W-ClearPass Policy Manager Tech Note Installing or Upgrading W-ClearPass 6.6 on a Virtual Machine

This document describes the procedures for installing and upgrading W-ClearPass Policy Manager 6.6 on a Virtual Machine. Information is provided for both ESXi® and Hyper-V™ installations.

This Tech Note includes the following sections:

- "ESXi Installations" on page 1
- "Hyper-V Installations" on page 17
- "Caveats, Hyper-V" on page 35

ESXi Installations

This section describes how to install or upgrade W-ClearPass on a VMware ESXi virtual machine, including:

- "ESXi Installation Process Overview" on page 1
- "Recommended ESXi Server Specifications" on page 1
- "Installing W-ClearPass Policy Manager on an ESXi Virtual Machine" on page 3
- "Morphing ESXi to a Higher Model Virtual Appliance " on page 12
- "Manually Upgrading an ESXi Installation" on page 15

ESXi Installation Process Overview

The process of installing W-ClearPass on a VMware ESXi virtual machine is done in four stages:

- W-ClearPass 6.6 VMware software packages are distributed as Zip files. Download the software image from the Download Software > ClearPass > Policy Manager > Current Release > ESXi folder on the Support site (http://download.dell-pcw.com) and unzip it to a folder on your server to extract the files.
- 2. Follow the steps in the OVF wizard to deploy the OVF files, but do not power on yet.
- 3. Add a new hard disk, based on the requirements for your type of VM. See "Recommended ESXi Server Specifications" on page 1 for more information.
- 4. Power on and configure the VM.

Instructions for these procedures are provided in "Installing W-ClearPass Policy Manager on an ESXi Virtual Machine" on page 3.



Review the release notes for the current release before you upgrade W-ClearPass Policy Manager.



Cloning a virtual machine to facilitate a W-ClearPass deployment is not recommended or supported.

Recommended ESXi Server Specifications

Please carefully review all VA requirements, including functional IOP ratings, and verify that your system meets these requirements. These recommendations supersede earlier requirements that were published for W-ClearPass Policy Manager 6.x installations.

Virtual appliance recommendations are adjusted to align with the requirements for W-ClearPass hardware appliances. If you do not have the VA resources to support a full workload, then you should consider ordering the W-ClearPass Policy Manager hardware appliance.

Be sure that your system meets the recommended specifications required for the Policy Manager Virtual Appliance. The W-ClearPass VMware ships with a 20 GB hard disk volume. This must be supplemented with additional storage/hard disk through VMware settings by adding a new hard disk. The additional space required depends on the W-ClearPass virtual appliance version.

To ensure scalability, dedicate or reserve the processing and memory to the W-ClearPass VM instance. You must also ensure that the disk subsystem can maintain the IOP's throughput as detailed below. Most virtualized environments use a shared disk subsystem assuming that each application will have bursts of I/O without a sustained high I/O throughput. W-ClearPass Policy Manager requires a continuous sustained high data I/O rate.



If you do not add a new hard disk to the VM before it is powered on, it will continue to restart with kernel panics.

An ESXi version can be morphed to a larger version by using the morph-vm command. For more information, see the **Command Line Interface > System Commands** section in the *W-ClearPass Policy Manager 6.6 User Guide*.

Supported ESXi Versions

The following VMware versions are supported. VMware Player is not supported.

• VMware ESXi 5.0, 5.1, 5.5, 6.0, or higher

CP-SW-EVAL (Evaluation OVF)

- 2 Virtual CPUs
- 4 GB RAM
- 80 GB disk space

CP-VA-500 (500 Virtual Appliance OVF)

- 8 Virtual CPUs
 - Underlying CPU is recommended to have a <u>PassMark</u>® of 3000 or higher
- 8 GB RAM
- Disk space:
 - 500 GB disk space required for existing deployments (upgrading from 6.3.6, 6.4.7, or 6.5.x)
 - 1000 GB disk
- 2 Gigabit virtual switched ports
- Functional IOP rating for a 40-60 read/write profile for 4K random read/write = 75

CP-VA-5K (5K Virtual Appliance OVF)

- 8 Virtual CPUs
 - Underlying CPU is recommended to have a <u>PassMark</u>® of 9600 or higher
- 8 GB RAM
- Disk space:
 - 500 GB disk space required for existing deployments (upgrading from 6.3.6, 6.4.7, or 6.5.x)

- 1000 GB disk
- 2 Gigabit virtual switched ports
- Functional IOP rating for a 40-60 read/write profile for 4K random read/write = 105

CP-VA-25K (25K Virtual Appliance OVF)

- 24 Virtual CPUs
 - Underlying CPUs are recommended to have a <u>PassMark</u>® of 9900 or higher
- 64 GB RAM
- Disk space:
 - 1000 GB disk space required for existing deployments (upgrading from 6.3.6, 6.4.7, or 6.5.x)
 - 1800 GB disk
- 2 Gigabit virtual switched ports
- Functional IOP rating for a 40-60 read/write profile for 4K random read/write = 350

Installing W-ClearPass Policy Manager on an ESXi Virtual Machine

After you download and unzip the W-ClearPass 6.6 VMware ESXi software package Zip files, follow the instructions in this section to deploy the W-ClearPass files, add a new hard disk, and power on and configure the VM:

- "Deploy W-ClearPass Policy Manager Image on a VMware ESXi Server" on page 3
- "Add a Hard Disk to the Virtual Machine" on page 5
- "Power On and Configure the VM" on page 9

Deploy W-ClearPass Policy Manager Image on a VMware ESXi Server

NOTE

The illustrations in this section use a CP-VA-500 virtual appliance as an example. Refer to "Recommended ESXi Server Specifications" on page 1 for the appropriate requirements for your appliance.

- 1. Start the VMware vSphere client and connect to your ESXi server.
- 2. Select File > Deploy OVF template.

- 3. Select the .ovf file from the folder where the W-ClearPass Policy Manager Zip file was extracted. The Deploy OVF wizard opens with the OVF Template Details page displayed. (OVF, or Open Virtualization Format, is a standard for distributing virtual appliances or software to virtual machines)
- Figure 1 Deploy OVF Template Wizard, OVF Template Details

💋 Deploy OVF Template				- • ×
OVF Template Details Verify OVF template de	etails.			
Source OVF Template Details End User License Agreen Name and Location Resource Pool Disk Format Network Mapping Ready to Complete	Product: Version: Vendor: Publisher: Download size: Size on disk: Description:	Aruba ClearPass Policy Manager Appliance 6.6.0.81015 Aruba Networks No certificate present 2.9 GB 5.2 GB (thin provisioned) 20.0 GB (thick provisioned)		
Help		< Back	Next >	Cancel

- 4. Click Next.
- 5. On the **End User License Agreement** page, click **Accept**, and then click **Next**.
- 6. On the **Name and Location** page, the **Name** is set by default to Aruba ClearPass Policy Manager Appliance. You can change it as you wish, and then click **Next**.

