



Install or upgrade

ONTAP 9

NetApp
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Install or upgrade

ONTAP Mediator installation workflow summary

Installing ONTAP Mediator includes preparing for the installation, providing access to repositories, downloading the installation package, verifying the code signature, installing the ONTAP Mediator package, and performing post-installation configuration tasks.

1

Prepare to install or upgrade ONTAP Mediator

To install or upgrade ONTAP Mediator, you must ensure all prerequisites are met.

2

Upgrade host OS and Mediator

If you are upgrading an existing version of ONTAP Mediator, you must first uninstall the previous version, and then install the new version. If you are installing ONTAP Mediator for the first time, you can skip this step.

3

Provide repository access

You should enable access to repositories so that ONTAP Mediator can access the required packages during the installation process.

4

Download the ONTAP Mediator installation package

Download the ONTAP Mediator installation package from the ONTAP Mediator download page.

5

Verify the code signature of the ONTAP Mediator installation package

NetApp recommends verifying the ONTAP Mediator code signature before installing the ONTAP Mediator installation package.

6

Install ONTAP Mediator

To install ONTAP Mediator, you must get the installation package and run the installer on the host.

7

Verify the ONTAP Mediator installation

After you install ONTAP Mediator, verify that it is running successfully.

8

Perform post-installation configuration tasks

After ONTAP Mediator is installed and running, additional configuration tasks must be performed to use the ONTAP Mediator features.

Install or upgrade ONTAP Mediator

To install or upgrade ONTAP Mediator, you need to meet all prerequisites, download the installation package, and run the installer on the host.

- Beginning with ONTAP 9.8, you can use any version of ONTAP Mediator to monitor an SnapMirror active sync relationship.
- You can use any version of ONTAP Mediator to monitor a MetroCluster IP configuration.

Installation and upgrade considerations

Review these points before upgrading or installing ONTAP Mediator.



ONTAP Mediator 1.8 and earlier is not compatible with Red Hat Enterprise Linux (RHEL) FIPS mode and prevents it from installing successfully. You can check if FIPS mode is enabled using the `fips-mode-setup --check` command. You can disable FIPS mode using the `fips-modesetup --disable` command. Reboot after disabling FIPS mode to successfully install ONTAP Mediator 1.8 or earlier.

- You should upgrade ONTAP Mediator to the latest version. Older versions still work with all ONTAP releases, but newer versions include security patches for third-party components.
- When you upgrade to a new ONTAP Mediator version, the installer automatically upgrades to the recommended SCST version unless a higher version is available. For instructions on manually installing a higher SCST version, see [Manage ONTAP Mediator](#). For supported versions, see the [SCST support matrix](#).



- If the installation fails, you might need to upgrade to a newer version of ONTAP Mediator.
- From June 15, 2025, you can't install or upgrade ONTAP Mediator 1.9 and 1.8 because their code signing certificates have expired. If the installation or upgrade fails, use the ONTAP Mediator 1.9.1 patch version instead.

- If you install the `yum-utils` package, you can use the `needs-restarting` command.
- Beginning with ONTAP Mediator 1.11, IPv6 is supported for MetroCluster IP configurations.

Host requirements

Follow these requirements when installing RHEL or Rocky Linux and configuring the associated repositories.



If you modify the installation or configuration process, you might need to perform additional steps.

Linux distribution requirements

- Install RHEL or Rocky Linux according to Red Hat's best practices. Because CentOS 8.x has reached end-of-life, compatible versions of CentOS 8.x are not recommended.
- When installing ONTAP Mediator, ensure the system has access to the required repository so the installation program can retrieve and install all required software dependencies.
- To enable the yum installer to find dependent software in the RHEL repositories, register the system during installation or afterwards using a valid Red Hat subscription.



See the Red Hat Subscription Manager documentation for further information.

Networking requirements

Ensure that the following ports are available and unused for ONTAP Mediator:

Port/services	Source	Direction	Destination	Purpose
22/tcp	Management host	Inbound	ONTAP Mediator	(Optional) SSH / ONTAP Mediator management
31784/tcp	cluster-mgmt and node-mgmt LIFs	Inbound	ONTAP Mediator web server	(Required) REST API (HTTPS)
3260/tcp	node-mgmt LIFs	Inbound	ONTAP Mediator iSCSI targets	(Required for MetroCluster IP configurations) iSCSI data connection for mailboxes

For SMBC customers, ONTAP doesn't require port 3260 to be enabled or connected.

- If using a third-party firewall, see [Firewall requirements for ONTAP Mediator](#).
- For Linux hosts without internet access, make sure the required packages are available in a local repository.

If you are using Link Aggregation Control Protocol (LACP) in a Linux environment, configure the kernel and set the `sysctl net.ipv4.conf.all.arp_ignore` to 2.

OS requirements

Your OS must meet the following requirements:

- 64-bit physical installation or virtual machine
- 8 GB RAM
- 1 GB disk space (used for applications installation, server logs, and the database)
- User: Root access

The following table shows the supported OSs for each version of ONTAP Mediator.

ONTAP Mediator version	Supported Linux versions
------------------------	--------------------------

1.11	<ul style="list-style-type: none"> • Red Hat Enterprise Linux <ul style="list-style-type: none"> ◦ Compatible: 9.5 ¹ ◦ Recommended: 10.1, 10.0, 9.7, 9.6, 9.4, and 8.10 • Rocky Linux 10.1, 9.7, and 8.10 • Oracle Linux 10.0 and 9.6
1.10	<ul style="list-style-type: none"> • Red Hat Enterprise Linux <ul style="list-style-type: none"> ◦ Compatible: 9.5 ¹ ◦ Recommended: 10.0, 9.6, 9.4, and 8.10 • Rocky Linux 10.0, 9.6, and 8.10
1.9.1	<ul style="list-style-type: none"> • Red Hat Enterprise Linux <ul style="list-style-type: none"> ◦ Compatible: 9.3, 9.1, 8.9, 8.7, 8.6, 8.5, and 8.4 ¹ ◦ Recommended: 9.5, 9.4, 9.2, 9.0, 8.10, and 8.8 • Rocky Linux 9.5 and 8.10
1.9	<ul style="list-style-type: none"> • Red Hat Enterprise Linux <ul style="list-style-type: none"> ◦ Compatible: 9.3, 9.1, 8.9, 8.7, 8.6, 8.5, and 8.4 ¹ ◦ Recommended: 9.5, 9.4, 9.2, 9.0, 8.10, and 8.8 • Rocky Linux 9.5 and 8.10
1.8	<ul style="list-style-type: none"> • Red Hat Enterprise Linux: <ul style="list-style-type: none"> ◦ Compatible: 8.7, 8.6, 8.5, and 8.4 ¹ ◦ Recommended: 9.4, 9.3, 9.2, 9.1, 9.0, 8.10, 8.9, and 8.8 • Rocky Linux 9.4 and 8.10
1.7	<ul style="list-style-type: none"> • Red Hat Enterprise Linux: <ul style="list-style-type: none"> ◦ Compatible: 8.7, 8.6, 8.5, and 8.4 ¹ ◦ Recommended: 9.3, 9.2, 9.1, 9.0, 8.9, and 8.8 • Rocky Linux 9.3 and 8.9
1.6	<ul style="list-style-type: none"> • Red Hat Enterprise Linux: <ul style="list-style-type: none"> ◦ Compatible: 8.7, 8.6, 8.5, and 8.4 ¹ ◦ Recommended: 9.2, 9.1, 9.0, and 8.8 • Rocky Linux 9.2 and 8.8
1.5	<ul style="list-style-type: none"> • Red Hat Enterprise Linux: 8.5, 8.4, 8.3, 8.2, 8.1, 8.0, 7.9, 7.8, 7.7, and 7.6 • CentOS: 7.9, 7.8, 7.7, and 7.6

1.4	<ul style="list-style-type: none"> • Red Hat Enterprise Linux: 8.5, 8.4, 8.3, 8.2, 8.1, 8.0, 7.9, 7.8, 7.7, and 7.6 • CentOS: 7.9, 7.8, 7.7, and 7.6
1.3	<ul style="list-style-type: none"> • Red Hat Enterprise Linux: 8.3, 8.2, 8.1, 8.0, 7.9, 7.8, 7.7, and 7.6 • CentOS: 7.9, 7.8, 7.7, and 7.6
1.2	<ul style="list-style-type: none"> • Red Hat Enterprise Linux: 8.1, 8.0, 7.9, 7.8, 7.7, and 7.6 • CentOS: 7.9, 7.8, 7.7, and 7.6

1. Compatible means that Red Hat no longer supports these RHEL versions, but ONTAP Mediator can still be installed on them.

