

Dell EMC UnityVSA™ and Unity Cloud Edition Frequently Asked Questions

302-002-570 REV 05

Version 5.x

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Overview

What is UnityVSA?

UnityVSA (Virtual Storage Appliance) is a software defined storage platform that provides users with a low acquisition cost option for hardware consolidation, multitenant storage instances, remote/branch office storage environment, and easier to build/maintain/destroy environments for staging and testing. UnityVSA is deployed on a VMware ESXi host and is available in two editions:

- Community Edition is a free downloadable 4 TB solution that is recommended for nonproduction use.
- Professional Edition is a licensed subscription-based offering available at capacity levels of 10 TB, 25 TB, and 50 TB. The subscription includes access to online support resources, ESRS support, and on-call software- and systems-related support. With the Professional Edition, you can deploy a single-SP UnityVSA, a dual-SP Unity VSA where each SP is on a different ESXi server (UnityVSA HA), or a dual-SP UnityVSA where the SPs are on the same ESXi server (not recommended). Dual-SP UnityVSA is also called UnityVSA HA.

The Community Edition and single-SP Professional Edition can optionally be deployed on a VxRail appliance.

The Unity Cloud Edition implementation describes deployment of the UnityVSA on the VMware Cloud (VMC) on Amazon Web Services (AWS).

What are the specifications for UnityVSA?

To see the specifications for UnityVSA, see the *Dell EMC UnityVSA Installation Guide*, which is available from the [UnityVSA Info Hub](#).

How do UnityVSA features compare to the physical Unity models?

The following table compares UnityVSA features to the physical Unity models. The Unity 300 is used for this comparison.

	Unity 300	UnityVSA
Goal	High performance, reliability	Virtual deployment on reliable block
Dual-SP	Yes	Yes (UnityVSA HA and Unity Cloud Edition HA only)
HTML 5 GUI	Yes	Yes
Front end services	Yes	Yes
FAST VP	Yes	Yes
64-bit file system	Yes	Yes
Read caching	Yes	Yes
Snapshots	Yes	Yes
Replication	Yes	Yes (asynchronous replication only)

	Unity 300	UnityVSA
REST API	Yes	Yes
Disk sector	520 bytes	512 bytes
Disk firmware upgrades	Yes	N/A
Pool members	RAID groups	Virtual disks
Hardware components	Physical	Virtual
Hypervisor	N/A	ESXi
ESRS VE	Integrated, Centralized	Centralized
Fibre Channel	Yes	No
Write caching	Yes	No
Data at Rest Encryption	Yes	No

What resources can UnityVSA use for underlying storage?

UnityVSA can use Unity arrays, third-party arrays, or commodity disks for underlying storage.

Deploying and licensing

How do I install and license UnityVSA?

For the UnityVSA Professional Edition, install your license file in Unisphere using the System UUID after you register the product. The online help contains instructions for obtaining a license.

Note: UnityVSA HA and Unity Cloud Edition HA require a Professional Edition license.

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

Note: Use the License Activation Key instead of the serial number or UUID as the unique identifier for setting up ESRS and for obtaining customer support (Professional Editions).

Can I deploy UnityVSA to an ESXi cluster that has server hardware platforms that do not support CPU instruction set SSE 4.2?

Starting in the UnityVSA 4.3 release, server hardware platforms that do not support CPU instruction set SSE 4.2 are no longer supported. If you are running in an ESXi cluster environment, your Enhanced VMotion Compatibility (EVC) settings are set to strict, and you have a nonsupported server in your cluster, you might encounter an error that prevents you from deploying your new 4.3 OVA, even if the server you intend to install it on supports SSE 4.2.

If you deploy a 4.3 UnityVSA on a single server and you receive this error, choose a newer server platform on which to run ESXi. If you deploy or upgrade a previously running 4.0, 4.1, or 4.2 version of UnityVSA within an ESXi cluster, update your EVC settings so that the 4.3 UnityVSA only runs on

the servers in the cluster whose CPUs support SSE 4.2. Otherwise, you must remove the older, nonsupported servers from your cluster environment. For instructions for modifying the EVC setting within an ESXi cluster, see the VMware documentation.

Note: Changes to your EVC control require you to power cycle the UnityVSA within VMWare. A shutdown, restart, or a reboot of UnityVSA is not sufficient to correct this issue after modifying the EVC settings. Power cycling a UnityVSA is a disruptive operation that should be scheduled in advance.

What else should I watch out for when I deploy UnityVSA?

