Installation Guide

EMC Unity™ Family

EMC UnityVSA™

Installation

P/N 302-002-561
REV 01

May, 2016

EMC²

Overview of UnityVSA

UnityVSA (Virtual Storage Appliance) is a software defined storage platform that provides users greater agility and flexibility. UnityVSA is deployed on a VMware ESXi host. UnityVSA is available in two editions - Professional Edition (PE) and Community Edition (CE). Professional Edition is a licensed product available at capacity levels of 10 TB, 25 TB, and 50 TB. Community Edition is a free downloadable 4 TB solution recommended for non-production use.

Installation requirements
The following resources are required for configuring the UnityVSA environment.

A 64-bit ESXi host running 5.5 or later that meets the following requirements:

Note

EMC recommends running version 6.0 or later. To support VVols, the ESXi host must be running at least 6.0.

ESXi requirements	
Hardware processor	Xeon E5 Series Dual Core CPU 64-bit x86 Intel 2 GHz+ (or equivalent)
Hardware memory	16 GB minimum for ESXi 5.5 and 18 GB minimum for ESXi 6.0
Hardware network	4x1 GbE or 4x10 GbE (recommended)
Hardware RAID	RAID card 512 MB NV cache, battery backed (recommended)
UnityVSA requirements	
Virtual processor cores per Storage Processor (SP) **Note** UnityVSA supports 1 SP.	2 (2GHz+)
Virtual system memory	12 GB
Virtual network adapters	6 (4 ports for I/O, 1 for Unisphere, 1 for system use)

The use of vCenter to manage ESXi hosts is optional.

To deploy and configure UnityVSA, you must provide network configuration information. Contact your network administrator to gather network setting information before you install UnityVSA.

UnityVSA can be configured to use:

- Only an IPv4 address (static or dynamic)
- Only an IPv6 address (static or dynamic)
- Both IPv4 and IPv6 addresses

To use dynamic addressing, your network environment must include a DHCP server (DHCPv4 for an IPv4 address and DHCPv6 or SLAAC for an IPv6 address). If the network environment is not dynamic, you must assign the management IP address manually.

If UnityVSA is configured with a single IP address, either IPv4 or IPv6, a DNS server is optional but highly recommended. If UnityVSA is configured with both an IPv4 and IPv6 address, a DNS configuration is required.

To access Unisphere, the following browsers are supported:

- Google Chrome v33 or later
- Microsoft Internet Explorer v10 or later
- Mozilla Firefox v28 or later
- Apple Safari v6 or later

Additional resources

As part of an effort to improve its product lines, EMC periodically releases revisions of its software and hardware. Therefore, some functions 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 your EMC technical support professional if a product does not function properly or does not function as described in this document.

Where to get help
Support, product, and licensing information can be obtained as follows:

Product information
For product and feature documentation or release notes, go to Unity Technical Documentation at: www.emc.com/en-us/documentation/unity-family/index.htm. You can also access this page from the Unity product family page at: www.emc.com/en-us/storage/unity.htm. In the **Why Unity** section, click **Unity Product Resources**.

Troubleshooting
For information about EMC products, software updates, licensing, and service, go to EMC Online Support (registration required) at: https://Support.EMC.com. After logging in, locate the appropriate **Support by Product** page.

Technical support
For technical support and service requests, go to EMC Online Support at: https://Support.EMC.com. After logging in, locate **Create a service request**. To open a service request, you must have a valid support agreement. Contact your EMC Sales Representative for details about obtaining a valid support agreement or to answer any questions about your account.

Special notice conventions used in this document
EMC uses the following conventions for special notices:

⚠ **DANGER**

Indicates a hazardous situation which, if not avoided, will result 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 not related to personal injury.

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

Set up the VM environment

The ESXi host provides the storage virtualization, which abstracts the physical storage layer from the VM. Datastores are the logical containers created on physical storage. Datastores contain the virtual disks used by a VM to store its operating system, program files, and other data associated with its activities. You can configure VMs with multiple virtual disks.

From the standpoint of the VM, each virtual disk appears as if it were a SCSI drive connected to a SCSI controller. Whether the actual physical storage is being accessed through local storage or network adapters on the host is typically transparent to the VM.

A VM is connected to a virtual network by assigning the VM's network adapters to that network's port group. A vSphere switch detects which virtual machines are connected to each of its virtual ports and using that information to forward traffic to the correct VM.

For information on configuring and managing a VM environment, see the VMware vSphere documentation.

