What’s New with VMware vCloud Director® 5.5
Version 1.2

FEATURE OVERVIEW
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1. Introduction

1.1 VMware vCloud Suite

VMware vCloud® Suite is an integrated solution for building and managing a complete cloud infrastructure that meets IT’s most critical needs. vCloud Suite fulfills the promise of the software-defined datacenter (SDDC) by pooling industry-standard hardware and running each layer of the datacenter as software-defined services. It creates pools of servers, storage and networking with dynamically configurable security, availability and management services that can meet the needs of every application.

1.2 VMware vCloud Director

VMware vCloud Director® is a key component of vCloud Suite that provides a self-service portal and catalog that enables policy-based infrastructure and application provisioning and automated operations management. vCloud Director orchestrates the provisioning of software-defined datacenter services, to deliver complete virtual datacenters for easy consumption in minutes. Software-defined datacenter services and virtual datacenters simplify infrastructure provisioning and enable IT to move at the speed of business.

vCloud Director 5.5 includes many enhancements and new features that further extend its position as the best infrastructure-as-a-service (IaaS) solution in the marketplace today. This white paper introduces these enhancements and new features. It is assumed that the reader is already familiar with the features and capabilities of previous vCloud Director releases.
2. What’s New with VMware vCloud Director 5.5

vCloud Director 5.5 is a significant milestone for vCloud Director. The following are among the many new features and capabilities provided in this release:

• Enhancements to the catalog, including the ability to limit access to shared catalogs, automated versioning of catalog content, and the ability to upload any type of file to the catalog
• Usability improvements for VMware vSphere® vApp™ provisioning and life-cycle management, including the ability to customize virtual machine hardware settings when deploying vApps from templates, support for hot-add and hot-remove of hard disk and NICs, and vApp clone support for running and suspended vApps including capturing memory state
• The ability to import and export vApps directly to and from the virtual datacenter (VDC), together with support for the Open Virtual Appliance (OVA) file format
• Support for the CentOS operating system to host the vCloud Director cell
• Google Chrome Web browser support and the ability to access virtual machine consoles on Mac OS

In the following sections, we will take a look at each of these features in detail.

2.1 Catalog Enhancements

vCloud Director 5.5 provides the following enhancements to the catalog:

• The ability to limit access to shared catalogs
• The ability to publish catalogs between vCloud Director instances
• Automated versioning of media, vApps and other files stored in the catalog
• Support for uploading any type of file into the catalog

2.1.1 Limit Access to Shared Catalogs

vCloud Director has always supported private (nonshared) as well as public (shared) catalogs. However, it has been limited by the fact that whenever a catalog was shared, it became public and accessible by all organizations. vCloud Director 5.5 provides the ability to restrict access to shared catalogs by enabling users to specify the organizations to which a catalog will be shared.
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This improves security and facilitates the sharing of vApps, media and other files within the vCloud by enabling organizations to better restrict access to their shared catalogs.

2.1.2 Catalog Publish and Subscribe

vCloud Director 5.5 also introduces the ability to publish a catalog, which enables users to share content between separate vCloud Director instances. This is done using the new publish-and-subscribe feature. Organizations optionally can choose to “publish” their catalog. When a catalog is published, a URL is created from which the content can be accessed from outside the vCloud. This URL then can be provided to other vCloud administrators to “subscribe” to the catalog. The publisher controls access to the URL and optionally can assign a password to limit access and ensure security of the shared content.
When an administrator from a remote vCloud subscribes to a published catalog, the catalog contents are copied to the subscriber side, where they are stored in a read-only capacity. As updates are made on the publisher side, they are automatically synchronized to the subscriber side. By default, the copying and synchronization of the catalogs is done over HTTPS using the VMware® Content Subscription Protocol (VCSP).

In vCloud Director 5.5, the catalog publish-and-subscribe capability includes the following features:

• Pre-exporting of catalog content – When a catalog is published, the contents are immediately exported to the spool area, where they are readily available to be sent to the subscriber.
• Support for third-party replication tools – Because the content is pre-exported from the catalog to the spool area, replication tools other than the HTTPS-based VCSP can be used to synchronize the content between the publisher and subscriber.
• Choice between an automatic full sync and on-demand synchronization – When a remote vCloud subscribes to a published catalog, the administrator can choose whether to automatically copy the entire catalog or to download only the metadata. In the latter case, the individual catalog items are copied on demand as they are needed. This is helpful when working with large catalogs where important files might be located near the end of the catalog. Rather than have to wait for the entire catalog to be copied, users can disable the automatic synchronization and instead choose to copy the most important items on an on-demand basis.

