NetApp

Mediator service for MetroCluster and SnapMirror Business Continuity

ONTAP 9

NetApp
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Mediator service for MetroCluster and SnapMirror Business Continuity

Install or upgrade the ONTAP Mediator service

To install the ONTAP Mediator service, you must ensure all prerequisites are met, get the installation package and run the installer on the host. This procedure is used for an installation or an upgrade of an existing installation.

About this task

- Beginning with ONTAP 9.7, you can use any version of ONTAP Mediator to monitor a MetroCluster IP configuration.
- Beginning with ONTAP 9.8, you can use any version of ONTAP Mediator to monitor an SM-BC relationship.

Before you begin

You must meet the following prerequisites.

Mediator version	Supported Linux versions
1.5	• Red Hat Enterprise Linux: 7.6, 7.7, 7.8, 7.9, 8.1, 8.2, 8.3, 8.4, 8.5 • CentOS: 7.6, 7.7, 7.8, 7.9
1.4	• Red Hat Enterprise Linux: 7.6, 7.7, 7.8, 7.9, 8.1, 8.2, 8.3, 8.4, 8.5 • CentOS: 7.6, 7.7, 7.8, 7.9
1.3	• Red Hat Enterprise Linux: 7.6, 7.7, 7.8, 7.9, 8.1, 8.2, 8.3 • CentOS: 7.6, 7.7, 7.8, 7.9
1.2	• Red Hat Enterprise Linux: 7.6, 7.7, 7.8, 8.1 • CentOS: 7.6, 7.7, 7.8

ⓘ   The kernel version must match the operating system version.

- 64-bit physical installation or virtual machine
- 8 GB RAM
- User: Root access

Upgrade the host operating system and then the Mediator

The following table provides the upgrade guidelines if you are upgrading from RHEL/CentOS 7.6 to a later RHEL/CentOS release in addition upgrading the Mediator version.

Target Linux version	Target Mediator version	Upgrade notes

• Red Hat Enterprise Linux: 7.6, 7.7, 7.8, 8.1
• CentOS: 7.6, 7.7, 7.8
	1.2	• The upgrade must be performed in the following order:
		  a. Upgrade the operating system from RHEL/CentOS version.
		  b. Reboot the host to apply the kernel module changes.
		  c. Upgrade the Mediator from the immediately prior version to the current version.
		• For MetroCluster:
		  1. The storage iscsi-initiator show command will report that the connection to the Mediator service is down during the upgrade.
		  2. The ONTAP operating system will generate the following EMS events:
		    a. cf.mccip.med.auso.stDisabled during the upgrade
		    b. cf.mccip.med.auso.stEnabled when automatic unplanned switchover is re-enabled

• Red Hat Enterprise Linux: 7.6, 7.7, 7.8, 7.9, 8.1, 8.2, 8.3 • CentOS: 7.6, 7.7, 7.8, 7.9	1.3	a. Upgrade the operating system from RHEL/CentOS version. b. Reboot the host to apply the kernel module changes. c. Upgrade the Mediator from the immediately prior version to the current version.
• Red Hat Enterprise Linux: 7.6, 7.7, 7.8, 7.9, 8.1, 8.2, 8.3, 8.4, 8.5 • CentOS: 7.6, 7.7, 7.8, 7.9	1.4	a. Upgrade the operating system from RHEL/CentOS version. b. Reboot the host to apply the kernel module changes. c. Upgrade the Mediator from the immediately prior version to the current version.
• Red Hat Enterprise Linux: 7.6, 7.7, 7.8, 7.9, 8.1, 8.2, 8.3, 8.4, 8.5 • CentOS: 7.6, 7.7, 7.8, 7.9	1.5	a. Upgrade the operating system from RHEL/CentOS version. b. Reboot the host to apply the kernel module changes. If you do not reboot the host, an error message appears prompting you to perform a reboot. c. Upgrade the Mediator from the immediately prior version to the current version.

The best practices for installing Red Hat Enterprise Linux or CentOS and the associated repositories on your system are listed below. Systems installed or configured differently might require additional steps.

* You must install Red Hat Enterprise Linux or CentOS according to Red Hat best practices. Due to end-of-life support for CentOS 8.x versions, compatible versions of CentOS 8.x are not recommended.

* While installing the ONTAP Mediator service on Red Hat Enterprise Linux or CentOS, the system must have access to the appropriate repository so that the installation program can access and install all the

required software dependencies.

- For the yum installer to find dependent software in the Red Hat Enterprise Linux repositories, you must have registered the system during the Red Hat Enterprise Linux installation or afterwards by using a valid Red Hat subscription.

  See the Red Hat documentation for information about the Red Hat Subscription Manager.

- The following ports must be unused and available for the Mediator:

  ◦ 31784

  ◦ 3260

- If using a third-party firewall: refer to Firewall requirements for ONTAP Mediator

- If the Linux host is in a location without access to the internet, you must ensure that the required packages are available in a local repository.

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

  The following packages are required by the ONTAP Mediator service:

All RHEL/CentOS versions	Additional packages for RHEL/CentOS 7.x	Additional packages for RHEL 8.x
• openssl • openssl-devel • kernel-devel • gcc • libselinux-utils • make • redhat-lsb-core • patch • bzip2 • python36 • python36-devel • perl-Data-Dumper • perl-ExtUtils-MakeMaker • python3-pip	• policycoreutils-python • python36-pip	• elfutils-libelf-devel • policycoreutils-python-utils

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 certification is recommended, as documented in this procedure.

Enable access to the repositories

If your operating system is…	You must provide access to these repositories…
RHEL 7.x	rhel-7-server-optional-rpms
CentOS 7.x	C7.6.1810 - Base repository
RHEL 8.x	• rhel-8-for-x86_64-baseos-rpms • rhel-8-for-x86_64-appstream-rpms

Enable access to the repositories listed above so Mediator can access the required packages during the installation process. Use the procedure below for your operating system.

- Procedure for RHEL 7.x operating system.
- Procedure for RHEL 8.x operating system.
- Procedure for CentOS 7.x operating system.