Procedure

1. Verify that the selected ESXi host meets the required configuration, as outlined in Overview of UnityVSA on page 2.

2. Verify, and if necessary configure, the host network configuration.

3. Verify that a vSphere switch has been created.

   a. Determine which port groups are associated with which subnets so you can ensure that the VM's network adapters are assigned to the correct subnet.

      - Ethernet port 0 is associated with network adapter 3
      - Ethernet port 1 is associated with network adapter 4
      - Ethernet port 2 is associated with network adapter 5
      - Ethernet port 3 is associated with network adapter 6

      You can verify which VM network adapter is mapped to which UnityVSA Ethernet port by comparing the MAC address displayed for the network adapter in the vSphere VM Hardware summary to the MAC address displayed for the Ethernet port in Unisphere.

      To display the MAC address in Unisphere, select **System › System View › Enclosures**. Select the rear view of the Disk Processor Enclosure (DPE) and click on SP A or SP B Ethernet port to display detailed information about the port including its MAC address. It is important to take note of the Ethernet port name, for example, SP A Ethernet Port 3, since this is the port name used when creating iSCSI and Replication network interfaces.

   b. If the network environment supports jumbo frames, verify that the MTU value for the switch on the ESXi host is set to the same value as the UnityVSA Ethernet ports.

If the UnityVSA VM sets an MTU value that is higher than the MTU value set on ESXi, the UnityVSA VM MTU value defaults to the smaller value. In vSphere, select **Edit Settings** on the Virtual switch to check the MTU value.

In Unisphere, select the **Settings** icon, and then select **Access › Ethernet**. MTU is not displayed by default so you must select the **Customize** icon, select **Columns** and then click on **MTU**.

The VMware Knowledge Base article, *iSCSI and Jumbo Frames configuration on VMware ESXi/ESX (1007654)*, provides more information.

> **NOTICE**
>
> Do not make any changes to the VM, such as changing the virtual hardware configuration (CPU, memory, NICs, and so on), as this causes UnityVSA to boot in service mode in order to prevent invalid configurations.

Download UnityVSA

Before you begin

To download the UnityVSA Professional Edition, you must set up a product support account. If you do not already have an account, go to your product support site to set one up. To download the UnityVSA Community Edition, go to the EMC Community Network website.

Procedure

1. Using a web browser, go to your product support or community site.

2. Select UnityVSA.

3. Locate the available downloads.

4. Select the UnityVSA Open Virtualization Appliance (OVA) file.

5. Save the OVA file to your computer.

Deploy UnityVSA directly to an ESXi host

Procedure

1. Launch VMware vSphere Client to access your ESXi host.

   > **Note**
   >
   > This procedure is based on vSphere 5.5. Depending on the version of vSphere you are using, the path to various tasks may vary.

2. Select the ESXi host on which you want to create the UnityVSA VM. Select **Deploy OVF Template** to launch the wizard. Using the wizard, complete the following steps.

3. To select the source from which to deploy, select **Browse** to locate and select the OVA file you downloaded to your computer.

4. Verify the OVF template details, including that the OVA image is signed by EMC.

5. Specify a name for the UnityVSA server. The name you enter will appear in the vSphere list.

6. Select a folder or datacenter location for the deployed template.

7. Select a datastore from the list of datastores accessible from the resource you selected in which to create the virtual disks used to store the VM configuration files.

> **NOTICE**
>
> For optimal performance, EMC recommends that you deploy the UnityVSA VM on a datastore on different physical disks than the datastore in which you will later create the virtual disks used to provide user data storage to UnityVSA. Failure to follow this recommendation can lead to system and I/O performance degradation.

8. Select a disk format for provisioning the VM's virtual disks.

> **Note**
>
> EMC recommends using **Thick Provision Eager Zero**.

9. Select a VM storage policy, if applicable.

10. Select the networks the deployed VM should use, making sure that:

    - The management network is on a network accessible by the workstation used to access Unisphere.
    - The data networks are on networks accessible by the host that will attach to the UnityVSA.

11. Confirm the settings, select the **Power on after deployment** checkbox (if available), and then select **Finish** to deploy the OVF template.

    It may take up to 60 minutes to boot the VM. (Subsequent reboots are faster as the VM has already initialized itself.) The UnityVSA VM appears in the left pane of the vSphere Client under the ESXi host you specified in the OVF template wizard.

12. Select the UnityVSA VM. Select the Summary tab to view information about the VM. If it is not already powered on, select **Power On** to start the VM.

13. To determine when the UnityVSA VM is fully up and running, monitor the DNS Name field on the Summary tab. When the DNS Name field displays a system name, the UnityVSA VM is ready.