OS required packages

The following packages are required by ONTAP Mediator:



The packages are either pre-installed or automatically installed by the ONTAP Mediator installer.

All RHEL/CentOS versions	Additional packages for RHEL 10.x / Rocky Linux 10	Additional packages for RHEL 9.x / Rocky Linux 9	Additional packages for RHEL 8.x / Rocky Linux 8
<ul style="list-style-type: none"> • openssl • openssl-devel • kernel-devel-\$(uname -r) • gcc • make • libselinux-utils • patch • bzip2 • perl-Data-Dumper • perl-ExtUtils-MakeMaker • efibootmgr • mokutil 	<ul style="list-style-type: none"> • python3.12 • python3.12-devel 	<ul style="list-style-type: none"> • elfutils-libelf-devel • policycoreutils-python-utils • python3 • python3-devel 	<ul style="list-style-type: none"> • elfutils-libelf-devel • policycoreutils-python-utils • redhat-lsb-core • python39 • python39-devel

The Mediator installation package is a self-extracting compressed tar file that includes:

- An RPM file containing all dependencies that cannot be obtained from the supported release's repository.
- An install script.

A valid SSL certificate is recommended.

OS upgrade considerations and kernel compatibility

- You can update all library packages except the kernel, but you might need to reboot to apply changes in ONTAP Mediator. Schedule downtime if you need to reboot.
- You should keep the OS kernel up to date. Upgrade the kernel core to a supported version listed in the [ONTAP Mediator version matrix](#). You must reboot the system, so plan a maintenance window for the outage.
 - Uninstall the SCST kernel module before you reboot, and then reinstall it afterwards.
 - Prepare a supported version of SCST to reinstall before you start the kernel OS upgrade.



- The kernel version must match the operating system version.
- Do not upgrade the kernel past the supported OS version for your ONTAP Mediator release as the tested SCST module probably won't work.

Install ONTAP Mediator when UEFI Secure Boot is enabled

ONTAP Mediator can be installed on a system with or without UEFI Secure Boot enabled.

About this task

You can choose to disable UEFI Secure Boot before installing ONTAP Mediator if it is not needed or if you are troubleshooting ONTAP Mediator installation issues. Disable the UEFI Secure Boot option from your machine settings.



For detailed instructions on disabling UEFI Secure Boot, refer to the documentation for your host OS.

To install ONTAP Mediator with UEFI Secure Boot enabled, you must register a security key before the service can start. The key is generated during the SCST installation's compile step and saved as a private-public key pair on your machine. Use the `mokutil` utility to add the public key as a Machine Owner Key (MOK) to your UEFI firmware, enabling the system to trust and load the signed module. Save the `mokutil` passphrase in a secure location as this is required when rebooting your system to activate the MOK.

Steps

1. Check if UEFI Secure Boot is enabled on your system:

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

The results indicate whether UEFI Secure Boot is enabled on this system.

If...	Go to...
UEFI secure boot is enabled	The step where you run the <code>mokutil</code> utility
UEFI secure boot is disabled	Upgrade the host operating system and then ONTAP Mediator



- You are prompted to create a passphrase that you must store in a secure location. You'll need this passphrase to enable the key in the UEFI Boot Manager.
- ONTAP Mediator 1.2.0 and earlier versions do not support this mode.

2. If the `mokutil` utility is not installed, run the following command:

```
yum install mokutil
```

Upgrade the host OS and ONTAP Mediator

To upgrade the host OS for ONTAP Mediator to a later version, you must first uninstall ONTAP Mediator.

About this task

Before upgrading the host OS for ONTAP Mediator with the `leapp-upgrade` tool, uninstall ONTAP Mediator. The tool checks for new RPM versions in registered repositories.

The ONTAP Mediator installer installs an `.rpm` file, which the `leapp-upgrade` tool includes in the search. Because the installer unpacks the file instead of downloading it from a registered repository, the tool cannot find an upgrade. You must use the `leapp-upgrade` tool to uninstall the package.

Steps

1. Back up the log files:

```
[rootmediator-host ~]# tar -czf ontap_mediator_file_backup.tgz -C
/opt/netapp/lib/ontap_mediator ./log
./ontap_mediator/server_config/ontap_mediator.user_config.yaml
[rootmediator-host ~]# tar -tf ontap_mediator_file_backup.tgz
./log/
./log/ontap_mediator.log
./log/scstadmin.log
./log/ontap_mediator_stdout.log
./log/ontap_mediator_requests.log
./log/install_20230419134611.log
./log/scst.log
./log/ontap_mediator_syslog.log
./ontap_mediator/server_config/ontap_mediator.user_config.yaml
[rootmediator-host ~]#
```

2. Perform upgrade with `leapp-upgrade` tool:

```
[rootmediator-host ~]# leapp preupgrade --target 8.4
  ..<snip upgrade checks>..
  ..<fix issues found>..
[rootmediator-host ~]# leapp upgrade --target 8.4
  ..<snip upgrade>..
[rootmediator-host ~]# cat /etc/os-release | head -2
NAME="Red Hat Enterprise Linux"
VERSION="8.4 (Ootpa)"
[rootmediator-host ~]#
```

3. Reinstall ONTAP Mediator:



Perform the rest of the steps immediately after reinstalling ONTAP Mediator to prevent a loss of log files.

```
[rootmediator-host ~]# ontap-mediator-1.11.0/ontap-mediator-1.11.0

ONTAP Mediator: Self Extracting Installer

  ..<snip installation>..
[rootmediator-host ~]#
```

4. Stop ontap_mediator:

```
[rootmediator-host ~]# systemctl stop ontap_mediator
[rootmediator-host ~]#
```

5. Replace the log files:

```
[rootmediator-host ~]# tar -xf ontap_mediator_log_backup.tgz -C
/opt/netapp/lib/ontap_mediator
[rootmediator-host ~]#
```

6. Start ontap_mediator:

```
[rootmediator-host ~]# systemctl start ontap_mediator
[rootmediator-host ~]#
```

7. Reconnect all ONTAP clusters to the upgraded ONTAP Mediator:

MetroCluster over IP

```
siteA::> metrocluster configuration-settings mediator show
Mediator IP      Port    Node          Configuration
Connection
-----
-----
172.31.40.122
                31784    siteA-node2   true          false
                siteA-nod1   true          false
                siteB-node2 true          false
                siteB-node2 true          false

siteA::> metrocluster configuration-settings mediator remove
Removing the mediator and disabling Automatic Unplanned Switchover. It
may take a few minutes to complete.
Please enter the username for the mediator: mediatoradmin
Please enter the password for the mediator:
Confirm the mediator password:
Automatic Unplanned Switchover is disabled for all nodes...
Removing mediator mailboxes...
Successfully removed the mediator.

siteA::> metrocluster configuration-settings mediator add -mediator
-address 172.31.40.122
Adding the mediator and enabling Automatic Unplanned Switchover. It may
take a few minutes to complete.
Please enter the username for the mediator: mediatoradmin
Please enter the password for the mediator:
Confirm the mediator password:
Successfully added the mediator.

siteA::> metrocluster configuration-settings mediator show
Mediator IP      Port    Node          Configuration
Connection
-----
-----
172.31.40.122
                31784    siteA-node2   true          true
                siteA-nod1   true          true
                siteB-node2 true          true
                siteB-node2 true          true

siteA::>
```

SnapMirror active sync

For SnapMirror active sync, you do not need to reinstall TLS certificates stored outside /opt/netapp. Back up and restore the certificates stored in /opt/netapp.

```
peer1::> snapmirror mediator show
Mediator Address Peer Cluster      Connection Status Quorum Status
-----
172.31.49.237    peer2                unreachable      true

peer1::> snapmirror mediator remove -mediator-address 172.31.49.237
-peer-cluster peer2

Info: [Job 39] 'mediator remove' job queued

peer1::> job show -id 39

Job ID Name                Owning
Vserver      Node                State
-----
39    mediator remove    peer1    peer1-node1    Success
Description: Removing entry in mediator

peer1::> security certificate show -common-name ONTAPMediatorCA
Vserver      Serial Number      Certificate Name                Type
-----
peer1
4A790360081F41145E14C5D7CE721DC6C210007F
ONTAPMediatorCA                server-
ca
Certificate Authority: ONTAP Mediator CA
Expiration Date: Mon Apr 17 10:27:54 2073

peer1::> security certificate delete -common-name ONTAPMediatorCA *
1 entry was deleted.

peer1::> security certificate install -type server-ca -vserver peer1

Please enter Certificate: Press <Enter> when done
..<snip ONTAP Mediator CA public key>..

You should keep a copy of the CA-signed digital certificate for future
reference.

The installed certificate's CA and serial number for reference:
CA: ONTAP Mediator CA
serial: 44786524464C5113D5EC966779D3002135EA4254
```

The certificate's generated name for reference: ONTAPMediatorCA

```
peer2::> security certificate delete -common-name ONTAPMediatorCA *
1 entry was deleted.
```

```
peer2::> security certificate install -type server-ca -vserver peer2
```

```
Please enter Certificate: Press <Enter> when done
..<snip ONTAP Mediator CA public key>..
```

You should keep a copy of the CA-signed digital certificate for future reference.

