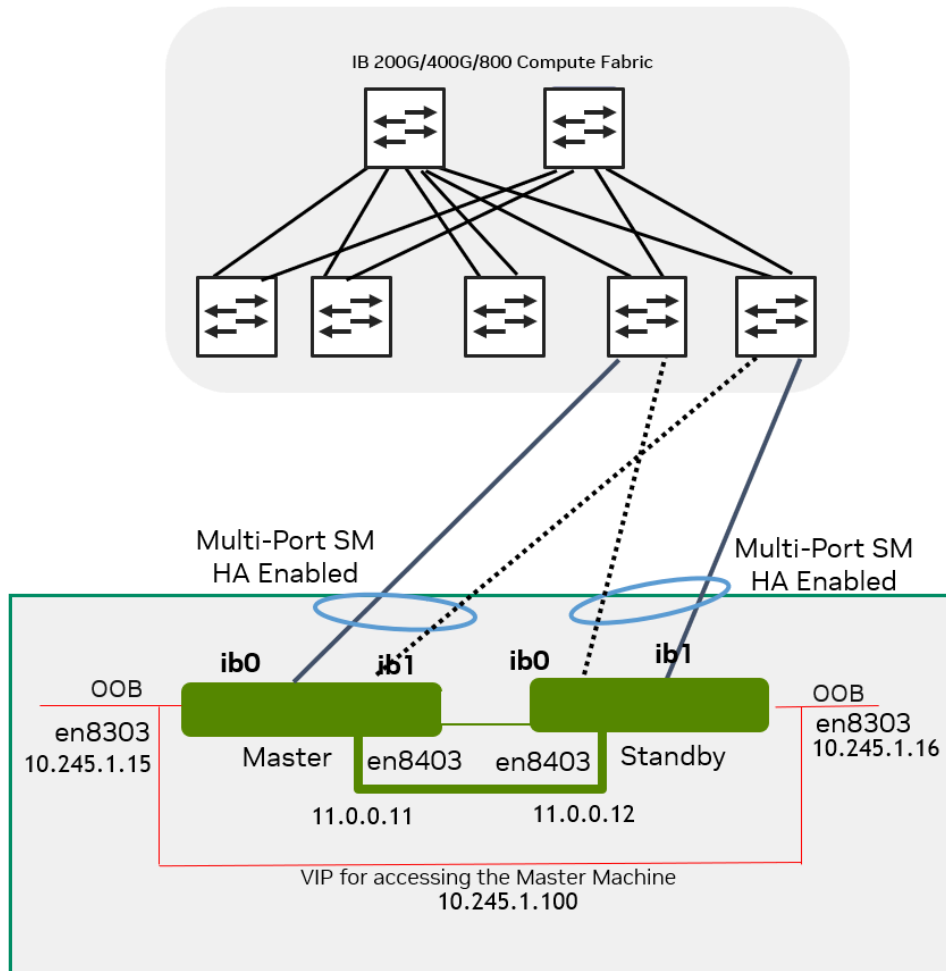
Your software is now activated.

### Note

In a High Availability configuration, the license files are replicated to the standby machine automatically.

## Configuring the Appliance for the First Time

The diagram below describes the connectivity scheme of the UFM High-Availability cluster.



The following are instructions on how to configure the management and fabric (InfiniBand) interfaces in the UFM cluster.

## Configuring the Management Interface

The NVIDIA UFM Enterprise Appliance has multiple Ethernet management interfaces. The primary management interface is eno8303. The MAC address for eno8303 is available on the pull tab and can be configured in the DHCP server. To use the remote management controller with DHCP, the free-range IP allocation must be enabled on the DHCP server.

The appliance supports a direct connection via a serial port.

For instructions on how to configure the management interface, please refer to [Configuring the Appliance](#).

## Configuring the Back-to-Back Interface

## **Warning**

This interface should be used as the primary interface when configuring HA.

When operating in HA configuration, directly connect (back-to-back - without a management switch in the middle) the Master node to the Standby node. To do so, utilize the Ethernet management interface eno8403, as shown in the above diagram.

For your convenience, you may use the CLI command [Interface](#) to set a static IP address for eno8403.

Example:

```
interface eno8403 ip address 11.0.0.11 /24
```

## Configuring the Fabric Interface

### **Note**

As of UFM Enterprise Appliance v1.3.0 (UFM Enterprise v6.12.0), configuring the fabric interface is optional.

The NVIDIA UFM Enterprise Appliance has multiple InfiniBand interfaces. The primary interface is ib0.

Configure a static IPoIB with Network service (create the file `/etc/network/interfaces.d/ifcfg-ib0` and run `ifup ib0`).

Example of `ifcfg-ib0` file definition:



```
auto ib0
iface ib0 inet static
address 10.0.0.12
netmask 255.255.255.0
broadcast 10.0.0.255
```

For your convenience, you may use the CLI command [Interface](#) to set a static IP address for ib0.

Example:

```
interface ib0 ip address 192.168.1.11 /24
```

For more details on how to configure the UFM Enterprise, please refer to [UFM Enterprise Initial Configuration](#).

# Starting UFM

## Starting UFM Procedure

1. Start the UFM Enterprise service. Run:

```
# systemctl start ufm-enterprise.service
```

2. Wait 1 minute for the service to come up.

3. Ensure the service health. Run:

```
# ufm_enterprise_sanity.sh
Checking Service...
Done
```

```
Checking Images...
Done
Checking Containers...
Done
Checking ufm REST server...
Done
Sanity tests completed successfully!
```

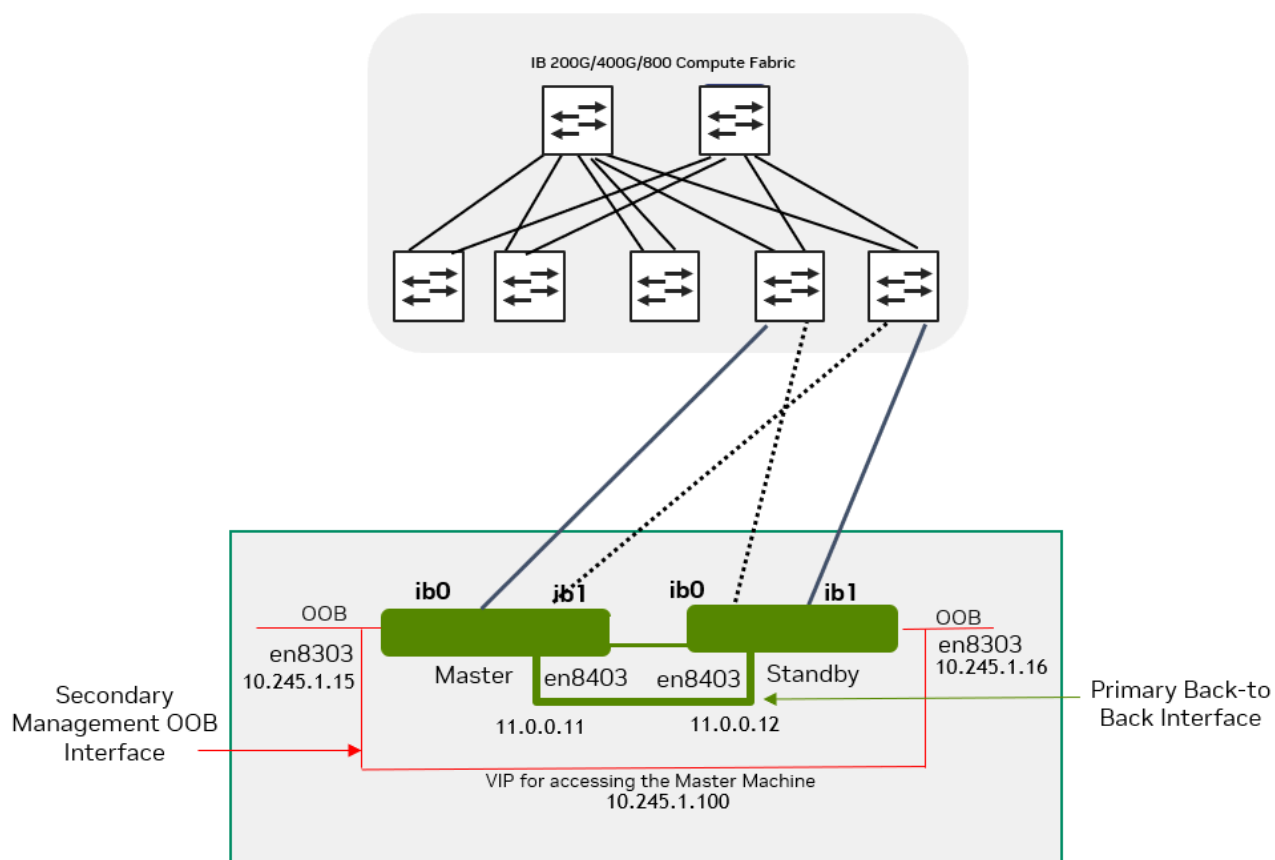
## Logging Into UFM Web UI

To open UFM WEB UI, open the following URL in your browser: [https://\[SERVER\\_IP\]/ufm/](https://[SERVER_IP]/ufm/) and type the default credentials.

# High Availability

UFM HA supports High-Availability on the host level for UFM Enterprise appliances. The solution is based on a pacemaker to monitor services, and on DRBD to sync file-system states.

The diagram below describes the connectivity scheme of the UFM High-Availability cluster.



## High-Availability Configuration

UFM HA should be configured on two appliances, master and standby.

**Warning**

High-availability should be configured first on on the standby node.  
When completed, it should be configured on the master node.

### Command Usage:

```
# ufm_ha_cluster config --help
Usage: ufm_ha_cluster config [<options>]

The config command configures ha add-on for ufm server.
```

### Options:

Option	Description
-r   --role <node role>	Node role (master or standby) - Mandatory
-e   --peer-primary-ip <ip address>	Peer node primary ip address - Mandatory
-l   --local-primary-ip <ip address>	Local node primary ip address - Mandatory
-E   --peer-secondary-ip <ip address>	Peer node secondary ip address - Mandatory
-L   --local-secondary-ip <ip address>	Local node secondary ip address - Mandatory
-i   --virtual-ip <virtual-ip> OR -N   --no-vip	Cluster virtual IP <u>OR</u>

Option	Description
	Do not create virtual IP resource - Mutual exclusive with virtual-IP option One of the two options is mandatory
-p   --hacluster-pwd <pwd>	hacluster user password - Mandatory
-f   --ha-config-file <file path>	HA configuration file - The default is ufm-ha.conf

## Configure HA with VIP (Virtual IP)

1. [On Standby Server] Run the following command to configure Standby Server:

```
ufm_ha_cluster config -r standby \
--local-primary-ip <local back-to-back IP> \
--peer-primary-ip <peer back-to-back IP> \
--local-secondary-ip <local management IP> \
--peer-secondary-ip <peer management IP> \
--virtual-ip <virtual management IP used for accessing the
master node> \
--hacluster-pwd <password>
```

2. [On Master Server] Run the following command to configure Master Server:

```
ufm_ha_cluster config -r master \
--local-primary-ip <local back-to-back IP> \
```

```
--peer-primary-ip <peer back-to-back IP> \  
--local-secondary-ip <local management IP> \  
--peer-secondary-ip <peer management IP> \  
--virtual-ip <virtual management IP used for accessing the  
master node> \  
--hacluster-pwd <password>
```

Alternatively, you can run the CLI command [ufm ha configure](#).

### **Warning**

You must wait until after configuration for DRBD sync to finish before starting the UFM cluster. To check the DRBD sync status, run:

```
ufm_ha_cluster status
```

## Configure HA without VIP (on a Dual Subnet)

### **Note**

Please change the variables in the commands below based on your setup.

1. [On Standby Server] Run the following command to configure Standby Server:

```
ufm_ha_cluster config -r standby \  
--local-primary-ip <local back-to-back IP> \  
--peer-secondary-ip <peer management IP> \  
--virtual-ip <virtual management IP used for accessing the  
master node> \  
--hacluster-pwd <password>
```

```
--peer-primary-ip <peer back-to-back IP> \  
--local-secondary-ip <local management IP> \  
--peer-secondary-ip <peer management IP> \  
--hacluster-pwd <password> \  
--no-vip
```

2. [On Master Server] Run the following command to configure Master Server:

```
ufm_ha_cluster config -r master \  
--local-primary-ip <local back-to-back IP> \  
--peer-primary-ip <peer back-to-back IP> \  
--local-secondary-ip <local management IP> \  
--peer-secondary-ip <peer management IP> \  
--hacluster-pwd <password> \  
--no-vip
```

**Alternatively, you can run the CLI command** [ufm ha configure dual-subnet](#).

### **Warning**

You must wait until after configuration for DRBD sync to finish before starting the UFM cluster. To check the DRBD sync status, run:

```
ufm_ha_cluster status
```

## High-Availability Cluster Management

- To manage the HA cluster, use the ***ufm\_ha\_cluster*** tool.

## ufm\_ha\_cluster Usage

```
# ufm_ha_cluster --help
=====
UFM-HA version: 5.3.0-17
-----
-----
Usage: ufm_ha_cluster [-h|--help] <command> [<options>]
This script manages UFM HA cluster.
```

### Options:

```
OPTIONS:
  -h|--help          Show this message

COMMANDS:
  version            HA cluster version
  config             Configure HA cluster
  cleanup            Remove HA configurations
  status             Check HA cluster status
  failover           Master node failover
  takeover           Standby node takeover
  start              Start HA services
  stop               Stop HA services
  detach             etach the standby from cluster
  attach             Attach a new standby to cluster
  enable-maintain    Enable maintenance to cluster
  disable-maintain   Disable maintenance to cluster
  reset              Reset DRBD connectivity from split-
  brain
  is-master          check if the current node is a master
  is-running         check if ufm services are running
```



```
is-ha          Check if running in HA mode
```

- For further information on each command, run:

```
ufm_ha_cluster <command> --help
```

- To check UFM HA cluster status, run:

```
ufm_ha_cluster status
```

- To start the UFM HA cluster, run:

```
ufm_ha_cluster start
```

- To stop the UFM HA cluster, run:

```
ufm_ha_cluster stop
```

- Execute the failover command on the master appliance to become the standby appliance. Run:

```
ufm_ha_cluster failover
```

- Execute the takeover command on the standby machine to become the master appliance. Run:

ufm\_ha\_cluster takeover

**i Note**

For additional information on configuring UFM HA, please refer to [Installing UFM Server Software for High Availability](#). Since the UFM HA package and related components (i.e. pacemaker and DRBD) are already deployed, follow instructions from step 6 (Configure HA from the main server) and onward.

---

# Authentication, Authorization and Accounting - AAA

AAA is a term describing a framework for intelligently controlling access to computer resources, enforcing policies, auditing usage, and providing the information necessary to bill for services. These combined processes are considered important for effective network management and security. The AAA feature allows you to verify the identity of, grant access to, and track the actions of users managing the system. The UFM Enterprise Appliance switch supports Terminal Access Controller Access Control device Plus (TACACS+) protocol.

- **Authentication** – authentication provides the initial method of identifying each individual user, typically by entering a valid username and password before access is granted. The AAA server compares a user's authentication credentials with the user credentials stored in a database. If the credentials match, the user is granted access to the network or devices. If the credentials do not match, authentication fails and network access is denied.
- **Authorization** – following the authentication, a user must gain authorization for performing certain tasks. After logging into a system, for instance, the user may try to issue commands. The authorization process determines whether the user has the authority to issue such commands. Simply put, authorization is the process of enforcing policies: determining what types or qualities of activities, resources, or services a user is permitted. Usually, authorization occurs within the context of authentication. Once you have authenticated a user, they may be authorized for different types of access or activity.
- **Accounting** – the last level is accounting, which measures the resources a user consumes during access. This includes the amount of system time or the amount of data a user has sent and/or received during a session. Accounting is carried out by logging of session statistics and usage information, and is used for authorization control, billing, trend analysis, resource utilization, and capacity planning activities.

Authentication, authorization, and accounting services are often provided by a dedicated AAA server, a program that performs these functions.

# TACACS+

TACACS (Terminal Access Controller Access Control System), widely used in network environments, is a client/server protocol that enables remote access servers to communicate with a central server to authenticate dial-in users and authorize their access to the requested system or service. TACACS implements the TACACS Client and provides the AAA (Authentication, Authorization and Accounting) functionalities.

TACACS is used for several reasons:

- Facilitates centralized user administration
- Uses TCP for transport to ensure reliable delivery
- Supports inbound authentication, outbound authentication and change password request for the authentication service
- Provides some level of protection against an active attacker

For the list of TACACAS+ CLI commands, please refer to [TACACAS+](#).

## Configuring TACACS+ and Performing AAA

### Note

Note: TACACS+ should be configured on two appliances, master and standby.

## Configuring TACACS+ on UFM Servers

- Add TACACS server with a key. Run:

```
ufmap1 (config) # tacacs-server host 10.209.102.86 key  
testkey123
```

- [Optional] Review the added server configuration. Run:

```
ufmap1 (config) # show tacacs
```

Example:

```
swx-ufm3-06 (config) # show tacacs

TACACS+ defaults:
  Timeout      :1
TACACS+ servers:
  10.209.102.86:49:
    Key         : *****
```

- Enable TACACS authentication. Run:

```
ufmap1 (config) # aaa authentication login default local
tacacs+
```

- [Optional] Review the Authentication and Accounting methods. Run:

```
ufmap1 (config) # show aaa
```

**Example:**

```
swx-ufm3-06 (config) # show aaa
AAA authorization:
  Map Order: remote-only
```

```
Authentication method(s)L
```

```
local
```

```
tacacs+
```

```
Accounting method(s)L
```

```
tacacs+
```

## Adding TACACS Users on the Server Side

### Note

The predefined "root" and "admin" users are local users, therefore, they can not be defined as remote TACACS+ users.

A simple configuration file is provided below:

```
accounting file = /var/log/tac_plus.acct
key = testkey123
user = testuser1 {
    global = cleartext testpass1
    service = exec { priv-lvl=15 }
    cmd = help { permit .* }
    cmd = enable { permit .* }
    cmd = configure { permit terminal }
    cmd = show {
        permit ufm.*
        deny .*
    }
}
```

```

user = testuser2 {
    global = cleartext testpass2
    service = exec { priv-lvl=15 }
    cmd = help { permit .* }
    cmd = enable { permit .* }
    cmd = configure { permit terminal }
    cmd = ufm {
        permit "logging.*"
        deny .*
    }
    cmd = no {
        permit "ufm logging.*"
        deny .*
    }
    cmd = show { permit .* }
}

user = testuser3 {
    default service = permit
    global = cleartext testpass3
    service = exec { priv-lvl=15 }
}

```

From the above configuration example

- There are 3 TACACS users named `testuser1`, `testuser2` and `testuser3` with respective passwords of `testuser1`, `testuser2` and `testuser3`.
- The secret of the TACACS server is `testkey123`, assuming that this server is running at an IP address of `10.209.102.86`. This information is used to register a TACACS server using the `tacacs-host` command in UFM CLI.
- `testuser1` can only execute the `show ufm` commands. Executing any other command is not allowed.

- `testuser2` can execute all show commands and can configure only the `[no] ufm logging` commands.
- `testuser3` can execute all commands since the default service is permit.



---

# Command Line Interface

UFM Enterprise Appliance is equipped with an industry-standard command line interface (CLI). The CLI is accessed through SSH session or directly through the console port, following login with username (admin) and credentials (admin). Following the initial login, the user is asked to set a new password.

This section explains how to use the CLI of UFM Enterprise Appliance.

## Note

### Ignored Commands

To support backward compatibility with automation for initial configuration, the following commands are being ignored (they do not output error):

1. `cli default auto-logout 1`
2. `no cli default paging enable`
3. `no cli default progress enable`
4. `no cli default prompt confirm-reload`
5. `no telnet-server enable`
6. `no interface <ifname> dhcp`
7. `no interface <ifname> ipv6 enable`
8. `no interface <ifname> shutdown`
9. `write memory`

# CLI Modes

The CLI has the following modes, and each mode makes available a different set of commands for execution. The different CLI configuration modes are:

Mode/Context	Description
standard	When the CLI is launched, it begins in Standard mode. This is the most restrictive mode and only has commands to query a restricted set of state information. Users cannot take any actions that directly affect the system, nor can they change any configuration.
enable	The "enable" command moves the user to Enable mode. This mode offers commands to view all state information and take actions like rebooting the system, but it does not allow any configuration to be changed.

Mode/Context	Description
	<p>Its commands are a superset of those in Standard mode. To return to Standard mode, enter "exit".</p>
config	<p>The "configure terminal" command moves the user from Enable mode to Config mode. This mode has a full unrestricted set of commands to view anything, take any action, or change any configuration. Its commands are a superset of those in Enable mode. To return to Enable mode, enter "exit". Note that moving directly from/to Standard mode to/from Config mode is impossible.</p>
config interface management	<p>Configuration mode for management interfaces</p>

## Prompt and Response Conventions

The prompt always begins with the hostname of the system. What follows depends on what command mode the user is in. To demonstrate by example, assuming the machine name is "ufm-enterprise-app", the prompts for each of the modes are:

```
ufm-enterprise-app >           (Standard mode)
ufm-enterprise-app #           (Enable mode)
ufm-enterprise-app (config) #   (Config mode)
```

The following session shows how to move between command modes:

```
ufm-enterprise-app >           (You
start in Standard mode)
ufm-enterprise-app > enable
(Move to Enable mode)
ufm-enterprise-app #
(You are in Enable mode)
ufm-enterprise-app # configure terminal   (Move to Config
mode)
ufm-enterprise-app (config) #           (You are
in Config mode)
ufm-enterprise-app (config) # exit      (Exit
Config mode)
ufm-enterprise-app #
(You are back in Enable mode)
ufm-enterprise-app # exit              (Exit
Enable mode)
ufm-enterprise-app >
(You are back in Standard mode)
```

Commands entered do not print any response and simply show the command prompt after you press <Enter>.

## Using "no" Command Form

Several config commands feature a "no" form whose purpose is to reset a parameter value to its inherited or default value, or to disable a configuration.

## Getting Help

Enter "help" to view a description of the interactive help system. Note that the CLI supports command and/or parameter tab-completions. Thus, to learn which commands start with the letter "c", type "c" and click twice on the Tab key to get the following:

```
ufm # u<tab>
ufm username
ufm # u
```

This signifies that there are two commands that start with the letter "u": "ufm", "username".

# System Management

## Network Interfaces

This section describes the commands that configure and monitor the network interface.

## Interface

### interface

	interface <eno8303   eno8403   eno12399np0   eno12409np1   ib0   ib1   ib2   ib3> Enters a network interface context.	
Syntax Description	eno8303	Management port 0 (out of band)
	eno8403	Management port 1 (out of band)
	eno12399np0	Management port 2 (out of band)
	eno12409np1	Management port 3 (out of band)

	ib0	InfiniBand interface 0
	ib1	InfiniBand interface 1
	ib2	InfiniBand interface 2 (UFM 3.0 only)
	Sib3	InfiniBand interface 3 (UFM 3.0 only)
Default	N/A	
Configuration Mode	config	
History	1.3.0	
Example	<pre> ufmap1 (config) # interface eno8303 ufmap1 (config interface eno8303) # </pre>	
Related Commands	N/A	
Notes	N/A	

## show interfaces

	show interfaces [eno8303   eno8403   eno12399np0   eno12409np1   ib0   ib1   ib2   ib3] Displays information about the network interfaces.	
Syntax Description	eno8303	Management port 0 (out of band)
	eno8403	Management port 1 (out of band)
	eno12399np0	Management port 2 (out of band)
	eno12409np1	Management port 3 (out of band)
	ib0	InfiniBand interface 0
	ib1	InfiniBand interface 1
	ib2	InfiniBand interface 2 (UFM 3.0 only)
	ib3	InfiniBand interface 3 (UFM 3.0 only)
Default	N/A	
Configuration Mode	enable	

History	1.6.0	Updated example and added command syntax
	1.4.1	First release
Example	<pre> swx-ufm3-06 # show interfaces eno8303 Interface eno8303 status:   Comment           :   Admin up          : yes   Link up           : yes   DHCP running      : yes   IP address        : 10.209.36.101   Netmask           : 255.255.252.0   IPv6 enabled      : yes   Autoconf enabled  : N/A   Autoconf route    : N/A   Autoconf privacy  : N/A   DHCPv6 running    : yes   IPv6 addresses    : 2  IPv6 address:   fcfc:fcfc:209:36:b27b:25ff:fee9:30c8/64   fe80::b27b:25ff:fee9:30c8/64  Speed              : 1000Mb/s (auto) Duplex             : Full (auto) Interface type     : ethernet Interface source   : physical MTU                : 1500 HW address         : b0:7b:25:e9:30:c8  Rx:   6109552397 bytes   45457113 packets   36881549 mcast packets   295 discards   0 errors </pre>	

	<pre> 0 overruns 0 frame Tx: 242521186 bytes 1211397 packets 0 discards 0 errors N/A overruns 0 carrier 1211397 collisions 1000 queue len </pre>
Related Commands	interface <ifname> ip address <IP address> <netmask>
Notes	

## ip address

	ip address <IP address> <netmask> Sets the IP address and netmask of this interface.	
Syntax Description	IP address	IPv4 address
	netmask	Subnet mask of IP address
Default	N/A	
Configuration Mode	config interface	
History	1.3.0	
Example	<pre> ufmap1 (config interface eno8303) # ip address 10.10.10.10 255.255.255.0 </pre>	
Related Command	interface	



ds	
Notes	The command sequence is important. The <code>ip address</code> command should be used first during automation since it clears both default-gateway and name-server settings

## ipv6 address

	<code>ipv6 address &lt;IPv6 address&gt;/&lt;netmask&gt;</code> Configures static IPv6 address and netmask to this interface, static option is possible.	
Syntax Description	IPv6 address/netmask	Configures a static IPv6 address and netmask. Format example: 2001:db8:1234::5678/64.
Default	N/A	
Configuration Mode	config interface management	
History	1.3.0	
Example	<pre>ufmap1 (config interface eno8303)# ipv6 address fe80::202:c9ff:fe5e:a5d8/6</pre>	
Related Commands	N/A	
Notes	N/A	

## Hostname

### hostname

	<code>hostname &lt;hostname&gt;</code> Sets a static system hostname.	
Syntax Description	hostname	String

Default	
Configuration Mode	config
History	1.3.0
Example	<pre>ufmap1(config) # hostname ufmap1-hostname</pre>
Related Commands	N/A
Notes	N/A

## ip name-server

	ip name-server <no ip name-server> no ip name-server Configures DNS servers to be used. The no form of the command clears the name server.	
Syntax Description	IPv4 address	IPv4 address
	IPv6 address	IPv6 address
Default	No server name	
Configuration Mode	config	
History	1.4.2	Updated command description and added the a no form of the command
	1.3.0	First release
Example	ufmap1 (config)# ip name-server 9.9.9.9	
Related Commands	N/A	
Notes	The command sequence is important. The <code>ip name-server</code> command should be used during automation, after running the <code>ip address</code> and the <code>ip default-gateway</code> commands	

## {ip | ipv6} host

	<pre>{ip   ipv6} host &lt;hostname&gt; &lt;ip-address&gt; no {ip   ipv6} host &lt;hostname&gt; &lt;ip-address&gt; Sets the static domain name. The no form of the command clears the domain name.</pre>	
Syntax Description	hostname	String
	ip-address	IPv4 or IPv6 address
Default	N/A	
Configuration Mode	config	
History	1.5.0	
Example	<pre>ufmap1 (config)# ip host test-host 1.2.3.4 ufmap1 (config)# ipv6 host my-ipv6-host 2001::8f9</pre>	
Related Commands	show hosts	
Notes		

## show hosts

	<pre>show hosts Displays hostname, DNS configuration, and static host mappings.</pre>
Syntax Description	N/A
Default	N/A
Configuration Mode	Any configuration mode
History	1.4.0
Example	<pre>ufmap1 (config) # show hosts  Hostname: swx-ufm3-02</pre>

	<pre> Name servers:   10.211.0.124 (on eno8303)   10.211.0.121 (on eno8303)   10.7.77.135 (on eno8303)  Domain names:   mtr.labs.mlnx (on   eno8303)  Static IPv4 host mappings:   127.0.0.1 --&gt; localhost  Static IPv6 host mappings:   ::1 --&gt; localhost   ::1 --&gt; ip6-localhost   ::1 --&gt; ip6-loopback   ff02::1 --&gt; ip6-allnodes   ff02::2 --&gt; ip6-   allrouters </pre>
Related Commands	N/A
Noes	N/A

## Routing

### ip default-gateway

	<pre> ip default-gateway &lt;address&gt; no ip default-gateway &lt;address&gt; Configures a static default route. The no form of the command removes the static route. </pre>
--	---

Syntax Description	address	gateway IPv4 or IPv6 address
Default	N/A	
Configuration Mode	config	
History	1.4.2	Updated syntax description and added a no form of the command
	1.3.0	First release
Example	ufmapl (config)# ip default-gateway 10.209.36.1	
Related Commands	N/A	
Notes	The command sequence is important. The <code>ip default-gateway</code> command should be used during automation, <b>after</b> running the <code>ip address</code> command as it requires a static IP setting	

## ipv6 default-gateway

	ipv6 default-gateway <address> no ipv6 default-gateway <address> Configures a static default route. The no form of the command removes the static route.	
Syntax Description	address	gateway IPv6 address
Default	N/A	
Configuration Mode	config	
History	1.4.2	
Example	ufmapl (config)# ip default-gateway ::1	
Related Commands	N/A	
Notes	The command sequence is important. The <code>ip default-gateway</code> command should be used during automation, <b>after</b> running the <code>ip address</code> command as it requires a static IP setting	

## show {ip | ipv6} route

	show {ip   ipv6} route [static] Displays the routing table in the system.	
Syntax Description	static	Filters the table with the static route entries
Default	N/A	
Configuration Mode	Enable	
History	1.6.0	
Example	<pre> ufmap1 (config) # show ip route Destination      Mask                Gateway Interface  Source default          0.0.0.0             10.209.36.1 eno8303          dhcp 10.209.36.0      255.255.252.0       0.0.0.0 eno8303          interface 10.209.36.1      255.255.255.255     0.0.0.0          eno8303 dhcp 169.254.1.0      255.255.255.0       0.0.0.0          idrac interface 172.17.0.0       255.255.0.0         0.0.0.0 docker0         interface </pre>	
Related Commands	{ip   ipv6} route	
Notes		

## show {ip | ipv6} default-gateway

	show {ip   ipv6} default-gateway [static]
--	---

	Displays the default gateway.	
Syntax Description	static	Displays the static configuration of the default gateway
Default	N/A	
Configuration Mode	Enable	
History	1.6.0	
Example	<pre>ufmap1 (config) # show ip default-gateway Active default gateways: 10.209.36.1 (interface: eno8303)</pre>	
Related Commands	{ip   ipv6} default-gateway	
Notes		

## NTP

### ntp enable

	ntp enable Enables NTP.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.3.0
Example	<pre>ufmap1 (config) #</pre>

	<pre>ntp enable</pre>
Related Commands	N/A
Notes	N/A

## ntp server

	<pre>ntp server &lt;address&gt; no ntp server &lt;address&gt; Configures an NTP server The no form of the command removes NTP server</pre>	
Syntax Description	address	IPv4 or IPv6 address
Default	N/A	
Configuration Mode	config	
History	1.4.2	Updated the command description and added a no form of the command
	1.3.0	First release
Example	<pre>ufmap1 (config) # ntp server 10.10.10.10</pre>	
Related Commands	N/A	
Notes	N/A	

## ntp peer

	<pre>ntp peer &lt;address&gt; no ntp peer &lt;address&gt; Configures an NTP peer The no form of the command removes the NTP peer</pre>	
--	--	--



Syntax Description	address	IPv4 or IPv6 address
Default	N/A	
Configuration Mode	config	
History	1.4.2	Added the no form of the command
	1.3.0	First release
Example	<pre>ufmap1 (config) # ntp peer 11.11.11.11</pre>	
Related Commands	N/A	
Notes	N/A	

## Software Management

### image fetch

	image fetch <URL> Downloads a system image from a remote host.	
Syntax Description	URL	HTTPS, SCP and SFTP are supported Example: <a href="scp://username[:password]@hostname/path/filename">scp://username[:password]@hostname/path/filename</a>
Default	N/A	
Configuration Mode	config	
History	1.5.0	
Example	<pre>ufmap1 (config) # image fetch scp://root:123456@192.168.10.125/tmp/ufm</pre>	

	<pre>-appliance-1.5.0-6-omu.tar 100.0% [##### ##### #####]</pre>
Related Commands	show images
Notes	<ul style="list-style-type: none"> <li>• The image format must be as follows: ufm-appliance-&lt;version&gt;-omu.tar</li> <li>• Please delete the previously available image, prior to fetching the new image</li> <li>• See section In-Service Upgrade at <a href="#">UFM Enterprise Appliance Upgrade</a></li> </ul>

## image install

	<pre>image install &lt;image-name&gt; Installs an image file.</pre>	
Syntax Description	image name	Specifies the image name
Default	N/A	
Configuration Mode	config	
History	1.5.0	
Example	<pre>ufmap1 (config) # image install ufm-appliance-1.5.0-6-omu.tar Verifying image... Extracting image... Installing image... 20230809-07_24_52: UFM-OS UPGRADE to version 23.07.18-3 STARTED 20230809-07_24_52: UFM_OS_UPGRADE [STARTED ]</pre>	

WARNING!!!

/tmp/ufm\_os\_upgrade\_ml2ah98f/ufm-appliance-1.5.0-4-omu/ufm-os-upgrade.sh will require a restart upon completion.

OFED drivers, kernel and kernel models will not work properly until the server is rebooted!!!

In case of a change to the secureboot certificate , a message will be prompted to the screen to indicate that

an action is needed when restarting.

20230809-07\_24\_52: HighAvailability is detected, node role is: stand-by

20230809-07\_24\_53: Check if ufm-enterprise.service is running

20230809-07\_24\_53: ufm-enterprise.service is not running, continue with the upgrade

20230809-07\_24\_53: Extracting ISO...

20230809-07\_24\_53: CERTIFICATE-VALIDATION

[PASSED ]

20230809-07\_24\_54: HA-STANDBY-MODE-ACTIVATE

[PASSED ]

20230809-07\_24\_54: Backup HA cluster config to

/var/tmp/ufm\_os\_upgrade\_23\_07\_18-

3/pcs\_config\_backup\_23.07.18-3.tar.bz2

20230809-07\_24\_55: HA-PREPARATION

[PASSED ]

20230809-07\_24\_55: A newer kernel version is detected: 4.15.0-213-generic, installing

20230809-07\_25\_22: KERNEL-UPGRADE

[PASSED ]

20230809-07\_25\_22: Preparing MOFED repo

20230809-07\_25\_24: MOFED-PREPARATION

[PASSED ]

```
20230809-07_25_24: Upgrading UFM-APPLIANCE SW
20230809-07_27_01: Upgrading UFM-APPLIANCE SW
finished
20230809-07_27_01: APPLIANCE-UPGRADE
[PASSED ]
20230809-07_27_01: HA-PACKAGES-UPGRADE
[SKIPPED ]
20230809-07_27_01: Upgrading telemetry packages...
20230809-07_27_01: TELEMETRY-REQUIREMENTS-UPGRADE
[PASSED ]
20230809-07_27_06: updating firmware
20230809-07_27_19: FW-UPGRADE
[PASSED ]
20230809-07_27_19: Upgrading packages...
20230809-07_28_15: PACKAGES-UPGRADE
[PASSED ]
20230809-07_28_15: Upgrading collection tools...
20230809-07_28_15: Updating FW rules
20230809-07_28_20: FIREWALL-PORTS
[PASSED ]
20230809-07_28_20: UFMCLI tar is copied to /opt/ufm-
os-firstboot to run on next-boot.
20230809-07_28_20: UFMCLI-PREPERATION
[PASSED ]
20230809-07_28_20: HA-STANDBY-MODE-DEACTIVATE
[PASSED ]
20230809-07_28_20: UFM-OS-UPGRADE
[PASSED ]
20230809-07_28_20: UPGRADE finished, kernel modules,
OFED and new kernel wont function properly until
reboot is performed.
20230809-07_28_20: Please reboot the server.
```

```
Please check log file for more details:
/var/log/ufm_os_upgrade_23.07.18-3.log
```

	<pre>Upgrade steps status information: /var/log/ufm_os_upgrade_23.07.18-3_status.log.</pre>
Related Commands	show images
Notes	<ul style="list-style-type: none"> <li>The image should be installed on the standby node only. Installation on the master node is not allowed.</li> <li>Once the installation is complete, perform system reboot using the command: <pre>reload</pre> </li> </ul>

## image delete

	<pre>image delete &lt;image-name&gt;</pre> Deletes the specified image file from the hard drive.	
Syntax Description	image-name	Specifies the image name
Default	N/A	
Configuration Mode	config	
History	1.5.0	
Example	<pre>ufmap1 (config) # image delete ufm-appliance-1.5.0-6-omu.tar</pre>	
Related Commands	show images	
Notes		

## show images

	<code>show image</code> Displays information about the system images and boot parameters.
Syntax Description	N/A
Default	N/A
Configuration Mode	Any configuration mode
History	1.5.0
Example	<pre>ufmapl (config) # show images Installed images:   Partition 1:     version: ufm_appliance UFMAPL_1.4.3.1_UFM_6.13.2.5 2023-06-13 08:42:27 x86_64 Images available to be installed:   1:     Image   : ufm-appliance-1.5.0-6-omu.tar</pre>
Related Commands	<code>image delete</code> <code>image fetch</code> <code>image install</code>
Notes	

## Configuration Management

### File System

#### debug generate dump

	debug generate dump Generates a debug dump.e
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) # debug generate dump Generated dump sysdump-ufmap1- 112104-201140526- 091707.tgz</pre>
Related Commands	file debug-dump
Notes	The dump can then be manipulated using the “file debug-dump...” commands

## show files debug-dump

	show files debug-dump [<filename>] Displays a list of debug dump files.	
Syntax Description	filename	Displays a summary of the contents of a particular debug dump file
Default	N/A	
Configuration Mode	Any configuration mode	
History	1.9.0	

Example	<pre> ufmapl (config) # show files debug-dump sysdump-r- ufm237-20210809-211426.tgz  ===== System information:  Hostname:      r-ufm237 Version:      ufm_appliance UFMAPL_4.6.0.6_UFM_6.7.0.8 2021-08-08 19:27:47 x86_64 Current time: 2021-08-09 21:14:26 System uptime: 0d 21h 27m 28s  =====  =====  Output of 'uname -a':  Linux r-ufm237 3.10.0-1127.19.1.el7MELLANOXsmp-x86_64 ufm_appliance UFMAPL_4.6.0.6_UFM_6.7.0.8 #1 2021-08- 08 18:45:38 x86_64 x86_64 x86_64 GNU/Linux  ===== </pre>
Related Commands	file debug-dump
Notes	

## file debug-dump

	file debug-dump {delete {<filename>   latest}   email {<filename>   latest}   upload {{<filename>   latest} <URL>}}  Manipulates debug dump files.	
Syntax Descripti	filename	The specified file name



on	latest	Delete, upload, or e-mail the latest debug dump file to a remote host
	URL	HTTP, HTTPS, FTP, TFTP, SCP and SFTP are supported Example: <a href="#">scp://username[:password]@hostname/path/filename</a>
Default	N/A	
Configuration Mode	config	
History	1.9.0	First release
Example	<pre>ufmap1 (config) # file debug-dump email sysdump-ufmap1-112104-20114052-091707.tgz</pre>	
Related Commands		
Notes		

## Local and Remote Logging

### show log

	show log [continues   files [<file-number>] ] [ [not] matching <reg-exp>] Displays the log file with optional filter criteria.	
Syntax Description	continues	Displays the last few lines of the current log file and then continues to display new lines as they come in until the user hits Ctrl+C, similar to LINUX "tail" utility
	files	Displays the list of log files

	file-number	Displays an archived log file, where the number may range from 1 up to the number of archived log files available
	[not] matching <reg-exp>	The file is piped through a LINUX "grep" utility to only include lines either matching, or not matching, the provided regular expression
Default	N/A	
Configuration Mode	Any configuration mode	
History	1.9.0	
Example	<pre> ufmap1 (config) #show log matching INFO Feb  1 10:57:04 switch clusterd[2659]: [4.193] [clusterd.INFO]: master browse reply: add service 0x20000 mxyzy--0002c95ea5d8 _tms_cluster._tcp. local. Feb  1 10:57:04 switch clusterd[2659]: [4.199] [clusterd.INFO]: master resolve reply via browse: name mxyzy--0002c95ea5d8 type _tms_cluster._tcp. domain local. addr 172.30.2.2 port 60102 ifindex 1 31072 Feb  1 10:57:07 switch SX[2785]: TID 1208106288: [7.746] [hwd.INFO]: hwd_kernel_interrupt_sim: Entry Feb  1 10:57:07 switch SX[2785]: TID 1208106288: [7.747] [hwd.INFO]: hwd_kernel_interrupt_sim: err=0 Feb  1 10:57:07 switch mgmtd[2599]: [7.748] [mgmtd.INFO]: Handling EVENT request (session 26) Feb  1 10:57:07 switch mgmtd[2599]: [7.749] [mgmtd.INFO]: EVENT: /system/chassis/events/hw-isr-event </pre>	

	<pre>Feb  1 10:57:07 switch mgmtd[2599]: [7.750] [mgmtd.INFO]: EVENT: [0] mask = 0 (uint32) Feb  1 10:57:07 switch health[2900]: TID 1208104656: [7.751] [health.INFO]: Received ISR event with mask 0 Feb  1 10:57:07 switch mgmtd[2599]: [7.754] [mgmtd.INFO]: Sending externally: type event session 36 id 1732128 Feb  1 10:57:07 switch mgmtd[2599]: [7.755] [mgmtd.INFO]: Event sent by user i:2785-0-0 has been handled</pre>
Related Commands	
Notes	<p>For the following commands, to quit from the output view, <b>use 'CTRL +C'</b>.</p> <ul style="list-style-type: none"> <li>• show log continuous</li> <li>• show log continuous matching &lt;regex&gt;</li> <li>• show log continuous not matching &lt;regex&gt;</li> </ul> <p>For the following commands, to quit from the output view, <b>press 'q'</b>.</p> <ul style="list-style-type: none"> <li>• show log</li> <li>• show log matching &lt;regex&gt;</li> <li>• show log not matching &lt;regex&gt;</li> <li>• show log files &lt;number&gt;</li> <li>• show log files &lt;number&gt; matching &lt;regex&gt;</li> <li>• show log files &lt;number&gt; not matching &lt;regex&gt;</li> </ul>

## logging

	<pre>logging [trap &lt;log-level&gt;   port &lt;log-level&gt;] no logging [trap &lt;log-level&gt;   port &lt;log-level&gt;]</pre> <p>Enables sending logging messages, with ability to filter the logging messages according to their classes.</p> <p>The no form of the command stops sending messages to the remote syslog server.</p>
--	--

Syntax Description	log-level	<ul style="list-style-type: none"> <li>• alert – alert notification, action must be taken immediately</li> <li>• crit – critical condition</li> <li>• debug – debug level messages</li> <li>• emerg – system is unusable (emergency)</li> <li>• err – error condition</li> <li>• info – informational condition</li> <li>• none – disables the logging locally and remotely</li> <li>• notice – normal, but significant condition</li> <li>• warning – warning condition</li> </ul>
Default	Remote logging is disabled	
Configuration Mode	config	
History	1.9.0	
Example	<pre>ufmapl (config) # logging local info</pre> <pre>ufmapl [ mgmt-sa ] (config) # logging local info</pre>	
Related Commands	show logging logging local override	
Notes		

## show logging

	show logging Displays the logging configurations.
Syntax Description	N/A

Default	N/A
Configuration Mode	Any configuration mode
History	1.9.0
Example	<pre> ufmapl (config) # show logging Local logging level: info   Override for class mgmt-front: warning Default remote logging level: notice No remote syslog servers configured. Allow receiving of messages from remote hosts: no Number of archived log files to keep: 10 Log rotation size threshold: 5.000% of partition (43 megabytes) Log format: standard Subsecond timestamp field: enabled Subsecond timestamp precision: 1 whole digit; 3 fractional digits Levels at which messages are logged:   CLI commands: info   Audit messages: notic </pre>
Related Commands	logging
Notes	

## User Management and AAA

### User Accounts

#### username

	username root disable no username root disable
--	---

	Disable logging into root account The no form of the command reenables login into root account
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.1
Example	<pre>ufmap1 (config) # username root disable</pre>
Related Commands	N/A
Notes	N/A

## username root password

username root password<{password}>

	username root password <password> Changes the root user password.	
Syntax Description	password	Specifies a password for the user in string form.
Default	N/A	
Configuration Mode	config	
History	1.8.0	Updated command name
	1.4.2	First release
Example	<pre>ufmap1 (config) #</pre>	

	<pre>username root password 123456</pre>
Related Commands	N/A
Notes	N/A

## AAA Methods

### aaa authentication login default

	aaa authentication login default <auth method> [<auth method>] Sets a sequence of authentication methods. Up to two methods can be configured.	
Syntax Description	auth-method	Possible values: <ul style="list-style-type: none"> <li>• local</li> <li>• tacacs+</li> </ul>
Default	N/A	
Configuration Mode	config	
History	1.6.0	
Example	<pre>ufmap1 (config) # aaa authentication login default local tacacs+</pre>	
Related Commands	show aaa	
Notes	Setting tacacs+ as one of the authentication methods enables tacacs. Setting no tacacs+ and only local in the authentication methods disables tacacs.	

