

# Radware Alteon VA Installation and Maintenance Guide

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@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

@author Paulo Barreto <paulo.barreto@terra.com.br>

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@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

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@author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>

@author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>

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 <b>Note:</b>	Additional information	Informations complémentaires	Zusätzliche Informationen
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 <b>Tip:</b>	A suggestion or workaround	Une suggestion ou solution	Ein Vorschlag oder eine Umgehung
 <b>Warning:</b>	Possible physical harm to the operator	Blessure possible de l'opérateur	Verletzungsgefahr des Bedieners



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# *Chapter 1 – Preface*

This guide describes the installation process and initial configuration for the Alteon VA platform for the following hypervisor types:

- VMware
- KVM
- Microsoft Hyper-V Server

## *Who Should Use This Book*

This book is intended for network and system administrators engaged in installing, configuring and maintaining their network environment. It assumes that you are familiar with Ethernet concepts and the process of device installation.

## *Related Documentation*

Alteon Application Switches have the following related documentation, which may be required for various tasks described in this book:

- Release Notes
- Alteon Application Switch Operating System Application Guide
- Alteon Application Switch Operating System Command Reference
- Alteon Application Switch Operating System Web Based Management Quick Start
- Alteon Application Switch Troubleshooting Guide
- Alteon Application Switch Operating System AppShape+ + Reference Guide
- AppWall for Alteon User Guide
- FastView for Alteon User Guide





## Chapter 2 – Alteon Application Switch Platform

This chapter describes the following Alteon Application Switch platform:

- [Alteon VA Platform, page 17](#)

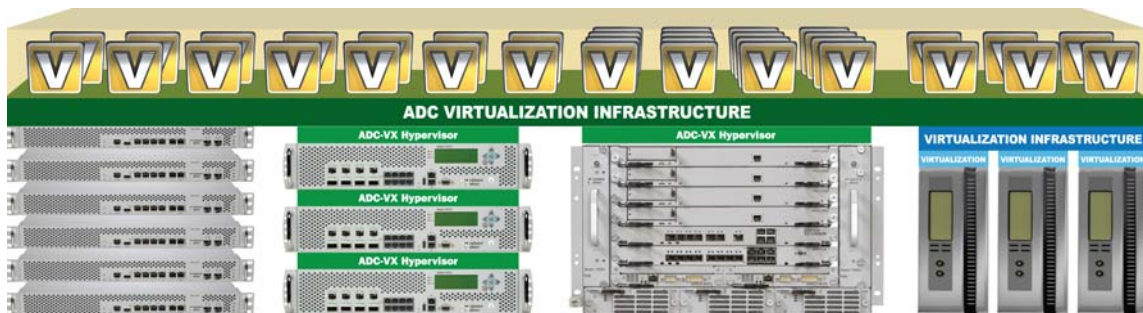
### Alteon VA Platform

Alteon Virtual Appliance (VA) is an Alteon Application Switch packaged as a virtual appliance running on server virtualization infrastructure, providing identical functionality to the physical Alteon ADC devices including local and global server load balancing, Layer 7 capabilities, and application acceleration.

Alteon VA is part of Radware's Virtual Application Delivery Infrastructure (VADI) architecture which integrates the ADC and virtualization services.

Alteon VA is one of the three ADC form factors offered as part of Radware's VADI architecture, along with a dedicated Alteon device and a vADC instance running on the ADC-VX hypervisor.

Figure 1: Radware's Alteon VA and VADI Architecture



Alteon VA provides ADC virtualization with ADC-VX, the ADC virtualization and consolidation platform based on a specialized ADC hypervisor. ADC-VX is built on architecture that virtualizes the resources of the Alteon ADC platform including CPU, memory, network and acceleration resources. This specialized hypervisor runs fully functional virtual ADC instances, each of which delivers ADC functionality just like a dedicated physical ADC device. Each virtual ADC instance contains a complete and separated environment of resources, configurations, and management.



## Chapter 3 – Initial Configuration

Once installed, the Alteon Application Switch requires some administrative configuration before it can be used effectively.

Alteon supports the following interface options:

- A **command line interface (CLI)** text-based menu system for configuration and management through a local terminal or through a remote Telnet or SSH session.



**Note:** For more information regarding CLI commands, see the Alteon Application Switch Operating System Command Reference.

- A **Web-Based Management (WBM)** application accessible through a Web browser (HTTPS access).
- **SNMP** support for access through the APSolute Vision management system or through network management software such as HP OpenView.



**Note:** For more information regarding SNMP MIBs and the commands used to configure SNMP on Alteon, see the Alteon Application Switch Operating System Command Reference.

Alteon provides a console port, a management port, and network ports that can be used for configuring and managing the Alteon platform. This section explains how to establish a connection using these ports and to perform the initial management port configuration if required.



**Note:** Make sure the connectivity between your client station and the Alteon platform is not blocked by a firewall.

This chapter includes the following sections:

- [Alteon VA Platforms Installation and Configuration, page 19](#)

## Alteon VA Platforms Installation and Configuration

Radware's Virtual Application Delivery Infrastructure (VADI™) architecture integrates ADC and virtualization services. This section describes the installation and configuration instructions for the various VADI platforms and includes the following sections:

- [ADC Form Factors, page 19](#)
- [Alteon VA for VMware Installation and Configuration, page 21.](#)
- [Alteon VA for KVM Installation and Configuration, page 33.](#)
- [Alteon VA for Microsoft Hyper-V Installation and Configuration, page 37](#)
- [Initial Deployment of Alteon VA, page 45.](#)
- [Obtaining and Installing a Permanent License for Alteon VA, page 47.](#)

### ADC Form Factors

Radware's VADI infrastructure supports various ADC form factors or platforms:

- Dedicated ADC — The traditional Alteon ADC hardware.

- vADC — A virtualized instance of the Alteon operating system, running on the ADC-VX, Radware's ADC hypervisor that enables multiple vADCs on top of a dedicated Alteon ADC.
- Alteon VA — A software-based ADC platform supporting AlteonOS functionality and running on a virtualization infrastructure. Alteon VA is supported by the following hypervisor types:
  - VMware
  - KVM
  - Microsoft Hyper-V Server



**Caution:** Before powering up your Alteon VA, ensure that you connect the network interfaces to different networks.

### Minimum Requirements

- A new Alteon VA installation requires a minimum of 1 vCPU, 2 GB RAM (2.4 GB under VMware), and 6 GB disk space.
- Alteon VA with FastView requires a minimum of 3 vCPUs (1 vCPU for Alteon and 2 vCPUs for FastView), 7 GB RAM (3 GB for Alteon and 4 GB for FastView), and 18 GB disk space.

**Note:** When configuring FastView with more than 4 GB RAM, the minimum disk size should be 6 GB + 3 x the FastView RAM size. For example, if the VA is configured to have 4 GB RAM for Alteon and 8 GB RAM for FastView, the minimum disk size should be 30 GB—6 GB for Alteon and 24 GB (3 x 8) for FastView.

- Alteon VA (version 30.2) with AppWall requires a minimum of 2 vCPUs (1 vCPU for Alteon and 1 vCPU for AppWall), 5 GB RAM (3 GB for Alteon and 2 GB for AppWall), and 8 GB disk space.
- Alteon VA (version 30.1) with AppWall requires a minimum of 3 vCPUs (1 vCPU for Alteon and 2 vCPUs for AppWall), 5 GB RAM (3 GB for Alteon and 2 GB for AppWall), and 8 GB disk space.
- To run in a multi-SP environment, Alteon VA utilizes the DPDK library. This is supported on the Alteon VA over Intel processors starting with the Westmere architecture or higher (Xeon series 36xx, 56xx, and the Core i7-980X).
- When configuring the Alteon VA to run with multiple SPs, allocate the VM with a minimum of 2 GB RAM per SP.
- An Alteon VA upgrade requires a minimum of 1 vCPU, 2 GB RAM, and 6.5 GB disk space.
- An Alteon VA upgrade on VMware that includes FastView requires a minimum of 3 vCPUs, 7 GB RAM (3 GB for Alteon and 4 GB for FastView), and 50 GB disk space.



**Note:** Before starting the upgrade process, you should free unnecessary disk space by cleaning the log and dump files. Run the following commands prior to the upgrade in order to free disk space:

- `/maint/cldmp` — clears the core dumps
- `/maint/debug/cleandumps` — clears the panic dumps
- `/maint/applog/clearlog` — clears the AX logs
- `/maint/debug/logger/clean` — clears the Alteon logs

## Alteon VA for VMware Installation and Configuration

To set up Alteon VA for VMware, you must first obtain the Open Virtualization Format (OVF) package for Alteon VA provided by Radware.