The installed certificate's CA and serial number for reference:

CA: ONTAP Mediator CA

serial: 44786524464C5113D5EC966779D3002135EA4254

The certificate's generated name for reference: ONTAPMediatorCA

```
peer1::> snapmirror mediator add -mediator-address 172.31.49.237 -peer
-cluster peer2 -username mediatoradmin
```

Notice: Enter the mediator password.

Enter the password:

Enter the password again:

Info: [Job: 43] 'mediator add' job queued

```
peer1::> job show -id 43
```

Job ID	Name	Owning Vserver	Node	State
43	mediator add	peer1	peer1-node2	Success

Description: Creating a mediator entry

```
peer1::> snapmirror mediator show
```

Mediator Address	Peer	Cluster	Connection Status	Quorum Status
172.31.49.237	peer2		connected	true

```
peer1::>
```

Related information

- [security certificate delete](#)
- [security certificate install](#)
- [security certificate show](#)
- [snapmirror mediator add](#)
- [snapmirror mediator remove](#)
- [storage iscsi-initiator show](#)

Provide repository access for ONTAP Mediator installation

You should enable access to repositories so that ONTAP Mediator can access the required packages during the installation process.

Steps

1. Determine which repositories must be accessed, as shown in the following table:

If your operating system is...	You must provide access to these repositories...
RHEL 10.x	<ul style="list-style-type: none">• rhel-10-for-x86_64-baseos-rpms• rhel-10-for-x86_64-appstream-rpms
RHEL 9.x	<ul style="list-style-type: none">• rhel-9-for-x86_64-baseos-rpms• rhel-9-for-x86_64-appstream-rpms
RHEL 8.x	<ul style="list-style-type: none">• rhel-8-for-x86_64-baseos-rpms• rhel-8-for-x86_64-appstream-rpms
RHEL 7.x	<ul style="list-style-type: none">• rhel-7-server-optional-rpms
CentOS 7.x	<ul style="list-style-type: none">• C7.6.1810 - Base repository
Rocky Linux 10	<ul style="list-style-type: none">• appstream• baseos
Rocky Linux 9	<ul style="list-style-type: none">• appstream• baseos
Rocky Linux 8	<ul style="list-style-type: none">• appstream• baseos

2. Use one of the following procedures to enable access to the repositories listed above so ONTAP Mediator can access the required packages during the installation process.



If ONTAP Mediator has dependencies on Python modules present in the "extras" and "optional" repositories, it might need to access the `rhel-X-for-x86_64-extras-rpms` and `rhel-X-for-x86_64-optional-rpms` files.

Procedure for RHEL 10.x operating system

Use this procedure if your operating system is **RHEL 10.x** to enable access to repositories:

Steps

1. Subscribe to the required repository:

```
subscription-manager repos --enable rhel-10-for-x86_64-baseos-rpms
```

```
subscription-manager repos --enable rhel-10-for-x86_64-appstream-rpms
```

The following example shows the execution of this command:

```
[root@localhost ~]# subscription-manager repos --enable rhel-10-for-x86_64-baseos-rpms
Repository 'rhel-10-for-x86_64-baseos-rpms' is enabled for this system.
[root@localhost ~]# subscription-manager repos --enable rhel-10-for-x86_64-appstream-rpms
Repository 'rhel-10-for-x86_64-appstream-rpms' is enabled for this system.
```

2. Run the `yum repolist` command.

The newly subscribed repositories should appear in the list.

Procedure for RHEL 9.x operating system

Use this procedure if your operating system is **RHEL 9.x** to enable access to repositories:

Steps

1. Subscribe to the required repository:

```
subscription-manager repos --enable rhel-9-for-x86_64-baseos-rpms
```

```
subscription-manager repos --enable rhel-9-for-x86_64-appstream-rpms
```

The following example shows the execution of this command:

```
[root@localhost ~]# subscription-manager repos --enable rhel-9-for-x86_64-baseos-rpms
Repository 'rhel-9-for-x86_64-baseos-rpms' is enabled for this system.
[root@localhost ~]# subscription-manager repos --enable rhel-9-for-x86_64-appstream-rpms
Repository 'rhel-9-for-x86_64-appstream-rpms' is enabled for this system.
```

2. Run the `yum repolist` command.

The newly subscribed repositories should appear in the list.

Procedure for RHEL 8.x operating system

Use this procedure if your operating system is **RHEL 8.x** to enable access to repositories:

Steps

1. Subscribe to the required repository:

```
subscription-manager repos --enable rhel-8-for-x86_64-baseos-rpms
```

```
subscription-manager repos --enable rhel-8-for-x86_64-appstream-rpms
```

The following example shows the execution of this command:

```
[root@localhost ~]# subscription-manager repos --enable rhel-8-for-x86_64-baseos-rpms
Repository 'rhel-8-for-x86_64-baseos-rpms' is enabled for this system.
[root@localhost ~]# subscription-manager repos --enable rhel-8-for-x86_64-appstream-rpms
Repository 'rhel-8-for-x86_64-appstream-rpms' is enabled for this system.
```

2. Run the `yum repolist` command.

The newly subscribed repositories should appear in the list.

Procedure for RHEL 7.x operating system

Use this procedure if your operating system is **RHEL 7.x** to enable access to repositories:

Steps

1. Subscribe to the required repository:

```
subscription-manager repos --enable rhel-7-server-optional-rpms
```

The following example shows the execution of this command:

```
[root@localhost ~]# subscription-manager repos --enable rhel-7-  
server-optional-rpms  
Repository 'rhel-7-server-optional-rpms' is enabled for this system.
```

2. Run the `yum repolist` command.

The following example shows the execution of this command. The "rhel-7-server-optional-rpms" repository should appear in the list.

```
[root@localhost ~]# yum repolist  
Loaded plugins: product-id, search-disabled-repos, subscription-  
manager  
rhel-7-server-optional-rpms | 3.2 kB  00:00:00  
rhel-7-server-rpms | 3.5 kB  00:00:00  
(1/3): rhel-7-server-optional-rpms/7Server/x86_64/group  
| 26 kB  00:00:00  
(2/3): rhel-7-server-optional-rpms/7Server/x86_64/updateinfo  
| 2.5 MB  00:00:00  
(3/3): rhel-7-server-optional-rpms/7Server/x86_64/primary_db  
| 8.3 MB  00:00:01  
repo id                                repo name  
status  
rhel-7-server-optional-rpms/7Server/x86_64  Red Hat Enterprise  
Linux 7 Server - Optional (RPMs)  19,447  
rhel-7-server-rpms/7Server/x86_64          Red Hat Enterprise  
Linux 7 Server (RPMs)                26,758  
repolist: 46,205  
[root@localhost ~]#
```

Procedure for CentOS 7.x operating system

Use this procedure if your operating system is **CentOS 7.x** to enable access to repositories:



The following examples are showing a repository for CentOS 7.6 and might not work for other CentOS versions. Use the base repository for your version of CentOS.