> **Note**
>
> The system name displayed is either the name you specified during deployment or the serial number of the system (format is VIRTXXXXXXXXXX).

14. If you are running the UnityVSA VM on a dynamic network using DHCP or SLAAC, the management IP address is assigned automatically.

    You can find the assigned IP on the Summary view for the VM Summary view in vSphere.

15. If you are not running the UnityVSA VM on a dynamic network using DHCP or SLAAC and you did not configure the management interface when you deployed the OVF template, you must open the vSphere Console and login using the service account username and password service/service and run the svc_initial_config command to assign an IP address.

    For an IPv4 address, enter: svc_initial_config -4 "‹ipv4_address› ‹ipv4_netmask› ‹ipv4_gateway›"

    For an IPv6 address, enter: svc_initial_config -6 "‹ipv6_address› ‹ipv6_prefix_length› ‹ipv6_default_gateway›"

For full usage, enter: svc_initial_config -h

Note

Alternatively, you can run the svc_diag command from the vSphere Console and, from the output, identify the UnityVSA system serial number. Then use the EMC Connection Utility to discover a list of systems, find the UnityVSA serial number in the list, and assign an IP address.

16. Enter the UnityVSA management IP address in your browser to open Unisphere.

Deploy UnityVSA through a vCenter server

Procedure

1. Launch VMware vSphere Client to access your vCenter server.

   Note

   This procedure is based on vSphere 5.5. Depending on the version of vSphere you are using, the path to various tasks may vary.

2. Select the host, select **Actions** and select **Deploy OVF template** to launch the Deploy OVF Template wizard. Using the wizard, complete the following steps.

3. To select the source from which to deploy, select **Browse** to locate and select the OVA file you downloaded to your computer.

4. Verify the OVF template details, including that the OVA image is signed by EMC.

   Also select **Accept extra configuration options** to accept revised Network TIme Protocol (NTP) settings made in the template.

5. Specify a name for the UnityVSA server. The name you enter will appear in the vSphere list.

6. Select a folder or datacenter location for the deployed template.

7. Select a datastore from the list of datastores accessible from the resource you selected in which to create the virtual disks used to store the VM configuration files.

   NOTICE

   For optimal performance, EMC recommends that you deploy the UnityVSA VM on a datastore on different physical disks than the datastore in which you will later create the virtual disks used to provide user data storage to UnityVSA. Failure to follow this recommendation can lead to system and I/O performance degradation.

8. Select a disk format for provisioning the VM's virtual disks.

   Note

   EMC recommends **Thick Provision Eager Zero**.

9. Select a VM storage policy, if applicable.

10. Configure the networks the deployed VM should use, making sure that:

    - The management network is on a network accessible by the workstation used to access Unisphere.

- The data networks are on networks accessible by the host that will attach to the UnityVSA.

11. Customize the network settings for the UnityVSA VM:

   a. Enter a user friendly name for the UnityVSA. Leave this field blank to use the default name: an automatically generated serial number for UnityVSA.

   b. If you want to use static IP addresses, enter the IPv4 and IPv6 management settings.

   c. If you want to use dynamic IP addresses, leave these fields blank for automatic configuration using DHCP.

   d. If you do not have a dynamic network and you do not specify a static IP address, you must specify the IP address after the OVF template is deployed.

12. Confirm the settings, select the **Power on after deployment** checkbox (if available), and then click **Finish** to deploy the OVF template.

13. Select the UnityVSA VM. Select the Summary tab to view information about the VM. If it is not already powered on, select **Power On** to start the VM.

14. To determine when the UnityVSA VM is fully up and running, monitor the DNS Name field on the Summary tab. When the DNS Name field displays a system name, the UnityVSA VM is ready.

   Note

   The system name displayed is either the name you specified during deployment or the serial number of the system (format is VIRTXXXXXXXXXX).

15. If you are not running the UnityVSA VM on a dynamic network using DHCP or SLAAC and you did not configure the management interface when you deployed the OVF template, you must open the vSphere Console and login using the service account service/service and run the svc_initial_config command to assign an IP address.

   For an IPv4 address, enter: svc_initial_config -4 "‹ipv4_address› ‹ipv4_netmask› ‹ipv4_gateway›"

   For an IPv6 address, enter: svc_initial_config -6 "‹ipv6_address› ‹ipv6_prefix_length› ‹ipv6_default_gateway›"

   For full usage, enter: svc_initial_config -h

   Note

   Alternatively, you can run the svc_diag command from the vSphere Console and, from the output, identify the UnityVSA system serial number. Then use the EMC Connection Utility to discover a list of systems, find the UnityVSA serial number in the list, and assign an IP address.

