Last updated Sept 21. 2016

Cisco Unified Communications Manager (CallManager) 11.5 Virtual Server Template (OVA)

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1.0 Overview

The Cisco Unified Communications Manager (CUCM) 11.5 Virtual Server Template (OVA) defines a virtual machine configuration that are supported in the CUCM 11.5 release. This OVA contains all supported virtual machine configurations of this CUCM release. Any fresh install of CUCM 11.5 must use a virtual machine created from this OVA.

2.0 Scope

The CUCM template is an OVA (open virtual archive) file that can be imported/deployed using the OVF (open virtualization format) support of VMware. The OVA file defines the following for the virtual machine based on the deployment selected:

- Number of virtual CPUs (minimum of Nehalem class CPU)
- Amount of RAM
- Number and size of hard disks
- ESXi support: ESXi 5.0 (VM version 8) and beyond dependent upon currently supported versions noted on Docwiki http://docwiki.cisco.com/wiki/Unified_Communications_VMware_Requirements#VMware_vSphere_ESXi_Version_Support_for_Call_Processing_and_System_Management_Applications
- OS support: Red Hat Enterprise Linux 6 (64-bit)

3.0 Deployment Options

CUCM 600 user node (HCS only - Deprecated in CUCM 10.5.2. Use CUCM 2500 user node):

CUCM 1000 user node - C200:

Cisco Unified Communications Manager (CUCM) configuration that supports up to 1000 users per node. For use on C-200 only.

Details:
Red Hat Enterprise Linux 6 (64-bit)
CPU: 2 vCPU with 800 MHz reservation
Memory: 6 GB with 6 GB reservation
Disk: 1 - 80 GB disk with pre-aligned disk partitions

CUCM 2500 user node:

Cisco Unified Communications Manager (CUCM) configuration that supports up to 2500 users per node.
Details:
Red Hat Enterprise Linux 6 (64-bit)
CPU: 1 vCPU with 800 MHz reservation
Memory: 6 GB with 6 GB reservation
Disk: 1 - 80 GB disk with pre-aligned disk partitions

CUCM 2500 user node - 60GB hard disk (HCS only - Deprecated in CUCM 10.5.2. Use CUCM 2500 user node):

CUCM 7500 user node:

Cisco Unified Communications Manager (CUCM) configuration that supports up to 7500 users per node.
Details:
Red Hat Enterprise Linux 6 (64-bit)
CPU: 2 vCPU with 3600 MHz reservation
Memory: 8 GB with 8 GB reservation
Disk: 1 - 110 GB disk with pre-aligned disk partitions

CUCM 10000 user node:

Cisco Unified Communications Manager (CUCM) configuration that supports up to 10000 users per node.
Details:
Red Hat Enterprise Linux 6 (64-bit)
CPU: 4 vCPU with 7200 MHz reservation
Memory: 8 GB with 8 GB reservation
Disk: 1 - 110 GB disk with pre-aligned disk partitions

CUCM 150 user node (BE6K only):

Cisco Unified Communications Manager (CUCM) configuration that supports up to 150 users per node (BE6K only).
Details:
Red Hat Enterprise Linux 6 (64-bit)
CPU: 2 vCPU with 800 MHz reservation

Memory: 4 GB with 4 GB reservation
Disk: 1 - 80 GB disk with pre-aligned disk partitions

4.0 Changes from previous release

The following are changes from the OVA in the previous (CUCM 9.1(1)) release:

1) The OS has changed to RHEL 6 (64-bit)
2) A new 600 user deployment has been added (used for HCS only)
3) The Adapter type on the Network adapter changed from "Flexible" to "VMXNET 3"

The following are changes from the OVA in the previous (CUCM 10.x) release:

1) vRAM size has been increased by 2GB for 11.0(1) and above releases.
2) Deprecated 600 and 2500 user HCS only deployments.

5.0 Instructions

New Installs:
Import the OVA using the vSphere Client:

1) Using the File --> Deploy OVF Template ... option to start the import
2) Deploy from file and point to the OVA file downloaded from Cisco
3) Provide VM name, select server, and select data store
4) Verify deployment settings and finish deployment

Edit Virtual Machine to prepare for installation:

5) Once VM is created, edit settings
6) Provide the appropriate mount location for the CUCM installation ISO
7) Select checkbox to go into BIOS settings upon first boot
8) Save settings

Start CUCM installation:

9) Power on VM
10) In the BIOS settings, edit boot order to have CD drive first, followed by hard disk.
11) Save BIOS settings
12) Follow CUCM installation procedures to complete installation

Upgrades from previous release:

* Perform all of the required changes to the VM Configuration prior to starting Upgrade to CUCM 11.5 !!
  Direct Refresh Upgrade Method is only supported from CUCM 8.6 or 9.1 to CUCM 11.0 release !!

