Oracle® Communications Session Monitor

Upgrade Guide

Release 5.1
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ORACLE

Oracle Communications Session Monitor Upgrade Guide, Release 5.1

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Contents

About this Guide

This guide provides guidelines and recommendations for setting up Oracle Communications Session Monitor in a secure configuration. The Oracle Communications Session Monitor product family includes the following products:

- Operations Monitor
- Enterprise Operations Monitor
- Fraud Monitor
- Control Plane Monitor

Documentation Set

Table 1 Documentation Suite for OCSM 5.1

Document Name	Document Description
Backup and Restore Guide	Provides instructions for backing up and restoring Session Monitor.
Developer Guide	Contains information for using the Session Monitor SAU Extension.
Fraud Monitor User Guide	Contains information for installing and configuring Fraud Monitor to monitor calls and detect fraud.
Installation Guide	Contains information for installing Session Monitor.
Mediation Engine Connector User Guide	Contains information for configuring and using the Mediation Engine Connector.
Operations Monitor User Guide	Contains information for monitoring and troubleshooting IMS, VoLTE, and NGN networks using the Operations Monitor.
Release Notes	Contains information about the Session Monitor 5.1 release, including new features.
Security Guide	Contains information for securely configuring Session Monitor.
Upgrade Guide	Contains information for upgrading Session Monitor.

Revision History

This section provides a revision history for this document.

Date	Description
April 2023	Initial release
July 2023	Updates for P1 Release
August 2023	Content updates
October 2023	Content updates

1 Upgrading Session Monitor

This document provides instructions for upgrading Oracle Communications Session Monitor from a previous version such as 4.x, and 5.0 to 5.1 version.

Supported Upgrade Paths

This release has been tested for upgrades from specific prior releases. Verify that your current installed release is listed on a valid upgrade path. The possible upgrade paths to Session Monitor 5.1 are listed below.

Table 1-1 Supported Upgrade Paths

From	To	Mechanism
4.4	5.1	CLI upgrade
5.0	5.1	CLI upgrade
5.1	5.1.0.0.<x> [1]	CLI/PSA upgrade

[1] where x is a patch release

> **Note:**
>
> It is recommended to have both Probe and Mediation Engine in the same version of 5.1.

Pre-requisites

Before beginning with the process of upgrading, ensure that the following pre-requisites are fulfilled.

Configuring Proxies and Repos

You are required to configure the proxies and repos.

Configure the http proxy in **/etc/yum.conf** file and also export the proxy's address to the environment.

1. In **/etc/yum.conf**, add the following line:

```
proxy=<proxy_server>
```

2. Export the proxy's address.

```
export http_proxy=<proxy_server>
export https_proxy=<proxy_server>
```

Preparing MySQL before Upgrading

Upgrading to Release OCSM 5.1 requires MySQL 8.0. For MySQL 8.0, it is required that you upgrade from a MySQL 5.7 GA release.

Upgrades from non-GA releases of MySQL 5.7 or Older Versions (earlier than 5.7.35) are not supported. In your current OCSM Server, ensure that the version of MySQL is 5.7.35 or higher. If it is not, upgrade to the latest GA release of 5.7 (5.7.35 or higher). For more information, see Upgrading MySQL section in the Session Monitor Upgrade Guide for your current OCSM version.

Temporarily Disabling External Authentication

For External Authentication enabled systems, it is recommended that you temporally disable External Authentication as after the upgrade to OCSM 5.1, the Apache Web Server is reverted to NGINX.

Perform the following tasks for Mediation Engine External Authentication:

1. Log in to the Mediation Engine with the configured credentials.
2. Disable the **External authentication** in admin → Settings → System Settings.
3. Click **Update** , and log out from the Mediation Engine.

Perform the following tasks for Mediation Engine Connector:

1. Log in to the MEC with the configured credentials.
2. Navigate to admin → Settings → External Authentication and disable 'External authentication' .
3. Click **Save**, and log out from MEC.

> **Note:**
>
> If the admin user is set up for External Authentication, set a local password for the admin user while disabling External Authentication.

Creating a Backup before Upgrading

It is recommended that you create a backup of the Mediation Engine (ME) and Mediation Engine Connector (MEC), and Fraud Monitor (FM) before you begin the upgrade procedure.

Session Monitor enables you to back up the Configuration, Database, Block Storage and essential OCSM files of OCSM Servers by providing a Backup and Restore procedure.

For more information, see the Session Monitor Release 5.1 Backup and Restore Guide.

> **Note:**
>
> The process to upgrade Session Monitor Releases 4.4 or 5.0 to Release 5.1 is a lengthy process involving the upgrade of the complete tech stack including upgrade of Oracle Linux, Python and MySQL.

A Note if you Have Not Taken a Backup

Create Historical System Diagnostics with the **Create savepoint** and **Include mysqldump** check boxes enabled from the PSA Page. This is mandatory.

Download a copy of the Diagnostics created and save it in a safe location. These diagnostics are required to debug any issues in the future.

For more information, see the System Diagnostics section in the Session Monitor Release 5.1 Installation Guide

> **Note:**
>
> Creating the Savepoint is applicable only for the Mediation Engine. Also, enabling the **Create savepoint** and **Include mysqldump** check boxes is mandatory for taking Diagnostics.

Upgrading Session Monitor

Upgrade of Session Monitor from Releases 4.4, and 5.0 to Release 5.1 is available only through a CLI upgrade. It is not possible to directly upgrade through PSA as the upgrade of Session Monitor 5.1 involves the upgrade of the complete tech stack including Oracle Linux, Python and MySQL.

1. For Mediation Engines (ME), it is recommended to disconnect all probes.
2. Run the following command to stop OCSM service:

   ```
   source /opt/oracle/ocsm/ocsm_env.sh
   pld-systemctl stop
   ```

3. Run these commands to save the version information. As the current version of files are updated after the upgrade.

   ```
   cp /opt/oracle/ocsm/etc/iptego/version /opt/oracle/ocsm/etc/iptego/
   version_old
   ```

   ```
   cp /opt/oracle/ocsm/etc/iptego/version.history /opt/oracle/ocsm/etc/
   iptego/version.history_old
   ```

   ----------> Execute only if the `version.history` file is present in the location `/opt/oracle/ocsm/etc/iptego/`.

4. Run the following command to stop the MySQL services:

   ```
   systemctl stop mysqld
   ```

5. Upgrade Oracle Linux 7.X to Oracle Linux 8. Follow the official Oracle Linux 8 Upgrade Guide. For more information, see https://docs.oracle.com/en/operating-systems/oracle-linux/8/leapp/leapp-PreparingfortheUpgrade.html#chap-leapp-prep.

   > **Note:**
   >
   > The upgrade to Oracle Linux 8 removes OCSM, however OCSM data is left intact.

6. Run the following command to verify that Oracle Linux 8 has been installed:

   ```
   cat /etc/oracle-release
   ```

   You are required to re-configure the proxies. For more information, see Configuring Proxies.

Configuring Proxies

You need to re-configure the proxies.

Configure the http proxy in the `/etc/yum.conf` file and also export the same to environment.

1. Add the following line in the /etc/yum.conf:

   ```
   proxy=<proxy_server>
   ```

2. Export the proxy's address.

   ```
   export http_proxy=<proxy_server>
   export https_proxy=<proxy_server>
   ```

Downloading the Session Monitor 5.1 Software

Perform the following tasks to download the Session Monitor 5.1 software:

1. Create a temporary directory (temp_dir) on the system that hosts the OCSM.
2. Download the Session Monitor installation software RPM ZIP file to the temp_dir folder.
3. Extract the Session Monitor installation software RPM ZIP file.