- When you deploy:
 - A single-SP UnityVSA VM, three virtual disks are automatically created for the VM's system data. These are the virtual disks that are identified as 1–3.
 - UnityVSA HA, five virtual disks are automatically created for the VM's system data. These are the virtual disks that are identified as 1–5.
 - **Note:** Do not modify these virtual disks.
- (For non-VxRail deployments) It is strongly recommended that the user's storage (on virtual disks) is allocated on a datastore that is built on different physical disks than the default UnityVSA VM datastore. Failure to follow this recommendation can lead to system and I/O performance degradation.
- If there is a possibility of upgrading your UnityVSA license later, it is important to avoid using all 16 virtual disks. This leaves virtual disks with more capacity after the upgraded license is installed. Otherwise, storage resources may need to be deleted to free up a virtual disk for expansion. Expanding virtual disks that are already configured in a storage pool is not supported and could result in data unavailable conditions.
- Do not use Dynamic IP addresses (DHCP) for any components of the ESRS servers, Policy Manager servers, or managed devices. Leases for the IP addresses that Dell EMC devices use cannot be set to expire. It is recommended that you assign static IP addresses to those devices you plan to have managed by ESRS.
- When deploying UnityVSA HA, use unique VLAN IDs for the three internal connections (HB0, HB1, and CMI), respectively. That guarantees that every internal connection is isolated from the rest of the network, which is important.
- **Note:** If you use DHCP to assign IP addresses to any ESRS components (ESRS servers, Policy Manager, or managed devices), you must change these to static IP addresses.

Can I install/upgrade VMware Tools on my UnityVSA VM?

No. UnityVSA ships with a qualified version of VMware Tools. Installing a different version or upgrading to another version is not supported.

Can I use the Virtual Storage Integrator (VSI) to manage my UnityVSA VM?

Yes, the Dell EMC VSI plug-in supports UnityVSA.

If user data is allocated on the same datastore where UnityVSA is deployed, can I migrate the data to a different datastore?

Yes. To perform the migration:

1. Back up the users' data.
2. Shut down the UnityVSA system.
3. Use vSphere to detach the users' virtual disks from the UnityVSA VM.
4. Migrate the data.
5. Use vSphere to reattach the virtual disks to the UnityVSA VM.
6. Restart UnityVSA.

After installation, how can I differentiate between the Community Edition and Professional Edition of UnityVSA?

The difference between editions can be seen in many different places across Unisphere. One way to check this is by selecting the Settings icon and then selecting **Software and Licenses > Software Upgrades**. The **Model** field displays the UnityVSA model name.

What if I need more capacity than my model allows?

You can buy a subscription for a larger capacity and upgrade the existing VSA. Subscriptions are offered for one-year intervals. If you upgrade before the subscription period ends, the subscription price is prorated based on the expiration of the original license.

Does UnityVSA support Raw Device Mapping (RDM)?

UnityVSA does not support RDM. It only detects VMDKs that are presented from a datastore.

With UnityVSA HA, what should I do if SPA's or SPB's VM has a nonrecoverable failure and cannot be restored?

To avoid data loss, it is recommended that you:

1. Deploy a new UnityVSA HA.
2. Migrate data to the new UnityVSA HA using a data migration service, such as asynchronous replication.

Does the UnityVSA support deployments to the VMware Cloud on AWS (VMC)?

The UnityVSA version 4.5 or later can be deployed to the VMC as a single-node and UnityVSA version 5.0.1 or later can be deployed to VMC as a dual-node solution. Unity Cloud Edition HA (dual-node) deployments require you to use the UnityVSA Deployment Utility version 5.0.1 or later (Windows 64-bit only).

Why should I use Tie Breaker Node with UnityVSA HA?

UnityVSA HA can deploy a separate Tie Breaker Node (TBN) VM along with the two SPs for a more robust solution against possible failure scenarios. The deployment of a TBN is not required but is highly recommended as it avoids "split-brain" scenarios where data corruption could occur if all

internal networks (CMI and heartbeats) in between the two SPs become isolated. This is done by changing the failure behavior of the SPs in certain scenarios once TBN is configured. TBN communicates to each SP through the same primary heartbeat network that the SPs use and uses the same configured VLANs. TBN is not supported for Unity Cloud Edition HA deployments.

Using and managing

How do I create initial and additional storage capacity?

Use VMware vSphere to create virtual disks, as described in the *UnityVSA Installation Guide*.

How do I create a storage pool with UnityVSA?

Creating a storage pool with UnityVSA is similar to creating a storage pool with Unity, except for the following:

- The underlying storage is different. UnityVSA uses virtual disks on the VMware backend, while a physical deployment of Unity uses physical disks on its own hardware.
- With the UnityVSA, you must assign tiers to the virtual disks you are including in the pool, if the virtual disks do not already have an assigned tier. The tier that you select for a disk must be based on the underlying disk characteristics.

For more information, see *Configuring Storage Pools*, which is available on the UnityOE Features Info Hub at <http://bit.ly/unityvsainfohub>.