**Note:** Alteon VA over VMware supports ESX versions 4.1, 5.0, 5.1, 5.5, and 6.0. To configure Alteon VA to run with multiple SPs, the VMware ESX version must be 5.0 or higher.

To configure Alteon VA on VMware to work with multiple SPs, it should use the vmxnet3 virtual network adapter.

In order for it to work with VLAN tags, you can manually change the adapter on the VA to a basic adapter named E1000.

### Installation Prerequisites

- Fully functioning VMware infrastructure, including:
  - A VMware ESX server (version 4.1, 5.0, 5.1, 5.5, or 6.0)
  - An installed vSphere client
- OVF/OVA package from Radware



#### Notes

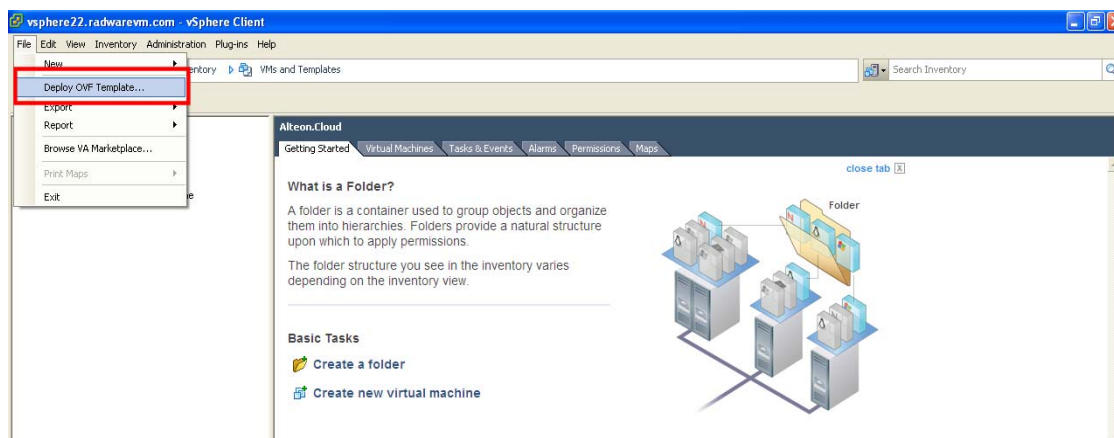
- The **Open Virtualization Format (OVF)** is an open standard for packaging and distributing virtual appliances or more generally software to be run on virtual machines. The OVF standard is not tied to any particular hypervisor or processor architecture. The unit of packaging and distribution is called an OVF Package which may contain one or more virtual systems each of which can be deployed to a virtual machine. An OVF package consists of several files, placed in one directory.
- The **Open Virtualization Appliance (OVA)** is a one-file alternative package, a TAR file with the OVF directory inside. So if you want to share your VM on the Internet you can create a single OVA file (similar to a zip file). To consume the file, you have to convert it first to OVF (just like you unzip a file before you use it).

## Deploying the OVF Package

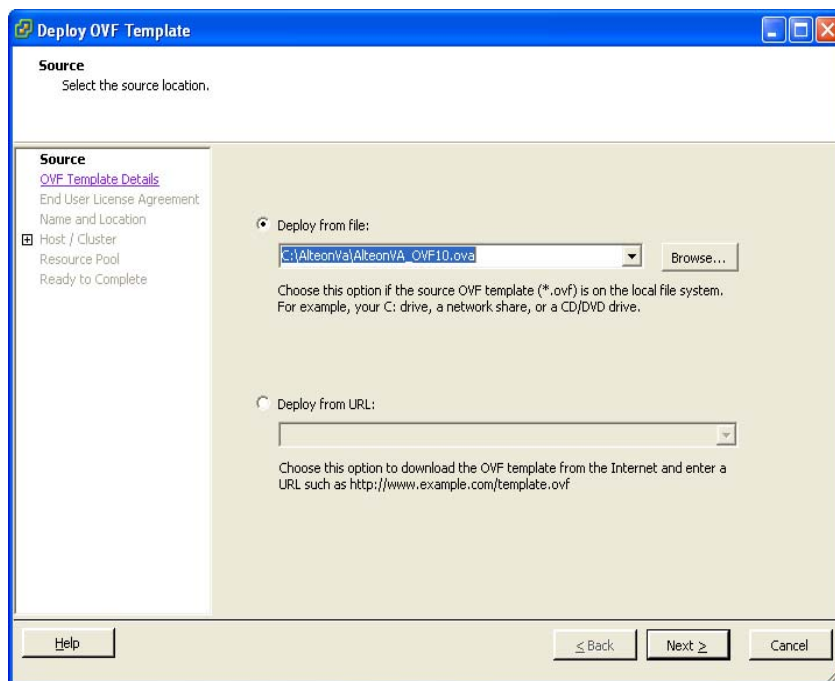


### To deploy the OVF

1. Log into the VMware vSphere client.



2. Deploy the OVF package by selecting **File > Deploy OVF Template**. The *Deployment OVF Template* wizard is displayed.



3. In the *Deploy OVF Template* dialog box, select **Deploy from file**, click **Browse** to select the OVF template from the relevant location, and click **Next**.
4. In the *End User Agreement* dialog box, click **Accept** to accept the end-user licensing agreement. Click **Next**.
5. In the *Name and Location* dialog box, provide a name and location for the deployed template. The name can contain up to 80 characters and must be unique within the inventory folder, and click **Next**.



6. In the *Host/Cluster* dialog box, select a host or cluster that will run the deployed template, and click **Next**.

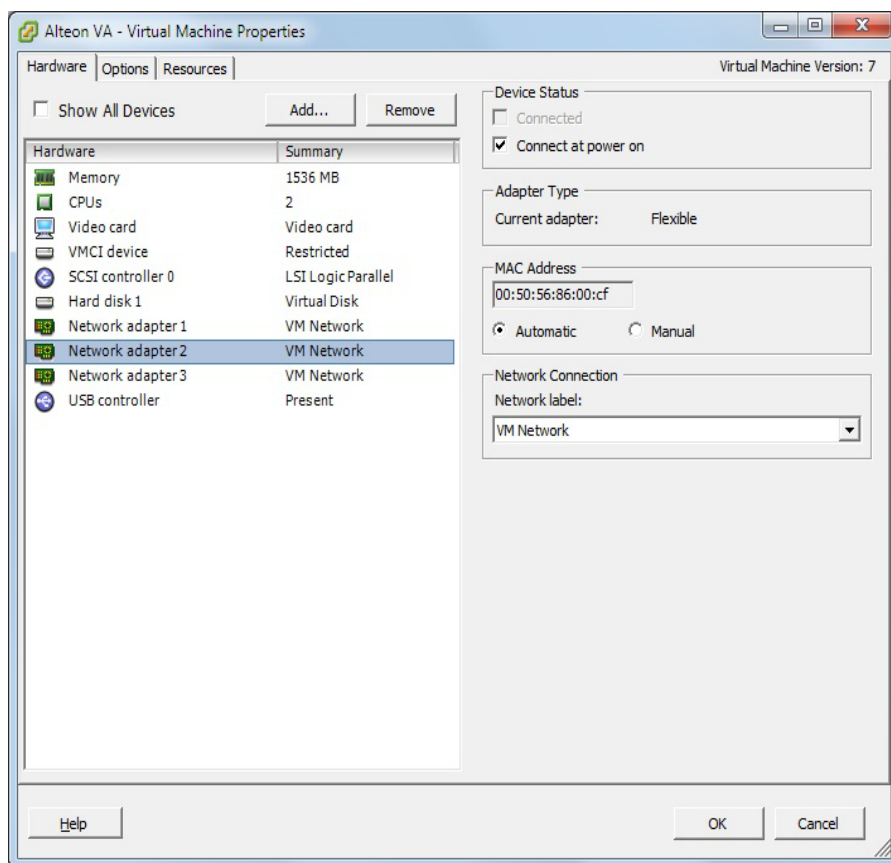
A cluster is a logical group of devices for high availability or load balancing purposes. If you select a cluster, you must select a specific host. Each virtual machine must be assigned to a specific host. You must select a storage location for the virtual machine files.

- a. In the *Specify a Specific Host* dialog box, select an available host from the list, and click **Next**.
- b. In the *Datastore* dialog box, select the storage for the virtual machine files, and click **Next**.
7. Finish the Alteon VA installation.
8. Click **Next** to view the options you selected, and then click **Finish**.
9. From the **Home > Inventory** drop-down menu, select **Templates and VMs**.
10. In the *VM Inventory tree*, right-click the desired Alteon VA from the list, and then select **Edit Settings**.



