Additional deployment options

Cloud Manager 3.5

NetApp

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1. Additional deployment options

1.1. 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

t2.medium or m4.large

Supported Azure VM sizes

A2 or D2_v2

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.

> ℹ️ 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.

1.2. Installing Cloud Manager on an existing Linux host

If you want to run the Cloud Manager software on an existing host, you can download and install the software on a 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.

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. Set up permissions for Cloud Manager:

   a. If you want to deploy Cloud Volumes ONTAP in AWS, set up an IAM role that includes the required permissions.

   b. If you want to deploy Cloud Volumes ONTAP in Azure, create and set up a service principal in Azure Active Directory.

3. Review Cloud Manager host requirements.

4. 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.

5. Assign permissions to execute the script.

   Example

   ```
   chmod +x OnCommandCloudManager-V3.5.0.sh
   ```

6. Run the installation script:

   ```
   ./OnCommandCloudManager-V3.5.0.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.

7. 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.

8. 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

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

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

11. After you log in, enter a name for this Cloud Manager system.

After you finish

You can start creating Cloud Volumes ONTAP systems but you might want to perform additional setup first.

1.3. 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.

Before you begin

If you want to assign a public IP address to the Cloud Manager instance and use the AWS 1-Click Launch option, the public subnet must be already enabled to automatically assign public IP addresses. Otherwise, you must use the Manual Launch option to assign a public IP address to the instance.

For details, refer to AWS Documentation: IP Addressing in Your VPC.

Steps

1. Set up an IAM role that includes the required permissions.

2. Go to the Cloud Manager page on the AWS Marketplace.

3. Click **Continue**.

4. Launch the instance from the 1-Click Launch tab or the Custom Launch tab, depending on how you want to grant AWS permissions to Cloud Manager:

Choice	Steps
You want to associate the instance with an IAM role.	a. On the Custom Launch tab, click **Launch with EC2 Console** for your region. b. Choose the t2.medium or m4.large instance type. c. Select a VPC, subnet, IAM role, and other configuration options that meet your requirements. d. Keep the default storage options. e. Enter tags for the instance, if desired. f. Specify the required connection methods for the Cloud Manager instance: SSH, HTTP, and HTTPS. g. Click **Launch**.
You do not want to associate the instance with an IAM role. You want to specify AWS keys for each Cloud Manager user account.	a. On the 1-Click Launch tab, specify settings for the instance. Note the following: ◦ The t2.medium and m4.large instance types are supported. ◦ Under security group, select **Create new based on seller settings** to create a pre-defined security group that includes the rules required by Cloud Manager. b. Click **Accept Terms and Launch with 1-Click**.

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.

1.4. 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.

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

1.4.1. 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 virtual machine:

   ◦ Cloud Manager can perform optimally with either HDD or SSD disks.

   ◦ You should choose one of the recommended virtual machine sizes: A2 or D2_v2.

   ◦ 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.

   ◦ Under the settings, enable **Managed Service Identity** for Cloud Manager by selecting **Yes**.

   This setting is important because a Managed Service Identity allows a Cloud Manager virtual machine to identify itself to Azure Active Directory without providing any credentials. This method is simpler than manually setting up an Azure service principal and providing the credentials to Cloud Manager.

   For more information about Managed Service Identities, refer to Azure documentation.

4. 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.

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.

1.4.2. Granting Azure permissions to Cloud Manager

When you deployed Cloud Manager in Azure, you should have enabled a Managed Service 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_5_2.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** 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.

1.5. Installing Cloud Manager in an Azure US Gov region

To deploy Cloud Manager in an Azure US Gov region, you must download the Cloud Manager installer from the NetApp Support Site and install it on an existing CentOS 7.3 host.

About this task

For a list of supported Azure US Gov regions, see Supported Azure regions.

Steps

1. Review networking requirements for Azure.

2. Create a CentOS 7.3 virtual machine from the Azure Marketplace.

   While Cloud Manager supports other operating systems, it only supports CentOS 7.3 in the Azure US Gov regions.

3. Download and install Cloud Manager.

4. Grant Azure permissions to Cloud Manager using a service principal and credentials.

   > **ⓘ**   Managed Service Identities are not supported in the US Gov regions.

After you finish

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

1.6. 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 and credentials.

> ℹ️ Managed Service Identities are not supported in the Azure Germany regions.

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.