Additional deployment options

Cloud Manager 3.6

NetApp
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Additional deployment options

Cloud Manager host requirements

If you install Cloud Manager on your own host, then you must verify support for your configuration, which includes operating system requirements, port requirements, and so on.

Supported AWS EC2 instance types

t3.medium (recommended), t2.medium, and m4.large

Supported Azure VM sizes

A2, D2 v2, or D2 v3 (based on availability)

Supported operating systems

- CentOS 7.2
- CentOS 7.3
- CentOS 7.4
- Red Hat Enterprise Linux 7.2
- Red Hat Enterprise Linux 7.3
- Red Hat Enterprise Linux 7.4

  The Red Hat Enterprise Linux system must be registered with Red Hat Subscription Management. If it is not registered, the system cannot access repositories to update required 3rd party software during Cloud Manager installation.

  Cloud Manager is supported on English-language versions of these operating systems.

Hypervisor

A bare metal or hosted hypervisor that is certified to run CentOS or Red Hat Enterprise Linux
Red Hat Solution: Which hypervisors are certified to run Red Hat Enterprise Linux?

CPU

2.27 GHz or higher with two cores

RAM

4 GB

Free disk space

50 GB

Outbound internet access

Outbound internet access is required when installing Cloud Manager and when using Cloud Manager to deploy Cloud Volumes ONTAP. For a list of endpoints, see Networking requirements for Cloud Manager.

Ports

The following ports must be available:

- 80 for HTTP access
- 443 for HTTPS access
- 3306 for the Cloud Manager database
- 8080 for the Cloud Manager API proxy

  If other services are using these ports, Cloud Manager installation fails.

  > There is a potential conflict with port 3306. If another instance of MySQL is running on the host, it uses port 3306 by default. You must change the port that the existing MySQL instance uses.

  You can change the default HTTP and HTTPS ports when you install Cloud Manager. You cannot change the default port for the MySQL database. If you change the HTTP and HTTPS ports, you must ensure that users can access the Cloud Manager web console from a remote host:

  - Modify the security group to allow inbound connections through the ports.
  - Specify the port when you enter the URL to the Cloud Manager web console.

Installing Cloud Manager on an existing Linux host

The most common way to deploy Cloud Manager is from Cloud Central or from a cloud provider's marketplace. But you have the option to download and install the Cloud Manager software on an existing Linux host in your network or in the cloud.

Before you begin

- A Red Hat Enterprise Linux system must be registered with Red Hat Subscription Management. If it is not registered, the system cannot access repositories to update required 3rd party software during Cloud Manager installation.
- The Cloud Manager installer accesses several URLs during the installation process. You must ensure that outbound internet access is allowed to those endpoints. Refer to Networking requirements for Cloud Manager.

About this task

- Root privileges are not required to install Cloud Manager.
- Cloud Manager installs the AWS command line tools (awscli) to enable recovery procedures from NetApp support.

  If you receive a message that installing the awscli failed, you can safely ignore the message. Cloud Manager can operate successfully without the tools.

- The installer that is available on the NetApp Support Site might be an earlier version. After installation, Cloud Manager automatically updates itself if a new version is available.

Steps

1. Review networking requirements:
   - Networking requirements for Cloud Manager
   - Networking requirements for Cloud Volumes ONTAP for AWS
   - Networking requirements for Cloud Volumes ONTAP for Azure

2. Review Cloud Manager host requirements.
3. Download the software from the NetApp Support Site, and then copy it to the Linux host.

   For help with connecting and copying the file to an EC2 instance in AWS, see AWS Documentation: Connecting to Your Linux Instance Using SSH.

4. Assign permissions to execute the script.

   Example

   ```
   chmod +x OnCommandCloudManager-V3.6.3.sh
   ```

5. Run the installation script:

   ```
   ./OnCommandCloudManager-V3.6.3.sh [silent] [proxy=ipaddress]
   [proxyport=port] [proxyuser=user_name] [proxypwd=password]
   ```

   silent runs the installation without prompting you for information.

   proxy is required if the Cloud Manager host is behind a proxy server.

   proxyport is the port for the proxy server.

   proxyuser is the user name for the proxy server, if basic authentication is required.

   proxypwd is the password for the user name that you specified.