Steps

1. Add the C7.6.1810 - Base repository. The C7.6.1810 - Base vault repository contains the "kernel-devel" package needed for ONTAP Mediator.
2. Add the following lines to `/etc/yum.repos.d/CentOS-Vault.repo`.

```
[C7.6.1810-base]
name=CentOS-7.6.1810 - Base
baseurl=http://vault.centos.org/7.6.1810/os/$basearch/
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
enabled=1
```

3. Run the `yum repolist` command.

The following example shows the execution of this command. The CentOS-7.6.1810 - Base repository should appear in the list.

```
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: distro.ibiblio.org
 * extras: distro.ibiblio.org
 * updates: ewr.edge.kernel.org
C7.6.1810-base | 3.6 kB 00:00:00
(1/2): C7.6.1810-base/x86_64/group_gz | 166 kB 00:00:00
(2/2): C7.6.1810-base/x86_64/primary_db | 6.0 MB 00:00:04
repo id repo name status
C7.6.1810-base/x86_64 CentOS-7.6.1810 - Base 10,019
base/7/x86_64 CentOS-7 - Base 10,097
extras/7/x86_64 CentOS-7 - Extras 307
updates/7/x86_64 CentOS-7 - Updates 1,010
repolist: 21,433
[root@localhost ~]#
```

Procedure for Rocky Linux 10, 9, or 8 operating systems

Use this procedure if your operating system is **Rocky Linux 10**, **Rocky Linux 9**, or **Rocky Linux 8** to enable access to repositories:

Steps

1. Subscribe to the required repositories:

```
dnf config-manager --set-enabled baseos
```

```
dnf config-manager --set-enabled appstream
```

2. Perform a clean operation:

```
dnf clean all
```

3. Verify the list of repositories:

```
dnf repolist
```

Example for Rocky Linux 10

```
[root@localhost ~]# dnf config-manager --set-enabled baseos
[root@localhost ~]# dnf config-manager --set-enabled appstream
[root@localhost ~]# dnf clean all
[root@localhost ~]# dnf repolist
repo id                repo name
appstream              Rocky Linux 10 - AppStream
baseos                 Rocky Linux 10 - BaseOS
[root@localhost ~]#
```

Example for Rocky Linux 9

```
[root@localhost ~]# dnf config-manager --set-enabled baseos
[root@localhost ~]# dnf config-manager --set-enabled appstream
[root@localhost ~]# dnf clean all
[root@localhost ~]# dnf repolist
repo id                repo name
appstream              Rocky Linux 9 - AppStream
baseos                 Rocky Linux 9 - BaseOS
[root@localhost ~]#
```

Example for Rocky Linux 8

```
[root@localhost ~]# dnf config-manager --set-enabled baseos
[root@localhost ~]# dnf config-manager --set-enabled appstream
[root@localhost ~]# dnf clean all
[root@localhost ~]# dnf repolist
repo id                                repo name
appstream                              Rocky Linux 8 - AppStream
baseos                                  Rocky Linux 8 - BaseOS
[root@localhost ~]#
```

Download the ONTAP Mediator installation package

Download the ONTAP Mediator installation package and install it.

Steps

1. Download the ONTAP Mediator installation package from the ONTAP Mediator download page.

[ONTAP Mediator download page](#)

2. Make sure you have placed the Mediator installation package in the current working directory:

```
[root@sdot-r730-0003a-d6 ~]# ls ontap-mediator-1.11.0.tgz
```

```
ontap-mediator-1.11.0.tgz
```



For ONTAP Mediator versions 1.4 and earlier, the installer is named `ontap-mediator`.

If your system does not have internet access, make sure the installer can access the required packages.

3. Move the Mediator installation package to the installation directory if needed.
4. Unzip the installer package:

```
tar xvfz ontap-mediator-1.11.0.tgz
```

```

ontap-mediator-1.11.0/
ontap-mediator-1.11.0/csc-prod-ONTAP-Mediator.pem
ontap-mediator-1.11.0/csc-prod-chain-ONTAP-Mediator.pem
ontap-mediator-1.11.0/tsa-prod-ONTAP-Mediator.pem
ontap-mediator-1.11.0/tsa-prod-chain-ONTAP-Mediator.pem
ontap-mediator-1.11.0/ONTAP-Mediator-production.pub
ontap-mediator-1.11.0/ontap-mediator-1.11.0
ontap-mediator-1.11.0/ontap-mediator-1.11.0.sig.tsr
ontap-mediator-1.11.0/ontap-mediator-1.11.0.tsr
ontap-mediator-1.11.0/ontap-mediator-1.11.0.sig

```

Verify the ONTAP Mediator code signature

NetApp recommends verifying the ONTAP Mediator code signature before installation. This step is optional.

Before you begin

Make sure your system meets these needs before verifying the ONTAP Mediator code signature.



- From June 15th, 2025, you can't install or upgrade to ONTAP Mediator 1.9 and 1.8 because the code signature verification certificates have expired. Instead, install or upgrade to ONTAP Mediator 1.11 or 1.10.
- If the system doesn't meet the below requirements, the verification process isn't required and you can go directly to [Install the ONTAP Mediator installation package](#).

- openssl versions 1.0.2 to 3.0 for basic verification
- openssl version 1.1.0 or later for Time Stamping Authority (TSA) operations
- Public internet access for OCSP verification

The download package includes the following files:

File	Description
ONTAP-Mediator-production.pub	The public key used to verify the signature
csc-prod-chain-ONTAP-Mediator.pem	The public certification CA chain of trust
csc-prod-ONTAP-Mediator.pem	The certificate used to generate the key
ontap-mediator-1.11.0	The product installation executable for version 1.11
ontap-mediator-1.11.0.sig	The SHA-256 hashed, then RSA-signed using the csc-prod key, signature for the installer

ontap-mediator-1.11.0.sig.tsr	The revocation request for use by OCSCP for the installer's signature
ontap-mediator-1.11.0.tsr	The timestamp signing request file
tsa-prod-ONTAP-Mediator.pem	The public certificate for the TSR
tsa-prod-chain-ONTAP-Mediator.pem	The public certificate CA Chain for the TSR

Steps

1. Perform the revocation check on `csc-prod-ONTAP-Mediator.pem` by using Online Certificate Status Protocol (OCSP).

- a. Find the OCSP URL for the certificate. Developer certificates might not provide a URI:

```
openssl x509 -noout -ocsp_uri -in csc-prod-chain-ONTAP-Mediator.pem
```

- b. Generate an OCSP request for the certificate.

```
openssl ocsp -issuer csc-prod-chain-ONTAP-Mediator.pem -CAfile csc-prod-chain-ONTAP-Mediator.pem -cert csc-prod-ONTAP-Mediator.pem -reqout req.der
```

- c. Connect to the OCSP Manager to send the OCSP request:

```
openssl ocsp -issuer csc-prod-chain-ONTAP-Mediator.pem -CAfile csc-prod-chain-ONTAP-Mediator.pem -cert csc-prod-ONTAP-Mediator.pem -url ${ocsp_uri} -resp_text -respout resp.der -verify_other csc-prod-chain-ONTAP-Mediator.pem
```

2. Verify the trust chain of the CSC and expiration dates against the local host:

```
openssl verify
```



The `openssl` version from the `PATH` must have a valid `cert.pem` (not self-signed).

```
openssl verify -untrusted csc-prod-chain-ONTAP-Mediator.pem -CApath
${OPENSSLDIR} csc-prod-ONTAP-Mediator.pem # Failure action: The Code-
Signature-Check certificate has expired or is invalid. Download a newer
version of the ONTAP Mediator.
openssl verify -untrusted tsa-prod-chain-ONTAP-Mediator.pem -CApath
${OPENSSLDIR} tsa-prod-ONTAP-Mediator.pem # Failure action: The Time-
Stamp certificate has expired or is invalid. Download a newer version of
the ONTAP Mediator.
```

3. Verify the `ontap-mediator-1.11.0.sig.tsr` and `ontap-mediator-1.11.0.tsr` files using the associated certificates:

OpenSSL 3.x

```
openssl ts -verify -data ontap-mediator-1.11.0.sig -in ontap-mediator-
1.11.0.sig.tsr -CAfile tsa-prod-chain-ONTAP-Mediator.pem -untrusted tsa-
prod-ONTAP-Mediator.pem
```

OpenSSL 1.x

```
openssl ts -verify -data ontap-mediator-1.11.0 -in ontap-mediator-
1.11.0.tsr -CAfile tsa-prod-chain-ONTAP-Mediator.pem -partial_chain
```



.tsr files contain the time stamp response associated with the installer and the code signature. Processing confirms that the time stamp has a valid signature from TSA and that your input file has not changed. Your machine performs the verification locally. You do not need to access TSA servers.

4. Verify signatures against the key:

```
openssl -dgst -verify
```

```
openssl dgst -sha256 -verify ONTAP-Mediator-production.pub -signature
ontap-mediator-1.11.0.sig ontap-mediator-1.11.0
```

Install the ONTAP Mediator installation package

To install ONTAP Mediator, you must get the installation package and run the installer on the host.

Steps

1. Run the installer and respond to the prompts as required:

```
./ontap-mediator-1.11.0/ontap-mediator-1.11.0 -y
```

```
[root@scs000099753 ~]# ./ontap-mediator-1.11.0/ontap-mediator-1.11.0 -y
```



To skip signature check during installation, use this command: `./ontap-mediator-1.11.0/ontap-mediator-1.11.0 -y --skip-code-signature-check`

The installer creates the required accounts and installs the required packages. If the Mediator is already installed, it prompts you to upgrade.

