



# Installation procedure

## Keystone

NetApp  
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# Installation procedure

## Deploy Keystone Collector on VMware vSphere systems

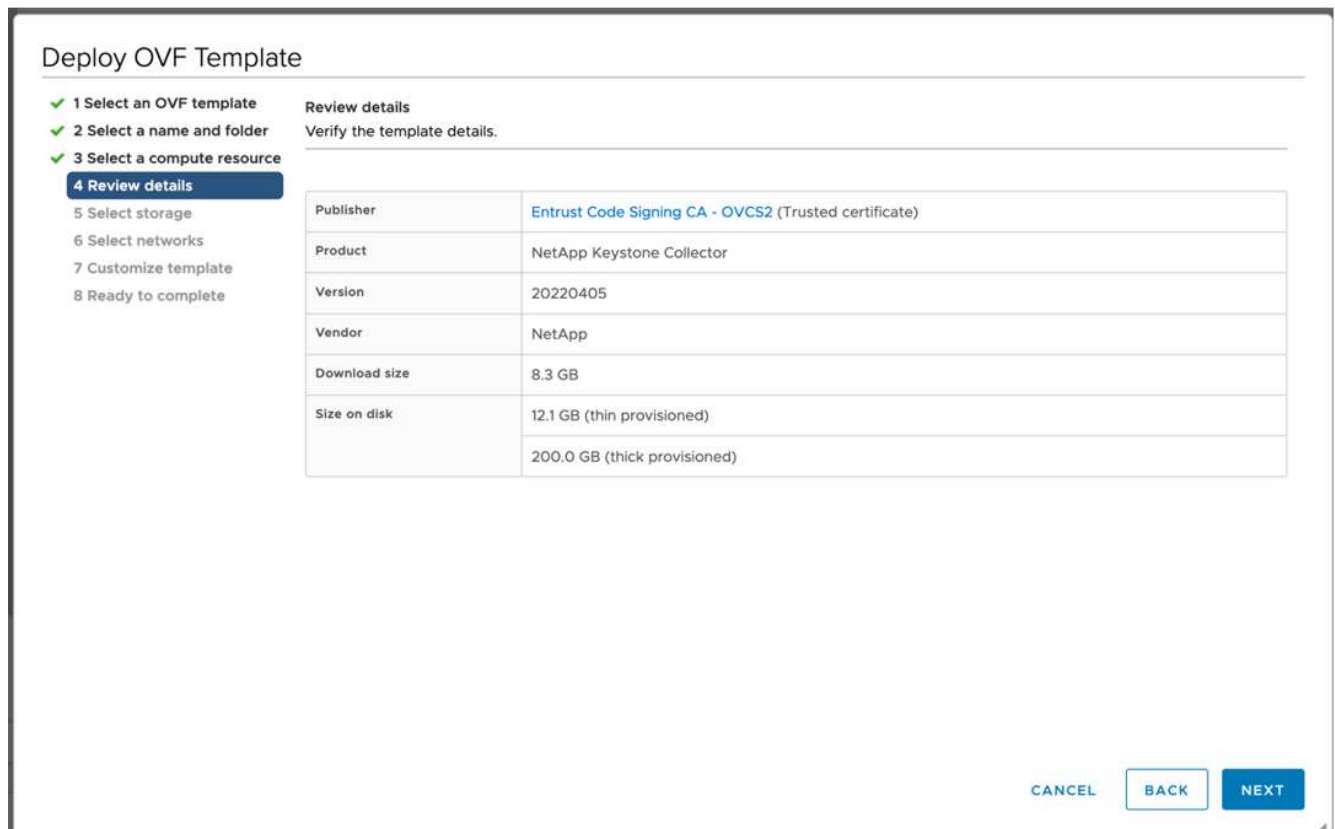
Deploying Keystone Collector on VMware vSphere systems includes downloading the OVA template, deploying the template by using the **Deploy OVF Template** wizard, verifying the integrity of the certificates, and verifying the readiness of the VM.

### Deploying the OVA template

Follow these steps:

#### Steps

1. Download the OVA file from <https://keystone.netapp.com/downloads/KeystoneCollector-latest.ova> and store it on your VMware vSphere system.
2. On your VMware vSphere system, navigate to the **VMs and Templates** view.
3. Right click on the required folder for the virtual machine (VM) (or data center, if not using VM folders) and select **Deploy OVF Template**.
4. On *Step 1* of the **Deploy OVF Template** wizard, click **Select and OVF template** to select the downloaded `KeystoneCollector-latest.ova` file.
5. On *Step 2*, specify the VM name and select the VM folder.
6. On *Step 3*, specify the required compute resource that is to run the VM.
7. On *Step 4: Review details*, verify the correctness and authenticity of the OVA. The product name should appear as *NetApp Keystone Collector*.