Figure 2 Deploy OVF Template Wizard, Name and Location

(Deploy OVF Template				23
	Name and Location Specify a name and location	n for the deployed template			
	Source OVF Template Details End User License Agreement Name and Location Disk Format Network Mapping Ready to Complete	Name: Aruba ClearPass Policy Manager Appliance The name can contain up to 80 characters and it must be unique within the inventory fold	er.		
	Help	< Back Next >] [Car	ncel

7. On the **Disk Format** page, leave the default option of **Thick Provision Lazy Zeroed**, and then click **Next**.

Figure 3 Deploy OVF Template Wizard, Disk Format

🕑 Deploy OVF Template					x
Disk Format In which format do you wa	nt to store the virtual disks?				
Source OVE Template Details	Datastore:	datastore 1			
End User License Agreement	Available space (GB):	10779.7			
Disk Format					
Ready to Complete	Thick Provision Lazy Zero	ed			
	C Thick Provision Eager Zer	oed			
	C Thin Provision				
Help		< Back N	lext >	Can	ncel
				-	

8. On the **Ready to Complete** page, do not select the "Power on after deployment" check box. Just click **Finish**.

Figure 4 Deploy OVF Template Wizard, Ready to Complete

🕗 Deploy OVF Template		_ 0 🗙
Ready to Complete Are these the optic	ons you want to use?	
Source OVF Template Details End User License Agreen	When you click Finish, the depk Deployment settings:	pyment task will be started.
Name and Location Resource Pool Disk Format Network Mapping Ready to Complete	OVF file: Download size: Size on disk: Name: Host/Cluster: Datastore: Disk provisioning: Network Mapping:	C:\Users\pbadarinath\Desktop\CPPM-VM-x86_64-6.6.0.81015-ESX-CP-VA\CPPM-VM-x86_64-6.6.0.8 2.9 GB 20.0 GB Aruba ClearPass Policy Manager Appliance localhost. datastore1 (6)-Temp Thick Provision Lazy Zeroed "VM Network" to "VLAN-51"
4 III >	Power on after deployment	
Help		< Back Finish Cancel

You will need to reconfigure the VM settings by adding a hard disk before you power on.

Add a Hard Disk to the Virtual Machine

NOTE

For disk size requirements for the different W-ClearPass models, see "Recommended ESXi Server Specifications" on page 1.

1. On the vSphere client, navigate to the deployed virtual machine, right-click on it, and select **Edit Settings**.

Figure 5 vSphere Client, Edit Settings

2 192.168.2.106 - vSphere Client		
File Edit View Inventory Administration Plug-ins Help		
🔁 🔝 🏠 Home 🕨 👸 Inventory 👂 🗊 Inventory		
Image: Section 192.168.2.106 DiskSizeTest(PExpL1	~	
AirWave 7.7.6	Resource Allocation Performance Events Console Permissions	
Aruba ClearPass Policy Mar		close tab 🗶 🔺
DiskSizeTestCPEval-1	chine?	
🗃 Winde Guest	software computer that, like a Virtual Machines	
Snapshot •	ating system installed on a virtual	
Open Console	lest operating system.	
Edit Settings	machine is an isolated computing	
Add Permission Ctrl+P	use virtual machines as desktop or ents, as testing environments, or to	Host
Report Performance	plications.	
Rename	on hosts. The same host can run	
Open in New Window Ctrl+Alt+N	5.	
Delete from Disk		
Basic Tasks	vSphere Client	
Shut down the	virtual machine	
Suspend the vi	irtual machine	
👘 Edit virtual mac	chine settings	