Example of ONTAP Mediator installation (console output)

```
[root@mediator_host ~]# tar -zxvf ontap-mediator-1.11.0.tgz
ontap-mediator-1.11.0/
ontap-mediator-1.11.0/csc-prod-chain-ONTAP-Mediator.pem
ontap-mediator-1.11.0/csc-prod-ONTAP-Mediator.pem
ontap-mediator-1.11.0/tsa-prod-ONTAP-Mediator.pem
ontap-mediator-1.11.0/tsa-prod-chain-ONTAP-Mediator.pem
ontap-mediator-1.11.0/ONTAP-Mediator-production.pub
ontap-mediator-1.11.0/ontap-mediator-1.11.0
ontap-mediator-1.11.0/ontap-mediator-1.11.0.sig.tsr
ontap-mediator-1.11.0/ontap-mediator-1.11.0.tsr
ontap-mediator-1.11.0/ontap-mediator-1.11.0.sig
[root@mediator_host ~]# ./ontap-mediator-1.11.0/ontap-mediator-1.11.0

ONTAP Mediator: Self Extracting Installer

+ Extracting the ONTAP Mediator installation/upgrade archive
+ Performing the ONTAP Mediator run-time code signature check
  Using openssl from the path: /usr/bin/openssl configured for
  CApath:/etc/pki/tls
  Error querying OCSP responder
  80BBA032607F0000:error:1E800080:HTTP
  routines:OSSL_HTTP_REQ_CTX_nbio:failed reading
  data:crypto/http/http_client.c:549:
  80BBA032607F0000:error:1E800067:HTTP
  routines:OSSL_HTTP_REQ_CTX_exchange:error
  receiving:crypto/http/http_client.c:901:server=http://ocsp.entrust.net:
  80
  WARNING: The OCSP check failed while attempting to test the Code-
  Signature-Check certificate
  Continue without code signature checking (only recommended if
  integrity has been established manually)? yes/no: yes
  SKIPPING: Code signature check, manual override due to lack of OCSP
  response
+ Unpacking the ONTAP Mediator installer

ONTAP Mediator requires two user accounts. One for the service
(netapp), and one for use by ONTAP to the mediator API (mediatoradmin).
Would you like to use the default account names: netapp +
mediatoradmin? (Y(es)/n(o)): yes

Enter ONTAP Mediator user account (mediatoradmin) password:
```

Re-Enter ONTAP Mediator user account (mediatoradmin) password:

+ Checking if SELinux is in enforcing mode

The installer will change the SELinux context type of /opt/netapp/lib/ontap_mediator/pyenv/bin/uwsgi from type 'lib_t' to 'bin_t'.

+ Checking for default Linux firewall

+ Installing required packages.

Updating Subscription Management repositories.

Unable to read consumer identity

This system is not registered with an entitlement server. You can use "rhc" or "subscription-manager" to register.

Last metadata expiration check: 5 days, 14:34:13 ago on Thu 10 Jul 2025 01:28:32 AM EDT.

Package openssl-1:3.2.2-16.el10.x86_64 is already installed.

Package libselinux-utils-3.8-1.el10.x86_64 is already installed.

Package perl-Data-Dumper-2.189-512.el10.x86_64 is already installed.

Package bzip2-1.0.8-25.el10.x86_64 is already installed.

Package efibootmgr-18-8.el10.x86_64 is already installed.

Package mokutil-2:0.6.0-11.el10.x86_64 is already installed.

Package policycoreutils-python-utils-3.8-1.el10.noarch is already installed.

Package python3-3.12.9-1.el10.x86_64 is already installed.

Dependencies resolved.

=====
=====
=====
=====

Package	Version
Architecture	Size
Repository	
=====	
=====	
=====	
=====	

Installing:

elfutils-libelf-devel	
x86_64	0.192-5.el10

```

AppStream                                50 k
gcc
x86_64                                  14.2.1-7.e110
AppStream                                37 M
kernel-devel
x86_64                                  6.12.0-55.9.1.e110_0
AppStream                                22 M
make
x86_64                                  1:4.4.1-9.e110
BaseOS                                   591 k
openssl-devel
x86_64                                  1:3.2.2-16.e110
AppStream                                3.9 M
patch
x86_64                                  2.7.6-26.e110
AppStream                                134 k
perl-ExtUtils-MakeMaker
noarch                                   2:7.70-513.e110
AppStream                                297 k
python3-devel
x86_64                                  3.12.9-1.e110
AppStream                                334 k
python3-pip
noarch                                   23.3.2-7.e110
AppStream                                3.2 M
Installing dependencies:
annobin-docs
noarch                                   12.92-1.e110
AppStream                                94 k
annobin-plugin-gcc
x86_64                                  12.92-1.e110
AppStream                                985 k
bison
x86_64                                  3.8.2-9.e110
AppStream                                1.0 M
cmake-filesystem
x86_64                                  3.30.5-2.e110
AppStream                                29 k
cpp
x86_64                                  14.2.1-7.e110
AppStream                                12 M
dwz
x86_64                                  0.15-7.e110
AppStream                                139 k
efi-srpm-macros

```

noarch	6-6.e110
AppStream	25 k
flex	
x86_64	2.6.4-19.e110
AppStream	303 k
fonts-srpm-macros	
noarch	1:2.0.5-18.e110
AppStream	29 k
forge-srpm-macros	
noarch	0.4.0-6.e110
AppStream	23 k
gcc-plugin-annobin	
x86_64	14.2.1-7.e110
AppStream	62 k
glibc-devel	
x86_64	2.39-37.e110
AppStream	641 k
go-srpm-macros	
noarch	3.6.0-4.e110
AppStream	29 k
kernel-headers	
x86_64	6.12.0-55.9.1.e110_0
AppStream	2.3 M
kernel-srpm-macros	
noarch	1.0-25.e110
AppStream	11 k
libxcrypt-devel	
x86_64	4.4.36-10.e110
AppStream	33 k
libzstd-devel	
x86_64	1.5.5-9.e110
AppStream	53 k
lua-srpm-macros	
noarch	1-15.e110
AppStream	10 k
m4	
x86_64	1.4.19-11.e110
AppStream	309 k
ocaml-srpm-macros	
noarch	10-4.e110
AppStream	10 k
openblas-srpm-macros	
noarch	2-19.e110
AppStream	9.0 k
package-notes-srpm-macros	

noarch	0.5-13.e110
AppStream	11 k
perl-AutoSplit	
noarch	5.74-512.e110
AppStream	23 k
perl-Benchmark	
noarch	1.25-512.e110
AppStream	28 k
perl-CPAN-Meta-Requirements	
noarch	2.143-11.e110
AppStream	39 k
perl-CPAN-Meta-YAML	
noarch	0.018-512.e110
AppStream	29 k
perl-Devel-PPPort	
x86_64	3.72-512.e110
AppStream	223 k
perl-ExtUtils-Command	
noarch	2:7.70-513.e110
AppStream	16 k
perl-ExtUtils-Constant	
noarch	0.25-512.e110
AppStream	47 k
perl-ExtUtils-Install	
noarch	2.22-511.e110
AppStream	47 k
perl-ExtUtils-Manifest	
noarch	1:1.75-511.e110
AppStream	37 k
perl-ExtUtils-ParseXS	
noarch	1:3.51-512.e110
AppStream	190 k
perl-File-Compare	
noarch	1.100.800-512.e110
AppStream	15 k
perl-File-Copy	
noarch	2.41-512.e110
AppStream	22 k
perl-I18N-Langinfo	
x86_64	0.24-512.e110
AppStream	28 k
perl-JSON-PP	
noarch	1:4.16-512.e110
AppStream	69 k
perl-Test-Harness	
noarch	1:3.48-512.e110

```

AppStream 288 k
  perl-lib
x86_64 0.65-512.e110
AppStream 16 k
  perl-srpm-macros
noarch 1-57.e110
AppStream 9.7 k
  perl-version
x86_64 8:0.99.32-4.e110
AppStream 68 k
  pyproject-srpm-macros
noarch 1.16.2-1.e110
AppStream 16 k
  python-srpm-macros
noarch 3.12-9.1.e110
AppStream 26 k
  python3-pyparsing
noarch 3.1.1-7.e110
BaseOS 273 k
  qt6-srpm-macros
noarch 6.8.1-3.e110
AppStream
  11 k
  redhat-rpm-config
noarch 288-1.e110
AppStream 83 k
  rust-toolset-srpm-macros
noarch 1.84.1-1.e110
AppStream 13 k
  systemtap-sdt-devel
x86_64 5.2-2.e110
AppStream 78 k
  systemtap-sdt-dtrace
x86_64 5.2-2.e110
AppStream 72 k
  zlib-ng-compat-devel
x86_64 2.2.3-1.e110
AppStream 41 k
Installing weak dependencies:
  perl-CPAN-Meta
noarch 2.150010-511.e110
AppStream 202 k
  perl-Encode-Locale
noarch 1.05-31.e110
AppStream 21 k
  perl-Time-HiRes

