Dell EMC Avamar Virtual Edition for VMware

Version 18.1

Installation and Upgrade Guide

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REV 01

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PREFACE

As part of an effort to improve the product lines, revisions of the software and hardware are periodically released. Therefore, some functions that are described in this document might not be supported by all versions of the software or hardware currently in use. The product release notes provide the most up-to-date information on product features.

Contact the technical support professional when a product does not function correctly or does not function as described in this document.

Note

This document was accurate at publication time. To find the latest version of this document, go to Online Support (https://support.EMC.com).

Purpose

This guide describes how to install the Avamar Virtual Edition solution, a single-node, non-RAIN Avamar server that runs as a virtual machine in a VMware ESXi or vSphere Server environment.

Audience

The information in this guide is primarily intended for system administrators who are responsible for installing and maintaining Avamar virtual servers.

Revision history

The following table presents the revision history of this document.

Revision	Date	Description
01	July 7, 2018	GA release of Avamar 18.1

Related documentation

The following publications provide additional information:

- *Avamar Release Notes*

- *Avamar Administration Guide*

- *Avamar Operational Best Practices Guide*

- *Avamar Product Security Guide*

- *Avamar Backup Clients User Guide*

Special notice conventions used in this document
These conventions are used for special notices.

⚠ DANGER

Indicates a hazardous situation which, if not avoided, results in death or serious injury.

⚠WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Addresses practices that are not related to personal injury.

Note

Presents information that is important, but not hazard-related.

Typographical conventions
These type style conventions are used in this document.

Table 1 Typographical conventions

Bold	Used for names of interface elements, such as names of windows, dialog boxes, buttons, fields, tab names, key names, and menu paths (what the user specifically selects or clicks)
Italic	Used for full titles of publications that are referenced in text
`Monospace`	Used for: • System code • System output, such as an error message or script • Pathnames, filenames, prompts, and syntax • Commands and options
Monospace italic	Used for variables
`Monospace bold`	Used for user input
[ ]	Square brackets enclose optional values
|	Vertical bar indicates alternate selections - the bar means "or"
{ }	Braces enclose content that the user must specify, such as x or y or z
...	Ellipses indicate nonessential information that is omitted from the example

Where to get help

The Avamar support page provides access to licensing information, product documentation, advisories, and downloads, as well as how-to and troubleshooting information. This information may resolve a product issue before contacting Customer Support.

To access the Avamar support page:

1. Go to https://support.EMC.com/products.

2. Type a product name in the **Find a Product by Name** box.

3. Select the product from the list that appears.

4. Click the arrow next to the **Find a Product by Name** box.

5. (Optional) Add the product to the **My Products** list by clicking **Add to My Saved Products** in the upper right corner of the **Support by Product** page.

Comments and suggestions

Comments and suggestions help to continue to improve the accuracy, organization, and overall quality of the user publications. Send comments and suggestions about this document to DPAD.Doc.Feedback@emc.com.

Please include the following information:

- Product name and version

- Document name, part number, and revision (for example, 01)

- Page numbers

- Other details to help address documentation issues

CHAPTER 1

Introduction

This chapter includes the following topics:

Overview of Avamar Virtual Edition for VMware

Avamar Virtual Edition (AVE) is a single-node non-RAIN (Redundant Array of Independent Nodes) Avamar server that runs as a virtual machine in a VMware ESXi 5.5, 6.0, 6.5, or 6.7 environment. AVE integrates the latest version of Avamar software with SUSE Linux as a VMware virtual machine.

AVE is similar to single-node Avamar servers in the following ways:

- Runs autonomously as a target for all Avamar client backups

- Performs a replication to a physical Avamar server or another AVE

AVE for VMware supports the following licensed capacity configurations:

- 0.5 TB

- 1 TB

- 2 TB

- 4 TB

- 8 TB

- 16 TB

AVE is not scalable to a multi-node Avamar server, and resizing the virtual machine is not supported. You can increase storage capacity by either of the following methods:

- Deploy additional AVE virtual machines, and then divide backups among the virtual machines.

- Replicate the data to another AVE server, delete the smaller virtual machine, create a larger virtual machine, and then replicate the data back to the larger virtual machine.

AVE supports backup of physical and virtual clients:

- For physical clients, install the Avamar client software on each client.

- For virtual clients, there are two options for backups. Virtual clients can be backed up through guest OS backups (requires installing the Avamar client software on each virtual machine) or through host-based backups (requires a proxy server).

Appropriate environments for AVE

The following factors have the most direct impact on the long-term reliability, availability, and supportability of the AVE virtual machine:

- I/O performance capability of the AVE storage subsystem

- Amount of data added daily to the AVE virtual machine (change rate)

- Capacity that is utilized within the AVE virtual machine

Specifications in this section and AVE virtual disk requirements on page 19 describe minimum or maximum requirements for these factors. AVE generally performs better when I/O performance is higher. Change rate and utilized capacity are also lower. To maximize the capacity the AVE virtual machine can use, the daily change rate of the data AVE protects must be balanced with adequate I/O performance.