Downloading the Latest MySQL 8 Commercial Package

Perform the following tasks to download the latest MySQL 8 commercial package:

1. Download the MySQL 8 Commercial package from MOS to a temporary directory of the OCSM Server.

   The latest supported Version is 8.0.32 (Patch 34982613: MySQL Database/Components 8.0.32 Yum Repository TAR for Oracle Linux / RHEL 8 x86 (64bit)).
2. Copy the MySQL tar.gz package from the download to a temporary directory.
3. Untar the MySQL tar.gz package by running the following commands:

   ```
   yum install tar

   tar -xvf mysql-commercial-<rn>.x86_64.repo.tar.gz
   ```

   > **Note:**
   >
   > where <rn> is the current MySQL 8 version.

4. Navigate to the `MySQL` directory:

   ```
   cd mysql-8.X/8.X.XX/
   ```

   For example:

   ```
   tar -xvf mysql-commercial-8.0.32-1.1.el8.x86_64.repo.tar.gz

   cd mysql-8.0/8.0.32/
   ```

Installing the MySQL 8 RPMs

Use the following instructions to install the MySQL 8 RPMs.

1. Run this command to install MYSQL 8 RPMs:

   ```
   yum install mysql-commercial-*
   ```

2. Replace the existing `/opt/oracle/ocsm/etc/iptego/my.cnf` file with the new `my-8.0.cnf` file present in the Session Monitor installation software RPM ZIP file:
   a. Navigate to the temporary directory (temp_dir) where the Session Monitor software RPM ZIP file was extracted.
   b. Run the command:

      ```
      cp my-8.0.cnf /opt/oracle/ocsm/etc/iptego/my.cnf
      ```

   > **Note:**
   >
   > After replacing the new file ensure that the filename is still `my.cnf` under the path `/opt/oracle/ocsm/etc/iptego/`.

3. Run this command to start the MySQL 8 Server:

```
systemctl start mysqld
```

4. Run this command to verify the MySQL version:

```
mysql --version
```

Install Python3.9

Perform the following tasks to Install Python39.

1. Run the command to install Python39.

```
yum install python39-pip
```

2. Execute these commands to set Python alternatives to Python39:

```
update-alternatives --config python3
update-alternatives --config python
```

> **Note:**
>
> When prompted, select the number corresponding to Python39 option and press the Enter key.

> **Note:**
>
> After the OCSM upgrade, while installing any new packages using yum, some packages install Python 3.6 as a dependency. As a result, Python alternatives are changed which can cause unexpected problems in the OCSM. To avoid this, it is mandatory to verify that Python is pointing Python 39 after installing every package using yum by running the above two commands.

Downloading and Installing the MYSQL Connector

Download and install the MySQL Connector package.

1. Download the MySQL Connector package corresponding to the MySQL version installed from MOS to a temporary directory of OCSM Server:

   If MySQL 8.0.32 Commercial is installed in the system, download MySQL Connector 8.0.32 Package from MOS (Patch 34984522: MySQL Connector/ Python 8.0.32 WHL for portable Linux x86 (64bit) Python 3.9 -– p34984522_800_Linux-x86-64.zip)

2. From the temporary directory, run the following commands to install MySQL Connector:

```
yum install unzip

unzip pXXXXXXXX_XXX_Linux-x86-64.zip

pip3 install mysql_connector_python-8.X.X-1commercial-cp39-cp39-
manylinux1_x86_64.whl
```

For example:

```
unzip p34984522_800_Linux-x86-64.zip

pip3 install mysql_connector_python-8.0.32-1commercial-cp39-cp39-
manylinux1_x86_64.whl
```

> **Note:**
>
> If necessary, use proxy with pip3. For example:
>
> ```
> pip3 install --proxy [PROTOCOL://]HOST[:PORT]
> mysql_connector_python-8.0.32-1commercial-cp39-cp39-
> manylinux1_x86_64.whl
> ```

Installing Oracle epel Repository

Install the Oracle epel repository.

1. Run the following command to install the Oracle epel repository:

```
yum install oracle-epel-release-el8.x86_64
```

2. Install the yum utils by running the following command:

```
yum install yum-utils
```

3. Enable the latest Oracle Linux 8 repositories by running the following command:

```
yum-config-manager --enable ol8_baseos_latest ol8_appstream ol8_addons
ol8_developer_EPEL
```

4. Install the Session Monitor RPM file by running the following command:

```
yum install ocsm-<rn>x86_64.rpm
```

where: <rn> is the current Session Monitor release number.

For example:

```
ocsm-5.1.0.0.0-149.x86_64.rpm
```

> **Note:**
>
> OCSM Installation may take several minutes depending on the data size of MySQL.

Enabling or Disabling SELinux After the Upgrade to OCSM 5.1

After the upgrade, it is mandatory to enable or disable SELinux again as per your requirement.

SELinux policy modules have changed with OCSM 5.1, For more information, see Enabling SE Linux in the OCSM Release 5.1 Installation Guide.

Enabling SELinux After the Upgrade

After the upgrade, it is mandatory to enable or disable SELinux again as per your requirement.

- To enable SELinux run the following commands:
  1. Run these commands:

     ```
     sed -i -e "s/^SELINUX=.*/SELINUX=enforcing/" /etc/selinux/config

     sed -i -e "s/^SELINUXTYPE=.*/SELINUXTYPE=targeted/" /etc/selinux/
     config

     reboot
     ```

  2. Install the new customized SELinux policy modules for Session monitor using the command:

     ```
     cd /opt/oracle/ocsm/
     ./ocsm_ext.sh
     ```

Disabling SELinux After the Upgrade

After the upgrade, it is mandatory to enable or disable SELinux again as per your requirement.

- To disable SELinux run the following commands:
  - Disable SELinux run the following commands:

    ```
    sed -i -e "s/^SELINUX=.*/SELINUX=disabled/" /etc/selinux/config
    reboot
    ```

Running the Post Install Script ocsm_post_install.sh

Execute the Post Install Script, ocsm_post_install.sh file present in the Session Monitor installation software RPM ZIP file.

- To execute the post-install script `ocsm_post_install.sh`:
  1. Navigate to the temporary directory (temp_dir) where the Session Monitor software RPM zip file was unzipped.
  2. Run the following command to provide the necessary permissions for the script file:

     ```
     chmod +x ocsm_post_install.sh
     ```
  3. Run this script:

     ```
     ./ocsm_post_install.sh
     ```

> **Note:**
>
> Post-install script takes care of reconfiguring your Product Type to the state as before and links back the new OCSM with existing data.

The OCSM installation is complete now. Follow the post upgrade procedure once the script execution is successful as mentioned in the section Post Upgrade.

Post Upgrade

After upgrading the system, complete the following steps.

Certificate Exchange

Before logging into the system, exchange certificates between the Mediation Engine (ME) and the Mediation Engine Connector (MEC). See the "Connecting Mediation Engine with Mediation Engine Connector" section in the MEC User Guide.

Multi VSP

Post the upgrade, multi-vsp will be disabled by default. You can enable multi-vsp again as per your requirement.

External Authentication

For External Authentication enabled Machines, re-enable `External Authentication` from **Settings** Post the upgrade, it is mandatory to copy the new `pld.conf` template from `/opt/oracle/ocsm/etc/httpd/conf.d/pld.conf` to `/etc/httpd/conf.d/` folder, and configure the External Authentication details again.

This ensures new fixes and any changes in the `pld.conf` template to be applied on the system.