```

```

x86_64                                4:1.9777-511.el10
AppStream                               62 k
  perl-devel
x86_64                                4:5.40.1-512.el10
AppStream                               772 k
  perl-doc
noarch                                  5.40.1-512.el10
AppStream                               4.9 M

```

Transaction Summary

```

=====
=====
=====
=====

```

Install 63 Packages

Total size: 94 M

Installed size: 282 M

Downloading Packages:

BaseOS Packages Red Hat Enterprise Linux 10

439 kB/s | 3.7 kB 00:00

Importing GPG key 0xFD431D51:

Userid : "Red Hat, Inc. (release key 2) <security@redhat.com>"

Fingerprint: 567E 347A D004 4ADE 55BA 8A5F 199E 2F91 FD43 1D51

From : /etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release

Key imported successfully

Importing GPG key 0x5A6340B3:

Userid : "Red Hat, Inc. (auxiliary key 3) <security@redhat.com>"

Fingerprint: 7E46 2425 8C40 6535 D56D 6F13 5054 E4A4 5A63 40B3

From : /etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release

Key imported successfully

Running transaction check

Transaction check succeeded.

Running transaction test

Transaction test succeeded.

Running transaction

Preparing :

1/1

Installing : perl-version-8:0.99.32-4.el10.x86_64

1/63

Installing : perl-File-Copy-2.41-512.el10.noarch

2/63

Installing : perl-CPAN-Meta-Requirements-2.143-11.el10.noarch

3/63

Installing : perl-Time-HiRes-4:1.9777-511.el10.x86_64

4/63

```
Installing      : perl-JSON-PP-1:4.16-512.el10.noarch
5/63
Installing      : perl-File-Compare-1.100.800-512.el10.noarch
6/63
Installing      : perl-ExtUtils-ParseXS-1:3.51-512.el10.noarch
7/63
Installing      : m4-1.4.19-11.el10.x86_64
8/63
Installing      : make-1:4.4.1-9.el10.x86_64
9/63
Installing      : bison-3.8.2-9.el10.x86_64
10/63
Installing      : flex-2.6.4-19.el10.x86_64
11/63
Installing      : perl-ExtUtils-Command-2:7.70-513.el10.noarch
12/63
Installing      : perl-ExtUtils-Manifest-1:1.75-511.el10.noarch
13/63
Installing      : systemtap-sdt-devel-5.2-2.el10.x86_64
14/63
Installing      : rust-toolset-srpm-macros-1.84.1-1.el10.noarch
15/63
Installing      : qt6-srpm-macros-6.8.1-3.el10.noarch
16/63
Installing      : python3-pip-23.3.2-7.el10.noarch
17/63
Installing      : pyproject-srpm-macros-1.16.2-1.el10.noarch
18/63
Installing      : perl-srpm-macros-1-57.el10.noarch
19/63
Installing      : perl-lib-0.65-512.el10.x86_64
20/63
Installing      : perl-doc-5.40.1-512.el10.noarch
21/63
Installing      : perl-I18N-Langinfo-0.24-512.el10.x86_64
22/63
Installing      : perl-Encode-Locale-1.05-31.el10.noarch
23/63
Installing      : perl-ExtUtils-Constant-0.25-512.el10.noarch
24/63
Installing      : perl-Devel-PPPort-3.72-512.el10.x86_64
25/63
Installing      : perl-CPAN-Meta-YAML-0.018-512.el10.noarch
26/63
Installing      : perl-CPAN-Meta-2.150010-511.el10.noarch
27/63
```

```
Installing      : perl-Benchmark-1.25-512.el10.noarch
28/63
Installing      : perl-Test-Harness-1:3.48-512.el10.noarch
29/63
Installing      : perl-AutoSplit-5.74-512.el10.noarch
30/63
Installing      : package-notes-srpm-macros-0.5-13.el10.noarch
31/63
Installing      : openssl-devel-1:3.2.2-16.el10.x86_64
32/63
Installing      : openblas-srpm-macros-2-19.el10.noarch
33/63
Installing      : ocaml-srpm-macros-10-4.el10.noarch
34/63
Installing      : lua-srpm-macros-1-15.el10.noarch
35/63
Installing      : libzstd-devel-1.5.5-9.el10.x86_64
36/63
Installing      : kernel-srpm-macros-1.0-25.el10.noarch
37/63
Installing      : kernel-headers-6.12.0-55.9.1.el10_0.x86_64
38/63
Installing      : libxcrypt-devel-4.4.36-10.el10.x86_64
39/63
Installing      : glibc-devel-2.39-37.el10.x86_64
40/63
Installing      : efi-srpm-macros-6-6.el10.noarch
41/63
Installing      : dwz-0.15-7.el10.x86_64
42/63
Installing      : cpp-14.2.1-7.el10.x86_64
43/63
Installing      : gcc-14.2.1-7.el10.x86_64
44/63
Installing      : gcc-plugin-annobin-14.2.1-7.el10.x86_64
45/63
Installing      : cmake-filesystem-3.30.5-2.el10.x86_64
46/63
Installing      : zlib-ng-compat-devel-2.2.3-1.el10.x86_64
47/63
Installing      : elfutils-libelf-devel-0.192-5.el10.x86_64
48/63
Installing      : annobin-docs-12.92-1.el10.noarch
49/63
Installing      : annobin-plugin-gcc-12.92-1.el10.x86_64
50/63
```

```

Installing      : fonts-srpm-macros-1:2.0.5-18.el10.noarch
51/63
Installing      : forge-srpm-macros-0.4.0-6.el10.noarch
52/63
Installing      : go-srpm-macros-3.6.0-4.el10.noarch
53/63
Installing      : python-srpm-macros-3.12-9.1.el10.noarch
54/63
Installing      : redhat-rpm-config-288-1.el10.noarch
55/63
Running scriptlet: redhat-rpm-config-288-1.el10.noarch
55/63
Installing      : python3-pyparsing-3.1.1-7.el10.noarch
56/63
Installing      : systemtap-sdt-dtrace-5.2-2.el10.x86_64
57/63
Installing      : perl-devel-4:5.40.1-512.el10.x86_64
58/63
Installing      : perl-ExtUtils-Install-2.22-511.el10.noarch
59/63
Installing      : perl-ExtUtils-MakeMaker-2:7.70-513.el10.noarch
60/63
Installing      : kernel-devel-6.12.0-55.9.1.el10_0.x86_64
61/63
Running scriptlet: kernel-devel-6.12.0-55.9.1.el10_0.x86_64
61/63
Installing      : python3-devel-3.12.9-1.el10.x86_64
62/63
Installing      : patch-2.7.6-26.el10.x86_64
63/63
Running scriptlet: patch-2.7.6-26.el10.x86_64
63/63
Installed products updated.

```

Installed:

```

annobin-docs-12.92-1.el10.noarch          annobin-plugin-gcc-
12.92-1.el10.x86_64                      bison-3.8.2-9.el10.x86_64
cmake-filesystem-3.30.5-2.el10.x86_64    cpp-14.2.1-
7.el10.x86_64
dwz-0.15-7.el10.x86_64                   efi-srpm-macros-6-
6.el10.noarch                            elfutils-libelf-devel-0.192-
5.el10.x86_64  flex-2.6.4-19.el10.x86_64          fonts-
srpm-macros-1:2.0.5-18.el10.noarch
forge-srpm-macros-0.4.0-6.el10.noarch    gcc-14.2.1-
7.el10.x86_64                            gcc-plugin-annobin-14.2.1-
7.el10.x86_64  glibc-devel-2.39-37.el10.x86_64      go-