6. Unless you specified the silent parameter, type **Y** to continue the script, and then enter the HTTP and HTTPS ports when prompted.

   If you change the HTTP and HTTPS ports, you must ensure that users can access the Cloud Manager web console from a remote host:

   - Modify the security group to allow inbound connections through the ports.
   - Specify the port when you enter the URL to the Cloud Manager web console.

     Cloud Manager is now installed. At the end of the installation, the Cloud Manager service (occm) restarts twice if you specified a proxy server.

7. Open a web browser and enter the following URL:

   https://*ipaddress*:*port*

   ipaddress can be localhost, a private IP address, or a public IP address, depending on the configuration of the Cloud Manager host. For example, if Cloud Manager is in the public cloud without a public IP address, you must enter a private IP address from a host that has a connection to the Cloud Manager host.

   port is required if you changed the default HTTP (80) or HTTPS (443) ports. For example, if the HTTPS port was changed to 8443, you would enter https://*ipaddress*:8443

8. Sign up for a NetApp Cloud Central account or log in if you already have one.

9. When you sign up or log in, Cloud Manager automatically adds your user account as the administrator for this system.
10. After you log in, enter a name for this Cloud Manager system.

After you finish

Set up permissions for your AWS and Azure accounts so Cloud Manager can deploy Cloud Volumes ONTAP:

- If you want to deploy Cloud Volumes ONTAP in AWS, set up an AWS account and then add it to Cloud Manager.
- If you want to deploy Cloud Volumes ONTAP in Azure, set up an Azure account and then add it to Cloud Manager.

Launching Cloud Manager from the AWS Marketplace

It is best to launch Cloud Manager in AWS using NetApp Cloud Central, but you can launch it from the AWS Marketplace, if needed.

If you launch Cloud Manager from the AWS Marketplace, Cloud Manager is still integrated with NetApp Cloud Central. Learn more about the integration.

About this task

The following steps describe how to launch the instance from the EC2 Console because the console enables you to attach an IAM role to the Cloud Manager instance. This is not possible using the 1-Click option.

Steps

1. Create an IAM policy and role for the EC2 instance:
   a. Download the Cloud Manager IAM policy from the following location:

      NetApp OnCommand Cloud Manager: AWS and Azure Policies

   b. From the IAM console, create your own policy by copying and pasting the text from the Cloud Manager IAM policy.
   c. Create an IAM role with the role type Amazon EC2 and attach the policy that you created in the previous step to the role.
2. Go to the Cloud Manager page on the AWS Marketplace.
3. Click **Continue**.
4. On the Custom Launch tab, click **Launch with EC2 Console** for your region, and then make your selections:
   a. Depending on region availability, choose the t3.medium (recommended), t2.medium, or m4.large instance type.
   b. Select a VPC, subnet, IAM role, and other configuration options that meet your requirements.
   c. Keep the default storage options.
   d. Enter tags for the instance, if desired.
   e. Specify the required connection methods for the Cloud Manager instance: SSH, HTTP, and HTTPS.
   f. Click **Launch**.

Result

AWS launches the software with the specified settings. The Cloud Manager instance and software should be running in approximately five minutes.

After you finish

Log in to Cloud Manager by entering the public IP address or private IP address in a web browser and then complete the Setup wizard.

Deploying Cloud Manager from the Azure Marketplace

It is best to deploy Cloud Manager in Azure using NetApp Cloud Central, but you can deploy it from the Azure Marketplace, if needed.

Separate instructions are available to deploy Cloud Manager in Azure US Government regions and in Azure Germany regions.

If you deploy Cloud Manager from the Azure Marketplace, Cloud Manager is still integrated with NetApp Cloud Central. Learn more about the integration.

Deploying Cloud Manager in Azure

You need to install and set up Cloud Manager so you can use it to launch Cloud Volumes ONTAP in Azure.

