Welcome to Enterprise Hybrid Cloud 4.1 Technical Differences.

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This course covers the major differences between the Enterprise Hybrid Cloud 4.0 and 4.1 releases. It reviews all the major components and their respective versions, covers the differences between the vCenter Server Windows-based deployment and Linux-based Virtual appliance, and defines the new installation option to Enterprise Hybrid Cloud 4.1. The course also discusses the differences between vRA 6 and 7, introduces the new vRA7 converged blueprint builder, and discusses the new features in vRealize Orchestrator 7.

NOTE: The following technologies are not going to be discussed in complete detail

- vRealize Automation and IaaS components
- vRealize Orchestration

For full level of detail, refer to the following course(s):
Enterprise Hybrid Cloud - Configuration and Integration
Enterprise Hybrid Cloud - Management and Orchestration
Enterprise Hybrid Cloud 4.0 Technical Differences
Module 1: Technical Differences Overview

Upon completion of this module, you should be able to:

- List the components and identify major version changes in Enterprise Hybrid Cloud 4.1
- Identify differences between Windows vCenter Server and Linux vCenter Appliance
- Define the Clean Installation option for Enterprise Hybrid Cloud 4.1

This module lists the components and their respective versions in the Enterprise Hybrid Cloud 4.1 Platform, and goes on to the identify the major component upgrades from the previous version of Enterprise Hybrid Cloud 4.0. It identifies the differences between the Windows-based vCenter Server and the Linux-based vCenter Virtual Appliance, and covers the Greenfield-only installation for the Enterprise Hybrid Cloud 4.1 platform.
The Enterprise Hybrid Cloud platform is a unification of several EMC and VMware products and the integration points between. It is essential that each of these individual components are not only compatible with each other, but are also aligned with the Release Certification Matrices (RCM) of the VCE converged Infrastructure deployment.

This section highlights each of the EMC and VMware Components and lists their respective version numbers. The components in blue are EMC components, and those in green are VMware components.
Let's take a look at the major components that have been upgraded in the Enterprise Hybrid Cloud Platform.

This table lists the components and versions across the Enterprise Hybrid Cloud Platform versions 4.0 and 4.1. As you can see, the single biggest component upgrade is the vRealize Automation Suite that includes the Application Services and Orchestrator which has been upgraded from 6.2 to 7.0, while the other components have undergone minor upgrades.

<table>
<thead>
<tr>
<th>Component</th>
<th>4.0</th>
<th>4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMC PowerPath Virtual Appliance</td>
<td>2.1</td>
<td>2.1</td>
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<tr>
<td>EMC VIPR</td>
<td>3.0.0.1-38</td>
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<tr>
<td>EMC VIPR SRM</td>
<td>3.7</td>
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<tr>
<td>EMC ViPR Plugin for vCenter Orchestrator</td>
<td>2.4.1.0.25</td>
<td>2.4.1.0.25</td>
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<tr>
<td>EMC Avamar</td>
<td>7.3 build 226</td>
<td>7.3 (226)</td>
</tr>
<tr>
<td>VMware vRealize Automation</td>
<td>6.2.3</td>
<td>7.0.1</td>
</tr>
<tr>
<td>VMware vRealize Application Services</td>
<td>6.2.0</td>
<td><em>Built into vRA</em></td>
</tr>
<tr>
<td>VMware vRealize Orchestrator</td>
<td>6.0.4</td>
<td>7.0.1</td>
</tr>
<tr>
<td>VMware vCenter Server</td>
<td>6.0 U1b, 6.0 U2</td>
<td>6.0 U1b, 6.0 U2</td>
</tr>
<tr>
<td>VMware vSphere ESXi</td>
<td>6.0 U1 P5</td>
<td>6.0 U2</td>
</tr>
<tr>
<td>VMware NSX for vSphere</td>
<td>6.2.3b</td>
<td>6.2.3</td>
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<td>VMware vRealize Operations Manager</td>
<td>6.1</td>
<td>6.2.1</td>
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<tr>
<td>VMware vRealize Log Insight</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>EMC Cloudlink SecureVM</td>
<td>5.5</td>
<td>5.5</td>
</tr>
</tbody>
</table>

*Find the most up to date component versions refer to the Federation Enterprise Hybrid Cloud Simple Support Matrices (https://sdbnavigator.emc.com/edu/modernHybridFederation)
One of the significant differences between the 4.0 and 4.1 versions is the vCenter deployment platform. While the 4.0 version recommends the windows-based deployment for both the Platform Services Controller and the vCenter Server itself, the 4.1 release recommends the Linux-based – vCenter Server Appliance (vCSA).