2. Click **Add** to add another hard disk.

Figure 6 Virtual Machine Properties, Add Hard Disk

Hardware Ootons Resources Add Remove Memory Configuration Memory Configuration Memory Configuration 111 GB Memory See: 8 - 121 GB Memory See: 121 GB M	🕝 finalovf-aruba - Virtua	I Machine Properties			
Show Al Devices Add Remove Hardware Summary 011 GB Memory 8192 MB 256 GB Video card Video card Wideo card Video card Video card 128 GB CPUS 8 256 GB Memory Size: Memory Configuration 128 GB Memory Size: Video card Video card Wideo card CVD/DVD drive 1 [datastore1 (6) T Hard disk 1 Vitual Disk Network adapter 1 VLAN-51 Network adapter 2 VLAN-53 Network adapter 2 VLAN-53 Herb 2 GB 108 512 MB 9 9 9 9 108 512 MB 108 128 MB 109 128 MB 100 100 101 100 101 100	Hardware Options Resou	rces		Virtual Machine Version: 8	
Hardware Summary I011 GB Memory Size: Hardware Summary 512 GB S12 GB Memory Size: 8			- 1	Memory Conf	figuration
Hardware Summary 1011 GB Memory Size: Memory 8192 MB 512 GB Maximum recommended for Video card Video card 128 GB 256 GB VMCI device Restricted 128 GB Maximum recommended for CD/DVD drive 1 [datastore] (b)T 64 GB Maximum recommended for Hard disk 1 Vitual Disk 32 GB Memory Size: Network adapter 1 VLAN-53 16 GB Minimum recommended for V GB VLAN-53 16 GB Minimum recommended for V B 2 GB 16 GB Minimum recommended for V B 2 GB 16 GB Minimum recommended for B GB 2 GB Minimum recommended for Minimum recommended for B GB 2 GB Minimum recommended for Minimum recommended for B GB 2 GB Minimum recommended for Minimum recommended for B GB 2 GB Minimum recommended for Minimum recommended for B GB 2 GB Minimum recommended for Minimum recommended for B MB Minimum recommended for Minimum recommended fo	Show All Devices	Add	Remove		
Memory 8192 MB CPUs 8 Wideo card Video card Wideo card Video card Wideo card Video card Wideo card Video card CD/DVD drive 1 [datastore1 (6)-T Hard disk 1 Virtual Disk Network adapter 2 VLAN-53 Network adapter 2 VLAN-53 Help OK Cardel Use card Help OK	Hardware	Summary			Memon (Size)
Image: Cruss of the second	Memory	8192 MB		512 GB	Memory Size.
Wdeo card Video card 225 GB 4 this WVCI device Restricted 128 GB 4 dB SCSI controller 0 LSI Logic Parallel 64 GB 4 dB C/D/DVD drive 1 [datastore1 (6)-T 64 GB 9 dest performance: 130972 MB Hard disk 1 Virtual Disk 32 GB 9 dest performance: 130972 MB Network adapter 1 VLAN-51 16 GB 9 dest performance: 130972 MB Network adapter 2 VLAN-53 16 GB 9 dest performance: 130972 MB 128 GB 9 dest performance: 130972 MB 9 dest performance: 130972 MB 9 dest performance: 130972 MB 16 GB 9 dest performance: 130972 MB 9 dest performance: 130972 MB 9 dest performance: 130972 MB 16 GB 9 dest performance: 130972 MB 9 dest performance: 130972 MB 9 dest performance: 130972 MB 16 GB 9 dest performance: 130 MB 16 GB 9 dest performance: 130972 MB 9 dest performance: 130972 MB 128 MB 16 GB 9 dest performance: 130 MB 128 MB 128 MB 16 MB 128 MB 16 MB 9 MB 4 MB 14 MB 14 MB 16 MB 9 MB 16 MB	CPUs	8			Maximum recommended for
WICI device Restricted 128 GB guest OS: 1011 GB. SCSI controller 0 LSI Logic Parallel 64 GB Maximum recommended for best performance: 130972 Wici disk 1 Vitual Disk 32 GB 0 Default recommended for this guest OS: 512 MB. Network adapter 2 VLAN-53 16 GB 0 Minimum recommended for this guest OS: 512 MB. 4 GB 2 GB 1 GB 1 GB 512 MB 4 GB 1 GB 128 MB 1 GB 1 MB 129	Video card	Video card		256 GB H	⊲ this
SCSI controller 0 LSI Logic Parallel 64 GB Maximum recommended for best performance: 130972 Hard disk 1 Virtual Disk 32 GB Default recommended for this guest OS: 2 GB. Network adapter 2 VLAN-53 16 GB Minimum recommended for this guest OS: 512 MB. 4 GB 2 GB 4 GB 1 GB 512 MB 4 GB 256 MB 1 GB 128 MB 64 MB 32 MB 1 GM 64 MB 4 MB 32 MB 1 GB 16 MB Maximum recommended for this 9 Uest OS: 512 MB. 1 GB 16 MB Maximum recommended for this 9 Uest OS: 512 MB. 1 GB 16 MB 4 GB 1 GB 1 GB 1 GB 178 MB 1 GB 1 GB 1 GB 1 GB 18 MB 1 GM 1 GM 1 GM 1 GM 1 GM 199 0K Cancel 0K Cancel 1 GM	VMCI device	Restricted		128 GB	guest OS: 1011 GB.
CD/DVD drive 1 [datastore1 (6)-T Hard disk 1 Virtual Disk Network adapter 1 VLAN-51 Network adapter 2 VLAN-53 Network adapter 2 VLAN-53 Help Help Mexon Adapter 2 VLAN-53 Minimum recommended for this guest OS: 512 MB. 4 GB 2 GB 4 1 GB 5 12 MB 1 GB 4 GB 1 GB	SCSI controller 0	LSI Logic Parallel			Maximum recommended for
Hard disk 1 Virtual Disk 32 GB Default recommended for this Network adapter 1 VLAN-51 16 GB Minimum recommended for Network adapter 2 VLAN-53 16 GB 4 GB 2 GB 4 1 GB 9 uest OS: 512 MB. 4 GB 2 GB 4 1 GB 512 MB 4 2 56 MB 128 MB 4 1 22 MB 64 MB 32 MB 1 6 MB 8 MB 4 4 MB 4 4	🚇 CD/DVD drive 1	[datastore1 (6)-T		64 GB H	MB.
 Network adapter 1 VLAN-51 Network adapter 2 VLAN-53 16 GB 8 GB 4 GB 2 GB 4 GB 2 GB 4 GB 5 12 MB. 4 GB 5 12 MB 6 4 MB 3 2 MB 6 4 MB 6 4 MB 7 MB 8 MB 9 MB<	Hard disk 1	Virtual Disk		32 GB -	Default recommended for this
Image: Network adapter 2 VLAN-53 Image: Size of the second s	Network adapter 1	VLAN-51			✓ quest OS: 2 GB.
8 GB 4 GB 2 GB 2 GB 3 GB 1 GB 512 MB 4 256 MB 128 MB 128 MB 32 MB 16 MB 32 MB 4 MB 4 MB 4 MB	Network adapter 2	VLAN-53		16 GB	Minimum recommended for
guest OS: 512 MB. 4 GB 2 GB 1 GB 512 MB 1 GB 512 MB 2 GB 1 GB 512 MB 1 GB 512 MB 1 GB 512 MB 1 GB 512 MB 1 GB 2 GB 1 GB 1 28 MB 64 MB 32 MB 16 MB 8 MB 4 MB				8 GB	⊲ this
4 GB 2 GB 1 GB 1 GB 512 MB 512 MB 256 MB 128 MB 64 MB 32 MB 16 MB 32 MB 4 MB					guest OS: 512 MB.
2 GB ■ 1 GB ■ 512 MB ■ 256 MB ■ 128 MB ■ 16 MB ■ 18 MB ■ 14 MB ■ Help OK Cancel				4 GB	
1 G8 512 MB 256 MB 128 MB 64 MB 32 MB 16 MB 8 MB 4 MB				2 GB 🚽	
1 G8 512 M8 256 M8 128 M8 64 M8 32 M8 16 M8 8 M8 4 M8					
512 MB I 256 MB I 128 MB I 64 MB I 32 MB I 16 MB I 8 MB I 4 MB I				1 GB	
256 MB 128 MB 64 MB 32 MB 16 MB 8 MB 4 MB Help OK Cancel				512 MB	
256 MB 128 MB 64 MB 32 MB 16 MB 8 MB 4 MB Help OK Cancel					
128 MB 64 MB 32 MB 16 MB 8 MB 4 MB Help OK Cancel				256 MB -	
64 MB 32 MB 16 MB 8 MB 4 MB Help OK Cancel				128 MB	
64 MB 32 MB 16 MB 8 MB 4 MB Help OK Cancel					
32 MB 16 MB 8 MB 4 MB MB OK Cancel				64 MB	
16 MB B MB 4 MB MB OK Cancel				32 MB -	
16 MB 8 MB 4 MB Help OK Cancel					
B MB 4 MB Help OK Cancel				16 MB -	
4 MB OK Cancel				8 MB -	
Help OK Cancel				4.640	
Help OK Cancel				4 MB 🗖	
Help OK Cancel					
OK Cancel	11-12				
	нер				OK Cancel
					11

3. On the **Device Type** page of the Add Hardware wizard, select **Hard Disk**, and then click **Next**.

Figure 7 Add Hardware Wizard, Device Type

wish to add.	Choose the type of device you w	Device Type Select a Disk Create a Disk
	Serial Port Paralel Port Paralel Port Floppy Drive CO/DVD Drive USB Controler USB Device (unavailable) PCI Device (unavailable) Ethernet Adapter Hard Disk SCSI Device	Advanced Options Ready to Complete
< Back Next >	III PCI Device (unavailable) III Ethernet Adapter III And Disk SCSI Device	Help

4. On the Select a Disk page, select Create a new virtual disk, and then click Next.

Figure 8 Add Hardware Wizard, Select a Disk

Select a Disk	
Device Type Select a Disk Create a Disk Advanced Options	A virtual disk is composed of one or more files on the host file system. Together these files appear as a single hard disk to the guest operating system. Select the type of disk to use.
reauy to complete	Disk Create a new virtual disk Use an existing virtual disk Reuse a previously configured virtual disk. Raw Device Mappings Give your virtual machine direct access to SAN. This option allows you to use existing SAN commands to manage the storage and continue to access it using a datastore.
Help	< Back Next > Canc

5. On the **Create a Disk** page, set the **Disk Size** to the correct requirements for your virtual appliance version. See "Recommended ESXi Server Specifications" on page 1.