Steps

1. Go to the Azure Marketplace page for Cloud Manager.
2. Click **Get it now** and then click **Continue**.
3. From the Azure portal, click **Create** and follow the steps to configure the virtual machine.

   Note the following as you configure the VM:

   - Cloud Manager can perform optimally with either HDD or SSD disks.
   - Choose one of the recommended virtual machine sizes: A2, D2 v2, or D2 v3 (based on availability).
   - For the network security group, Cloud Manager requires inbound connections using SSH, HTTP, and HTTPS.

     Learn more about security group rules for Cloud Manager.

   - Under **Management**, enable **System assigned managed identity** for Cloud Manager by selecting **On**.

     This setting is important because a managed identity allows the Cloud Manager virtual machine to identify itself to Azure Active Directory without providing any credentials. Learn more about managed identities for Azure resources.

4. On the **Review + create** page, review your selections and click **Create** to start the deployment.

   Azure deploys the virtual machine with the specified settings. The virtual machine and Cloud Manager software should be running in approximately five minutes.

5. Open a web browser from a host that has a connection to the Cloud Manager virtual machine and enter the following URL:

http://*ipaddress*:80

When you log in, Cloud Manager automatically adds your user account as the administrator for this system.

6. After you log in, enter a name for the Cloud Manager system.

Result

Cloud Manager is now installed and set up. You must grant Azure permissions before users can deploy Cloud Volumes ONTAP in Azure.

Granting Azure permissions to Cloud Manager

When you deployed Cloud Manager in Azure, you should have enabled a system-assigned managed identity. You must now grant the required Azure permissions by creating a custom role and then by assigning the role to the Cloud Manager virtual machine for one or more subscriptions.

Steps

1. Create a custom role using the Cloud Manager policy:
   a. Download the Cloud Manager Azure policy.
   b. Modify the JSON file by adding Azure subscription IDs to the assignable scope.

      You should add the ID for each Azure subscription from which users will create Cloud Volumes ONTAP systems.

      Example

      "AssignableScopes": [
      "/subscriptions/d333af45-0d07-4154-943d-c25fbzzzzzzz",
      "/subscriptions/54b91999-b3e6-4599-908e-416e0zzzzzzz",
      "/subscriptions/398e471c-3b42-4ae7-9b59-ce5bbzzzzzzz"

   c. Use the JSON file to create a custom role in Azure.

      The following example shows how to create a custom role using the Azure CLI 2.0:

      az role definition create --role-definition C:\Policy_for_cloud_Manager_Azure_3.6.1.json

      You should now have a custom role called OnCommand Cloud Manager Operator that you can assign to the Cloud Manager virtual machine.

2. Assign the role to the Cloud Manager virtual machine for one or more subscriptions:
   a. Open the **Subscriptions** service and then select the subscription in which you want to deploy Cloud Volumes ONTAP systems.
   b. Click **Access control (IAM)**.
   c. Click **Add** > **Add role assignment** and then add the permissions:
      - Select the **OnCommand Cloud Manager Operator** role.

        OnCommand Cloud Manager Operator is the default name provided in the Cloud Manager policy. If you chose a different name for the role, then select that name instead.

- Assign access to a **Virtual Machine**.
- Select the subscription in which the Cloud Manager virtual machine was created.
- Select the Cloud Manager virtual machine.
- Click **Save**.

d. If you want to deploy Cloud Volumes ONTAP from additional subscriptions, switch to that subscription and then repeat these steps.

Result

Cloud Manager now has the permissions that it needs to deploy and manage Cloud Volumes ONTAP in Azure.

Deploying Cloud Manager in an Azure US Government region

To get Cloud Manager up and running in a US Government region, first deploy Cloud Manager from the Azure Government Marketplace. Then provide the permissions that Cloud Manager needs to deploy and manage Cloud Volumes ONTAP systems.

For a list of supported Azure US Government regions, see Cloud Volumes Global Regions.

Deploying Cloud Manager from the Azure US Government Marketplace

Cloud Manager is available as an image in the Azure US Government Marketplace.