**Note:** If no virtual machines are displayed, verify that **Show VMs in Inventory** is selected in the Vsphere client **View** menu option.

11. Assign each network adapter to the pre-defined network connections for management, clients, and servers.
12. for configuring Alteon VA to run in PCI pass-through mode (Alteon VA for NFV), see [Configuring Alteon VA for Pass-through, page 28](#).
13. If you are configuring for a multi-core environment, see [Configuring Alteon VA on VMware to Support Enhanced Alteon VA Functionality, page 24](#).





**Note:** To deploy Alteon VA in bridge mode, you must set the vSwitch as promiscuous.

## *Configuring Alteon VA on VMware to Support Enhanced Alteon VA Functionality*

In order to support enhanced functionalities such as FastView, AppWall or multi-SP, you need to resize the VM running the Alteon VA through the VMware vSphere client.



**Note:** By default, the Alteon VA is deployed with the minimum Alteon requirements—1 vCPU, 2 GB RAM (2.4 GB under VMware), and 6 GB disk space.



### **To configure Alteon to utilize multi-core on VMware**

1. Deploy the OVF package (see [Deploying the OVF Package, page 22](#)).
2. Set the number of vCPUs and the RAM size (see [VM Configuration, page 24](#)).

To activate FastView or AppWall on Alteon, you must allocate VM resources between these applications (see [Resource Allocation, page 27](#)) .

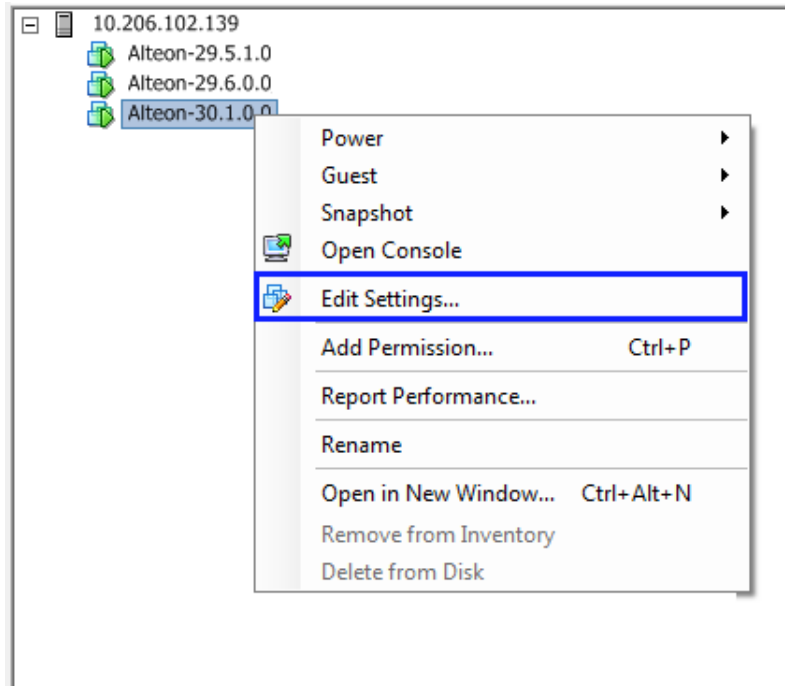
## *VM Configuration*

After successfully deploying the OVA, you have to resize the VM by setting the vCPUs, disk, and RAM size.



### **To configure the VM**

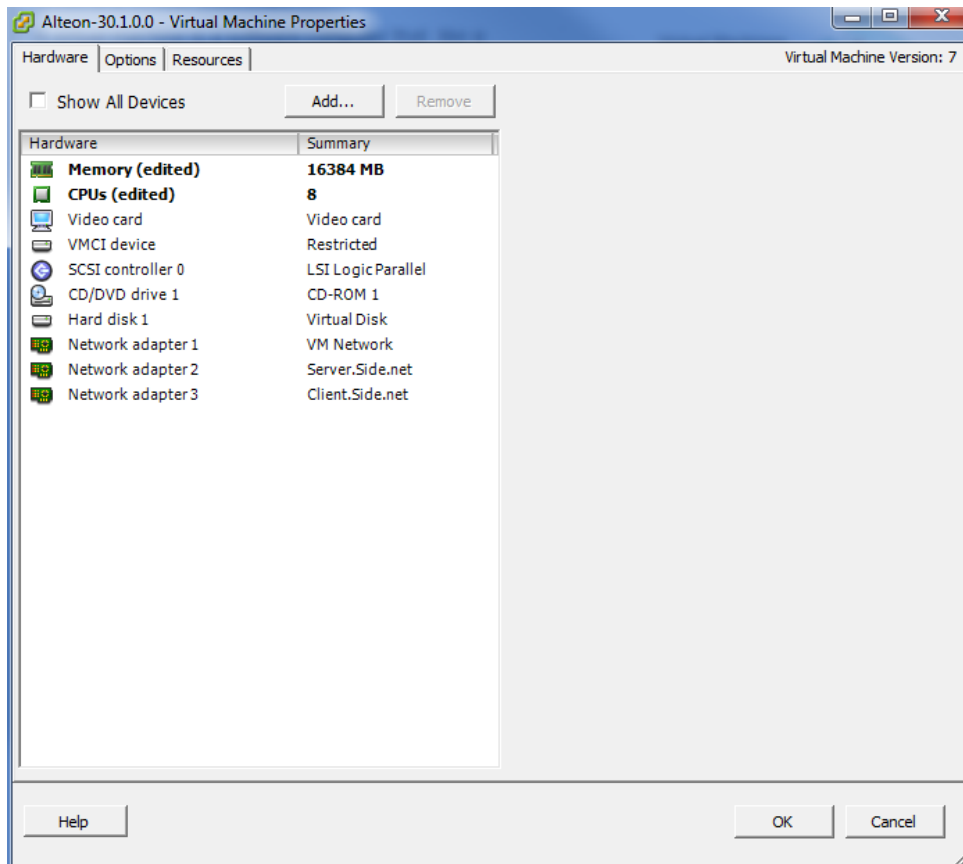
1. Access the vSphere client.
2. Right-click on the VM and select **Edit Settings**.



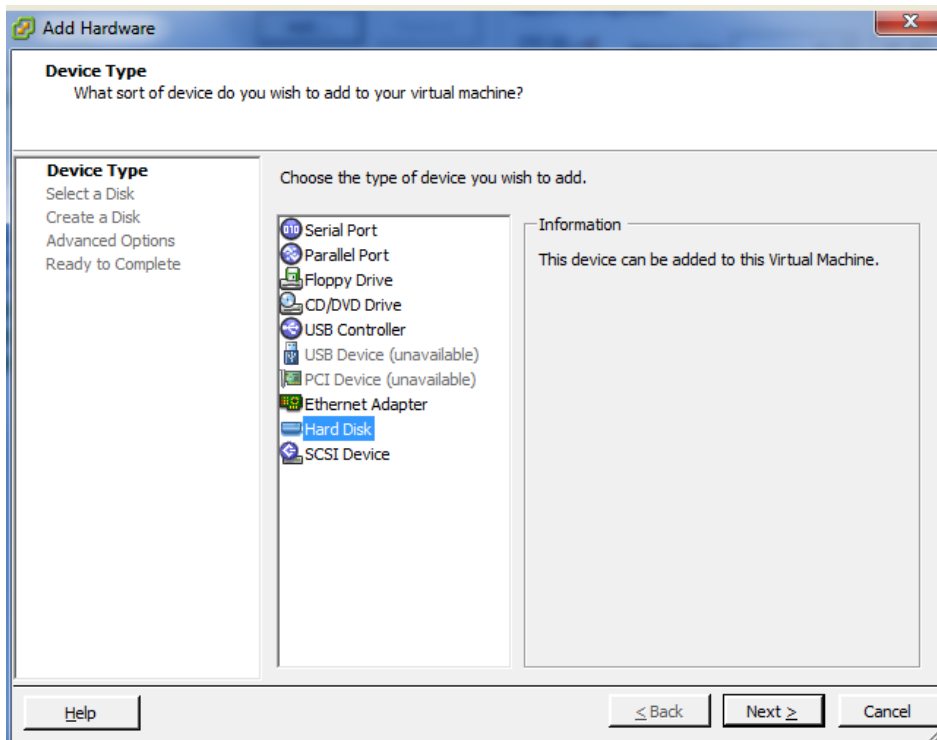
3. Set the number of vCPUs and the RAM size of the VM. See [Minimum Requirements, page 20](#) in order to determine the VM sizes required.