> **Note:**
>
> If any data loss occurs post upgrade, follow the Restore procedure provided in the Backup and Restore Guide

> **Note:**
>
> URLs of the OCSM Nodes has been updated with version 5.1 as below:
>
> ```
> https://<machine_ip>/me/ https://<machine_ip>/mec/
> https://<machine_ip>/fdp/ https://<machine_ip>/setup/
> ```

Upgrading from 5.1 to 5.1.0.0.x using PSA

Follow these instructions to upgrade Session Monitor from 5.1 to release 5.1.0.0.X using PSA

To upgrade Session Monitor from 5.1 to release 5.1.0.0.X through PSA:

(Optional) <Describe the prerequisites.>

1. Open the PSA page of the Mediation Engine. Provide the URL in the web browser. For example: https://<IPofME>/setup/ where, <IPofME> is the IP address of the Mediation Engine. Contact your Oracle representative for credentials.
2. Click **Browse** and upload the Session Monitor Release 5.1 P1 software that you downloaded. The software is an .rpm file, for example: ocsm-5.1.0.0.1-205.x86_64.rpm.
3. After the uploading the software, click **Install**.
4. Accept the license agreement, to start the installation process.

   > **Note:**
   >
   > You may see the following error message if there is no sufficient disk space. To free up the space, refer to the Document 1937398.1 in the My Oracle Support website.
   >
   > ```
   > Cannot update.
   > Not enough disk space.
   > Please contact Support.
   > ```

   The upgrade or installation process may take 1 hour or more depending on the data on your machine.
5. Log out of the PSA page after completing the installation.

6. Log in again to the PSA page, and click **Software Version** from the right panel. The upgraded version is shown as Release 5.1.0.0.1 on the machine.
7. Run the following command after establishing an SSH session with the product.

   ```
   source /opt/oracle/ocsm_env.sh
   ```

8. Log out of the application GUI and log in again to access the new features.

Upgrading from 5.1 to 5.1.0.0.X using ACLI

Follow these instructions to upgrade Session Monitor from 5.1 to release 5.1.0.0.X using ACLI.

To upgrade Session Monitor from 5.1 to release 5.1.0.0.X using ACLI:

1. Copy the .rpm file ocsm-5.1.0.0.1-205.x86_64.rpm to the system.
2. Run the command to set the correct environment:

   ```
   source /opt/oracle/ocsm/ocsm_env.sh
   ```

3. Run the command to stop all the services on Operations Monitor:

   ```
   pld-systemctl stop
   ```

4. Run the following command:

   ```
   yum install ocsm-5.1.0.0.1-205.x86_64.rpm
   ```

5. Run the following command to start all services.

   ```
   pld-systemctl start
   ```

6. The upgrade is complete. Run the following command to verify the Session:

   ```
   Monitor software version:
   cat /opt/oracle/ocsm/etc/iptego/display_version
   ```

   The output should be latest Session Monitor version. For example, 5.1.0.0.1

7. Run this command after establishing an SSH session with the product.

   ```
   source /opt/oracle/ocsm/ocsm_env.sh
   ```

8. Log out of the application GUI and log in again to access new features.

Upgrading Session Monitor without an Internet Connection

If your OCSM server is located on an isolated network that does not have a direct connection to the internet you can follow the Offline Upgrade Steps provided in this section. For OCSM Release 5.1, the steps to updgrade without an Internet differ from the steps followed for upgrading using the Internet due to the limitation in Oracle Linux 8.

OCSM Offline upgrade involves Creating Backup of your existing OCSM and Restoring it on a newly installed OCSM 5.1 Server rather than direct upgrade on existing system.

Follow the tasks given in this section to upgrade Session Monitor without an Internet connection.

Creating the Backup File

Take a backup of the current version of the OCSM Server by following the steps provided in the section Creating Backup in the OCSM Release 5.1 Backup and Restore Guide.

This involves taking a backup of the complete OCSM data including configuration, database, block storage and any essential OCSM files.

> **Note:**
>
> It is recommended not to delete the OCSM backup data until the Restore procedure is completed and data is verified successfully.

Installing OCSM without Internet

This section describes the procedure to install Session Monitor using RPM files without an Internet connection on a new system.

Prerequisites

Set up the OCSM Server machine with Oracle Linux 8 operating system to install Session Monitor using the RPM files. You can do this by either reinstalling your current OCSM Server with Oracle Linux 8, or you can bring up a new Server with Oracle Linux 8.

In next steps, you will first do an offline fresh installation of OCSM Release 5.1 on this setup. Then you will restore the Backup data. For more information on restoring data, see the OCSM Release 5.1 Backup and Restore Guide.

> **Note:**
>
> If you are using a new system to install OCSM Release 5.1, it is recommended that the new system has the same or higher configuration as the previous system, and the machine hosting the earlier version of OCSM remains intact till the completion of the upgrade procedure.

Downloading the RPM Files

This section describes how to download the RPM files needed to install Session Monitor. Complete this task on a system with an Internet connection.

You can manually download all RPM files from https://yum.oracle.com/oracle-linux-8.html or use a script. For more information on the RPM files that need to be downloaded, see Dependency RPMs .

To use the `Download_rpms.sh` script to get the RPM files:

1. Download the script from the software.zip file and save the file to your local storage on your system. .

   The `Download_rpms.sh` script downloads all dependency RPM files except for the OCSM and MySQL RPMs. For more information on downloading Session Monitor and the MySQL RPM files, see the Session Monitor Release 5.1 Release Notes.

2. Set execute permission with the following:

   ```
   chmod +x Download_rpms.sh
   ```

3. Run the following command:

   ```
   ./Download_rpms.sh
   ```

   - If you need to configure a proxy server for your system, run the same command with the following information:

   ```
   ./Download_rpms.sh "[PROTOCOL://]HOST[:PORT]"
   ```

Configuring the Repository Server

This section describes how to configure the repository server to install Session Monitor.

1. Copy the RPM files to the repository server in a temporary directory, such as `/tmp/ocsm/`.
2. Install the following RPM files in this order:
   a. `rpm -ivh vsftpd-3.0.3-35.el8.x86_64.rpm`
   b. `rpm -ivh drpm-0.4.1-3.el8.x86_64.rpm`
   c. `rpm -ivh createrepo_c-libs-0.17.7-6.el8.x86_64.rpm`
   d. `rpm -ivh createrepo_c-0.17.7-6.el8.x86_64.rpm`
3. Run this command to move the directory `/tmp/ocsm/` to the directory `/var/ftp/pub/`.

   ```
   mv /tmp/ocsm/  /var/ftp/pub/
   ```

4. Copy RPM files of OCSM and MySQL to the directory `/var/ftp/pub/ocsm/`

> **Note:**
>
> Use the Commercial Package of MySQL 8.0.32 for installation. The OCSM dependencies used here are based on MySQL 8.0.32 version. If there are any additional dependencies required, please take that as well

```
mysql-commercial-backup-8.0.32-1.1.el8.x86_64.rpm
mysql-commercial-client-8.0.32-1.1.el8.x86_64.rpm
mysql-commercial-client-plugins-8.0.32-1.1.el8.x86_64.rpm
mysql-commercial-common-8.0.32-1.1.el8.x86_64.rpm
mysql-commercial-devel-8.0.32-1.1.el8.x86_64.rpm
mysql-commercial-icu-data-files-8.0.32-1.1.el8.x86_64.rpm
mysql-commercial-libs-8.0.32-1.1.el8.x86_64.rpm
mysql-commercial-server-8.0.32-1.1.el8.x86_64.rpm
mysql-commercial-test-8.0.32-1.1.el8.x86_64.rpm
```

The OCSM, MySQL, and other dependency RPM files are now located in the directory `/var/ftp/pub/ocsm/`.