Also, the recommended deployment mode for production environments is the “External” as opposed to the “Embedded” deployment, which is more suitable for smaller and Proof of Concept environments.
Let's take a look at the installation options for the Enterprise Hybrid Cloud 4.1:

- For existing 3.5 environments, there is a direct upgrade path to 4.0
- However, the Enterprise Hybrid Cloud does not support an upgrade from 4.0 to 4.1
- The Enterprise Hybrid Cloud 4.1 platform currently supports new installations only

Hence, existing 4.0 platforms might have to wait for future releases of the Enterprise Hybrid Cloud to be able to upgrade to the same feature set as version 4.1; currently there is not sufficient information available on the product roadmap.
Module 1: Summary

Key points covered:

- Listed the components and identified major version changes in Enterprise Hybrid Cloud 4.1
- Identified the differences between Windows vCenter Server and Linux vCenter Appliance
- Defined the new clean installation option for Enterprise Hybrid Cloud 4.1

This module covered the Enterprise Hybrid Cloud components and their versions. It identified the major upgrades between Enterprise Hybrid Cloud 4.0 and 4.1 platforms, and the differences between the Windows-based vCenter server and the Linux-based vCenter Virtual Appliance. This module also covered the installation options for Enterprise Hybrid Cloud 4.1 version.
This module covers the deployment differences between vRA 6 and vRA 7, and also discusses the vRA IaaS services and high availability deployment architecture. It also covers some of the technical differences and new features introduced in vRA7, introduces the new Converged Blueprint Designer, and covers the new features in vRealize Orchestrator 7.
Let's discuss the differences in the deployment footprint between vRealize Automation 6 and vRealize Automation 7.

The vRA 7 Appliance forms the core of vRealize Automation 7 deployment.

The Application Services component which was an external service that was not capable of being highly available in vRA 6 is now integrated into the vRealize Automation 7 Appliance.

The External Databases (postgres) are also collapsed into the vRA 7 Appliance.

Similarly, the Orchestrator is also collapsed into the vRA7 Appliance.

However in the Enterprise Hybrid Cloud 4.1 deployment, the vRealize Orchestrator 7 component remains external to the vRealize Automation 7 Appliance as an independent component.

Finally, the identity manager is also now integrated into the vRA 7 appliance.

We now have the vRA 7 Virtual Appliance. All the core services including the Application Services, and the Identity Manager are provided in a single pair of virtual appliances, using a Load Balancer. This diagram illustrates how the vRealize Automation version 7 will look with the core services all being internal to the Appliance.
Now that we’ve seen the basic architecture of vRealize Automation 7, let’s take a look at how to deploy it via the OVA. Here you can see the information you will need to enter while deploying the OVA.
The recommended deployment mode for vRealize Automation Installation is “Enterprise” for production environments as against “Minimal” deployment for proof of concept installations.

The optional IaaS (Infrastructure as a Service) components can also be installed from the vRA 7 installation Wizard. After the OVA is deployed and the appliance has powered on, navigate to the vRealize appliance’s VAMI port 5480. The installation wizard will start and prompt you for all the information required to install vRealize Automation 7. The wizard makes it easy to deploy a high-availability environment by selecting the enterprise deployment radio button.
Let’s take a broader architectural view of the vRA appliances, the IaaS Components, and the Windows dependencies. The overall footprint of the Automation Cluster in the Enterprise Hybrid Cloud is reduced, and the management of the Virtual IP address on the Load Balancers and the SSL certificates is streamlined.
The Identity Manager has been embedded into vRA 7 for authentication and access controls, providing out-of-the-box support for two-factor/multi-factor authentication providers and policy-based access controls.

vIDM is tested to scale at millions of objects, synchronizes all desired users and groups to the local DB, and allows for granular controls over what to sync (for example, sync everything or just the users of a specific OU nested deep inside AD). It also allows you to create sync filters (for example, “entire directory except any user that contains admin”).