Procedure for RHEL 7.x operating system

If your operating system is **RHEL 7.x**:

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 RHEL 8.x operating system

If your operating system is **RHEL 8.x**:

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
   [root@localhost ~]# subscription-manager repos --enable rhel-8-for-
   x86_64-appstream-rpms
   Repository 'rhel-8-for-x86_64-baseos-rpms' is enabled for this system.
   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 CentOS 7.x operating system

If your operating system is **CentOS 7.x**:

> (i) The following examples are showing a repository for CentOS 7.6 and may 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 ~]#
```

Download the Mediator installation package

Steps

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

   [ONTAP Mediator download page](#)

2. Confirm that the Mediator installation package is in the current working directory:

   `ls`

   ```
   [root@mediator-host ~]#ls
   ontap-mediator-1.5.0.tgz
   ```

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

   If you are at a location without access to the internet, you must ensure that the installer has access to the required packages.

3. If necessary, move the Mediator installation package from the download directory to the installation directory on the Linux Mediator host.

4. Unzip the installer package: `tar xvfz ontap-mediator-1.5.0.tgz`

```
[root@scs000099753 ~]# tar xvfz ontap-mediator-1.5.0.tgz
ontap-mediator-1.5.0/
ontap-mediator-1.5.0/ONTAP-Mediator-production.pub
ontap-mediator-1.5.0/tsa-prod-chain-ONTAP-Mediator.pem
ontap-mediator-1.5.0/tsa-prod-ONTAP-Mediator.pem
ontap-mediator-1.5.0/csc-prod-ONTAP-Mediator.pem
ontap-mediator-1.5.0/csc-prod-chain-ONTAP-Mediator.pem
ontap-mediator-1.5.0/ontap-mediator-1.5.0
ontap-mediator-1.5.0/ontap-mediator-1.5.0.sig.tsr
ontap-mediator-1.5.0/ontap-mediator-1.5.0.tsr
ontap-mediator-1.5.0/ontap-mediator-1.5.0.sig
```

Verify the ONTAP Mediator code signature

You should verify the ONTAP Mediator code signature before installing the Mediator installation package.

Before you begin

Before verifying the Mediator code signature, your system must meet the following requirements.

- 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 following files are included in the download package:

- `ONTAP-Mediator-development.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-1.5.0` | The product installation executable for version 1.5.0
- `ontap-mediator-1.5.0.sig` | The SHA-256 hashed, then RSA-signed using the csc-prod key, signature for the installer
- `ontap-mediator-1.5.0.sig.tsr` | The revocation request for use by OCSCP for the installer's signature
- `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 used to register the certificate as 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`

```
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
```

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

(i) 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-1.5.0.sig.tsr` and `ontap-mediator-1.5.0.tsr` files using the associated certificates: `openssl ts -verify`

(i) `.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. The verification is performed locally on your machine. Independently, there is no need to access TSA servers.

```
openssl ts -verify -data ontap-mediator-1.5.0.sig -in ontap-mediator-
1.5.0.sig.tsr -CAfile tsa-prod-chain-ONTAP-Mediator.pem -untrusted tsa-
prod-ONTAP-Mediator.pem
openssl ts -verify -data ontap-mediator-1.5.0 -in ontap-mediator-
1.5.0.tsr -CAfile tsa-prod-chain-ONTAP-Mediator.pem -untrusted tsa-prod-
ONTAP-Mediator.pem
```

4. Verify signatures against the key: `openssl -dgst -verify`

```
openssl dgst -sha256 -verify ONTAP-Mediator-production.pub -signature
ontap-mediator-1.5.0.sig ontap-mediator-1.5.0
```

Example of Verifying the ONTAP Mediator code signature (console output)

```
[root@scspa2695423001 ontap-mediator-1.5.0]# pwd
/root/ontap-mediator-1.5.0
[root@scspa2695423001 ontap-mediator-1.5.0]# ls -l
total 63660
-r--r--r-- 1 root root     8582 Oct 19 15:02 csc-prod-chain-ONTAP-
Mediator.pem
-r--r--r-- 1 root root     2373 Oct 19 15:02 csc-prod-ONTAP-
Mediator.pem
-r-xr-xr-- 1 root root 65132818 Oct 20 15:17 ontap-mediator-1.5.0
-rw-r--r-- 1 root root      384 Oct 20 15:17 ontap-mediator-1.5.0.sig
-rw-r--r-- 1 root root     5437 Oct 20 15:17 ontap-mediator-
1.5.0.sig.tsr
-rw-r--r-- 1 root root     5436 Oct 20 15:17 ontap-mediator-1.5.0.tsr
-r--r--r-- 1 root root      625 Oct 19 15:02 ONTAP-Mediator-
production.pub
-r--r--r-- 1 root root     3323 Oct 19 15:02 tsa-prod-chain-ONTAP-
Mediator.pem
-r--r--r-- 1 root root     1740 Oct 19 15:02 tsa-prod-ONTAP-
Mediator.pem
[root@scspa2695423001 ontap-mediator-1.5.0]#
[root@scspa2695423001 ontap-mediator-1.5.0]#
/root/verify_ontap_mediator_signatures.sh
++ openssl version -d
++ cut -d '"' -f2
+ OPENSSLDIR=/etc/pki/tls
+ openssl version
OpenSSL 1.1.1k  FIPS 25 Mar 2021
++ openssl x509 -noout -ocsp_uri -in csc-prod-chain-ONTAP-Mediator.pem
+ ocsp_uri=http://ocsp.entrust.net
+ echo http://ocsp.entrust.net
http://ocsp.entrust.net
+ 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
+ openssl ocsp -issuer csc-prod-chain-ONTAP-Mediator.pem -CAfile csc-
prod-chain-ONTAP-Mediator.pem -cert csc-prod-ONTAP-Mediator.pem -url
http://ocsp.entrust.net -resp_text -respout resp.der
OCSP Response Data:
    OCSP Response Status: successful (0x0)
    Response Type: Basic OCSP Response
    Version: 1 (0x0)
    Responder Id: C = US, O = "Entrust, Inc.", CN = Entrust Extended
Validation Code Signing CA - EVCS2
    Produced At: Oct 28 05:01:00 2022 GMT
```

```
      Responses:
      Certificate ID:
        Hash Algorithm: sha1
        Issuer Name Hash: 69FA640329AB84E27220FE0927647B8194B91F2A
        Issuer Key Hash: CE894F8251AA15A28462CA312361D261FBF8FE78
        Serial Number: 511A542B57522AEB7295A640DC6200E5
      Cert Status: good
      This Update: Oct 28 05:00:00 2022 GMT
      Next Update: Nov  4 04:59:59 2022 GMT