The first step in determining the proper implementation of AVE is to establish which kind of customer environment AVE is used to protect, file server or mixed environment. File server environments include file system data and mixed

environments include file system data and structured data (for example, database data).

The following table describes the maximum change rates that AVE supports for file server and mixed environments.

Table 2 Maximum change rates AVE supports for file server and mixed environments

Configuration	File server data	Mixed data
0.5 TB AVE	Less than 2 GB per day	Less than 5 GB per day
1 TB AVE	Less than 4 GB per day	Less than 10 GB per day
2 TB AVE	Less than 8 GB per day	Less than 20 GB per day
4 TB AVE	Less than 20 GB per day	Less than 20 GB per day
8 TB AVE	Less than 40 GB per day	Less than 40 GB per day
16 TB AVE	Less than 80 GB per day	Less than 80 GB per day

Actual results depend on the retention policy and the actual data change rate. When the daily change rate exceeds the limits that are specified in the previous table, deploy a single or multi-node Avamar server.

CHAPTER 2

Installation and Upgrade

This chapter includes the following topics:

Preinstallation requirements and best practices

Before you install an AVE virtual machine, follow the preinstallation requirements and review the best practices in the following sections.

Note

Using third party tools to create clones or exact copies of deployed Avamar Virtual Edition systems is known to cause issues. Cloning of Avamar Virtual Edition systems is not supported.

System requirements

Supported versions of the VMware ESXi are available in the Avamar Compatibility and Interoperability Matrix on Online Support at http://compatibilityguide.emc.com:8080/CompGuideApp/.

The following table defines the minimum system requirements for each size of AVE.

Table 3 Minimum requirements for AVE

	0.5 TB AVE	1 TB AVE	2TB AVE	4 TB AVE	8 TB AVE	16 TB AVE
Processors	Minimum two 2 GHz processors	Minimum two 2 GHz processors	Minimum two 2 GHz processors	Minimum four 2 GHz processors	Minimum eight 2 GHz processors	Minimum sixteen 2 GHz processors
Memory	6 GB	8 GB	16 GB	36 GB	48 GB	96 GB
Disk space	900 GB	1,650 GB	3,150 GB	6,150 GB	12,150 GB	24,150 GB
Network connection	1 GbE connection	1 GbE connection	1 GbE connection	1 GbE connection	1 GbE connection	1 GbE connection

Verifying the DNS configuration

Before installing AVE, DNS must be correctly configured. Failure to have DNS set up correctly can cause runtime or configuration issues.

Procedure

1. Open a command prompt on the vCenter Server and type the following command:

   `nslookup AVE_IP_address DNS_Server_IP_address`

   The `nslookup` command returns the FQDN for AVE.

2. Type the following command:

   `nslookup AVE_FQDN DNS_Server_IP_address`

   The `nslookup` command returns the IP address for AVE.

3. Type the following command:

   `nslookup FQDN_of_vCenter DNS_Server_IP_address`

   The `nslookup` command returns the IP address of the vCenter Server.

4. If the `nslookup` commands return the proper information, close the command prompt. If the `nslookup` commands do not return proper information, resolve the DNS configuration before you install AVE.

AVE virtual disk requirements

The AVE disk layout comprises one operating system disk (126 GB) and several storage partitions (250 GB, 1000 GB, or 2000 GB, depending on the AVE configuration).

The OS disk stores the operating system, Avamar application, and log files.

The storage partitions store the backup data. Backup data is evenly distributed across the storage partitions. The primary amount of the disk read, write, and seek usage occurs on the storage partitions. To improve performance in the storage configuration, distribute storage partitions across high performance LUNs.

In addition to the OS partition, the following table defines the number and size of virtual disks that are required for each AVE configuration.

Table 4 AVE virtual disk requirements

AVE configuration	Number of virtual disks
0.5 TB	3 storage partitions (250 GB each)
1 TB	6 storage partitions (250 GB each)
2 TB	3 storage partitions (1000 GB each)
4 TB	6 storage partitions (1000 GB each)
8 TB	12 storage partitions (1000 GB each)
16 TB	12 storage partitions (2000 GB each)

Note

The AVE .ova installation creates three 250 GB storage partitions along with the OS disk and so requires approximately 900 GB of free disk space at installation.

However, the AVE .ovf installation does not create storage partitions during installation and therefore requires only enough disk space for the OS disk at installation. You can subsequently create storage partitions on other datastores.

Preparing the virtual machine on page 21 contains steps to ensure that all of the storage partitions are the same size.

Software requirements

Before you install AVE, ensure that you have the software that is listed in the following table.

Table 5 Additional AVE software installation requirements

Requirement	Description
Applications	PuTTY and WinSCP (not required for .ova deployments)

Table 5 Additional AVE software installation requirements (continued)

Requirement	Description
Files	AVE Package (not required for .ova deployments), operating system security patches (if applicable)

Network requirements

Before you install AVE, gather the following information:

- Hostnames and IP addresses for the AVE virtual machine and the DNS Server
- Gateway, netmask, and domain of the AVE virtual machine
- Firewall openings, if applicable
  The *Avamar Product Security Guide* provides client-server data port usage and firewall requirements.