Catalog publish and subscribe provides an automated and highly secure method for sharing catalog content between vCloud Director instances. This eliminates the need for administrators to create and maintain identical vApp templates and media files at multiple locations.

2.1.3 Catalog Versioning
vCloud Director 5.5 provides simple versioning for media, vApp templates and other files stored in the catalog. When an item is added to the catalog, it is assigned a version number. As the item is updated over time, the version number is automatically incremented. With this feature, a new Version column is now displayed in the user interface.

![Figure 4. Screenshot Showing the New Catalog Item Versioning Feature Available with vCloud Director 5.5](image)

In the past, to track updates to items in the catalog, administrators had to implement a file-naming scheme that included some type of versioning information within the filename. To be effective, this approach required careful planning and strict adherence to naming rules. vCloud Director 5.5 automates versioning control for all catalog items and eliminates the need to tie in versioning information with the filename.

2.1.4 Support for Uploading Any Content Type
Prior vCloud Director versions supported uploading ISO images, Open Virtualization Format (OVF) files and floppy disk images to the catalog. vCloud Director 5.5 now supports uploading any type of file to the catalog.
This improves the file-sharing capabilities both within and between vCloud organizations. For example, it enables saving VMware vFabric™ Application Director™ blueprints to the catalog so they can be easily shared along with the related vApp templates and ISOs.

### 2.2 vApp Provisioning and Life-Cycle Management

vCloud Director 5.5 provides the following improvements related to the provisioning and life-cycle management of virtual applications/vApps:

- The ability to customize virtual machine hardware settings when deploying vApps from templates
- The ability to hot-add/hot-remove as well as hot-connect/hot-reconnect network interface cards (NICs)
- The ability to clone running and suspended vApps with memory state

#### 2.2.1 Customize Hardware Settings

When deploying new vApps from the catalog, administrators can now customize the CPU, memory and hard-disk settings during the vApp deployment. Users often must deploy multiple instances of a vApp to test various workflows and hardware configurations. Prior to vCloud Director 5.5, the hardware settings for the vApp could not be modified. This meant that to have multiple instances of a vApp with varying CPU, memory and hard-disk sizes, the user had to maintain multiple copies of the vApp template in the catalog—one for each hardware configuration. This produced much duplication in the catalog and increased storage consumption.

With vCloud Director 5.5, users can save a single copy of the vApp template and modify the hardware settings—including CPU, memory and hard-disk size—when the vApp is instantiated. The new vApp uses the modified settings while leaving the vApp template unchanged.
So only one copy of a vApp template must be kept in the catalog, regardless of the number of hardware configurations to be deployed. This eliminates the need to maintain multiple copies of a vApp template and saves space in the catalog.

2.2.2 Support for Hot Add and Hot Remove of Hard Disk and NICs

vCloud Director 5.1 introduced the ability to dynamically add, extend and remove hard disks from a running virtual machine. vCloud Director 5.5 extends this support to include the ability to add and remove NICs from a running virtual machine and to dynamically connect and reconnect NICs.

This feature helps reduce virtual machine downtime by eliminating the need to first power-off the virtual machine/vApp to add and remove disk drives and network interface cards.

NOTE: You cannot remove the primary NIC or change its network while the virtual machine is running. The primary NIC is typically the first NIC added to the virtual machine and is identified in the Primary NIC column as shown in the screenshot in Figure 8.
2.2.3 Clone vApp with Memory State

vCloud Director 5.5 provides the ability to clone a powered-on or suspended vApp, including capturing the memory state of the virtual machines, and to save this clone to the catalog.

This feature is enabled through the vApp Copy to... and Add to Catalog... options, which are now enabled with vCloud Director 5.5 for both powered-on and suspended vApps.

![Figure 9. Screenshot Showing the “Add to Catalog...” and “Copy to...” Options Enabled for a Powered-on vApp](image)

The ability to clone running vApps with memory state helps with application development, testing and troubleshooting because it enables users to capture the exact virtual machine state, including memory, as part of the template when it is saved to the catalog. This enables others to then deploy the vApp and quickly duplicate failures scenarios and reproduce errors.

**NOTE:** This feature leverages the VMware vCenter Server™ memory clone support that is available with vCenter Server version 5.5. In addition, the Customize VM settings option is disabled for any vApps that include memory state. Also, the saved memory state will be lost when the vApp is exported from the catalog or if it is copied between instances of vCenter Server.
2.3 Deploy vApps Directly to and from the VDC

Prior releases of vCloud Director required that users create a vApp template in the catalog prior to instantiating the vApp in the VDC. vCloud Director 5.5 now enables users to import and export vApps directly to and from the VDC without the need for an intermediate vApp template in the catalog.