## show aaa

	show aaa Displays the AAA configuration.
Syntax Description	N/A
Default	N/A
Configuration Mode	Enable
History	1.6.0
Example	<pre>ufmap1 [ mgmt-sa ] (config) # show aaa AAA authorization:   Map Order: remote-only  Authentication method(s):   local   tacacs+  Accounting method(s):   tacacs+</pre>
Related Commands	aaa authentication login default
Notes	

## TACACS+

### tacacs-server

	<pre>tacacs-server {key &lt;secret&gt;   timeout &lt;seconds&gt;} no tacacs-server {key   timeout} Sets global TACACS+ server attributes. The no form of the command resets the attributes to default values.</pre>
--	---



Syntax Description	key	Set a secret key (shared hidden text string) known to the system and to the TACACS+ server
	timeout	Timeout in seconds (1-60)
Default	1 second	
Configuration Mode	config	
History	1.6.0	
Example	<pre>ufmap1 (config) # tacacs-server key testkey</pre>	
Related Commands	show tacacs tacacs-server host	
Notes	Each TACACS+ server can override the global secret parameter using the command "tacacs-server host"	

## **tacacs-server host**

	tacacs-server host <ip-address> {auth-port <port>   key <secret>} no tacacs-server host <ip-address> {auth-port <port>} Configures TACACS+ server attributes. The no form of the command removes the TACACS+ server.	
Syntax Description	ip-address	TACACS+ server IP address
	auth-port	TACACS+ server UDP port number
	key	Set a secret key (shared hidden text string) known to the system and to the TACACS+ server
Default	Default TCP port is 49	
Configuration Mode	config	
History	1.6.0	
Example	<pre>ufmap1 (config) # tacacs-server key testkey</pre>	

Related Commands	show tacacs tacacs-server
Notes	<ul style="list-style-type: none"> <li>• TACACS+ servers are tried in the order they are configured</li> <li>• If the user does not specify a parameter for this configured TACACS+ server, the configuration will be taken from the global TACACS+ server configuration. Refer to "tacacs-server" command.</li> </ul>

## show tacacs

	show tacacs Displays TACACS+ configurations.
Syntax Description	N/A
Default	N/A
Configuration Mode	Enable
History	1.6.0
Example	<pre> ufmap1 (config) # show tacacs TACACS+ defaults:   Timeout      : 1  TACACS+ servers:   10.209.36.156:49:     Key         : *****    1.2.3.4:49:     Key         : ***** </pre>
Related Commands	tacacs-server tacacs-server host
Notes	

# Chassis Management

## show resources

	show resources Displays system resources.
Syntax Description	N/A
Default	N/A
Configuration Mode	Any configuration mode
History	1.6.0
Example	<pre>ufmap1 (config) # show resources                 Total Used           Free Physical 65400 MB 2719 MB 60585 MB Swap         16252 MB 0 MB 16252 MB  Number of CPUs: 64 CPU load averages: 0.16 / 0.08 / 0.04  CPU 1   Utilization: 0%   Peak Utilization Last Hour: 0% at 2023- 11-05 09:45:01</pre>

	<pre> Avg. Utilization Last Hour: 0%  CPU 2   Utilization:   5%   Peak   Utilization Last   Hour: 19% at 2023-   11-05 09:45:01   Avg.   Utilization Last   Hour: 7%  ...  CPU 64   Utilization:   0%   Peak   Utilization Last   Hour: 1% at 2023-   11-05 09:45:01   Avg.   Utilization Last   Hour: 1% </pre>
Related Commands	
Notes	

## show version

	show version
--	--------------

	Displays version information for the currently running system image.	
Syntax Description	N/A	
Default	N/A	
Configuration Mode	Any configuration mode	
History	1.11.0	Updated command output, added UFM plugin information
	1.8.0	Updated command output, added system serial number and a note
	1.4.2	Updated command output
	1.4.0	First release
Example	<pre> ufmapl (config) # show version Product name:          ufm_appliance Product release:      UFMAPL_1.11.0.5_UFM_6.20.0.5 Build date:           2025-01-30 14:09:30 Version summary:     ufm_appliance UFMAPL_1.11.0.5_UFM_6.20.0.5 2025-01-30 14:09:30 x86_64  UFM OS:                25.01.18-1 UFM HA:                 5.8.0-4 UFM CLI:               1.9.0-5 GNMI PLUGIN:           1.2.12-8 TOOLS PLUGIN:          2.0.0-4  System serial num:     MT0006M7SMK3  Uptime:                4d 22h 58m CPU load averages:    0.19 / 0.20 / 0.09 Number of CPUs:       64 System memory:        2655 MB used / 58799 MB free / 64614 MB total </pre>	

	<pre>Swap:                0 MB used / 16252 MB free / 16252 MB total</pre>
Related Commands	N/A
Notes	For devices with IDM v1.0.0, the serial number (SN) is generated based on ODM SN since the NVIDIA SN is not available

## show files system

	<pre>show files system [detail]</pre> Displays usage information of the file systems on the system.	
Syntax Description	detail	Displays more detailed information on file-system
Default	N/A	
Configuration Mode	Any configuration mode	
History	1.6.0	
Example	<pre>ufmap1 (config) # show files system Statistics for /var filesystem:   Space Total          1649517 MB   Space Used           23438 MB   Space Free           1626079 MB   Space Available      1542216 MB   Space Percent Free   98%   Inodes Percent Free  99%  Statistics for /opt/ufm/files filesystem:   Space Total          150105 MB   Space Used           294 MB   Space Free           149811 MB</pre>	

	<pre> Space Available          142116 MB Space Percent Free      99% Inodes Percent Free     99% </pre>
Related Commands	
Notes	

## Operating System License

### Note

The following CLI commands relate to the operating system license. For UFM License CLI commands, please refer to [UFM License](#).

### license install

	<pre>license install &lt;url&gt;</pre> <p>Installs a UFM appliance OS license file from a remote host.</p>	
Syntax Description	url	https, sftp are supported. Example: <a href="#">sftp://username:password@hostname/path/filename</a>
Default	N/A	
Configuration Mode	config	
History	1.4.1	First release
	1.4.3	Added the first note in the "Notes" row.
Example	<pre> ufmap1 (config) # license install sftp://root:root/tmp/nvidia-ufm-os- </pre>	

	<pre>restricted-3922145848058.lic</pre>
Related Commands	license delete show license
Notes	<ul style="list-style-type: none"> <li>• The license installation is used to access the SHELL in cases where the root account is disabled. For UFM Enterprise license installation, please refer to <a href="#">Activating the UFM Enterprise License</a>.</li> <li>• The license format must be as follow: *.lic</li> <li>• The license installation overrides the existing license, if present.</li> <li>• To generate UFM appliance OS license, the management interface MAC address (eno8303) should be provided to NVIDIA by running the "<code>show interfaces</code>" command.</li> </ul>

## license delete

	license delete Deletes a UFM appliance OS license file from the hard drive.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.1
Example	<pre>ufmap1 (config) # license delete</pre>
Related Commands	license install show license
Notes	N/A

## show license



	show license Displays UFM appliance OS license information.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.1
Example	<pre> ufmap1 (config) # show license Customer ID:      NVIDIA RND TESTING SN:               194042963524002 Type:             Subscription Status:           Valid MAC address:      b0:7b:25:e9:79:a2 </pre>
Related Commands	license install license delete
Notes	N/A

## **\_shell**

	<b>_shell</b> Runs a UNIX command shell such as bash. This shell command replaces the CLI; when the user exits the shell, they will be returned to the CLI.	
Syntax Description	N/A	
Default	N/A	
Configuration Mode	enable	
History	1.8.0	Added a note
	1.4.1	First release

Example	<pre>ufmapl # _shell root@ufmapl:~#</pre>
Related Commands	license install license delete show license
Notes	The OS license check is disabled by default. To enable it, set:  <pre>[security]:os-license = true in /opt/ufmcli/conf/ufmcli_cfg.yaml</pre>

## Docker Container

### docker load <image name>

	docker load <image name> Loads a docker image from a TAR archive.	
Syntax Description	image name	Name of the TAR image to be loaded
Default	N/A	
Configuration Mode	config	
History	1.7.0	
Example	<pre>ufm (config) # docker load ufm-plugin-ndt_1.1.1-17-docker.img.gz</pre>	
Related Commands	image fetch show docker images docker remove	
Notes	The image should be downloaded into the UFM Enterprise appliance from a remote host	

## docker pull

	docker pull <image-name>[:<version>] Pulls a docker image from a docker repository.	
Syntax Description	image-name [:<version>]	Image name Format: Name:Version If only "Name" is provided, "version" defaults to latest
Default	N/A	
Configuration Mode	config	
History	1.7.0	
Example	<pre>ufm (config) # docker pull mellanox/ufm-plugin-ndt:1.1.1-17</pre>	
Related Commands	show docker images docker remove	
Notes		

## docker remove image <image name> <image version>

	docker remove image <image-name> <image-version> Removes an image from the Linux docker service.	
Syntax Description	image-name	Name of the image to be deleted
	image-version	Version of the image to be deleted
Default	N/A	
Configuration Mode	config	
History	1.7.0	
Example	<pre>ufm (config) # docker remove image mellanox/ufm-plugin-</pre>	

	ndt 1.1.1-17
Related Commands	show docker images docker remove
Notes	

## show docker images

	show docker images Displays docker images.
Syntax Description	N/A
Default	N/A
Configuration Mode	enable
History	1.7.0
Example	<pre> ufm (config) # show docker images ----- ----- Image                Version             Created Size                Digest ----- ----- mellanox/ufm-plugin-ndt 1.1.1-17          2 months ago 1.59GB              sha256:89e61315 4dd3fed89a54780 920c138c2edb1ab 85acd8fe788ef12 </pre>

	23f3c83bae3
Related Commands	show docker ps docker remove docker pull docker load
Notes	

## show docker ps

	show docker ps Displays docker containers.
Syntax Description	N/A
Default	N/A
Configuration Mode	enable
History	1.7.0
Example	<pre>ufm (config) # show docker ps ----- Container          Image:Version      Created Status ----- ufm-plugin-ndt     mellanox/ufm-plugin-nd  4 seconds ago                Up 3 seconds                    t:1.1.1-17</pre>
Related Commands	show docker images docker remove docker pull

	docker load
Notes	

## docker exec

	docker exec <container-name> <program-executable> Executes a program within a running docker container.	
Syntax Description	container-name	Name of the running docker container
	program-executable	Linux command
Default	N/A	
Configuration Mode	config docker	
History	1.8.0	
Example	<pre>ufm (config) # docker exec ufm /bin/bash</pre>	
Related Commands	show docker images docker remove image	
Notes		

## docker prune image

	docker prune image Removes all dangling docker prune images.
Syntax Description	N/A
Default	N/A
Configuration Mode	config docker
History	1.8.0

Example	<pre>ufm (config) # docker prune image</pre>
Related Commands	show docker images docker remove image
Notes	

## UFM Commands

### General

#### ufm start

	ufm start no ufm start Starts UFM. The no form of the command stops UFM.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.1
Example	<pre>ufmapl (config) # ufm start</pre>
Related Commands	show ufm status
Notes	

## show ufm status

	show ufm status Displays the status of UFM. The outcome of the command varies according to the working mode.	
Syntax Description	N/A	
Default	N/A	
Configuration Mode	config	
History	1.4.2	Updated command output
	1.4.0	First release
Example	<pre> ufmap1 (config) # show ufm status  Cluster name: ufmcluster WARNING: corosync and pacemaker node names do not match (IPs used in setup?) Stack: corosync Current DC: swx-ufm3-02 (version 1.1.18-2b07d5c5a9) - partition with quorum Last updated: Thu Jun  1 19:06:57 2023 Last change: Thu Jun  1 19:06:11 2023 by root via crm_resource on swx-ufm3-02  2 nodes configured 5 resources configured  Online: [ swx-ufm3-01 swx-ufm3-02 ] Full list of resources:  Master/Slave Set: ha_data_drbd_master [ha_data_drbd]     Masters: [ swx-ufm3-01 ]     Slaves: [ swx-ufm3-02 ] Resource Group: ufmcluster-grp           </pre>	



```

    ha_data_file_system
(ocf::heartbeat:Filesystem):   Started swx-ufm3-01
    ufm-ha-watcher      (systemd:ufm-ha-watcher):
Started swx-ufm3-01
    ufm-enterprise     (systemd:ufm-enterprise):
Started swx-ufm3-01

```

Daemon Status:

```

    corosync: active/enabled
    pacemaker: active/enabled
    pcsd: active/enabled
DRBD_RESOURCE:      ha_data
DRBD_CONNECTIVITY: Connected
DISK_STATE:         UpToDate
DRBD_ROLE:          Primary
PEER_DISK_STATE:   UpToDate
PEER_DRBD_ROLE:    Secondary

```

DRBD Sync Status:

```

version: 8.4.10 (api:1/proto:86-101)
srcversion: 7C5B8378BE913D722F67EFD
0: cs:Connected ro:Primary/Secondary
ds:UpToDate/UpToDate C r-----
    ns:9044 nr:159762612 dw:159771656 dr:2813 al:48 bm:0
lo:0 pe:0 ua:0 ap:0 ep:1 wo:d oos:0

```

```

=====
=====
                                     UFM Main

```

Processes

```

=====
=====
ModelMain          Process is : [ Running ]
Opensm             Process is : [ Running ]
Unhealthy Ports    Process is : [ Running ]
Daily Report       Process is : [ Running ]

```

	<pre> UFM Health          Process is : [ Running ] UFM Telemetry       Process is : [ Running ] UFM                  Running ===== HA Summary ===== Local ===== Primary IP          11.0.0.11 Secondary IP        10.209.44.115 DRBD                 Running Primary DRBD State           ConnectionState = Connected - DiskState = UpToDate ===== Peer ===== Primary IP          11.0.0.12 Secondary IP        10.209.44.116 DRBD                 Running Secondary DRBD State           ConnectionState = Connected - DiskState = UpToDate ===== swx-ufm3-01 (config) # </pre>
<p>Related Commands</p>	<p>N/A</p>
<p>Notes</p>	<ul style="list-style-type: none"> <li>• The output example above is taken from a high-availability setup</li> <li>• If working in HA mode, you will receive information on the HA status</li> </ul> <p>The process status can be one of the below:</p> <ul style="list-style-type: none"> <li>• Running – the process is running</li> <li>• Stopped – the process is not running</li> </ul>

## UFM License

## ufm license install

	ufm license install <url> Installs a UFM license file from a remote host.	
Syntax Description	url	https, scp and sftp are supported. Example: <a href="#">scp://username[:password]@hostname/path/filename</a> , <a href="#">usb:/path/filename</a> .
Default	N/A	
Configuration Mode	config	
History	1.6.0	
Example	<pre>ufmap1 (config) # ufm license install scp ://root:123456@10.209.1.21/tmp/volt-ufm-advanced.lic</pre>	
Related Commands	ufm license delete show ufm license	
Notes	<ul style="list-style-type: none"> <li>The license format must be as follow: volt-ufm-*.lic, mlnx-ufm-*.lic or nvidia-ufm-*.lic</li> <li>Duplicate license are not permitted. You must delete the previous license before installing the new one.</li> </ul>	

## ufm license delete

	ufm license delete <filename> Deletes a UFM license file from the hard drive.	
Syntax Description	filename	UFM license filename
Default	N/A	
Configuration Mode	config	
History	1.6.0	

Example	<pre>ufmapl (config) # ufm license delete volt-ufm-advanced.lic</pre>
Related Commands	ufm license install show ufm license
Notes	

## show ufm license

	show ufm license Displays UFM license information.
Syntax Description	N/A
Default	N/A
Configuration Mode	Enable
History	1.6.0
Example	<pre>ufmapl (config) # show ufm license  -----   -----   -----   Customer ID  SN   swName   Type   MAC Address   Exp. Date  Limit  Functionality   Status    -----   -----   -----   495760397  123456778  UFM  Evaluation  NA  2090-11-21  1024  Advanced  Valid  </pre>

	<pre> ----- ----- ----- </pre>
Related Commands	<pre> ufm license install ufm license delete </pre>
Notes	

## show files ufm-license

	<pre> show files ufm-license Displays a list of UFM license files </pre>
Syntax Description	N/A
Default	N/A
Configuration Mode	Enable
History	1.6.0
Example	<pre> ufmapl (config) # show files ufm-license nvidia-ufm-advanced.lic </pre>
Related Commands	ufm license delete
Notes	

## UFM Configuration Management

### ufm configuration delete

	<pre> ufm configuration delete &lt;zip-file&gt; Deletes a configuration zip file from the hard drive. </pre>
Syntax Description	<pre> zip-file   Zip filename to delete </pre>

Default	N/A
Configuration Mode	config
History	1.6.0
Example	<pre>ufmap1 (config) # ufm configuration delete ufm-config-20121128-180857.zip</pre>
Related Commands	ufm configuration upload ufm configuration import ufm configuration export ufm configuration fetch
Notes	

## ufm configuration export

	ufm configuration export [<zip-file>] Exports UFM configuration to a file (a zip archive).	
Syntax Description	zip-file	UFM configuration of exporting the zip file
Default	N/A	
Configuration Mode	config	
History	1.6.0	
Example	<pre>ufmap1 (config) # ufm configuration export</pre>	
Related Commands	ufm configuration upload ufm configuration import ufm configuration delete ufm configuration fetch	
Notes	If no zip file is provided, a zip archive is created with the name: ufm-config-<date>-<time>.zip (e.g. ufm-config-20130327-153314.zip)	

## ufm configuration fetch

	ufm configuration fetch <url> Downloads UFM configuration files from a remote host or a USB device.	
Syntax Description	url	The URL path from where the configuration file can be downloaded. https, scp and sftp are supported. Example: <a href="#">scp://username[:password]@hostname/path/filename</a>
Default	N/A	
Configuration Mode	config	
History	1.6.0	
Example	<pre>ufmap1 (config) # ufm configuration fetch usb:/ufmapp/ufmconf1.zip</pre>	
Related Commands	ufm configuration upload ufm configuration import ufm configuration export ufm configuration delete	
Notes		

## ufm configuration import

	ufm configuration import <zip-file> [upgrade] Imports UFM configuration from a file (a zip archive).	
Syntax Description	zip-file	Zip filename from which to import
	upgra	Imports UFM-SDN Appliance configuration from a previous

	de	version and upgrades it to the latest one
Default	N/A	
Configuration Mode	config	
History	1.6.0	
Example	<pre>ufmap1 (config) # ufm configuration import ufm-config-20121128-180857.zip</pre>	
Related Commands	ufm configuration upload ufm configuration export ufm configuration delete ufm configuration fetch	
Notes		

## ufm configuration upload

	ufm configuration upload <filename> <url> Uploads UFM configuration to a remote host or a USB device (a zip archive).	
Syntax Description	filename	The UFM configuration of uploading the file name
	url	The URL path from where the configuration file can be uploaded. Supported formats: https, scp and sftp. Example: <a href="https://username[:password]@hostname/path/filename">scp://username[:password]@hostname/path/filename</a>
Default	N/A	
Configuration Mode	config	
History	1.6.0	
Example	<pre>ufmap1 (config) # ufm configuration upload ufm-config-20121128-180857.zip scp://mlnx:123456@172.30.3.201/tmp</pre>	



Related Commands	ufm configuration export ufm configuration import ufm configuration delete
Notes	

## show files ufm-configuration

	show files ufm-configuration Displays a list of UFM configuration zip archives.
Syntax Description	N/A
Default	N/A
Configuration Mode	Enable
History	1.6.0
Example	<pre>ufmapl (config) # show files ufm-configuration ufm-config-20231105-102019.zip</pre>
Related Commands	
Notes	

## Data Management

### ufm data reset

	ufm data reset Resets the UFM data (both the configuration and the database data).
Syntax Description	N/A

Default	N/A
Configuration Mode	config
History	1.5.0
Example	<pre> ufmapl (config) # ufm data reset This command resets UFM data (configuration and database) and consequently deletes installed web client related certificates. Are you sure you wish to proceed? [yes/no] yes  UFM reset to factory defaults finished successfully. </pre>
Related Commands	N/A
Notes	This command is available in standalone mode only. For resetting UFM in HA mode, refer to <a href="#">no ufm ha</a> .

## ufm data backup

	<pre>ufm data backup [&lt;backup-file&gt;][with-telemetry]</pre> <p>Backs up UFM data files.</p>
--	--

Syntax Description	backup file	Backup file name to be generated
	with-telemetry	Backup UFM historical telemetry
Default	N/A	
Configuration Mode	config	
History	1.9.0	
Example	<pre>ufmapl (config) # ufm data backup ufm-backup.zip</pre>	
Related Commands		
Notes		

## ufm data upload

	<b>ufm data upload &lt;zip file&gt; &lt;URL&gt;</b> Uploads UFM data files to a remote host or a USB device.	
Syntax Description	URL	Supported formats: http, https, ftp, tftp, scp, sftp and usb. (e.g., <a href="#">scp://username[:password]@hostname/path/filename</a> , <a href="#">usb:/path/filename</a> )
Default	N/A	
Configuration Mode	config	
History	1.9.0	
Example	<pre>ufmapl (config) # fm data upload ufm-backup-20210716-130311.zip scp://mlnx:1234Kb@172.30.3.201/tmp</pre>	
Related Command		

ds	
Notes	

## ufm data fetch

	ufm data fetch <URL> Deletes a UFM data archive from the hard drive.	
Syntax Description	URL	Supported formats: http, https, ftp, tftp, scp, sftp and usb. (e.g., <a href="#">scp://username[:password]@hostname/path/filename</a> , <a href="#">usb:/path/filename</a> )
Default	N/A	
Configuration Mode	config	
History	1.9.0	
Example	<pre>ufmapl (config) # ufm data fetch scp://mlnx:1234Kb@172.30.3.201/tmp</pre>	
Related Commands		
Notes		

## ufm data restore

	ufm data restore <zip file> Restores UFM data files.	
Syntax Description	N/A	
Default	N/A	
Configuration Mode	config	

History	1.9.0
Example	<pre>ufmap1 (config) # ufm data restore ufm-backup-20210716-122851.zip</pre>
Related Commands	
Notes	

## ufm data delete

	ufm data delete <zip file> Deletes a UFM data archive from the hard drive.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) # ufm data delete ufm-backup-20210716-122851.zip</pre>
Related Commands	
Notes	

## ufm migrate-ufm2-to-ufm3

	ufm migrate-ufm2-to-ufm3 Modifies UFM-SDN settings to fit the UFM Enterprise Appliance cluster
--	---

Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.10.0
Example	<pre>ufmap1 (config) # ufm migrate-ufm2-to-ufm3</pre>
Related Commands	ufm data backup ufm data restore
Notes	

## Management Interface Monitoring

### ufm mgmt-interface monitor enable

	ufm mgmt-interface monitor enable no ufm mgmt-interface monitor enable Enables monitoring of the management interface. The no form of the command disables monitoring of the management interface.
Syntax Description	N/A
Default	Disabled
Configuration Mode	config
History	1.4.0
Example	<pre>ufmap1 (config) # ufm mgmt-</pre>

	<code>interface monitor enable</code>
Related Commands	<code>ufm mgmt-interface monitor interval</code> <code>ufm mgmt-interface show ufm mgmt-interface</code>
Notes	

## ufm mgmt-interface monitor interval

	<code>ufm mgmt-interface monitor interval &lt;time&gt;</code> Configures the management interface monitoring interval.	
Syntax Description	<code>time</code>	The management interface monitoring interval. Range: 5-180 seconds.
Default	10 seconds	
Configuration Mode	<code>config</code>	
History	1.4.0	
Example	<pre>ufmapl (config) # ufm mgmt-interface monitor interval 15</pre>	
Related Commands	<code>ufm mgmt-interface monitor enable</code> <code>ufm mgmt-interface show ufm mgmt-interface</code>	
Notes		

## ufm mgmt-interface

	<code>ufm mgmt-interface &lt;interface&gt;</code> Configures the management interface to be monitored.
--	---

Syntax Description	interface	Management interface to be monitored (e.g. eno8303, eno8403)
Default	eno8303	
Configuration Mode	config	
History	1.4.0	
Example	<pre>ufmap1 (config) # ufm mgmt-interface eth0</pre>	
Related Commands	ufm mgmt-interface monitor enable ufm mgmt-interface monitor interval show ufm mgmt-interface	
Notes	N/A	

## show ufm mgmt-interface

	show ufm mgmt-interface Displays the management interface settings.
Syntax Description	N/A
Default	N/A
Configuration Mode	Enable
History	1.4.0
Example	<pre>ufmap1 (config) # show ufm mgmt-interface  Management interface monitoring:   Interface name:      eno8303   Enabled:             Yes   Monitoring interval: 10 seconds</pre>



Related Commands	ufm mgmt-interface monitor enable ufm mgmt-interface monitor interval ufm mgmt-interface
Notes	

## UFM Logs

### show ufm logging

	show ufm logging Displays logging configuration.
Syntax Description	N/A
Default	N/A
Configuration Mode	Enable
History	1.4.0
Example	<pre> ufmapl (config) # show ufm logging Number of archived log files to keep: 15 Log rotation size threshold: 100M  Ufm-log level: WARNING Syslog:     Enabled:     No     Server:     Local </pre>

	<pre> Level: WARNING Ufm-log enabled:      No Ufm-events enabled: No swx-ufm3-01 (config) # </pre>
Related Commands	
Notes	

## ufm logging syslog enable

	<pre> ufm logging syslog enable no ufm logging syslog enable Enable sending UFM logs to syslog. The no form of the command disables sending UFM logs to syslog. </pre>
Syntax Description	N/A
Default	Disabled
Configuration Mode	config
History	1.4.0
Example	<pre> ufmapl (config) # ufm logging syslog enable </pre>
Related Commands	
Notes	This change takes effect after UFM restart.

## ufm logging syslog

	ufm logging syslog <host:port> no ufm logging syslog Sends UFM logs to a remote syslog server. The no form of the command sends UFM logs to the local syslog server.	
Syntax Description	port	Remote syslog hostname and port
Default	N/A	
Configuration Mode	config	
History	1.4.0	
Example	<pre>ufmap1 (config) # ufm logging syslog 172.30.36.120:514</pre>	
Related Commands		
Notes	This change takes effect after UFM restart.	

## ufm logging syslog ufm-log enable

	ufm logging syslog ufm-log enable no ufm logging syslog ufm-log enable Send UFM log messages to a syslog server The no form of the command disables sending UFM log messages to a syslog server	
Syntax Description	N/A	
Default	Disabled	
Configuration Mode	config	
History	1.4.0	

Example	<pre>ufmapl (config) # ufm logging syslog enable</pre>
Related Commands	
Notes	This change takes effect after UFM restart.

## ufm logging syslog ufm-events enable

	ufm logging syslog ufm-events enable no ufm logging syslog ufm-events enable Send UFM event log messages to a syslog server. The no form disables the ability to log UFM event messages to syslog server
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.0
Example	<pre>ufmapl (config) # ufm logging syslog ufm-events enable</pre>
Related Commands	
Notes	This change takes effect after UFM restart.

## ufm logging level

	ufm logging level <log-level> Sets the severity level of certain log messages.
--	---

Syntax Description	log-level	<ul style="list-style-type: none"> <li>• CRITICAL – critical conditions</li> <li>• DEBUG – debug-level messages</li> <li>• ERROR – error conditions</li> <li>• INFO – informational messages</li> <li>• WARNING – warning conditions</li> </ul>
Default	WARNING	
Configuration Mode	config	
History	1.6	
Example	<pre>ufmap1 (config) # ufm logging level WARNING</pre>	
Related Commands		
Notes		

## show ufmhealth log

	show ufmhealth log [continuous   files   matching   not ] Displays UFM health event log.	
Syntax Description	continuous	Displays new event log messages as they arrive. Press 'Ctrl+C' to quit from output view.
	files	Displays archived log files
	matching	Displays event logs that match a given regular expression
	not	Displays event logs that do not meet certain criteria
Default	N/A	
Configuration Mode	Any configuration mode	
History	1.9.0	
Example	<pre>ufmap1 (config) # show ufmhealth log</pre>	

	<pre> 2013-09-03 14:36:30.423 ufm INIT Request Polling Delta Fabric 2013-09-03 14:37:00.426 ufm INIT Request Polling Delta Fabric 2013-09-03 14:37:30.428 ufm INIT Request Polling Delta Fabric 2013-09-03 14:38:00.431 ufm INIT Request Polling Delta Fabric 2013-09-03 14:38:02.175 ufm WARNING Failed to parse host response from host 172.30.105.153 message type 10 2013-09-03 14:38:02.193 ufm WARNING Failed to parse host response from host 172.30.11.161 message type 10 </pre>
Related Commands	
Notes	To quit from the output view, <b>press 'q'</b> .

## show ufmhealth log files

	<pre> show ufmhealth log files [number   matching &lt;regex&gt;   not ] Displays UFM health event log. </pre>	
Syntax Description	number	Displays new event log messages as they arrive
	matching	Displays event logs that match a given regular expression
	not	Displays event logs that do not meet certain criteria
Default	N/A	
Configuration Mode	Any configuration mode	
History	1.9.0	
Example	<pre> ufmap1 (config) # show ufmhealth log files </pre>	

Related Commands	
Notes	

## show ufm event log

	show ufm event log [matching <regex>   not matching <regex>] Displays current event log file in a scrollable pager.	
Syntax Description	matching	Displays new event log messages that match a given regular expression
	not matching	Displays new event log messages that do not match a given regular expression
Default	N/A	
Configuration Mode	Any configuration mode	
History	1.9.0	
Example	<pre> ufmap1 (config) # show ufm event log matching INFO 2021-07-20 09:35:31.551 [1] [352] INFO [Logical_Model] Grid [Grid]: Network management is added 2021-07-20 09:35:34.454 [3] [604] INFO [Maintenance] Grid [Grid]: Fabric Analysis Report succeeded 2021-07-20 09:40:31.957 [5] [604] INFO [Maintenance] Grid [Grid]: Fabric Analysis Report succeeded ... </pre>	
Related Commands		
Notes	To quit from the output view, <b>press 'q'</b> .	

## show ufm event log continuous

	show ufm event log continuous [matching <regex>   not matching <regex>] Displays new event log messages as they arrive.	
Syntax Description	matching	Displays new event log messages that match a given regular expression
	not matching	Displays new event log messages that do not match a given regular expression
Default	N/A	
Configuration Mode	Any configuration mode	
History	1.9.0	
Example	<pre> ufmap1 (config) # show ufm event log continuous not matching INFO 2021-07-20 09:38:33.192 [4] [406] WARNING [Communication_Error] Grid [Grid]: Failed to get sysinfo for switch 0002c903005dd830 2021-07-20 09:40:33.825 [10] [394] CRITICAL [Module_Status] Switch [default(6) / Switch: switch-system / NA / NA] [dev_id: 0002c903005dd830]: Module PS 2 on switch- system(10.10.10.10) status is fatal 2021-07-20 10:36:23.961 [40] [518] CRITICAL [Maintenance] Grid [Grid]: Process periodic_report_runner is down.           </pre>	
Related Commands	show ufm console event log	
Notes	To quit from the output view, <b>press 'Ctrl+C'</b> .	



## show ufm event log files

	show ufm event log files [<file-number> [matching <regex>   not matching <regex>]] Lists all archived log files available.	
Syntax Description	file-number	Displays the selected archived event log file
	matching	Displays entries from the selected log file that match a given regular expression
	not matching	Displays entries from the selected log file that do not match a given regular expression
Default	N/A	
Configuration Mode	Any configuration mode	
History	1.9.0	
Example	<pre>ufmap1 (config) # show ufm event log files</pre>	
Related Commands	show ufm event log	
Notes	To quit from the output view, <b>press 'q'</b> .	

## show ufm console log

	show ufm console log [matching <regex>   not matching <regex>] Displays current console event log file in a scrollable pager.	
Syntax Description	matching	Displays new console log messages that match a given regular expression
	not matching	Displays new console log messages that do not match a given regular expression
Default	N/A	
Configuration	Any configuration mode	

Mode	
History	1.9.0
Example	<pre> ufmapl (config) # show ufm console log 2021-07-20 13:34:49.090 ufm  INIT    Prometheus Client: Request time = 0.005601406097412109, Total Processing time = 0.011138916015625 2021-07-20 13:34:49.092 ufm  INIT    handled device stats. (10) 3887.93 devices/sec. (18) 6998.28 ports/sec, queue: 9 2021-07-20 13:35:19.115 ufm  INIT    Telemetry packet: size: 0.043 MB, transfer rate: 7.684 MB/sec 2021-07-20 13:35:19.120 ufm  INIT    Prometheus Client: Request time = 0.0056459903717041016, Total Processing time = 0.010822296142578125 ... </pre>
Related Commands	
Notes	To quit from the output view, <b>press 'q'</b> .

## show ufm console log continuous

	show ufm console log continuous [matching <regex>   not matching <regex>] Displays new event log messages as they arrive.	
Syntax Description	matching	Displays new console log messages that match a given regular expression
	not matching	Displays new console log messages that do not match a given regular expression
Default	N/A	
Configuration	Any configuration mode	

on Mode	
History	1.9.0
Example	<pre>ufmapl (config) # show ufm console log continuous matching CRITICAL 2021-07-20 09:40:33.825 eventlog CRITICAL 2021-07-20 09:40:33.825 [10] [394] CRITICAL [Module_Status] Switch [default(6) / Switch: switch-system / NA / NA] [dev_id: 0002c903005dd830]: Module PS 2 on switch- system(10.10.10.10) status is fatal 2021-07-20 10:36:23.962 eventlog CRITICAL 2021-07-20 10:36:23.961 [40] [518] CRITICAL [Maintenance] Grid [Grid]: Process periodic_report_runner is down. ...</pre>
Related Commands	show ufm console log
Notes	To quit from the output view, <b>press 'Ctrl+C'</b> .

## show ufm console log files

	show ufm console log files [<file-number> [matching <regex>   not matching <regex>]] Lists all archived log files available.	
Syntax Description	file-number	Displays the selected archived event log file
	matching	Displays entries from the selected log file that match a given regular expression
	not matching	Displays entries from the selected log file that do not match a given regular expression

Default	N/A
Configuration Mode	Any configuration mode
History	1.9.0
Example	<pre> ufmap1 (config) # show ufm console log files 1 matching INFO 2021-07-20 11:47:43.231 rest_api INFO      user: ufmsystem, url: (http://11.1.1.11:8000/app/events/external_event), meth od: (POST) 2021-07-20 11:50:43.437 rest_api INFO      user: ufmsystem, url: (http://11.1.1.11:8000/app/events/external_event), meth od: (POST) 2021-07-20 11:53:43.642 rest_api INFO      user: ufmsystem, url: (http://11.1.1.11:8000/app/events/external_event), meth od: (POST) 2021-07-20 11:56:43.862 rest_api INFO      user: ufmsystem, url: (http://11.1.1.11:8000/app/events/external_event), meth od: (POST) ... </pre>
Related Commands	show ufm console log
Notes	To quit from the output view, <b>press 'q'</b> .