      Signature Algorithm: sha512WithRSAEncryption
          3c:1d:49:b0:93:62:37:3e:c7:38:e3:9f:9f:62:82:73:ed:f4:
          ea:00:6b:f1:01:cd:79:57:92:f1:9d:5d:85:9b:60:59:f8:6c:
          e6:f4:50:51:f3:4c:8a:51:dd:50:68:16:8f:20:24:7e:39:b0:
          44:94:8d:b0:61:da:b9:08:36:74:2d:44:55:62:fb:92:be:4a:
          e7:6c:8c:49:dd:0c:fd:d8:ce:20:08:0d:0f:5a:29:a3:19:03:
          9f:d3:df:41:f4:89:0f:73:18:3f:ac:bb:a7:a3:96:7d:c5:70:
          4c:57:cd:17:17:c6:8a:60:d1:37:c9:2d:81:07:2a:d7:a6:02:
          ee:ce:88:16:22:db:e3:43:64:1e:9b:0d:4d:31:66:fa:ab:a5:
          52:99:94:4a:4a:d0:52:c5:34:f5:18:c7:15:5b:ce:74:c2:fc:
          61:ea:55:aa:f1:2f:82:a3:6a:95:8d:7e:2b:38:49:4f:bf:b1:
          68:7b:1b:24:8b:1f:4d:c5:77:f0:71:af:9c:34:c8:7a:82:50:
          09:a2:19:6e:c6:30:4f:da:a2:79:08:f9:d0:ff:85:d9:2a:84:
          cf:0c:aa:75:8f:72:c9:a7:a2:83:e8:8b:cf:ed:0c:69:75:b6:
          2a:7b:6b:58:99:01:d8:34:ad:e1:89:25:27:1b:fa:d9:6d:32:
          97:3a:0b:0a:8e:a3:9e:e3:f4:e0:d6:1a:c9:b5:14:8c:3e:54:
          3b:37:17:1a:93:44:84:8b:4a:87:97:1e:76:43:3e:d3:ec:8b:
          7e:56:4a:3f:01:31:c0:e5:58:fb:50:ce:6f:b1:e7:35:f9:b7:
          a3:ef:6b:3b:21:95:37:a6:5b:8f:f0:15:18:36:65:89:a1:9c:
          9b:69:00:b4:b1:65:6a:bc:11:2d:d4:9b:b4:97:cc:cb:7a:0c:
          16:11:c1:75:58:7e:13:ab:56:3c:3f:93:5b:95:24:c6:54:52:
          1f:86:a9:16:ce:d9:ea:8b:3a:f3:4f:c4:8f:ad:de:e8:3e:3c:
          d2:51:51:ad:33:7f:d8:c5:33:24:26:f1:2d:9d:0e:9f:55:d0:
          68:bf:af:bd:68:4a:40:08:bc:92:a0:62:54:7d:16:7b:36:29:
          15:b1:cd:58:8e:fb:4a:f2:3e:94:8b:fe:56:95:cc:24:32:af:
          5f:71:99:18:ed:0c:64:94:f7:54:48:87:48:d0:6d:b3:42:04:
          96:03:73:a2:8e:8a:6a:b2:af:ee:56:19:a1:c6:35:12:59:ad:
          19:6a:fe:e0:f1:27:cc:96:4e:f0:4f:fb:6a:bd:ce:05:2c:aa:
          79:7c:df:02:5c:ca:53:7d:60:12:88:7c:ce:15:c7:d4:02:27:
          c1:ab:cf:71:30:1e:14:ba
WARNING: no nonce in response
Response verify OK
csc-prod-ONTAP-Mediator.pem: good
        This Update: Oct 28 05:00:00 2022 GMT
        Next Update: Nov  4 04:59:59 2022 GMT
+ openssl verify -untrusted csc-prod-chain-ONTAP-Mediator.pem -CApath
```

```
/etc/pki/tls csc-prod-ONTAP-Mediator.pem
csc-prod-ONTAP-Mediator.pem: OK
+ openssl verify -untrusted tsa-prod-chain-ONTAP-Mediator.pem -CApath
/etc/pki/tls tsa-prod-ONTAP-Mediator.pem
tsa-prod-ONTAP-Mediator.pem: OK
+ openssl ts -verify -data ontap-mediator-1.5.0.sig -in ontap-mediator-
1.5.0.sig.tsr -CAfile tsa-prod-chain-ONTAP-Mediator.pem -untrusted tsa-
prod-ONTAP-Mediator.pem
Using configuration from /etc/pki/tls/openssl.cnf
Verification: OK
+ openssl ts -verify -data ontap-mediator-1.5.0 -in ontap-mediator-
1.5.0.tsr -CAfile tsa-prod-chain-ONTAP-Mediator.pem -untrusted tsa-
prod-ONTAP-Mediator.pem
Using configuration from /etc/pki/tls/openssl.cnf
Verification: OK
+ openssl dgst -sha256 -verify ONTAP-Mediator-production.pub -signature
ontap-mediator-1.5.0.sig ontap-mediator-1.5.0
Verified OK
[root@scspa2695423001 ontap-mediator-1.5.0]#
```

Install the ONTAP Mediator installation package

About this task

- 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:

  ◦ Follow instructions in the README file:
    `/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys/README.module-signing` to sign the SCST kernel module.

  ◦ Locate the required keys:
    `/opt/netapp/lib/ontap_mediator/ontap_mediator/SCST_mod_keys`

  > ⓘ After installation, the README files and key location are also provided in the system output.

Steps

1. Run the installer and respond to the prompts as required: `./ontap-mediator-1.5.0/ontap-mediator-1.5.0 -y`

```
[root@scs000099753 ~]# ./ontap-mediator-1.5.0/ontap-mediator-1.5.0 -y
```

The installation process proceeds to create the required accounts and install required packages. If you have a previous version of Mediator installed on the host, you will be prompted to confirm that you want to upgrade.

Example of ONTAP Mediator 1.5 installation (console output)

```
[root@scs000099753 ~]# ./ontap-mediator-1.5.0/ontap-mediator-1.5.0 -y
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

+ 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).
Using default account names: netapp + mediatoradmin

Enter ONTAP Mediator user account (mediatoradmin) password:

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

+ Checking if SELinux is in enforcing mode


+ Checking for default Linux firewall
success
success
success



##################################################################
Preparing for installation of ONTAP Mediator packages.


+ Installing required packages.