Deploy OVF Template

✓ 1 Select an OVF template  
✓ 2 Select a name and folder  
✓ 3 Select a compute resource  
**4 Review details**  
5 Select storage  
6 Select networks  
7 Customize template  
8 Ready to complete

**Review details**  
Verify the template details.

Publisher	Entrust Code Signing CA - OVCS2 (Trusted certificate)
Product	NetApp Keystone Collector
Version	20220405
Vendor	NetApp
Download size	8.3 GB
Size on disk	12.1 GB (thin provisioned) 200.0 GB (thick provisioned)

CANCEL BACK NEXT

vCentre validates the integrity of the OVA contents and that a valid code-signing digest is provided for the

files contained in the OVA. However, it does not validate the authenticity of the code-signing certificate. For verifying the integrity, you should download the full signing digest certificate, and verify it against the public certificate published by Keystone.

- a. Click the **Publisher** link to download the full signing digest certificate.
  - b. Download the *Keystone Billing* public certificate: <https://keystone.netapp.com/downloads/OVA-SSL-NetApp-Keystone-20221101.pem>.
  - c. Verify the authenticity of the OVA signing certificate against the public certificate by using OpenSSL:  

```
openssl verify -CAfile OVA-SSL-NetApp-Keystone-20221101.pem keystone-collector.cert
```
8. On *Step 5* of the **Deploy OVF Template** wizard, specify the location for storing the VM.
  9. On *Step 6*, select the destination network for the VM to utilize.
  10. On *Step 7 Customize template*, specify the initial network address and password for the admin user account.



The admin password is stored in a reversible format in vCentre, and should be used as a bootstrap credential to gain initial access to the VMware vSphere system. During the initial software configuration, this admin password should be changed. The subnet mask for the IPv4 address should be supplied in CIDR notation. For example, use the value of 24 for a subnet mask of 255.255.255.0.

11. On *Step 8 Ready to complete* of the **Deploy OVF Template** wizard, review the configuration and verify that you have correctly set the parameters for the OVA deployment.

After the VM has been deployed from the template and powered on, open an SSH session to the VM and log in with the temporary admin credentials to verify that the VM is ready for configuration.

## Initial System Configuration

Perform these steps on your VMware vSphere systems for an initial configuration of Keystone Collector servers deployed through OVA:



On completing the deployment, you can use the Keystone Collector Management Terminal User Interface (TUI) utility to perform the configuration and monitoring activities. You can use various keyboard controls, such as the Enter and arrow keys, to select the options and navigate across this TUI.

1. Open an SSH session to the Keystone Collector server. On login, the TUI appears. You can also launch the TUI manually by running the `keystone-collector-tui` CLI command.
2. If required, configure the proxy details in the **Configuration > Network** section on the TUI.
3. Update the system/collector by using the **Maintenance > Update System** option. Some mirrors that are selected might be unavailable, and the system details are updated after a few retries.
4. Configure the system hostname, location, and NTP server in the **Configuration > System** section.
5. Update the admin password in the **Maintenance > User** section.
6. Mark the initial OVA configuration as complete in the **Configuration > Advanced** section.

# Installing Keystone Collector on Linux systems

The Keystone Collector software is distributed by an online YUM software repository. You need to import and install the file on a Linux server.

Follow these steps to install the software on your Linux server:

1. SSH to the Keystone Collector server and elevate to `root` privilege.
2. Import the Keystone public signing signature:  

```
# rpm --import https://keystone.netapp.com/repo/RPM-GPG-NetApp-Keystone-20221101
```
3. Ensure that the correct public certificate has been imported by checking the fingerprint for Keystone Billing Platform in the RPM database:  

```
# rpm -qa gpg-pubkey --qf '%<Description>' | gpg --show-keys --fingerprint
```

The correct fingerprint looks like this:  
90B3 83AF E07B 658A 6058 5B4E 76C2 45E4 33B6 C17D
4. Download the `keystonerepo.rpm` file:  

```
curl -O https://keystone.netapp.com/repo/keystonerepo.rpm
```
5. Verify the authenticity of the file:  

```
rpm --checksig -v keystonerepo.rpm
```

A signature for an authentic file looks like this:  
Header V4 RSA/SHA512 Signature, key ID 33b6c17d: OK
6. Install the YUM software repository file:  

```
# yum install keystonerepo.rpm
```
7. When the Keystone repo is installed, install the `keystone-collector` package through the YUM package manager:  

```
# yum install keystone-collector
```



On completing the installation, you can use the Keystone Collector Management Terminal User Interface (TUI) utility to perform the configuration and monitoring activities. You can use various keyboard controls, such as the Enter and arrow keys, to select the options and navigate across this TUI. See [Configure Keystone Collector](#) and [Monitor system health](#).

## Automatic validation of software integrity

There is a reiterative process of validating the integrity of the Keystone software.

The Keystone YUM repository client configuration provided in `keystonerepo.rpm` makes use of enforced GPG checking (`gpgcheck=1`) on all software downloaded through this repository. Any RPM downloaded through the Keystone repository that fails signature validation is prevented from being installed. This functionality is used in the scheduled auto-update capability of the Keystone Collector to ensure only valid and authentic software is installed at your site.

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