## UFM Web Client

### ufm web-client mode

	ufm web-client mode <http   https-client-authentication> Configures Access mode to the UFM web clients.	
Syntax Description	https	HTTPS access
	https-client-authentication	HTTPS access with client authentication
Default	https	
Configuration Mode	config	
History	1.4.0	
Example	<pre>ufmapl (config) # ufm web-client mode https-client-authen</pre>	
Related Commands	show ufm web-client ufm web-client client-authentication ufm web-client associate-user	
Notes		

## ufm web-client associate-user

	ufm web-client associate-user <san> <username> no ufm web-client associate-user <san> <username> Associates client certificate subject alternative name with a UFM user. The no form of the command disassociates client certificate subject alternative name from a UFM user.	
Syntax Description	san	Client certificate subject alternative name
	username	UFM username
Default	N/A	
Configuration Mode	config	
History	1.4.0	

Example	<pre>ufmap1 (config) # ufm web-client associate-user ufm.mellanoxhpc.net admin</pre>
Related Commands	<pre>show ufm web-client ufm web-client mode ufm web-client client-authentication</pre>
Notes	

## show ufm web-client

	<pre>show ufm web-client Displays UFM web client settings.</pre>
Syntax Description	N/A
Default	N/A
Configuration Mode	enable
History	1.4.0
Example	<pre>ufmap1 (config) # show ufm web-client Mode: HTTPS Client authentication: Yes  Bootstrap certificate file: Present CA certificate file: Present Server certificate file: Present  Server certificate hostname: ufm.mellanoxhpc.net  User Associations: SAN: ufm.mellanoxhpc.net User: ufmsysadmin</pre>

	<pre> Certificate Auto-refresh:   Enabled: Yes   CA certificate URL: https://mellanox.com/cacert   Server certificate URL: https://mellanox.com/servercerts   Server certificate thumbprint: 2268BDD79DF7FD9C818EB97F315AE0F35D223A15   Last checked: 2019-04-20 20:57:21   Last update: 2019-04-20 20:57:21 </pre>
Related Commands	<pre> ufm web-client mode ufm web-client client-authentication ufm web-client associate-user </pre>
Notes	

## ufm web-client client-authentication cert-refresh enable

	<pre> ufm web-client client-authentication cert-refresh enable no ufm web-client client-authentication cert-refresh enable </pre> <p>Enables UFM web client certificates auto-refresh. The no form of the command disables the feature.</p>
Syntax Description	N/A
Default	Disabled
Configuration Mode	config
History	1.4.0
Example	<pre> ufmapl (config) # ufm web-client client- authentication cert-refresh enable </pre>
Related Commands	show ufm web-client

Notes	
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## ufm web-client client-authentication cert-refresh ca-cert

	ufm web-client client-authentication cert-refresh ca-cert <download-url> no ufm web-client client-authentication cert-refresh ca-cert <download-url> Sets the download URL for root/intermediate certificate. The no form of the command clears the root/intermediate certificate auto-refresh settings.	
Syntax Description	download-url	Download URL for root/intermediate certificate
Default	N/A	
Configuration Mode	config	
History	1.5	
Example	<pre>ufmapl (config) # ufm web-client client-authentication cert-refresh ca-cert "https://mellanox.com/cacerts"</pre>	
Related Commands	show ufm web-client	
Notes		

## ufm web-client client-authentication cert-refresh server-cert

	ufm web-client client-authentication cert-refresh server-cert <url> <thumbprint> no ufm web-client client-authentication cert-refresh server-cert <url> <thumbprint> Sets the download URL for server and bootstrap certificates.	
--	---	--



	The no form of the command clears the server and bootstrap certificates auto-refresh settings.	
Syntax Description	url	https and sftp are supported. Example: <a href="https://username[:password]@hostname/path/filename">sftp://username[:password]@hostname/path/filename</a> .
	thumbprint	Server certificate thumbprint
Default	N/A	
Configuration Mode	config	
History	1.4.0	
Example	<pre>ufmapl (config) # ufm web-client client- authentication cert-refresh server-cert "https://mellanox.com/servercerts" 2268BDD79DF7FD9C818EB97F315AE0F35D223A15</pre>	
Related Commands	show ufm web-client	
Notes		

## ufm web-client client-authentication cert-refresh run-now

	ufm web-client client-authentication cert-refresh run-now Refreshes the server and root/intermediate certificates manually.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.0

Example	<pre>ufmapl (config) # ufm web- client client- authentication cert- refresh run-now</pre>
Related Commands	show ufm web-client
Notes	

## UFM Audit

### ufm track-conf-changes enable

	<pre>ufm track-conf-changes enable no ufm track-conf-changes enable Enables UFM configuration changes tracking The no form of the command disables UFM configuration changes tracking</pre>
Syntax Description	N/A
Default	Enabled
Configuration Mode	config
History	1.4.0
Example	<pre>ufmapl (config) # ufm track-conf- changes enable</pre>
Related Commands	show ufm track-conf- changes

Notes	
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## show ufm track-conf-changes

	show ufm track-conf-changes Displays UFM configuration changes tracking settings
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.0
Example	<pre>ufmap1 (config) # show ufm Track UFM configuration changes: No</pre>
Related Commands	ufm track-conf-changes enable no ufm track-conf-changes enable
Notes	

## High-Availability

### ufm ha

	ufm ha [failover   takeover] Performs High Availability failover/takeover operations.	
Syntax Description	failover	Failover can be performed only on master (active) machine
	takeover	Takeover can be performed only on slave (standby) machine
Default	N/A	

Configuration Mode	config
History	1.4.1
Example	<pre>ufmapl (config) # ufm ha takeover</pre>
Related Commands	
Notes	

## ufm ha configure

	<p>ufm ha configure &lt;standby master&gt; &lt;local primary IP&gt; &lt;peer primary IP&gt; &lt;local secondary IP&gt; &lt;peer secondary IP&gt; &lt;virtual ip&gt; &lt;hacluster-pwd&gt;  no ufm ha  Applies HA configuration.  The no form of the command reverts the appliance to a standalone configuration.</p>	
Syntax Description	node-role	Master or standby
	local-primary-ip	Local node primary IP address
	peer-primary-ip	Peer node primary IP address
	local-secondary-ip	Local node secondary IP address
	peer-secondary-ip	Peer node secondary IP address
	virtual ip	Virtual IP used for accessing the active (master) machine
	hacluster-pwd	hacluster user password
Default	N/A	
Configuration Mode	config	
History	1.6.0	

Example	<pre>swx-ufm3-01 (config) # ufm ha configure standby 11.0.0.12 11.0.0.11 10.209.44.12 10.209.44.11 10.209.44.111 123456</pre>
Related Commands	
Notes	<ol style="list-style-type: none"> <li>1. The local and peer primary interfaces should be connected directly back-to-back</li> <li>2. The command must be ran first on standby node and only then on the master node</li> </ol>

## ufm ha configure dual-subnet

	<pre>ufm ha configure dual-subnet &lt;standby master&gt; &lt;local primary IP&gt; &lt;peer primary IP&gt; &lt;local secondary IP&gt; &lt;peer secondary IP&gt; &lt;hacluster-pwd&gt;</pre> <pre>no ufm ha</pre> <p>Applies HA configuration for dual-subnet. The no form of the command reverts the appliance to a standalone configuration.</p>	
Syntax Description	node-role	Master or standby
	local-primary-ip	Local node primary IP address
	peer-primary-ip	Peer node primary IP address
	local-secondary-ip	Local node secondary IP address
	peer-secondary-ip	Peer node secondary IP address
	hacluster-pwd	hacluster user password
Default	N/A	
Configuration Mode	config	
History	1.4.0	

Example	<pre>swx-ufm3-01 (config) # ufm ha configure dual-subnet standby 11.0.0.12 11.0.0.11 10.209.44.12 10.209.44.11 123456</pre>
Related Commands	
Notes	<ol style="list-style-type: none"> <li>1. The local and peer primary interfaces should be connected directly back-to-back</li> <li>2. The command must be ran first on standby node and only then on the master node</li> </ol>

## ufm ha-nodes

	<pre>ufm ha-nodes &lt;master hostname&gt; &lt;standby hostname&gt; no ufm ha-nodes</pre> <p>Sets the HA nodes information in UFM configuration. The no form of the commands clears the HA nodes information from the UFM configuration.</p>	
Syntax Description	master hostname	The originally set master node hostname.
	standby hostname	The originally set standby node hostname.
Default	N/A	
Configuration Mode	config	
History	1.5.0	
Example	<pre>ufmapl (config) # ufm ha-nodes ufm-host-01 ufm- host-02</pre>	
Related Commands	show ufm ha-nodes	
Notes		

## show ufm ha-nodes

	show ufm ha-nodes Shows the UFM HA configuration that is set in UFM.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.5.0
Example	<pre>ufmap1 (config) # show ufm ha-nodes 08c0eb030098609a:11.0.0.12:1,08c0eb0300986042:11. 0.0.11:2</pre>
Related Commands	ufm ha-nodes
Notes	N/A

## UFM Multi-Port SM

### ufm multi-port-sm

	<pre>ufm multi-port-sm enable ufm multi-port-sm ha- enable no ufm multi-port-sm enable</pre> <p>Enables configuring OpenSM with multiple GUIDs. The no form of the command disables</p>
--	---

	configuring OpenSM with multiple GUIDs.
Syntax Description	enable – enables configuring OpenSM with multiple GUIDs ha-enable – enables multi-port SM with high availability
Default	Disabled
Configuration Mode	config
History	1.6.0
Example	<pre>ufm (config) # ufm multi-port-sm enable</pre>
Related Commands	show ufm multi-port-sm
Notes	

## show ufm multi-port-sm

	show ufm multi-port-sm Displays whether configuring OpenSM with multiple GUIDs is enabled.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.6.0
Example	<pre>ufm (config) # show ufm multi- port-sm Enable</pre>



Related Commands	ufm multi-port-sm enable
Notes	

## ufm additional-fabric-interfaces

	ufm additional-fabric-interfaces no ufm additional-fabric-interfaces Sets additional fabric interfaces for OpenSM. Clears the additional fabric interfaces list.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.6.0
Example	<pre>ufm (config) #ufmapl (config) # ufm additional-fabric-interfaces ib1</pre>
Related Commands	ufm multi-port-sm enable
Notes	

## show ufm additional-fabric-interfaces

	show ufm additional-fabric-interfaces Displays the additional fabric interfaces list used by OpenSM.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.6.0

Example	<pre>ufm (config) # show ufm additional-fabric-interfaces ib1</pre>
Related Commands	<pre>ufm multi-port-sm enable</pre>
Notes	

## UFM Plugins

### ufm plugin

	<pre>ufm plugin &lt;plugin-name&gt; {add [tag &lt;plugin tag&gt;]   enable   remove   upgrade tag &lt;plugin tag&gt; } no ufm plugin &lt;plugin-name&gt; enable Manages the UFM plugin. The no form of the command disables the UFM plugin.</pre>	
Syntax Description	add [tag <plugin tag>]	Adds UFM plugin with an optional plugin tag
	enable	Enables UFM plugin
	remove	Removes UFM plugin
	upgrade tag <plugin tag>	Upgrades UFM plugin data
Default	N/A	
Configuration Mode	config	
History	1.11.0	Removed the [force] option from the UFM plugin upgrade command
	1.8.0	Added the upgrade tag <plugin tag> [force]
	1.7.0	First release
Example	<pre>ufm (config) # ufm plugin ndt add tag 1.1.1-17</pre>	

Related Commands	show ufm plugin
Notes	<ul style="list-style-type: none"> <li>• The plugin can be added, removed, enabled or disabled while UFM is running.</li> <li>• Prior to the plugin upgrade, the plugin should be disabled. After the upgrade, it should be enabled.</li> <li>• The plugin will be started upon UFM startup.</li> <li>• Disabling the plugin will only stop it from its current UFM run and from any future runs.</li> <li>• Removing the plugin also clears all its folders and files (including conflagration and logs).</li> </ul>

## show ufm plugin

	show ufm plugin Displays UFM plugin information
Syntax Description	N/A
Default	enabled
Configuration Mode	config
History	1.7.0
Example	<pre> ufm (config) # show ufm plugin Plugin ndt:   Enabled:          Yes   Plugin tag:       1.1.1-17   Shared volumes: /opt/ufm/files/log:/log, /dev:/h ost_dev   HTTPD port:       8980   HTTPD file:       Present   State:            running   CPU limit: unlimited </pre>

Related Commands	ufm plugin add, ufm plugin remove, ufm plugin enable, no ufm plugin enable
Notes	

## NVP

### nvp set

	<p>nvp set &lt;nvp-file-name&gt; &lt;key&gt; &lt;value&gt; [force]</p> <p>Changes the configuration of a file based on the key-value pair provided by the user</p>	
Syntax Description	nvp-file-name	Refers to the file name
	key	Refers to the key
	value	Refers to the value
	force	Allows the command to proceed even if the configuration does not currently exist
Default	N/A	
Configuration Mode	config	
History	1.10.0	Updated <file-name> to <nvp-file-name> Added the [force] flag
	1.8.0	First release
Example	<pre>ufmapl (config) # nvp set opensm.conf qos TRUE</pre>	
Related Commands	nvp get	
Notes	<p>Force Option:</p> <ul style="list-style-type: none"> <li>If the <code>force</code> flag is included, it allows the command to proceed even if the configuration does not currently exist. For example, it can create a new section in INI files if needed.</li> </ul>	

- Without the `force` option, the command will only update existing entries.

## nvp get

	nvp get <file_name> <key> Retrieve the configuration of file based on the key entered by the user	
Syntax Description	file-name	Refers to the file name
	key	Refers to the key
Default	N/A	
Configuration Mode	config	
History	1.8.0	
Example	<pre>ufmap1 (config) # nvp get opensm.conf qos</pre>	
Related Commands	nvp set	
Notes	Get can retrieve the configuration of only those files, that have been modified via the nvp set.	

## nvp dump

	nvp dump Generates a JSON file containing the configuration of all the NVP-supported configuration files
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.8.0

Example	<pre>ufmapl (config) # nvp dump Dump file created at /opt/ufm/files/conf/plugins/tools/nvp/nv p_dump.json</pre>
Related Commands	<pre>nvp set nvp append</pre>
Notes	

## nvp append

	<pre>nvp append &lt;file_name&gt; &lt;config_line&gt;</pre> <p>Adds any new configuration line as plain text to the configuration</p>	
Syntax Description	file-name	Refers to the file name
	config-line	Refers to the config line
Default	N/A	
Configuration Mode	config	
History	1.9.0	
Example	<pre>ufmapl (config) # nvp append root_guid.conf "root_switches"</pre>	
Related Commands	<pre>nvp reset</pre>	
Notes		

## nvp reset

	<pre>nvp reset &lt;file-name&gt;</pre>
--	--

	Clears the configuration file that has a plain text format	
Syntax Description	file_name	Refers to the file name
Default	N/A	
Configuration Mode	config	
History	1.9.0	
Example	<pre>ufmap1 (config) # nvp reset root_guid.conf</pre>	
Related Commands	nvp append	
Notes		

## nvp discard

	nvp discard [file-name] Removes configuration changes from the transaction folder in NVP.	
Syntax Description	file-name	Refers to the file name
Default	N/A	
Configuration Mode	config	
History	1.10.0	
Example	<pre>ufmap1 (config) # nvp discard gv.cfg</pre>	
Related Commands	nvp set nvp append	
Notes		

## nvp backup

	nvp backup [backup-name] Creates a backup archive of all NVP-supported configuration files.	
Syntax Description	backup-name	Name of the archive containing the backup configuration
Default	N/A	
Configuration Mode	config	
History	1.10.0	
Example	<pre>ufmap1 (config) # nvp backup Backup 'nvp_backup_2024-10-31_09-12-59.tar.gz' created successfully.</pre>	
Related Commands	nvp upload nvp delete	
Notes		

## nvp delete

	nvp delete <backup-name> Removes a specified backup file created using the <code>backup</code> command.	
Syntax Description	backup-name	Name of the archive containing the backup configuration
Default	N/A	
Configuration Mode	config	
History	1.10.0	
Example	<pre>ufmap1 (config) # nvp delete nvp_backup_2024-10-31_09-12-59.tar.gz</pre>	



Related Commands	nvp backup
Notes	

## nvp fetch

	nvp fetch <url> Download an NVP backup archive file from a remote host.	
Syntax Description	url	The URL path from where the NVP archive file can be downloaded. https, scp and sftp are supported. Example: <a href="#">scp://username[:password]@hostname/path/filename</a>
Default	N/A	
Configuration Mode	config	
History	1.10.0	
Example	<pre>ufmap1 (config) # nvp fetch scp ://root:123456@10.10.0.6/tmp/nvp_backup_2024-10-31_09-19-07.tar.gz</pre>	
Related Commands	nvp backup nvp upload	
Notes		

## nvp upload

	nvp upload <backup-name> <url> Uploads an NVP backup archive file to a remote host.	
Syntax Description	backup-name	Name of the backup file
	url	The URL path where the NVP archive file can be uploaded to. Supported formats: https, scp and sftp.

	Example: <a href="#">scp://username[:password]@hostname/path/filename</a>
Default	N/A
Configuration Mode	config
History	1.10.0
Example	<pre>ufmap1 (config) # nvp upload nvp_backup_2024-10-31_09-19-07.tar.gz scp ://root:123456@10.0.0.6/tmp</pre>
Related Commands	nvp backup
Notes	

## nvp rollback

	nvp rollback <backup-name> [force] Restores a previous configuration from a specified backup file in NVP	
Syntax Description	backup-name	Name of the archive file containing the backup configuration
Default	N/A	
Configuration Mode	config	
History	1.10.0	
Example	<pre>ufmap1 (config) # nvp rollback nvp_backup_2024-10-31_09-19-07.tar.gz</pre>	
Related Commands	nvp backup nvp apply	

Notes	<p>If the <code>force</code> option is included, there will be no prompts.</p> <p>Since the Rollback action overwrites the transactional folder, users must subsequently call <code>APPLY</code> to implement the changes from the transactional folder to the UFM configuration.</p>
-------	---

## nvp apply

	<p><code>nvp apply [ force   no-restart]</code></p> <p>Moves all the files that have been changed via the <code>nvp set / append</code> commands to their original location and restarts the UFM Server for changes to take effect.</p>	
Syntax Description	<code>force</code>	Performs <code>nvp apply</code> without any prompts
	<code>no-restart</code>	Apply the updated configuration without restarting UFM.
Configuration Mode	<code>config</code>	
History	1.8.0	
Example	<pre>ufmapl (config) nvp apply force</pre>	
Related Commands	<p><code>nvp set</code></p> <p><code>nvp append</code></p> <p><code>nvp reset</code></p> <p><code>nvp discard</code></p>	
Notes		

## UFM Process Commands

### ufm process health start

	<p><code>ufm process health start</code></p> <p><code>ufm process health restart</code></p>
--	---

	no ufm process health start Starts/restarts the UFM health process. The no form of the command stops the UFM health process.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.7.0
Example	<pre>ufmap1 (config) # ufm process health start</pre>
Related Commands	show ufm status
Notes	

## ufm process model start

	ufm process model start ufm process model restart no ufm process model start Starts/restarts the UFM ModelMain process. The no form of the command stops the UFM ModelMain process.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.7.0
Example	<pre>ufmap1 (config) # ufm process</pre>

	<pre>model start</pre>
Related Commands	show ufm status
Notes	When stopping the UFM ModelMain process, the UFM health is also stopped in order not to start the UFM ModelMain process.

## ufm process telemetry start

	ufm process telemetry start ufm process telemetry restart no ufm process telemetry start Starts/restarts UFM telemetry process. The no form of the command stops UFM telemetry process.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.7.0
Example	<pre>ufmap1 (config) # ufm process telemetry start</pre>
Related Commands	show ufm status
Notes	When stopping the UFM telemetry process, the UFM health is also stopped in order not to start the UFM telemetry process.

## ufm process sharp start

	ufm process sharp start ufm process sharp restart no ufm process sharp start
--	--

	Starts/restarts the NVIDIA SHARP Aggregation Manager process. The no form of the command stops the NVIDIA SHARP Aggregation Manager process.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.7.0
Example	<pre>ufmap1 (config) # ufm process sharp start</pre>
Related Commands	show ufm status
Notes	When stopping the SHARP Aggregation Manager process, the UFM health is also stopped in order not to start the SHARP Aggregation Manager process.

## ufm process telemetry start

	ufm process telemetry start ufm process telemetry restart no ufm process telemetry start Starts/restarts the UFM Telemetry process. The no form of the command stops the UFM Telemetry process.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.7.0
Example	<pre>ufmap1 (config) # ufm process telemetry start</pre>

Related Commands	show ufm status
Notes	When stopping the UFM Telemetry process, the UFM health is also stopped in order not to start the UFM Telemetry process.

## ufm process sm start

	ufm process sm start ufm process sm restart no ufm process sm start Starts/restarts the SM. The no form of the command stops the SM.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.7.0
Example	<pre>ufmap1 (config) # ufm process sm start</pre>
Related Commands	show ufm status
Notes	When stopping the SM process, the UFM health is also stopped in order not to start the SM process.

# InfiniBand Commands

## InfiniBand Utilities

### ib ibdiagnet

	Dib ibdiagnet [<ibdiagnet-options>] Scans the fabric using directed route packets and extracts all the available information regarding its connectivity and devices.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) # ib ibdiagnet</pre>
Related Commands	
Notes	<ul style="list-style-type: none"> <li>• For further information on the command, please run "ib ibdiagnet --help".</li> <li>• Running this command with the "upload" parameter uploads the last execution of the command.</li> </ul>

## ib ibaddr

	ib ibaddr <ibaddr options> Shows the LID range and default GID of the target.
Syntax Description	N/A
Default	The local port.



Configuration Mode	config
History	1.9.0
Example	<pre>ufmapl (config) # ib ibaddr GID fe80::c42:a103:74:f88e LID start 0x4 end 0x4</pre>
Related Commands	
Notes	For further information on the command, please run "ib ibaddr --help"

## ib ibhosts

	<b>ib ibhosts [matching &lt;expression&gt; [count]]</b> Scans the net or uses existing net topology file and lists all hosts.	
Syntax Description	matching	A matching expression in a form of a string to ease the information search
	count	The number of times the matching expression appears
Default	N/A	
Configuration Mode	config	
History	1.9.0	
Example	<pre>ufmapl (config) #</pre>	
Related Commands		
Notes	For further information on the command, please run "ib ibhosts --help"	

## ib iblinkinfo

	ib iblinkinfo [<iblinkinfo-options>] [matching <expression>] [count] Reports link info for each port in an IB fabric, node by node. Optionally, iblinkinfo can do partial scans and limit its output to parts of a fabric.	
Syntax Description	matching	A matching expression in a form of a string to ease the information search
	count	The number of times the matching expression appears
Default	N/A	
Configuration Mode	config	
History	1.9.0	
Example	<pre>ufmap1 (config) #</pre>	
Related Commands		
Notes	For further information on the command, please run "ib iblinkinfo --help"	

## ib ibnetdiscover

	ib ibnetdiscover [matching <expression> [count]] Assists to match more ibnetdiscover information.	
Syntax Description	matching	A matching expression in a form of a string to ease the information search
	count	The number of times the matching expression appears
Default	N/A	
Configuration Mode	config	
History	1.9.0	

Example	<pre>ufmapl (config) # ib ibnetdiscover</pre>
Related Commands	
Notes	For further information on the command, please run "ib ibnetdiscover --help".

## ib ibnodes

	<pre>ib ibnodes &lt;ibnodes-options&gt;</pre> Scans the net or uses existing net topology file and lists all nodes.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmapl (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib ibnodes --help"

## ib ibping

	<pre>ib ibping &lt;ibping options&gt;</pre> Uses vendor MADs to validate connectivity between InfiniBand nodes. On exit, (IP) ping-like output is shown.
Syntax Description	N/A

Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre> ufmap1 (config) # ib ibping -c 3 5  --- (Lid 5) ibping statistics --- 3 packets transmitted, 0 received, 100% packet loss, time 3000 ms rtt min/avg/max = 0.000/0.000/0.000 ms </pre>
Related Commands	
Notes	For further information on the command, please run "ib ibping --help"

## ib ibportstate

	<p>ib ibportstate &lt;ibportstate-options&gt; Gets the logical and physical port states of an InfiniBand port or disables or enables the port (only on a switch).</p>
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre> ufmap1 (config) # </pre>

Related Commands	
Notes	For further information on the command, please run "ib ibportstate --help".

## ib ibqueryerrors

	ib ibqueryerrors <ibqueryerrors-options> Queries and reports non-zero IB port counters.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib ibqueryerrors --help".

## ib ibroute

	ib ibroute <ibroute-options> Displays unicast and multicast forwarding tables of the switches.
Syntax Description	N/A
Default	N/A
Configuration Mode	config

History	1.9.0
Example	<pre>ufmap1 (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib ibroute --help".

## ib ibrouters

	<code>ib ibrouters &lt;ibrouters-options&gt;</code> Shows InfiniBand router nodes in topology.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) # ib routers Rt      : 0xe41d2d030048dbf8 ports 3 "MF0;mlnx-switch15:MSB7780/RT" Rt      : 0xe41d2d030048dc18 ports 3 "MF0;mlnx-switch18:MSB7780/RT"</pre>
Related Commands	
Notes	For further information on the command, please run "ib ibrouters --help".

## ib ibstat

	<code>ib ibstat &lt;ibstat options&gt;</code> Shows the host adapters status.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib ibstat --help"

## ib ibstatus

	<code>ib ibstatus &lt;ibstatus-options&gt;</code> Queries basic status of InfiniBand device(s).
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib ibstatus --help"

## ib ibswitches

	<b>ib ibswitches [matching &lt;expression&gt; [count]]</b> Scans the net or uses existing net topology file and lists all switches.	
Syntax Description	matching	A matching expression in a form of a string to ease the information search
	count	The number of times the matching expression appears
Default	N/A	
Configuration Mode	config	
History	1.9.0	
Example	<pre>ufmap1 (config) #</pre>	
Related Commands		
Notes	For further information on the command, please run "ib ibswitches --help"	

## ib ibsysstat

	<b>ib ibsysstat &lt;ibsysstat options&gt;</b> Obtains basic information for the specific node which may be remote. This information includes: hostname, CPUs, memory utilization.	
Syntax Description	N/A	
Default	N/A	
Configuration Mode	config	
History	1.9.0	



Example	<pre>ufmap1 (config) # ib ibsysstat 5 sysstat ping succeeded</pre>
Related Commands	
Notes	For further information on the command, please run "ib ibsysstat --help"

## ib ibtracert

	<pre>ib ibtracert &lt;ibtracert-options&gt; Displays unicast or multicast route from source to destination.</pre>
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib ibtracert --help".

## ib perfquery

	<pre>ib perfquery &lt;perfquery-options&gt; Dumps (and optionally clears) the performance counters of the destination port (including error counters).</pre>
Syntax	N/A

Description	
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmapl (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib perfquery --help".

## ib saquery

	<code>ib saquery &lt;saquery-options&gt;</code> Queries InfiniBand subnet administration attributes.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmapl (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib saquery --help"

## ib sminfo

	<code>ib sminfo &lt;sminfo-options&gt;</code> Queries the SMInfo attribute on a node.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib sminfo --help".

## ib smpdump

	<code>ib smpdump &lt;smpdump-options&gt;</code> A general purpose SMP utility which gets SM attributes from a specified SMA. The result is dumped in hex by default.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) #</pre>
Related Commands	

Notes	For further information on the command, please run "ib smpdump --help".
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## ib saquery

	ib saquery <saquery-options> Queries InfiniBand subnet administration attributes.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib saquery --help"

## ib smparquery

	ib smparquery <smparquery options> Queries adaptive-routing related settings from a particular switch.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0

Example	<pre>ufmapl (config) # smparquery argrouptable 3 1</pre>
Related Commands	
Notes	For further information on the command, please run "ib smparquery --help"

## ib smpquery

	<pre>ib smpquery &lt;smpquery-options&gt;</pre> <p>Enables a basic subset of standard SMP queries including the following: node info, node description, switch info, port info. Fields are displayed in human readable format.</p>
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmapl (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib smpquery --help".

## ib vendstat

	<pre>ib vendstat &lt;vendstat-options&gt;</pre>
--	---

	Uses vendor specific MADs to access beyond the IB spec vendor specific functionality.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) #</pre>
Related Commands	
Notes	For further information on the command, please run "ib vendstat --help"

## OpenSM

### ib sm configuration import

	<pre>ib sm configuration import [partition-conf-user-ext] &lt;url&gt; Imports the Subnet Manager configuration.</pre>
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.1
Example	<pre>ufmap1 (config) # ib sm configuration</pre>

	<pre>import partition- config-user-ext sftp://admin:1234 56@192.168.1.12/t mp/partitions.con f.user_ext</pre>
Related Commands	show ib sm configuration import
Notes	N/A

## show ib sm allow-both-pkeys

	show ib sm allow-both-pkeys Displays if both full and limited memberships on the same partition are enabled or not.
Syntax Description	N/A
Default	N/A
Configuration Mode	Enable
History	1.4.0
Example	<pre>ufmap1 (config) # show ib sm allow-both-pkeys disable</pre>
Related Commands	ib sm allow-both-pkeys
Notes	N/A

## ib sm allow-both-pkeys

	ib sm allow-both-pkeys
--	------------------------

	<p>no ib sm allow-both-pkeys</p> <p>Enables having both a full and limited membership on the same partition.</p> <p>The no form of the command disables having both full and limited memberships on the same partition.</p>
Syntax Description	N/A
Default	Disabled
Configuration Mode	config
History	1.4.0
Example	<pre>ufmap1 (config) # ib sm allow-both-pkeys</pre>
Related Commands	<p>show ib sm allow-both-pkey</p> <p>ib partition management defmember</p>
Notes	N/A

## show ib sm keep-pkey-indexes

	<p>show ib sm keep-pkey-indexes</p> <p>Displays whether PKey indexes belonging to the historical PKeys configured on the port are preserved or not.</p>
Syntax Description	N/A
Default	N/A
Configuration Mode	Enable
History	1.4.0
Example	<pre>ufmap1 (config) # show ib sm keep-pkey-indexes enable</pre>
Related Commands	ib sm keep-pkey-indexes



Notes	N/A
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## ib sm keep-pkey-indexes

	ib sm keep-pkey-indexes no ib sm keep-pkey-indexes Preserves PKey indexes belonging to the historical PKeys configured on the port when generating PKey tables for a certain port. The no form of the command calculates PKey indexes belonging to the historical PKeys configured on the port.
Syntax Description	N/A
Default	Enabled
Configuration Mode	config
History	1.4.0
Example	<pre>ufmap1 (config) # no ib sm keep-pkey-indexes</pre>
Related Commands	show ib sm keep-pkey-indexes ib sm allow-both-pkeys
Notes	N/A

## show ib sm virtualization

	show ib sm virtualization Displays virtualization support.
Syntax Description	N/A
Default	N/A
Configuration Mode	enable
History	1.4.0

Example	<pre>ufmapl (config) # show ib sm virtualization enable</pre>
Related Commands	ib sm virtualization enable ib sm virtualization ignore
Notes	N/A

## ib sm virtualization enable

	ib sm virtualization enable no ib sm virtualization enable Enables virtualization on all supported ports (default). The no form of the command disables virtualization on all supporting ports.
Syntax Description	N/A
Default	Enabled
Configuration Mode	config
History	1.4.0
Example	<pre>ufmapl (config) # ib sm virtualization enable</pre>
Related Commands	show ib sm virtualization
Notes	It is not possible to modify the virtualization support in case OpenSM or UFM are running.

## ib sm virtualization ignore

	ib sm virtualization ignore No virtualization support.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.0
Example	<pre>ufmap1 (config) # ib sm virtualization ignore</pre>
Related Commands	show ib sm virtualization
Notes	It is not possible to modify the virtualization support in case OpenSM or UFM are running.

## show ib sm root-guid

	show ib sm root-guid Displays all configured root GUIDs for the SM.
Syntax Description	N/A
Default	N/A
Configuration Mode	enable
History	1.4.0
Example	<pre>ufmap1 (config) # show ib sm root- guid 0x0002c903006ad83 0</pre>

	<pre>0x0002c903006ae12 0 0x0002c903006af52 0</pre>
Related Commands	ib sm root-guid
Notes	N/A

## ib sm root-guid

	ib sm root-guid <guid> no ib sm root-guid <guid> Adds a root GUID for the SM. The no form of the command removes the GUID from the SM.	
Syntax Description	guid	The root GUID number in hexadecimal notation For example: 0x0002c903006ad830
Default	N/A	
Configuration Mode	config	
History	1.4.0	
Example	<pre>ufmap1 (config) # ib sm root-guid 0x0002c903006ad830</pre>	
Related Commands	show ib sm root-guid	
Notes	The list of root GUIDs are relevant when the routing algorithm is up-down or fat-tree.	

## show ib sm routing-engines

	show ib sm routing-engines
--	----------------------------

	Displays number of CPUs configured to use for parallel calculations.
Syntax Description	N/A
Default	N/A
Configuration Mode	enable
History	1.4.0
Example	<pre>ufmap1 (config) # show ib sm routing-engines ar_updn</pre>
Related Commands	ib sm routing-engines
Notes	N/A

## ib sm routing-engines

	<b>ib sm routing-engines &lt;engine&gt;</b> Configures number of CPUs to use for parallel calculations.	
Syntax Description	engine	Multiple routing engines can be specified separated by space. Supported engines: ar-dor, ar-ftree, ar-torus, ar-updn, chain, dfp, dfp2, dor, file, ftree, minhop, pqft, torus-2QoS, updn)
Default	1	
Configuration Mode	config	
History	1.4.0	
Example	<pre>ufmap1 (config) # ib sm routing-engines ar-updn</pre>	
Related Command	show ib sm routing-engines	

ds	
Notes	N/A

## show ib sm ar-sl-mask

	show ib sm ar-sl-mask Displays the adaptive routing SL mask.
Syntax Description	N/A
Default	N/A
Configuration Mode	enable
History	1.4.0
Example	<pre>ufmap1 (config) # show ib sm ar-sl-mask 0xffff</pre>
Related Commands	ib sm ar-sl-mask
Notes	N/A

## ib sm ar-sl-mask

	ib sm ar-sl-mask <mask> no ib sm ar-sl-mask Configures the adaptive routing SL mask. The no form of the command rests the mask value to default.	
Syntax Description	mask	Range: 0x0000-0xffff
Default	0xffff	
Configuration Mode	config	
History	1.4.0	

Example	<pre>ufmapl (config) # ib sm ar-sl-mask 0xffff</pre>
Related Commands	show ib sm ar-sl-mask
Notes	N/A

## show ib sm configuration import

	show ib sm configuration import Displays imported subnet manager configuration files.
Syntax Description	N/A
Default	N/A
Configuration Mode	enable
History	1.4.0
Example	<pre>ufmapl (config) # show ib sm configuration import partitions.conf.user_ext          ----</pre>
Related Commands	ib sm configuration import
Notes	N/A

## ib sm partition-config-merge

	ib sm partition-config-merge Merges the partitions.conf.user_ext into the partitions.conf and starts the heavy sweep on the SM. To use after importing the specific file or importing all configuration files.
--	---

Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.0
Example	<pre>ufmap1 (config) # ib sm partition-config-merge</pre>
Related Commands	ib sm configuration import partition-config-user-ext
Notes	The SM must be running for this command to work.

## ib sm sharp enable

	ib sm sharp enable no ib sm sharp enable Enables NVIDIA® Scalable Hierarchical Aggregation and Reduction Protocol (SHARP)™ on all supporting switches. The no form disables NVIDIA SHARP on all supporting switches.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.0
Example	<pre>ufmap1 (config) # ib sm sharp enable</pre>
Related Commands	show ib sm sharp



Notes	It is not possible to modify the NVIDIA SHARP support parameter in case OpenSM is running.
-------	--

## ib sm sharp ignore

	<p>ib sm sharp ignore</p> <p>No NVIDIA SHARP support.</p> <p>This command does not change the current switch configuration. If NVIDIA SHARP is enabled on the switch, it will remain enabled. If it is disabled on the switch, it will remain disabled.</p>
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.0
Example	<pre>ufmapl (config) # ib sm sharp ignore</pre>
Related Commands	show ib sm sharp
Notes	It is not possible to modify the NVIDIA SHARP support parameter in case OpenSM is running.

## show ib sm sharp

	<p>show ib sm sharp</p> <p>Displays NVIDIA SHARP support.</p>
Syntax Description	N/A
Default	N/A

Configuration Mode	Enable
History	1.4.0
Example	<pre>ufmapl (config) # show ib sm sharp ignore</pre>
Related Commands	ib sm sharp enable ib sm sharp ignore
Notes	N/A

## show ib sm log

	show ib sm log [continuous   files   matching   not] Displays ib sm log event.	
Syntax Description	continuous	Displays new event log messages as they arrive. Press 'Ctrl+C' to quit from output view.
	files	Displays archived log files
	matching	Displays event logs that match a given regular expression
	not	Displays event logs that do not meet certain criteria
Default	N/A	
Configuration Mode	Any configuration mode	
History	1.9.0	
Example	<pre>ufmapl (config) # show ib sm log</pre>	
Related Commands		
Notes	To quit from the output view, <b>press 'q'</b> .	

# HCA Commands

## ib hca-vl15-window

	ib hca-vl15-window <value> no ib hca-vl15-window Sets the HCA VL15 port receive buffer size. The no form of the command resets this parameter to its default.	
Syntax Description	value	1,2,4,8,16,32,64,128
Default	1	
Configuration Mode	config	
History	1.6.0	
Example	<pre>UFM-APL (config) # ib hca-vl15-window 6</pre>	
Related Commands	show ib hca-vl15-window	
Notes	UFM system must be rebooted to apply the new configuration	

## show ib hca-vl15-window

	show ib hca-vl15-window Displays the configured HCA VL15 port receive buffer size.
Syntax Description	N/A
Default	N/A
Configuration Mode	Enable
History	1.6.0
Example	<pre>ufmap1 (config) # show ib hca-vl15-window</pre>

	<pre> /dev/mst/mt4123_pciconf0:   Running configuration: default  /dev/mst/mt4123_pciconf1:   Running configuration: default </pre>
Related Commands	ib hca-vl15-window
Notes	The example shows an instance where the system has not been rebooted after implementing new configuration

## Partition

### ib partition management defmember

	ib partition management defmember <type> no ib partition management defmember Sets the default membership for the management IB partition (default PKEY). The no form of the command resets the parameter to its default value.	
Syntax Description	type	<ul style="list-style-type: none"> <li>• full – full membership</li> <li>• limited – limited membership</li> </ul>
Default	Full membership	
Configuration Mode	config	
History	1.4.0	
Example	<pre> ufmapl (config) # ib partition management defmember limited </pre>	
Related Commands	show ib partition	
Notes	<ul style="list-style-type: none"> <li>• The defmember setting controls the ability of end nodes to communicate over the management partition</li> </ul>	

- It is not possible to modify the defmember in case OpenSM or UFM are running

## show ib partition

	show ib partition Displays partition information.
Syntax Description	N/A
Default	N/A
Configuration Mode	enable
History	1.4.0
Example	<pre>ufmap1 (config) # show ib partition  management:   Default membership: full</pre>
Related Commands	ib partition management defmember
Notes	N/A

## NVIDIA SHARP

### ib sharp enable

	ib sharp enable no ib sharp enable Enables NVIDIA® Scalable Hierarchical Aggregation and Reduction Protocol (SHARP)™.
--	---

	The no form of the command disables NVIDIA SHARP.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.4.0
Example	<pre>ufmap1 (config) # ib sharp enable</pre>
Related Commands	show ib sharp
Notes	N/A

## ib sharp allocation enable

	ib sharp allocation enable no ib sharp allocation enable Enables NVIDIA SHARP allocation reservation. The no form of the command disables NVIDIA SHARP allocation reservation.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.6.0
Example	<pre>ufmap1 (config) # ib sharp allocation enable</pre>
Related Commands	show ib sharp
Notes	

## ib sharp smx-protocol

	<code>ib sharp smx-protocol {sockets   ucx}</code> <code>no ib sharp smx-protocol</code> Configures network protocol to be used by SMX. The no form of the command restores the network protocol to default.
Syntax Description	N/A
Default	sockets
Configuration Mode	config
History	1.4.0
Example	<pre>ufmap1 (config) # ib sharp smx-protocol ucx</pre>
Related Commands	show ib sharp
Notes	N/A

## ib sharp topology-api enable

	<code>ib sharp topology-api enable</code> <code>no ib sharp topology-api enable</code> Enables the SHARP topology API. The no form of the command disables the SHARP topology API.
Syntax Description	N/A
Default	Disabled
Configuration Mode	config
History	1.4.0

Example	<pre>ufmapl (config) # ib sharp topology-api enable</pre>
Related Commands	show ib sharp
Notes	N/A

## show ib sharp

	show ib sharp Displays the configuration of NVIDIA SHARP Aggregation Manager.	
Syntax Description	N/A	
Default	N/A	
Configuration Mode	config	
History	1.9.0	Added a note
	1.6.0	Updated the output to reflect the new settings
	1.4.0	First release
Example	<pre>ufmapl (config) # show ib sharp   Enabled:                No   Allocation:              No   SMX protocol:           sockets   Topology API:           No   Dump files generation:  Yes   Dynamic tree allocation: No   Dynamic tree algorithm: 0   IB QPC SL:               0   IB SAT QPC SL:          1</pre>	
Related Commands	N/A	
Notes		



## ib sharp dump-files-generation enable

	ib sharp dump-files-generation enable no ib sharp dump-files-generation enable Enables dumping SHARP's internal state to files The no form of the command disables dumping SHARP's internal state to files
Syntax Description	N/A
Default	Disable
Configuration Mode	config
History	1.6.0
Example	<pre>ufmap1(config) # ib sharp dump-files-generation enable</pre>
Related Commands	show ib sharp
Notes	N/A

## ib sharp dynamic-tree-allocation enable

	ib sharp dynamic-tree-allocation enable no ib sharp dynamic-tree-allocation enable Enables dynamically allocated trees for each SHARP job The no form of the command disables dynamically allocated trees for each SHARP job
Syntax Description	N/A
Default	Enable
Configuration Mode	config
History	1.6.0

Example	<pre>ufmapl (config) # ib sharp dynamic-tree-allocation enable</pre>
Related Commands	show ib sharp
Notes	N/A

## ib sharp dynamic-tree-algorithm

	<p>ib sharp dynamic-tree-algorithm &lt;0-1&gt;  no ib sharp dynamic-tree-algorithm  Sets which algorithm should be used by the dynamic tree mechanism  The no form of the command restores the algorithm used by the dynamic tree mechanism to default</p>
Syntax Description	N/A
Default	0
Configuration Mode	config
History	1.6.0
Example	<pre>ufmapl (config) # ib sharp dynamic-tree-algorithm</pre>
Related Commands	show ib sharp
Notes	N/A

## ib sharp ib-qpc-sl <0-15>

	<p>ib sharp ib-qpc-sl &lt;0-15&gt;  no ib sharp ib-qpc-sl</p>
--	---

	Set the IB QP context SL for SHARP data path communication The no form of the command restores the IB QP context SL for SHARP data path communication to default
Syntax Description	N/A
Default	0
Configuration Mode	config
History	1.6.0
Example	<pre> ufmap1 (config) # ib sharp ib-qpc- sl 1 </pre>
Related Commands	show ib sharp
Notes	N/A

## ib sharp ib-sat-qpc-sl <0-15>

	ib sharp ib-sat-qpc-sl <0-15> no ib sharp ib-sat-qpc-sl Sets the IB QP context SL for SHARP streaming data path communication The no form of the command restores the IB QP context SL for SHARP streaming data path communication to default
Syntax Description	N/A
Default	1
Configuration Mode	config
History	1.6.0

Example	<pre>ufmap1 (config) # ib sharp ib-sat-qpc-sl 1</pre>
Related Commands	show ib sharp
Notes	N/A

## show ib sharp log

	show ib sharp log Displays NVIDIA SHARP log file in a scrollable pager.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) # show ib sharp log</pre>
Related Commands	
Notes	To quit from the output view, <b>press 'q'</b> .

## show ib sharp log continuous

	show ib sharp log continuous Displays new NVIDIA SHARP log messages as they happen.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0

Example	<pre>ufmapl (config) # show ib sharp log continuous</pre>
Related Commands	
Notes	To quit from the output view, <b>press 'Ctrl+C'</b> .

## show ib sharp log files

	show ib sharp log files [number   matching <regex>   not ]] Displays archived log files.	
Syntax Description	number	Displays new event log messages as they arrive
	matching	Displays event logs that match a given regular expression
	not	Displays event logs that do not meet certain criteria
Default	N/A	
Configuration Mode	config	
History	1.9.0	
Example	<pre>ufmapl (config) # show ib sharp log files</pre>	
Related Commands		
Notes		

## show ib sharp log matching

	show ib sharp log matching <reg-exp> Display NVIDIA SHARP logs that match a given regular expression.	
Syntax Description	N/A	

Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) # show ib sharp log matching error</pre>
Related Commands	
Notes	To quit from the output view, <b>press 'q'</b> .

## show ib sharp log not matching

	show ib sharp log not matching <reg-exp> Display NVIDIA SHARP logs that do not match a given regular expression.
Syntax Description	N/A
Default	N/A
Configuration Mode	config
History	1.9.0
Example	<pre>ufmap1 (config) # show ib sharp log not matching error</pre>
Related Commands	
Notes	To quit from the output view, <b>press 'q'</b> .

---

# UFM Enterprise Appliance Upgrade

## Note

Upgrading the UFM Enterprise Appliance is supported up to two previous GA software versions (GA -1 or GA -2).

For example, if you wish to upgrade to UFM Enterprise Appliance v1.8.0, it is possible to do so only from UFM Enterprise v1.7.0 or v1.6.1.

## Note

**This is the recommended upgrade procedure, which involves upgrading all UFM Enterprise appliance software components and operating system. For additional upgrade procedures of specific software components, please refer to [Appendix - Software Components Upgrade](#).**

As of UFM Enterprise Appliance version 1.5.0, upgrading the appliance on HA supports an in-service upgrade, meaning UFM can continue running during the steps of the upgrade, and there is no need to stop UFM before the upgrade.

## Note

As of version UFM Enterprise Appliance v1.10.0, some plugin images are available for deployment as part of the OMU image. Information

regarding the relevant plugins and their versions is available in the "`show version`" CLI command and in the `/etc/ufm-release` file.

The unique image name is `"/var/opt/ufm/images/ufm-plugin-<plugin name>_from_release-docker.img.gz"` to allow overriding previous plugin versions.

The upgrade is performed on both **Master** and **Standby** nodes.

To upgrade the UFM Enterprise Appliance software:

1. On the standby server, extract the OMU image to the `/tmp` folder:

```
tar -xzf ufm-appliance-<version>-omu.tar -C /tmp
```

2. On the standby server, access the installation folder and upgrade script:

```
standby# cd /tmp/ufm-appliance-<version>-omu
```

3. Run the UFM upgrade script on the standby server:

```
./ufm-os-upgrade.sh --yes --reboot
```

4. After the reboot procedure is complete, a systemd service (`ufm-os-firstboot.service`) runs the remainder of the upgrade procedure. Once completed, a message is prompted to all open terminals including the status:

"`UFM-OS-FIRSTBOOT-FAILURE`" - if installation is failed.

"`UFM-OS-FIRSTBOOT-SUCCESS`" - if installation succeeded.