Virtual disk configuration best practices

ESXi supports multiple disk formats. For AVE virtual machines, the initial configuration is Thick Provision Lazy Zeroed.

Note

AVE does not support thin provisioning.

After the initial installation, if you configure the virtual disks for the Thick Provision Eager Zeroed, you will get better initial performance because the first write to the disk will require fewer operations.

Note

See the VMware documentation for information on converting Lazy zeroed virtual disks to Eager zeroed virtual disks. Converting a disk from Thick Provisioned Lazy Zeroed to Thick Provisioned Eager Zeroed is so time consuming that uses a significant number of storage I/O processes.

A virtual machine running AVE aggressively uses disk I/O and is almost never idle. VMware's recommendations for appropriate resources for high-performance database virtual machines are generally applicable to an AVE virtual machine.

Network Time Protocol (NTP) server best practices

AVE supports synchronizing with a Network Time Protocol (NTP) server. Best practice is to identify at least one NTP server to synchronize with the AVE host. If no NTP server is identified, the default behavior is to leave the NTP service disabled and to synchronize with the VMware host. If one or more NTP servers are identified during network configuration, synchronization with the VMware host is disabled and the NTP service is enabled.

During network configuration, you can type one or more optional NTP servers in either IPv4 or IPv6 format or in hostname format.

Upgrade requirements and best practices

Use the procedures in this document for upgrading from Avamar Virtual Edition 7.4 and later and Avamar Virtual Edition 18.1 to newer AVE versions. The Dell EMC personnel must perform the upgrade from releases earlier than 7.4.

Upgrading other components in the Avamar environment
Information in this document pertains only to upgrading the AVE server. Other components in the environment may also require upgrades to retain compatibility after the AVE upgrade. Check the relevant compatibility guides on the Online Support website (https://support.EMC.com) and take any necessary steps to upgrade external components separately. Some external components may require Dell EMC engagement. External components include, but are not limited to:

- All clients and database plug-ins. Customer Support can provide more information about client versions.

  - If you use the Avamar VMware or NDMP plug-ins, upgrade these plug-ins to a supported version, if necessary, before upgrading the AVE server.

  - If you use Avamar along with NetWorker, upgrade the NetWorker software to a supported version, if necessary, before upgrading the AVE server.

- Tape-out applications, such as ADT and ATO/ADMe.
  If necessary, upgrade these applications as part of the upgrade.

- Avamar Extended Retention (AER).
  Shut down the AER software before upgrading the AVE server. If necessary, contact Customer Support to open a Service Request to upgrade AER.

Stopping replication tasks before the upgrade
An active replication session during the upgrade can cause the upgrade to fail. Determine if there are any replication tasks running and cancel those tasks if appropriate, before upgrading the AVE server. The *Avamar Administration Guide* contains information about monitoring and canceling replication tasks.

Installation

The following sections describe how to install an AVE virtual machine.

Preparing the virtual machine

The following instructions use vCenter Server 5.5. Other versions of vCenter Server might have different options.

Procedure

1. Download the AVE virtual appliance file for the appropriate version of AVE you are installing.

   Required software can be downloaded from Dell EMC Online Support.

2. Extract the compressed .7z file.

3. Start a VMware Web Client and connect to the vCenter Server or to the ESXi host that hosts the AVE virtual machine.

4. Log in with administrative rights.

5. If you logged in to vCenter, select the ESXi server that hosts the AVE virtual machine.

6. Select **File** > **Deploy OVF Template**.

   Figure 1 Deploying the OVF template
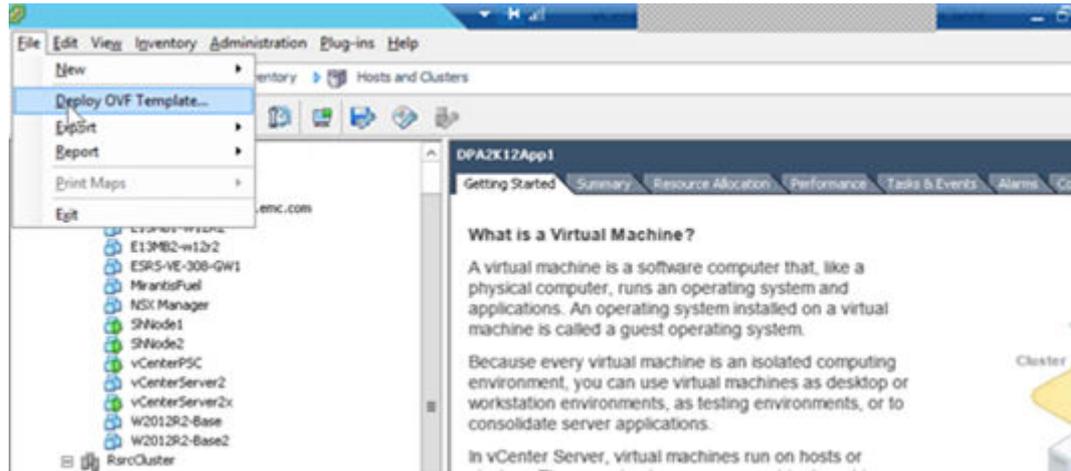
   The **Source** page appears.