5. Run the following command to create the repository: .

   ```
   createrepo /var/ftp/pub/ocsm/
   ```

6. Add a comment at the beginning of the root line of `/etc/vsftpd/ftpusers` and `/etc/vsftpd/user_list` using the character "#" to say the following:

   ```
   [root@test vsftpd]# cat /etc/vsftpd/ftpusers
   # Users that are not allowed to login via ftp
   #root
   bin
   daemon
   adm
   lp
   sync
   shutdown
   halt
   mail
   news
   uucp
   operator
   games
   nobody
   ```

   ```
   [root@test vsftpd]# cat /etc/vsftpd/user_list
   # vsftpd userlist
   # If userlist_deny=NO, only allow users in this file
   # If userlist_deny=YES (default), never allow users in this file,
   and
   # do not even prompt for a password.
   # Note that the default vsftpd pam config also checks /etc/vsftpd/
   ftpusers
   # for users that are denied.
   ```

```
#root
bin
daemon
adm
lp
sync
shutdown
halt
mail
news
uucp
operator
games
nobody
```

7. Run these commands to disable SELinux:

```
setenforce 0
sed -i -e "s/^SELINUX=.*/SELINUX=disabled/" /etc/selinux/config
reboot
```

8. Using an editor, open the file `/etc/vsftpd/vsftpd.conf`.
9. Comment the line `anonymous_enable=NO`.
10. Save and quit the `vsftpd.conf` file.
11. Run the following commands to start the vsftp service:

```
systemctl start vsftpd
systemctl enable vsftpd
```

12. Run this command to check the status of vsftp service:

```
systemctl status vsftpd
```

    The status of the service should be active (running).

13. Run these commands to disable the firewall:

```
systemctl stop firewalld
systemctl disable firewalld
```

The repo server is now ready to be used.

Installing Session Monitor for the First Time

This section describes how to install Session Monitor for a new system.

1. Log in to the OCSM server as a root or root privileged user.
2. Run this command to verify that Oracle Linux 8 has been installed:

```
cat /etc/oracle-release
```

3. For partitioning, see the section Creating a Separate Partition for Data and MySQL Storage in the Session Monitor Release 5.1 Installation Guide.

4. Rename all the repos under the directory /etc/yum.repos.d/

```
mv /etc/yum.repos.d/oracle-linux-ol8.repo /etc/yum.repos.d/oracle-
linux-ol8.repo_bkp
mv /etc/yum.repos.d/uek-ol8.repo /etc/yum.repos.d/uek-ol8.repo_bkp
mv /etc/yum.repos.d/virt-ol8.repo /etc/yum.repos.d/virt-ol8.repo_bkp
```

5. Create the `/etc/yum.repos.d/ocsm.repo` with the following content:

```
[OCSM]
name=OCSM dependencies
baseurl=ftp://<REPO_SERVER_IP>/pub/ocsm/
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-oracle
gpgcheck=0
enabled=1
proxy=_none_
```

6. Run this command to clean-up the repo:

```
yum clean all
```

7. Run this command to verify the repolist:

```
yum repolist


# yum repolist

repo id  repo name
OCSM     OCSM dependencies
```

8. Install the MySQL rpms using the following command:

```
yum install mysql-commercial-*
```

9. Copy the following RPMs from the Repo server to the OCSM server in a temporary directory, such as `/tmp/dependency/`, and install the RPM files on the OCSM server in this order:

   a. `rpm -ivh python39-setuptools-wheel-50.3.2-4.module+el8.5.0+20364+c7fe1181.noarch.rpm`

   b. `rpm -ivh python39-pip-wheel-20.2.4-7.module+el8.6.0+20625+ee813db2.noarch.rpm`

   c. `rpm -ivh python39-libs-3.9.13-2.module+el8.7.0+20879+a85b87b0.x86_64.rpm`

   d. `rpm -ivh python39-3.9.13-2.module+el8.7.0+20879+a85b87b0.x86_64.rpm`

   e. `rpm -ivh python39-pip-20.2.4-7.module+el8.6.0+20625+ee813db2.noarch.rpm`

   f. `rpm -ivh python39-pyyaml-5.4.1-1.module+el8.5.0+20364+c7fe1181.x86_64.rpm`

10. Download the following **protobuf** package from https://pypi.org/project/protobuf/3.20.3/#files to a temporary directory, such as `/tmp/dependency/` of the OCSM Server:

    ```
    protobuf-3.20.3-cp39-cp39-manylinux_2_5_x86_64.manylinux1_x86_64.whl
    ```

11. Download the following MySQL Connector package from MOS to the same temporary directory used above. such as `/tmp/dependency/` directory of OCSM Server:

    ```
    MySQL Connector 8.0.32 Package: p34984522_800_Linux-x86-64.zip
    ( Patch 34984522: MySQL Connector/Python 8.0.32 WHL for portable Linux
    x86 (64bit) Python 3.9 )
    ```

    > **Note:**
    >
    > The OCSM dependencies used here are based on MySQL Connector 8.0.32 version since we are using MySQL 8.0.32 version. If there are any additional dependencies required, please take that as well.

12. Run this command to set Python alternatives to python3.9:

    ```
    update-alternatives --config python3
    update-alternatives --config python
    ```

    > **Note:**
    >
    > After the OCSM upgrade, while installing any new packages using yum, some packages will install Python 3.6 as a dependency. As a result, Python alternatives will be getting changed. This can cause unexpected problems in the OCSM functionality. So, it is mandatory to verify that Python is pointing to Python 39. Run the commands listed above after installing every package using yum.

    > **Note:**
    >
    > When prompted, select the number corresponding to python3.9 option and press the Enter key on the keyboard.

13. Run the following commands to install MySQL Connector from the temporary directory, such as `/tmp/dependency/`:

    ```
    cd /tmp/dependency/
    yum install unzip
    unzip p34984522_800_Linux-x86-64.zip
    pip3 install mysql_connector_python-8.0.32-1commercial-cp39-cp39-
    manylinux1_x86_64.whl --no-index --find-links=/tmp/dependency/
    ```

> **Note:**
>
> In the pip3 command used above, the option "--find-links" points to the directory where the dependencies required for the MySQL Connector whl file is present. Here, protobuf package is a dependency for MySQL Connector and is present in the temporary directory, such as `/tmp/dependency/` as mentioned in the previous steps.

14. Run this command to install OCSM:

    ```
    yum install ocsm
    ```

    For adjusting the firewall access, see the section Tasks to be Performed after RPM Installation in the Session Monitor Release 5.1 Installation Guide.

The OCSM 5.1 rpm installation is now complete. Proceed with Restoring Backup. For more information, see the section Restoring Backup in the Session Monitor Release 5.1 Backup and Restore Guide.

Installing any New Package on the OCSM Server

To install any new package on OCSM Server follow these steps:

1. Download the required RPM files and their dependences from yum.oracle.com OL8 repo manually.
2. Copy the RPM files to the directory `/var/ftp/pub/ocsm/` of the Repo Server .
3. On the Repo Server, execute the following command: `createrepo /var/ftp/pub/ocsm/`.
4. On the OCSM Server, execute the following command: `yum clean all`.
5. Install the package on the OCSM Server using the command "`yum install <package>`"

> **Note:**
>
> Alternatively, you can also update the `Download_rpm.sh` script by adding the RPM file names under the respective Repo links and follow the steps.

Restoring Backup

Restore the backup of the earlier version OCSM taken during the Backup procedure on the newly installed version of OCSM Server Release 5.1, by following the steps provided in Restoring Backup Section in Backup and Restore Guide.

This involves complete restoration of all OCSM Data backed up during the Backup procedure including configuration, database, block storage and essential OCSM files of the OCSM Servers.