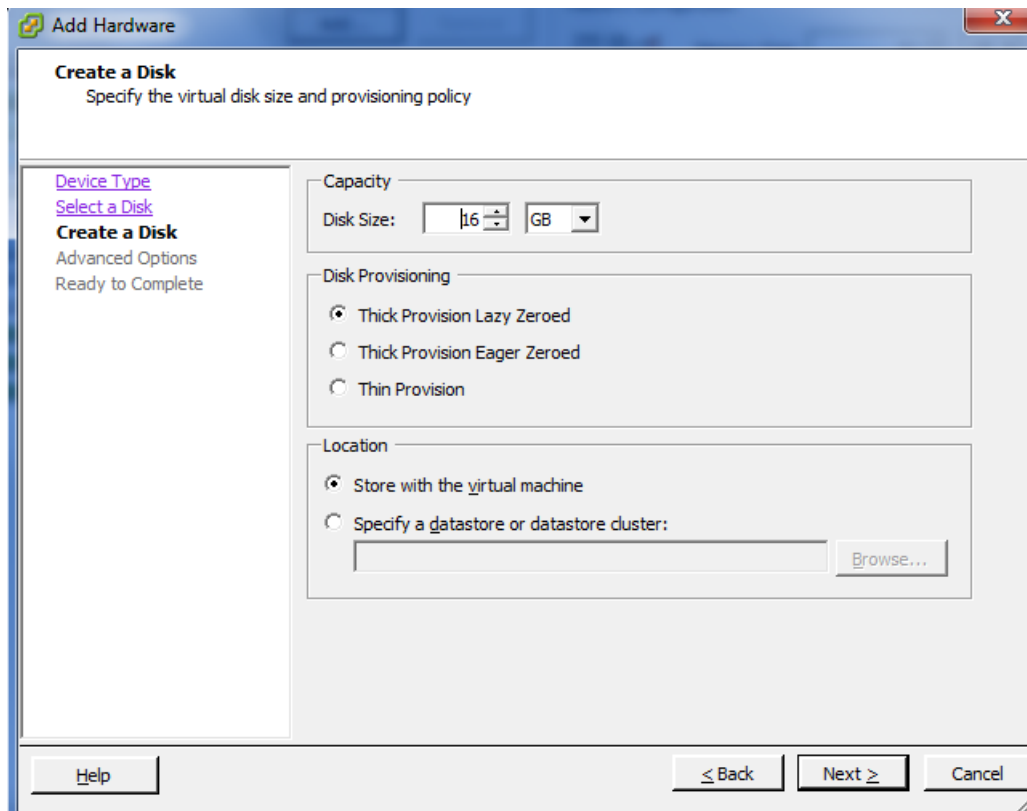
**Note:** You must now allocate an additional virtual disk with the required size, according to the guidelines detailed in [Minimum Requirements, page 20](#). If there is a need for additional disk size beyond the 6 GB of the default disk, you cannot utilize the space of the original virtual disk.



4. Click **Add**.
5. Select **Hard Disk**, and click **Next**.



6. Click **Next** when prompted.
7. Set the hard disk size and click **Next**.



8. Click **Next** when prompted.
9. Click **Finish**.
10. Press **OK** and restart the virtual machine.

Note:



**Note:** After assigning an additional vDisk, the system performs an automatic reboot when turning on the VM for the first time.

## Resource Allocation

By default, the system allocates all its resources for Alteon only.

- If you intend to run FastView or AppWall on Alteon, you need to allocate the VM resources between Alteon and AppWall or FastView.
- If you do not intend to run FastView or AppWall, then no other configuration is required.



**Note:** These limitations are not relevant when configuring the network interfaces to work in pass-through mode.



### To allocate the resources

1. Go to **Configuration > System > VM Resource Allocation**.
2. Allocate 3, 5, 9, or 17 vCPUs for Alteon, where one vCPU is for used by the MP and the remaining for the SPs. (Allocating 17 vCPUs is only relevant when configuring PCI pass-through mode.)



**Note:** If you configure the number of vCPUs differently, Alteon will fail and won't launch.

3. Set the RAM size, for Alteon, as 2 GB multiplied by the number of Alteon vCPUs minus one. For example, if 5 vCPUs are assigned to Alteon, the minimum RAM size must be  $(5-1) \times 2 = 8$  GB.



### Notes

- For extended network performance by using DPDK, allocate at least 3 GB RAM.
- When configuring to run with multiple SPs, allocate at least 2 GB RAM per SP.

### FastView Resource Allocation and Activation

1. In the VM Resource Allocation window, select **FastView**.
2. Select the required RAM size for FastView.  
The number of vCPUs is fixed at 2. The disk size is automatically calculated as  $3 \times \text{RAM size}$ .
3. Go to **Application Delivery > Application Services > FastView**.
4. Select **Enable FastView**.

### AppWall Resource Allocation and Activation

1. In the VM Resource Allocation window, select **AppWall**.
2. Select the required number of vCPUs: 2, 4 or 8  
Alteon automatically calculates the required RAM and disk size.
3. Go to **Application Delivery > Security > Web Security**.
4. Select **Enable AppWall**.

## Configuring Alteon VA for Pass-through

Configuring Alteon VA for pass-through consists of the following steps:

1. [Selecting Network Interface Cards for PCI Pass-through, page 28](#)
2. [Attaching PCI NICs to the Alteon VA Virtual Machine, page 30](#)

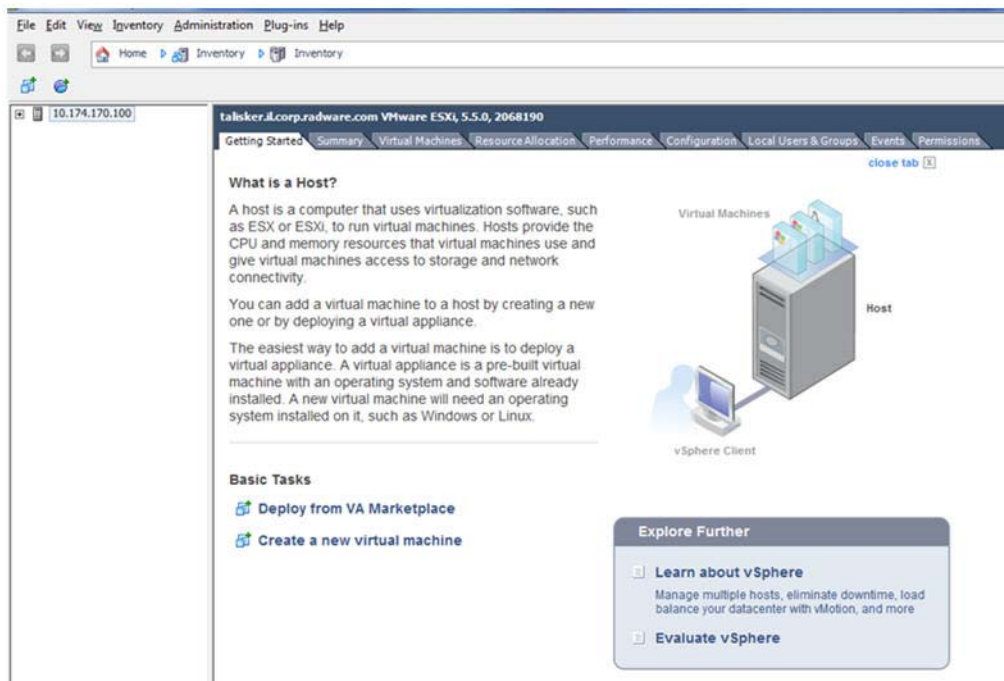
### Selecting Network Interface Cards for PCI Pass-through



**Note:** To configure the Alteon VA to run in a PCI pass-through mode on HP servers, you must run ESXi version 6.0.

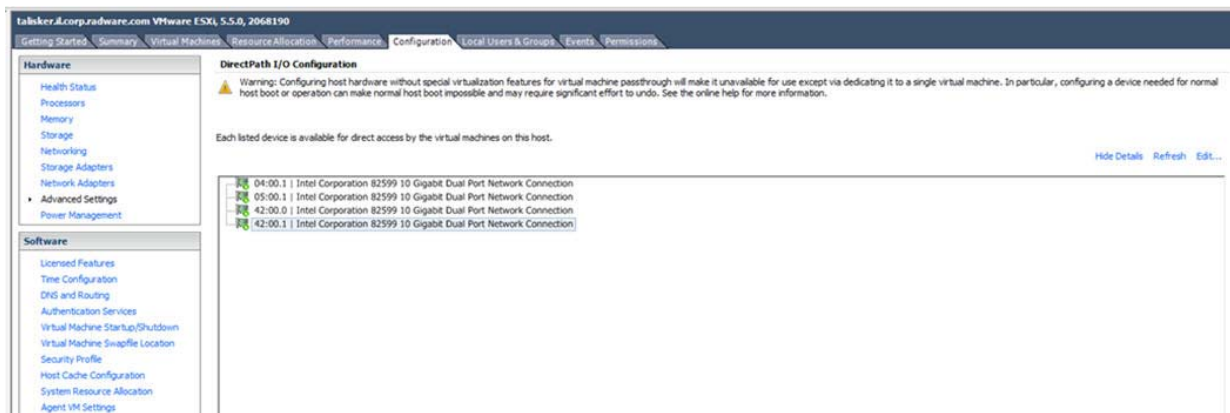
To enable the VM to work in pass-through mode, designate the host machine PCI NICs that you intend to use in pass-through mode.