7. Select **Deploy from a file or URL** and browse to the AVE virtual machine file (OVF extension) and click **Next**.

   The **OVF Template Details** page appears.

   Figure 2 OVF Templates Details page

8. Verify that the template details are correct and click **Next**.

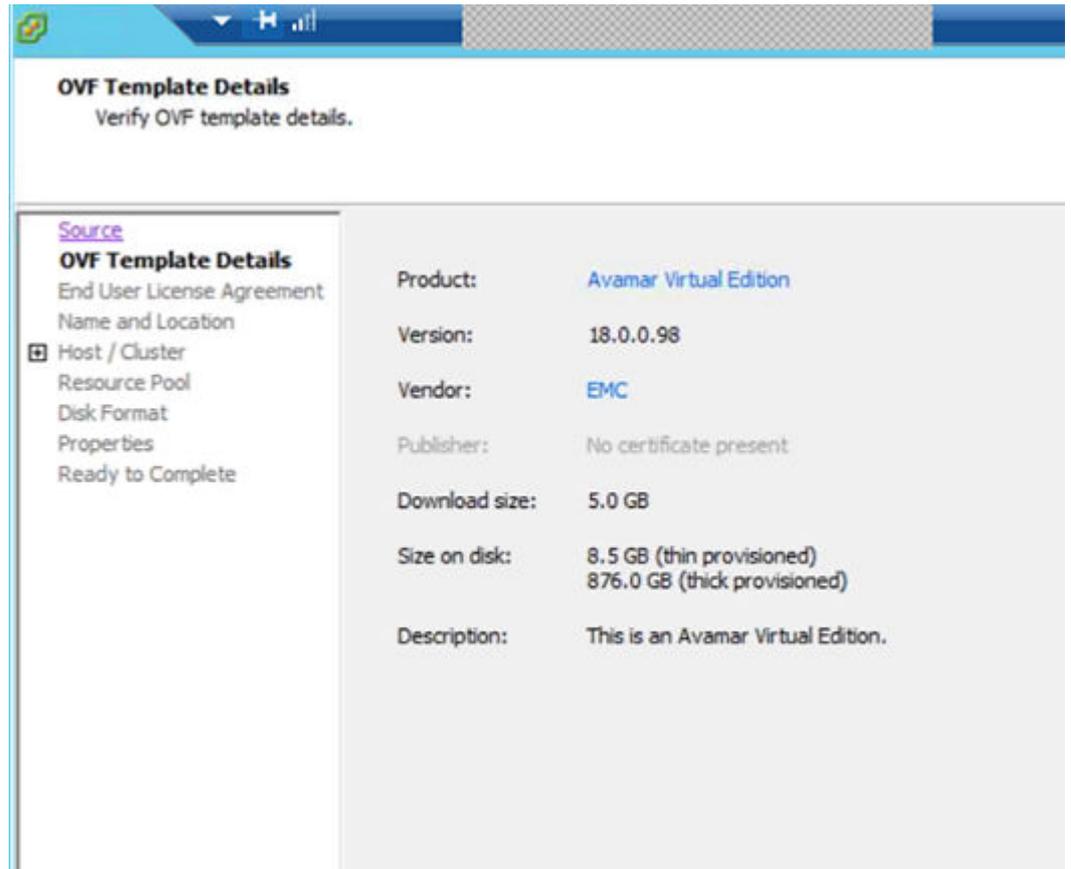   The **End User License Agreement** page appears.

9. Click **Accept** to accept the **End User License Agreement** and click **Next**.

   The **Name and Location** page appears.

10. Type in the AVE name, select the inventory location, and then click **Next**.

    The **Storage** page appears.

11. Select the storage for AVE and click **Next**.

    The **Disk Format** page appears.

12. Select **Thick Provision Lazy Zeroed** format and click **Next**.

    Thin provisioning is not supported with AVE.

    The **Network Mapping** page appears.

13. Select the destination network and click **Next**.

    The **Networking Properties** page appears.

14. At the **Networking Properties** page, perform one of the following steps:

    - If you use the AVE `.ovf` file to perform the installation, do not complete the fields on this page and click **Next** .

    - If you use the AVE `.ova` file to perform the installation, complete the required and optional networking information as described in the **Networking Properties** page and click **Next**.