1) Power off the VM.
2) Modify the vRAM, CPU, reservations, and OS based on the changes listed above via the vmware-viclient. Note, do not attempt to change the number of disks or disk size.
3) Modify the Network Adapter. See “Modifying the Network Adapter” section.

4) Modify the VM Version if previously using VM Version 7. See "Instructions to upgrade the virtual hardware version" section.
5) Modify the VMware tools Upgrade Setting and enable “Check and upgrade VMware Tools (before each power on / during power cycling)” option (This option will be already checked on CUCM VMs deployed with 10.X or beyond OVA file) . Click on VM Instance -> select Edit settings -> click (VM) Options tab -> Select VMWare Tools -> click "Check and upgrade Tools (before each power on / during power cycling) option.
6) Save the changes
7) Power back on the VM

Modifying the Network Adapter:

* First, confirm whether the existing network adapter is configured with a manual (static) or automatic (dynamic) MAC address
    1) Navigate to the Summary tab for the VM in question, choose "Edit Settings"
    2) Choose "Network adapter 1" and check whether the radio button in the MAC Address section is selected for "Automatic" or "Manual" (do NOT make any changes)
    3) select a) or b) below accordingly and follow the steps. If you have the proper VMware license you can also use the PowerCLI method c) below instead of a) or b). The PowerCLI method is applicable for both Automatic and Manual MAC address configurations

    a) If the existing network adapter is configured with an **Automatic** (dynamic) MAC address, the administrator needs to modify the virtual machine configuration file. For tips on how to edit the vmx file, see "Tips for editing a .vmx file" (http://kb.vmware.com/kb/1714).
        * Before you edit the .vmx file be sure to do the following:
        * The file has a file extension of ".vmx" and can be found in: /vmfs/volumes/datastore/virtual_machine_directory/virtual_machine_name.vmx
        * Always power off the virtual machine.
        * Determine location of virtual machine datastore and host (or cluster).
        * Make sure you are logged on as a user with the correct permission level to edit the file.

    Below is an example list of steps to accomplish this process. Depending on the specific version of ESXi in your environment and other variables some of these steps may vary slightly.
    1) Navigate to the Summary tab for the VM in question, right-click the Storage volume on which the VM is located, and choose "Browse this datastore"
    2) In the "Datastore Browser" window, locate and select the relevant folder for the VM in question
    3) Right-click on the <virtual_machine_name>.vmx file and choose "Download...", selecting a folder on your local machine for the file
    4) Make a backup copy of the .vmx file on your local machine by running the following commands from a Windows Command Prompt in the same folder as the downloaded .vmx

file. If your edits break the virtual machine, you can roll back to the original version of the file.

copy "<virtual_machine_name>.vmx" "<virtual_machine_name>.vmxBACKUP"

5) Add the necessary configuration to the end of the .vmx file by running the following commands from a Windows Command Prompt in the same folder as the downloaded .vmx file

copy "<virtual_machine_name>.vmx" temp_file.vmx
findstr /V /R "^ethernet0.virtualDev.*" temp_file.vmx > "<virtual_machine_name>.vmx"
echo ethernet0.virtualDev = "vmxnet3" >> "<virtual_machine_name>.vmx"

6) Upload the edited <virtual_machine_name>.vmx file to the Datastore by selecting the relevant folder for the VM in question in the "Datastore Browser" window, clicking the button for "Upload files to this datastore", and choosing "Upload File..."

7) Locate the edited <virtual_machine_name>.vmx file from your local machine and select it, acknowledging that existing files of the same name will be overwritten

Note: Keep the "Datastore Browser" window open, as you will need it again in Step 10

8) Now that .vmx file is updated, note on which ESXi host the VM in question is located.

9) From the main vSphere client window, right-click the VM in question in the list of VMs and choose "Remove from Inventory"

10) Navigate back to the "Datastore Browser" (from the window left open earlier. Otherwise, open the Datastore Browser from another VM's Summary page "Storage" list or the ESXi host's Summary page "Storage" list)

11) Locate and select the relevant folder for the VM in question

12) Right-click on the <virtual_machine_name>.vmx file and choose "Add to Inventory".