1. Open the vSphere client and select the node of the host machine.



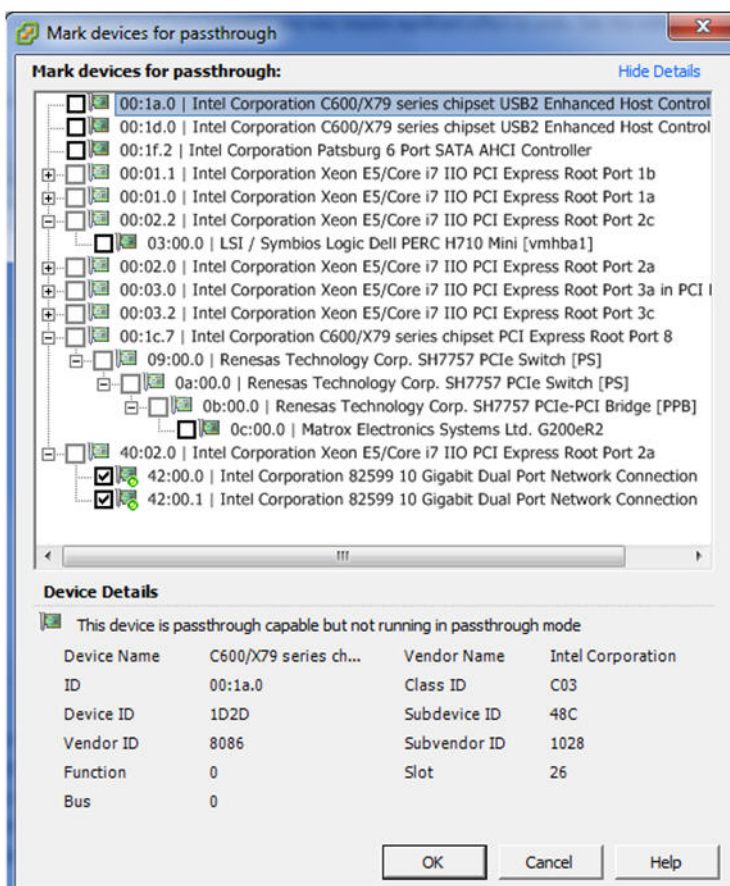
2. In the *Configuration* tab, select **Hardware** > **Advanced Settings**.

A list of all the available network interface cards suitable for PCI pass-through displays.



3. Click **Edit** (on the far right side of the window).





4. Select the Intel NIC you want to use and click **OK**.

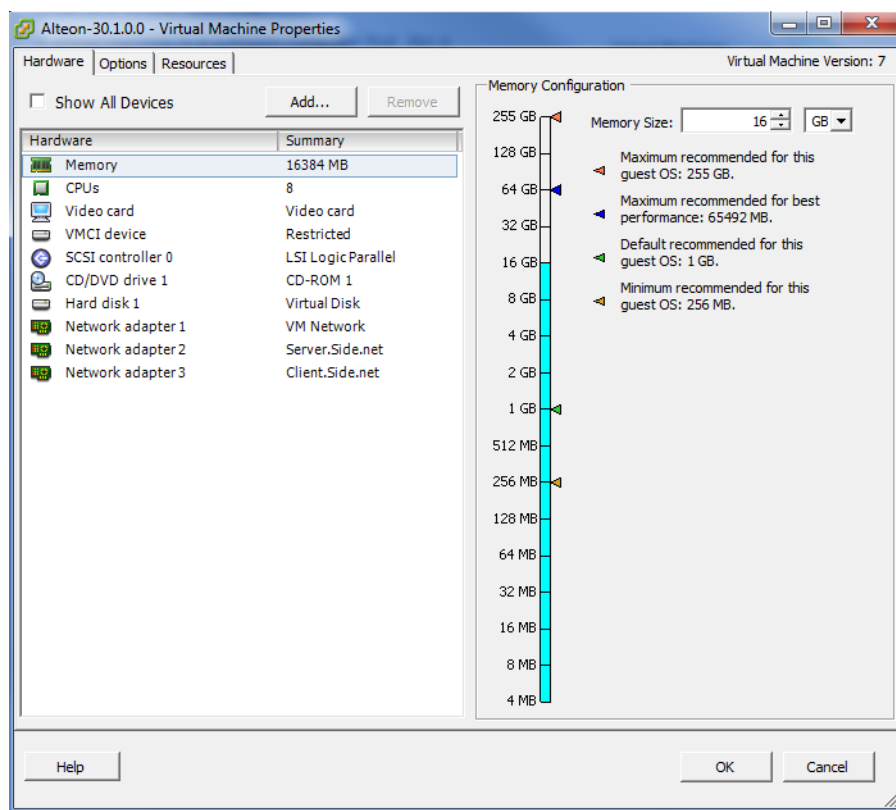
### Attaching PCI NICs to the Alteon VA Virtual Machine

After designating the PCI NICs that can be used in pass-through mode, assign to the VM the NICs to directly attach to the VM.