Example:



```
root@ufm-ai03:~#  
root@ufm-ai03:~#  
Broadcast message from root@ufm-ai03 (somewhere) (Fri Dec 30 18:47:32 2022):  
UFM-OS-FIRSTBOOT-SUCCESS, installation succeeded additional info is available in /var/log/ufm-os-firstboot.log
```

To manually check the status, run

`systemctl status ufm-os-firstboot.service`. If it is already finished, an error message is prompted stating that there is no such service. In that case, the log `/var/log/ufm-os-firstboot.log` can be checked instead.

```
systemctl status ufm-os-firstboot.service
```

Example:

```
root@ufm-ai03:~# systemctl status ufm-os-firstboot  
Unit ufm-os-firstboot.service could not be found.  
root@ufm-ai03:~#
```

### **(i) Note**

Do NOT proceed to the next step before ensuring that the `systemctl status ufm-os-firstboot.service` service has been completed.

5. After the completion of the upgrade script, the UFM code is upgraded, while the UFM data remains unchanged. The automatic upgrade of UFM data will take place during the next UFM startup. To initiate this process, execute a failover from the Master node (or perform a takeover from the Standby node).

```
master# ufm_ha_cluster failover
```

### **(i) Note**

The upgrade script logs the data to

```
/var/log/ufm_os_upgrade_<UFM-OS version>.log
```

 and outputs simultaneously it to the screen. In case of an issue, UFM data can be restored to factory default. For more information, refer to [Appendix - UFM Factory Reset](#).

6. Once UFM is operational on the upgraded node (formerly the standby node), proceed to replicate steps 1 to 3 on the non-upgraded node (previously the master node).

## In-Service Upgrade via CLI

Alternatively, in-service upgrade can be performed via the CLI. The upgrade is performed on both **Master** and **Standby** nodes.

Follow the below instructions:

1. On the Standby node, fetch the new image from a remote server. Run:

```
ufmapl (config) # image fetch <download URL>
```

2. On the Standby node, install the new image. Run:

```
ufmapl (config) # image install <image name>
```

3. Reload the Standby UFM Enterprise Appliance. Run:

```
ufmapl (config) # reload
```

4. After the completion of the upgrade on the Standby node, the UFM code is upgraded, while the UFM data remains unchanged. The automatic upgrade of UFM data will take place during the next UFM startup. To initiate this process, execute a failover from the Master node. Once the Standby node is up and running, perform a failover on the **Master node**. Run:

```
ufmap1 (config) # ufm ha failover
```

5. Once UFM is operational on the upgraded node (formerly the standby node), proceed to replicate steps 1 to 3 on the non-upgraded node (previously the Master node).

---

# Split-Brain Recovery in HA Installation

The split-brain problem is a DRBD synchronization issue (HA status shows `DUnknown` in the DRBD disk state), which occurs when both HA nodes are rebooted. For example, in cases of electricity shut-down. To recover, please follow the below steps:

- **Step 1:** Run the following command to clear the cluster failure.

```
pcs resource cleanup
```

If the split-brain issue is not resolved, perform the below steps.

- **Step 2:** Manually choose a node where data modifications will be discarded.

It is called the split-brain victim. Choose wisely; all modifications will be lost! When in doubt, run a backup of the victim's data before you continue.

When running a Pacemaker cluster, you can enable maintenance mode. If the split-brain victim is in the Primary role, bring down all applications using this resource. Now switch the victim to the Secondary role:

```
victim# drbdadm secondary ha_data
```

- **Step 3:** Disconnect the resource if it's in connection state **WFConnection**:

```
victim# drbdadm disconnect ha_data
```

- **Step 4:** Force discard of all modifications on the split-brain victim:

```
victim# drbdadm connect --discard-my-data ha_data
```

- **Step 5:** Resync starts automatically if the survivor is in a WFConnection network state. If the split-brain survivor is still in a Standalone connection state, reconnect it:

```
survivor# drbdadm connect ha_data
```

Now the resynchronization from the survivor (SyncSource) to the victim (SyncTarget) starts immediately. There is no full sync initiated, but all modifications on the victim will be overwritten by the survivor's data, and modifications on the survivor will be applied to the victim.

---

# Appendixes

## Appendix - Chassis Health Monitoring

### Overview

Chassis Health Monitoring enables monitoring hardware alerts via `rsyslog` and generating external events in UFM. The alerts are written to `/var/log/syslog`.

Monitoring hardware health status is essential for failure prevention and maintenance. The Chassis Health Monitoring service is run as a Docker container.

### Configuration

1. Generate UFM token authentication. Run:

```
POST https://<UFM server IP>/ufmRest/app/tokens
```

2. Set the UFM server hostname and authentication token in `/opt/ufm/chassis_health/chassis_health.conf`:

```
[connection]
# UFM server hostname. In case of HA, it should be the VIP
hostname =

[authentication]
# UFM server user credentials
token =
```

3. Restart the Chassis Health Monitoring service for changes to take effect. Run:

```
systemctl restart ufm-chassis-health.service
```

Once the service runs, the status can be viewed via `systemctl (systemctl status ufm-chassis-health.service)` and `/var/log/chassis_health_fluentd_console.log` file.

## Appendix - Secure Boot Activation and Deactivation

This section provides instructions on how to enable/disable the Secure Boot feature in UFM Enterprise Appliance.

### Enabling Secure Boot

The NVIDIA public certificate needs to be imported to the Machine Owner Key DB (MOK DB) before enabling secure boot. To do so, follow the below steps:

### Add NVIDIA Certificate to MOK DB

1. Download NVIDIA certificate [mlnx\\_signing\\_key\\_pub.der](#) to a temporary folder.

checksums:

MD5: c3ce3dcad0f38b02a9cbb991ce1bc7f4

sha256:

ff7fe8c650e936079a8add2900b190f9e7f3806e5ad42e48c2b88408a6ce70aa

```
cd /tmp
wget
http://www.mellanox.com/downloads/ofed/mlnx_signing_key_pub.de
ls -ltrh ./mlnx_signing_key_pub.der
```

Example:

```
root@ubuntu:/tmp# ls -ltrh mlnx_signing_key_pub.der
-rw-r--r-- 1 root root 1.5K Feb 23 2017 mlnx_signing_key_pub.der
```

2. Import the mlnx\_signing\_key\_pub.der to MOK DB using mok-util:

```
cd /tmp
mokutil --import ./mlnx_signing_key_pub.der --root-pw
```

### **Warning**

The certificate is in the enrolled queue at this point. Upon the next server reboot, a 10 second prompt appears at the start of the boot process to confirm the certificate addition. It is important to confirm the certificate addition at this stage. Failure to do so requires you to repeat the procedure.

To be able to interact with the prompt, a console connection is needed either from the serial port or from the web console available via Remote Management.

Verify the certificate in the enrolled queue:

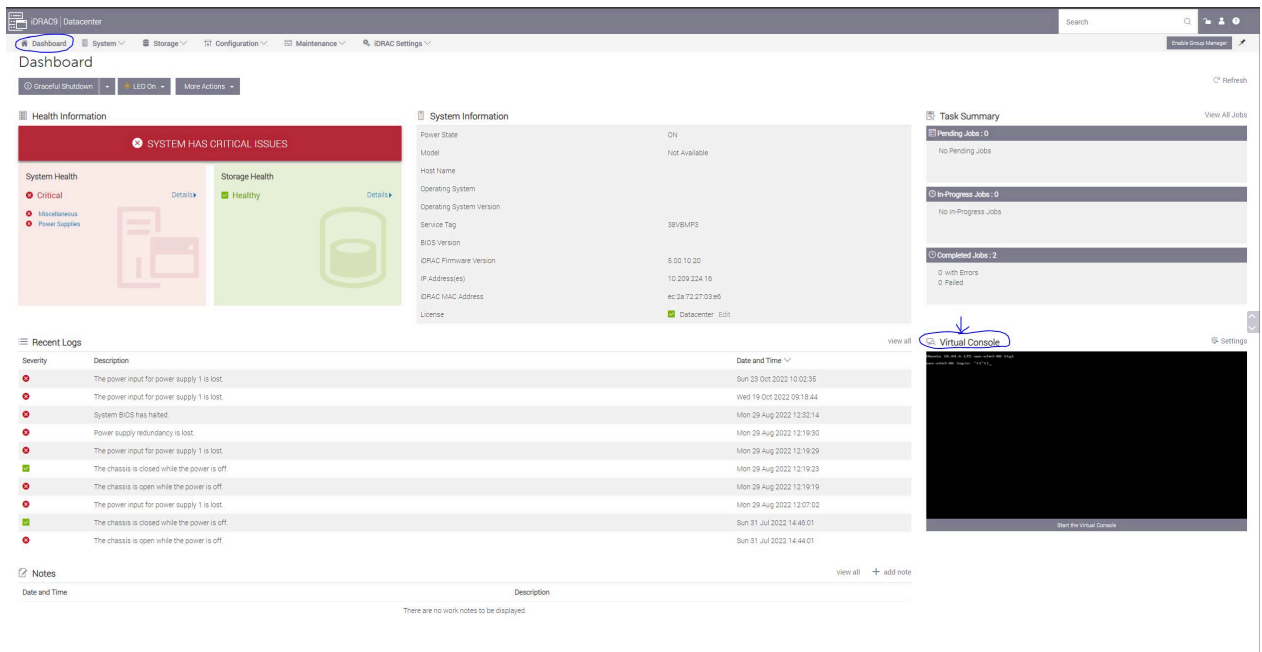
```
mokutil --list-new
```

images/download/attachments/3644393372/-1-version-1-modificationdate-1740388618096-api-v2.jpg

3. Login to Remote Management via <https://<iDRAC-ip address>>

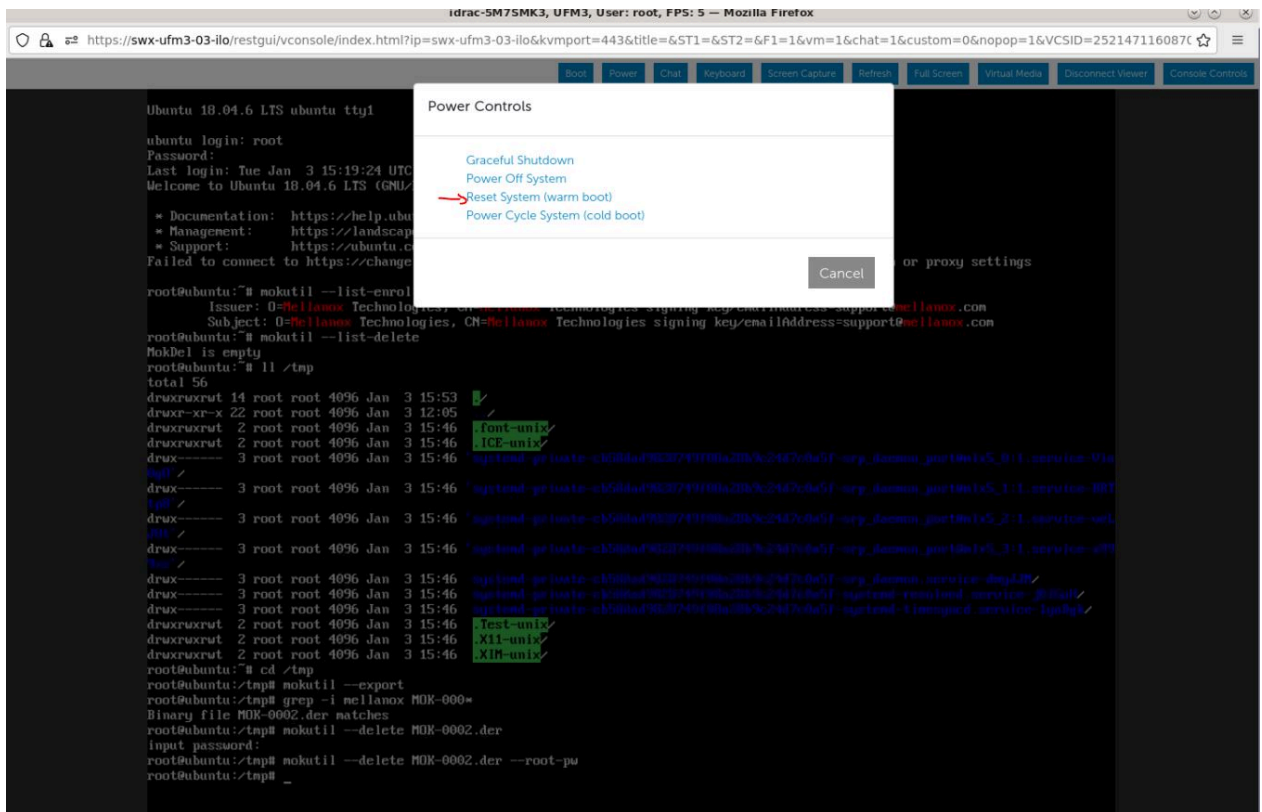
4. To open the virtual web console, click on "Dashboard"→"Virtual Console"





5. Power cycle the server (at boot startup a 10 second prompt appears to verify the certificate addition)

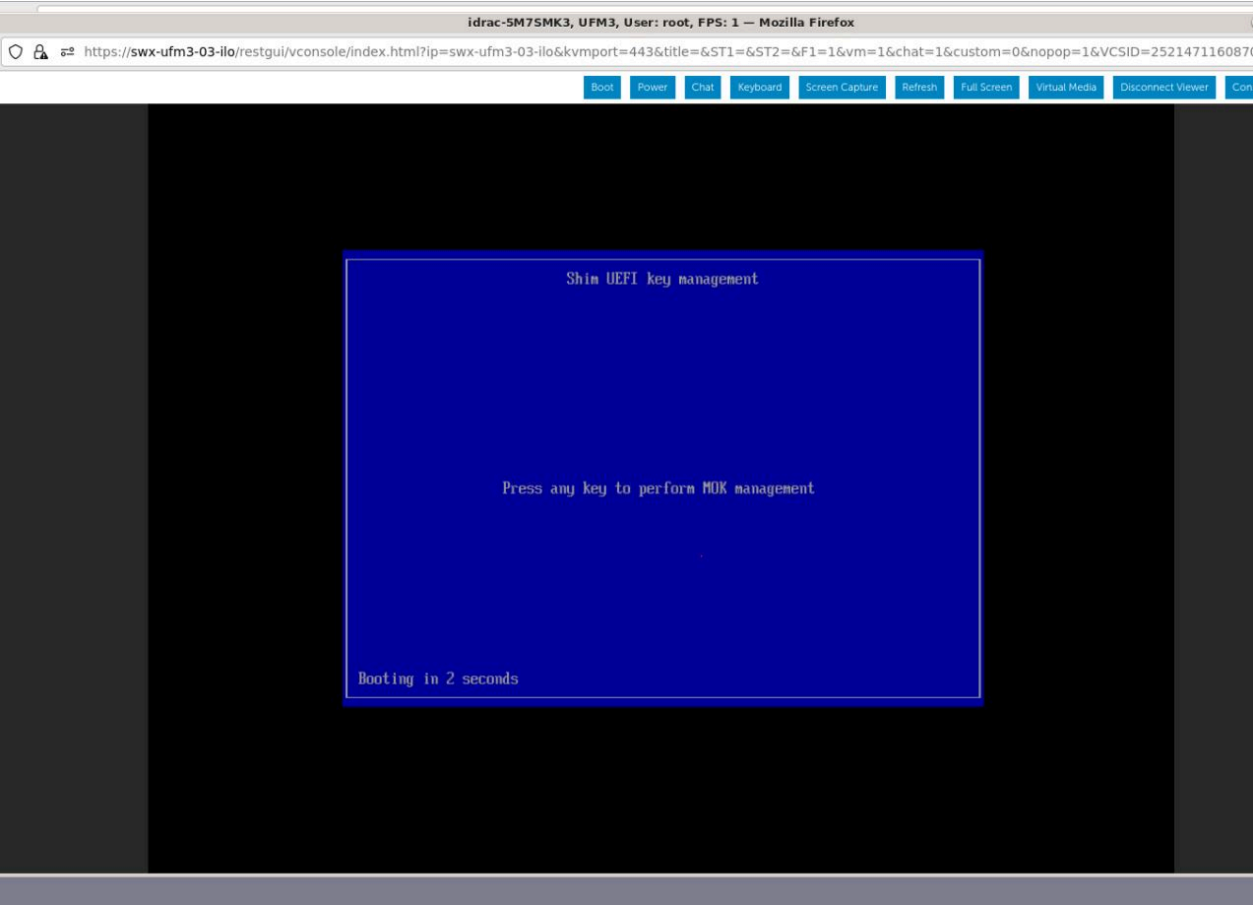
On the top menu, go to "Power" → "Reset System (warm boot)"



The server will now reboot.

6. At boot startup, a confirmation prompt appears to verify certificate addition. The prompt closes after 10 seconds, so if missed, the certificate addition procedure needs to be done again.

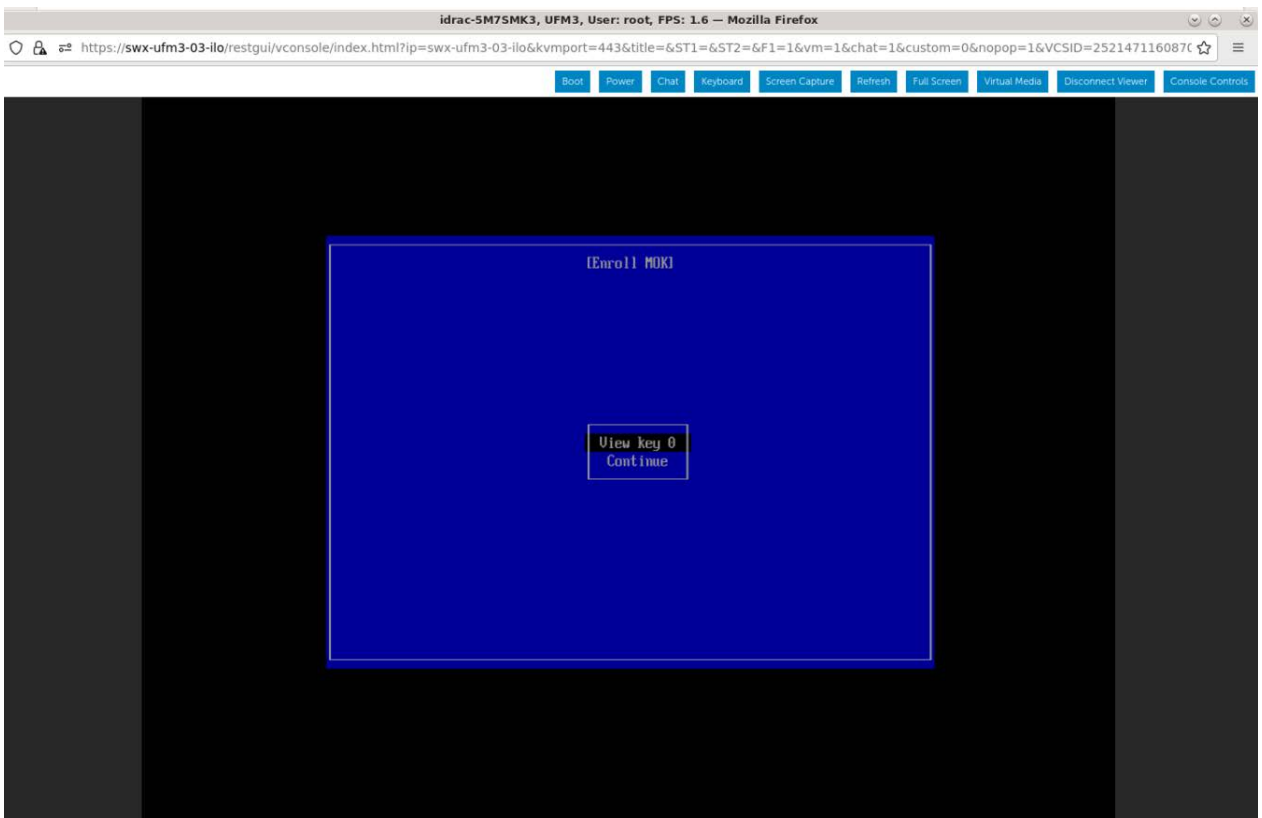
When the prompt appears, press any key to interact.

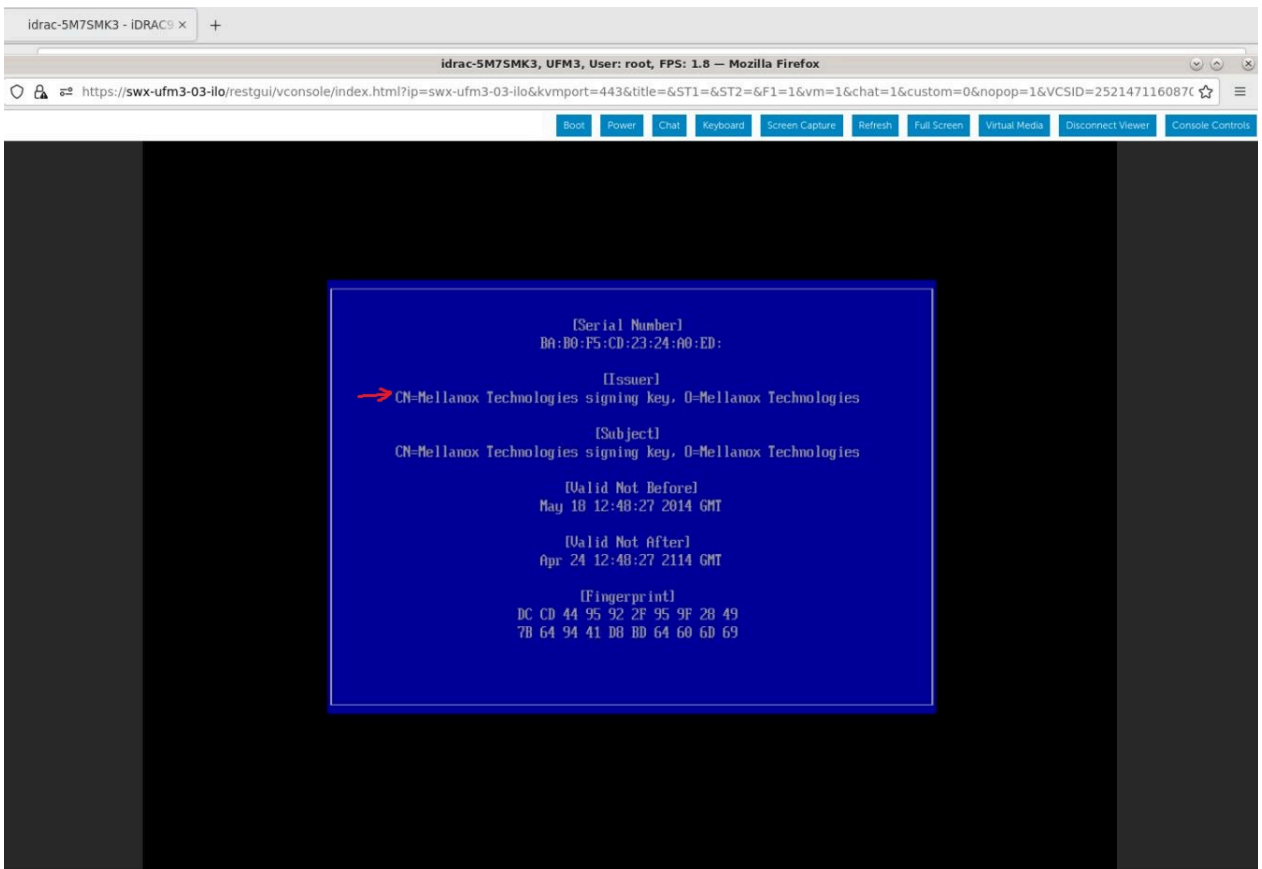


7. Navigate to "Delete MOK"



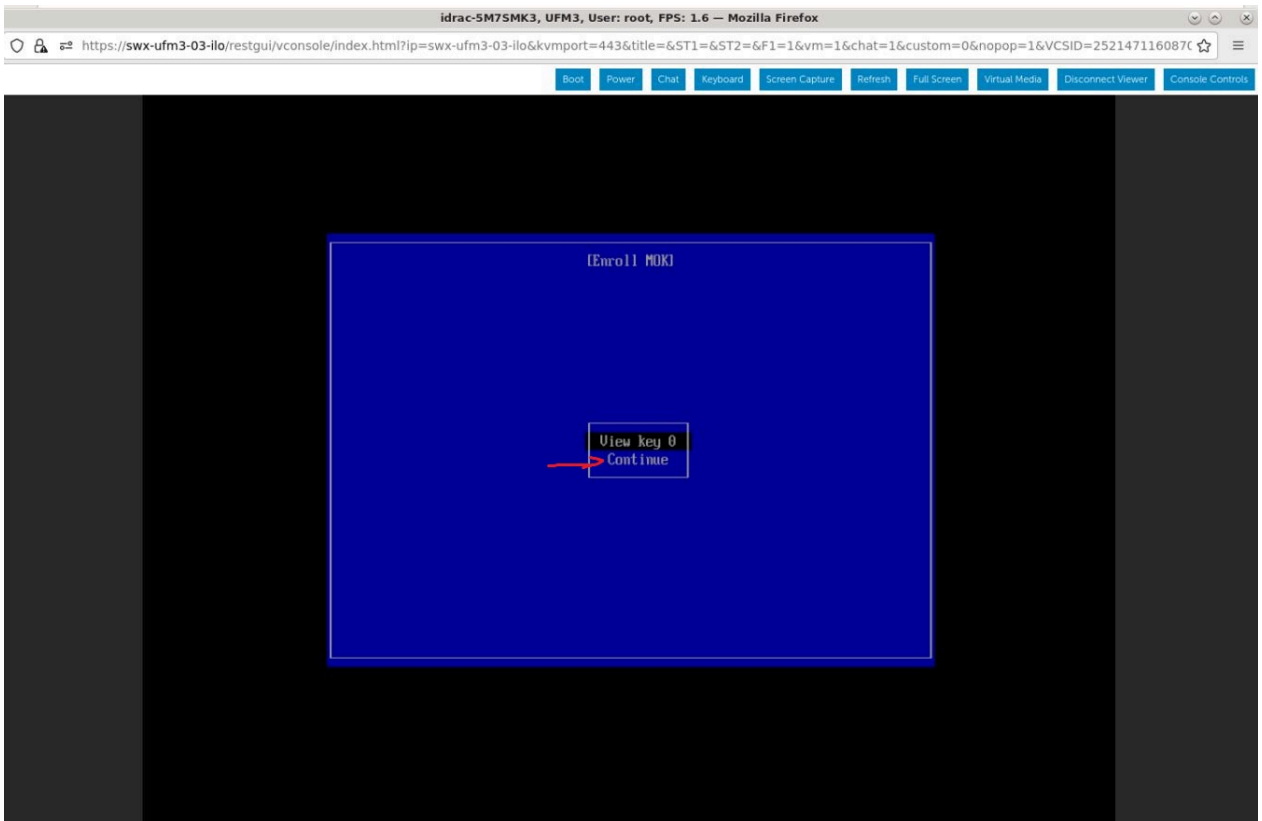
8. View the certificate to be enrolled. To verify, press "View key0".





Press "Enter" to exit the view.

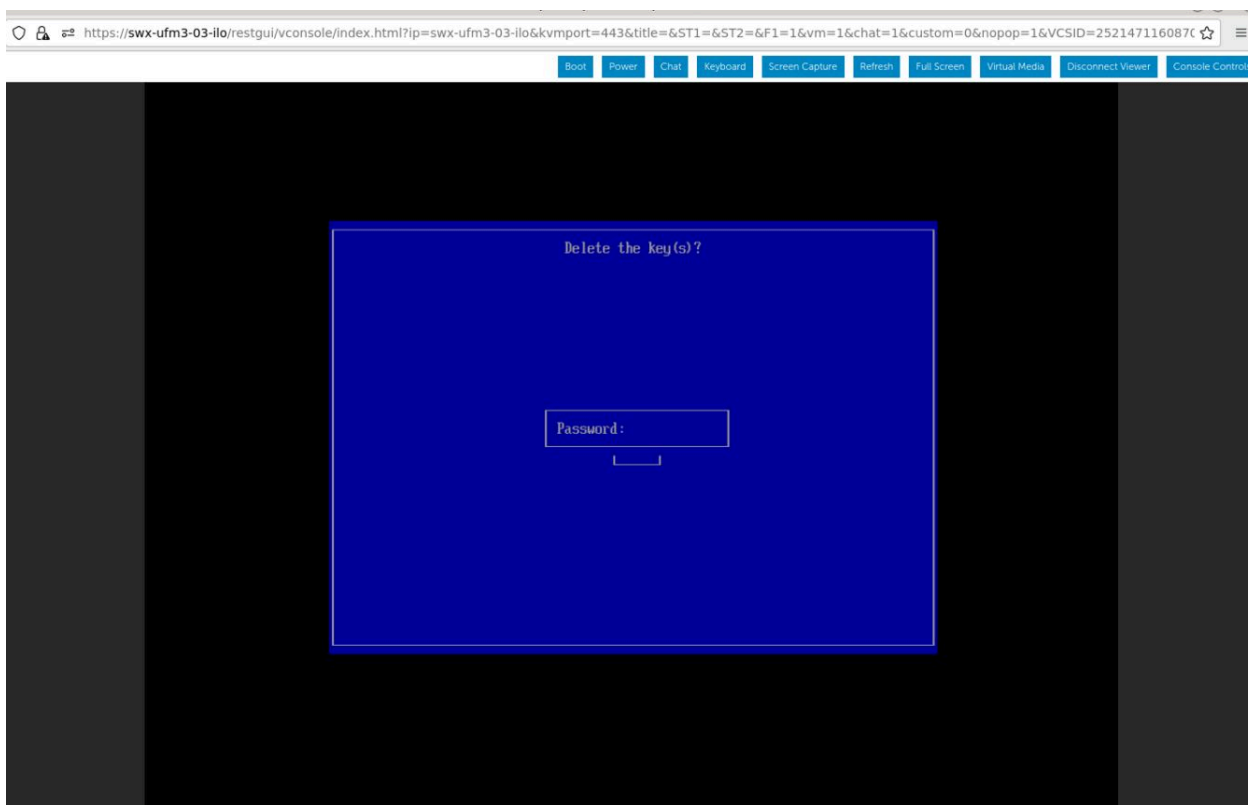
9. Select "Continue" from the menu and press Enter.



10. Select "Yes" from the menu, and press Enter.



11. A password prompt appears, then, enter the OS Root user credentials.

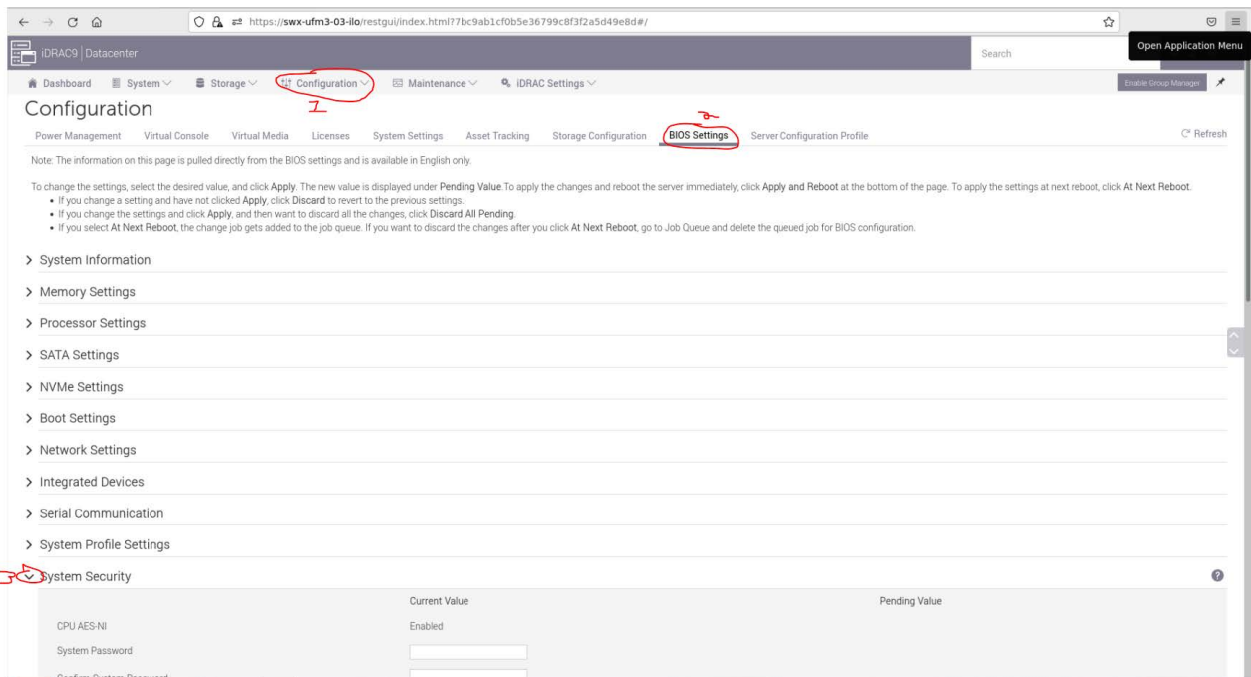


12. Select "Reboot" and press Enter. After the reboot is completed, the certificate is removed.

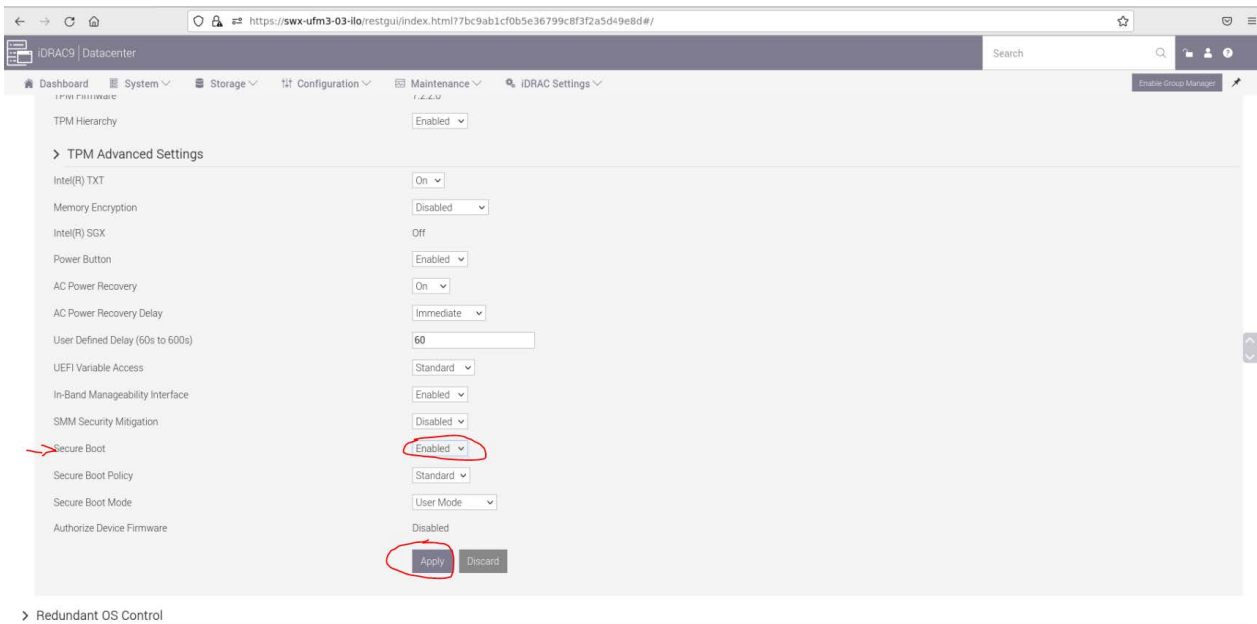


## Enable Secure Boot

1. Login to Remote Management available via <https://<iDRAC-ip address>>
2. Navigate to "Configuration" → "BIOS Settings" → "System Security" and press the drop down menu (arrow).

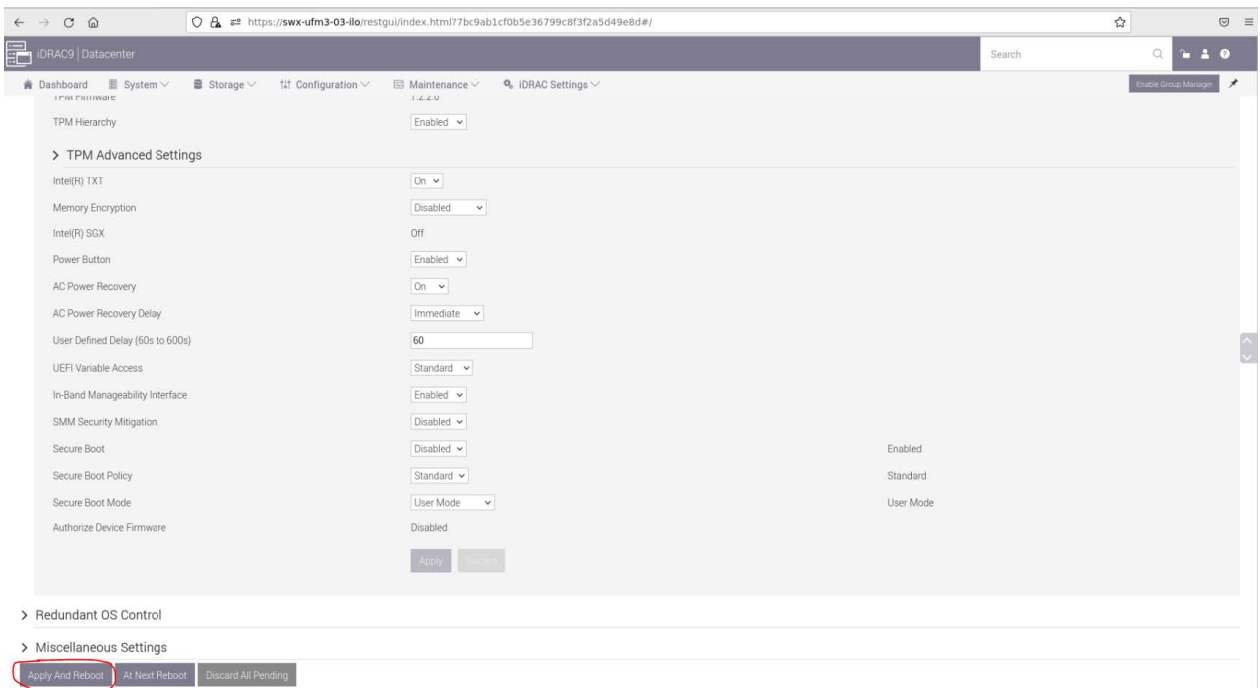


3. Scroll down to "Secure Boot" and select "Enabled" from the drop menu. Click the "Apply" button.



4. Scroll to the bottom of the page and click on "Apply And Reboot" button, this will reboot the server and perform the configuration





5. An Information Popup is prompted. Click on the "Job Queue" button (can also be navigated from "Maintenance" → "Job Queue").



6. Wait for the Jobs to finish and reach 100%

ID	Job	Status
RID_727855969221	Reboot: Graceful OS shutdown with powercycle on timeout	Reboot Completed (100%)
JID_727855968521	Configure: BIOS.Setup.1-1	Completed (100%)
JID_714091551187	Export: Server Configuration Profile	Completed (100%)
JID_703615455555	Configure: Import Server Configuration Profile	Completed (100%)
JID_703615396967	Firmware Update: OEM ID Module	Completed (100%)
RID_625592058437	Reboot: Graceful OS shutdown with powercycle on timeout	Reboot Completed (100%)
JID_625592057947	Configure: BIOS.Setup.1-1	Completed (100%)
JID_612763094152	Firmware Update: OEM ID Module	Completed (100%)
RID_612740933938	Reboot: Graceful OS shutdown with powercycle on timeout	Reboot Completed (100%)
JID_612740933147	Configure: BIOS.Setup.1-1	Completed (100%)
JID_606568609010	Export: Server Configuration Profile	Completed (100%)
RID_606568609301	Configure: Import Server Configuration Profile	Failed (100%)

7. Validate that secure boot is enabled and active (from the terminal).

```
mokutil --sb-state
```

```
root@ubuntu:~# mokutil --sb-state
SecureBoot enabled
```

```
mokutil --list-enrolled | grep -i mellanox
```

```
root@ubuntu:~# mokutil --list-enrolled | grep -i mellanox
Issuer: 0=Mellanox Technologies, CN=Mellanox Technologies signing key/emailAddress=support@mellanox.com
Subject: 0=Mellanox Technologies, CN=Mellanox Technologies signing key/emailAddress=support@mellanox.com
```

## Disable Secure Boot

 **Warning**

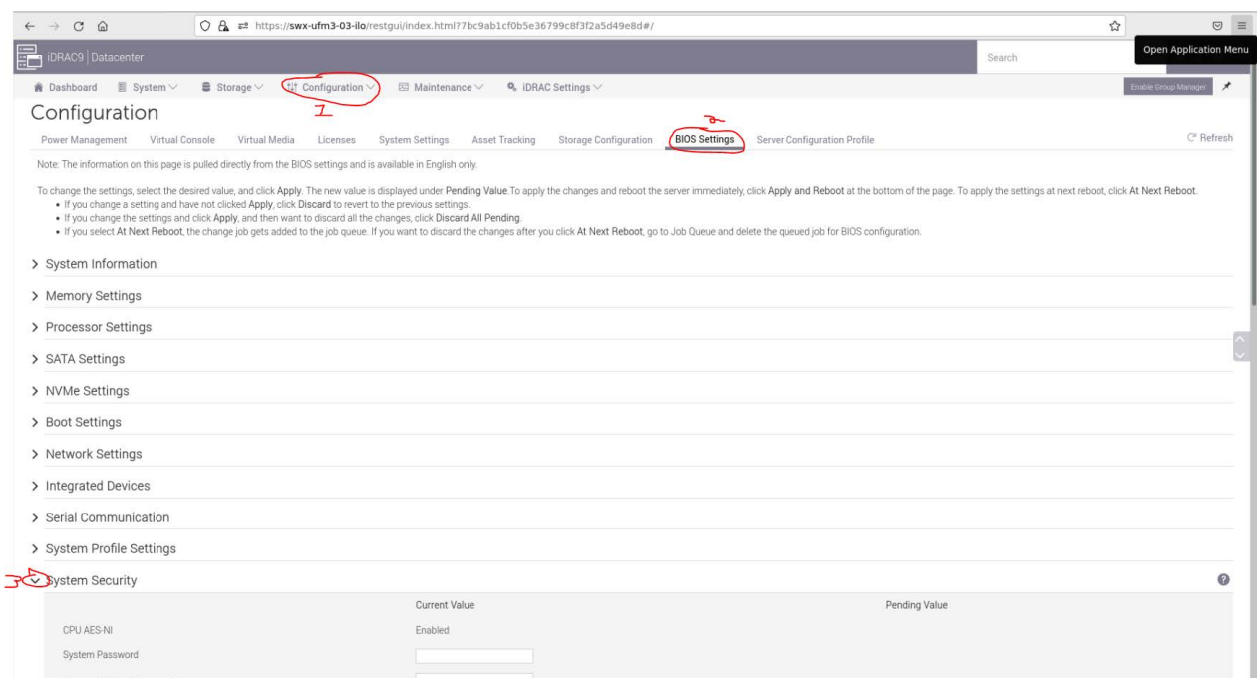
Disabling secure boot is not recommended and may cause security issues.