Last metadata expiration check: 0:25:24 ago on Fri 21 Oct 2022 04:00:13
PM EDT.
Package openssl-1:1.1.1k-4.el8.x86_64 is already installed.
Package gcc-8.4.1-1.el8.x86_64 is already installed.
Package python36-3.6.8-2.module+el8.1.0+3334+5cb623d7.x86_64 is already
installed.
Package libselinux-utils-2.9-5.el8.x86_64 is already installed.
Package perl-Data-Dumper-2.167-399.el8.x86_64 is already installed.
Package efibootmgr-16-1.el8.x86_64 is already installed.
Package mokutil-1:0.3.0-11.el8.x86_64 is already installed.
```

```
Package python3-pip-9.0.3-19.el8.noarch is already installed.
Package policycoreutils-python-utils-2.9-14.el8.noarch is already
installed.
Dependencies resolved.
================================================================
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========================================
 Package                                 Architecture
Version                                          Repository
Size
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Installing:
 bzip2                                   x86_64
1.0.6-26.el8                                     rhel-8-for-
x86_64-baseos-rpms                 60 k
 elfutils-libelf-devel                   x86_64
0.186-1.el8                                      rhel-8-for-
x86_64-baseos-rpms                 60 k
 kernel-devel                            x86_64
4.18.0-348.el8                                   rhel-8-for-
x86_64-baseos-rpms                 20 M
 make                                    x86_64
1:4.2.1-11.el8                                   rhel-8-for-
x86_64-baseos-rpms                498 k
 openssl-devel                           x86_64
1:1.1.1k-7.el8_6                                 rhel-8-for-
x86_64-baseos-rpms                2.3 M
 patch                                   x86_64
2.7.6-11.el8                                     rhel-8-for-
x86_64-baseos-rpms                138 k
 perl-ExtUtils-MakeMaker                 noarch
1:7.34-1.el8                                     rhel-8-for-
x86_64-appstream-rpms             301 k
 python36-devel                          x86_64
3.6.8-38.module+el8.5.0+12207+5c5719bc           rhel-8-for-
x86_64-appstream-rpms              17 k
 redhat-lsb-core                         x86_64
4.1-47.el8                                       rhel-8-for-
x86_64-appstream-rpms              45 k
Upgrading:
 cpp                                     x86_64
8.5.0-10.1.el8_6                                 rhel-8-for-
x86_64-appstream-rpms              10 M
 elfutils-libelf                         x86_64
```

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0.186-1.el8                                               rhel-8-for-
x86_64-baseos-rpms                   229 k
 elfutils-libs                       x86_64
0.186-1.el8                                               rhel-8-for-
x86_64-baseos-rpms                   295 k
 gcc                                 x86_64
8.5.0-10.1.el8_6                                          rhel-8-for-
x86_64-appstream-rpms                 23 M
 libgcc                              x86_64
8.5.0-10.1.el8_6                                          rhel-8-for-
x86_64-baseos-rpms                    80 k
 libgomp                             x86_64
8.5.0-10.1.el8_6                                          rhel-8-for-
x86_64-baseos-rpms                   207 k
 libsemanage                         x86_64
2.9-8.el8                                                 rhel-8-for-
x86_64-baseos-rpms                   168 k
 mokutil                             x86_64
1:0.3.0-11.el8_6.1                                        rhel-8-for-
x86_64-baseos-rpms                    46 k
 openssl                             x86_64
1:1.1.1k-7.el8_6                                          rhel-8-for-
x86_64-baseos-rpms                   709 k
 openssl-libs                        x86_64
1:1.1.1k-7.el8_6                                          rhel-8-for-
x86_64-baseos-rpms                   1.5 M
 platform-python-pip                 noarch
9.0.3-22.el8                                              rhel-8-for-
x86_64-baseos-rpms                   1.6 M
 policycoreutils                     x86_64
2.9-19.el8                                                rhel-8-for-
x86_64-baseos-rpms                   374 k
 policycoreutils-python-utils        noarch
2.9-19.el8                                                rhel-8-for-
x86_64-baseos-rpms                   253 k
 python3-libsemanage                 x86_64
2.9-8.el8                                                 rhel-8-for-
x86_64-baseos-rpms                   128 k
 python3-pip                         noarch
9.0.3-22.el8                                              rhel-8-for-
x86_64-appstream-rpms                 20 k
 python3-policycoreutils             noarch
2.9-19.el8                                                rhel-8-for-
x86_64-baseos-rpms                   2.2 M
 python36                            x86_64
3.6.8-38.module+el8.5.0+12207+5c5719bc                    rhel-8-for-
```

```
x86_64-appstream-rpms                      19 k
Installing dependencies:
 annobin                             x86_64
10.29-3.el8                                         rhel-8-for-
x86_64-appstream-rpms                     117 k
 at                                  x86_64
3.1.20-11.el8                                       rhel-8-for-
x86_64-baseos-rpms                         81 k
 bc                                  x86_64
1.07.1-5.el8                                        rhel-8-for-
x86_64-baseos-rpms                        129 k
 cups-client                         x86_64
1:2.2.6-38.el8                                      rhel-8-for-
x86_64-appstream-rpms                     169 k
 dwz                                 x86_64
0.12-10.el8                                         rhel-8-for-
x86_64-appstream-rpms                     109 k
 ed                                  x86_64
1.14.2-4.el8                                        rhel-8-for-
x86_64-baseos-rpms                         82 k
 efi-srpm-macros                     noarch
3-3.el8                                             rhel-8-for-
x86_64-appstream-rpms                      22 k
 esmtp                               x86_64
1.2-15.el8                                          EPEL-8
57 k
 ghc-srpm-macros                     noarch
1.4.2-7.el8                                         rhel-8-for-
x86_64-appstream-rpms                     9.4 k
 go-srpm-macros                      noarch
2-17.el8                                            rhel-8-for-
x86_64-appstream-rpms                      13 k
 keyutils-libs-devel                 x86_64
1.5.10-6.el8                                        rhel-8-for-
x86_64-baseos-rpms                         48 k
 krb5-devel                          x86_64
1.18.2-14.el8                                       rhel-8-for-
x86_64-baseos-rpms                        560 k
 libcom_err-devel                    x86_64
1.45.6-2.el8                                        rhel-8-for-
x86_64-baseos-rpms                         38 k
 libesmtp                            x86_64
1.0.6-18.el8                                        EPEL-8
70 k
 libkadm5                            x86_64
1.18.2-14.el8                                       rhel-8-for-
```