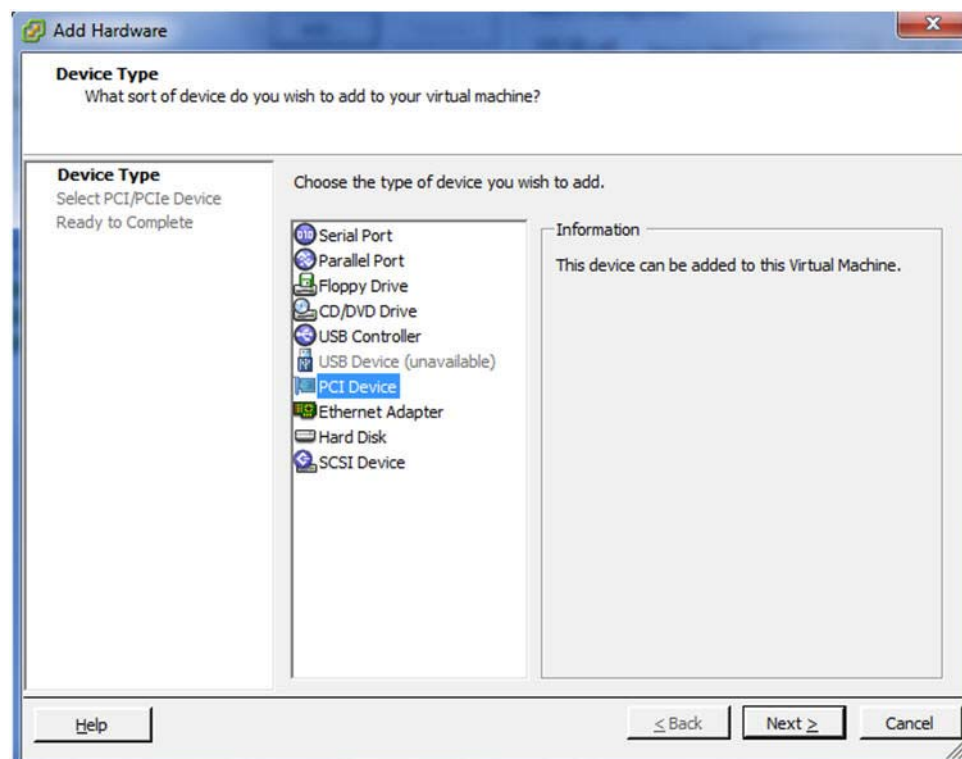


#### To attach PCI NICs to the VM

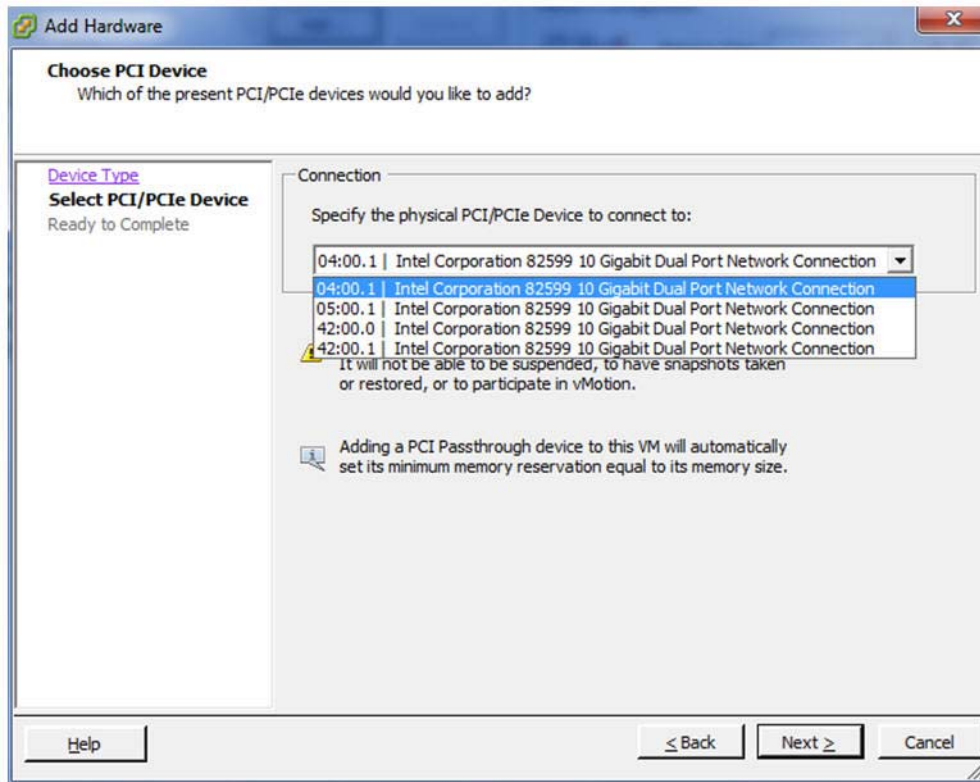
1. From the *navigation tree*, right-click on the Virtual Machine and select **Edit Settings**.
2. From the *Hardware* tab, click **Add**.



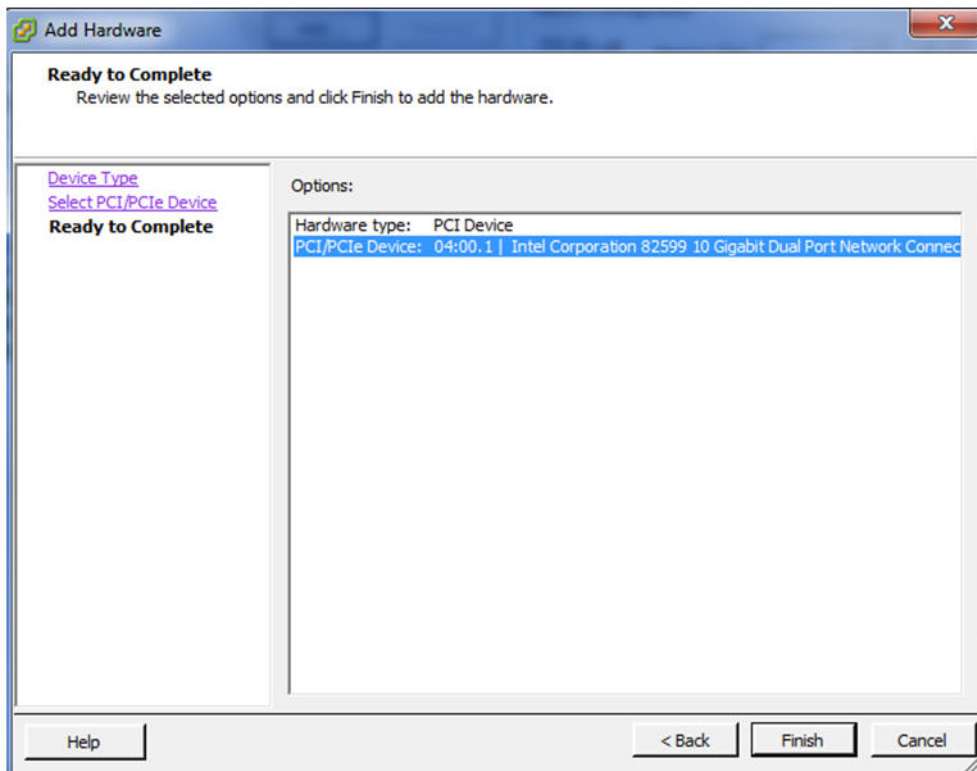
3. Select **PCI Device** and click **Next**.



4. Select the PCI NIC to attach to the VM and click **Next**.



5. Click **Finish**.



6. Repeat steps 1-5 to attach all the NICs to the VM.

## Alteon VA for KVM Installation and Configuration

To set up Alteon VA for KVM, you must first obtain the KVM package for Alteon VA provided by Radware.

### Alteon VA for KVM libvirt/virsh Deployment

This section includes:

- [Supported Host Kernels, page 33](#)
- [Installation Prerequisites, page 33](#)
- [Minimum Requirements, page 33](#)
- [Deploying the Package, page 33](#)

#### Supported Host Kernels

- Ubuntu 14.04
- CentOS 6.4

#### Installation Prerequisites

- The KVM host has the following packages and tools installed:
  - Qemu 2.0
  - libvirt version v0.9.10 and up. For bypass mode (Alteon VA for NFV) version 1.2.5 or higher is recommended.
  - losetup

#### Minimum Requirements

- For single SP (1-2 vCPUs)
  - KVM host kernel (minimum version: 2.6.32-279.5.2.el6.x86\_64)
  - libvirt (v0.9.10)
- For multiple SPs (more than 3 vCPUs)
  - KVM host kernel (minimum version: 3.13)
  - libvirt (v1.0.5)



**Note:** When Alteon VA for KVM is installed through a libvirt/virsh deployment, a virtual serial line or virsh console to the serial line is used instead of the usual TTY. Therefore, you should switch to a serial console if you are using a GUI based framework. If you attempt to use a standard TTY, the line is dropped and the prompt may freeze.

#### Deploying the Package



##### To deploy the package

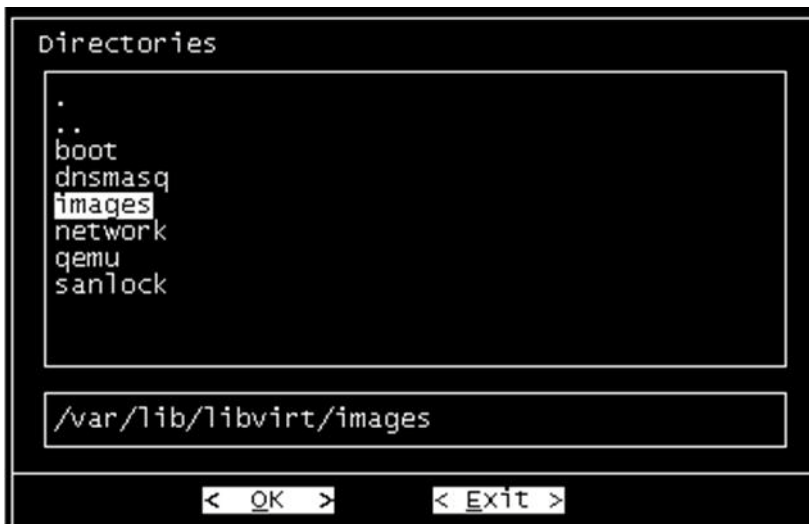
1. Unpack the Alteon VA package. For example: `# tar -xzf Alteon-2x.x.x.0_VA_kvm.tgz`
2. Run the setup script from `./install/bin/main_setup`.



3. Press **OK**.
4. Select the deployment mode (location) for the new image as **1 local**, and click **OK**.



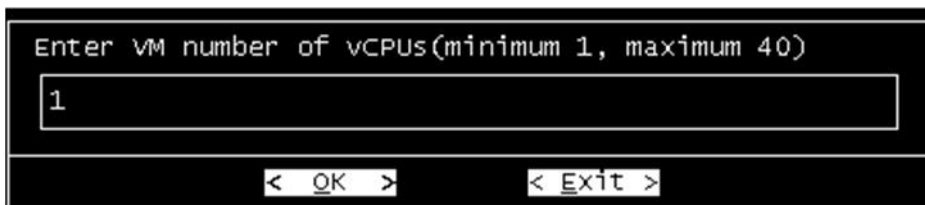
5. Select the location to deploy the VM, and click **OK**.