Figure 9 Add Hardware Wizard, Create a Disk

🕜 Add Hardware	
Create a Disk Specify the virtua	I disk size and provisioning policy
Device Type Select a Disk Create a Disk Advanced Options Ready to Complete	Capacity Disk 1000 ± GB ▼ Disk Provisioning • Thick Provision Lazy Zeroed [•] Thick Provision Eager Zeroed • Thick Provision Eager Zeroed [•] Thick Provision • • Location • • [•] Store with the virtual machine • • [•] Specify a datastore or datastore cluster: Browse
Help	< Back Next > Cancel

6. Leave the default settings on the **Advanced Options** page (the Virtual Device Node should be SCSI(0:1)), and then click **Next**.

Figure 10 Add Hardware Wizard, Advanced Options

Add Hardware	
Advanced Options These advanced options d	o not usually need to be changed.
Device Type Select a Disk Create a Disk Advanced Options Ready to Complete	Specify the advanced options for this virtual disk. These options do not normally need to be changed. Virtual Device Node SCSI (0:1) DIDE (0:0) Mode Mode Independent Independent Independent disks are not affected by snapshots. Persistent Changes are immediately and permanently written to the disk.
Help	Changes to this disk are discarded when you power off or revert to the snapshot.

7. The **Ready to Complete** page displays the disk details for verification. If the disk size matches the requirements described in "Recommended ESXi Server Specifications" on page 1 and the disk provisioning setting is **Thick Provision Lazy Zeroed**, click **Finish**.

Figure 11 Add Hardware Wizard, Ready to Complete

🛃 Add Hardware					×
Ready to Complete Review the selecte	d options and click Finis	sh to add the hardware.			
Device Type Select a Disk Create a Disk Advanced Options Ready to Complete	Options: Hardware type: Create disk: Disk capacity: Disk provisioning: Datastore: Virtual Device Node: Disk mode:	Hard Disk New virtual disk 1000 GB Thick Provision Lazy Zeroed datastore1 (6)-Temp SCSI (0:1) Persistent			
Help			< Back	Finish	Cancel

Power On and Configure the VM

1. Power on the virtual machine. You should see the following in the vSphere client:

Figure 12 "Enter appliance type to continue"

- 2. Enter the number for the appropriate appliance type (do not enter the appliance model itself). Options include:
 - 1) CP-SW-EVAL
 - 2) CP-VA-500
 - 3) CP-VA-5K
 - 4) CP-VA-25K
- 3. So, for example, to install a CP-VA-500, you would enter the number 2.

Figure 13 Number Entered to Indicate Appliance Option

🥝 finalovf-aruba on localhost.localdomain	
File View VM	
Number of active connections has changed. There are now 2 active connections to this console	×
<pre>[8.387167] sda: sda1 sda2 sda3 sda4 < sda5 sda6 > [8.387167] sda: sda1 sda2 sda3 sda4 < sda5 sda6 > [8.387861] sd 2:8:8:9: Isda1 Assuming drive cache: write through [8.387861] sd 2:8:8:9: Isda1 Attached SCS1 disk [8.394895] Floppy drive(s): fd8 is 1.44M [8.486859] FDC B is a post-1991 82877 [18.833667] EXT4-fs (sda2): mounted filesystem with ordered data mode. Opts: [null] [19.272367] dracut: Mounted root filesystem /dev/sda2 [13.559357] ecryptfs_parse_options: eCryptfs: unrecognized option [passphrase _ passud_fd=41] [13.738277] eryptfs_parse_options: eCryptfs: unrecognized option [passphrase _ passud_fd=41] [13.8936867] exryptfs_parse_options: eCryptfs: unrecognized option [passphrase _ passud_fd=41] [13.893867] ecryptfs_parse_options: eCryptfs: unrecognized option [passphrase _ passud_fd=41] [13.893867] ecryptfs_parse_options: eCryptfs: unrecognized option [passphrase _ passud_fd=41] [13.893869] dracut: Switching root [14.176773] EXT4-fs (sda2): re-mounted. Opts: (null) Wf appliance types [1 CF-Wn-258 Enter appliance type to continue : 2_</pre>	

4. The system requirements are displayed for the appliance model you entered, along with your current system configuration. Compare these to make sure your system meets the new system requirements. For more information, see "Recommended ESXi Server Specifications" on page 1.

Figure 14 System Requirements Comparison, and "Enter 'y' or 'Y' to proceed"



5. When you have verified that your system meets the new requirements, press **y**. The W-ClearPass 6.6.0 setup and installation begins. You should see the following information, and W-ClearPass will reboot at least once:

Figure 15 Initializing Disk

🔐 Aruba ClearPass Policy Manager Appliance-5K on localhost.us.avendasys.com	
File View VM	
sd Z:0:020 Lsdal Assuming drive cache: write through	
sa 2:0:1:0: Isabi Hssuming drive cache: write through	
sa 2.8.8.8. Isaal Assuming drive cache: write through	
sa 2.0.1.0. Isabi assuming arive cache, write through	
sa 2:0:10:1 [sab] Assuming drive cache: write through	
WARNING: All data on the second disk [SCSI (0:1)] will be erased and that	
disk will be setup as the primary boot image. Please ensure that disk has	
the recommended capacity for the appliance version.	
Enter 'y' or 'Y' to proceed:	
**** uuu Tuitialiaine diale	
*** Initializing alsk	
sd 2:0:1:0: [sdb] Assuming drive cache: write through	
sd 2:0:1:0: [sdb] Assuming drive cache: write through	
sd 2:0:1:0: [sdb] Assuming drive cache: write through	
sd 2:0:1:0: [sdb] Assuming drive cache: write through	
_	
To release cursor, press CTRL + ALT	

Figure 16 "First boot setup DONE"

🛃 Aı	uba C	learPass Policy Manager Appliance 6.4 500 on vmware33.testlab.avendatest.com	_ 🗆 🗡
File	View	VM	
	00		
	sd	2:0:1:0: [sdb] Assuming drive cache: write through	
	sd	2:0:1:0: [sdb] Cache data unavailable	
	sd	2:0:1:0: [sdb] Assuming drive cache: write through	
	sd	db: sdb1 sdb2	
	sa sa	2:0:1:0: [sdb] Cache data unavailable 2:0:1:0: [sdb] Assuming drive cache: write through	
	sd	2:0:1:0: [sdb] Cache data unavailable	
	sd	2:0:1:0: [sdb] Assuming drive cache: write through	
	**; **; **;	* * Copying file system contents. This may take a while *	
	EX1 Set	F4-fs (sdb1): mounted filesystem with ordered data mode. Opts: tting up boot targets	
	*** ***	* * First boot setup DONE. Ready to reboot.	
	***	* Forcibly killing init. Next boot will use the new disk setup.	
	***	* * Any error messages that appear below can be ignored.	
	***	*	
	_		

After that reboot the W-ClearPass VM is configured, and will power on and boot up within a couple of minutes. The whole process from Deploying the OVF image to the final startup screen should take between 30 and 40 minutes.