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x86_64-baseos-rpms                              187 k
 liblockfile                            x86_64
1.14-1.el8                                             rhel-8-for-
x86_64-appstream-rpms                    32 k
 libselinux-devel                       x86_64
2.9-5.el8                                              rhel-8-for-
x86_64-baseos-rpms                      200 k
 libsepol-devel                         x86_64
2.9-3.el8                                              rhel-8-for-
x86_64-baseos-rpms                       87 k
 libverto-devel                         x86_64
0.3.0-5.el8                                            rhel-8-for-
x86_64-baseos-rpms                       18 k
 m4                                     x86_64
1.4.18-7.el8                                           rhel-8-for-
x86_64-baseos-rpms                      223 k
 mailx                                  x86_64
12.5-29.el8                                            rhel-8-for-
x86_64-baseos-rpms                      257 k
 ncurses-compat-libs                    x86_64
6.1-9.20180224.el8                                     rhel-8-for-
x86_64-baseos-rpms                      328 k
 ocaml-srpm-macros                      noarch
5-4.el8                                                rhel-8-for-
x86_64-appstream-rpms                    9.5 k
 openblas-srpm-macros                   noarch
2-2.el8                                                rhel-8-for-
x86_64-appstream-rpms                    8.0 k
 pcre2-devel                            x86_64
10.32-2.el8                                            rhel-8-for-
x86_64-baseos-rpms                      605 k
 pcre2-utf16                            x86_64
10.32-2.el8                                            rhel-8-for-
x86_64-baseos-rpms                      229 k
 pcre2-utf32                            x86_64
10.32-2.el8                                            rhel-8-for-
x86_64-baseos-rpms                      220 k
 perl-CPAN-Meta-YAML                    noarch
0.018-397.el8                                          rhel-8-for-
x86_64-appstream-rpms                    34 k
 perl-ExtUtils-Command                  noarch
1:7.34-1.el8                                           rhel-8-for-
x86_64-appstream-rpms                    19 k
 perl-ExtUtils-Install                  noarch
2.14-4.el8                                             rhel-8-for-
x86_64-appstream-rpms                    46 k
```