```

```

srpm-macros-3.6.0-4.el10.noarch
  kernel-devel-6.12.0-55.9.1.el10_0.x86_64      kernel-headers-6.12.0-
55.9.1.el10_0.x86_64      kernel-srpm-macros-1.0-25.el10.noarch
libxcrypt-devel-4.4.36-10.el10.x86_64      libzstd-devel-1.5.5-
9.el10.x86_64
  lua-srpm-macros-1-15.el10.noarch      m4-1.4.19-
11.el10.x86_64      make-1:4.4.1-9.el10.x86_64
ocaml-srpm-macros-10-4.el10.noarch      openblas-srpm-macros-2-
19.el10.noarch
  openssl-devel-1:3.2.2-16.el10.x86_64      package-notes-srpm-
macros-0.5-13.el10.noarch      patch-2.7.6-26.el10.x86_64
perl-AutoSplit-5.74-512.el10.noarch      perl-Benchmark-1.25-
512.el10.noarch
  perl-CPAN-Meta-2.150010-511.el10.noarch      perl-CPAN-Meta-
Requirements-2.143-11.el10.noarch      perl-CPAN-Meta-YAML-0.018-
512.el10.noarch      perl-Devel-PPPort-3.72-512.el10.x86_64      perl-
Encode-Locale-1.05-31.el10.noarch
  perl-ExtUtils-Command-2:7.70-513.el10.noarch      perl-ExtUtils-Constant-
0.25-512.el10.noarch      perl-ExtUtils-Install-2.22-511.el10.noarch
perl-ExtUtils-MakeMaker-2:7.70-513.el10.noarch      perl-ExtUtils-Manifest-
1:1.75-511.el10.noarch
  perl-ExtUtils-ParseXS-1:3.51-512.el10.noarch      perl-File-Compare-
1.100.800-512.el10.noarch      perl-File-Copy-2.41-512.el10.noarch
perl-I18N-Langinfo-0.24-512.el10.x86_64      perl-JSON-PP-1:4.16-
512.el10.noarch
  perl-Test-Harness-1:3.48-512.el10.noarch      perl-Time-HiRes-
4:1.9777-511.el10.x86_64      perl-devel-4:5.40.1-512.el10.x86_64
perl-doc-5.40.1-512.el10.noarch      perl-lib-0.65-
512.el10.x86_64
  perl-srpm-macros-1-57.el10.noarch      perl-version-8:0.99.32-
4.el10.x86_64      pyproject-srpm-macros-1.16.2-1.el10.noarch
python-srpm-macros-3.12-9.1.el10.noarch      python3-devel-3.12.9-
1.el10.x86_64
  python3-pip-23.3.2-7.el10.noarch      python3-pyparsing-
3.1.1-7.el10.noarch      qt6-srpm-macros-6.8.1-3.el10.noarch
redhat-rpm-config-288-1.el10.noarch      rust-toolset-srpm-
macros-1.84.1-1.el10.noarch
  systemtap-sdt-devel-5.2-2.el10.x86_64      systemtap-sdt-dtrace-
5.2-2.el10.x86_64      zlib-ng-compat-devel-2.2.3-1.el10.x86_64

```

Complete!

OS package installations finished

+ Installing ONTAP Mediator. (Log: /root/ontap_mediator.vdizgQ/ontap-mediator-1.11.0/ontap-mediator-1.11.0/install_20250715160240.log)

This step takes several minutes. View progress in the log file.

Sudoer config verified

```
ONTAP Mediator rsyslog and logging rotation enabled
+ Install successful. (Moving log to
/opt/netapp/lib/ontap_mediator/log/install_20250715160240.log)
+ WARNING: This system supports UEFI
          Secure Boot (SB) is currently disabled on this system.
          If SB is enabled in the future, SCST will not work unless
the following action is taken:
          Using the keys in
/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys follow
          instructions in
/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys/README.modu
le-signing
          to sign the SCST kernel module. Note that a reboot is
needed.
          SCST does not start automatically when Secure Boot is enabled and
not configured properly.

+ Note: ONTAP Mediator generated a self-signed server certificate for
temporary use on
          this host. If the DNS name or IP address for the host is changed,
the certificate
          will no longer be valid. The default certificates should be
replaced with secure
          trusted certificates signed by a known certificate authority prior
to use for production.
          For more information, see /opt/netapp/lib/ontap_mediator/README

+ Note: ONTAP Mediator uses a kernel module compiled specifically for
the current
          OS. Using 'yum update' to upgrade the kernel might cause
service interruption.
          For more information, see /opt/netapp/lib/ontap_mediator/README
root@mediator_host:~# systemctl status ontap_mediator
● ontap_mediator.service - ONTAP Mediator
   Loaded: loaded (/etc/systemd/system/ontap_mediator.service;
enabled; preset: disabled)
   Active: active (running) since Tue 2025-07-15 16:07:29 EDT; 4min
9s ago
     Invocation: 395e9479487e4e308be2ae030c800c7f
       Process: 28745
ExecStartPre=/opt/netapp/lib/ontap_mediator/tools/otm_logs_fs.sh
(code=exited, status=0/SUCCESS)
   Main PID: 28759 (python)
      Tasks: 1 (limit: 22990)
     Memory: 66.8M (peak: 68.8M)
        CPU: 2.865s
```

```

CGroup: /system.slice/ontap_mediator.service
└─28759 /opt/netapp/lib/ontap_mediator/pyenv/bin/python
/opt/netapp/lib/ontap_mediator/ontap_mediator/server

Jul 15 16:07:29 mediator_host systemd[1]: Starting
ontap_mediator.service - ONTAP Mediator...
Jul 15 16:07:29 mediator_host systemd[1]: Started
ontap_mediator.service - ONTAP Mediator.
root@mediator_host:~# systemctl status mediator-scst
● mediator-scst.service
   Loaded: loaded (/etc/systemd/system/mediator-scst.service;
enabled; preset: disabled)
   Active: active (running) since Tue 2025-07-15 16:07:29 EDT; 4min
15s ago
     Invocation: f1d3be6ca1f9492b943e61872676f384
      Process: 28653 ExecStart=/etc/init.d/scst start (code=exited,
status=0/SUCCESS)
      Process: 28738 ExecStartPost=/usr/sbin/modprobe scst_vdisk
(code=exited, status=0/SUCCESS)
    Main PID: 28696 (iscsi-scstd)
       Tasks: 1 (limit: 22990)
      Memory: 5.2M (peak: 35.2M)
         CPU: 547ms
    CGroup: /system.slice/mediator-scst.service
           └─28696 /usr/local/sbin/iscsi-scstd

Jul 15 16:07:28 mediator_host systemd[1]: Starting mediator-
scst.service...
Jul 15 16:07:29 mediator_host iscsi-scstd[28694]: max_data_seg_len
1048576, max_queued_cmds 2048
Jul 15 16:07:29 mediator_host scst[28653]: Loading and configuring SCST
Jul 15 16:07:29 mediator_host systemd[1]: Started mediator-
scst.service.
root@mediator_host:~#

```

Register the security key for UEFI Secure Boot

Beginning with ONTAP Mediator 1.4, the Secure Boot mechanism is enabled on UEFI systems. When Secure Boot is enabled, you must take additional steps to register the security key after installation.

Steps

1. Follow the instructions in the README file to sign the SCST kernel module:

```

/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys/README.module-
signing

```

2. Locate the required keys:

```
/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys
```



After installation, the system output provides the README files and key location.

3. Add the public key to the MOK list:

```
mokutil --import
/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys/scst_module_key.de
r
```



You can leave the private key in its default location or move it to a secure location. You must keep the public key in its existing location so the Boot Manager can use it. For more information, see the README.module-signing file:

```
[root@hostname ~]# ls
/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys/
README.module-signing scst_module_key.der scst_module_key.priv
```

4. Reboot the host and use your device's UEFI Boot Manager to approve the new MOK. You'll need the passphrase provided for the `mokutil` utility in [Install ONTAP Mediator when UEFI Secure Boot is enabled](#).

Signing SCST kernel modules

After ONTAP Mediator is installed, if the `systemctl status mediator-scst` shows as failed (inactive), follow these steps to sign the SCST kernel module.

Steps

1. During the build process a public/private key pair is generated in the `/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys/` directory, using the following command:

```
[root@mediator-host ~]# ls
/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys/ README.module-
signing scst_module_key.der scst_module_key.priv [root@mediator-host ~]#
```

2. Start the process of importing the public key into the UEFI key repository by running the following commands:

```
[root@mediator-host ~]# mokutil --import
/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys/scst_module_key.de
r
input password: input password again:
```

```
[root@mediator-host ~]#
```

3. The `mokutil` software requests a temporary password to be used for this key during the import process.
4. Verify whether the import process has started with the `mokutil --list-new` and then reboot the system. The bootloader starts the EFI MOK manager.
5. Use the menus on the screen to turn on the SCST kernel module key. After booting, run `systemctl status mediator-scst`. Once the service starts, the SCST kernel modules are signed.

Verify the ONTAP Mediator installation status

After you install ONTAP Mediator, verify that it is running successfully.