It is recommended not to delete the Backup data of the earlier version of OCSM until the restore procedure is completed and data is verified successfully.

OCSM Offline Upgrade Procedure is now complete.

Dependency RPMs

This section describes the RPMs needed to install Session Monitor without an internet connection.

BaseOS Latest: https://yum.oracle.com/repo/OracleLinux/OL8/baseos/latest/x86_64/index.html.

1. bash-4.4.20-4.el8_6.x86_64.rpm
2. brotli-1.0.6-3.el8.x86_64.rpm
3. bzip2-libs-1.0.6-26.el8.x86_64.rpm
4. c-ares-1.13.0-6.el8.x86_64.rpm
5. coreutils-8.30-13.0.1.el8.x86_64.rpm
6. coreutils-single-8.30-13.0.1.el8.x86_64.rpm
7. dejavu-sans-fonts-2.35-7.el8.noarch.rpm
8. dejavu-serif-fonts-2.35-7.el8.noarch.rpm
9. freetype-2.9.1-9.el8.x86_64.rpm
10. glib2-2.56.4-159.0.1.el8.x86_64.rpm
11. glibc-2.28-211.0.1.el8.x86_64.rpm
12. gnutls-3.6.16-5.el8_6.x86_64.rpm
13. krb5-libs-1.18.2-22.0.1.el8_7.x86_64.rpm
14. libcap-2.48-4.el8.x86_64.rpm
15. libcurl-7.61.1-25.el8_7.1.x86_64.rpm
16. libcurl-minimal-7.61.1-25.el8_7.1.x86_64.rpm
17. libgcc-8.5.0-16.0.2.el8_7.x86_64.rpm
18. libgcrypt-1.8.5-7.el8_6.x86_64.rpm
19. libgomp-8.5.0-16.0.2.el8_7.x86_64.rpm
20. libibverbs-41.0-1.el8.x86_64.rpm
21. libicu-60.3-2.el8_1.x86_64.rpm
22. libnghttp2-1.33.0-3.el8_2.1.x86_64.rpm
23. libnl3-3.7.0-1.el8.x86_64.rpm
24. libpcap-1.9.1-5.el8.x86_64.rpm
25. libpng-1.6.34-5.el8.x86_64.rpm
26. libssh-0.9.6-3.el8.x86_64.rpm
27. libstdc++-8.5.0-16.0.2.el8_7.x86_64.rpm
28. libuuid-2.32.1-39.el8_7.x86_64.rpm
29. libxcrypt-4.1.1-6.el8.x86_64.rpm
30. libxml2-2.9.7-15.el8_7.1.x86_64.rpm

31. libzstd-1.4.4-1.0.1.el8.x86_64.rpm
32. lshw-B.02.19.2-6.el8.x86_64.rpm
33. numactl-devel-2.0.12-13.el8.x86_64.rpm
34. numactl-libs-2.0.12-13.el8.x86_64.rpm
35. openssl-1.1.1k-7.el8_6.x86_64.rpm
36. openssl-libs-1.1.1k-7.el8_6.x86_64.rpm
37. openssl-perl-1.1.1k-7.el8_6.x86_64.rpm
38. pciutils-3.7.0-1.el8.x86_64.rpm
39. pcre2-10.32-3.el8_6.x86_64.rpm
40. python3-requests-2.20.0-2.1.el8_1.noarch.rpm
41. python3-setuptools-39.2.0-6.el8.noarch.rpm
42. selinux-policy-3.14.3-108.0.2.el8_7.1.noarch.rpm
43. selinux-policy-targeted-3.14.3-108.0.2.el8_7.1.noarch.rpm
44. snappy-1.1.8-3.el8.x86_64.rpm
45. sudo-1.8.29-8.el8_7.1.x86_64.rpm
46. systemd-libs-239-68.0.2.el8_7.2.x86_64.rpm
47. xmlrpc-c-1.51.0-8.el8.x86_64.rpm
48. xmlrpc-c-client-1.51.0-8.el8.x86_64.rpm
49. xz-libs-5.2.4-4.el8_6.x86_64.rpm
50. unzip-6.0-46.0.1.el8.x86_64.rpm
51. zlib-1.2.11-21.el8_7.x86_64.rpm
52. libcom_err-devel-1.45.6-5.el8.x86_64.rpm
53. keyutils-libs-devel-1.5.10-9.el8.x86_64.rpm
54. libpkgconf-1.4.2-1.el8.x86_64.rpm
55. libkadm5-1.18.2-21.0.1.el8.x86_64.rpm
56. krb5-devel-1.18.2-21.0.1.el8.x86_64.rpm
57. libsepol-devel-2.9-3.el8.x86_64.rpm
58. libselinux-devel-2.9-6.el8.x86_64.rpm
59. libverto-devel-0.3.2-2.el8.x86_64.rpm
60. pcre2-devel-10.32-3.el8_6.x86_64.rpm
61. pcre2-utf16-10.32-3.el8_6.x86_64.rpm
62. openssl-devel-1.1.1k-7.el8_6.x86_64.rpm
63. perl-Carp-1.42-396.el8.noarch.rpm
64. pcre2-utf32-10.32-3.el8_6.x86_64.rpm
65. perl-Data-Dumper-2.167-399.el8.x86_64.rpm
66. perl-Errno-1.28-421.el8.x86_64.rpm
67. perl-Exporter-5.72-396.el8.noarch.rpm

68. perl-File-Path-2.15-2.el8.noarch.rpm
69. perl-File-Temp-0.230.600-1.el8.noarch.rpm
70. perl-Encode-2.97-3.el8.x86_64.rpm
71. perl-Getopt-Long-2.50-4.el8.noarch.rpm
72. perl-HTTP-Tiny-0.074-1.el8.noarch.rpm
73. perl-IO-1.38-421.el8.x86_64.rpm
74. perl-MIME-Base64-3.15-396.el8.x86_64.rpm
75. perl-PathTools-3.74-1.el8.x86_64.rpm
76. perl-Pod-Escapes-1.07-395.el8.noarch.rpm
77. perl-Pod-Perldoc-3.28-396.el8.noarch.rpm
78. perl-Pod-Simple-3.35-395.el8.noarch.rpm
79. perl-Pod-Usage-1.69-395.el8.noarch.rpm
80. perl-Scalar-List-Utils-1.49-2.el8.x86_64.rpm
81. perl-Socket-2.027-3.el8.x86_64.rpm
82. perl-Storable-3.11-3.el8.x86_64.rpm
83. perl-Term-ANSIColor-4.06-396.el8.noarch.rpm
84. perl-Term-Cap-1.17-395.el8.noarch.rpm
85. perl-Text-ParseWords-3.30-395.el8.noarch.rpm
86. perl-Text-Tabs+Wrap-2013.0523-395.el8.noarch.rpm
87. perl-Time-Local-1.280-1.el8.noarch.rpm
88. perl-Unicode-Normalize-1.25-396.el8.x86_64.rpm
89. perl-constant-1.33-396.el8.noarch.rpm
90. perl-macros-5.26.3-421.el8.x86_64.rpm
91. perl-interpreter-5.26.3-421.el8.x86_64.rpm
92. perl-parent-0.237-1.el8.noarch.rpm
93. perl-libs-5.26.3-421.el8.x86_64.rpm
94. perl-threads-2.21-2.el8.x86_64.rpm
95. perl-podlators-4.11-1.el8.noarch.rpm
96. perl-threads-shared-1.58-2.el8.x86_64.rpm
97. pkgconf-1.4.2-1.el8.x86_64.rpm
98. pkgconf-m4-1.4.2-1.el8.noarch.rpm
99. pkgconf-pkg-config-1.4.2-1.el8.x86_64.rpm
100. zlib-devel-1.2.11-20.el8.x86_64.rpm
101. python3-chardet-3.0.4-7.el8.noarch.rpm
102. python3-urllib3-1.24.2-5.0.1.el8.noarch.rpm
103. python3-idna-2.5-5.el8.noarch.rpm
104. net-snmp-libs-5.8-25.0.2.el8_7.1.x86_64.rpm