```
 perl-ExtUtils-Manifest                          noarch
1.70-395.el8                                             rhel-8-for-
x86_64-appstream-rpms                   37 k
 perl-ExtUtils-ParseXS                           noarch
1:3.35-2.el8                                             rhel-8-for-
x86_64-appstream-rpms                   83 k
 perl-JSON-PP                                    noarch
1:2.97.001-3.el8                                        rhel-8-for-
x86_64-appstream-rpms                   68 k
 perl-Math-BigInt                               noarch
1:1.9998.11-7.el8                                       rhel-8-for-
x86_64-baseos-rpms                     196 k
 perl-Math-Complex                              noarch
1.59-421.el8                                            rhel-8-for-
x86_64-baseos-rpms                     109 k
 perl-Test-Harness                              noarch
1:3.42-1.el8                                            rhel-8-for-
x86_64-appstream-rpms                  279 k
 perl-devel                                     x86_64
4:5.26.3-419.el8_4.1                                    rhel-8-for-
x86_64-appstream-rpms                  599 k
 perl-srpm-macros                               noarch
1-25.el8                                                rhel-8-for-
x86_64-appstream-rpms                   11 k
 perl-version                                   x86_64
6:0.99.24-1.el8                                         rhel-8-for-
x86_64-appstream-rpms                   67 k
 platform-python-devel                          x86_64
3.6.8-41.el8                                            rhel-8-for-
x86_64-appstream-rpms                  249 k
 python-rpm-macros                              noarch
3-41.el8                                                rhel-8-for-
x86_64-appstream-rpms                   15 k
 python-srpm-macros                             noarch
3-41.el8                                                rhel-8-for-
x86_64-appstream-rpms                   15 k
 python3-pyparsing                              noarch
2.1.10-7.el8                                            rhel-8-for-
x86_64-baseos-rpms                     142 k
 python3-rpm-generators                         noarch
5-7.el8                                                 rhel-8-for-
x86_64-appstream-rpms                   25 k
 python3-rpm-macros                             noarch
3-41.el8                                                rhel-8-for-
x86_64-appstream-rpms                   14 k
 qt5-srpm-macros                                noarch
```

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                                5.15.2-1.el8                                    rhel-8-for-
x86_64-appstream-rpms                        11 k
  redhat-lsb-submod-security                x86_64
4.1-47.el8                                       rhel-8-for-
x86_64-appstream-rpms                        22 k
  redhat-rpm-config                         noarch
125-1.el8                                        rhel-8-for-
x86_64-appstream-rpms                        87 k
  rust-srpm-macros                          noarch
5-2.el8                                          rhel-8-for-
x86_64-appstream-rpms                        9.3 k
  spax                                      x86_64
1.5.3-13.el8                                     rhel-8-for-
x86_64-baseos-rpms                           217 k
  systemtap-sdt-devel                       x86_64
4.6-4.el8                                        rhel-8-for-
x86_64-appstream-rpms                        86 k
  time                                      x86_64
1.9-3.el8                                        rhel-8-for-
x86_64-baseos-rpms                           54 k
  unzip                                     x86_64
6.0-46.el8                                       rhel-8-for-
x86_64-baseos-rpms                           196 k
  util-linux-user                           x86_64
2.32.1-28.el8                                    rhel-8-for-
x86_64-baseos-rpms                           100 k
  zip                                       x86_64
3.0-23.el8                                       rhel-8-for-
x86_64-baseos-rpms                           270 k
  zlib-devel                                x86_64
1.2.11-17.el8                                    rhel-8-for-
x86_64-baseos-rpms                           58 k
Installing weak dependencies:
  perl-CPAN-Meta                            noarch
2.150010-396.el8                                 rhel-8-for-
x86_64-appstream-rpms                        191 k
  perl-CPAN-Meta-Requirements               noarch
2.140-396.el8                                    rhel-8-for-
x86_64-appstream-rpms                        37 k
  perl-Encode-Locale                        noarch
1.05-10.module+el8.3.0+6498+9eecfe51             rhel-8-for-
x86_64-appstream-rpms                        22 k
  perl-Time-HiRes                           x86_64
4:1.9758-2.el8                                   rhel-8-for-
x86_64-appstream-rpms                        61 k
```

```
Transaction Summary
================================================================
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=======================================
Install  69 Packages
Upgrade  17 Packages

Total download size: 72 M
Is this ok [y/N]: y
Downloading Packages:
(1/86): perl-ExtUtils-Install-2.14-4.el8.noarch.rpm
735 kB/s |  46 kB     00:00
(2/86): libesmtp-1.0.6-18.el8.x86_64.rpm
1.0 MB/s |  70 kB     00:00
(3/86): esmtp-1.2-15.el8.x86_64.rpm
747 kB/s |  57 kB     00:00
(4/86): rust-srpm-macros-5-2.el8.noarch.rpm
308 kB/s | 9.3 kB     00:00
(5/86): perl-ExtUtils-Manifest-1.70-395.el8.noarch.rpm
781 kB/s |  37 kB     00:00
(6/86): perl-CPAN-Meta-2.150010-396.el8.noarch.rpm
2.7 MB/s | 191 kB     00:00
(7/86): ocaml-srpm-macros-5-4.el8.noarch.rpm
214 kB/s | 9.5 kB     00:00
(8/86): perl-JSON-PP-2.97.001-3.el8.noarch.rpm
1.2 MB/s |  68 kB     00:00
(9/86): perl-ExtUtils-MakeMaker-7.34-1.el8.noarch.rpm
5.8 MB/s | 301 kB     00:00
(10/86): ghc-srpm-macros-1.4.2-7.el8.noarch.rpm
317 kB/s | 9.4 kB     00:00
(11/86): perl-Test-Harness-3.42-1.el8.noarch.rpm
4.5 MB/s | 279 kB     00:00
(12/86): perl-ExtUtils-Command-7.34-1.el8.noarch.rpm
520 kB/s |  19 kB     00:00


...


15 MB/s | 1.5 MB     00:00
----------------------------------------------------------------
----------------------------------------------------------------
--------------------------------------------
Total
35 MB/s |  72 MB     00:02
Running transaction check
Transaction check succeeded.
Running transaction test
```

```
Transaction test succeeded.
Running transaction
  Preparing        :
1/1
  Running scriptlet: openssl-libs-1:1.1.1k-7.el8_6.x86_64
1/1
  Upgrading        : openssl-libs-1:1.1.1k-7.el8_6.x86_64
1/103
  Running scriptlet: openssl-libs-1:1.1.1k-7.el8_6.x86_64
1/103
  Upgrading        : libgcc-8.5.0-10.1.el8_6.x86_64
2/103
  Running scriptlet: libgcc-8.5.0-10.1.el8_6.x86_64
2/103
  Upgrading        : elfutils-libelf-0.186-1.el8.x86_64
3/103
  Installing       : perl-version-6:0.99.24-1.el8.x86_64
4/103
  Installing       : perl-CPAN-Meta-Requirements-2.140-396.el8.noarch
5/103
  Upgrading        : libsemanage-2.9-8.el8.x86_64
6/103
  Installing       : zlib-devel-1.2.11-17.el8.x86_64
7/103
  Installing       : python-srpm-macros-3-41.el8.noarch
8/103
  Installing       : python-rpm-macros-3-41.el8.noarch
9/103
  Installing       : python3-rpm-macros-3-41.el8.noarch
10/103
  Installing       : perl-Time-HiRes-4:1.9758-2.el8.x86_64
11/103
  Installing       : perl-ExtUtils-ParseXS-1:3.35-2.el8.noarch
12/103
  Installing       : perl-Test-Harness-1:3.42-1.el8.noarch
13/103
  Upgrading        : python3-libsemanage-2.9-8.el8.x86_64
14/103
  Upgrading        : policycoreutils-2.9-19.el8.x86_64
15/103
  Running scriptlet: policycoreutils-2.9-19.el8.x86_64
15/103
  Upgrading        : python3-policycoreutils-2.9-19.el8.noarch
16/103
  Installing       : dwz-0.12-10.el8.x86_64
17/103
```

```
  Installing        : ncurses-compat-libs-6.1-9.20180224.el8.x86_64
18/103
  Installing        : libesmtp-1.0.6-18.el8.x86_64
19/103
  Installing        : mailx-12.5-29.el8.x86_64
20/103
  Installing        : libkadm5-1.18.2-14.el8.x86_64
21/103
  Upgrading         : libgomp-8.5.0-10.1.el8_6.x86_64
22/103
  Running scriptlet: libgomp-8.5.0-10.1.el8_6.x86_64
22/103
  Upgrading         : platform-python-pip-9.0.3-22.el8.noarch
23/103
  Upgrading         : python3-pip-9.0.3-22.el8.noarch
24/103
  Upgrading         : python36-3.6.8-
38.module+el8.5.0+12207+5c5719bc.x86_64
25/103
  Running scriptlet: python36-3.6.8-
38.module+el8.5.0+12207+5c5719bc.x86_64
25/103
  Upgrading         : cpp-8.5.0-10.1.el8_6.x86_64
26/103