VMware Identity Manager (vIDM) replaces VMware SSO as the core authentication provider in vRA 7. The vIDM is now embedded into the vRA virtual appliance. The new vIDM Identity Management solution, vRealize Automation, has added capabilities, including:

- an improved Identity Management solution to enhance authentication
- natively supported branding of the initial login screen
- support for local users – with no Active Directory or external authentication service required
- out-of-the-box SAML and Smartcard authentication support, along with many other types of multi-factor authentication
vRealize Automation now provides per-tenant branding capabilities to the login screen. The branding is not just limited to the login backdrop, but also the overall UI including color schemes, naming, branding logos, footers and headers.
There are several role changes in vRealize Automation 7. For example, the role XaaS (Anything as a Service) Architect has been newly added, and since the Application Services component is now part of the vRealize Automation, some of the roles are now classified as vRealize automation roles. The diagram shows the role changes in vRealize Automation 6 and 7.
vRealize Automation 7 has the ability to directly import and export blueprints as industry-standard YAML files. This means that it's easier to share blueprints, trade them with other members of the Enterprise Hybrid Cloud system, and enable architects to review, make changes, and perform version control.
The Converged Blueprint Designer is the biggest addition to vRA 7 and brings a complete redesign of how services and blueprints are created.

The Converged Blueprint Designer is a single unified canvas to build IaaS, PaaS, or XaaS services along with network capabilities. The Designer provides drag-and-drop functionality that allows binding of the individual systems and external services. The design tab inside the VRA Portal takes you to the Converged Blueprint Designer.

* This was called the Advanced Service designer in earlier versions.
The Unified Blueprint Canvas is a flexible and functional new way to visualize blueprint creation. By combining single and multi-machine blueprints into a single construct, you can simplify the management of the services you provide. The new ability to insert and manage software components and NSX networking and security through a drag-and-drop interface has greatly reduced the effort needed to build complex environments.

To build a complex deployment you can drag and drop items from the categorized lists on the left to the gridded area on the right. The Designer has various items on the panel on the left side. Let’s take a look at each one of them.

The Machine Types item includes various public and private workloads on a single blueprint. Amazon Machine Instances, Citrix Xen Server Machine, HyperV Machine, KVM Machine, and Open Stack Machines are a few examples, in addition to the vSphere, vCloud, and vAir virtual machines.
Software Components allow the creation of reusable components to be consumed on the Blueprint Canvas – with no external tools required. These components can have their own entitlements and approval actions tied to them, and even have a concept of parent-child relationships to help make sure they are only used under the correct circumstances. Software Components include builds incorporated in Enterprise Hybrid Cloud platform and also include existing IaaS blueprints.

All the pre-existing blueprints, including multi-machine blueprints, are available under the Blueprints Category.

The Network & Security items help vRealize Automation leverage NSX Components to be able to provide truly on-demand application delivery, with fully provisioned networking and security.

Finally, using XaaS extensibility via vRealize Orchestrator, you can also add any external interactions.
The VMware vRealize Orchestrator 7.0 is available as a preconfigured virtual appliance. The appliance significantly reduces the time and skills required to deploy vRealize Orchestrator and provides a low-cost alternative to a traditional Windows-based installation.

The Orchestrator Appliance is distributed as an OVF file (instead of a Windows Installer from the earlier version). It is prebuilt and preconfigured with Novell SUSE Linux Enterprise Server. vRO 7 is now capable of Built-in HA and Cluster and also supports external load balancers.
vRealize Orchestrator 7.0 brings a completely new, redesigned interface called Control Center which is based on HTML5.

The Control Center is where you’ll configure the whole product, including managing and creating workflows, performing general troubleshooting or collecting metrics. You can also manage, and import and export a central database. The product is also more scalable and high availability-aware.

The overall ecosystem of vRO has a large number of plugins. With the new Plugin Management UI, installation of plugins is much easier than in the previous release where it was often unclear as to whether to restart the vRO Service or the vRO appliance itself. The new plugin management eliminates complexity and gives simpler options to install plugins.
Another new feature in vRealize Orchestrator 7 is that the Runtime Metrics and Monitoring has been added to the appliance itself. For example, you would now be able to:

- have a global view of all running workflows
- manage workflow execution
- search by workflow name and Token ID
- view multiple workflows simultaneously
Module 2: Summary

Key points covered:

- Identified the deployment differences in the vRealize Automation
- Defined IaaS Services and HA deployment architecture
- Listed the technical differences in vRealize Automation 7
- Defined the new Converged Blueprint Designer
- Described new features in vRealize Orchestrator 7

This module covered the deployment differences between vRA 6 and vRA 7, discussed the vRA IaaS services and HA deployment architecture, and covered some of the technical differences and new features introduced in vRA7. It also introduced the new Converged Blueprint Designer and the new features in vRealize Orchestrator 7.
This course covered the major differences between the Enterprise Hybrid Cloud 4.0 and 4.1 releases, including the various components and their respective versions, differences between the Windows-based vCenter Server and Linux-based vCenter appliance, the course briefed the New Installation option, covered the differences between vRA 6 and 7, introduced the new Converged blueprint builder and discussed the new features in vRealize Orchestrator 7.