Secure Boot needs to be disabled prior to removing the NVIDIA public certificate.

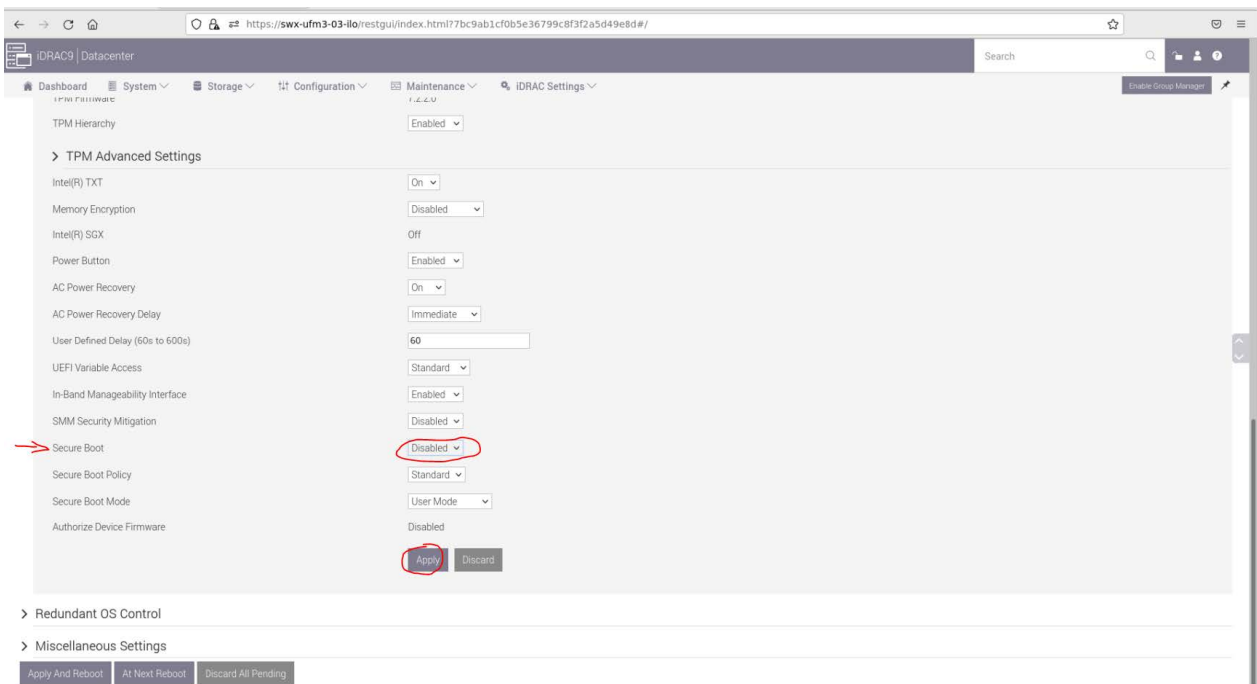
The removal of the certificate is optional and can be skipped if secure boot should be re-enabled at some point in the future.

## Disable Secure Boot in the BIOS

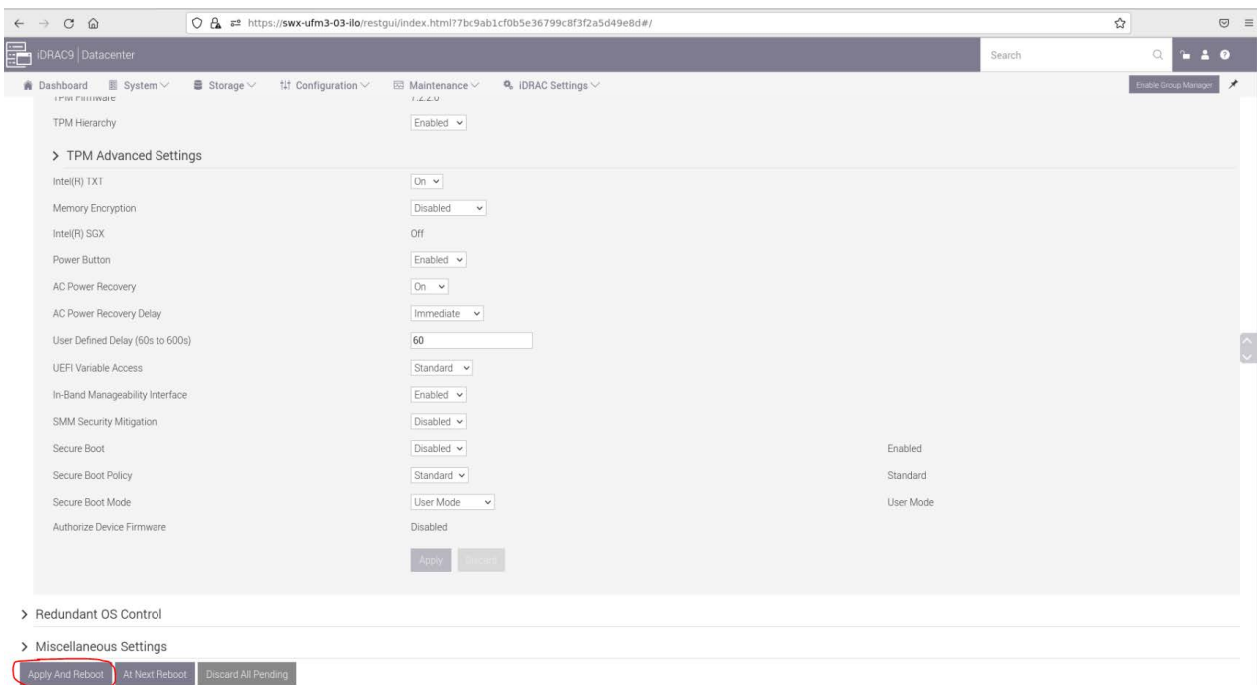
1. Login to Remote Management (<https://<iDRAC-ip address>>)
2. Navigate to "Configuration" → "BIOS Settings" → "System Security" and press the drop menu (arrow).



3. Scroll down to "Secure Boot" and select "Disabled" from the drop menu, and click the "Apply" button.



4. Scroll to the bottom of the page and click on the "Apply And Reboot" button; this will reboot the server and perform the configuration.



5. An Information Popup is prompted. Click on the "Job Queue" button (can also be navigated from "Maintenance" → "Job Queue").

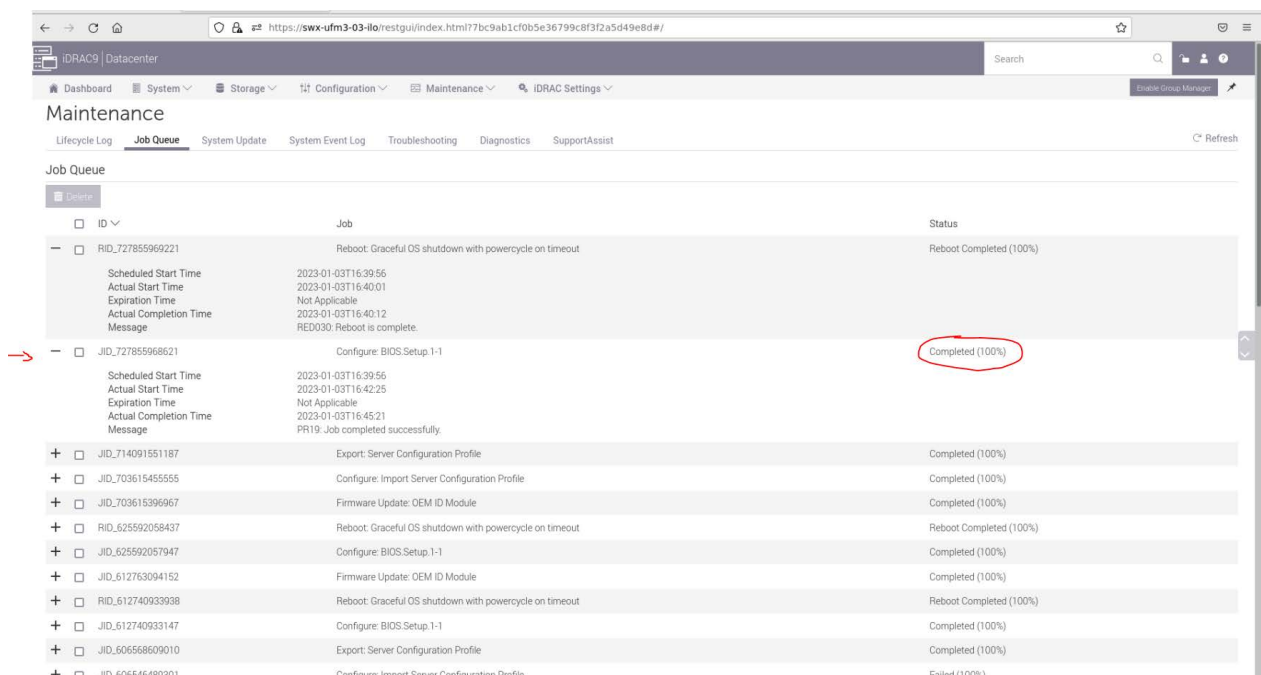
## Information

RAC0603: Updating Job Queue. Status of the update jobs can be viewed and managed within the Job Queue page.

Click Job Queue button to view the status of the update jobs.



6. Wait for the completion of the jobs (reach 100%).



ID	Job	Status
RID_72785596221	Reboot: Graceful OS shutdown with powercycle on timeout	Reboot Completed (100%)
JID_727855968621	Configure: BIOS.Setup.1-1	Completed (100%)
JID_714091551187	Export: Server Configuration Profile	Completed (100%)
JID_703615455555	Configure: Import Server Configuration Profile	Completed (100%)
JID_703615396967	Firmware Update: OEM ID Module	Completed (100%)
RID_625592058437	Reboot: Graceful OS shutdown with powercycle on timeout	Reboot Completed (100%)
JID_625592057947	Configure: BIOS.Setup.1-1	Completed (100%)
JID_612763094152	Firmware Update: OEM ID Module	Completed (100%)
JID_612740933938	Reboot: Graceful OS shutdown with powercycle on timeout	Reboot Completed (100%)
JID_612740933147	Configure: BIOS.Setup.1-1	Completed (100%)
JID_606568609010	Export: Server Configuration Profile	Completed (100%)
RID_606568609011	Configure: Import Server Configuration Profile	Failed (100%)

7. Validate that secure boot is Disabled (from the terminal).

```
mokutil --sb-state
```

```
root@ubuntu:/tmp# ls -ltrh mlnx_signing_key_pub.der
-rw-r--r-- 1 root root 1.5K Feb 23 2017 mlnx_signing_key_pub.der
```

## Remove the NVIDIA Certificate from MOK db

Perform this step if you want to entirely remove NVIDIA's certificate from MOK DB. This step is optional and is not required to disable secure boot. Skip this if you wish to enable secure boot at a later time.

1. Login as root to the UFM server.
2. Check current enrolled certificates.

```
mokutil --list-enrolled
```

Search for "Issuer: O=Mellanox Technologies.." and note the key ID above the start of this certificate:

```
root@ubuntu:~# mokutil --sb-state
SecureBoot enabled
```

3. Download the [mlnx\\_signing\\_key\\_pub.der](#) to a temporary folder (the DER certificate file must be present to be deleted). If the certificate is not available, it can be exported.

```
cd /tmp
wget
http://www.mellanox.com/downloads/ofed/mlnx_signing_key_pub.de
```

Or export from current keys (all the keys are named MOK-000X.der) and search the NVIDIA certificate.

```
cd /tmp
mokutil --export
grep "Mellanox" MOK-0*
```

```
root@ubuntu:~# mokutil --list-enrolled | grep -i mellanox
Issuer: O=Mellanox Technologies, CN=Mellanox Technologies signing key/emailAddress=support@mellanox.com
Subject: O=Mellanox Technologies, CN=Mellanox Technologies signing key/emailAddress=support@mellanox.com
```

Validate the certificate:

```
openssl x509 -inform der -in MOK-0002.der -noout -issuer
```

```
root@ubuntu:/tmp# openssl x509 -inform der -in MOK-0002.der -noout -issuer  
issuer=0 = Mellanox Technologies, CN = Mellanox Technologies signing key, emailAddress = support@mellanox.com
```

4. Remove the certificate from the MOK db. The below example lists MOK-0002.der, the naming convention might be different.

```
mokutil --delete ./MOK-0002.der --root-pw
```

The above can be validated by running

```
mokutil --list-delete
```

```
root@ubuntu:/tmp# mokutil --list-delete  
[key 1]  
SHA1 Fingerprint: dc:cd:44:95:92:2f:95:9f:28:49:7b:64:94:41:d8:bd:64:60:6d:69  
Certificate:  
Data:  
  Version: 3 (0x2)  
  Serial Number:  
    ba:b0:f5:cd:23:24:a0:ed  
  Signature Algorithm: sha256WithRSAEncryption  
  Issuer: 0=Mellanox Technologies, CN=Mellanox Technologies signing key/emailAddress=support@mellanox.com  
  Validity
```

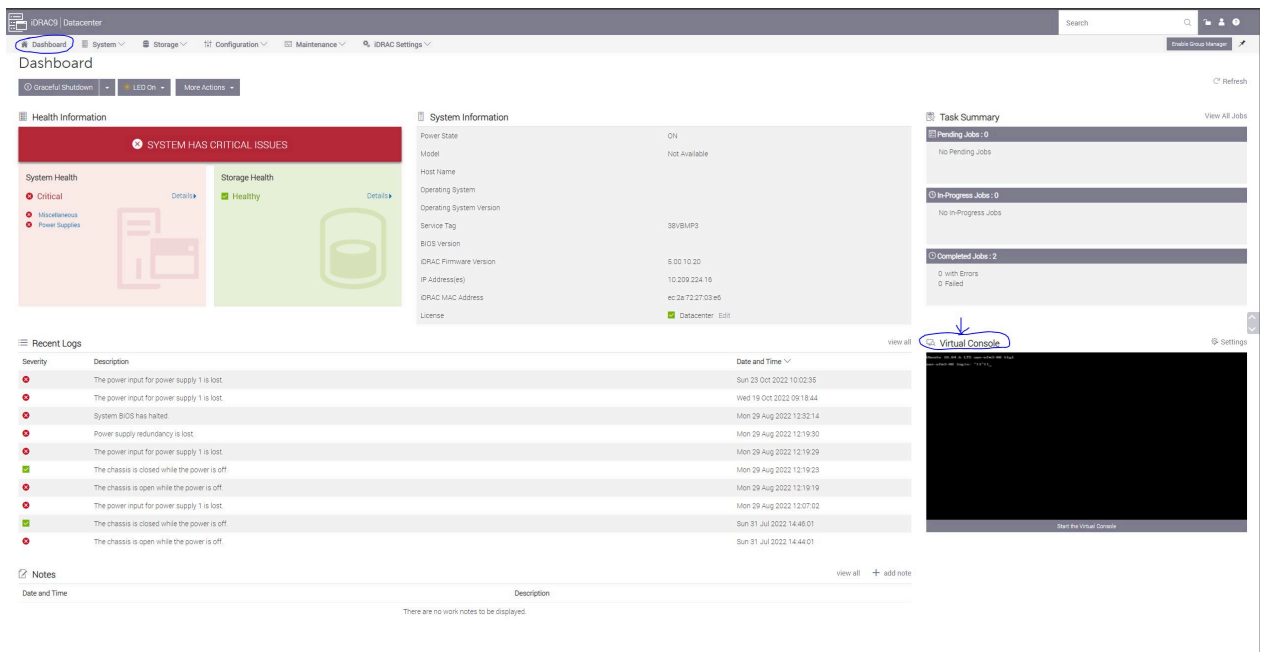
### Warning

The certificate is in the enrolled queue at this point. Upon the next server reboot, a 10 second prompt appears at the start of the boot process to confirm the certificate addition. It is important to confirm the certificate addition at this stage. Failure to do so requires you to repeat the procedure.

To be able to interact with the prompt, a console connection is needed either from the serial port or from the web console available via Remote Management.

5. Login to Remote Management (<https://<iDRAC-ip address>>)

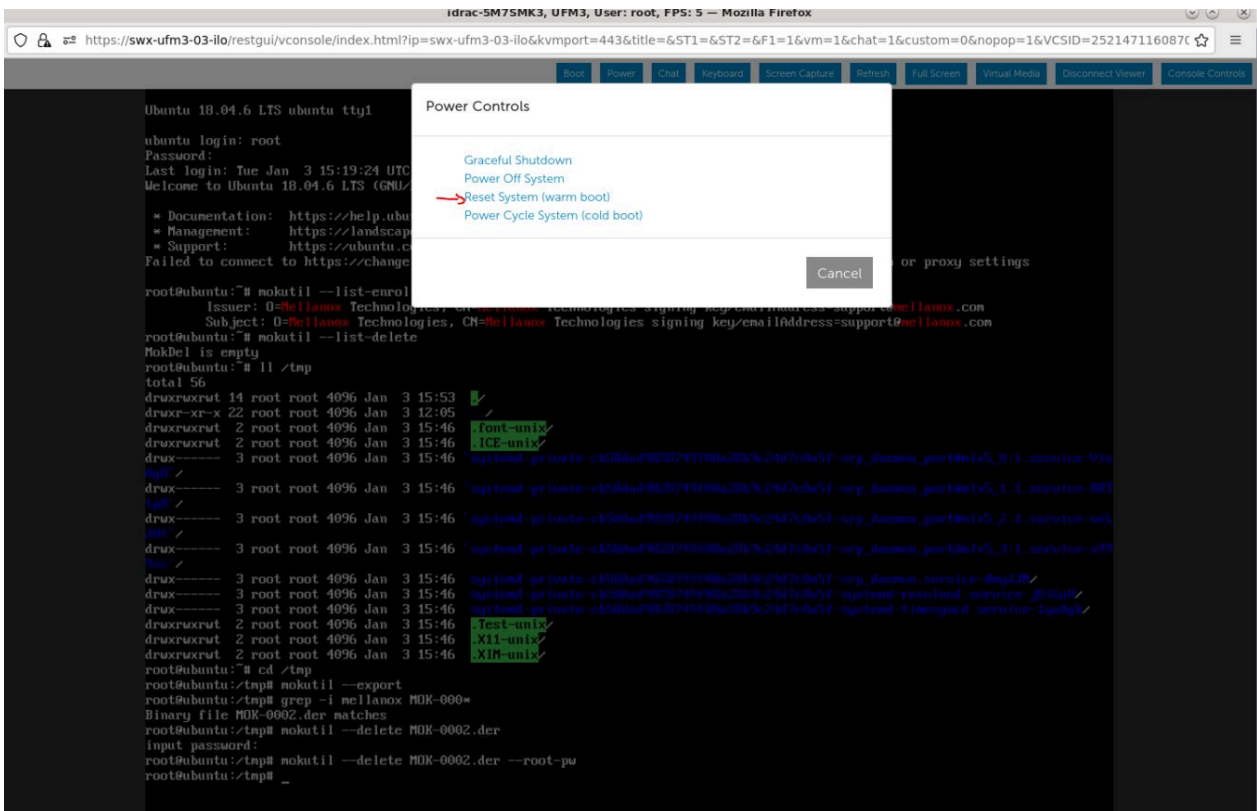
6. click on "Dashboard" → "Virtual Console" to open the virtual web console.



7. Power cycle the server (at boot startup, a 10 second prompt appears to verify the certificate deletion).

On the top menu: "Power" → "Reset System (warm boot)".

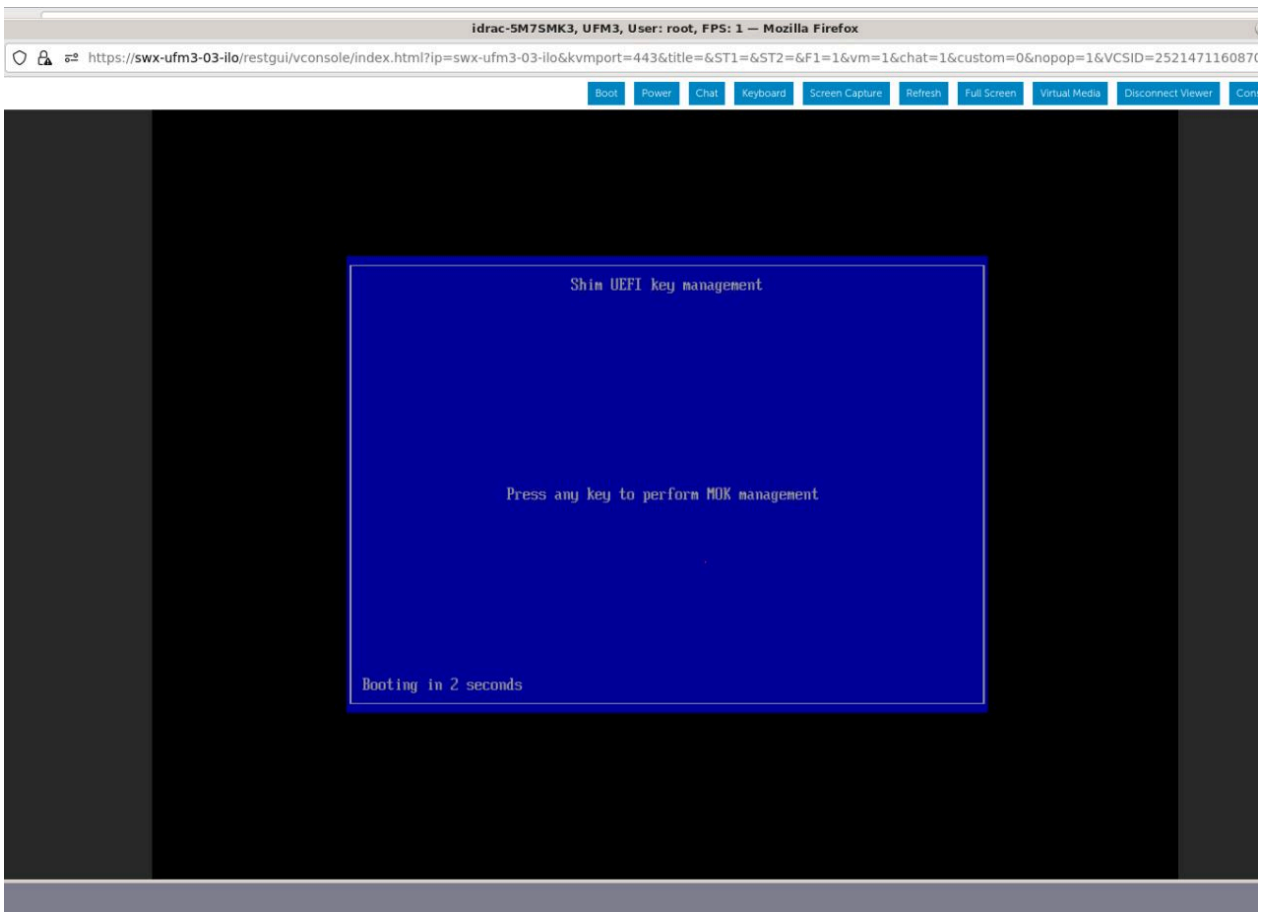




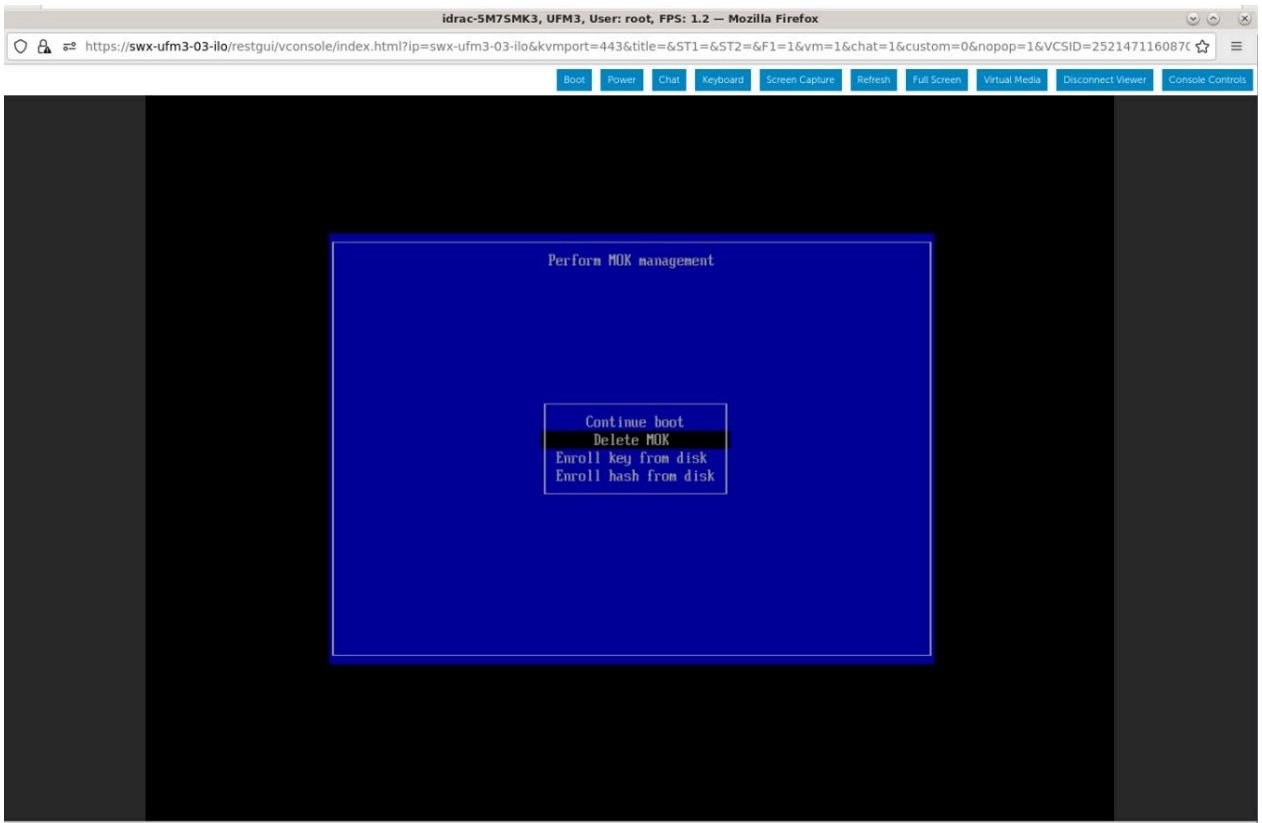
The server now performs reboot.

- Once the startup procedure begins, a confirmation prompt appears to verify certificate deletion. The prompt closes after 10 seconds, if missed, the certificate deletion procedure needs to be repeated.

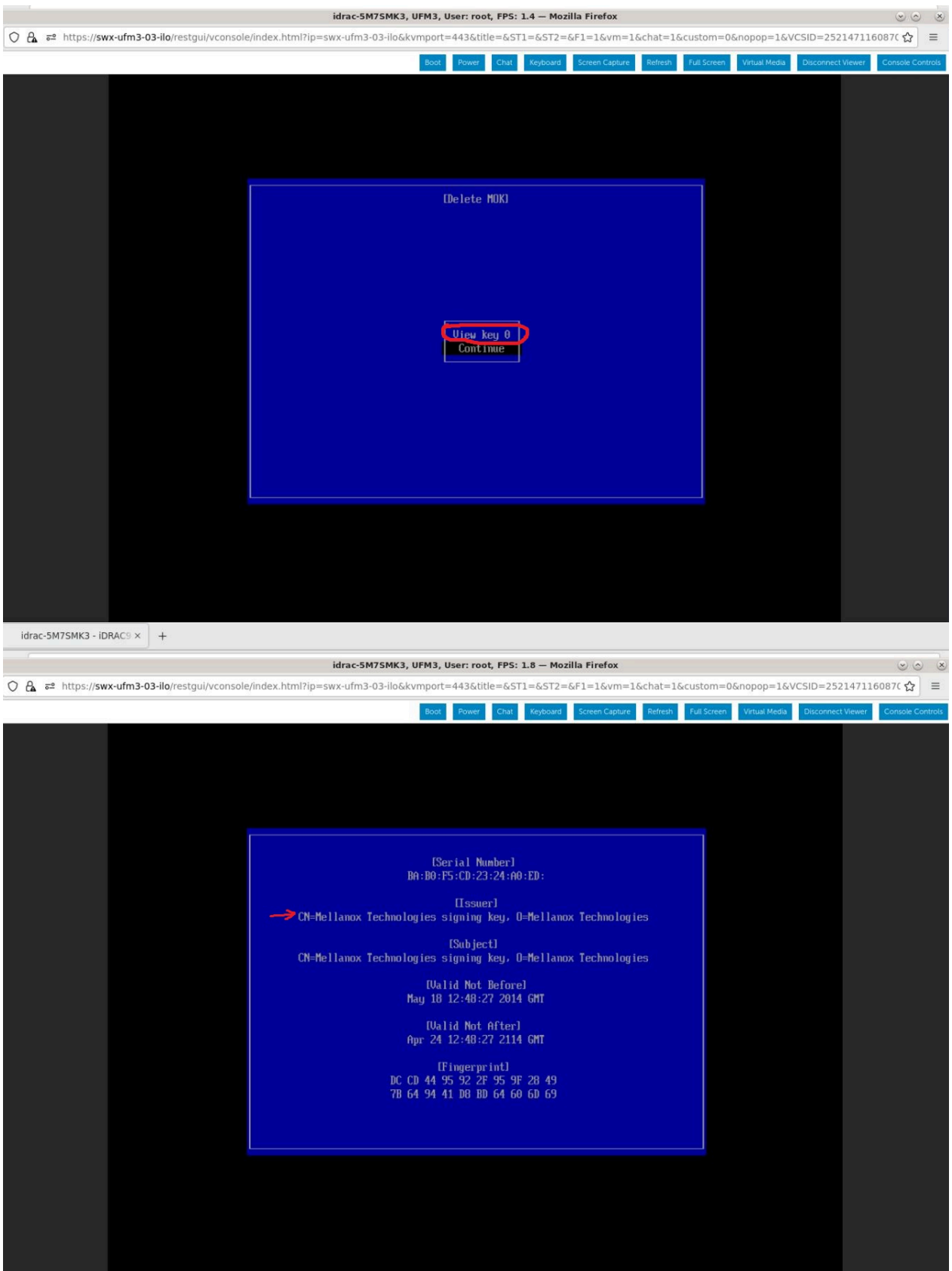
Once the prompt appears, press any key to interact.



9. Navigate to "Delete MOK".



10. View the certificate to be deleted. To verify, press "View key0".



Press "Enter" to exit the view.

11. Select "Continue" from the menu and press the Enter key.



12. Select "Yes" from the menu and press the Enter key.



13. Once a password prompt appears, enter the OS root user credential.



14. Select "Reboot" from the menu and press Enter. Upon reboot completion, the certificate is removed.



## Appendix - Deploying UFM Appliance from an ISO File

This section provides a step-by-step guide for deploying UFM Enterprise Appliance from an ISO file.

The ISO installation is set to use interface "eno8303" via a DHCP as default; if DHCP is unavailable, the installer will request manual intervention to set the IP address manually on "eno8303" or to skip the IP settings altogether.

If IP settings are skipped, they can be set manually after the installation. Refer to [Getting Started](#).

If a different interface should be used, skip the IP settings when prompted.

### Deploying UFM Appliance from an ISO File

Extract the `ufm-appliance-<version>-omu.tar` to a temporary directory.

```
tar xzf /path/to/tar.tar -C /tmp
```

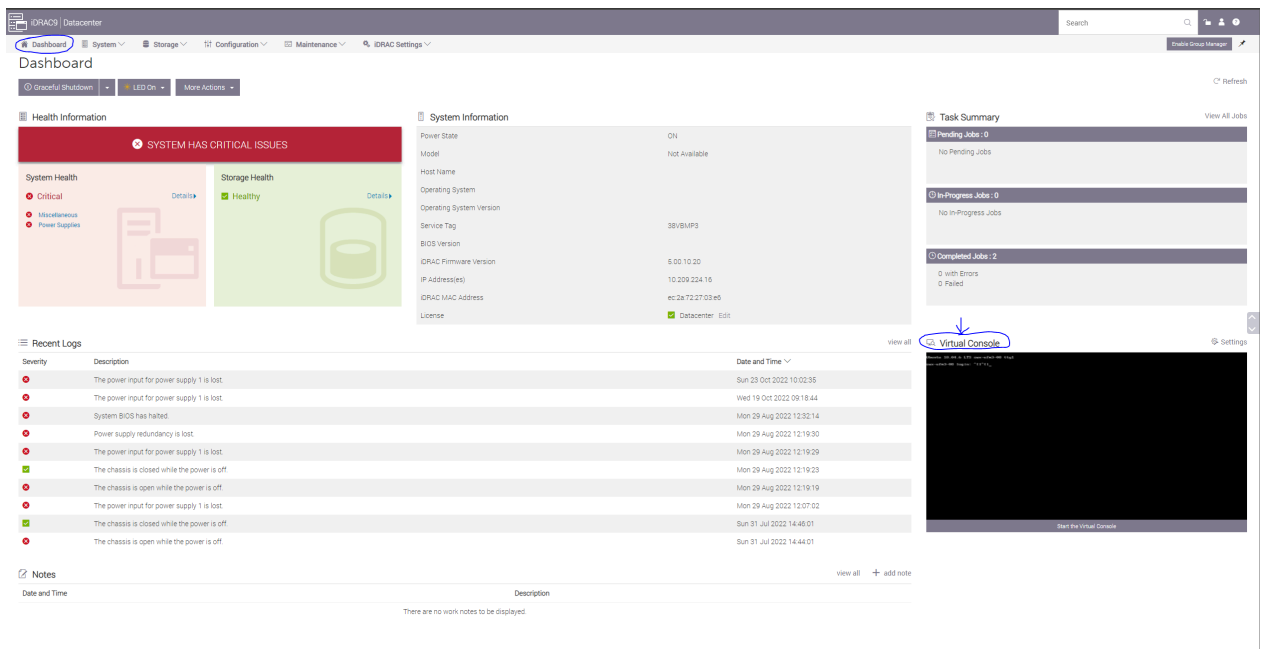
An ISO file and an upgrade script will be present inside the directory.

```
ls -ltrh /tmp/ufm-appliance-<version>/
```

Follow the following steps based on the desired method of installation.

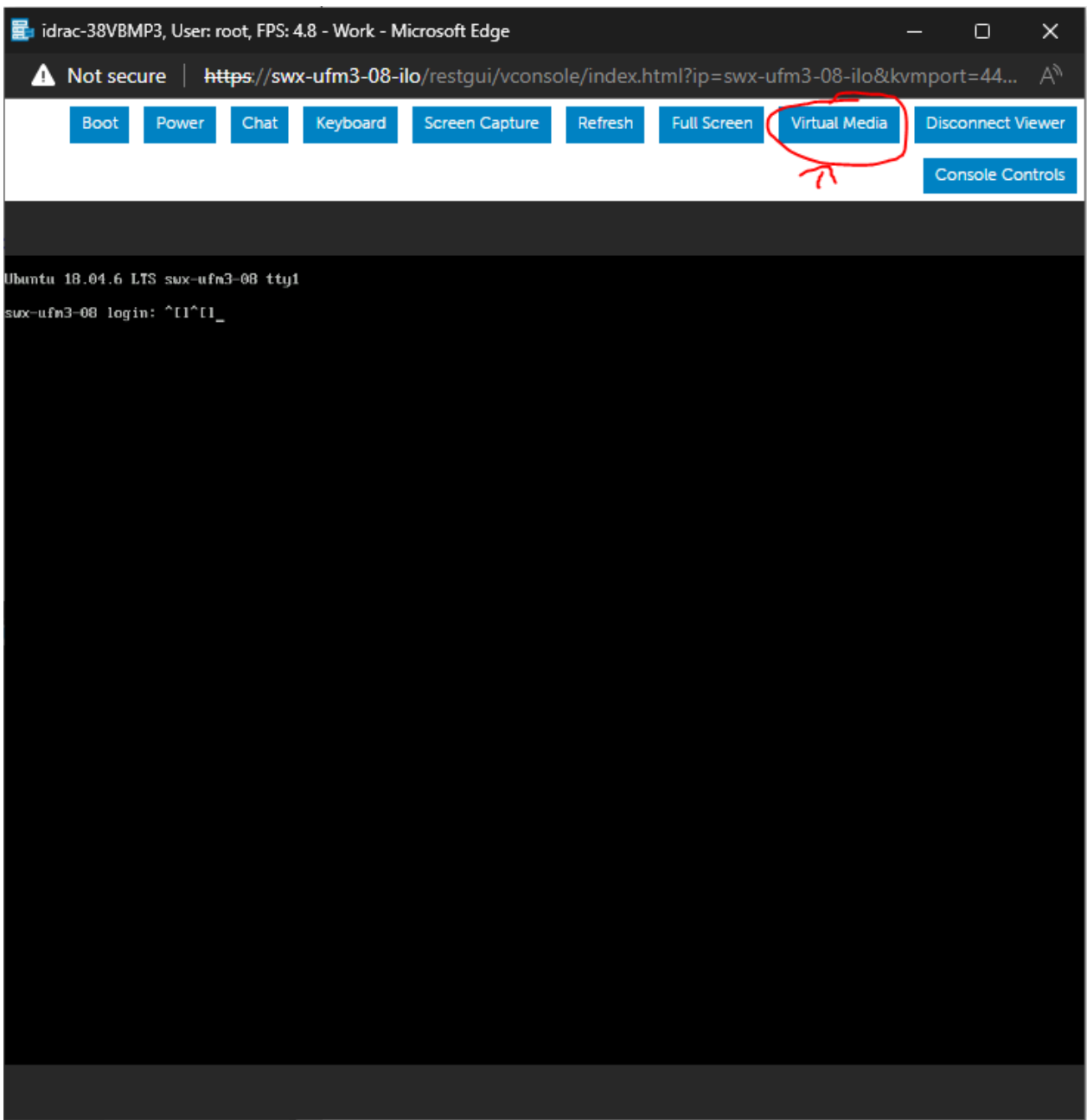
## Virtual Media via Management Port

1. Open a web browser and navigate to `https://<IDRAC-ILO-address>`
2. On the Dashboard pane, click on the virtual console icon on the bottom right corner of the screen.



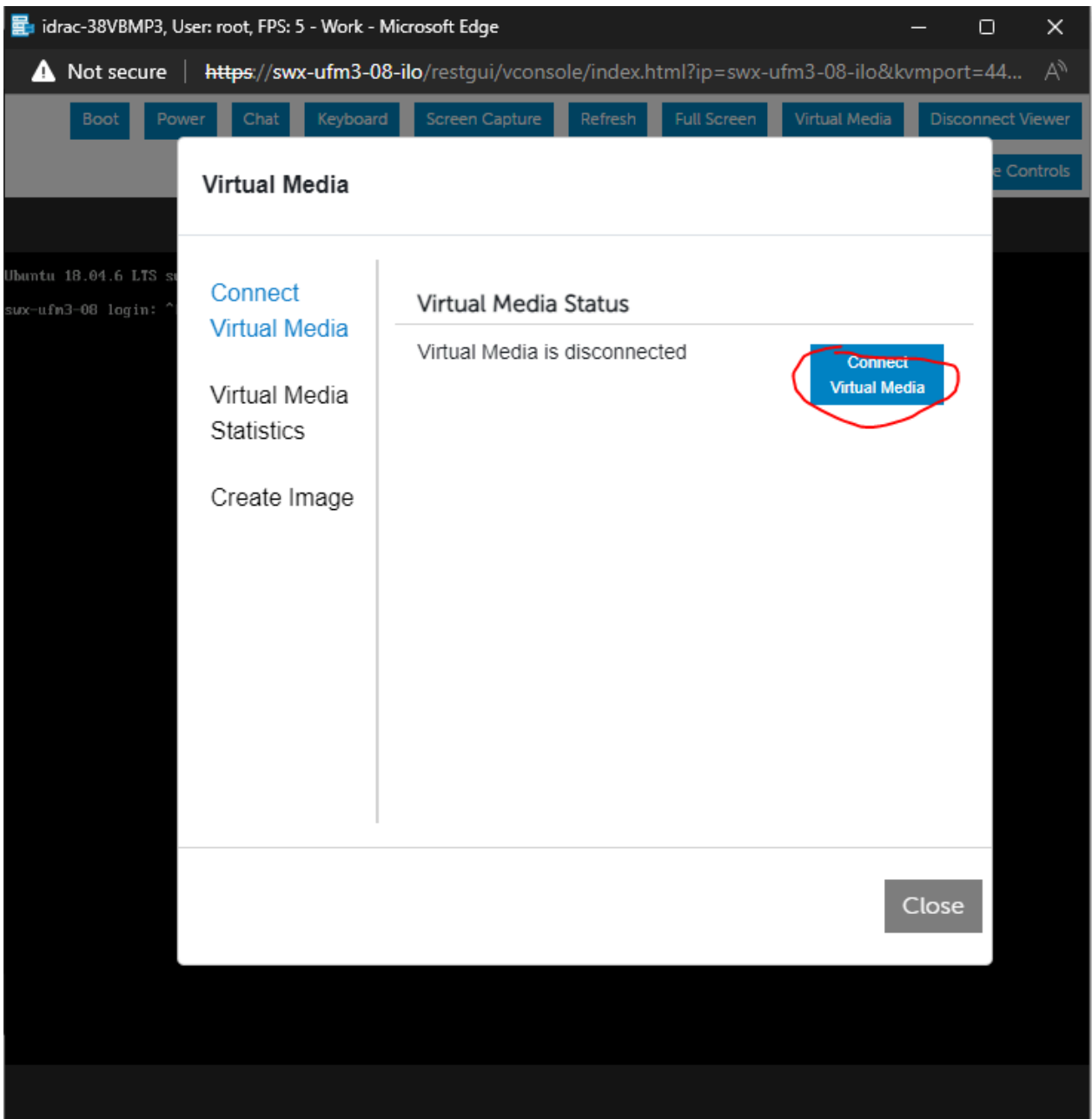
3. A new virtual console window will pop out, on the top right corner, click on the virtual media.