  Running scriptlet: cpp-8.5.0-10.1.el8_6.x86_64
26/103
  Upgrading         : gcc-8.5.0-10.1.el8_6.x86_64
27/103
  Running scriptlet: gcc-8.5.0-10.1.el8_6.x86_64
27/103
  Installing        : annobin-10.29-3.el8.x86_64
28/103
  Installing        : unzip-6.0-46.el8.x86_64
29/103
  Installing        : zip-3.0-23.el8.x86_64
30/103
  Installing        : perl-Math-Complex-1.59-421.el8.noarch
31/103
  Installing        : perl-Math-BigInt-1:1.9998.11-7.el8.noarch
32/103
  Installing        : perl-JSON-PP-1:2.97.001-3.el8.noarch
33/103
  Installing        : make-1:4.2.1-11.el8.x86_64
34/103
  Running scriptlet: make-1:4.2.1-11.el8.x86_64
34/103
```

```
   Installing        : libcom_err-devel-1.45.6-2.el8.x86_64
35/103
   Installing        : util-linux-user-2.32.1-28.el8.x86_64
36/103
   Installing        : libsepol-devel-2.9-3.el8.x86_64
37/103
   Installing        : pcre2-utf32-10.32-2.el8.x86_64
38/103
   Installing        : pcre2-utf16-10.32-2.el8.x86_64
39/103
   Installing        : pcre2-devel-10.32-2.el8.x86_64
40/103
   Installing        : libselinux-devel-2.9-5.el8.x86_64
41/103
   Installing        : patch-2.7.6-11.el8.x86_64
42/103
   Installing        : python3-pyparsing-2.1.10-7.el8.noarch
43/103
   Installing        : systemtap-sdt-devel-4.6-4.el8.x86_64
44/103
   Installing        : spax-1.5.3-13.el8.x86_64
45/103
   Running scriptlet: spax-1.5.3-13.el8.x86_64
45/103
   Installing        : m4-1.4.18-7.el8.x86_64
46/103
   Running scriptlet: m4-1.4.18-7.el8.x86_64
46/103
   Installing        : libverto-devel-0.3.0-5.el8.x86_64
47/103
   Installing        : bc-1.07.1-5.el8.x86_64
48/103
   Running scriptlet: bc-1.07.1-5.el8.x86_64
48/103
   Installing        : at-3.1.20-11.el8.x86_64
49/103
   Running scriptlet: at-3.1.20-11.el8.x86_64
49/103
   Installing        : keyutils-libs-devel-1.5.10-6.el8.x86_64
50/103
   Installing        : krb5-devel-1.18.2-14.el8.x86_64
51/103
   Installing        : time-1.9-3.el8.x86_64
52/103
   Running scriptlet: time-1.9-3.el8.x86_64
52/103
```

```
  Upgrading       : policycoreutils-python-utils-2.9-19.el8.noarch
80/103
  Installing      : elfutils-libelf-devel-0.186-1.el8.x86_64
81/103
  Upgrading       : elfutils-libs-0.186-1.el8.x86_64
82/103
  Upgrading       : mokutil-1:0.3.0-11.el8_6.1.x86_64
83/103
  Upgrading       : openssl-1:1.1.1k-7.el8_6.x86_64
84/103
  Installing      : kernel-devel-4.18.0-348.el8.x86_64
85/103
  Running scriptlet: kernel-devel-4.18.0-348.el8.x86_64


  ...


85/103
  Installing      : bzip2-1.0.6-26.el8.x86_64
86/103
  Cleanup         : policycoreutils-python-utils-2.9-14.el8.noarch
87/103
  Cleanup         : python3-policycoreutils-2.9-14.el8.noarch
88/103
  Cleanup         : python36-3.6.8-
2.module+el8.1.0+3334+5cb623d7.x86_64
89/103
  Running scriptlet: python36-3.6.8-
2.module+el8.1.0+3334+5cb623d7.x86_64
89/103
  Cleanup         : elfutils-libs-0.185-1.el8.x86_64
90/103
  Cleanup         : openssl-1:1.1.1k-4.el8.x86_64
91/103
  Cleanup         : python3-libsemanage-2.9-6.el8.x86_64
92/103
  Running scriptlet: gcc-8.4.1-1.el8.x86_64
93/103
  Cleanup         : gcc-8.4.1-1.el8.x86_64
93/103
  Running scriptlet: policycoreutils-2.9-14.el8.x86_64
94/103
  Cleanup         : policycoreutils-2.9-14.el8.x86_64
94/103
  Cleanup         : mokutil-1:0.3.0-11.el8.x86_64
95/103
```

```
  Cleanup           : python3-pip-9.0.3-19.el8.noarch
96/103
  Cleanup           : platform-python-pip-9.0.3-19.el8.noarch
97/103
  Cleanup           : openssl-libs-1:1.1.1k-4.el8.x86_64
98/103
  Running scriptlet: openssl-libs-1:1.1.1k-4.el8.x86_64
98/103
  Cleanup           : libsemanage-2.9-6.el8.x86_64
99/103
  Running scriptlet: cpp-8.4.1-1.el8.x86_64
100/103
  Cleanup           : cpp-8.4.1-1.el8.x86_64
100/103
  Cleanup           : libgcc-8.5.0-3.el8.x86_64
101/103
  Running scriptlet: libgcc-8.5.0-3.el8.x86_64
101/103
  Running scriptlet: libgomp-8.4.1-1.el8.x86_64
102/103
  Cleanup           : libgomp-8.4.1-1.el8.x86_64
102/103
  Running scriptlet: libgomp-8.4.1-1.el8.x86_64
102/103
  Cleanup           : elfutils-libelf-0.185-1.el8.x86_64
103/103
  Running scriptlet: elfutils-libelf-0.185-1.el8.x86_64
103/103
  Verifying         : esmtp-1.2-15.el8.x86_64
1/103
  Verifying         : libesmtp-1.0.6-18.el8.x86_64


  ...


Upgraded:
  cpp-8.5.0-10.1.el8_6.x86_64                              elfutils-
libelf-0.186-1.el8.x86_64     elfutils-libs-0.186-1.el8.x86_64
gcc-8.5.0-10.1.el8_6.x86_64
  libgcc-8.5.0-10.1.el8_6.x86_64                              libgomp-
8.5.0-10.1.el8_6.x86_64        libsemanage-2.9-8.el8.x86_64
mokutil-1:0.3.0-11.el8_6.1.x86_64
  openssl-1:1.1.1k-7.el8_6.x86_64                              openssl-
libs-1:1.1.1k-7.el8_6.x86_64   platform-python-pip-9.0.3-22.el8.noarch
policycoreutils-2.9-19.el8.x86_64
  policycoreutils-python-utils-2.9-19.el8.noarch        python3-
libsemanage-2.9-8.el8.x86_64    python3-pip-9.0.3-22.el8.noarch
```

```
python3-policycoreutils-2.9-19.el8.noarch
  python36-3.6.8-38.module+el8.5.0+12207+5c5719bc.x86_64
Installed:
  annobin-10.29-3.el8.x86_64                                              at-
3.1.20-11.el8.x86_64                              bc-1.07.1-5.el8.x86_64
  bzip2-1.0.6-26.el8.x86_64
cups-client-1:2.2.6-38.el8.x86_64                 dwz-0.12-
10.el8.x86_64
  ed-1.14.2-4.el8.x86_64
efi-srpm-macros-3-3.el8.noarch                    elfutils-libelf-
devel-0.186-1.el8.x86_64
  esmtp-1.2-15.el8.x86_64
ghc-srpm-macros-1.4.2-7.el8.noarch                go-srpm-macros-2-
17.el8.noarch
  kernel-devel-4.18.0-348.el8.x86_64
keyutils-libs-devel-1.5.10-6.el8.x86_64           krb5-devel-1.18.2-
14.el8.x86_64
  libcom_err-devel-1.45.6-2.el8.x86_64
libesmtp-1.0.6-18.el8.x86_64                      libkadm5-1.18.2-
14.el8.x86_64
  liblockfile-1.14-1.el8.x86_64
libselinux-devel-2.9-5.el8.x86_64                 libsepol-devel-2.9-
3.el8.x86_64
  libverto-devel-0.3.0-5.el8.x86_64                                       m4-
1.4.18-7.el8.x86_64                              mailx-12.5-
29.el8.x86_64
  make-1:4.2.1-11.el8.x86_64
ncurses-compat-libs-6.1-9.20180224.el8.x86_64     ocaml-srpm-macros-
5-4.el8.noarch
  openblas-srpm-macros-2-2.el8.noarch
openssl-devel-1:1.1.1k-7.el8_6.x86_64             patch-2.7.6-
11.el8.x86_64
  pcre2-devel-10.32-2.el8.x86_64
pcre2-utf16-10.32-2.el8.x86_64                    pcre2-utf32-10.32-
2.el8.x86_64
  perl-CPAN-Meta-2.150010-396.el8.noarch
perl-CPAN-Meta-Requirements-2.140-396.el8.noarch  perl-CPAN-Meta-
YAML-0.018-397.el8.noarch
  perl-Encode-Locale-1.05-10.module+el8.3.0+6498+9eecfe51.noarch
perl-ExtUtils-Command-1:7.34-1.el8.noarch         perl-ExtUtils-
Install-2.14-4.el8.noarch
  perl-ExtUtils-MakeMaker-1:7.34-1.el8.noarch
perl-ExtUtils-Manifest-1.70-395.el8.noarch        perl-ExtUtils-
ParseXS-1:3.35-2.el8.noarch
  perl-JSON-PP-1:2.97.001-3.el8.noarch
perl-Math-BigInt-1:1.9998.11-7.el8.noarch         perl-Math-Complex-
```

```
1.59-421.el8.noarch
   perl-Test-Harness-1:3.42-1.el8.noarch
perl-Time-HiRes-4:1.9758-2.el8.x86_64                    perl-devel-
4:5.26.3-419.el8_4.1.x86_64
   perl-srpm-macros-1-25.el8.noarch
perl-version-6:0.99.24-1.el8.x86_64                      platform-python-
devel-3.6.8-41.el8.x86_64
   python-rpm-macros-3-41.el8.noarch
python-srpm-macros-3-41.el8.noarch                      python3-pyparsing-
2.1.10-7.el8.noarch
   python3-rpm-generators-5-7.el8.noarch
python3-rpm-macros-3-41.el8.noarch                      python36-devel-
3.6.8-38.module+el8.5.0+12207+5c5719bc.x86_64
   qt5-srpm-macros-5.15.2-1.el8.noarch
redhat-lsb-core-4.1-47.el8.x86_64                       redhat-lsb-submod-
security-4.1-47.el8.x86_64
   redhat-rpm-config-125-1.el8.noarch
rust-srpm-macros-5-2.el8.noarch                         spax-1.5.3-
13.el8.x86_64
   systemtap-sdt-devel-4.6-4.el8.x86_64
time-1.9-3.el8.x86_64                                    unzip-6.0-
46.el8.x86_64
   util-linux-user-2.32.1-28.el8.x86_64
zip-3.0-23.el8.x86_64                                    zlib-devel-1.2.11-
17.el8.x86_64


Complete!
OS package installations finished
+ Installing ONTAP Mediator. (Log: /tmp/ontap_mediator.JixKGP/ontap-
mediator-1.5.0/ontap-mediator-1.5.0/install_20221021155929.log)
    This step will take several minutes. Use the log file to view
progress.
    Sudoer config verified
    ONTAP Mediator rsyslog and logging rotation enabled
+ Install successful. (Moving log to
/opt/netapp/lib/ontap_mediator/log/install_20221021155929.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 reboot will be
```

```
needed.
     SCST will not start automatically when Secure Boot is enabled and
not configured properly.
+ 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@scs000099753 ~]# cat /etc/redhat-release
Red Hat Enterprise Linux release 8.5 (Ootpa)
[root@scs000099753 ~]#
```