6. At the prompt, enter the virtual machine name, and click **OK**. A default name is provided.



7. Enter the number of vCPUs for the virtual machine, and click **OK**.



8. Enter the RAM size (in MB) for the virtual machine, and click **OK**.

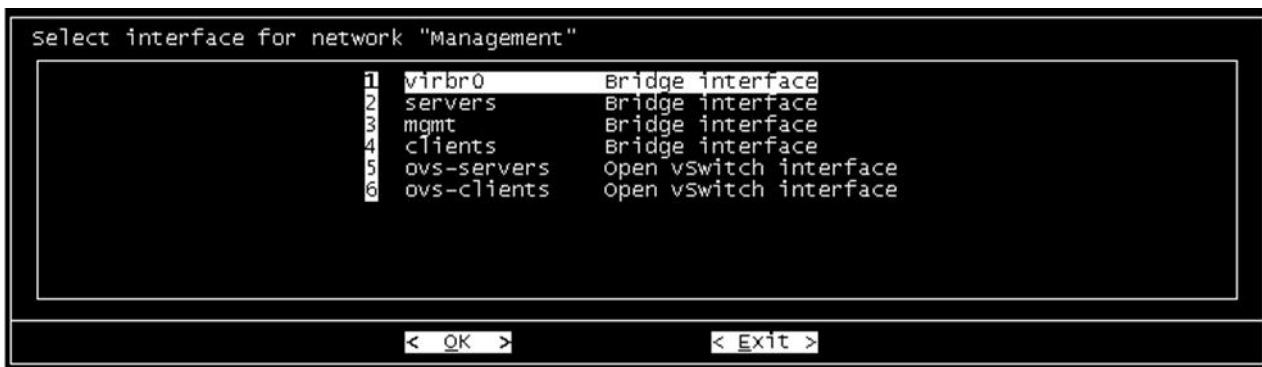


Enter VM RAM size(minimum 2048MB, maximum 128798MB)

2048

< OK >      < Exit >

9. Select the management port, and click **OK**.



Select interface for network "Management"

1	virbr0	Bridge interface
2	servers	Bridge interface
3	mgmt	Bridge interface
4	clients	Bridge interface
5	ovs-servers	open vswitch interface
6	ovs-clients	open vswitch interface

< OK >      < Exit >

10. Select the network interface for the data/traffic network ports:

- **virtio**—For network connection through the vSwitch.
- **pass-through**—For connecting the virtual machine directly to the network interface cards.



**Note:** When choosing the pass-through option, the selected NICs cannot be shared among other virtual machines.



Network interface type for network "Traffic"

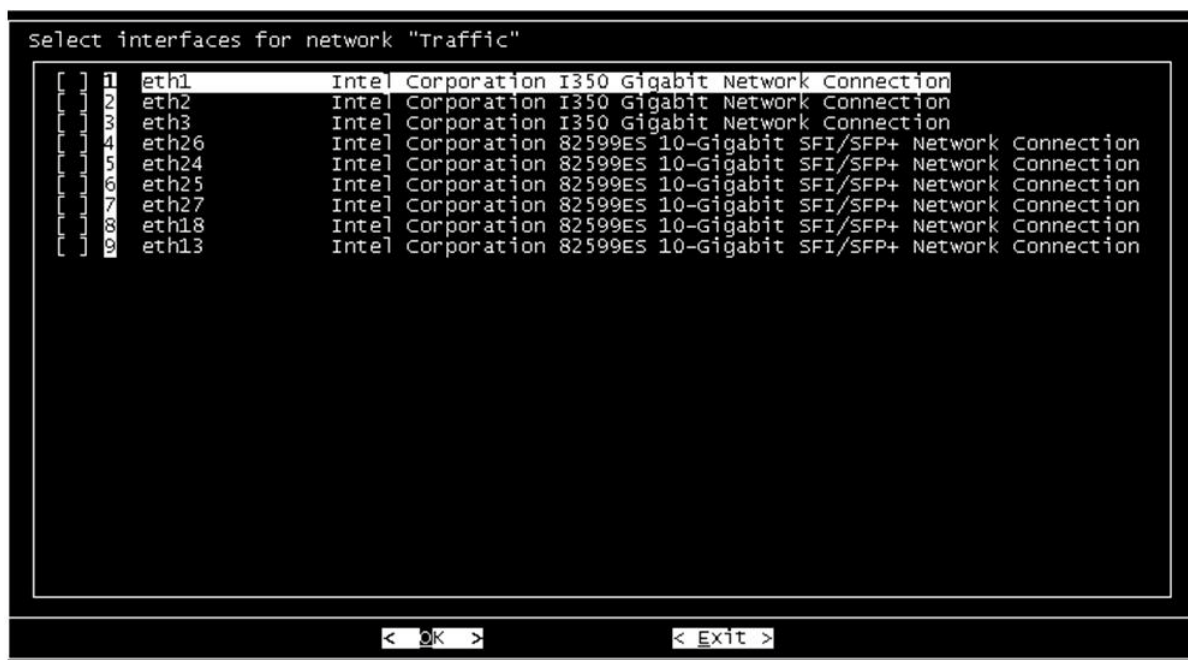
1	virtio
2	pass-through

< OK >      < Exit >

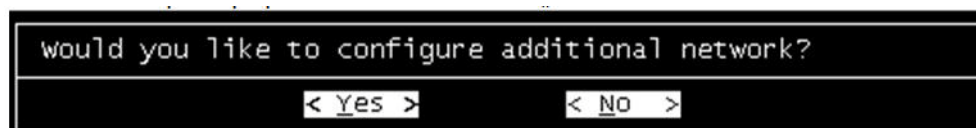
11. If you selected **virtio**, select the bridge interfaces. If you selected **pass-through**, select the relevant PCI NICs. Use the arrow buttons to scroll up or down and press the **space bar** to select.



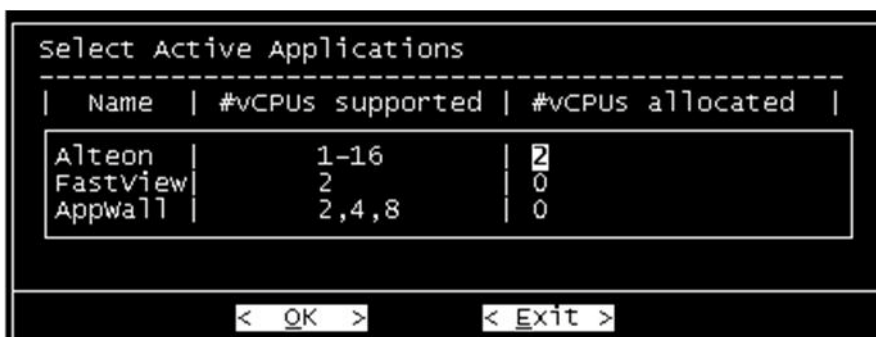
**Note:** The PCI interfaces you select are configured in the Virtual Machine configuration in the order that you selected them. Radware recommends that you first select the client-side interfaces, click **OK**, and then select the server-side interface.



12. When prompted to configure an additional network, if you need to configure more interfaces (for example, if you only configured the client-side interfaces) select **Yes**. If all interfaces are configured, select **No**.



13. Allocate the Virtual Machine resources, and click **OK**.



Allocate the VM vCPUs among the applications running on the Alteon VA:

- **Alteon**—ADC functionality. If one vCPU is allocated, both MP and SP run on the same vCPU. If more than one vCPU is allocated, one vCPU is assigned for MP processing while the rest are assigned for SP processing.
- **FastView** — Web Performance Optimization. To enable FastView, you must assign two (2) vCPUs for it.
- **AppWall** — WAF and authentication server. To enable AppWall, you must assign two (2), four (4), or eight (8) vCPUs for it.