105. python3-pysocks-1.6.8-3.el8.noarch.rpm
106. lm_sensors-libs-3.4.0-23.20180522git70f7e08.el8.x86_64.rpm
107. dejavu-fonts-common-2.35-7.el8.noarch.rpm
108. fontpackages-filesystem-1.44-22.el8.noarch.rpm
109. libmetalink-0.1.3-7.el8.x86_64.rpm
110. cronie-1.5.2-8.el8.x86_64.rpm
111. tar-1.30-6.el8_7.1.x86_64.rpm
112. net-tools-2.0-0.52.20160912git.el8.x86_64.rpm
113. avahi-libs-0.7-20.el8.x86_64.rpm
114. binutils-2.30-117.0.3.el8.x86_64.rpm
115. checkpolicy-2.9-1.el8.x86_64.rpm
116. efivar-libs-37-4.el8.x86_64.rpm
117. elfutils-devel-0.187-4.el8.x86_64.rpm
118. elfutils-libelf-devel-0.187-4.el8.x86_64.rpm
119. environment-modules-4.5.2-2.el8.x86_64.rpm
120. glibc-devel-2.28-211.0.1.el8.x86_64.rpm
121. glibc-headers-2.28-211.0.1.el8.x86_64.rpm
122. kernel-headers-4.18.0-425.13.1.el8_7.x86_64.rpm
123. libbabeltrace-1.5.4-4.el8.x86_64.rpm
124. libgfortran-8.5.0-16.0.2.el8_7.x86_64.rpm
125. libquadmath-8.5.0-16.0.2.el8_7.x86_64.rpm
126. libtool-ltdl-2.4.6-25.el8.x86_64.rpm
127. libxcrypt-devel-4.1.1-6.el8.x86_64.rpm
128. libzstd-devel-1.4.4-1.0.1.el8.x86_64.rpm
129. make-4.2.1-11.el8.x86_64.rpm
130. mokutil-0.6.0-1.0.1.el8.x86_64.rpm
131. policycoreutils-python-utils-2.9-20.0.1.el8.noarch.rpm
132. python3-audit-3.0.7-4.el8.x86_64.rpm
133. python3-libsemanage-2.9-9.el8.x86_64.rpm
134. python3-policycoreutils-2.9-20.0.1.el8.noarch.rpm
135. python3-setools-4.3.0-3.el8.x86_64.rpm
136. tcl-8.6.8-2.el8.x86_64.rpm
137. xz-devel-5.2.4-4.el8_6.x86_64.rpm
138. zip-3.0-23.el8.x86_64.rpm
139. elfutils-debuginfod-client-devel-0.187-4.el8.x86_64.rpm
140. kernel-devel-4.18.0-425.13.1.el8_7.x86_64.rpm

AppStream Latest: https://yum.oracle.com/repo/OracleLinux/OL8/appstream/x86_64/index.html

1. python39-3.9.13-2.module+el8.7.0+20879+a85b87b0.x86_64.rpm
2. python39-libs-3.9.13-2.module+el8.7.0+20879+a85b87b0.x86_64.rpm
3. python39-pyyaml-5.4.1-1.module+el8.5.0+20364+c7fe1181.x86_64.rpm
4. python39-pip-20.2.4-7.module+el8.6.0+20625+ee813db2.noarch.rpm
5. python39-pip-wheel-20.2.4-7.module+el8.6.0+20625+ee813db2.noarch.rpm python39-setuptools-wheel-50.3.2-4.module+el8.5.0+20364+c7fe1181.noarch.rpm
6. python39-setuptools-wheel-50.3.2-4.module+el8.5.0+20364+c7fe1181.noarch.rpm
7. libX11-1.6.8-5.el8.x86_64.rpm libjpeg-turbo-1.5.3-12.el8.x86_64.rpm
8. libjpeg-turbo-1.5.3-12.el8.x86_64.rpm
9. libmaxminddb-1.2.0-10.el8.x86_64.rpm
10. libsmi-0.4.8-23.el8.x86_64.rpm libtiff-4.0.9-26.el8_7.x86_64.rpm
11. libtiff-4.0.9-26.el8_7.x86_64.rpm
12. net-snmp-5.8-25.0.2.el8_7.1.x86_64.rpm
13. python3-reportlab-3.4.0-8.el8.x86_64.rpm
14. sbc-1.3-9.el8.x86_64.rpm
15. whois-5.5.1-2.el8.x86_64.rpm
16. vsftpd-3.0.3-35.el8.x86_64.rpm
17. drpm-0.4.1-3.el8.x86_64.rpm
18. createrepo_c-libs-0.17.7-6.el8.x86_64.rpm
19. createrepo_c-0.17.7-6.el8.x86_64.rpm
20. perl-JSON-2.97.001-2.el8.noarch.rpm
21. perl-Memoize-1.03-421.el8.noarch.rpm
22. perl-Time-HiRes-1.9758-2.el8.x86_64.rpm
23. libxcb-1.13.1-1.el8.x86_64.rpm
24. libwebp-1.0.0-5.el8.x86_64.rpm
25. python3-pillow-5.1.1-18.el8_5.x86_64.rpm
26. mariadb-connector-c-3.1.11-2.el8_3.x86_64.rpm
27. net-snmp-agent-libs-5.8-25.0.2.el8_7.1.x86_64.rpm
28. libXau-1.0.9-3.el8.x86_64.rpm
29. jbigkit-libs-2.1-14.el8.x86_64.rpm
30. fribidi-1.0.4-9.el8.x86_64.rpm
31. harfbuzz-1.7.5-3.el8.x86_64.rpm
32. libX11-common-1.6.8-5.el8.noarch.rpm
33. graphite2-1.3.10-10.el8.x86_64.rpm
34. lcms2-2.9-2.el8.x86_64.rpm