![Figure 10. Screenshot Showing an OVA Template Being Uploaded Directly to the Virtual Datacenter (VDC)](image)

This feature facilitates vApp provisioning and eliminates unnecessary storage consumption within the catalog.

2.4 OVA File Format Support

Along with the ability to import and export vApps directly to and from the VDC, vCloud Director 5.5 adds support for importing and exporting vApps using the OVA file format.

In earlier versions of vCloud Director, importing an OVA file required that administrators either first import the OVA template into vCenter Server or use the ovftool command-line tool to convert the OVA file to an OVF format prior to importing into vCloud Director.

With vCloud Director 5.5, the Add App From OVF wizard now supports selecting an OVA file as a source when importing vApps. In addition, the vApp Download... wizard supports choosing OVA as a target format when exporting vApps.
This feature improves usability by adding support for the increasingly popular OVA file type while helping to eliminate the complexity associated with having to manually convert OVA files to an OVF format prior to importing them into vCloud Director.

2.5 vCloud Director Cell Supported on CentOS

vCloud Director 5.5 supports CentOS as an OS that can be used to host the vCloud Director cell. With CentOS support, users now have an alternative to using Red Hat Enterprise Linux (RHEL), which until now has been the only supported OS. CentOS is a free Linux distribution, which enables cost savings for the customer. Refer to the vCloud Director 5.5 Installation and Configuration Guide for additional information.

2.6 Chrome Web Browser and Mac OS Virtual Machine Console Support

Google Chrome is now a supported Web browser on Microsoft Windows, Linux and Mac OS. In addition, virtual machine consoles can now be accessed from a Mac OS. Console access on the Mac OS is based on HTML5 and is supported on both the Firefox and Chrome Web browsers.
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This makes it easier for users running Mac desktops and laptops to manage their vCloud environment because they no longer must maintain a Windows or Linux virtual machine to access their virtual machine consoles.

The following limitations apply to the HTML5 console support available on Mac OS as compared to the VMware Remote Console (VMRC) support provided on Windows and Linux:

• No device support (cannot mount or unmount CD-ROMs from the console)
• No clipboard support (cannot copy and paste to and from the console)
• Console is not able to automatically grab and release the mouse

NOTE: HTML5 console support is available only on Mac OS. Windows and Linux operating systems continue to use the VMRC.
3. Conclusion

VMware vCloud Director 5.5 provides several enhancements and new features to improve the usability, functionality and management of the software-defined datacenter and further extend vCloud Director as the best infrastructure-as-a-service (IaaS) solution in the marketplace today. The following are among the many new features and capabilities available with vCloud Director 5.5:

- Improved catalog sharing; the ability to publish catalogs externally; automated versioning of catalog content; and support for storing additional file types to the catalog
- The ability to edit virtual hardware; the ability to import vApps directly into the virtual datacenter without having to first upload to the catalog; native OVA file support; and the ability to clone running and suspended vApps, including capturing memory state
- Support for CentOS as an operating system for hosting the vCloud Director cell
- Support for the Google Chrome Web browser along with the ability to access virtual machine consoles from Mac OS

3.1 VMware Contact Information

For more information about VMware vCloud Director, visit the product pages at http://www.vmware.com/products/vcloud-director/overview.html.

You can access the documentation for vCloud Director at http://www.vmware.com/support/pubs/vcd_pubs.html.

For additional information or to purchase VMware vCloud Director, the VMware global network of solutions providers is ready to assist. If you want to contact VMware directly, you can reach a sales representative at 1-877-4VMWARE (650-475-5000 outside North America) or email sales@vmware.com. When emailing, include the state, country and company name from which you are inquiring.

3.2 Providing Feedback

VMware appreciates your feedback on the material included in this guide. In particular, we would be grateful for any guidance on the following topics:

1. How useful was the information in this guide?
2. What other specific topics would you like to see covered?

Please send your feedback to tmfeedback@vmware.com, with “What’s New with vCloud Director 5.5” in the subject line. Thank you for your help in making this guide a valuable resource.

3.3 About the Author

Kyle Gleed is a senior technical marketing architect within the Cloud Infrastructure Technical Marketing group at VMware. He works with vCloud Suite, with a primary focus on vCloud Director and VMware vSphere. Kyle is a frequent blogger at http://blogs.vmware.com/vsphere/vcloud-director and has given numerous presentations on vSphere and vCloud best practices and new features. He has been with the Technical Marketing group since September 2010.