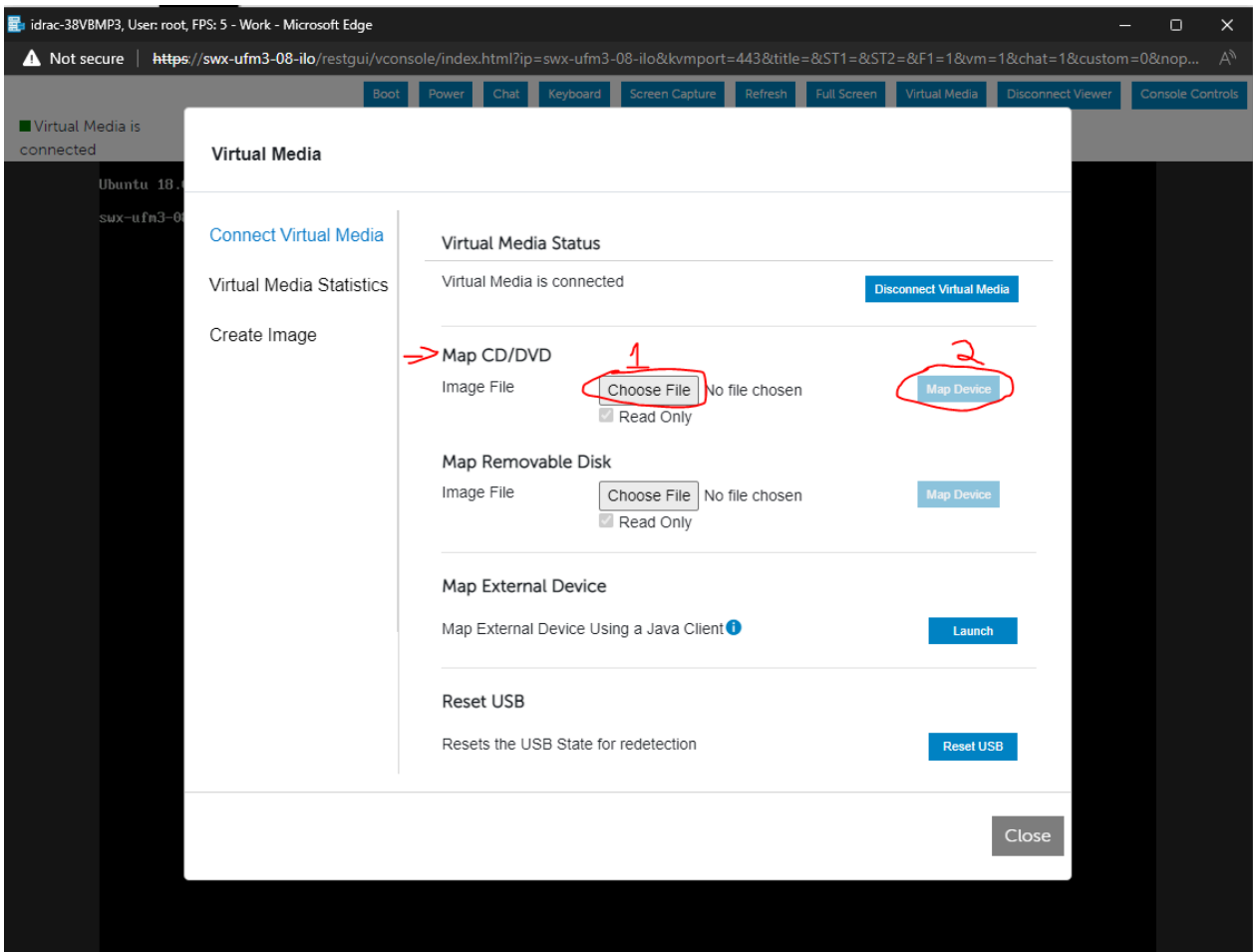


A new console window will appear

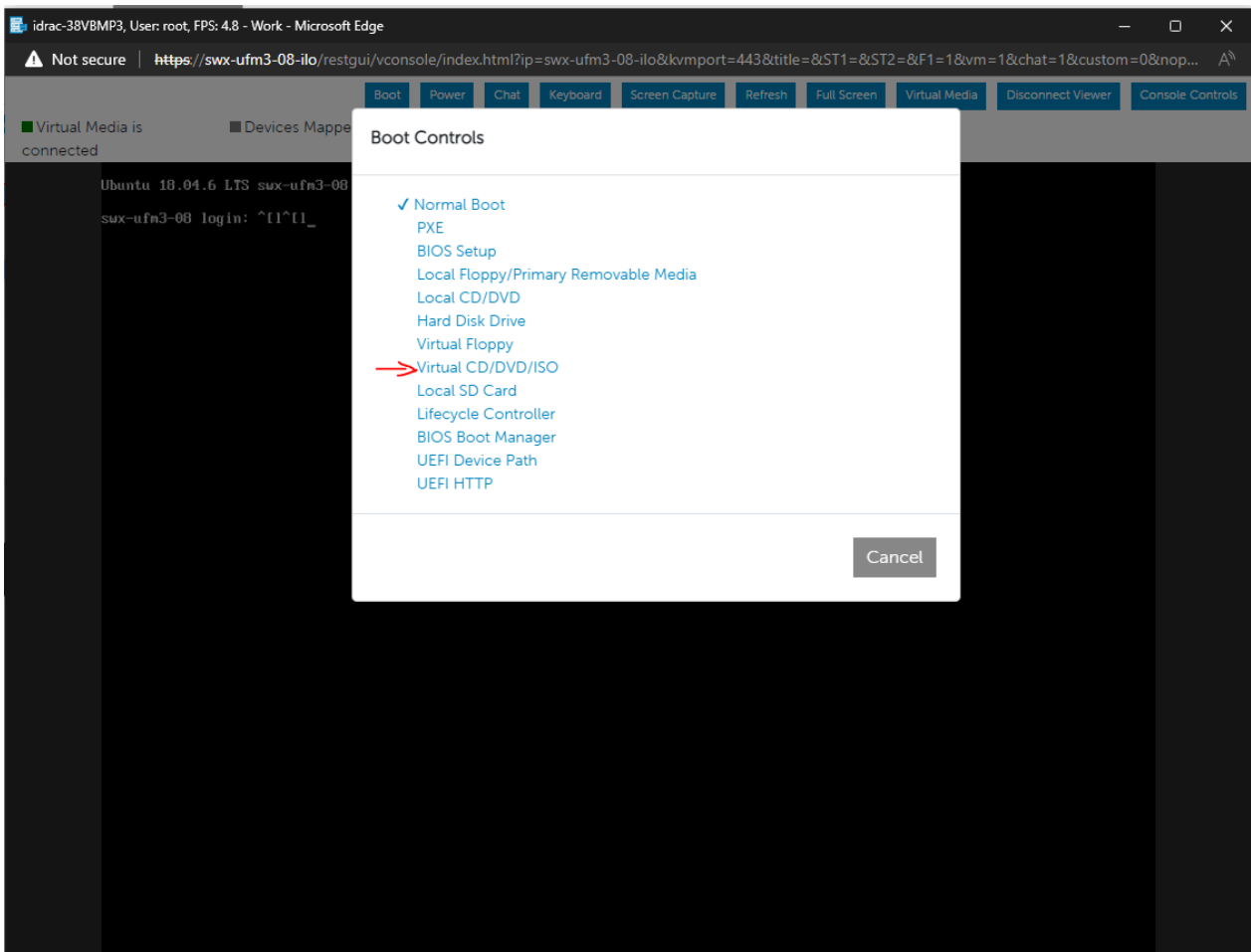
4. Click on the "Connect Media" button.



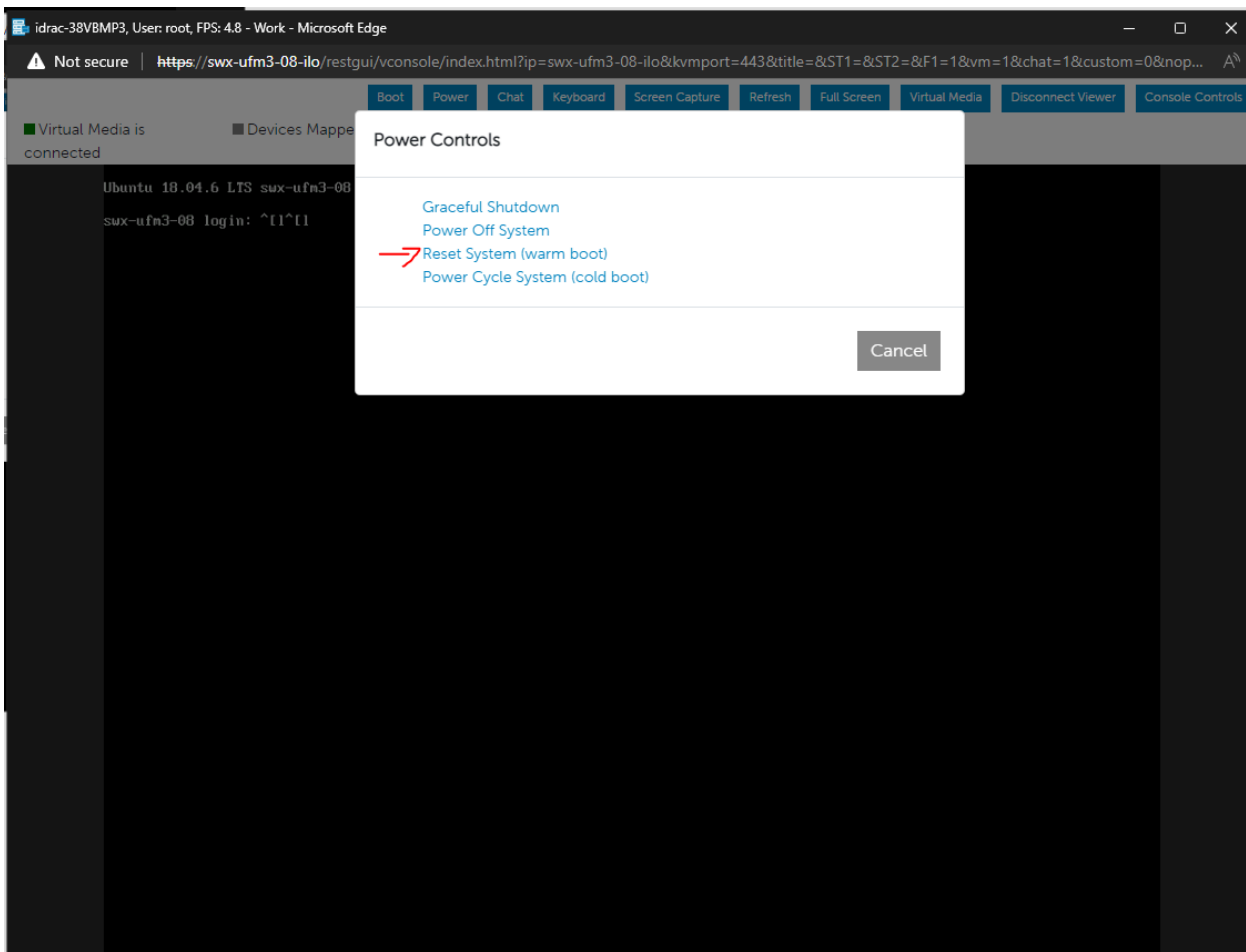
5. Under the "Map CD/DVD" section, click on "Choose file" and select the `ufm-appliance-<version>.iso` file extracted from the tar archive previously extracted and click on the "Map Device" button. Then, "Close".



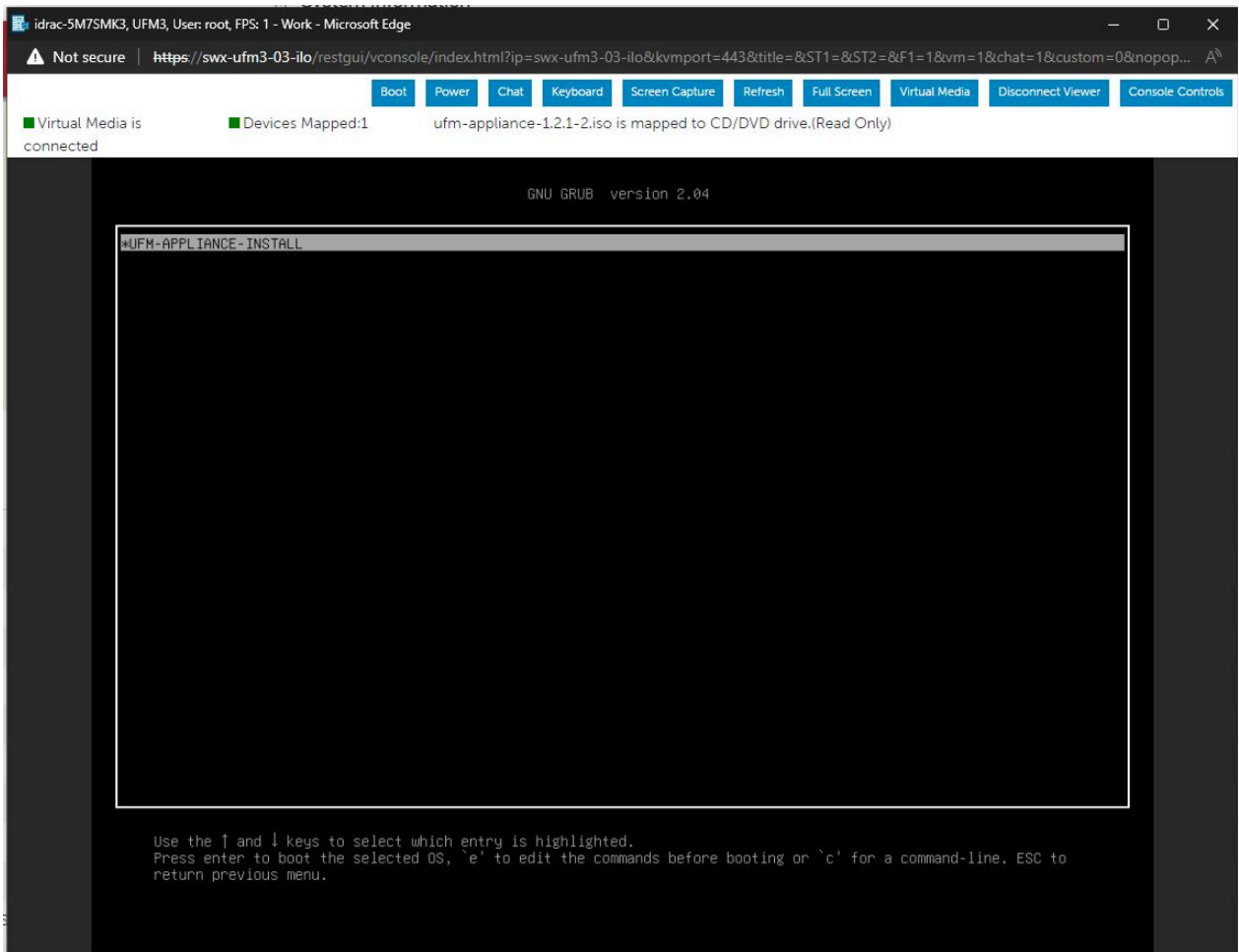
6. Click on the "Boot" menu button on the top left, on the opened menu choose "Virtual CD/DVD/ISO".



7. Click on the "Power" menu button and select "Reset System (warm boot)" entry.



8. At this point an automatic installation should start.



Installation will auto start after 30 seconds, press the enter key to start it immediately.

9. Proceed to [Finalizing the Installation](#).

## Physical USB

### Burn ISO to USB

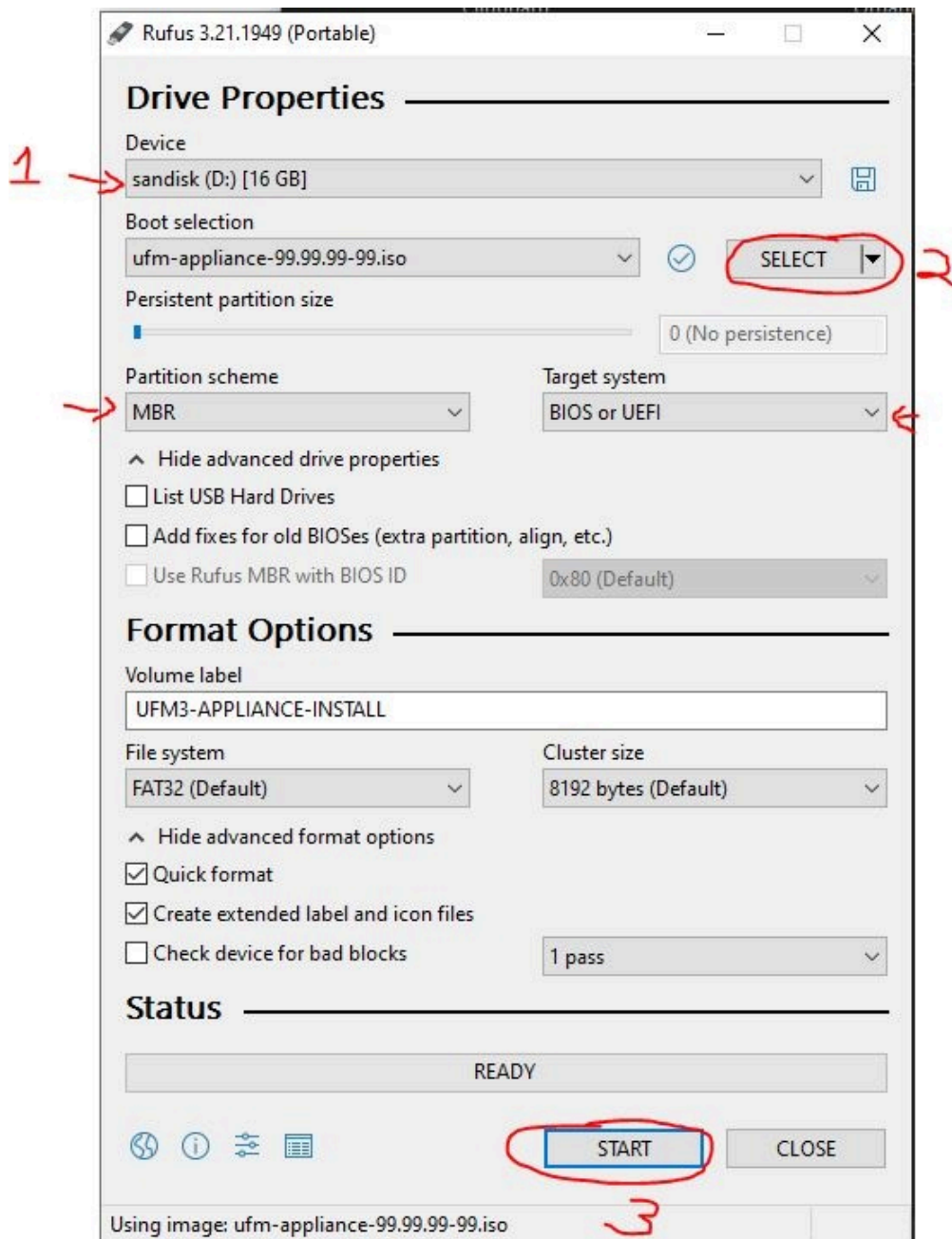
#### Windows

1. Download and open Rufus ([Rufus](#)).
2. Select the USB device from the drop down menu under "Devices".

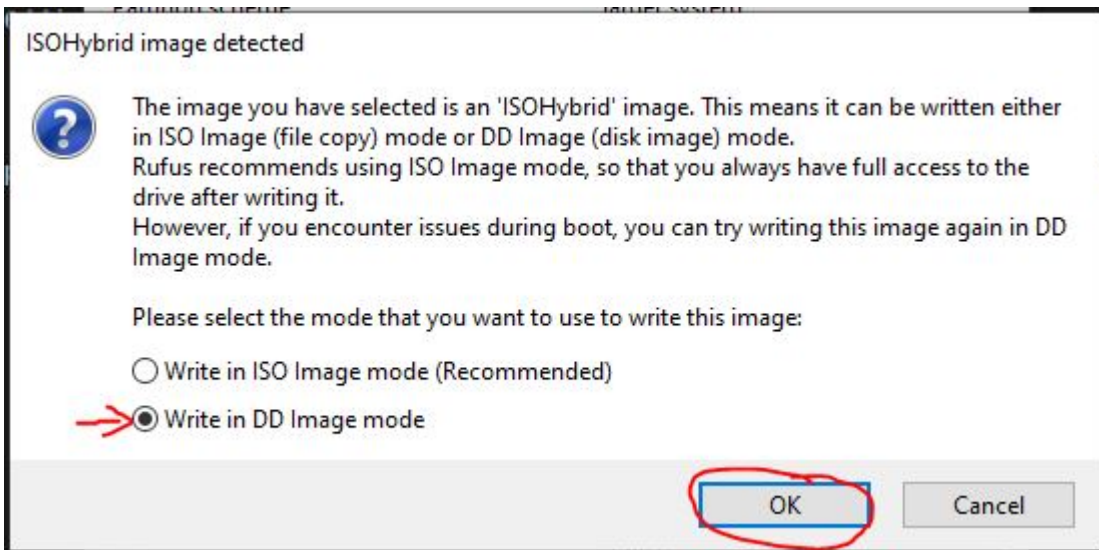
Click on "SELECT" and select `ufm-appliance-<version>.iso`

Validate that the "Partition Scheme" is MBR and "Target System" is "BIOS or UEFI", as seen in the screenshot below.

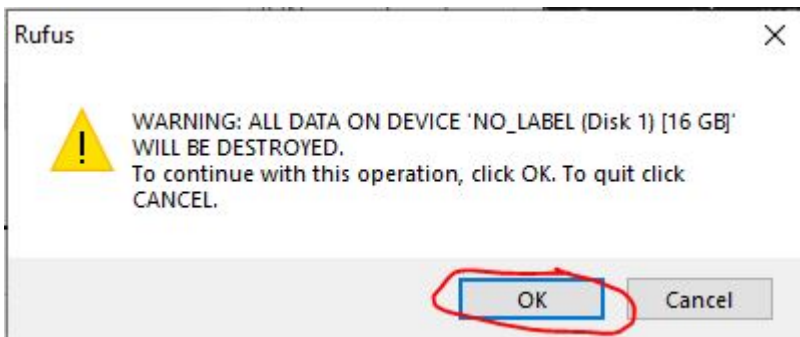
Click "START".



3. An "ISOHybrid image detected" prompt will pop up, choose "Write in DD mode" and click "OK".



4. Another message will appear stating that all data on the USB device will be lost, click "OK and continue".



5. Wait for Rufus to finish.

## Linux

1. Identify the USB drive:

### **Warning**

Do not run the following commands on a hard drive device, but only on the USB. The USB drive in the below command is mapped to sdb.



```
root@ubuntu18:~# ls -ltrh /dev/disk/by-id/usb*
lrwxrwxrwx 1 root root 9 Jan 2 13:44 /dev/disk/by-id/usb-
SanDisk_Cruzer_Glide_3.0_4C530000040724111091-0:0 ->
../../sdb
lrwxrwxrwx 1 root root 10 Jan 2 13:44 /dev/disk/by-id/usb-
SanDisk_Cruzer_Glide_3.0_4C530000040724111091-0:0-part1 ->
../../sdb1
```

2. Copy the `ufm-appliance-<version>.iso` to the USB using the following `dd` command:

### **Warning**

Do NOT run the following commands on a hard drive device but only on the USB. The USB drive in the below command is mapped to `/dev/sdb`.

```
dd if=/path/to/ufm-appliance-<version>.iso of=/dev/sdb bs=4M
status=progress oflag=sync
```

3. Verify that the USB is bootable:

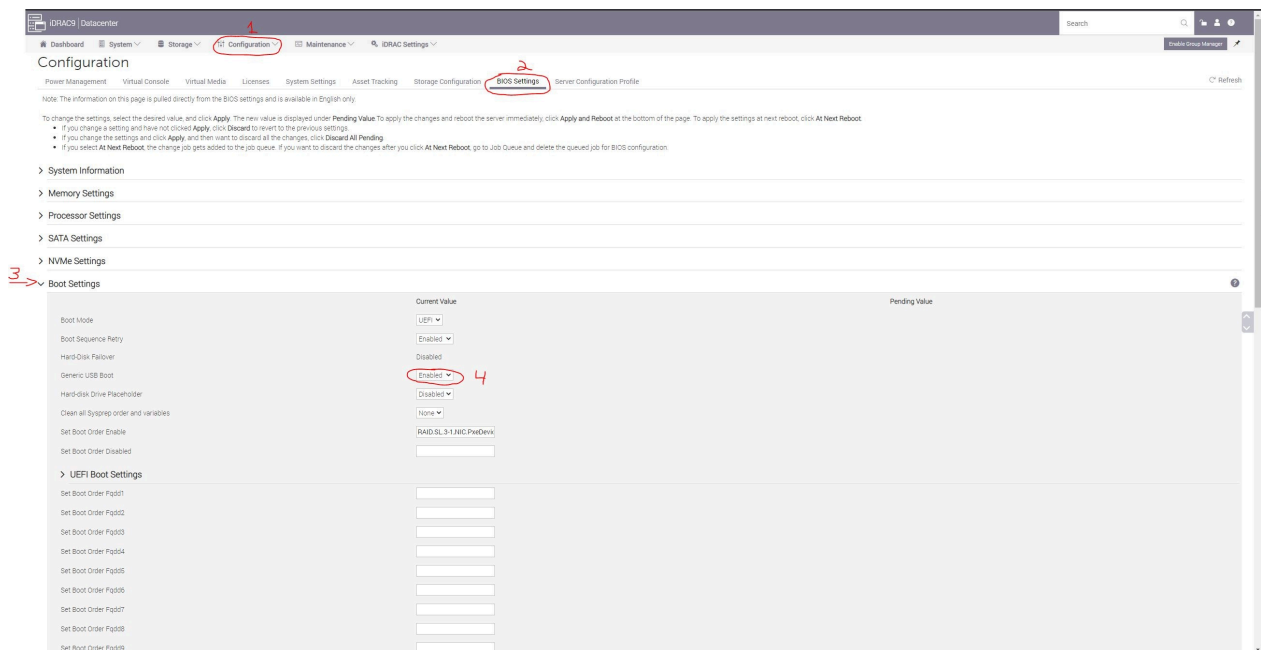
```
root@ubuntu18:~# fdisk -l /dev/sdb
Disk /dev/sdb: 14.9 GiB, 16005464064 bytes, 31260672 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x594ec03e
```

Device	Boot	Start	End	Sectors	Size	Id	Type
/dev/sdb1	*	64	15679439	15679376	7.5G	17	Hidden
HPFS/NTFS							

4. Unplug the USB.

## Manufacture UFM Appliance via the USB

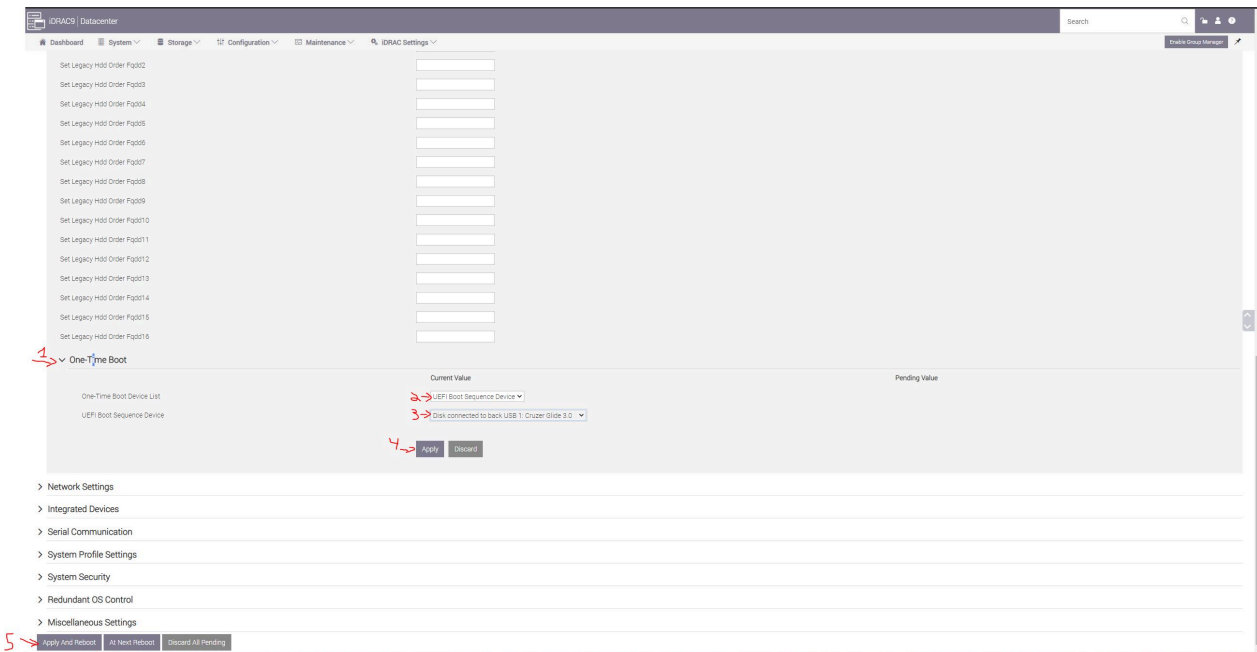
1. Plug in the USB device to the back panel (Front panel USB is disabled).
2. Open a web browser and navigate to <https://<IDRAC-ILO-address>>.
3. Navigate to "Configuration" → "BIOS Settings" → "Boot Settings" and set "Generic USB boot" option to enabled.



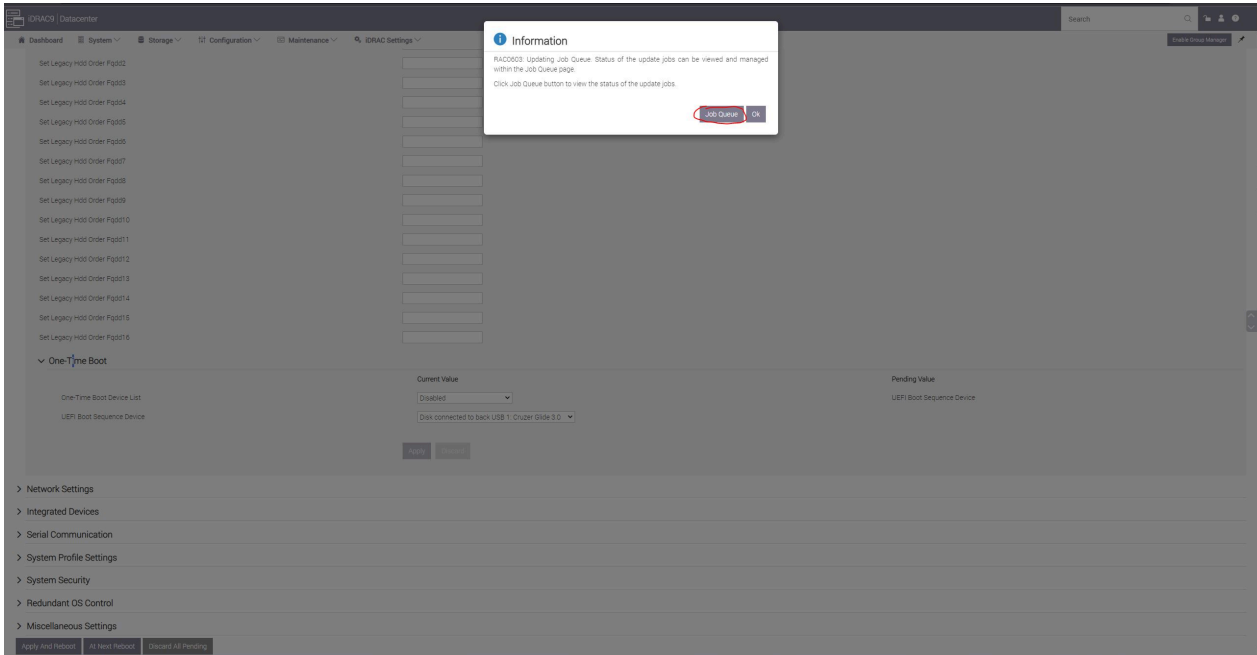
4. On the same pane, scroll down to "One-Time Boot" → "One-Time Boot Device List" select "UEFI Boot Sequence Device".

In "UEFI Boot Sequence Device", select the connected USB device and click apply.

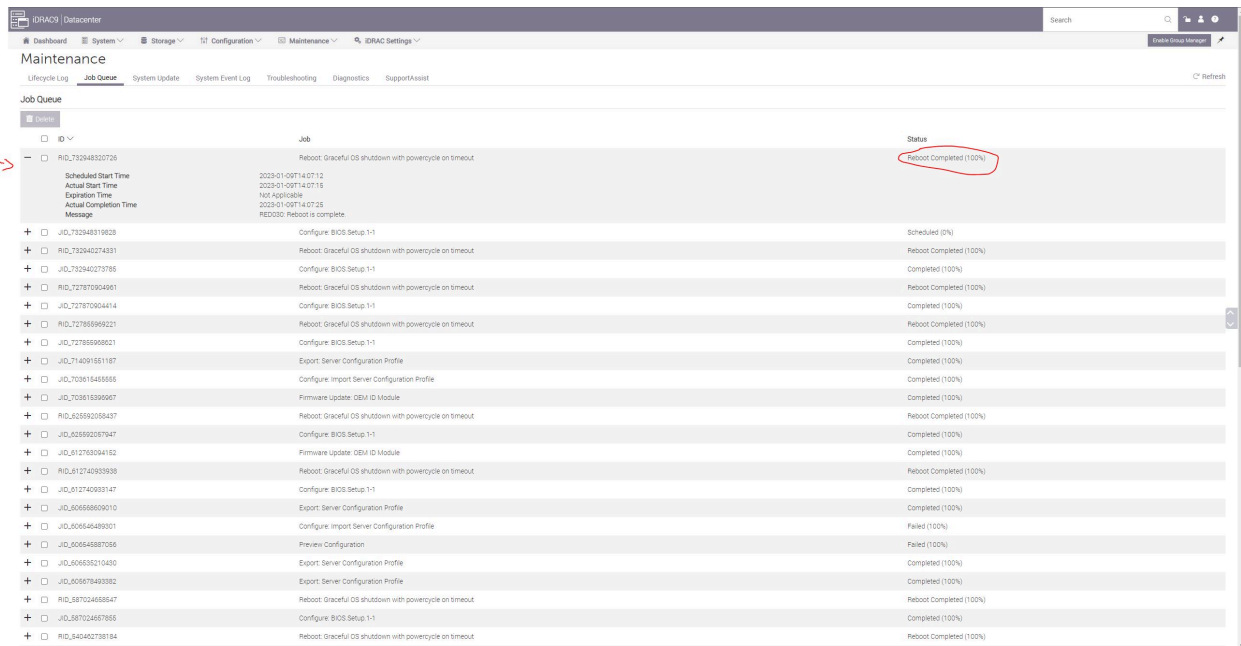
On the bottom of the page click on "Apply And Reboot" button.



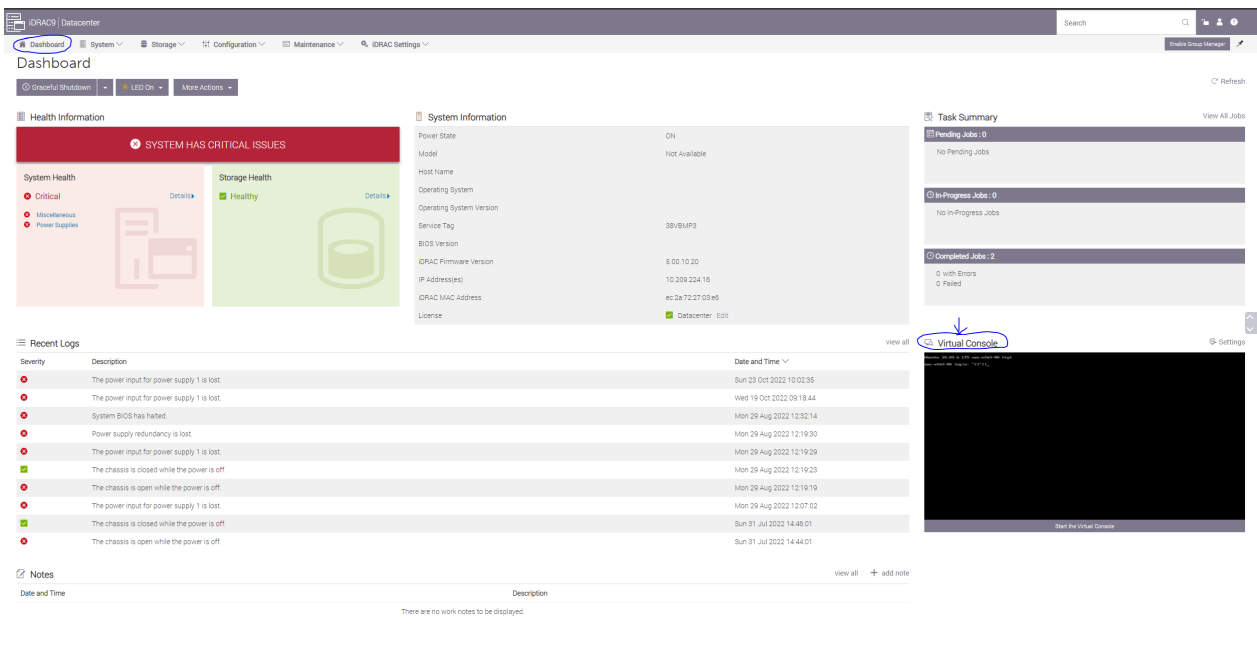
5. A popup message will appear click on "Job Queue" button.



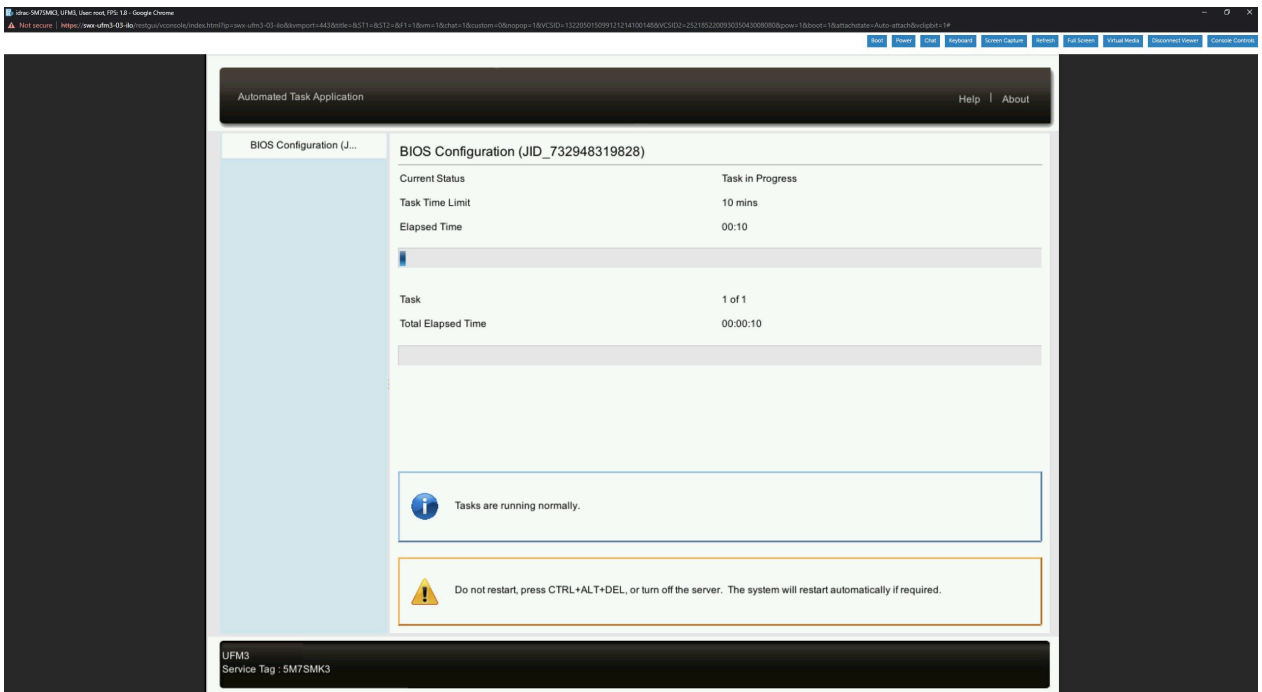
6. A "Job Queue" pane will open to monitor the progress of the created job.



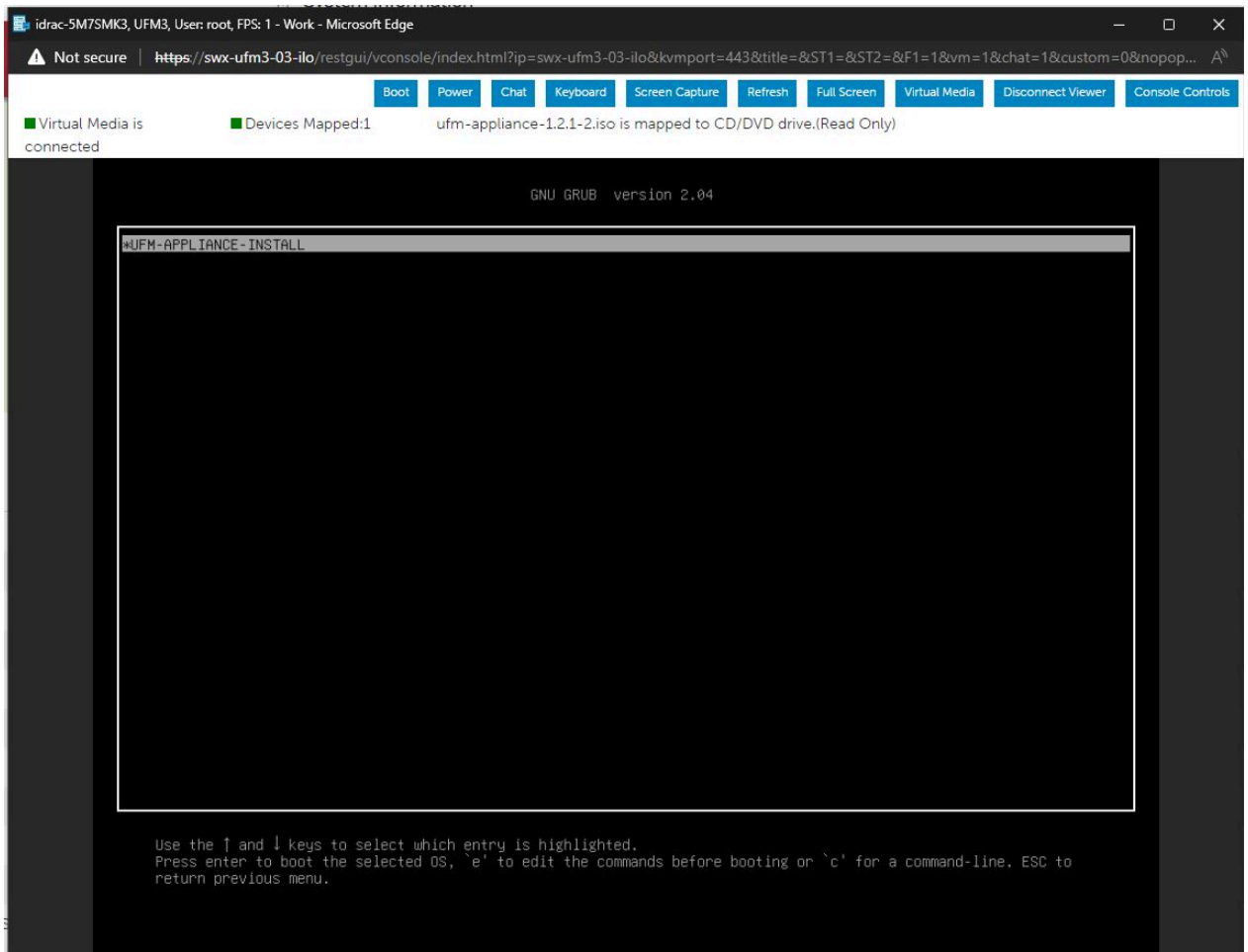
7. Navigate to the Dashboard pane, click on the virtual console icon on the bottom right corner of the screen.