Figure 3 Networking Properties page
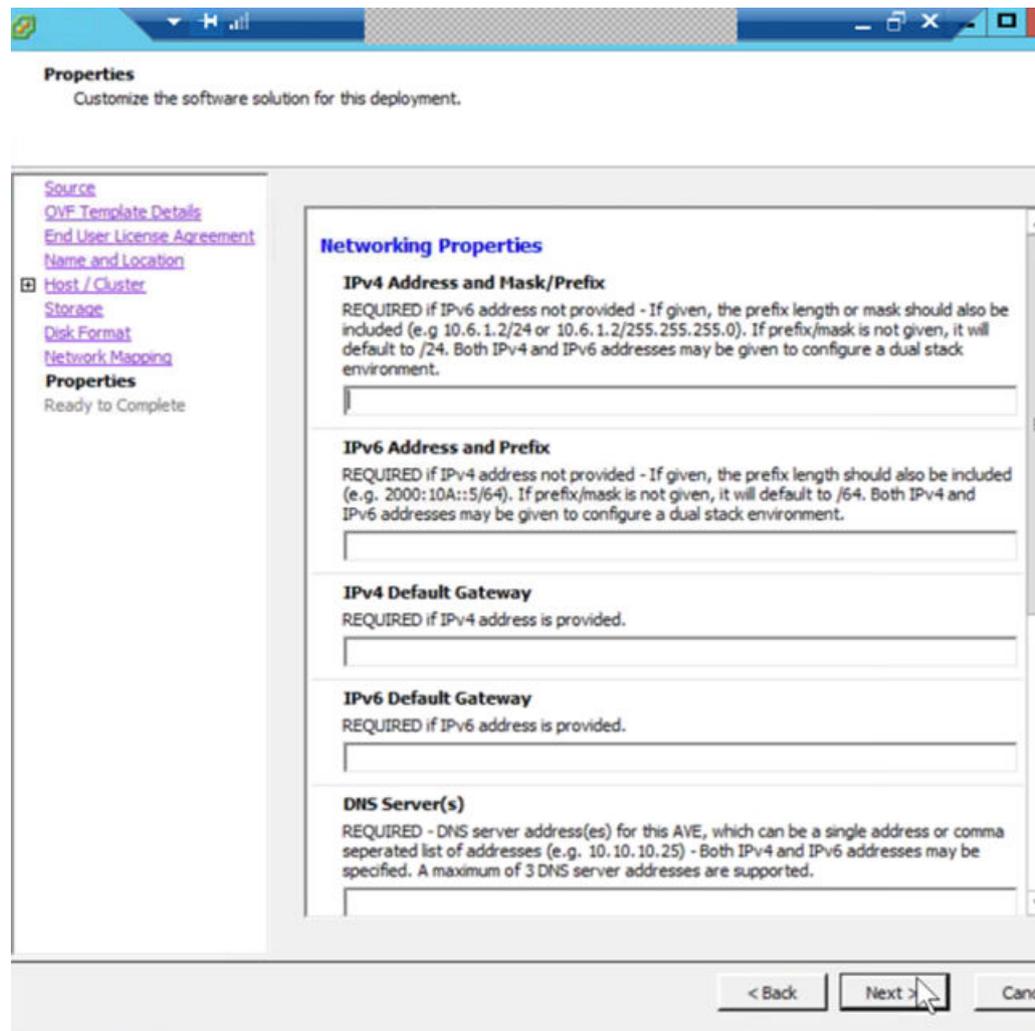
Note

For the **Hostname FQDN** field, the hostname can only include alphanumeric characters (a-z, A-Z, and 0–9), hyphen (-), and period(.). Hyphen and periods are only allowed if surrounded by other characters.

The **Ready to Complete** page appears.

15. Confirm that the deployment settings are correct and click **Finish**.

    The installation may take several minutes. A Deployment Completed Successfully message appears when the installation is complete.

16. Click **Close** to close the deployment dialog box.

17. If you are installing AVE from the `.ovf` file, skip the following steps. Type networking properties information by using the `avenetconfig` script, as described in Configuring network settings on page 27

18. If you are installing AVE from the .ova file, and you are installing a 2 TB, 4 TB, 8 TB, or 16 TB AVE, remove the existing 250 GB virtual disks that the .ova file has created.

Note

Do not perform this step for 0.5 TB and 1.0 TB AVE configurations.

---

    a. Right-click the AVE virtual machine and select **Edit Settings**.

    b. Select hard disk 2 in the table shown.

    c. Select **Remove**.

    d. Click **OK** to confirm drive removal.

    e. Repeat for hard disks 3 and 4.

19. Right-click the AVE virtual machine and select **Edit Settings**.

    The **Virtual Machine Properties** window appears.

20. On the **Hardware** tab, select **Memory** and set **Memory Size** based on the size of the AVE license:

    - For 0.5 TB AVE, specify **6 GB**

    - For 1 TB AVE, specify **8 GB**

    - For 2 TB AVE, specify **16 GB**

    - For 4 TB AVE, specify **36 GB**

    - For 8 TB AVE, specify **48 GB**

    - For 16 TB AVE, specify **96 GB**

21. On the **Hardware** tab, select **CPUs** and change the number of virtual CPUs based on the size of the AVE license:

    - For 0.5 TB AVE, specify **2 CPUs**.

    - For 1 TB AVE, specify **2 CPUs**.

    - For 2 TB AVE, specify **2 CPUs**.

    - For 4 TB AVE, specify **4 CPUs**.

    - For 8 TB AVE, specify **8 CPUs**.

    - For 16 TB AVE, specify **16 CPUs**.