What kind of replication is supported for UnityVSA?

UnityVSA supports native asynchronous block and file replication to and from the following types of storage systems:

- Another UnityVSA
- A physically deployed Unity system

For more information about replication, see *Configuring Replication*, which is available on the UnityOE Features Info Hub at <http://bit.ly/unityvsainfohub>.

Why does Unisphere not show the speed of the physical NIC ports to which my UnityVSA I/O ports are mapped?

There is a virtual switch layer between the UnityVSA I/O ports and the physical NIC ports of your host. The physical NIC ports serve as uplink ports to that switch. The speed that is reported in Unisphere is the maximum speed of the virtual NIC and virtual switch combination. Like with physical switches, the uplink speed throttles traffic that needs to leave the virtual switch.

Can I use VMware to modify the physical configuration of the UnityVSA VM? For example, can I add or remove network interfaces or modify the VM's cache size?

Using VMware to modify the physical configuration of a UnityVSA VM, other than to add or remove virtual disks, is not supported and can cause boot issues for the VM.

Can I use VMware to resize a virtual disk?

Resizing a virtual disk through VMware is not supported in UnityVSA. However, if the virtual disk is not part of a storage pool, you can remove it from UnityVSA and add one of the preferred size. Virtual disks that are already part of a storage pool should never be resized, because this can result in a failed, unrecoverable pool.

What provisioning method should I use when adding a virtual disk to a UnityVSA?

For a single-SP UnityVSA, you can use any provisioning method. For UnityVSA HA, you must use the **Thick Provision Eager Zeroed** option, because the virtual disk needs to be shared by both SP VMs.

If VMware automatically adds a SCSI adapter when I add disks to UnityVSA, what adapter type should I select?

Select **VMware Paravirtual** as the adapter type. If you select another adapter type, your newly added disks will be inaccessible and you will encounter boot issues with the UnityVSA VM.

Can I use vMotion with UnityVSA?

Yes, by following these directions.

For single-SP UnityVSA, do not use vMotion and DRS unless UnityVSA is powered off first. For more information, see the *UnityVSA - A Detailed Review* white paper, which is available on the UnityVSA Info Hub at <http://bit.ly/unityvsainfohub>.

For dual-SP UnityVSA, follow this procedure:

1. Power off both SPs.
2. Remove all shared disks from SPA, but do not delete the VMDK file. The shared disks include hard disks 2, 4, and 5, and all UnityVSA user disks.
3. Use vMotion to migrate SPB to the destination.
4. Use vMotion to migrate SPA to the destination.
5. Reattach the shared disk to SPA. When you do this, ensure you assign the first three shared disks to the same SCSI bus ID as those on SPB (0:1, 0:3, 0:4). The first three shared disks on SPA serve as system disks. Their capacities are 30 GB for the first shared disk, and 2 MB for the second and third shared disks.
6. Power on both SPs.

Note: Storage vMotion is not supported on dual-SP UnityVSA due to VMware restrictions on SCSI bus sharing.

Can I use other VMware features with UnityVSA?

UnityVSA does not support VMware Fault Tolerance or VM-level replication, snapshots, and data protection.

Can I add a Tie Breaker Node to an existing UnityVSA HA?

Yes. Launch the Dell EMC UnityVSA HA Deployment Utility and select **Deploy a new Tie Breaker Node (TBN) to an existing Dual-SP UnityVSA deployment**. Once the TBN is deployed, you must enable it in Unisphere. To do this, access Unisphere, select the Settings icon, and select **Management > Tie Breaker Node**. Then select **Enable TBN** and select the TBN to enable. Note that TBN is not supported on Unity Cloud Edition HA deployments.

Are there CLI commands I can use to view manage the Tie Breaker Node (TBN) configuration in a UnityVSA HA deployment?

- `uemcli /net/tbn show`, which lets you view the TBN configuration.
- `uemcli /net/tbn/config`, which lets you enable, disable, and change the active TBN.

For more information, see the *Unisphere Command Line Interface User Guide*, which is available on the UnityVSA Info Hub at <http://bit.ly/unityvsainfohub>.

Troubleshooting

What should I do if an offline pool has failed drives?

Do not remove a storage pool that has failed drives. Restore the failed drives first, and then delete the pool. If a drive cannot be repaired and you have the Professional Edition of UnityVSA, contact your service provider. Otherwise you have to redeploy UnityVSA to formally remove the offline pool.

I accidentally removed virtual disks from my UnityVSA before deleting the pool they were in, and now I cannot delete the pool. What should I do?

If you did not delete the virtual disks, you can restore them on the host directly or by using vSphere. Then you will be able to delete the pool. If you deleted the virtual disks, you can do one of the following:

- Leave the pool in error state.
- Contact your service provider if you have the Professional Edition of UnityVSA.
- Redeploy UnityVSA to formally remove the offline pool.