35. openjpeg2-2.4.0-5.el8.x86_64.rpm
36. whois-nls-5.5.1-2.el8.noarch.rpm
37. wget-1.19.5-10.0.1.el8.x86_64.rpm
38. gcc-toolset-11-11.1-1.el8.x86_64.rpm
39. boost-atomic-1.66.0-13.el8.x86_64.rpm
40. boost-chrono-1.66.0-13.el8.x86_64.rpm
41. boost-date-time-1.66.0-13.el8.x86_64.rpm
42. boost-filesystem-1.66.0-13.el8.x86_64.rpm
43. boost-regex-1.66.0-13.el8.x86_64.rpm
44. boost-system-1.66.0-13.el8.x86_64.rpm
45. boost-thread-1.66.0-13.el8.x86_64.rpm
46. boost-timer-1.66.0-13.el8.x86_64.rpm
47. cpp-8.5.0-15.0.1.el8.x86_64.rpm
48. ctags-5.8-22.el8.x86_64.rpm
49. gc-7.6.4-3.el8.x86_64.rpm
50. gcc-8.5.0-15.0.1.el8.x86_64.rpm
51. gcc-toolset-11-annobin-docs-10.23-1.el8.noarch.rpm
52. gcc-toolset-11-binutils-2.36.1-2.0.1.el8.x86_64.rpm
53. gcc-toolset-11-dwz-0.14-2.el8.x86_64.rpm
54. gcc-toolset-11-dyninst-11.0.0-2.el8.x86_64.rpm
55. gcc-toolset-11-elfutils-0.185-5.el8.x86_64.rpm
56. gcc-toolset-11-elfutils-debuginfod-client-0.185-5.el8.x86_64.rpm
57. gcc-toolset-11-elfutils-libelf-0.185-5.el8.x86_64.rpm
58. gcc-toolset-11-elfutils-libs-0.185-5.el8.x86_64.rpm
59. gcc-toolset-11-gcc-11.2.1-9.1.0.3.el8.x86_64.rpm
60. gcc-toolset-11-gcc-c++-11.2.1-9.1.0.3.el8.x86_64.rpm
61. gcc-toolset-11-gcc-gfortran-11.2.1-9.1.0.3.el8.x86_64.rpm
62. gcc-toolset-11-gdb-10.2-5.0.1.el8.x86_64.rpm
63. gcc-toolset-11-libquadmath-devel-11.2.1-9.1.0.3.el8.x86_64.rpm
64. gcc-toolset-11-libstdc++-devel-11.2.1-9.1.0.3.el8.x86_64.rpm
65. gcc-toolset-11-ltrace-0.7.91-1.el8.x86_64.rpm
66. gcc-toolset-11-make-4.3-2.el8.x86_64.rpm
67. gcc-toolset-11-perftools-11.1-1.el8.x86_64.rpm
68. gcc-toolset-11-runtime-11.1-1.el8.x86_64.rpm
69. gcc-toolset-11-strace-5.13-7.el8.x86_64.rpm
70. gcc-toolset-11-systemtap-4.5-6.el8.x86_64.rpm
71. gcc-toolset-11-systemtap-client-4.5-6.el8.x86_64.rpm

72. gcc-toolset-11-systemtap-devel-4.5-6.el8.x86_64.rpm
73. gcc-toolset-11-systemtap-runtime-4.5-6.el8.x86_64.rpm
74. gcc-toolset-11-toolchain-11.1-1.el8.x86_64.rpm
75. gcc-toolset-11-valgrind-3.17.0-6.el8.x86_64.rpm
76. guile-2.0.14-7.0.1.el8.x86_64.rpm
77. isl-0.16.1-6.el8.x86_64.rpm
78. libatomic_ops-7.6.2-3.el8.x86_64.rpm
79. libipt-1.6.1-8.el8.x86_64.rpm
80. libmpc-1.1.0-9.1.el8.x86_64.rpm
81. nspr-4.34.0-3.el8_6.x86_64.rpm
82. nss-3.79.0-10.el8_6.x86_64.rpm
83. nss-softokn-3.79.0-10.el8_6.x86_64.rpm
84. nss-softokn-freebl-3.79.0-10.el8_6.x86_64.rpm
85. nss-sysinit-3.79.0-10.el8_6.x86_64.rpm
86. nss-util-3.79.0-10.el8_6.x86_64.rpm
87. scl-utils-2.0.2-15.0.1.el8.x86_64.rpm
88. source-highlight-3.1.8-17.el8.x86_64.rpm
89. tbb-2018.2-9.el8.x86_64.rpm
90. gcc-toolset-11-gcc-gdb-plugin-11.2.1-9.1.0.3.el8.x86_64.rpm
91. gcc-toolset-11-binutils-devel-2.36.1-2.0.1.el8.x86_64.rpm
92. gcc-toolset-11-elfutils-libelf-devel-0.185-5.el8.x86_64.rpm

Developer EPEL Packages: https://yum.oracle.com/repo/OracleLinux/OL8/developer/EPEL/x86_64/index.html

1. gperftools-libs-2.7-9.el8.x86_64.rpm
2. jemalloc-5.2.1-2.el8.x86_64.rpm
3. openpgm-5.2.122-21.el8.x86_64.rpm
4. spandsp-0.0.6-9.el8.x86_64.rpm
5. zeromq-4.3.4-2.el8.x86_64.rpm
6. libimagequant-2.12.5-1.el8.x86_64.rpm
7. libraqm-0.7.0-4.el8.x86_64.rpm
8. libunwind-1.3.1-3.el8.x86_64.rpm

UEK Release 7 Packages: https://yum.oracle.com/repo/OracleLinux/OL8/UEKR7/x86_64/index.html

- kernel-uek-devel-5.15.0-3.60.5.1.el8uek.x86_64.rpm

2
Upgrading DPDK

DPDK upgrade is required. OCSM Release 5.1 and above supports DPDK version 21.11.2 only.
To update DPDK:

1. Follow the instructions in Uninstalling DPDK.
2. Follow the instructions in Installing and Configuring DPDK with Internet for Intel or Installing and Configuring DPDK without Internet for Intel based on the set up below.
3. Reboot the machine that hosts the probe, or mediation engine and probe.

Uninstalling DPDK

This section describes the instructions for uninstalling DPDK.
To uninstall DPDK:

- Run the following commands:

```
source /opt/oracle/ocsm/ocsm_env.sh

/opt/oracle/ocsm/usr/share/pld/rat/configure_dpdk.py --remove
```

Installing and Configuring DPDK with Internet for Intel

> **Note:**
>
> You must be connected to the internet before starting the installation. Running the following command installs, downloads the required files, and configures the DPDK automatically.

For DPDK installation, for Oracle X9-2 server has the following pre-requisite:

1. Log into the Platform Setup Application page:
   a. Select **Capture Settings**.
   b. Check the box in **Monitoring** column against each sniffing interface that you want to use for capturing the traffic.
2. Log into the machine that hosts the probe or mediation engine and probe as a **root** user.

3. (Optional) For better understanding of the network, CPU, and NUMA nodes of the server, you can run the following command to review the output of the **system_layout.py** script, that will display system information:

```
source /opt/oracle/ocsm/ocsm_env.sh
/opt/oracle/ocsm/usr/share/pld/rat/system_layout.py
```

4. Run the following commands which guides you through the installation:

```
source /opt/oracle/ocsm/ocsm_env.sh
python3 -m pip install meson
python3 -m pip install ninja
python3 -m pip install pyelftools
yum install -y git
yum install -y gcc-toolset-11.x86_64
git clone http://dpdk.org/git/dpdk-kmods (This command is
to be executed in root folder)
scl enable gcc-toolset-11 '/opt/oracle/ocsm/usr/share/pld/rat/
configure_dpdk.py'
```

   The **configure_dpdk.py** script downloads and installs the required DPDK driver, the corresponding Kernel headers required for compiling DPDK driver, compiles, installs the driver, and creates server and Session Monitor DPDK related configuration.