22. On the **Hardware** tab, select **Network adapter 1**, choose the **Network Connection** (Network label), and then select the correct network.

23. If you are installing a 1 TB, 2 TB, 4 TB, 8 TB, or 16 TB AVE, create additional virtual hard disks (VMDKs) for the AVE virtual machine which is based on the specifications from AVE virtual disk requirements on page 19.

Note

Do not perform this step for 0.5 TB AVE configurations.

---

    a. Click the **Add** button.

       The **Add Hardware Wizard** appears.

    b. Select **Hard Disk**.

    c. Click **Next**.

    d. Select **Create a new virtual disk**.

e. Click **Next**.

f. For **Disk Size**, type **250 GB** for a 1 TB AVE, **1000 GB** for a 2 TB, 4 TB AVE, or 8 TB AVE, or **2000 GB** for a 16 TB AVE.

g. For **Disk Provisioning**, select **Thick Provision Lazy Zeroed** format.

Thin provisioning is not supported with AVE. If you select **Thick Provision Eager Zeroed** during the installation, the installation could take several hours. Time-out errors could also occur. See AVE virtual disk requirements on page 19 for information about disk formatting after the installation process is complete.

h. For **Location**, select either **Store with virtual machine** or **Specify a datastore**.

i. Click **Next**.

j. For **Mode**, select **Independent**. Use the default setting for **Persistent**.

k. Click **Next**.

l. Verify the configuration and select **Finish**.

m. Repeat these steps which are based on the AVE configuration:

- For a 1 TB AVE, repeat five more times (for a total of six 250 GB hard drives; three original drives created by the .ova file and three new drives).

- For a 2 TB AVE, repeat two more times (for a total of three 1000 GB hard drives).

- For a 4 TB AVE, repeat five more times (for a total of six 1000 GB hard drives).

- For an 8 TB AVE repeat 11 more times (for a total of 12 1000 GB hard drives).

- For a 16 TB AVE repeat 11 more times (for a total of 12 2000 GB hard drives).

Note

Verify that all of the storage partitions are the same size before continuing.

---

24. Finish virtual machine configuration by completing the following steps:

a. Click **OK**.

b. In the **Recent Tasks** status area (bottom of screen), observe the progress of the hard drive creation.

When the status of the reconfigured Virtual Machine is complete, a Completed message appears.

25. Right-click the virtual machine and select **Power** > **Power On**. This command boots the virtual machine.

26. Open the **Virtual Console** to monitor installation progress.

An insufficient licensing message at this point might indicate either a shortage of ESXi Server licenses or an inability to connect to a license server. Resolve this problem with the network administrator.

27. On the **Summary** tab, verify the status for **VMware Tools** changes to `Running`, `Unmanaged`, **or** `out-of-date`.

Configuring network settings

Use the following procedure to configure the AVE network configuration for a single IP address or dual stack environment. Use this procedure only if you are using the AVE .ovf file to install the AVE software.

The `avenetconfig` command runs automatically when the virtual machine is first booted, in which case you should proceed to step 4 on page 27.

Procedure

1. In the vSphere client, right-click the virtual machine and select **Open Console**.

2. Log in as root using the password `changeme`.

3. At the command prompt, type the following command:

   `avenetconfig`

4. To enter the **IPv4 IP Configuration**, press **1**.

   a. Press **1** again to enter the **IPv4 Address and Prefix** (for example, 10.6.1.2/24 or 10.6.1.2/255.255.255.0).

   b. Press **2** to enter the **IPv4 Default Gateway** address.

   c. Press **4** when complete to return to the main menu.

5. To enter the **IPv6 IP Configuration**, press **2**.

   a. Press **1** to enter the **IPv6 Address and Prefix** (for example, 2000:10A:: 5/64).

   b. Press **2** to enter the **IPv6 Default Gateway** address.

   c. Press **4** when complete to return to the main menu.

6. Press **3** to enter the **DNS Settings**.

   a. Press **1** to enter the **Primary Nameserver** IP address. Both IPv4 and IPv6 addresses are supported. Enter additional optional nameservers by pressing **2** and **3**.

   b. Press appropriate number to enter **Alternative Search Domain(s)** (originally the number is **4**, but increases based on the number of Alternative Search Domains you enter). This action is optional and represents a list of domain names that are added to the DNS search path. By default, only the domain portion of the AVE hostname is added.

   c. Press the appropriate number to enter the **Hostname/FQDN** (originally the number is **5**, but increases based on the number of Alternative Search Domains you entered before). This action is optional and is the Fully Qualified Domain Name to be used as the hostname of this AVE. If not provided, the AVE attempts to determine its hostname from DNS using the IP addresses provided before.

   d. Press the appropriate number when complete to return to the main menu.

7. Press **4** to enter or change the **NTP Settings**.

   The **NTP Settings** is optional and can be a single IP address or comma-separated list of IP addresses for Network Time Protocol servers. If left blank, the default behavior is to use the WMware host's timesync. If one or more

addresses is included here, the VMware host's timesync is disabled and the NTP service is enabled.

   a. Press **1** to enter the IP address(es) for the NTP server(s).

   b. Press **3** to return to the main menu.