16. Enter the UnityVSA management IP address in your browser to open Unisphere.

Add virtual disks

Before you begin

> **NOTICE**
>
> Using vSphere to modify the physical configuration of a UnityVSA VM (such as adding or removing network interfaces or modifying the VM's cache size) is not supported, except for adding virtual disks to store user data.

When you create the UnityVSA VM, three virtual disks (vmdks) are automatically created for the VM's system data. (These are always the virtual disks identified as 1-3.) Do not modify or delete these disks.

You must add at least one virtual disk for user data. You can add more virtual disks, up to the system limit (16), when additional storage for user data is needed. Please allow up to sixty seconds for UnityVSA to recognize and display the newly attached vdisks.

You can only connect 12 virtual disks for user data to the VMware paravirtual SCSI controller provided with the UnityVSA template. If you add a 13th virtual disk, a new SCSI controller is automatically added to the UnityVSA VM to accommodate it. Make sure this controller is also of type **VMware paravirtual**. If the SCSI controller is a different type, UnityVSA can have boot problems and can fail to recognize the new virtual disks attached to it.

> **NOTICE**
>
> For optimal performance, EMC recommends that you deploy the UnityVSA VM on a datastore on different physical disks than the datastore on which you create the virtual disks used to provide user data storage to UnityVSA. Failure to follow this recommendation can lead to system and I/O performance degradation.

Procedure

1. In vSphere, find and select the UnityVSA VM.

2. Select the Summary tab and locate the VM Hardware panel. Select **Edit Settings** (located at the bottom of the panel). Or select the Manage tab and select **Setting › VM Hardware** and click **Edit**.

3. On the Virtual Hardware tab, locate the New device field, select New Hard Disk, and select **Add**.

4. Enter the size and provisioning method of the disk you want to add.

   > **Note**
   >
   > EMC recommends using **Thick Provision Eager Zero**.

5. Add at least one virtual disk for user data. As more storage space is needed, you can add more virtual disks up to a maximum of 16.

Note

The minimum virtual disk size is 10 GB. A disk appears as faulted if it is smaller than 10 GB and larger than the storage size allowed by the UnityVSA edition and version. To view your system's limits, in Unisphere select the **Settings** icon, and then select **Software and Licenses › System Limits**.
Allow up to 60 seconds for UnityVSA to recognize and display the newly attached virtual disks.

Launch UnityVSA Unisphere

Procedure

1. Launch Unisphere. To do so, enter the management IP address in your browser.
2. Log in with the default username and password.

Note

UnityVSA ships with a default username, admin, and password, Password123#. You must change the administrator password during this first login. You can also change the service password at this time, either making it the same as the administrator password or creating a separate service password.

Configure UnityVSA Unisphere

Configure initial settings

The Configuration Wizard runs when you log in to Unisphere for the first time.

For the UnityVSA Professional Edition, obtain your license file online using the System UUID.

For the UnityVSA Community Edition license, see the *Obtain and activate the evaluation license for UnityVSA Community Edition* post on the EMC Community Network website for instructions on how to obtain and activate the license.

Note

You must use the License Activation Key instead of the UUID to configure ESRS and obtain customer support (professional editions).

The Unisphere online help describes the Configuration Wizard and the initial settings you need to configure, including pools and DNS and NTP servers. You must create at least one pool before you can create storage resources or NAS servers.

Note

You can also create pools on the Unisphere Pools page.

Unisphere scans for the virtual disks available to the UnityVSA VM that can be used in a pool. You add virtual disks to the UnityVSA VM using vSphere.

When you create a pool, you must specify pool tiering information (Capacity, Performance, or Extreme Performance). Contact your storage system environment administrator to learn what tier should be assigned to each virtual disk pool since this information is hidden by the virtualized environment. UnityVSA supports the Fully

Automated Storage Tiering for Virtual Pool (FAST VP) feature for both block and file data. FAST VP optimizes storage utilization by automatically moving data between and within the storage tiers.

The maximum space available for all pools is 4, 10, 25, or 50 TB depending on the UnityVSA edition and version. The maximum number of pools per system is 16. To view your system's limits, select the **Settings** icon, and then select **Software and Licenses** › **System Limits**.

If your environment uses DHCP, typically the DNS servers are populated automatically. If not, configure the DNS servers.

The accuracy of the time on your UnityVSA server is important to the proper function of UnityVSA. If you do not configure NTP, UnityVSA gets its time from the ESXi host.

Further configuration
The Unisphere online help describes additional configuration procedures as well as the tasks to manage your UnityVSA.