A new console window will appear that shows the progress of restarting the node to USB.



8. At this point an automatic installation should start.



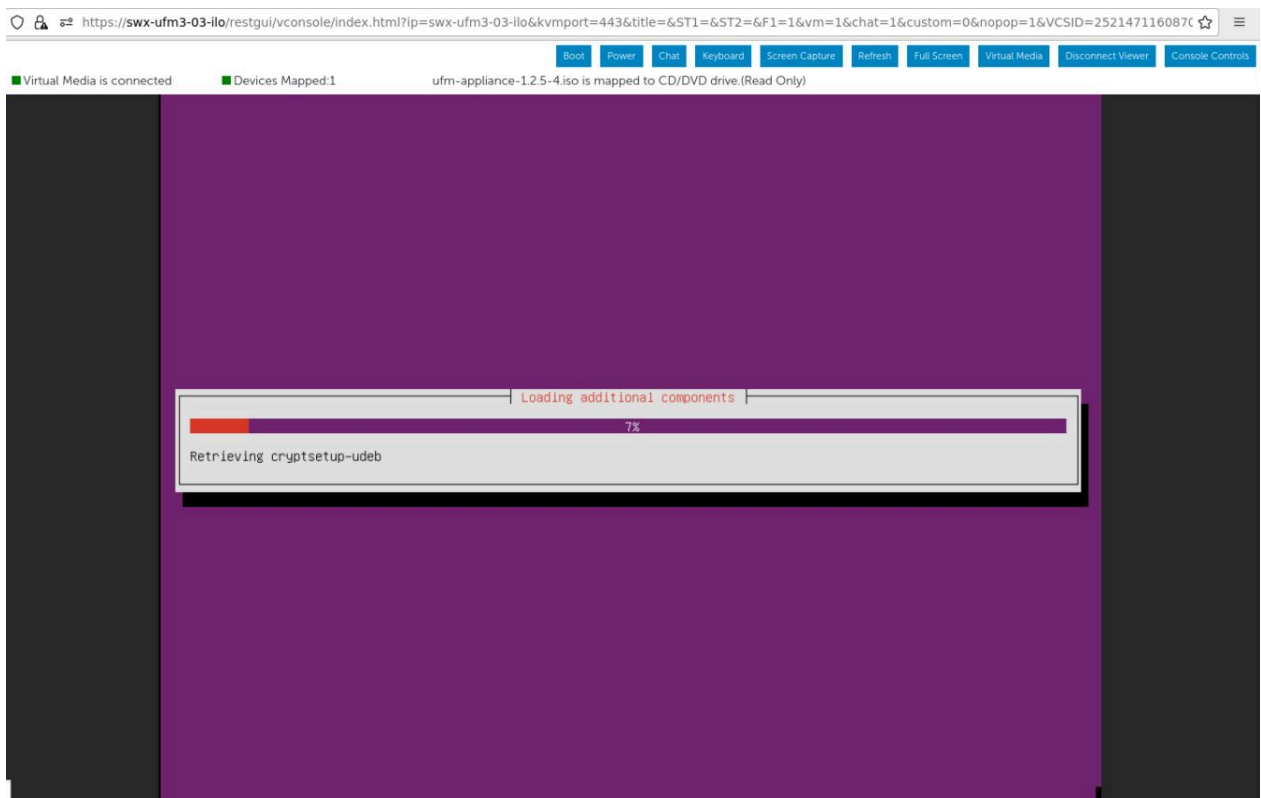
The installation will auto start after 30 seconds, press the enter key to start it immediately.

9. Proceed to the following section to proceed with the installation.

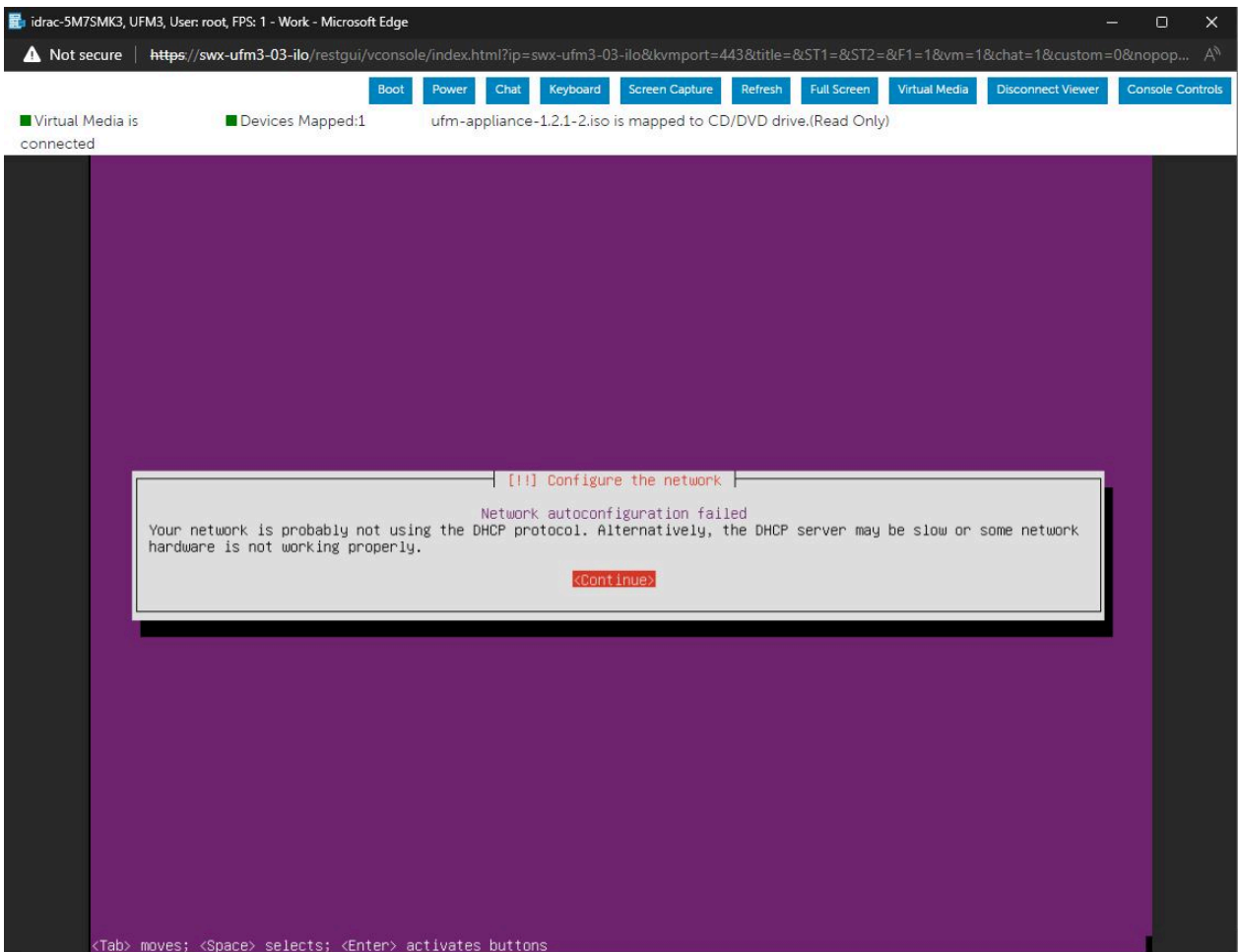
## Finalizing the Installation

Installation may take 20-90 minutes and depends on the chosen media; with USB it takes around 20 minutes and via the virtual media take around 90 minutes (this may vary and depends on network speed).

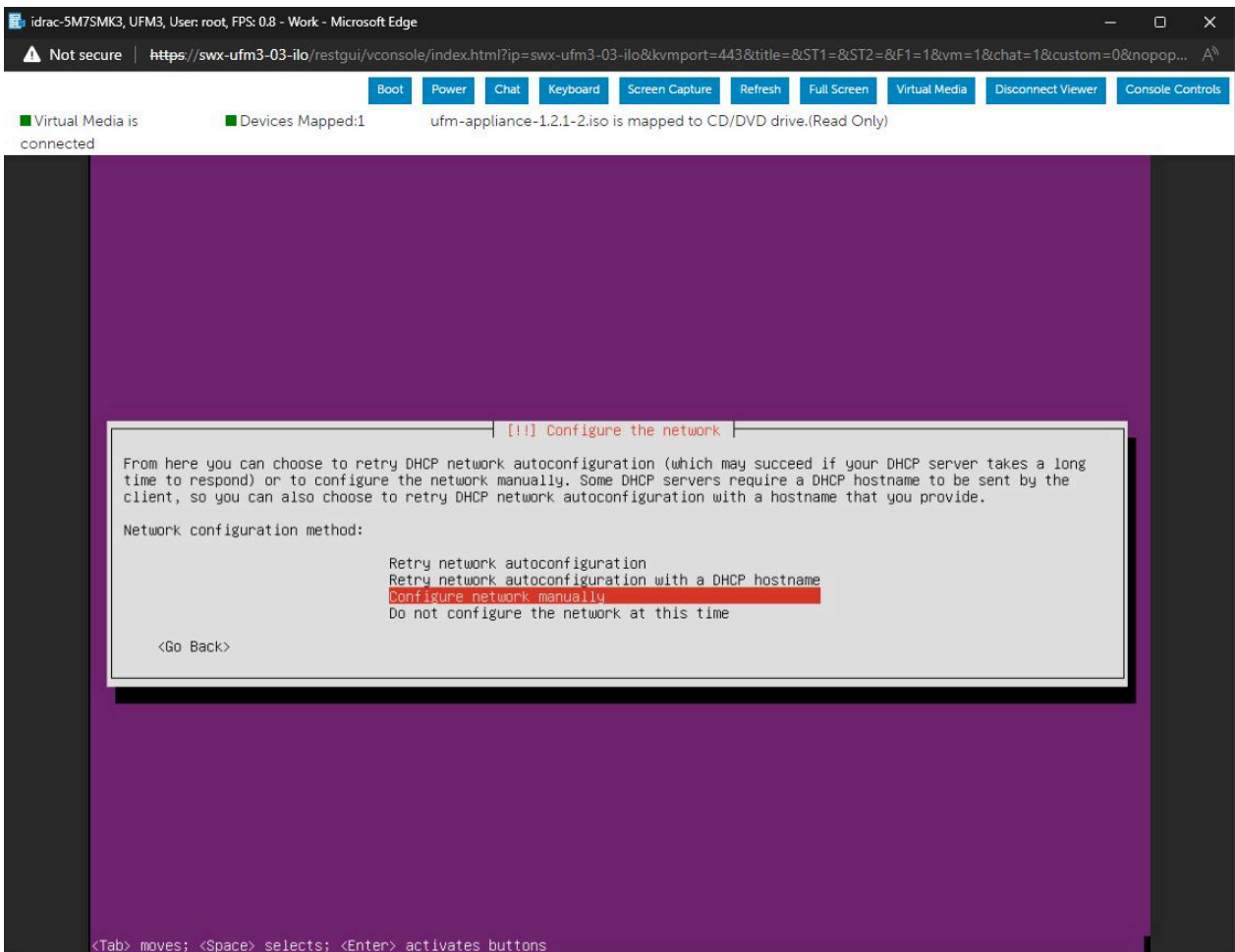
1. Installation should start automatically, and the progress is presented on the screen.



2. In case a DHCP is not available or not configured, a prompt will pop up with notification stating that DHCP cannot be set.



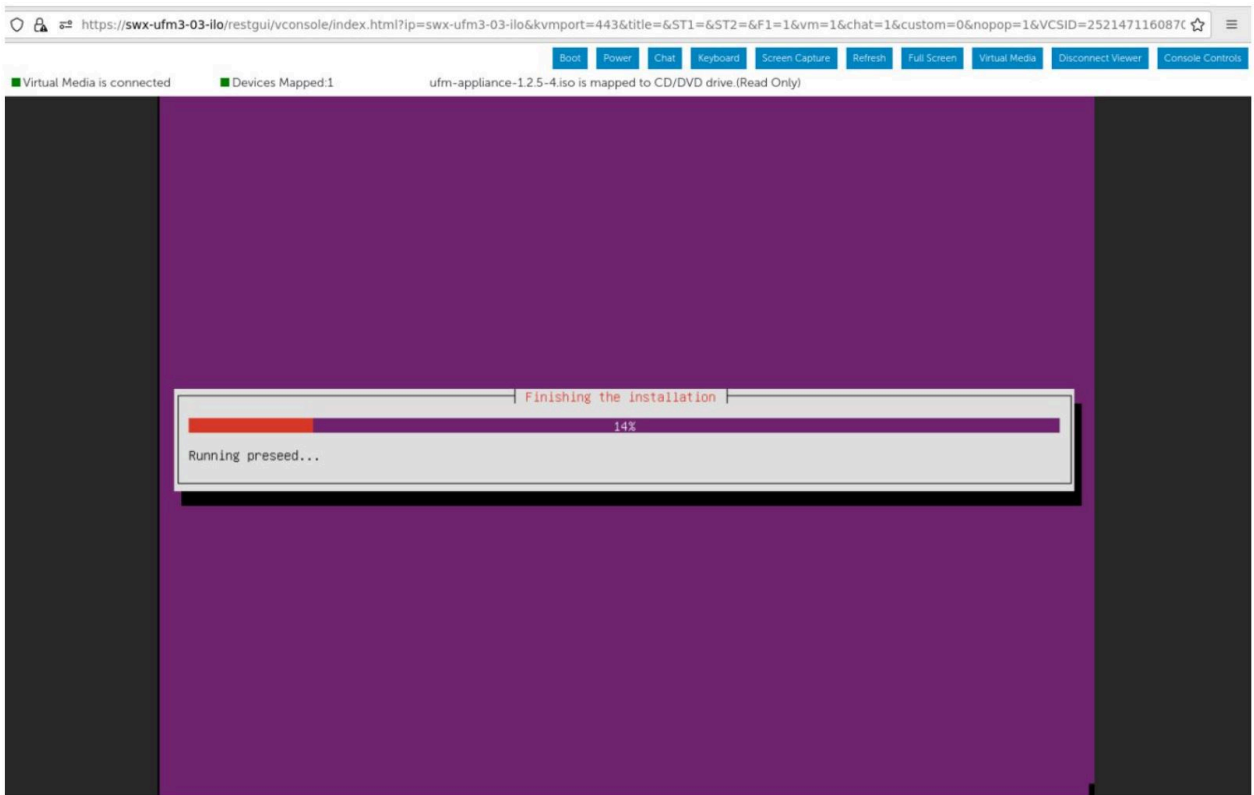
3. Press "Enter" to continue, a sub menu will appear.



You can choose the preferred option and follow the instructions on the screen by configuring it manually, or skip network configuration and add them at a later point.

4. The installation procedure should continue.



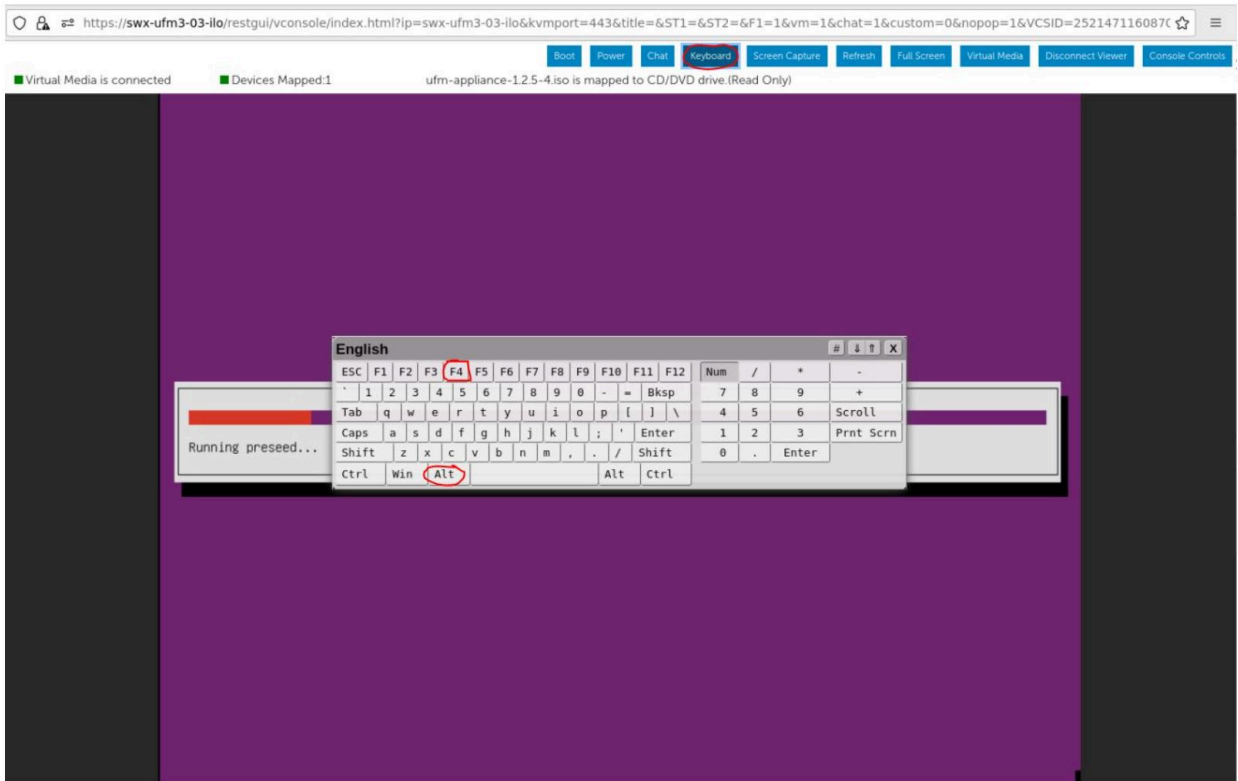


### **Note**

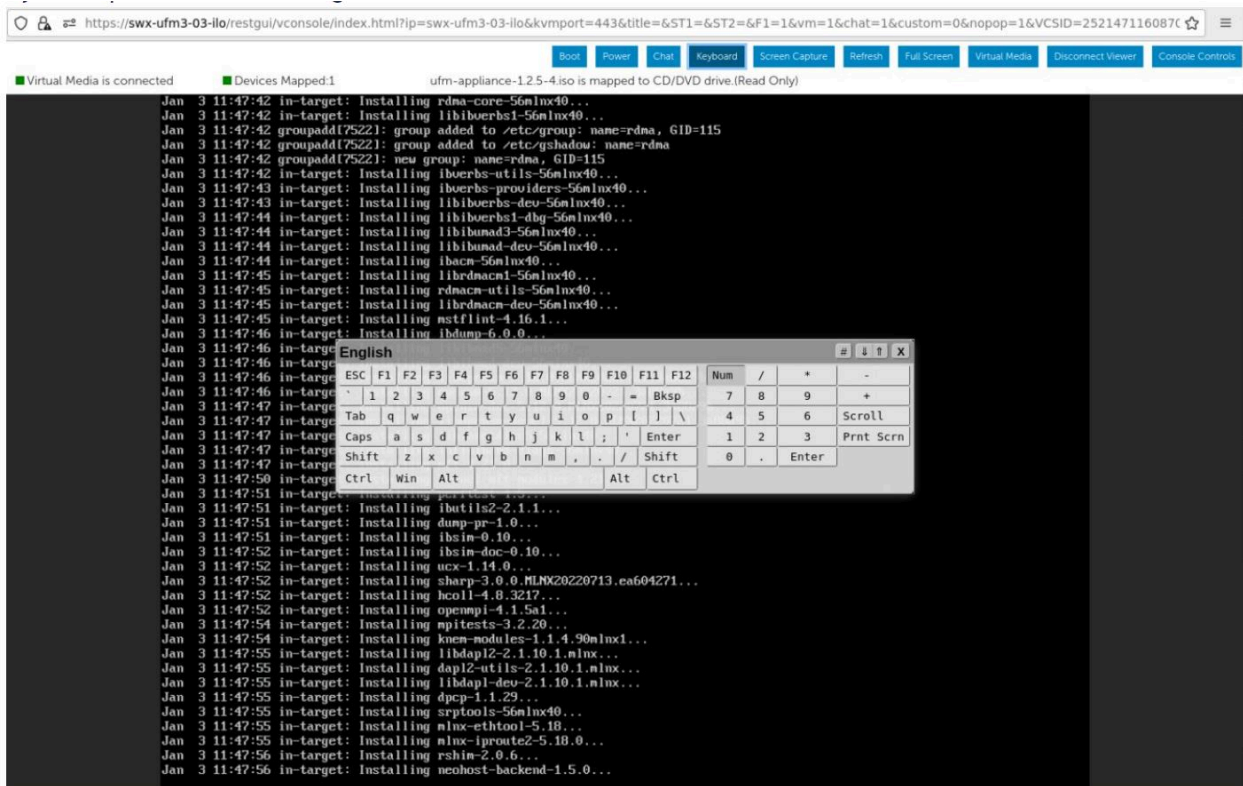
The installer may seem stuck when the status bar gets to "Running preseed" (14-16 %) - it takes a while to pass this, the script runs in the background and the progress can be seen by switching to tty4 (optional) by opening the virtual keyboard.

### **Warning**

This should be done on the virtual keyboard, otherwise it will close the installation window. The installation window can be opened by pressing "ALT+F4" on the virtual keyboard.



tty4 will open and the install log will show current status.



To return to the progress screen, click on "ALT+F1" on the virtual keyboard.

5. The server will automatically reboot when the installation procedure is completed.
6. At this point, the login screen will appear

 **Warning**

The installation procedure is not finished yet. At this point, an automatic service will install additional SW (including the UFM Enterprise Appliance).

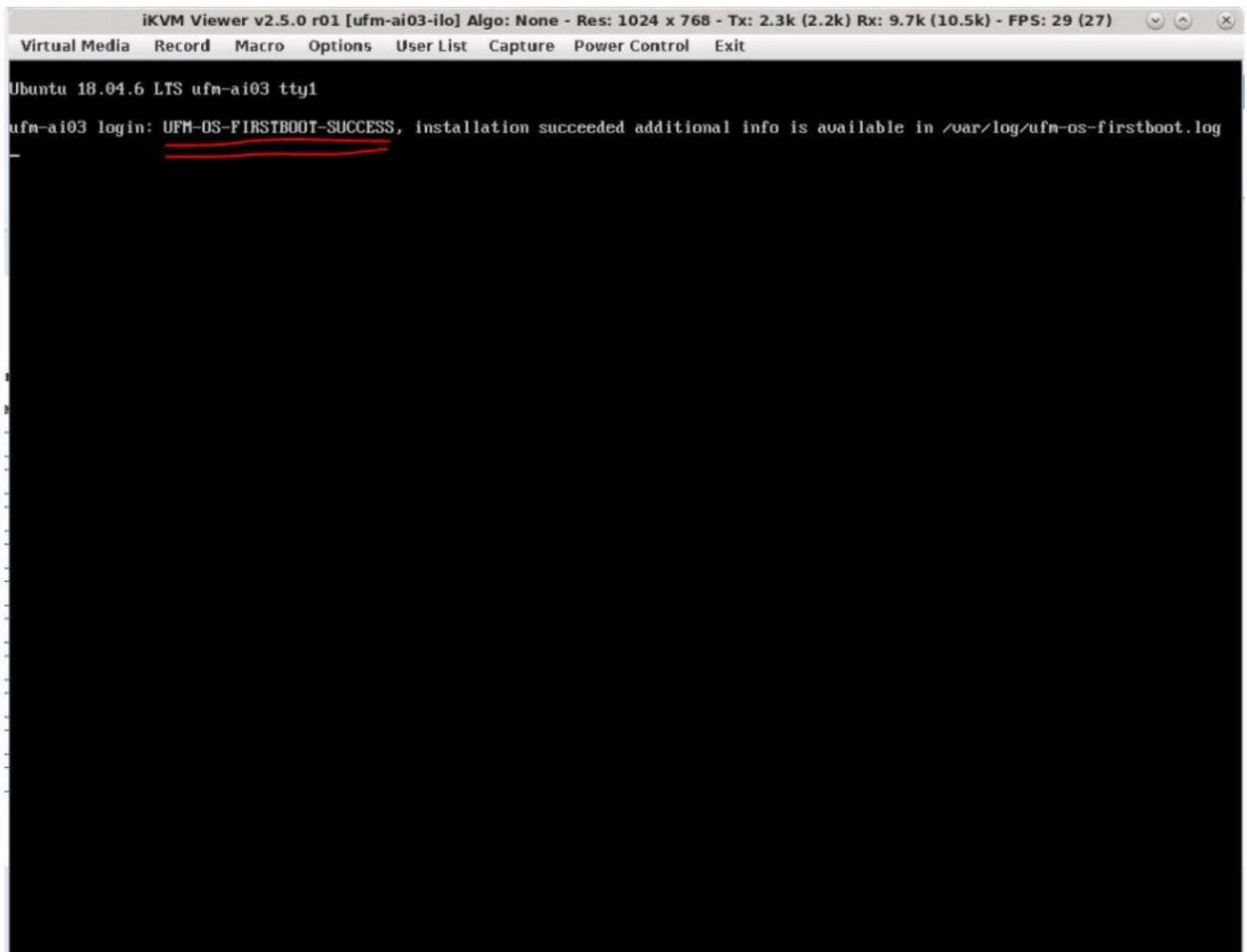
Upon installation completion, a message will appear on any attached terminal stating UFM-OS-FIRSTBOOT-SUCCESS for successful installation, or UFM-OS-FIRSTBOOT-FAILED for failed installation.

A log can be checked in `/var/log/ufm-os-firstboot.log`.

The below is an example from an attached ssh session:

```
root@ufm-ai03:~#  
root@ufm-ai03:~#  
Broadcast message from root@ufm-ai03 (somewhere) (Fri Dec 30 18:47:32 2022):  
UFM-OS-FIRSTBOOT-SUCCESS, installation succeeded additional info is available in /var/log/ufm-os-firstboot.log
```

Example from the console web screen:



To manually check if the installation procedure has completed or is still running:

```
systemctl status ufm-os-firstboot.service
```

If the installation is still running, the below status will be presented:

```
https://swx-ufm3-03-ilo/restgui/vconsole/index.html?ip=swx-ufm3-03-ilo&kvmport=443&title=&ST1=&ST2=&F1=1&vm=1&chat=1&custom=0&nopop=1&VCSID=252147116087c
Boot Power Chat Keyboard Screen Capture Refresh Full Screen Virtual Media Disconnect Viewer Console Controls

Ubuntu 18.04.6 LTS ubuntu tty1
ubuntu login: root
Password:
Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 4.15.0-192-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

root@ubuntu:~# systemctl status ufm-os-firstboot.service
■ ufm-os-firstboot.service - ufm-os-firstboot
   Loaded: loaded (/etc/systemd/system/ufm-os-firstboot.service; enabled; vendor preset: enabled)
   Active: activating (start) since Tue 2023-01-03 12:05:00 UTC; 53s ago
   Main PID: 3303 (ufm-os-run-firs)
   Tasks: 5 (limit: 9830)
   CGroup: /system.slice/ufm-os-firstboot.service
           └─3303 /bin/bash -x0Ec /opt/ufm-os-firstboot/ufm-os-run-firstboot.sh
             └─3317 /bin/bash -x0Ec /opt/ufm-os-firstboot/ufm-os-run-firstboot.sh
               └─3320 tee -a /var/log/ufm-os-firstboot.log
                 └─7358 bash -xv /opt/ufm-os-firstboot/ufu_ports_lock.sh
                   └─7477 /usr/bin/python3 /usr/sbin/ufu allow 28000/tcp

Jan 03 12:06:01 ubuntu ufm-os-run-firstboot.sh[3303]: ufu allow 7788/tcp
Jan 03 12:06:01 ubuntu ufm-os-run-firstboot.sh[3303]: + ufu allow 7788/tcp
Jan 03 12:06:01 ubuntu ufm-os-run-firstboot.sh[3303]: Rules updated
Jan 03 12:06:01 ubuntu ufm-os-run-firstboot.sh[3303]: Rules updated (v6)
Jan 03 12:06:01 ubuntu ufm-os-run-firstboot.sh[3303]: #####
Jan 03 12:06:01 ubuntu ufm-os-run-firstboot.sh[3303]: ## Telemetry
Jan 03 12:06:01 ubuntu ufm-os-run-firstboot.sh[3303]: #####
Jan 03 12:06:01 ubuntu ufm-os-run-firstboot.sh[3303]: # CLX
Jan 03 12:06:01 ubuntu ufm-os-run-firstboot.sh[3303]: ufu allow 28000/tcp
Jan 03 12:06:01 ubuntu ufm-os-run-firstboot.sh[3303]: + ufu allow 28000/tcp
```

If the installation is completed, an error message stating that `ufm-os-firstboot.service` does not exist (as it is deleted when the installation is finished).

```
https://swx-ufm3-03-ilo/restgui/vconsole/index.html?ip=swx-ufm3-03-ilo&kvmport=443&title=&ST1=&ST2=&F1=1&vm=1&chat=1&custom=0&nopop=1&VCSID=252147116087c
Boot Power Chat Keyboard Screen Capture Refresh Full Screen Virtual Media Disconnect Viewer Console Controls

Ubuntu 18.04.6 LTS ubuntu tty1
ubuntu login: root
Password:
Last login: Tue Jan 3 12:05:49 UTC 2023 on tty1
Welcome to Ubuntu 18.04.6 LTS (GNU/Linux 4.15.0-192-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage
Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your Internet connection or proxy settings

root@ubuntu:~# systemctl status ufm-os-firstboot.service
Unit ufm-os-firstboot.service could not be found.
root@ubuntu:~#
```

7. The installation is now finished and the UFM Enterprise Appliance can be started. If the network configuration step is skipped in previous steps, it can now be

configured.

## Appendix - UFM Factory Reset

This section provides a comprehensive guide on resetting UFM to its original factory settings.

### Note

WARNING!!! this operation will remove all user data and configuration and will restore UFM to its factory defaults.

### Note

The UFM Factory-Reset will exclusively revert UFM to its original factory settings, leaving HA configurations unaffected. To remove HA, it is essential to execute `ufm_ha_cluster cleanup` before initiating the factory reset.

## UFM Docker Container Factory Reset

To reset UFM to its factory defaults when using UFM on a Docker container, follow these steps.

1. Ensure that UFM is not up and running. If UFM is running, stop it.

For Stand-alone (SA) installations:

```
systemctl stop ufm-enterprise
# validate that ufm is not running
```

```
systemctl status ufm-enterprise
```

For High-Availability setups (perform the following on the master node only):

```
ufm_ha_cluster stop  
# validate that ufm is not running  
ufm_ha_cluster status
```

2. Run `mellanox/ufm-enterprise` Docker Container with the following flags:

### **Note**

WARNING: This operation will erase all user data and configurations, resetting UFM to its factory defaults.

CAUTION: This step does not require user confirmation, meaning UFM will be restored to factory defaults immediately once initiated.

```
docker run -it --name=ufm_installer --rm \  
    -v /var/run/docker.sock:/var/run/docker.sock \  
    \  
    -v /tmp:/tmp \  
    - \  
v /opt/ufm/files/:/opt/ufm/shared_config_files/ \  
    mellanox/ufm-enterprise:latest \  
    --factory-reset
```

Flag	Type	Description
<code>--name=ufm_installer</code>	Mandatory	The container name must be called <code>ufm_installer</code> .
<code>-v /var/run/docker.sock:/var/run/docker.sock</code>	Mandatory	The docker socket must be mounted on the docker container.
<code>-v /tmp:/tmp</code>	Optional	Logs of the operation can be viewed in <code>/tmp</code> on the host in case it is mounted.
<code>-v /opt/ufm/files:/opt/ufm/shared_config_ufm/</code>	Mandatory	For the factory reset to persist, it is essential to have the <code>/opt/ufm/files</code> directory mounted from the host. TBD: eylon - naming convention of the <code>/opt/ufm/files/</code>
<code>mellanox/ufm-enterprise:latest</code>	Mandatory	The docker image name.
<code>--factory-reset</code>	Mandatory	This action will signal the UFM container to initiate the factory reset process.

## UFM Factory Reset via CLI

### UFM Factory Reset in HA Configuration

#### Note

The UFM Factory-Reset will exclusively revert UFM to its original factory settings, including the HA configurations.

1. On the **Master** node, stop the UFM cluster. Run:

```
ufmapl (config) # no ufm start
```



2. On both **Master and Standby** nodes, reset the UFM cluster configuration to factory settings. Run:

```
ufmapl (config) # no ufm ha
```

**Note**

After the factory reset procedure is completed, both UFM nodes are configured as Standalone mode.

## UFM Factory Reset in Standalone Configuration

**Note**

The UFM Factory-Reset will exclusively revert UFM to its original factory settings.

1. Stop the UFM service. Run:

```
ufmapl (config) # no ufm start
```

2. Reset the UFM data to factory settings. Run:

```
ufmapl (config) # ufm data reset
```

# Appendix - Software Components Upgrade

## Warning

It is recommended to upgrade all UFM Enterprise appliance software components as listed in [UFM Enterprise Appliance Upgrade](#).

This section includes optional instructions on how to upgrade specific software components.

- [Upgrading UFM Enterprise Appliance Operating System](#): Involves UFM Enterprise appliance operating system upgrade only.
- [Upgrading All UFM-Related Software Components](#): Involves all UFM-related software components, including UFM Enterprise, Docker Container and UFM HA. The upgrade is done on all software components at once.
- [Upgrading Specific UFM-Related Software Component](#): Involves upgrading specific UFM-related software components separately.

## Upgrading UFM Enterprise Appliance Operating System

This section provides a step-by-step guide for UFM Enterprise Appliance Operating System upgrade.

Each UFM Enterprise Appliance software has an additional tar file with a `-omu.tar` suffix (OMU stands for OS Manufacture and Upgrade). This tar file can be used to re-manufacture the server and to upgrade the operating system/software on the server.

## Extracting the Software

1. Copy the OMU tar file to a temporary directory on the server.

```
UFM-APPLIANCE - ufm-appliance<version>-<revision>-omu.tar
```

2. Extract the contents of the tar file to /tmp.

```
tar vxf ./ufm-appliance-<version>-<revision>-omu.tar -C /tmp/
```

3. Change to the extracted directory.

```
cd /tmp/ufm-appliance-<version>-<revision>-omu
```

4. An upgrade script and an ISO file are included in the extracted directory.

```
ls -l ./#ls -l ./  
./ufm-os-upgrade.sh  
ufm-appliance-<version>-<revision>.iso
```

The following flags are available in the upgrade script help.

```
# ufm-os-upgrade.sh --help  
ufm-os-upgrade.sh will upgrade and install OS packages.  
  
IMPORTANT!!! a reboot is mandatory after the finalization of  
this script,  
kernel and kernel models will not work properly until the  
server is rebooted.  
  
Additional SW installations will be automatically invoked  
after reboot,
```

a message will pop on all open terminals with the installation status:

"UFM-OS-FIRSTBOOT-FAILURE" - if installation is failed.

"UFM-OS-FIRSTBOOT-SUCCESS" - if installation succeeded.

Additional info will be available in `"/var/log/ufm_os_upgrade_@@UFM-OS-VERSION@@.log"` log file.

Upgrade steps status information can be viewed in `"/var/log/ufm_os_upgrade_@@UFM-OS-VERSION@@_status.log"` log file.

Syntax: `ufm-os-upgrade.sh [options]`

options

`-d,--debug` debug info will be visible on the screen.

`-r,--reboot` Automatically reboot the server when upgrade is finished.

P.S. if secure boot is enabled and a new certificate is enrolled

the server will not automatically reboot even if this flag is set.

`-y,--yes` Will not prompt for user acknowledgements, use with CAUTION user prompts will be assumed as answered yes.

`-h,--help` print this help message.

### **Warning**

IMPORTANT!!! System reboot is mandatory once the upgrade procedure is completed. The `-r` flag can be used to automatically reboot the server at the end of the upgrade. Note

that some kernel modules may not work properly until server reboot is performed.

## Standalone Mode Upgrade

1. Stop UFM service by running the following command:

```
systemctl stop ufm-enterprise.service
```

2. Run the upgrade script.

### Note

System reboot is mandatory once the upgrade procedure is completed. The `-r` flag can be used to automatically reboot the server.

The `--appliance-sw-upgrade` flag CAN NOT !!! be supplied to upgrade the UFM Enterprise Appliance SW.

The `-y` flag can be supplied to skip user questions (the flag does not automatically reboot the server on its own. For auto reboot, combine with the `-r` flag)

Once a secure boot certificate is updated/installed, the script will not auto reboot even if `-y` and `-r` flags are provided. That is because the addition of certificates require manual user intervention at boot (after the upgrade).

There is a 10 seconds window to press any button when prompted during the boot procedure and insert the server root password in order to import the certificate. Further details are available in [Appendix - Secure Boot Activation and Deactivation](#).

In the following example the server will auto reboot when upgrade is finished.

```
./ufm-os-upgrade.sh -y -r
```

3. In case a secure-boot certificate is installed/upgraded, the following warning is presented:

```
WARNING!!!
The secure boot certificate have been renewed, to enroll the newly installed certificate:
[1] reboot the server
[2] upon boot a BIOS screen will pop out notifying a new certificate have been enrolled
    if secure boot is disabled discard it and continue with the boot process
[3] There is a 10 seconds window to apply the new certificate (if missed please refer to the manual on how to update the certificate manually)
[4] follow the instructions on the screen, the password will be the root user password
if secure boot is not enabled please discard this message.
```

In that case the server does not reboot automatically, a manual configuration is required at boot (a 10 second prompt appears during the boot. For more information, refer to [Appendix - Secure Boot Activation and Deactivation](#).

To continue with the upgrade procedure, manually reboot the server from as instructed in [Appendix - Secure Boot Activation and Deactivation](#).

4. After the reboot procedure is complete, a systemd service (`ufm-os-firstboot.service`) runs the remainder of the upgrade procedure. Once completed, a message is prompted to all open terminals including the status:

"`UFM-OS-FIRSTBOOT-FAILURE`" - if installation is failed.

"`UFM-OS-FIRSTBOOT-SUCCESS`" - if installation succeeded.

Example:

```
root@ufm-ai03:~#
root@ufm-ai03:~#
Broadcast message from root@ufm-ai03 (somewhere) (Fri Dec 30 18:47:32 2022):
UFM-OS-FIRSTBOOT-SUCCESS, installation succeeded additional info is available in /var/log/ufm-os-firstboot.log
```

To manually check the status, run

`systemctl status ufm-os-firstboot.service`. If it is already finished, an error message is prompted stating that there is no such service. In that case, the log `/var/log/ufm-os-firstboot.log` can be checked instead.

```
systemctl status ufm-os-firstboot.service
```

Example:

```
root@ufm-ai03:~# systemctl status ufm-os-firstboot
Unit ufm-os-firstboot.service could not be found.
root@ufm-ai03:~#
```

## High-Availability Mode Upgrade

Upgrade on HA should be done first on the stand-by node and after that on the master node, each node upgrade is similar to the SA instructions.

In case the Standby node is unavailable, the upgrade can be run on the Master node only, however, some additional steps will be required after the appliance is upgraded.

### Note

In case a secure boot certificate needs to be updated/installed, the script will stop execution and request the user to install the secure-boot certificate, secure-boot does not have to be active (although it is highly recommended), but the certificate must be installed/updated by the user before proceeding to the upgrade.

The upgrade script will verify that the certificate is up to date and will stop execution if it needs to be installed/updated (this happens at the start of the script)

1. [On the stand-by Node]: Copy and extract the OMU tar file to a temporary directory.
2. [On the stand-by Node]: Run the upgrade script.

### Note

System reboot is mandatory once the upgrade procedure is completed. The `-r` flag can be used to automatically reboot the server.

The flag CAN NOT !!! be supplied to upgrade the UFM Enterprise Appliance SW.

The `-y` flag can be supplied to skip user questions (the flag does not automatically reboot the server on its own. For auto reboot, combine with the `-r` flag).

In the following example the server auto reboots once the upgrade procedure is completed:

```
cd /tmp/ufm-appliance-<version>-<revision>-omu
./ufm-os-upgrade.sh -y -r
```

3. If `-r` flag was not provided reboot the server when the script will finish (a question will show on the screen that will ask to reboot if No was answered a manual reboot is required)

to manually reboot the server:

```
reboot now
```

4. After the reboot procedure is complete, a systemd service (`ufm-os-firstboot.service`) runs the remainder of the upgrade procedure. Once completed, a message is prompted to all open terminals including the status:

"UFM-OS-FIRSTBOOT-FAILURE" - if installation is failed.

"UFM-OS-FIRSTBOOT-SUCCESS" - if installation succeeded.

Example:

```
root@ufm-ai03:~#
root@ufm-ai03:~#
Broadcast message from root@ufm-ai03 (somewhere) (Fri Dec 30 18:47:32 2022):
UFM-OS-FIRSTBOOT-SUCCESS, installation succeeded additional info is available in /var/log/ufm-os-firstboot.log
```



To manually check the status, run

`systemctl status ufm-os-firstboot.service`. If it is already finished, an error message is prompted stating that there is no such service. In that case, the log `/var/log/ufm-os-firstboot.log` can be checked instead.

```
systemctl status ufm-os-firstboot.service
```

Example:

```
root@ufm-ai03:~# systemctl status ufm-os-firstboot
Unit ufm-os-firstboot.service could not be found.
root@ufm-ai03:~#
```

5. After the stand-by node have finished the upgrade check the HA cluster status

```
ufm_ha_cluster status
```

```
root@swx-ufm3-11:~# ufm_ha_cluster status
Cluster name: ufmcluster
WARNING: corosync and pacemaker node names do not match (IPs used in setup?)
Stack: corosync
Current DC: swx-ufm3-11 (version 1.1.18-2b07d5c5a9) - partition with quorum
Last updated: Thu Mar 16 18:45:19 2023
Last change: Mon Feb 27 12:40:22 2023 by root via crm_resource on swx-ufm3-11

2 nodes configured
5 resources configured

Online: [ swx-ufm3-09 swx-ufm3-11 ]

Full list of resources:

Master/Slave Set: ha_data_drbd_master [ha_data_drbd]
Masters: [ swx-ufm3-09 ]
Slaves: [ swx-ufm3-11 ]
Resource Group: ufmcluster-grp
  ha_data_file_system (ocf::heartbeat:Filesystem): Started swx-ufm3-09
  ufm-ha-watcher (systemd:ufm-ha-watcher): Started swx-ufm3-09
  ufm-enterprise (systemd:ufm-enterprise): Started swx-ufm3-09

Daemon Status:
corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
DRBD_RESOURCE: ha_data
DRBD_CONNECTIVITY: Connected
DISK_STATE: UpToDate
DRBD_ROLE: Secondary
PEER_DISK_STATE: UpToDate
PEER_DRBD_ROLE: Primary
```

All the nodes in the cluster should be online and the current node should remain a stand-by (Secondary in DRBD\_ROLE)

6. [On the Master Node]: Fail-over the UFM to the stand-by node (upgraded node will become master and current node will become stand-by).

```
ufm_ha_cluster failover
```

wait for all the resource of UFM are up and running on the upgraded node.