5. (Optional) To view all the available advanced options, run the following command:

```
/opt/oracle/ocsm/usr/share/pld/rat/configure_dpdk.py -h
```

6. Reboot the machine that hosts the probe or mediation engine and probe.

Installing and Configuring DPDK without Internet for Intel

1. Log into the Platform Setup Application page:
   a. Select **Capture Settings**.
   b. Check the box in Monitoring column against each sniffing interface that you want to use for capturing the traffic.
2. Log into the machine that hosts the probe or mediation engine and probe as a **root** user.
3. (Optional) For better understanding of the network, CPU, and NUMA nodes of the server, run the system_layout.py script to display system information.

```
source /opt/oracle/ocsm/ocsm_env.sh
/opt/oracle/ocsm/usr/share/pld/rat/system_layout.py
```

4. Run the following command to download and install the kernel:

> **Note:**
>
> For offline installation of DPDK, check the Kernel version before downloading. The Kernel version in the `Download_rpms.sh` script is currently - "`kernel-uek-devel-5.15.0-3.60.5.1.el8uek.x86_64.rpm`". The Kernel dependency libraries are also present in the `Download_rpms.sh` script. The Kernel version is subject to change and hence we recommend you to check the `uname -r` and then download the corresponding RPM file and their dependencies from the YUM repository and place the appropriate Kernel version RPM file in the `Download_rpms.sh script`. Or, you can download and copy the RPM file and their dependencies to the existing offline REPO server. For more information, see #unique_54.
> After downloading the RPM file, run this command:

```
yum install kernel-uek-devel-$(uname -r)
```

5. Download the DPDK tar.gz file from https://fast.dpdk.org/rel into the folder `/var/cache/ocsm/dpdk/`.
6. Run the below commands on a linux terminal connected to internet and download the `dpdk-kmods` folder:

```
yum install git
git clone http://dpdk.org/git/dpdk-kmods
```

7. Copy the downloaded `dpdk-kmods` folder into **root** of the system where DPDK needs to be installed.
8. Download the latest `.whl` files for the meson, ninja and pyelftools libraries from the URLs mentioned below:

Table 2-1 Download URLs

Item	URL
meson-X.X.X-py3-none-any.whl	https://pypi.org/project/meson/#files
ninja-1.11.1-py2.py3-none-manylinux_X_XX_x86_64.manylinux20XX_x86_64.whl	https://pypi.org/project/ninja/#files
pyelftools-X.XX-py2.py3-none-any.whl	https://pypi.org/project/pyelftools/#files

9. Run the following commands as a **root** user:

```
source /opt/oracle/ocsm/ocsm_env.sh
pip3 install meson-X.X.X-py3-none-any.whl --no-index
pip3 install ninja-1.11.1-py2.py3-none-
manylinux_X_XX_x86_64.manylinux20XX_x86_64.whl --no-index
pip3 install pyelftools-X.XX-py2.py3-none-any.whl --no-
index
yum install -y gcc-toolset-11.x86_64
scl enable gcc-toolset-11 '/opt/oracle/ocsm/usr/share/pld/rat/
configure_dpdk.py'
```

10. (Optional) To view all the available advanced options, run the following command:

```
/opt/oracle/ocsm/usr/share/pld/rat/configure_dpdk.py -h
```

11. Reboot the machine that hosts the probe or mediation engine and probe.

Downloading, Installing, and Configuring DPDK for Mellanox NIC Cards

Follow the instructions in this section to install and configure DPDK for Mellanox NIC cards.

1. Installing Mellanox OFED
2. Installing and Configuring DPDK

Installing Mellanox OFED

Complete the following tasks to download and install Mellanox OFED package for Oracle Linux.

The supported networking cards are: Mellanox Technologies MT27800 Family [ConnectX-5].

Ensure that you have installed:

- Oracle Linux 8.6
- Session Monitor 5.1
- DPDK Version 21.11.2 or higher.

1. Download the latest MLNX OFED driver (.iso) based on OS distribution and architecture from the MLNX_OFED Download Center page. Browse to **Downloads** - > **Current Versions**.

> **Note:**
>
> The drivers MLNX_OFED latest support is available till OL8.6. The drivers are not available for OL8.7 and supports only OL8.6

2. Run the commands:

   a.
   ```
   mount -o ro,loop MLNX_OFED_LINUX-xxxx /mnt
   ```

   b. Run this command:

   ```
   yum install rpm-build
   ```

> **Note:**
>
> The command may fail while building RPMs and may require the appropriate dependencies to be installed. Based on the dependency errors, the required packages must be installed.
> This would build the RPMs based on the underlying Kernel version and copy the RPMs to `/tmp/xxx.tgz`.

c.
```
cd /mnt/
/mnt/mlnx_add_kernel_support.sh -m /mnt --make-tgz
```

3. Install the MLNX OFED with upstream-libs:

```
cd /tmp
tar -xzvf MLxxxxx.tgz
cd /MLxxxxxxxx
./mlnxofedinstall --upstream-libs
```

> **Note:**
>
> For more information, see Installing Mellanox OFED.

4. Load the MLNX driver module.

```
modprobe mlx5_ib
```

5. Make sure that the `mlx kernel modules mlx5_ib`, `mlx5_core`, `ib_uverbs` are loaded.

```
lsmod | grep mlx5
lsmod | grep ib_uverbs
```

Installing and Configuring DPDK

Complete the following tasks to install and configure DPDK for Mellanox NIC cards.

1. Create a file `/opt/oracle/ocsm/etc/iptego/white_list_dpdk.local` with the value **mlx5_core** before starting the DPDK installation.
2. Log into the **Platform Setup** Application page.
   a. Select **Capture Settings**.
   b. Check the box in the **Monitoring** column against each sniffing interface that you want to use for capturing the traffic.
3. Log into the machine that hosts the probe or the mediation engine and probe as a **root** user.

(Optional) For better understanding of the network, CPU, and NUMA nodes of the server, run the `system_layout.py` script to display system information.

```
source /opt/oracle/ocsm/ocsm_env.sh
/opt/oracle/ocsm/usr/share/pld/rat/system_layout.py
```

> **Note:**
>
> If you observe a Python error while executing the .py files, run the command `update-alternatives --config python3` and select the `/usr/bin/python3.9` option.

4. Run the command:

   ```
   yum install kernel-uek-devel-$(uname -r)
   ```

5. Download the DPDK tar file from https://fast.dpdk.org/rel/ into the folder `/var/cache/ocsm/dpdk/`.
6. Untar and open the file in edit mode.

   ```
   /var/cache/ocsm/dpdk/dpdk-<version>/config/common_base
   ```

7. Run the following commands as a root user:

   ```
   source /opt/oracle/ocsm/ocsm_env.sh
   python3 -m pip install meson
   python3 -m pip install ninja
   python3 -m pip install pyelftools
   yum  install gcc-toolset-11.x86_64
   scl enable gcc-toolset-11 '/opt/oracle/ocsm/usr/share/pld/rat/
   configure_dpdk_mlx.py'
   ```

8. Reboot the machine that hosts the probe or the mediation engine and probe.
9. MLNX drivers require root privileges for the Promiscuous Mode to be enabled. Assign **root** user privileges to the **ocsm** user.
10. Open file in edit mode: `/etc/passwd`
11. Change line `ocsm:x:998:996::/opt/oracle/ocsm:/sbin/nologin` to `ocsm:x:0:0::/opt/oracle/ocsm:/sbin/nologin`
12. Restart the RAT service (pld-rat): `systemctl restart pld-rat`

DPDK with Higher Throughput

Starting with OCSM Release-5.1.0.0.0, both dynamic memory mode and legacy memory mode is supported. DPDK probe can reach up to 3.2 Mpps on a single port when legacy memory mode is enabled.

> **Note:**
>
> This applies only for Intel NIC cards.

Legacy Memory Mode

Add the below configurations in the `rat.dpdk.local.conf`.

```
[dpdk]
mem_mode = 2

[sniffer/xx_xx_x]
dpdk_rx_ring_desc = 1024
```

After making the changes, restart the rat process using the command `systemctl restart pld-rat`.

3
Upgrading MySQL

OCSM supports upgrade from MySQL 5.7.35 (or higher version of 5.7) to MySQL 8.0.32.

The MySQL upgrade occurs as part of the OCSM 5.1 upgrade. For more information, see the section, Upgrading Session Monitor. The procedure for future upgrades of MySQL 8.0.32 to a newer version will not be available at the time of general availibility of OCSM 5.1 Release, as this cannot be verified in our lab. Detailed steps will made available along with subsequent patches. For more information, contact Oracle Support.