What should I do if UnityVSA HA goes into service mode because the inter-SP network is disconnected and the SP suicides to prevent a split-brain scenario?

If a fault occurs due to transient networking conditions, you can try to clear the fault and reboot the affected SP VM. However, for more serious issues with the SP VM, it may reenter service mode. If this occurs, contact your service provider.

Are there service commands I can use to troubleshoot the Tie Breaker node (TBN) in a UnityVSA HA deployment?

- `svc_tbn_network`, to configure a TBN VM management interface.

- `svc_tbn_dc`, to collect trace information for the TBN.
- `svc_tbn_passwd`, to change the password of a service user on a TBN VM.

For more information, see the *Unity Service Commands Technical Notes*, which is available on the UnityVSA Info Hub at <http://bit.ly/unityvsainfohub>.

What should I do in the rare situation where both SPs are in service mode and the TBN is down but enabled?

Follow this recovery procedure to boot the SPs in normal mode, and then fix the TBN before the next potential failure occurs. If the TBN cannot be immediately fixed, you must disable it to pull the system out of the fragile state.

1. Execute the `svc_rescue_state --ignore_tbn_once` service command from one of the SP's consoles. This command checks the peer SP's status. If the peer SP is not reachable or is not in service mode, the command exits with an error. Fix the communication issue before going to the next step.
2. Execute the `svc_rescue_state --clear` service command. This command clears all fault counters so that the SPs can boot in normal mode during the next reboot.
3. Reboot the local SP with the `svc_shutdown -r` service command.
4. After this boot completes, repeat steps 2 and 3 for the peer SP.

To skip checking the peer SP status, use the `svc_rescue_state --ignore_tbn_once --force` service command. Use this command only if the following statements are true:

- The peer SP is not reachable because it is powered off or broken. It is not unreachable because the CMI is disconnected.
- You do not want to fix the broken peer but want to boot the current SP for data migration.

Caution: Using the `--force` option can cause a split-brain situation and a DL if the peer SP is alive.

For more information about the `svc_rescue_state` and `svc_shutdown` commands, see the *Unity Service Commands Technical Notes*, which is available on the UnityVSA Info Hub at <http://bit.ly/unityvsainfohub>.

If I have the Professional Edition, what information should I provide to my service provider when I have an issue?

The following information must be provided to properly diagnose issues that are related to the UnityVSA:

- The UnityVSA License Activation Key, which uniquely identifies the system to your service provider.
- Data collection from UnityVSA. To obtain this output, use the `svc_dc` command or the **Collect Service Information** task on the **Service** page in Unisphere.
- ESXi logs. In vSphere, select Actions > All vCenter Actions > Export System logs.
- Performance data from ESXi.
- Any logs from the storage backend.

For more information about the `svc_dc` command, see the *Unity Service Commands Technical Notes*, which is available on the UnityVSA Info Hub at <http://bit.ly/unityvsainfohub>. For more information using the **Collect Service Information** task in Unisphere, see the Unisphere online help.

How can I retrieve the TBN's data collection for my service provider?

Follow this procedure:

1. In the VMware vSphere client, go to the TBN VM, right-click the VM, and select **Edit Settings**.
2. In the VM Hardware tab, select **Network adapter 3** on the left, and use the Network dropdown to change the network to the VM management network.
3. Click **OK**.
4. Open a TBN VM console, and log in with the service username and password.
5. In the console, configure the TBN management interface:
 - o If there is a DHCP server in the management network, enable DHCP with the `svc_tbn_network -d` service command.
 - o Otherwise, set a static IP address with the `svc_tbn_network -a -n -g` service command.
6. Collect TBN traces with the `svc_tbn_dc` service command. When you use this command, a data collection file that is called `tbn_dc.tar` is generated in the home directory of the service user.
7. Transfer the `tbn_dc.tar` file to the user server with an SCP command.
8. Remove the `tbn_dc.tar` file, and set the management interface down with the `svc_tbn_network -o` service command.

For more information about the `svc_tbn_network_state` and `svc_tbn_dc` commands, see the *Unity Service Commands Technical Notes*, which is available on the UnityVSA Info Hub at <http://bit.ly/unityvsainfohub>.

Getting additional information and support

Where can I get more information about UnityVSA?

For more information about UnityVSA, see the posts on the Dell EMC Community Network website, the *UnityVSA Installation Guide*, and more UnityVSA documentation. You can view a list of UnityVSA documents, white papers, and videos by accessing the UnityVSA Info Hub at <http://bit.ly/unityvsainfohub>.

Where can I get instructions for managing virtual disks?

For information about managing virtual disks, see the VMware vSphere documentation on the VMware support website.