Steps

1. View the status of ONTAP Mediator:

a. `systemctl status ontap_mediator`

```
[root@scspr1915530002 ~]# systemctl status ontap_mediator

ontap_mediator.service - ONTAP Mediator
Loaded: loaded (/etc/systemd/system/ontap_mediator.service; enabled;
vendor preset: disabled)
Active: active (running) since Mon 2022-04-18 10:41:49 EDT; 1 weeks 0
days ago
Process: 286710 ExecStop=/bin/kill -s INT $MAINPID (code=exited,
status=0/SUCCESS)
Main PID: 286712 (uwsgi)
Status: "uWSGI is ready"
Tasks: 3 (limit: 49473)
Memory: 139.2M
CGroup: /system.slice/ontap_mediator.service
├─286712 /opt/netapp/lib/ontap_mediator/pyenv/bin/uwsgi --ini
/opt/netapp/lib/ontap_mediator/uwsgi/ontap_mediator.ini
├─286716 /opt/netapp/lib/ontap_mediator/pyenv/bin/uwsgi --ini
/opt/netapp/lib/ontap_mediator/uwsgi/ontap_mediator.ini
└─286717 /opt/netapp/lib/ontap_mediator/pyenv/bin/uwsgi --ini
/opt/netapp/lib/ontap_mediator/uwsgi/ontap_mediator.ini

[root@scspr1915530002 ~]#
```

b. `systemctl status mediator-scst`

```
[root@scspr1915530002 ~]# systemctl status mediator-scst
Loaded: loaded (/etc/systemd/system/mediator-scst.service;
enabled; vendor preset: disabled)
Active: active (running) since Mon 2022-04-18 10:41:47 EDT; 1
weeks 0 days ago
Process: 286595 ExecStart=/etc/init.d/scst start (code=exited,
status=0/SUCCESS)
Main PID: 286662 (iscsi-scstd)
Tasks: 1 (limit: 49473)
Memory: 1.2M
CGroup: /system.slice/mediator-scst.service
└─286662 /usr/local/sbin/iscsi-scstd

[root@scspr1915530002 ~]#
```

2. Confirm the ports that are used by ONTAP Mediator:

```
netstat
```

```
[root@scspr1905507001 ~]# netstat -anlt | grep -E '3260|31784'

tcp        0      0 0.0.0.0:31784      0.0.0.0:*          LISTEN
tcp        0      0 0.0.0.0:3260       0.0.0.0:*          LISTEN
tcp6       0      0 :::3260           :::*                LISTEN
```

Post-installation ONTAP Mediator configuration

After ONTAP Mediator is installed and running, additional configuration tasks must be performed in the ONTAP storage system to use the ONTAP Mediator features:

- To use ONTAP Mediator in a MetroCluster IP configuration, see [Configure ONTAP Mediator from a MetroCluster IP configuration](#).
- To use SnapMirror active sync, see [Install ONTAP Mediator and confirm the ONTAP cluster configuration](#).

Configure ONTAP Mediator security policies

ONTAP Mediator supports several configurable security settings. The default values for all settings are provided in a `low_space_threshold_mib: 10` read-only file:

```
/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator.user_c
onfig.yaml
```

All values that are placed in the `ontap_mediator.user_config.yaml` will override the default values and

be maintained across all ONTAP Mediator upgrades.

After you modify `ontap_mediator.user_config.yaml`, restart ONTAP Mediator:

```
systemctl restart ontap_mediator
```

Modify ONTAP Mediator attributes

The ONTAP Mediator attributes described in this section can be modified if required.



Other default values in the `ontap_mediator.config.yaml` should not be changed because modified values are not maintained during ONTAP Mediator upgrades.

You modify ONTAP Mediator attributes by copying the required variables to the `ontap_mediator.user_config.yaml` file to override the default settings.

Install third-party SSL certificates

If you need to replace the default self-signed certificates with third-party SSL certificates, modify certain attributes in the following files:

- `/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator.config.yaml`
- `/opt/netapp/lib/ontap_mediator/uwsgi/ontap_mediator.ini`

The variables in these files are used to control the certificate files used by ONTAP Mediator.

ONTAP Mediator 1.9 and later

The default variables listed in the following table are included in the `/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator.config.yaml` file.

Variable	Path
<code>cert_path</code>	<code>/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator_server.crt</code>
<code>key_path</code>	<code>/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator_server.key</code>
<code>ca_cert_path</code>	<code>/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/intermediate.crt</code>
<code>ca_key_path</code>	<code>/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/intermediate.key</code>
<code>ca_serial_path</code>	<code>/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/intermediate.srl</code>
<code>cert_valid_days</code>	1095
<code>x509_passin_pwd</code>	pass:ontap

- `cert_valid_days` is used to set the expiration of client certificates. The maximum value is three years (1095 days).
- `x509_passin_pwd` is the passphrase for the signed client certificate.

The default variables listed in the following table are included in the `/opt/netapp/lib/ontap_mediator/uwsgi/ontap_mediator.ini` file.

Variable	Path
<code>mediator_cert</code>	<code>/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator_server.crt</code>
<code>mediator_key</code>	<code>/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator_server.key</code>
<code>ca_cert_path</code>	<code>/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/intermediate.crt</code>

ONTAP Mediator 1.8 and earlier

The default variables listed in the following table are included in the `/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator.config.yaml` file.

Variable	Path
cert_path	/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator_server.crt
key_path	/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator_server.key
ca_cert_path	/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ca.crt
ca_key_path	/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ca.key
ca_serial_path	/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ca.srl
cert_valid_days	1095
x509_passin_pwd	pass:ontap

- cert_valid_days is used to set the expiration of client certificates. The maximum value is three years (1095 days).
- x509_passin_pwd is the passphrase for the signed client certificate.

The default variables listed in the following table are included in the /opt/netapp/lib/ontap_mediator/uwsgi/ontap_mediator.ini file.

Variable	Path
mediator_cert	/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator_server.crt
mediator_key	/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ontap_mediator_server.key
ca_cert_path	/opt/netapp/lib/ontap_mediator/ontap_mediator/server_config/ca.crt

If you modify these attributes, restart ONTAP Mediator to apply the changes. For detailed instructions on how to replace default certificates with third-party certificates, refer to [Replace self-signed certificates with trusted third party certificates](#).

Password attack protection

The following settings provide protection against brute-force password guessing attacks.

To enable the feature, set a value for the window_seconds and the retry_limit.

Examples:

- Provide a 5-minute window for guesses, and then reset the count to zero failures:

```
authentication_lock_window_seconds: 300
```

- Lock the account if five failures occur within the window timeframe:

```
authentication_retry_limit: 5
```

- Reduce the impact of brute-force password guessing attacks by setting a delay that occurs prior to rejecting each attempt, which slows the attacks.

```
authentication_failure_delay_seconds: 5
```

```
authentication_failure_delay_seconds: 0    # seconds (float) to delay
failed auth attempts prior to response, 0 = no delay
authentication_lock_window_seconds: null   # seconds (int) since the
oldest failure before resetting the retry counter, null = no window
authentication_retry_limit: null           # number of retries to allow
before locking API access, null = unlimited
```

Password complexity rules

The following fields control the password complexity rules of the ONTAP Mediator API user account.

```
password_min_length: 8

password_max_length: 64

password_uppercase_chars: 0    # min. uppercase characters

password_lowercase_chars: 1    # min. lowercase character

password_special_chars: 1      # min. non-letter, non-digit

password_nonletter_chars: 2    # min. non-letter characters (digits,
specials, anything)
```

Control of free space

There are settings that control the required free space on the `/opt/netapp/lib/ontap_mediator` disk.

If the space is lower than the set threshold, the service will issue a warning event.

```
low_space_threshold_mib: 10
```

Control of reserve log space

The RESERVE_LOG_SPACE is controlled by specific settings. By default, the ONTAP Mediator installation creates a separate disk space for the logs. The installer creates a new fixed-size file with a total of 700MB of disk space to be used explicitly for ONTAP Mediator logging.

To disable this feature and use the default disk space, perform the following steps:

1. Change the value of RESERVE_LOG_SPACE from 1 to 0 in the following file:

```
/opt/netapp/lib/ontap_mediator/tools/mediator_env
```

2. Restart the Mediator:

- a. `cat /opt/netapp/lib/ontap_mediator/tools/mediator_env | grep "RESERVE_LOG_SPACE"`

```
RESERVE_LOG_SPACE=0
```

- b. `systemctl restart ontap_mediator`

To re-enable the feature, change the value from 0 to 1 and restart the Mediator.



toggling between disk spaces does not purge existing logs. All previous logs are backed up and then moved to the current disk space after toggling and restarting the Mediator.

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