8. At the main menu, review the configuration and press **5** to save the changes and exit.

Install and configure the Avamar software

To install the Avamar software on a new AVE virtual machine, follow the instructions that are included in the help file for the AVE installation workflow on the **SW Releases** page of the **Avamar Installation Manager**.

Procedure

1. Open a web browser and log in to Avamar Installation Manager.

   The *Avamar Administration Guide* and *Avamar Virtual Edition Configuration Workflow Guide* contain information about the **Avamar Installation Manager**.

   a. Type the following URL:

   ```
   https://Avamar-server:7543/avi
   ```

   where *Avamar-server* is the IP address or the resolvable hostname of the Avamar server.

   Note

   Ensure that the hostname does not contain more than 63 characters.

   The Avamar Installation Manager login page appears.

   b. Log in as the root user for the Avamar software with the default password.

   Note

   The default password is the private IPv4 address for the virtual machine.

   c. Click **Login**.

   The **Avamar Installation Manager** opens on the **Package Selection** page.

2. In the menu bar, click **SW Releases**, and then select the **ave-config** installation package from the **Package List**.

   Before installing the **ave-config** package, you can access the workflow help guide for the AVE installation workflow, which provides information about the user input fields that you need to specify during the installation, by clicking the **?** button next to the **ave-config** package.

   Note

   Once you click **Install**, you will not be able to access the workflow help guide.

3. Click **Install** next to the AVE installation package **ave-config**.

   The **Installation Setup** page displays.

4. On the **Installation Setup** page, provide the required information in the user input fields for each tab, and then click **Continue**.

> **Note**
>
> When creating a 8 TB or 16 TB AVE that is intended to be used with Data Domain, if you do not specify the Data Domain system during this **Installation Setup**, additional configuration changes to Avamar GSAN settings will be required before you configure the Data Domain in order to improve system performance. The section "System requirements for Data Domain system integration" in the *Avamar Administration Guide* provides more information.

The **Installation Progress** page displays.

5. On the **Installation Progress** page, you can monitor the installation and respond to any installation problems:

   a. To resolve the problem, take the appropriate action.

   b. After resolving the problem, click **Call Support**.

      The **Call Support** dialog box appears.

   c. Click **Issue resolved, continuing the installation**.

      The installation resumes.

   d. Repeat these steps for all problems that occur during the installation.

Post-installation and post-upgrade tasks

Perform the following tasks after completing the installation or upgrade of the AVE server. Note that some of these tasks might apply only to an upgrade and are not applicable for a new installation.

Starting the backup scheduler
The pre-upgrade steps included suspending the backup scheduler. Start the backup scheduler by typing the following command as the admin user:

dpnctl start sched

Output similar to the following appears:

```
Identity added: /home/admin/.ssh/dpnid
(/home/admin/.ssh/dpnid)
dpnctl: INFO: Resuming backup scheduler...
dpnctl: INFO: Backup scheduler resumed.
```

Starting the maintenance scheduler
The pre-upgrade steps included suspending the maintenance scheduler. Start the maintenance scheduler by typing the following command as the admin user:

dpnctl start maint

Output similar to the following appears:

```
Identity added: /home/admin/.ssh/dpnid (/home/admin/.ssh/dpnid)
dpnctl: INFO: Resuming maintenance windows scheduler...
dpnctl: INFO: maintenance windows scheduler resumed.
```

Verify services
As a best practice, verify that all services are online by typing the following command as the admin user:

```
dpnctl status
```

Output similar to the following appears:

```
Identity added: /home/admin/.ssh/admin_key (/home/admin/.ssh/
admin_key)
dpnctl: INFO: gsan status: up
dpnctl: INFO: MCS status: up.
dpnctl: INFO: emt status: up.
dpnctl: INFO: Backup scheduler status: up.
dpnctl: INFO: Maintenance windows scheduler status: enabled.
dpnctl: INFO: Unattended startup status: enabled.
dpnctl: INFO: avinstaller status: up.
dpnctl: INFO: ConnectEMC status: up.
dpnctl: INFO: ddrmaint-service status
```

Adding Secure Remote Services to the AVE virtual machine (optional)

Secure Remote Services (ESRS) is a two-way connection between Dell EMC products and solutions and Dell EMC Customer Service. ESRS provides:

- Proactive remote monitoring and repair

- 5x faster issue resolution times

- 15 percent higher levels of availability

Depending on the type of warranty or maintenance contract, ESRS might be available to you at no charge.

Documentation, downloads and product information are available on Online Support.

Rebooting Avamar proxy clients

If Avamar proxy clients are installed, reboot the proxy clients by typing the following commands:

```
su -
```

```
mccli mcs reboot-proxy --all=true
```

```
exit
```

Output similar to the following appears:

```
0,22357,Initiated request to recycle proxy power.
```

Note

The *Avamar for VMware User Guide* contains information about deploying proxies.

Testing Data Domain integration

If you use AVE with Data Domain, verify the status of the Data Domain integration and open any necessary service requests with Customer Support when problems occur.