6. After the W-ClearPass VM launches correctly, you should see the following banner displayed:





7. When you see the banner, you can log in by following the instructions in the *W*-ClearPass Policy Manager 6.6.0 Getting Started Guide.

Morphing ESXi to a Higher Model Virtual Appliance



The illustrations in this section use the example of morphing a CP-VA-500 virtual appliance to a CP-VA-25K. Adjust your own configuration as needed.

Perform the following steps when morphing an ESXi virtual appliance to a higher model virtual appliance:

- 1. Power off the W-ClearPass VMware instance.
- 2. In VMware, open the W-ClearPass virtual machine properties.
- 3. Add a new hard disk to the virtual machine. The Virtual Device Node should be SCSI(0:2).

Review the VMware disk requirements first. These are described in "Recommended ESXi Server Specifications" on page 1.



Never remove SCSI 0:0

∂ finalovf-aruba - Virtual Machine Properties			
Hardware Options Resources	Add Remove	Virtual Machine Version: 8 Disk File [[datastore1 (6)-Temp] finalovf-aruba/finalovf-ar Disk Database	
Memory (edited)	65536 MB	Type: Thick Provision Lazy Z	
CPUs (edited)	24	Provisioned Size: 1,000 ÷ GB ▼	
Vic			
Sc Advanced Optio Ct These advan He Ne Ne Device Type Select a Disk Create a Disk Advanced Option Ready to Complete	Specify the advanced options for Specify the advanced options for Specify the advanced options for Scale Virtual Device Node SCSI (0:2) C IDE (0:0) Mode Independent disks are not a C Persistent Changes are immediately C Nonpersiste Changes to this disk are of	nanged. In this virtual disk. These options do Interpret of the state of the stat	
He Help		< Back Next > Cancel	

Figure 18 Add Hardware, Advanced Options, Virtual Device Node

Figure 19 New Hard Disk in Devices List

🕝 finalovf-aruba - Virtual Mac	chine Properties		
Hardware Options Resources			Virtual Machine Version: 8
Show All Devices	Add	Remove	Disk File [datastore1 (6)-Temp] finalovf-aruba/finalovf-ar
Hardware	Summary		Disk Provisioning
 Memory CPUs Video card VMCI device SCSI controller 0 CD/DVD drive 1 Hard disk 1 Hard disk 2 Hard disk 3 Network adapter 1 Network adapter 2 	65536 MB 24 Video card Restricted LSI Logic Parallel [datastore1 (6)-T Virtual Disk Virtual Disk Virtual Disk VLAN-51 VLAN-53]	Type: Thick Provision Lazy Z Provisioned Size: 1,800 G G Maximum Size (GB): 6124.46 Virtual Device Node SCSI (0:2) Hard disk 3 Mode Mode Independen Independen Independent disks are not affected by C persistent Changes are immediately and C Nonnersiste Changes to this disk are discarded when
Help			OK Cancel

4. Power on the W-ClearPass Policy Manager instance.



5. In the example we're using, the information shows that you are now in a CP-VA-500 virtual appliance and about to morph to a CP-VA-25K.

Figure 20 "Press "y" or "Y" to proceed"



6. Press **y**. The setup and installation begins.

Figure 21



- 7. The system requirements are displayed for the appliance model you entered, along with your current system configuration. Compare these to make sure your system meets the new system requirements. For more information, see "Recommended ESXi Server Specifications" on page 1.
- 8. When you have verified that your system meets the new requirements, press **y**. The W-ClearPass 6.6.0 setup and installation begins.

Manually Upgrading an ESXi Installation

This section describes how to perform a manual upgrade of a VMware ESXi virtual machine. This procedure is recommended only if you experience problems when taking snapshots of a virtual machine on an ESXi version 5.x or 6.x.

By default, W-ClearPass 6.6 comes with VMware Tools version 9.4.10.37835 installed in it. If you are going to perform a manual VMware Tools upgrade, you must first verify that a version of W-ClearPass is already installed.

To manually upgrade a VMware installation:

1. Power on the virtual machine and verify that W-ClearPass is installed on it. In the vSphere client, right-click on the VM instance and select **Guest > Install/Upgrade VMware Tools**.

Figure 22 Select the Virtual Machine Instance



2. Select **Automatic Tools Upgrade**. This option ensures that the VM instance is upgraded to the highest supported stable version for the respective version of ESXi server it is hosted on.

Figure 23 Automatic Tool Upgrade Option



- 3. Click **OK**.
- 4. The console displays a message that the VMware Tools upgrade has been initiated and is in progress. The process takes approximately five minutes to complete.



Do not make any configuration changes to either W-ClearPass or the vSphere client while the upgrade is in progress.

Hyper-V Installations

This section describes how to install W-ClearPass on a Microsoft Hyper-V virtual machine, including:

- "Hyper-V Installation Process Overview" on page 17
- "Recommended Hyper-V Server Specifications" on page 17
- "Installing W-ClearPass Policy Manager on a Hyper-V Virtual Machine" on page 18
- "Morphing a Hyper-V Version" on page 28
- "Caveats, Hyper-V" on page 35

Hyper-V Installation Process Overview

The process of installing W-ClearPass on a Microsoft Hyper-V virtual machine is done in four stages:

- W-ClearPass 6.6 Hyper-V software packages are distributed as Zip files. Download the software image from the **Download Software > ClearPass > Policy Manager > Current Release > Hyper-V** folder on the Support site (<u>http://download.dell-pcw.com</u>) and unzip it to a folder on your server to extract the files.
- 2. Import the virtual machine and choose the import type.
- 3. Add the hard disk and configure the format, type, and size, based on the requirement for your VM.
- 4. Power on and configure the VM.

Instructions for these procedures are provided in "Installing W-ClearPass Policy Manager on a Hyper-V Virtual Machine" on page 18.



Cloning a virtual machine to facilitate a W-ClearPass deployment is not recommended or supported.

Recommended Hyper-V Server Specifications

Please carefully review all VA requirements, including functional IOP ratings, and verify that your system meets these requirements. These recommendations supersede earlier requirements that were published for W-ClearPass Policy Manager 6.x installations.

Virtual appliance recommendations are adjusted to align with the requirements for W-ClearPass hardware appliances. If you do not have the VA resources to support a full workload, then you should consider ordering the W-ClearPass Policy Manager hardware appliance.

Be sure that your system meets the recommended specifications required for the Policy Manager Virtual Appliance. The W-ClearPass VM ships with a 20 GB hard disk volume. This must be supplemented with additional storage/hard disk through Hyper-V settings by adding a new hard disk. The additional space required depends on the W-ClearPass virtual appliance version.