7. repeat the procedure on the un-upgraded node (which is now acting as stand-by).

## Upgrading All UFM-Related Software Components

The installation process consists of replacing the containers/packages with the new version and upgrading the UFM data.

1. Copy the tarball file of UFM Enterprise Appliance software to the /tmp folder.
2. Connect to the UFM Enterprise Appliance via SSH.
3. Stop the UFM service/cluster before upgrading.

**In SA mode, run:**

```
#systemctl stop ufm-enterprise.service
```

**In HA mode, run:**

```
# ufm_ha_cluster stop
```

4. Extract the tarball file and run the installer for the upgrade. Run:

```
# cd /tmp  
# tar xvf ufm-appliance-sw-<version>.tar  
# cd ufm-appliance-sw-<version>
```

```
# ./install.sh
```

Installer Options:

```
-q|--quiet           Upgrade UFM without prompt
```

**(i) Note**

In HA mode, this step should be performed on both servers.

5. After the upgrade, start the UFM service/cluster.

**In SA mode, run:**

```
# systemctl start ufm-enterprise.service
```

**In HA mode, run:**

```
# ufm_ha_cluster start
```

6. Wait one minute for the service to come up.

7. Ensure the service health. Run:

```
# ufm_enterprise_sanity.sh
Checking Service...
Done
Checking Images...
```

```
Done
Checking Containers...
Done
Checking ufm REST server...
Done
Sanity tests completed successfully!
```

## Upgrading Specific UFM-Related Software Component

### Upgrading UFM Docker in SA Mode

For detailed information on upgrading the UFM docker in standalone mode, please refer to [Upgrading UFM on Docker Container](#).

### Upgrading UFM Docker in HA Mode

For detailed information on upgrading the UFM docker in high availability mode, please refer to [Upgrading UFM Container in High Availability Mode](#).

### Upgrading UFM HA Package

1. Stop the UFM cluster before upgrading. Run:

```
ufm_ha_cluster stop
```

2. Download the UFM-HA package on both servers using the following command:

```
wget https://www.mellanox.com/downloads/UFM/ufm_ha_5.6.0-4.tgz
```

For Sha256:

```
wget https://download.nvidia.com/ufm/ufm_ha/5.6.0/ufm_ha_5.6.0-4.sha256
```

3. On both servers, extract the downloaded UFM-HA package under /tmp/
4. On both servers, go to the extracted directory /tmp/ufm\_ha\_XXX and run the installation script:

```
./install.sh --upgrade
```

5. After the upgrade, start the UFM HA Cluster. Run:

```
ufm_ha_cluster start
```

## Upgrading UFM Enterprise Appliance CLI Package

1. Copy the tarball of the UFM CLI package to the /tmp folder.
2. Extract the tarball file and run the installer. Example:

```
# cd /tmp
# tar xvf ufmcli_<version>.tgz
# cd ufmcli_<version>
# ./install.sh
Creating the UFM3 CLI repository file
/etc/apt/sources.list.d/ufmcli.list
Refreshing the UFM3 CLI packages information...
Installing the UFM3 CLI package...
Removing the UFM3 CLI local repository
/etc/apt/sources.list.d/ufmcli.list
```

```
Done .
```

3. Once the upgrade procedure is completed, connect to the UFM Enterprise Appliance via SSH with admin. Run:

```
ssh admin@<hostname>
```

# Appendix - Deploy and Run UFM Plugins

## Overview

UFM plugins are service programs that can be dynamically loaded to extend the functionality of UFM Enterprise.

The plugins are Docker containers, and their life cycle is being managed by UFM.

Functions commonly added by optional UFM plugins include:

- gNMI (gnmi\_t elemetry)
- Tools (tools)

## Lifecycle

The UFM plugin lifecycle is managed by UFM. It is the user's responsibility to pull/load the plugin Docker container image on both master and standby nodes.

- Add - The plugin's data is copied to the host. In case UFM is running, it will be started.
- Disable - The plugin is stopped immediately if UFM is running, and it will not start upon UFM start. However, its data is still accessible via the host.

- Enable - The plugin is re-started immediately if UFM running or on the next UFM start.
- Remove - The plugin is stopped, and all its data is removed.
- Upgrade - The plugin data may be upgraded. The new version is set in the plugin's configuration file upon upgrade completion.

### **Note**

The plugin's Docker container is started/stopped upon UFM start/stop. In case UFM is already running when the plugin is added/enabled, it will be started. While in case it is disabled/removed, it will be stopped.

### **Note**

The plugin to be disabled prior to upgrade. After the upgrade completion, it should be re-enabled.

## Configuration

- Pull the UFM plugin image. Run:

```
ufmapl (config) # docker pull mellanox/ufm-plugin-ndt:1.1.1-17
```

- Alternatively, load the UFM plugin image. Run:

```
ufmapl (config) # image fetch sftp://root:123456@192.168.1.10/tmp/ufm-plugin-ndt_1.1.1-17-docker.img.gz
```

```
ufmap1 (config) # docker load ufm-plugin-ndt_1.1.1-17-  
docker.img.gz
```

- Review the plugin image.

```
ufmap1 (config) # show docker images  
-----  
-----  
Image                Version    Created      Size  
Digest  
-----  
-----  
mellanox/ufm-plugin-ndt    1.1.1-17  2 months ago  1.59GB  
<none>
```

- Deploy the plugin. Run:

```
ufmap1 (config) # ufm plugin ndt add tag 1.1.1-17
```

- Review the plugin settings. Run:

```
ufmap1 (config) # show ufm plugin  
Plugin ndt:  
  Enabled:           Yes  
  Plugin tag:        1.1.1-17  
  Shared volumes:  
/opt/ufm/files/log:/log, /dev:/host_dev  
  HTTPD port:        8980  
  HTTPD file:         Present  
  State:              running
```



```
CPU limit:          unlimited
```

For the relevant CLI commands, refer to [UFM Plugins](#) and [Docker Container](#).

## Appendix - NVP

The NVP is designed to help customers change, retrieve, and apply the configuration to UFM parameters of config files. NVP aims to eliminate the need to edit the config files manually. It is important to note that, NVP follows a transactional model approach. The NVP changes the configuration on temporary files. The changed configuration is reflected in the actual configuration only when `APPLY` is performed. The tool supports 4 standard file types mentioned below:

1. `flat config`: Refers to files that only have key-value pairs
2. `ini`: Refers to files that have sections associated with key-value pairs
3. `xml`: Refers to XML formatted files
4. `plain text`: Refers to files that contain plain text-like format

In addition to the above formats, NVP supports custom config of `pgrp_policy_config` to support `pgrp_policy.conf` file.

The tool is provided as a plugin and can be operated either as a standalone application using Docker commands or invoked through CLI commands. All the examples provided below illustrate the usage of NVP via CLI commands.

The tool supports the following functionalities:

1. `set`
2. `get`
3. `dump`
4. `append`
5. `reset`

6. `discard`
7. `backup`
8. `rollback`
9. `apply`
10. `reset`
11. `help`

**Note**

NVP operates on a transactional model; therefore, it is recommended that it is avoided alongside manual configuration edits. Doing so may result in the loss of manually made changes when NVP applies its configurations to the relevant files. Users can manually edit the configuration and then use NVP or vice versa, however it is not advisable to use them simultaneously.

Please note that the tool's plugin operates without a running daemon. Upon adding the plugin via the plugin infrastructure, its status remains "stopped" signifying its inactive state without a daemon. However, when a user initiates NVP (either through standalone Docker usage or via the CLI commands), the image activates, executes the command, performs the necessary operations, and then exits.

To add tools/NVP plugin, perform the following:

- Add the tools plugin with the "2.0.0-4" tag:

```
ufm plugin tools add tag 2.0.0-4
```

- It is recommended to disable the plugin as it is not necessary for UFM to monitor the tools plugin. When the tools plugin invokes NVP Apply, it triggers a restart of

UFM and all the plugins it monitors. To prevent this, disable the Tools/NVP plugin by running:

```
no ufm plugin tools enable
```

### **Note**

As of NVP 2.0.0 and UFM Enterprise v6.19.0, users no longer need to disable the plugin manually. By default, UFM will not monitor the tools plugin.

## NVP Set

The Set API is designed to change a file's configuration based on the user's key-value pair. It updates the specified key with a new value. The NVP tool generates an error indicating 'key not found' if the given key is not found'. Additionally, NVP refrains from making any changes if the new value for the key is identical to the old one. It is important to note that both the key and value are case-sensitive.

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

Example of the `nvp set` command that changes `qos value` to TRUE for `opensm.conf`(flat config):

```
nvp set opensm.conf qos TRUE
```

Similarly, for INI:

```
nvp set gv.cfg GarbageCollector.enable false
```

For XML files, a valid XPath must be provided. See below examples of the `nvp set` command for an XML config:

**Note**

The XPath must be enclosed in double quotes for NVP to function.

```
nvp set UFMHealthConfiguration.xml
"/TestsSchedule/Test[@Name='CheckMgmtInterface']/Frequency/Value" 20
nvp set UFMHealthConfiguration.xml
"./SupportedTests/Test[@Name='CpuUsageTest']/TestOperation[@Name='CPUTest']/Parameters/Parameter[C
```

**Note**

Note that there may be instances where files share identical names but are located in different directories. In such scenarios, NVP requires the file name to include its parent directory. For example, consider the file `launch_ibdiagnet_config.ini`, which exists in both `secondary_telemetry_defaults` and `telemetry_defaults` directories. If a user intends to modify the file within `secondary_telemetry_defaults`, the command should resemble the following:

```
nvp set
secondary_telemetry_defaults/launch_ibdiagnet_config.ini
<key> <val>
```

To assign an empty value using the "nvp set" command, pass an empty string as the value. For example:

```
nvp set gv.cfg Multisubnet.multisubnet_role ""
```

## NVP Set with Force Flag

As of version 2.0.0, NVP supports the SET command with a force flag. This feature is helpful when a configuration does not exist and the user wants to add it to a file. The force option is available only for flat config and ini files. For INI files, the force flag first checks for a matching section. If the section is not found, NVP will create it and then add the key-value pair to the newly created section. If the section exists but the key does not, NVP will add the new key-value pair to the existing section.

The command follows this syntax:

```
nvp set <file_name> <key> <value> force
```

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

## NVP Get

The purpose of the "nvp get" command is to retrieve the configuration from a file based on the key provided by the user. If NVP cannot locate the specified key, it raises an error indicating 'key not found'. It is important to note that the "nvp get" retrieves values from the transactional configuration. This means that only files whose configurations have been modified by the user using the "nvp get" command will be accessible to it. Please note that the key is case-sensitive.

Refer to [nvp\\_get](#) for command syntax.

An example of "nvp get" command that would retrieve QoS from opensm.conf(flat config):

```
nvp get opensm.conf qos
```

Similarly, for INI:

```
nvp get gv.cfg GarbageCollector.enable
```

For XML files, a valid XPath must be provided. Here are a few examples of GET commands for XML configurations:

```
nvp get UFMHealthConfiguration.xml  
"/TestsSchedule/Test[@Name='CheckMgmtInterface']/Frequency/Value"  
nvp get UFMHealthConfiguration.xml  
"/SupportedTests/Test[@Name='CpuUsageTest']/TestOperation[@Name='CPUTest']/Parameters/Parameter[0]
```

## NVP Dump

The `nvp dump` command produces a unified JSON file. This JSON file contains the configurations of all the NVP-supported configuration files represented as JSON objects, consolidated into a single JSON structure. Each file's content or configuration is appended to create an aggregated JSON structure. The sequence of the JSON dump corresponds to the original configuration file's order.

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

## NVP Append

The `nvp append` is provided to support plain text file format, making it useful for users who need to add any new configuration line as text to the configuration. Notably, the reset action follows a transactional model approach similar to the SET action (i.e Append copies the file and operates on the copy, the changes take effect once `nvp apply` is called).

The Append Action expects the below syntax:

```
nvp append <file_name> <config_line>
```

An example of Nvp Append that would add `root_switches config` to the `root_guid.conf` file is as follows:

```
nvp append root_guid.conf "root_switches"
```

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

## NVP Reset

The `nvp reset` is provided to support plain text file format, making it useful for users to clear/empty the configuration. Notably, the reset action follows a transactional model approach similar to the SET action.

The Reset Action expects the below syntax:

```
nvp reset <file_name>
```

An example of NVP Reset API to reset/empty the `root_guid.conf` file is as follows:

```
nvp reset root_guid.conf
```

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

## NVP Discard

The NVP Discard feature allows users to discard any configuration changes made. This action deleted the specified file from the transaction folder, resulting in the loss of all changes made by the user. NVP Discard can be performed on each file by specifying the

file name as an argument. If no argument is provided, the entire transaction folder will be deleted, discarding changes for all NVP-supported files.

The Discard action expects the below syntax, with the file name being optional:

```
nvp discard <file_name>
```

For example, to discard changes to the `gv.cfg` file, use the command:

```
nvp discard gv.cfg
```

To discard all files, use the command:

```
nvp discard
```

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

## NVP Backup

The NVP Backup feature creates backups of all NVP-supported files in the form of a tarball. Users can specify a name for the tarball; if none is provided, NVP generates a backup name based on the current timestamp. The created backup tarball can later be applied using the `ROLLBACK` API. By default, the maximum number of backups is set to 10, but this limit can be adjusted by modifying the backup limit configuration parameter in the `nvp.cfg` file.

**Note:** Backups should only be performed when there are no pending changes to apply and there are no files in the transaction folder. If this condition is not met, the backup action will result in an error.

The Backup action expects the below syntax, with the backup name being optional:



```
nvp backup <backup_name>
```

For example, to create a backup with a specified name, use:

```
nvp backup nvp_backup_initial_configuration
```

If the backup name is not specified, NVP generates a tarball named in the format `nvp_backup_<TS>.tar.gz`. For instance, the command below creates a tarball named `nvp_backup_2024-10-10_09-40-48.tar.gz`:

```
nvp backup
```

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

## NVP Backup Management

To assist users in managing backups, utility functions such as `Delete`, `Fetch`, and `Upload` are available. These APIs are implemented at the CLI level and are not part of the NVP Image.

- The **Delete** command removes the specified backup file created using the `BACKUP` command. The syntax for this command is:

```
nvp delete <backup_name>
```

Refer to [nvp delete](#) for command syntax.

- The **Fetch** command downloads the NVP backup configuration from a remote host. The syntax for this command is:

```
nvp fetch <url>
```

Refer to [nvp fetch](#) for command syntax.

- The **Upload** command uploads the NVP backup configuration to a remote host. The syntax for this command is:

```
nvp upload <backup_name> <url>
```

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

## NVP Rollback

The NVP Rollback action restores the contents of the specified tarball (a backup configuration created using the `BACKUP` action) to the transactional folder, overwriting its current contents.

**Note:** Since the Rollback action overwrites the transactional folder, users must subsequently call `APPLY` to implement the changes from the transactional folder to the UFM configuration.

The Rollback action expects the below syntax, where `backup_tar` is the name of the tarball:

```
nvp rollback <backup_tar>
```

For example, to apply the configuration from `backup_1.tar.gz`, the command would be:

```
nvp rollback nvp_backup_initial_configuration.tar.gz
```

To bypass prompts, users can utilize the force option.

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

## NVP Apply

The `nvp apply` command involves a two-step process. First, the `nvp apply` command moves all files that have been changed through the `nvp set` command to their original positions. The second step involves restarting the UFM Server to implement the new changes. The relocation of modified files from the transaction folder to their actual locations occurs independently of whether the UFM server is offline or if any errors arise during the UFM server restart process. Notably, NVP does not support rollback functionality in the event of an unsuccessful UFM server restart. Therefore, the first step of the `nvp apply` command operates irrespective of the outcome of the second step (UFM restart success/failure). However, if an error occurs during the first step, the function will prompt an appropriate error message and exit without attempting to restart the UFM.

### Note

Please note that a confirmation prompt is presented to the user before proceeding with this action, as the command restarts the UFM.

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

## NVP Apply Force

To bypass prompts, users can utilize the force option. This will initiate the UFM restart without any user interaction.

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

## NVP Apply No Restart

In situations where users want to apply the changed configuration and do not wish to restart the UFM, ``no-restart`` can be used.

Refer [NVIDIA UFM-SDN Appliance Command Reference Guide](#) command syntax.

# Appendix - Migrating UFM-SDN Appliance Data to UFM Enterprise Appliance

This procedure is based on the UFM data backup/restore mechanism and will be performed via CLI commands.

Please refer for the command syntax.

## Prerequisites

- **Minimum UFM Enterprise Appliance version:** 1.9.0
- **Minimum UFM tools plugin version:** 1.0.0-6

## Configuration

Follow the instructions to backup UFM data on UFM-SDN Appliance:

1. [On Master] Backup the UFM data to a ZIP file. Run:

```
ufm data backup ufm2-backup-<site name>.zip
```

2. [On Master] Upload the UFM Data (ZIP file) to a remote server

```
ufm data upload ufm2-backup-<site name>.zip  
scp ://username:password@hostname/path
```

## Pre-Restore UFM Data on UFM Enterprise Appliance

The following actions need to be performed prior to UFM data restoration,

1. Connect the appliances to the fabric and set initial network configuration (e.g., IP addresses, default gateway, hostname, DNS, NTP, etc...) via a serial console or a remote console.
2. Configure the appliances to run in HA (High-Availability) mode.
3. Load any UFM plugin Docker image that was deployed on the UFM-SDN Appliance cluster. The UFM plugins' configuration will be restored as part of the UFM data restore.

1.

1. [On Master and Standby] Fetch the image from a remote server

```
image fetch scp://username:password@hostname/path/to/image
```

1.

1. [On Master and Standby] Load the Docker image

```
docker load <ufm plugin image>
```

## Restore UFM Data on UFM Enterprise Appliance

1. [On Master] Fetch the UFM Data backup (ZIP file) from the remote server:

```
ufm data fetch scp://username:password@hostname/path/to/ufm2-backup-<site name>.zip
```

2. [On Mater] Restore the UFM Data from the ZIP file:

```
ufm data restore ufm2-backup-<site name>.zip [with-upgrade]
```

## Note

Note: The command argument “`with-upgrade`” is needed if the UFM version on UFM Enterprise Appliance is newer than the one on UFM-SDN Appliance. As a result, the UFM data is upgraded.

## Post-Restore UFM Data on UFM Enterprise Appliance

Once UFM data migration is completed successfully, some settings need to be modified via the NVP tool, to align with the UFM Enterprise Appliance. Then, stop the UFM-SDN Appliance cluster and start the UFM Enterprise Appliance cluster.

1. [On UFM Enterprise Appliance Master] Modify UFM settings to fit the UFM3 cluster:

```
ufm migrate-ufm2-to-ufm3
```

For more information, refer to [ufm migrate-ufm2-to-ufm3](#)

2. [On UFM Enterprise Appliance Master] Set the UFM3 HA nodes :

```
ufm ha-nodes <master hostname> <standby hostname>
```

3. [On UFM-SDN Appliance Master] Stop UFM:

```
no ufm start
```

4. [On UFM Enterprise Appliance Master] Start UFM:

```
ufm start
```

5. [On UFM Enterprise Appliance Master] Verify that UFM is up and running:

```
show ufm status
```

6. [On UFM Enterprise Appliance Master and Standby] collect a system dump and upload it to a remote server:

```
debug generate dump  
file debug-dump upload latest scp://username:password@hostname/path
```

## Appendix - GRUB and Kernel Behavior

This configuration aims to improve system reliability by ensuring quick recovery from critical errors while preserving valuable diagnostic data for troubleshooting.

The system is configured to treat certain critical Kernel events as panics, ensuring a timely and automated response. In the event of a Kernel panic, the system automatically reboots, preserving crash data for analysis.

### Key Changes

1. **Kernel Oops Behavior:**

- Any **Kernel oops** is treated as a **Kernel panic**.

2. **CPU Soft Lockup:**

- Any **CPU soft lockup** is treated as a **Kernel panic**.

3. **CPU Hard Lockup:**

- Any **CPU hard lockup** is treated as a **Kernel panic**.

#### 4. Automatic Reboot on Kernel Panic:

- On any **kernel panic**, the system is configured to **automatically reboot after 10 seconds**.
- A kernel dump is generated and saved in `/var/crash`.

#### 5. Kernel Crash Dump Management:

- The system retains a maximum of **5 Kernel crash dumps** in `/var/crash`.
- If more than 5 crash dumps are generated, the oldest dump is automatically deleted to ensure only the five most recent dumps are kept.

## Additional Notes

- The Kernel crash dumps stored in `/var/crash` can be analyzed to diagnose the cause of the panic. It is recommended to review these dumps after a system reboot following a Kernel panic.
- The reboot delay of ten seconds allows time for crash dump generation and any additional logging.



# Document Revision History

Revision	Date	Description
1.11.2	Feb 23, 2025	Updated: <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Installation Notes</a></li> </ul>
1.11.1	Feb 12, 2025	Updated <a href="#">Changes and New Features</a>
1.11.0	Feb 10, 2025	Updated the following sections: <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• Updated the <a href="#">ufm plugin</a> command - Removed the [force] option</li> <li>• Updated the <a href="#">show version</a> - Updated command output</li> <li>• <a href="#">UFM Enterprise Appliance Upgrade</a> - Added a note on UFM plugin images</li> <li>• <a href="#">Appendix - Deploy and Run UFM Plugins</a> - Updated <a href="#">Lifecycle</a> and added a note about plugin upgrade</li> </ul>
	Feb 11, 2025	Updated <a href="#">Known Issues in This Release</a>
1.10.1	Dec 6, 2024	Updated: <ul style="list-style-type: none"> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">Changes and New Features</a></li> </ul>
1.10.0	Nov 7, 2024	Updated the following sections: <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Installation Notes</a></li> <li>• <a href="#">Appendix - NVP</a></li> <li>• <a href="#">Post-Restore UFM Data on UFM Enterprise Appliance</a></li> </ul> <p>Updated <a href="#">nvp set</a> Added the following CLI commands:</p>

Revision	Date	Description
		<p>In <b><u>NVP</u></b>:</p> <ul style="list-style-type: none"> <li>• <a href="#">nvp discard</a></li> <li>• <a href="#">nvp backup</a></li> <li>• <a href="#">nvp delete</a></li> <li>• <a href="#">nvp fetch</a></li> <li>• <a href="#">nvp upload</a></li> <li>• <a href="#">nvp rollback</a></li> </ul> <p><b>In <u>Data Management</u></b>:</p> <ul style="list-style-type: none"> <li>• <a href="#">ufm migrate-ufm2-to-ufm3</a></li> </ul>
1.9.2	Sep 25, 2024	Updated <a href="#">Bug Fixes in This Release</a>
1.9.0	Aug 14, 2024	<p>Updated the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Installation Notes</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">Known Issues in This Release</a></li> <li>• <a href="#">Appendix - NVP</a></li> </ul> <p>Added the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Appendix - Migrating UFM-SDN Appliance Data to UFM Enterprise Appliance.</a></li> <li>• <a href="#">Appendix - GRUB and Kernel Behavior</a></li> </ul> <p>Added the following CLI commands:</p> <p><b>In <u>NVP</u></b>:</p> <ul style="list-style-type: none"> <li>• nvp append</li> <li>• nvp reset</li> <li>• nvp apply no-restart</li> </ul> <p><b>In <u>UFM Configuration Management</u></b>:</p> <ul style="list-style-type: none"> <li>• debug generate dump</li> <li>• show files debug-dump</li> <li>• file debug-dump</li> </ul> <p><b>In <u>Local and Remote Logging</u></b>:</p> <ul style="list-style-type: none"> <li>• show log</li> </ul>

Revision	Date	Description
		<ul style="list-style-type: none"> <li>• logging</li> <li>• show logging</li> </ul> <p><b>In <u>UFM Logs</u>:</b></p> <ul style="list-style-type: none"> <li>• show ufmhealth log</li> <li>• show ufmhealth log files</li> <li>• show ufm event log</li> <li>• show ufm event log continuous</li> <li>• show ufm event log files</li> <li>• show ufm console log</li> <li>• show ufm console log continuous</li> <li>• show ufm console log files</li> </ul> <p><b>In <u>OpenSM</u>:</b></p> <ul style="list-style-type: none"> <li>• show ib sm log</li> </ul> <p><b>In <u>NVIDIA SHARP</u>:</b></p> <ul style="list-style-type: none"> <li>• show ib sharp log</li> <li>• show ib sharp log continuous</li> <li>• show ib sharp log files</li> <li>• show ib sharp log matching</li> <li>• show ib sharp log not matching</li> </ul> <p><b>In <u>InfiniBand Utilities</u>:</b></p> <ul style="list-style-type: none"> <li>• ib ibdiagnet</li> <li>• ib ibaddr</li> <li>• ib ibhosts</li> <li>• ib iblinkinfo</li> <li>• ib ibnetdiscover</li> <li>• ib ibnodes</li> <li>• ib ibping</li> <li>• ib ibportstate</li> <li>• ib ibqueryerrors</li> <li>• ib ibroute</li> <li>• ib ibrouters</li> <li>• ib ibstat</li> <li>• ib ibstatus</li> <li>• ib ibswitches</li> <li>• ib ibsysstat</li> <li>• ib ibtracert</li> <li>• ib perfquery</li> </ul>

Revision	Date	Description
		<ul style="list-style-type: none"> <li>• ib saquery</li> <li>• ib sminfo</li> <li>• ib smpdump</li> <li>• ib saquery</li> <li>• ib smparquery</li> <li>• ib smpquery</li> <li>• ib vendstat</li> </ul> <p><b>In <u>Data Management</u>:</b></p> <ul style="list-style-type: none"> <li>• ufm data backup</li> <li>• ufm data upload</li> <li>• ufm data fetch</li> <li>• ufm data restore</li> <li>• ufm data delete</li> </ul>
1.8.2	Jun 24, 2024	<p>Updated:</p> <ul style="list-style-type: none"> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• UFM OS in <a href="#">Changes and New Features</a></li> </ul>
1.8.1	May 28, 2024	<p>Updated:</p> <ul style="list-style-type: none"> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">Known Issues in This Release</a></li> </ul>
1.8.0	May 5, 2024	<p>Updated:</p> <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Installation Notes</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">UFM Enterprise Appliance Upgrade</a> - Added a note</li> </ul> <p>Added:</p> <ul style="list-style-type: none"> <li>• <a href="#">Appendix - NVP</a></li> </ul> <p>Added the following CLI commands:</p> <ul style="list-style-type: none"> <li>• In <a href="#">Docker Container</a>: <ul style="list-style-type: none"> <li>◦ docker exec</li> <li>◦ docker prune image</li> </ul> </li> </ul>

Revision	Date	Description
		<ul style="list-style-type: none"> <li>• In <a href="#">User Accounts</a>: <ul style="list-style-type: none"> <li>◦ username root password</li> </ul> </li> <li>• In <a href="#">UFM Plugins</a>: <ul style="list-style-type: none"> <li>◦ ufm plugin - Updated command</li> </ul> </li> <li>• In <a href="#">NVP</a>: <ul style="list-style-type: none"> <li>◦ nvp set</li> <li>◦ nvp get</li> <li>◦ nvp dump</li> <li>◦ nvp apply</li> <li>◦ nvp apply force</li> </ul> </li> <li>• In <a href="#">Chassis Management</a>: <ul style="list-style-type: none"> <li>◦ show version - updated command output and added a note</li> </ul> </li> <li>• In Operating System License: <ul style="list-style-type: none"> <li>◦ _shell - Added a note</li> </ul> </li> </ul>
1.7.0	February 8, 2024	<p>Updated:</p> <ul style="list-style-type: none"> <li>• <a href="#">UFM Enterprise Appliance Upgrade</a> - Updated step 3</li> </ul> <p>Added the following CLI commands: In <a href="#">Docker Container</a>:</p> <ul style="list-style-type: none"> <li>• docker load &lt;image name&gt;</li> <li>• docker pull</li> <li>• docker remove image &lt;image name&gt; &lt;image version&gt;</li> <li>• show docker images</li> <li>• show docker ps</li> </ul> <p>In <a href="#">UFM Process Commands</a>:</p> <ul style="list-style-type: none"> <li>• ufm process health start</li> <li>• ufm process model start</li> <li>• ufm process telemetry start</li> <li>• ufm process sharp start</li> <li>• ufm process telemetry start</li> <li>• ufm process sm start</li> </ul> <p>In <a href="#">UFM Plugins</a>:</p> <ul style="list-style-type: none"> <li>• ufm plugin</li> </ul>

Revision	Date	Description
		<ul style="list-style-type: none"> <li>• show ufm plugin</li> </ul>
	February 19, 2024	<ul style="list-style-type: none"> <li>• Added <a href="#">Appendix - Deploy and Run UFM Plugins</a></li> <li>• Updated <a href="#">Known Issues in This Release</a></li> </ul>
1.6.2	January 4, 2024	<p>Updated the following section:</p> <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Known Issues in This Release</a></li> </ul>
1.6.1	December 12, 2023	<p>Updated the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Installation Notes</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">Known Issues in This Release</a></li> </ul>
1.6.0	December 12, 2023	Updated <a href="#">Known Issues in This Release</a>
	November 21, 2023	Added instructions on <a href="#">Configuring TACACS+ and Performing AAA</a> and <a href="#">Adding TACACS Users on the Server Side</a>
	November 5, 2023	<p>Updated the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">UFM Enterprise Appliance Upgrade</a> - Added an important note</li> <li>• <a href="#">Configuring the Appliance for the First Time</a> - Added a diagram to reflect the connectivity of the UFM High-Availability cluster and instructions on how to configure the back-to-back Interface</li> <li>• <a href="#">High Availability</a> - Added the HA configuration instructions</li> </ul> <p>Added <a href="#">Appendix - Software Components Upgrade</a></p> <p>Updated the following CLI Commands:</p>

Revision	Date	Description
		<ul style="list-style-type: none"> <li>• <a href="#">show interfaces</a> - Updated the output and added optional argument interface name</li> <li>• <a href="#">show ib sharp</a> - Updated the output to reflect the new settings</li> </ul> <p>Added the following CLI commands:</p> <ul style="list-style-type: none"> <li>• In <a href="#">Routing</a>: <ul style="list-style-type: none"> <li>◦ show {ip   ipv6} route</li> <li>◦ show {ip   ipv6} default-gateway</li> </ul> </li> <li>• In <a href="#">AAA Methods</a> : <ul style="list-style-type: none"> <li>◦ aaa authentication login default</li> <li>◦ show aaa</li> </ul> </li> <li>• In <a href="#">TACACAS+</a> : <ul style="list-style-type: none"> <li>◦ tacacs-server</li> <li>◦ tacacs-server host</li> <li>◦ show tacacs</li> </ul> </li> <li>• In <a href="#">Chassis Management</a>: <ul style="list-style-type: none"> <li>◦ show files system</li> <li>◦ show resources</li> </ul> </li> <li>• In <a href="#">UFM License</a> : <ul style="list-style-type: none"> <li>◦ ufm license install</li> <li>◦ ufm license delete</li> <li>◦ show ufm license</li> <li>◦ show files ufm-license</li> </ul> </li> <li>• In <a href="#">UFM Configuration Management</a> : <ul style="list-style-type: none"> <li>◦ ufm configuration delete</li> <li>◦ ufm configuration export</li> <li>◦ ufm configuration fetch</li> <li>◦ ufm configuration import</li> <li>◦ ufm configuration upload</li> <li>◦ show files ufm-configuration</li> </ul> </li> <li>• <a href="#">High-Availability</a> <ul style="list-style-type: none"> <li>◦ ufm ha configure</li> </ul> </li> <li>• In <a href="#">UFM Multi-Port SM</a>: <ul style="list-style-type: none"> <li>◦ ufm multi-port-sm</li> <li>◦ show ufm multi-port-sm</li> <li>◦ ufm additional-fabric-interfaces</li> <li>◦ show ufm additional-fabric-interfaces</li> </ul> </li> <li>• <a href="#">HCA Commands</a> <ul style="list-style-type: none"> <li>◦ ib hca-vl15-window</li> <li>◦ show ib hca-vl15-window</li> </ul> </li> </ul>

Revision	Date	Description
		<ul style="list-style-type: none"> <li>• In <a href="#">NVIDIA SHARP</a> : <ul style="list-style-type: none"> <li>◦ <code>ib sharp dump-files-generation enable</code></li> <li>◦ <code>ib sharp dynamic-tree-allocation enable</code></li> <li>◦ <code>ib sharp dynamic-tree-algorithm</code></li> <li>◦ <code>ib sharp ib-qpc-sl &lt;0-15&gt;</code></li> <li>◦ <code>ib sharp ib-sat-qpc-sl &lt;0-15&gt;</code></li> <li>◦ <code>ib sharp allocation enable</code></li> </ul> </li> </ul>
1.5.1	August 31, 2023	<p>Updated the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">license install</a> - Added note #1</li> </ul>
1.5.0	August 10, 2023	<p>Updated the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">Troubleshooting</a> - Added step 1 and rearranged the remainder of the steps.</li> </ul> <p>Added the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">UFM Enterprise Appliance In-Service Upgrade</a></li> <li>• <a href="#">Appendix - UFM Factory Reset</a></li> </ul> <p>Added the following CLI commands:</p> <ul style="list-style-type: none"> <li>• <a href="#">image fetch</a></li> <li>• <a href="#">image install</a></li> <li>• <a href="#">image delete</a></li> <li>• <a href="#">show images</a></li> <li>• <a href="#">ufm data reset</a></li> <li>• <a href="#">{ip   ipv6} host</a></li> <li>• <a href="#">ufm ha-nodes</a></li> <li>• <a href="#">show ufm ha-nodes</a></li> </ul>



Revision	Date	Description
	August 24, 2023	Added step 4 to <a href="#">UFM Enterprise Appliance In-Service Upgrade</a>
1.4.3	June 20, 2023	Updated the following sections: <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> </ul>
1.4.2	June 5, 2023	Updated the following sections: <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> </ul> Updated the following CLI commands: <ul style="list-style-type: none"> <li>• <a href="#">ip name-server</a></li> <li>• <a href="#">show version</a></li> <li>• <a href="#">ntp server</a></li> <li>• <a href="#">ntp peer</a></li> <li>• <a href="#">ip default-gateway</a></li> </ul> Added the following command: <ul style="list-style-type: none"> <li>• <a href="#">ipv6 default-gateway</a></li> <li>• <a href="#">username admin password</a></li> <li>• <a href="#">ib sm configuration import</a></li> </ul>
1.4.1	May 18, 2023	Updated the following sections: <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">Known Issues in This Release</a></li> </ul> Added the following CLI Commands: <ul style="list-style-type: none"> <li>• <a href="#">High-Availability</a> <ul style="list-style-type: none"> <li>◦ ufm ha</li> </ul> </li> <li>• <a href="#">General</a> <ul style="list-style-type: none"> <li>◦ ufm start</li> </ul> </li> <li>• <a href="#">Network Interfaces</a> <ul style="list-style-type: none"> <li>◦ show interfaces</li> </ul> </li> <li>• <a href="#">License</a> <ul style="list-style-type: none"> <li>◦ license install</li> <li>◦ license delete</li> <li>◦ show license</li> </ul> </li> </ul>

Revision	Date	Description
		<ul style="list-style-type: none"> <li>◦ <code>_shell</code></li> <li>• <a href="#">User Management</a> <ul style="list-style-type: none"> <li>◦ <code>username</code></li> </ul> </li> </ul>
1.4.0	May 5, 2023	<p>Updated the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Installation Notes</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">Known Issues in This Release</a></li> <li>• <a href="#">High Availability</a></li> <li>• <a href="#">UFM Enterprise Appliance Upgrade</a></li> </ul> <p>Added the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Appendix - Software Components Upgrade</a></li> </ul> <p>Added the following CLI Commands:</p> <ul style="list-style-type: none"> <li>• <a href="#">General</a> <ul style="list-style-type: none"> <li>◦ <code>show ufm status</code></li> </ul> </li> <li>• <a href="#">System Management</a> <ul style="list-style-type: none"> <li>◦ <code>show hosts</code></li> <li>◦ <code>show version</code></li> </ul> </li> <li>• <a href="#">OpenSM:</a> <ul style="list-style-type: none"> <li>◦ <code>show ib sm allow-both-pkeys</code></li> <li>◦ <code>ib sm allow-both-pkeys</code></li> <li>◦ <code>show ib sm keep-pkey-indexes</code></li> <li>◦ <code>ib sm keep-pkey-indexes</code></li> <li>◦ <code>show ib sm virtualization</code></li> <li>◦ <code>ib sm virtualization enable</code></li> <li>◦ <code>ib sm virtualization ignore</code></li> <li>◦ <code>show ib sm root-guid</code></li> <li>◦ <code>ib sm root-guid</code></li> <li>◦ <code>show ib sm routing-engines</code></li> <li>◦ <code>ib sm routing-engines</code></li> <li>◦ <code>show ib sm ar-sl-mask</code></li> <li>◦ <code>ib sm ar-sl-mask</code></li> <li>◦ <code>show ib sm configuration import</code></li> <li>◦ <code>ib sm partition-config-merge</code></li> </ul> </li> <li>• <a href="#">Partition:</a> <ul style="list-style-type: none"> <li>◦ <code>show ib partition</code></li> </ul> </li> </ul>

Revision	Date	Description
		<ul style="list-style-type: none"> <li>◦ ib partition management defmember</li> <li>• <a href="#">SHARP Aggregation Manager</a> <ul style="list-style-type: none"> <li>◦ ib sharp enable</li> <li>◦ ib sharp smx-protocol</li> <li>◦ ib sharp topology-api enable</li> <li>◦ show ib sharp</li> </ul> </li> <li>• <a href="#">SHARP Configuration in OpenSM</a> <ul style="list-style-type: none"> <li>◦ ib sm sharp enable</li> <li>◦ ib sm sharp ignore</li> <li>◦ show ib sm sharp</li> </ul> </li> <li>• <a href="#">High-Availability</a> <ul style="list-style-type: none"> <li>◦ ufm ha configure dual-subnet</li> </ul> </li> <li>• <a href="#">Management Interface Monitoring</a> <ul style="list-style-type: none"> <li>◦ show ufm mgmt-interface</li> <li>◦ ufm mgmt-interface monitor interval</li> <li>◦ ufm mgmt-interface</li> <li>◦ ufm mgmt-interface monitor enable</li> </ul> </li> <li>• <a href="#">UFM Logs:</a> <ul style="list-style-type: none"> <li>◦ show ufm logging</li> <li>◦ ufm logging syslog enable</li> <li>◦ ufm logging syslog</li> <li>◦ ufm logging syslog enable</li> <li>◦ ufm logging syslog ufm-events enable</li> <li>◦ ufm logging level</li> </ul> </li> <li>• <a href="#">UFM Web Client:</a> <ul style="list-style-type: none"> <li>◦ ufm web-client mode</li> <li>◦ ufm web-client associate-user</li> <li>◦ show ufm web-client</li> <li>◦ ufm web-client client-authentication cert-refresh enable</li> <li>◦ ufm web-client client-authentication cert-refresh ca-cert</li> <li>◦ ufm web-client client-authentication cert-refresh server-cert</li> <li>◦ ufm web-client client-authentication cert-refresh run-</li> </ul> </li> </ul>

Revision	Date	Description
		<p>now</p> <ul style="list-style-type: none"> <li>• <a href="#">UFM Audit</a>: <ul style="list-style-type: none"> <li>◦ ufm track-conf-changes enable</li> <li>◦ show ufm track-conf-changes</li> </ul> </li> </ul>
	May 15, 2023	Added Upgrading UFM Enterprise Appliance CLI Package
1.3.1	Feb 19, 2023	<p>Updated</p> <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">Known Issues in This Release</a></li> </ul>
	Mar 16, 2023	Updated <a href="#">Changes and New Features</a> - Added MFT package integration details
1.3.0	Feb 6, 2023	<p>Updated the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Installation Notes</a></li> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Bug Fixes in This Release</a></li> <li>• <a href="#">Known Issues in This Release</a></li> <li>• Added a note under <a href="#">Configuring the Fabric Interface</a></li> </ul> <p>Added the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Command Line Interface</a></li> <li>• <a href="#">Appendix - Secure Boot Activation and Deactivation</a></li> <li>• <a href="#">Appendix - Deploying UFM Appliance from an ISO File</a></li> </ul>
	Feb 6, 2023	<ul style="list-style-type: none"> <li>• Added <a href="#">Troubleshooting</a></li> <li>• Updated <a href="#">Known Issues in This Release</a></li> </ul>
1.2.1	Dec 1, 2022	<p>Updated the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> <li>• <a href="#">Installation Notes</a></li> </ul>

Revision	Date	Description
	Dec 19, 2022	Updated <ul style="list-style-type: none"> <li>• <a href="#">Changes and New Features</a></li> </ul>
1.2.0	Nov 21, 2022	Updated the following sections: <ul style="list-style-type: none"> <li>• <a href="#">Release Notes</a></li> <li>• <a href="#">UFM Enterprise Appliance Upgrade</a></li> </ul> Added the following section: <ul style="list-style-type: none"> <li>• <a href="#">Appendix - Chassis Health Monitoring</a></li> </ul>
1.1.0	Jul 31, 2022	Updated the following sections: <ul style="list-style-type: none"> <li>• <a href="#">Release Notes</a></li> </ul> Added the following section: <ul style="list-style-type: none"> <li>• <a href="#">Introduction</a></li> <li>• <a href="#">Getting Started</a></li> <li>• <a href="#">High Availability</a></li> <li>• <a href="#">UFM Enterprise Appliance Upgrade</a></li> </ul>
	Oct 23, 2022	Update the following sections: <ul style="list-style-type: none"> <li>• <a href="#">UFM Enterprise Appliance Upgrade</a></li> <li>• <a href="#">Starting UFM</a></li> </ul>

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