Note

The *Avamar and Data Domain System Integration Guide* contains information about how to add a Data Domain system to the Avamar system and then verify it. This document also contains information about replication.

Selecting a Data Domain target for backups

To select a Data Domain system as the storage for a backup, select the **Store backup on Data Domain system** checkbox in the plug-in options for the backup, and then select the Data Domain system from the list.

Generating new certificates with Data Domain systems

When you upgrade an AVE that is connected to a Data Domain system to Avamar release 7.3 or greater, and session ticket authentication is enabled during upgrade, you must generate new certificates on the Data Domain system. The *Avamar Product Security Guide* contains more information.

Storing Avamar server checkpoints on a Data Domain system

You can store checkpoints for a single-node Avamar server or Avamar Virtual Edition (AVE) on a Data Domain system. Checkpoints are system-wide backups that are taken for disaster recovery of the Avamar server. Restoring checkpoints from a Data Domain system requires assistance from Dell EMC Professional Services. The *Dell EMC Avamar Administration Guide* provides details about checkpoints.

To store checkpoints, perform the following steps:

1. In Avamar Administrator, click the Server launcher button to open the **Server** window.

2. Click the **Server Management** tab.

3. Select a Data Domain system.

4. Navigate to **Actions** > **Edit Data Domain System** to open the **Edit Data Domain System** window .

5. Click the **System** tab and then select **Use system as target for Avamar Checkpoint Backups**.

6. Click **OK**.

7. After the edits are complete, click **Close**.

Setting the passphrase on Data Domain systems

When you upgrade an AVE that is connected to a Data Domain system to Avamar release 7.3 or greater, enable a passphrase for the DD Boost user by performing the following steps:

1. Log in to the Data Domain system.

2. Type the following command at the Data Domain CLI:

   ```
   system passphrase set
   ```

3. When prompted, type a passphrase.

Note

The DD Boost user must have admin rights.

Testing replication

If you are performing an AVE upgrade and if replication was configured before the upgrade, verify the status of replication and open any necessary service requests with Customer Support when problems occur. The *Avamar Administration Guide* contains information about replication.

Upgrading the Avamar client downloads

The *Avamar Client Downloads and Client Manager Installer Upgrades Technical Note*, which is available on Online Support contains information about the procedures to upgrade client installation packages.

Installing the server hotfixes and the Avamar platform security patch rollup

Server hotfixes and the Avamar platform security patch rollup are released on a periodic basis. When available, you should install these hotfixes and the Avamar platform security patch rollup on new and existing AVE systems.

The *Avamar Administration Guide* contains information about installing hotfixes, and the Support KB article https://support.emc.com/kb/335359 provides instructions for installing the Avamar platform security patch rollup.

Upgrading the Avamar software

To upgrade the Avamar software on an AVE virtual machine, follow the instructions that are included in the workflow guide for the AVE upgrade workflow package on the **SW Releases** page of the **Avamar Installation Manager**.

Procedure

1. Download the AVE upgrade workflow package for the appropriate version of AVE.

   Download the required software from https://support.emc.com/.

   You can also use the Avamar Download Manager or Local Downloader Service to download the software. The *Avamar Administration Guide* contains information about configuring and using the Avamar Download Manager and the Local Downloader Service.

2. Log in to the Avamar Installation Manager by performing the following substeps:

   a. Open a web browser and type the following URL:

   https://*Avamar-server*:7543/avi

   where *Avamar-server* is the IP address or the resolvable hostname of the Avamar server.

   Note

   Ensure that the hostname does not contain more than 63 characters.

   The Avamar Installation Manager login page appears. The *Avamar Administration Guide* contains information about the **Avamar Installation Manager**.

   b. Log in as the Avamar software root user.

   The root user password is typically created with the **ave_config** workflow when you install the Avamar software.

   c. Click **Login**.

3. Upload the AVE upgrade workflow package that you downloaded in step 1 on page 32 by performing the following substeps:

   a. Click **Repository**.

   The **Repository** tab appears.

   b. For **Package Upload**, click **Browse** and select the package to upload.

   Once the package upload completes, it automatically appears in the **Repository** table.

4. Click **SW Upgrade**.

   The **SW Upgrade** tab appears.

5. Click the **?** button for the AVE upgrade workflow package (`AvamarUpgrade-version.avp`) to open the workflow guide.

6. Click **Upgrade**.

7. Monitor the upgrade progress on the **Installation Progress** page and respond to any problems:

   a. To resolve the problem, take the appropriate action.

   b. After resolving the problem, click **Call Support**.

      The **Call Support** dialog box appears.

   c. Click **Issue resolved, continuing the installation**.

      The upgrade resumes.

   d. Repeat these substeps for all problems that occur during the upgrade.

8. When the upgrade is complete, run the following optional, but recommended, packages:

   - `AvPlatformOsRollup_<year>-Q<q>-R<r>.avp`
   - `UpgradeClientDownloads-<version>.avp`
   - `UpgradeClientPluginCatalog-<version>.avp`