Steps

1. Search for OnCommand Cloud Manager in the Azure US Government portal.
2. Click **Create** and follow the steps to configure the virtual machine.

   Note the following as you configure the virtual machine:

   - Cloud Manager can perform optimally with either HDD or SSD disks.
   - You should choose one of the recommended virtual machine sizes: A2, D2 v2, or D2 v3 (based on availability).
   - For the network security group, it is best to choose **Advanced**.

     The **Advanced** option creates a new security group that includes the required inbound rules for Cloud Manager. If you choose Basic, refer to Security group rules for the list of required rules.

3. On the summary page, review your selections and click **Create** to start the deployment.

   Azure deploys the virtual machine with the specified settings. The virtual machine and Cloud Manager software should be running in approximately five minutes.

4. Open a web browser from a host that has a connection to the Cloud Manager virtual machine and enter the following URL:

   http://*ipaddress*:80

   When you log in, Cloud Manager automatically adds your user account as the administrator for this system.

5. After you log in, enter a name for the Cloud Manager system.

Result

Cloud Manager is now installed and set up. You must grant Azure permissions before users can deploy Cloud Volumes ONTAP in Azure.

Granting Azure permissions to Cloud Manager using a managed identity

The easiest way to provide permissions is by enabling a managed identity on the Cloud Manager virtual machine and then by assigning the required permissions to the virtual machine. If preferred, an alternative way is to grant Azure permissions using a service principal.

Steps

1. Enable a managed identity on the Cloud Manager virtual machine:
   a. Navigate to the Cloud Manager virtual machine and select **Identity**.
   b. Under **System Assigned**, click **On** and then click **Save**.
2. Create a custom role using the Cloud Manager policy:
   a. Download the Cloud Manager Azure policy.
   b. Modify the JSON file by adding Azure subscription IDs to the assignable scope.

      You should add the ID for each Azure subscription from which users will create Cloud Volumes ONTAP systems.

      Example

      "AssignableScopes": [
      "/subscriptions/d333af45-0d07-4154-943d-c25fbzzzzzzz",
      "/subscriptions/54b91999-b3e6-4599-908e-416e0zzzzzzz",
      "/subscriptions/398e471c-3b42-4ae7-9b59-ce5bbzzzzzzz"

   c. Use the JSON file to create a custom role in Azure.

      The following example shows how to create a custom role using the Azure CLI 2.0:

      az role definition create --role-definition C:\Policy_for_cloud_Manager_Azure_3.6.1.json

      You should now have a custom role called OnCommand Cloud Manager Operator that you can assign to the Cloud Manager virtual machine.
3. Assign the role to the Cloud Manager virtual machine for one or more subscriptions:
   a. Open the **Subscriptions** service and then select the subscription in which you want to deploy Cloud Volumes ONTAP systems.
   b. Click **Access control (IAM)**.
   c. Click **Add**, click **Add role assignment**, and then add the permissions:
      - Select the **OnCommand Cloud Manager Operator** role.

        OnCommand Cloud Manager Operator is the default name provided in the Cloud Manager policy. If you chose a different name for the role, then select that name instead.

- Assign access to a **Virtual Machine**.
- Select the subscription in which the Cloud Manager virtual machine was created.
- Type the name of the virtual machine and then select it.
- Click **Save**.

d. If you want to deploy Cloud Volumes ONTAP from additional subscriptions, switch to that subscription and then repeat these steps.

Result

Cloud Manager now has the permissions that it needs to deploy and manage Cloud Volumes ONTAP in Azure.

Installing Cloud Manager in an Azure Germany region

The Azure Marketplace is not available in the Azure Germany regions, so you must download the Cloud Manager installer from the NetApp Support Site and install it on an existing Linux host in the region.

Steps

1. Review networking requirements for Azure.
2. Review Cloud Manager host requirements.
3. Download and install Cloud Manager.
4. Grant Azure permissions to Cloud Manager using a service principal.

After you finish

Cloud Manager is now ready to deploy Cloud Volumes ONTAP in the Azure Germany region, just like any other region. However, you might want to perform additional setup first.