13) Step through the "Add to Inventory" wizard, selecting the same host on which you previously noted the VM was located. These steps will ensure that the VM will utilize the updated .vmx file using the network adapter type as "vmxnet3"

14) On the newly-readded VM you can verify the change by selecting "Edit Settings..", choosing "Network adapter 1" and verifying that the "Adapter Type" section shows "Current adapter: VMXNET 3"

OR

b) If the existing network adapter is configured with a **Manual** (static) MAC address, the administrator can simply remove the existing network adapter and add a new network adapter using the same MAC address.

1) Verify VM is powered off

2) Save MAC address of the existing Network adapter

3) Delete existing Network adapter

4) Add new Network Adapter using the "VMXNET 3" Adapter type. Use the previously saved MAC address in the manual configuration box.

OR

c) Alternatively, the VMware vSphere PowerCLI can be used to edit the .vmx file with the proper network adapter configuration.

* The VMware vSphere PowerCLI (set cmdlet) is supported in the following environment:
  - Cisco UC Virtualization Foundation (appears as "Foundation Edition" in vSphere Client)
  - VMware vSphere Standard Edition, Enterprise Edition, or Enterprise Plus Edition
  - Evaluation mode license

* The VMware vSphere PowerCLI (set cmdlet) is NOT supported in the following environment:
  - Cisco UC Virtualization Hypervisor (appears as "Hypervisor Edition" in vSphere Client)
  - VMware vSphere Hypervisor Edition

1) Install VMware vSphere PowerCLI (http://www.vmware.com/support/developer/PowerCLI/)
2) Always power off the virtual machine.
3) From the Windows "Start" menu select Start -> All Programs -> VMware -> VMware vSphere PowerCLI -> VMware vSphere PowerCLI
4) Running the following commands, replacing <virtual_machine_host> with the ESXi host machine hostname and <virtual_machine_name> with the actual virtual machine name. Enter credentials when prompted.

```
Connect-VIServer <virtual_machine_host>
get-vm "<virtual_machine_name>" | get-networkadapter | set-networkadapter -type "vmxnet3"
```

5) Once the virtual machine is modified, reload it

```
Get-View -ViewType VirtualMachine -Filter @{"Name" = "<virtual_machine_name>"} | %{$_.reload()}
```

Instructions to upgrade the virtual hardware version:

Below is an example list of steps to accomplish this process. Depending on the specific version of ESXi in your environment and other variables, some of these steps may vary slightly.

NOTE: PERFORM ONLY ON VMS RUNNING ON EXSI HOST 5.0 AND ABOVE.

1) Navigate to the Summary tab for the VM in question, right-click the Storage volume on which the VM is located, and choose "Browse this datastore".
2) In the "Datastore Browser" window, locate and select the relevant folder for the VM in question.
3) Right-click on the <virtual_machine_name>.vmx file and choose "Download...", select a folder on your local machine for the file.
4) Make a backup copy of the .vmx file on your local machine by running the following commands from a Windows Command Prompt in the same folder as the downloaded .vmx file. If your edits break the virtual machine,you can roll back to the original version of the file.

```
copy"<virtual_machine_name>.vmx""<virtual_machine_name>.vmxBACKUP"
```

5) Modify the configuration file-".vmx file":

Locate the entry virtualHW.version = "7".
Change the above entry to:
virtualHW.version = "8"

6) Upload the edited <virtual_machine_name>.vmx file to the Datastore by selecting the relevant folder for the VM in question in the "Datastore Browser" window, clicking the button for "Upload files to this datastore", and choosing "Upload File..."
7) Locate the edited <virtual_machine_name>.vmx file from your local machine and select it, acknowledging that existing files of the same name will be overwritten
   Note: Keep the "Datastore Browser" window open, as you will need it again in Step 10
8) Now that .vmx file is updated, note on which ESXi host the VM in question is located.
9) From the main vSphere client window, right-click the VM in question in the list of VMs and choose "Remove from Inventory"
10) Navigate back to the "Datastore Browser" (from the window left open earlier. Otherwise, open the Datastore Browser from another VM's Summary page "Storage" list or the ESXi host's Summary page "Storage" list)
11) Locate and select the relevant folder for the VM in question
12) Right-click on the <virtual_machine_name>.vmx file and choose "Add to Inventory".
13) Step through the "Add to Inventory" wizard, selecting the same host on which you previously noted the VM was located. These steps will ensure that the VM will utilize the updated .vmx file using the virtual hardware version 8.
14) On the newly-readded VM you can verify the change by navigating to the summary tab and noting the VM Version field.

6.0 Trademarks and Notices

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