To ensure scalability, dedicate or reserve the processing and memory to the W-ClearPass VM instance. You must also ensure that the disk subsystem can maintain the IOP's throughput as detailed below. Most virtualized environments use a shared disk subsystem assuming that each application will have bursts of I/O without a sustained high I/O throughput. W-ClearPass Policy Manager requires a continuous sustained high data I/O rate.



If you do not add a new hard disk to the VM before it is powered on, it will continue to restart with kernel panics.

To morph a Hyper-V version to a larger version by using the morph-vm command, see "Morphing a Hyper-V Version" on page 28.

Supported Hyper-V Versions

The following Microsoft Hyper-V versions are supported:

- Microsoft Hyper-V Server 2012 R2
- Hyper-V on Microsoft Windows Server 2012 R2

CP-SW-EVAL (Evaluation VHDX)

- 2 Virtual CPUs
- 4 GB RAM
- 80 GB disk space

CP-VA-500 (500 Virtual Appliance VHDX)

- 8 Virtual CPUs
 - Underlying CPU is recommended to have a <u>PassMark</u>® of 3000 or higher
- 8 GB RAM
- Disk space:
 - 500 GB disk space required for existing deployments (upgrading from 6.5.x)
 - 1000 GB disk space recommended for new deployments
- 2 Gigabit virtual switched ports
- Functional IOP rating for a 40-60 read/write profile for 4K random read/write = 75

CP-VA-5K (5K Virtual Appliance VHDX)

- 8 Virtual CPUs
 - Underlying is recommended to have a <u>PassMark</u>® of 9600 or higher
- 8 GB RAM
- Disk space:
 - 1000 GB disk
- 2 Gigabit virtual switched ports
- Functional IOP rating for a 40-60 read/write profile for 4K random read/write = 105

CP-VA-25K (25K Virtual Appliance VHDX)

- 24 Virtual CPUs
 - Underlying CPUs are recommended to have a <u>PassMark</u>® of 9900 or higher
- 64 GB RAM
- Disk space:
 - 1800 GB disk
- 2 Gigabit virtual switched ports
- Functional IOP rating for a 40-60 read/write profile for 4K random read/write = 350

Installing W-ClearPass Policy Manager on a Hyper-V Virtual Machine

After you download and unzip the W-ClearPass 6.6 Hyper-V software package Zip files, follow the instructions in this section to deploy the W-ClearPass files, add a new hard disk, and power on and configure the VM:

- "Import the Virtual Machine " on page 19
- "Add a Hard Disk to the Hyper-V Virtual Machine" on page 20
- "Power On and Configure the VM" on page 24

Import the Virtual Machine

- Download and unzip the Hyper-V package from the Download Software > ClearPass > Policy Manager
 > Current Release > Hyper-V folder on the Support site (<u>http://download.dell-pcw.com</u>).
- 2. From Hyper-V Manager, right-click to select the **Hyper-V server** and select the **Import Virtual Machine** option. The **Import Virtual Machine** window opens.
- 3. In the **Locate Folder** step, browse to the folder you unzipped in step 1, and then click **Next**.

Figure 24 Import Virtual Machine Window, Locate Folder

	Import Virtual Machine		
Locate Folder	r		
Before You Begin Locate Folder Select Virtual Machine Choose Import Type Summary	Specify the folder containing the virtual machine to import. Folder: C:Users\Administrator\Desktop\finalovf-aruba\ Brow	wse	
	< Previous Next > Finish Ca	ancel	

4. In the Select Virtual Machine step, click Next.

2	Import Virtual Machine		
Select Virtu	ual Machine		
Before You Begin Locate Folder Select Virtual Machine Choose Import Type Summary	Select the virtual machine to import: Name CPPM-VM-x86_64-6.6.0.81015-HYPERV-CP-VA	Date Created 4/5/2016 3:16:08 AM	
Summary	< Previous Next >	Finish Cancel	

5. In the **Choose Import Type** step, select **Copy the virtual machine**.

Figure 25 Import Virtual Machine Window, Choose Import Type

2	Import Virtual Machine			
Choose Import Type				
Before You Begin Locate Folder Select Virtual Machine Choose Import Type Summary	Choose the type of import to perform: Register the virtual machine in-place (use the existing unique ID) Restore the virtual machine (use the existing unique ID) Copy the virtual machine (create a new unique ID) 			
	< Previous Next > Finish Cancel			

6. After it is imported, select the VM, right click, and choose properties. The **Settings** configuration window opens, where you will add the hard disk.

Add a Hard Disk to the Hyper-V Virtual Machine

- 1. Select the **SCSI Controller** option.
- Figure 26 Hyper-V Settings, SCSI Controller Option

12	Set	tings for arubafinal on WINHYPERV-2
arubafinal	~	Ø •
 ★ Hardware M Add Hardware BIOS Boot from CD ■ Memory 8192 MB ■ Processor 8 Virtual processors ■ IDE Controller 0 ■ Hard Drive CPPM-VM-x86_64+6.6.0.81 ■ IDE Controller 1 SCSI Controller ■ NICO SwitchManagement ■ NIC1 SwitchData ■ Network Adapter Not connected ▼ COM 1 None ▼ COM 2 None ■ Diskette Drive None ▼ CAM 2 None ■ Diskette Drive None ▼ Management ③ Name arubafinal ☑ Integration Services Some services offered ※ Checkpoint File Location C: \ProgramData \Wicrosoft\Win ■ Smart Paging File Location C: \ProgramData \Wicrosoft\Win 		SCSI Controller You can add hard drives to your SCSI controller or remove the SCSI controller from the virtual machine. Click Add to add a new hard drive to this SCSI controller. Hard Drive Add You can configure a hard drive to use a virtual hard disk or a physical hard disk after you attach the drive to the controller. To remove the SCSI controller from this virtual machine, dick Remove. All virtual hard disks attached to this controller will be removed but not deleted. Remove
		OK Cancel Apply

- 2. Add a hard drive and verify the following values:
 - Controller = **SCSI Controller**
 - Location = **1**



3. Click **New** below the Virtual Hard Disk option. The **New Virtual Hard Disk** wizard opens.

Figure 28 New Virtual Hard Disk Wizard, Before You Begin

2	New Virtual Hard Disk Wizard		
Before You I	Begin		
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk	This wizard helps you create a new virtual hard disk. Virtual hard disks provide storage for virtual machines and are stored on physical media as .vhd or .vhdx files.		
Summary	Do not show this page again		
	< Previous Next > Finish Cancel		

- 4. Select the following options while creating the disk:
 - Disk Format: VHDX

Figure 29 New Virtual Hard Disk Wizard, Choose Disk Format

L	New Virtual Hard Disk Wizard
Choose Disk	Format
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	 What format do you want to use for the virtual hard disk? VHD Supports virtual hard disks up to 2,040 GB in size. VHDX This format supports virtual disks up to 64 TB and is resilient to consistency issues that might occur from power failures. This format is not supported in operating systems earlier than Windows Server 2012.
	< Previous Next > Finish Cancel