Verify the installation

Steps

1. Run the following commands to view the status of the ONTAP Mediator services:

   a. Run: `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. Run: `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 the ONTAP Mediator service is using: `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
```

Result

The ONTAP Mediator service is now installed and running. Further configuration must be performed in the ONTAP storage system to use the Mediator features:

- To use the ONTAP Mediator service in a MetroCluster IP configuration, see Configuring the ONTAP Mediator service from a MetroCluster IP configuration
- To use SnapMirror Business Continuity, see Install ONTAP Mediator Service and confirm the ONTAP cluster configuration

Manage the ONTAP mediator service

After you have installed ONTAP Mediator service, you may change the user name or password. You may also uninstall the ONTAP Mediator Service.

Change the user name

About these tasks

These task is performed on the Linux host on which the ONTAP Mediator service is installed.

If you are unable to reach this command, you might need to run the command using the full path as shown in the following example:

```
/usr/local/bin/mediator_username
```

Procedure

Change the username by choosing one of the following options:

- Run the command mediator_change_user and respond to the prompts as shown in the following example:

```
[root@mediator-host ~]# mediator_change_user
Modify the Mediator API username by entering the following values:
    Mediator API User Name: mediatoradmin
                  Password:
New Mediator API User Name: mediator
The account username has been modified successfully.
[root@mediator-host ~]#
```

- Run the following command:

```
MEDIATOR_USERNAME=mediator MEDIATOR_PASSWORD=mediator2
MEDIATOR_NEW_USERNAME=mediatoradmin mediator_change_user
```

```
[root@mediator-host ~]# MEDIATOR_USERNAME= mediator
MEDIATOR_PASSWORD='mediator2' MEDIATOR_NEW_USERNAME= mediatoradmin
mediator_change_user
 The account username has been modified successfully.
[root@mediator-host ~]#
```

Change the password

About this task

This task is performed on the Linux host on which the ONTAP Mediator service is installed.

If you are unable to reach this command, you might need to run the command using the full path as shown in the following example:

```
/usr/local/bin/mediator_change_password
```

Procedure

Change the password by choosing one of the following options:

- Run the `mediator_change_password` command and respond to the prompts as shown in the following example:

```
[root@mediator-host ~]# mediator_change_password
Change the Mediator API password by entering the following values:
    Mediator API User Name: mediatoradmin
               Old Password:
               New Password:
           Confirm Password:
The password has been updated successfully.
[root@mediator-host ~]#
```

- Run the following command:

```
MEDIATOR_USERNAME= mediatoradmin MEDIATOR_PASSWORD=mediator1
MEDIATOR_NEW_PASSWORD=mediator2 mediator_change_password
```

The example shows the password is changed from "mediator1" to "mediator2".

```
 [root@mediator-host ~]# MEDIATOR_USERNAME=mediatoradmin
MEDIATOR_PASSWORD=mediator1 MEDIATOR_NEW_PASSWORD=mediator2
mediator_change_password
 The password has been updated successfully.
 [root@mediator-host ~]#
```

Uninstall the ONTAP Mediator service

Before you begin

If necessary, you can remove the ONTAP Mediator service. The Mediator must be disconnected from ONTAP before you remove the Mediator service.

About this task

This task is performed on the Linux host on which the ONTAP Mediator service is installed.

If you are unable to reach this command, you might need to run the command using the full path as shown in the following example:

```
/usr/local/bin/uninstall_ontap_mediator
```

Step

1. Uninstall the ONTAP Mediator service:

```
uninstall_ontap_mediator
```

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

ONTAP Mediator: Self Extracting Uninstaller

+ Removing ONTAP Mediator. (Log:
/tmp/ontap_mediator.GmRGdA/uninstall_ontap_mediator/remove.log)
+ Remove successful.
[root@mediator-host ~]#
```