• Disk Type: Fixed

Figure 30	New	Virtual	Hard	Disk	Wizard,	Choose	Disk	Туре
-----------	-----	---------	------	------	---------	--------	------	------

2	New Virtual Hard Disk Wizard
Choose Disk	Туре
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	 What type of virtual hard disk do you want to create? Fixed size This type of disk provides better performance and is recommended for servers running applications with high levels of disk activity. The virtual hard disk file that is created initially uses the size of the virtual hard disk and does not change when data is deleted or added. Dynamically expanding This type of disk provides better use of physical storage space and is recommended for servers running applications that are not disk intensive. The virtual hard disk file that is created is small initially and changes as data is added. Differencing This type of disk is associated in a parent-child relationship with another disk that you want to leave intact. You can make changes to the data or operating system without affecting the parent disk, so that you can revert the changes easily. All children must have the same virtual hard disk format as the parent (VHD or VHDX).
	< Previous Next > Finish Cancel

- Disk Size:
 - EVAL = 80 GB
 - 500 = **1000 GB**
 - 5K = **1000 GB**
 - 25K = **1800 GB**

Using a CP-VA-500 VHDX as an example, the following images show the name and location, disk configuration, and summary steps. For more information about the correct requirements for your virtual appliance version, see "Recommended Hyper-V Server Specifications" on page 17.

Figure 31 New Virtual Hard Disk Wizard, Specify Name and Location

1	New Virtual Hard Disk Wizard	x
Specify Nan	ne and Location	
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	Specify the name and location of the virtual hard disk file. Name: CP-VA-500_Jvhdx Location: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks\	Browse
	< Previous Next > Finish	Cancel

Figure 32 New Virtual Hard Disk Wizard, Configure Disk

*	New Virtual Hard Disk Wizard		x
Configure Dis	k		
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	You can create a blank virtual hard disk or copy the contents of an existing Create a new blank virtual hard disk Size: 1000 GB (Maximum: 64 TB) Copy the contents of the specified physical disk: Physical Hard Disk N, PHYSICALDRIVE0 N, PHYSICALDRIVE1	physical disk. Size 14901 GB 159 GB	
	O Copy the contents of the specified virtual hard disk Path:	Browse	
	< Previous Next >	Finish Cancel	

Figure 33 New Virtual Hard Disk Wizard, Summary

2	New Virtual Hard Disk Wizard	x
Completing	the New Virtual Hard Disk Wizard	
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	You have successfully completed the New Virtual Hard Disk Wizard. You are about to create the following virtual hard disk. Description: Format: VHDX Type: fixed size Name: CP-VA-500.vhdx Location: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks Size: 1000 GB To create the virtual hard disk and close this wizard, click Finish.	
	< Previous Next > Finish Cancel	

5. Click **Apply** in the main window, and then click **OK**.

Power On and Configure the VM

1. Power on the virtual machine. You should see the following:

Figure 34 "Enter appliance type to continue"



- 2. Enter the number for the appropriate appliance type (do not enter the appliance model itself). Options include:
 - 1) CP-SW-EVAL
 - 2) CP-VA-500
 - 3) CP-VA-5K
 - 4) CP-VA-25K

So, for example, to install a CP-VA-500, you would enter the number **2**.

Figure 35 Number Entered to Indicate Appliance Option

arubafinal on WINHYPERV-2 - Virtual Machine Connection
File Action Media Clipboard View Help
🕸 💿 💿 💿 II 🌆 🍮 🐁
[6.538682] sd 3:0:0:1: [sdb] Write cache: enabled, read cache: enabled, does
n't support DPU or FUA
1 = 0.5045451 Sab: Unknown partition table
[6579603] sda: sda1 sda2 sda3 sda4 < sda5 sda6 >
[6.583929] sd 2:0:0:0: [sda] Attached SCSI disk
[6.867634] EXT4-fs (sda2): mounted filesystem with ordered data mode. Opts:
(null)
[6.901977] dracut: Mounted root filesystem /dev/sda2
[8.005929] ecryptfs_parse_options: eCryptfs: unrecognized option [passphrase
_passwd_fd=4]
1 8.2347211 ecryptis_parse_options: etryptis: unrecognized option (passporase
_passwa_ru-13 [
parsed fd=4]
8.491012] dracut: Switching root
[8.836709] EXT4-fs (sda2): re-mounted. Opts: (null)
UM appliance tupes
1) CP-SW-EVAL
2) CP-VA-500
3) CP-VA-5K
4) CP-VA-25K
Enter appliance type to continue : 2
Status: Running 🔤 🖉 🔒

3. The system requirements are displayed for the appliance model you entered, along with your current system configuration. Compare these to make sure your system meets the new system requirements. For more information, see "Recommended Hyper-V Server Specifications" on page 17.

Figure 36 "Enter 'y' or 'Y' to proceed"



4. When you have verified that your system meets the new requirements, press **y**. The W-ClearPass 6.6.0 setup and installation begins. You should see the following information, and W-ClearPass will reboot at least once.

Figure 37 Initializing Disk



5. After that reboot the W-ClearPass VM is configured, and will power on and boot up within a couple of minutes. The whole process from Deploying the VHDX image to the final startup screen should take between 30 and 40 minutes.

6. After the W-ClearPass VM launches correctly, you should see the following banner:

Figure 38 Banner

arubafinal on WINHYPERV-2 - Virtual Machine Connection	-		x
File Action Media Clipboard View Help			
🕸 💿 💿 🥥 🔢 🌬 🏂 🏂			

*************		×××	
* . Dalie: Managan is numbing with fasten: default soufiguration. Defa		*	
* Folley manager is running with factory default configuration. Refe * Quick Start Guide for configuration instructions.	r t	0* *	
*		×	
***************************************	****	***	
Policy Manager software version : 6.6.0.81015			
Policy Manager model number : CP-VA-500			
hanayement ir haaress : < not configurea>			
localhost login: _			
Status: Running	E.	- P	A

7. When you see the banner, you can log in by following the instructions in the *W*-ClearPass Policy Manager 6.6.0 Getting Started Guide.

Morphing a Hyper-V Version

A Hyper-V virtual machine can be morphed to a higher-value virtual appliance by using the morph-vm command as follows:

- 1. Power off the VM.
- 2. Open **Settings** and make the following modifications:
 - a. Modify the **RAM** and **CPU** to match the recommended system requirements for the larger VM (see "Recommended Hyper-V Server Specifications" on page 17).



rubafinal	~	
tardware		Memory -
🛍 Add Hardware		
N BIOS		You can configure options for assigning and managing memory for this virtual machine.
Boot from CD		Specify the amount of memory that this virtual machine will be started with.
Memory 65536 MB		Startup RAM: 6553d MB
E 🔲 Processor		Dynamic Memory
8 Virtual processors		You can manage the amount of memory assigned to this virtual machine dynamically within the specified range.
Hard Drive CPPM-VM-x86_64-6.6.0.81		Enable Dynamic Memory
IDE Controller 1 SCSI Controller		Minimum RAM: 512 MB
Hard Drive CP-VA-500.vhdx		Maximum RAM: 1048576 MB
NICO SwitchManagement		Specify the percentage of memory that Hyper-V should try to reserve as a buffer. Hyper-V uses the percentage and the current demand for memory to determine an amount of memory for the buffer.
NIC1 SwitchData		Memory buffer: 20 🔦 %
Network Adapter Not connected		Memory weight
COM 1 None		Specify how to prioritize the availability of memory for this virtual machine compared to other virtual machines on this computer.
1 COM 2		
None		Low High
🚽 Diskette Drive		
None		Specifying a lower setting for this virtual machine might prevent it from starting when other virtual machines are running and available memory is low
Name	-	starting when other virtual machines are running and available menory is low.
arubafinal		
Integration Services		
Checkpoint File Location		
C:\ProgramData\Microsoft\Win	\sim	



arubafinal Image: Construint of the second seco		Settings for arubafinal on WINHYPERV-2
★ Hardware ^ ▲ Add Hardware ^ ▲ BLOS Boot from CD Boot from CD Wemory 65536 MB ■ Processor 24 (*) 24 Virtual processors 24 (*) ■ Hard Drive CPPM-VM-x86_64+6.6.0.81 ■ DE Controller 0 ■ Hard Drive CPPM-VM-x86_64+6.6.0.81 ■ DE Controller 1 © NICO SwitchData I NICO SwitchData I None I DE Controller B NICO SwitchData I None I DE Controller I SwitchData I None I Diskette Drive	arubafinal	
SwitchManagement Itelevice weight Image: Niclassian state in the sta	 ★ Hardware ★ Add Hardware ★ BIOS Boot from CD ■ Memory 65536 MB ● Processor 24 Virtual processors ■ IDE Controller 0 ● Hard Drive CPPM-VM-x86_64-6.6.0.81 ■ IDE Controller 1 ● SCSI Controller ● Hard Drive CP-VA-500.vhdx ● Q NIC0 	Processor
Name arubafinal Integration Services Some services offered Checkpoint File Location C:VerogramDataWirrosoftWin	SwitchManagement VIC1 SwitchData Vetwork Adapter Not connected COM 1 None COM 2 None Diskette Drive None Management None Common Services Some services offered Checkpoint File Location C: VerogramData Wirrosoft Wirp	This virtual machine is configured with the following: Sockets: 2 NUMA nodes per socket: 1 Virtual processors per NUMA node: 24 Memory per NUMA node: 63092 MB

- b. Add an additional disk with the recommended disk size for the larger VM:
 - (1) Select SCSI(0:2) Controller.
 - (2) Select the **Hard Drive** option and then click **Add**.
 - (3) In the next screen, specify the following values: Controller = SCSI(0:2) Controller 1 Location = 2
 - (4) In the **Media** section, click **New**.

Figure 41 Hardware, Controller Settings

(5) Add a new **VHDX** hard disk of **Fixed size**, and size equivalent to the requirements for the larger VM disk size.

Figure 42 Choose Disk Type and Size

2	New Virtual Hard Disk Wizard
Choose Disk	Туре
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	 What type of virtual hard disk do you want to create? Fixed size This type of disk provides better performance and is recommended for servers running applications with high levels of disk activity. The virtual hard disk file that is created initially uses the size of the virtual hard disk and does not change when data is deleted or added. Dynamically expanding This type of disk provides better use of physical storage space and is recommended for servers running applications that are not disk intensive. The virtual hard disk file that is created is small initially and changes as data is added. Differencing This type of disk is associated in a parent-child relationship with another disk that you want to leave intact. You can make changes to the data or operating system without affecting the parent disk, so that you can revert the changes easily. All children must have the same virtual hard disk format as the parent (VHD or VHDX).
	< Previous Next > Finish Cancel

(6) Specify the name and location.

Figure 43 Specify Name and Location

*	New Virtual Hard Disk Wizard	x
Specify Nam	e and Location	
Before You Begin Choose Disk Format Choose Disk Type <u>Specify Name and Location</u> Configure Disk Summary	Specify the name and location of the virtual hard disk file. Name: CP-VA-25Kvhdx.vhdx Location: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks\ Browse.	
	< Previous Next > Finish Cancel	

(7) Configure the disk size and click **Finish**.



2	New Virtual Hard Disk Wizard	x		
Configure Disk				
Before You Begin Choose Disk Format Choose Disk Type Specify Name and Location Configure Disk Summary	You can create a blank virtual hard disk or copy the contents	of an existing physical disk. Size 14901 GB 159 GB Browse		
	< Previous Ne	xt > Finish Cancel		

- 3. After adding the hard disk, power on the original VM and, using SSH, log in to it as appadmin.
- 4. Run the command 'system morph-vm <CP-VA-25K> and follow the prompts.

Figure 45 System Morph-VM Command

arubafcsfinal on WINHYPERV-2 - Virtual Machine Connection		x		
File Action Media Clipboard View Help				
🕸 💿 💿 💿 🔢 🌬 🏂 🕾				

*	*			
* Policy Manager CLI v6.6(0), *				
 Copyright © 2016, Hewlett Packard Enterprise Development LP. 				
* Software Version : 6.6.0.81015				
*	*			

Logged in as group Local Administrator				
[appadmin@arubafcs]# system morph-vm CP-VA-25K				
Status: Running		3		

5. The existing hardware version and the new hardware version are displayed, along with a warning that you cannot revert to the existing version after the morphing process is started. When you are ready to proceed, press **y**.

Figure 46 Version Comparison and Warning



6. The system requirements are displayed for the appliance model you entered, along with your current system configuration. Compare these to make sure your system meets the new system requirements. For more information, see "Recommended Hyper-V Server Specifications" on page 17.

Figure 47



When you have verified that your system meets the new requirements, press **y**. The W-ClearPass 6.6.0 setup and installation begins.

Caveats, Hyper-V

This section describes caveats to be aware of with Hyper-V.

Low Network Performance on Hyper-V Due to NIC Cards

In lab conditions, we noticed that the network latency increases and throughput decreases due to certain features in the NIC not working as expected. This affects network throughput to any OS installed on a Hyper-V server.

In W-ClearPass, we have noticed the following symptoms when the server is handling authentications:

- Drastic increase in network latency to external servers
- Increase in RADIUS timeout packets
- Increase in RADIUS end-to-end processing of authentication requests

If you notice these symptoms with your W-ClearPass server running on Hyper-V, please consult with the NIC vendor about compatibility issues with the Microsoft Hyper-V platform, or update to the latest driver version which might resolve network throughput problems.

Figure 48 System Monitor, RADIUS Timeout Packets Count

Figure 49 System Monitor, Time for Full RADIUS Request Processing and Total RADIUS Request Count