**Note:** You can configure either AppWall or FastView, –but not both.



14. When the installation completed successfully message displays, click **OK**.



15. To view a list of the installed devices, enter **virsh list --all**.

```
virsh list --all
Id      Name                                State
-----
77      virtio634_8sp                      running
78      Master_VRRP                       running
81      BACKUP_VRRP                       running
82      AlteonOS-30-0-4-0_rls_27          running
-       alteon                             shut off
-       Alteon-29-5-100-0_21              shut off
```

16. To run the Alteon VA Virtual Machine, enter **virsh start [name]**.



#### Notes

- If your network has a DHCP server, the Alteon VA IP address displays. If not, configure this manually. For more information, see the *Alteon Application Switch Operating System Command Reference Guide*.
- The Alteon VA installation on KVM requires that the vhost-net driver is installed. If the KVM host does not have this driver configured, you can do this by entering the following command:  
`/etc/default/qemu-kvm: VHOST_NET_ENABLED=0 to VHOST_NET_ENABLED=1.`

## Alteon VA for Microsoft Hyper-V Installation and Configuration

Microsoft Hyper-V Server is a hypervisor-based server virtualization product that enables you to consolidate workloads, helping organizations improve server utilization and reduce costs.

Hyper-V Server is a dedicated stand-alone product that contains the hypervisor, Windows Server driver model, virtualization capabilities, and supporting components.

### Installation Prerequisites

Fully functioning infrastructure, including:

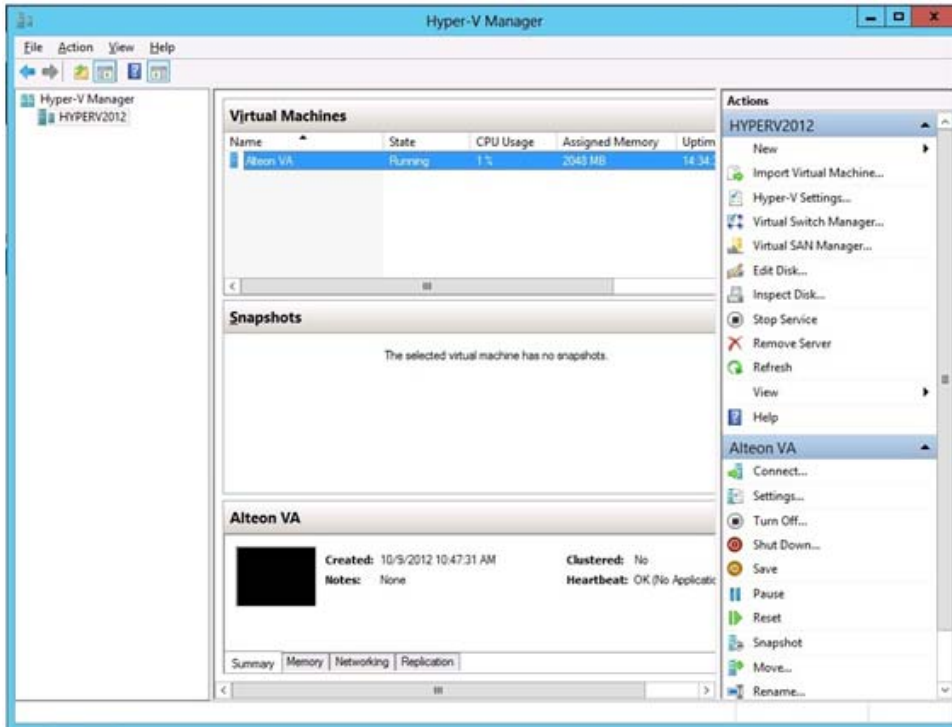
- Microsoft Hyper-V Server
- Hyper-V Server GUI
- Alteon VA package (zip file) from Radware

### Deploying the Package

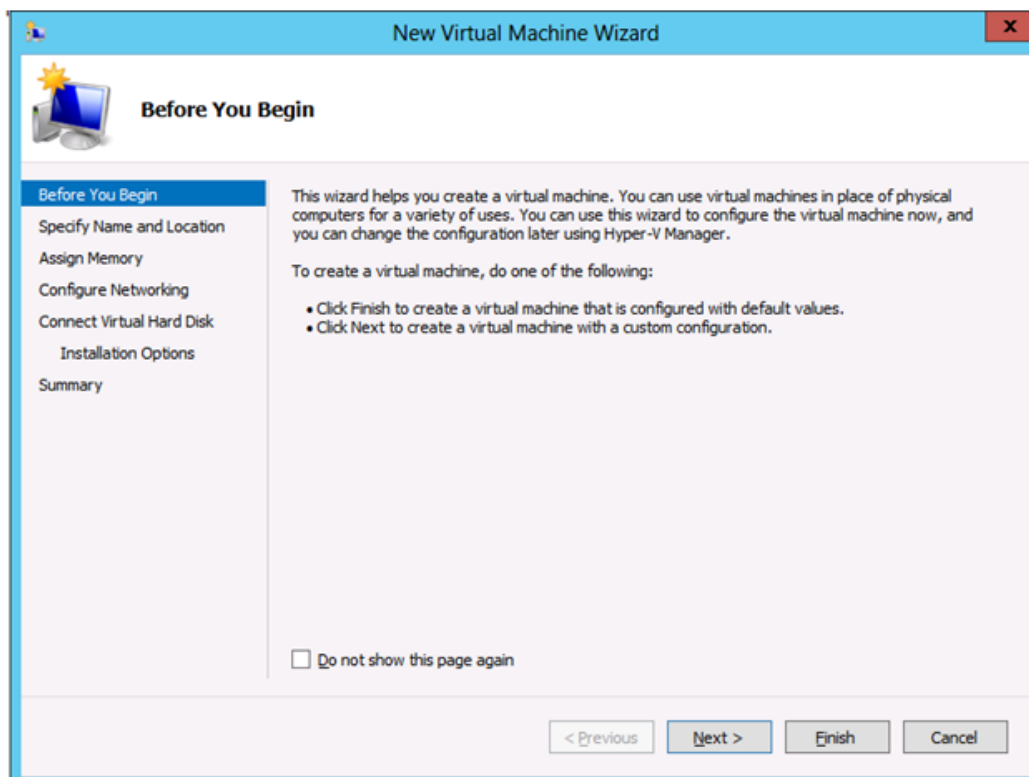


#### To deploy the package

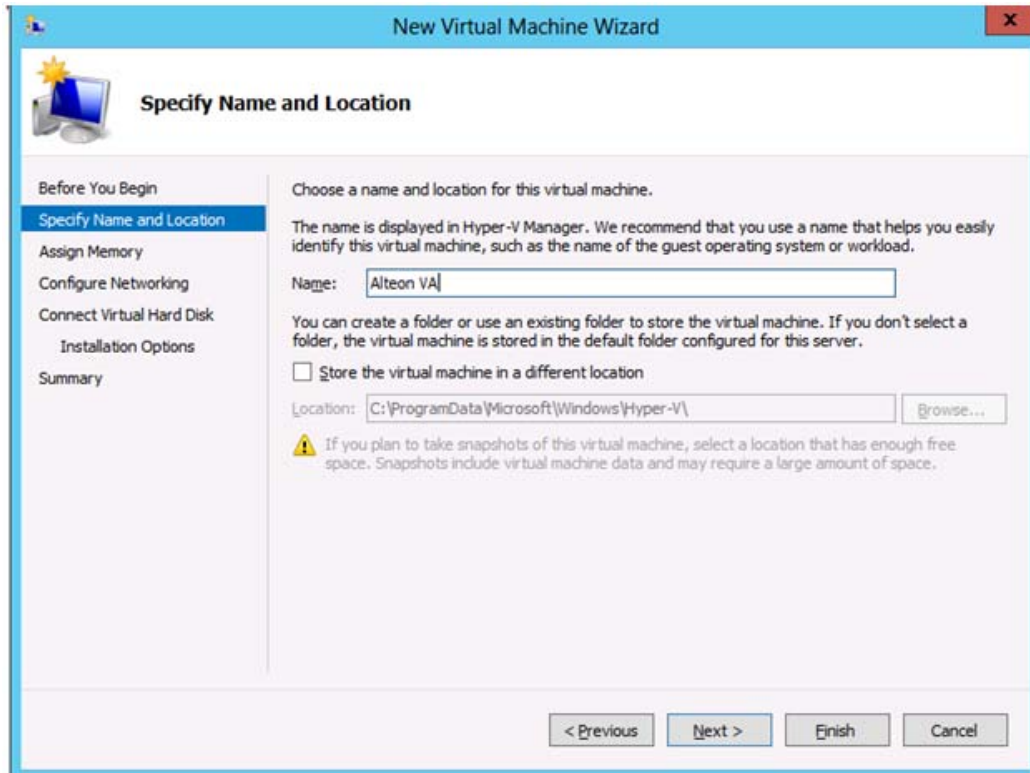
- Extract the zip file to the location of the virtual hard disks of the remote server.
- Run the server manager application and open the Hyper-V Manager.



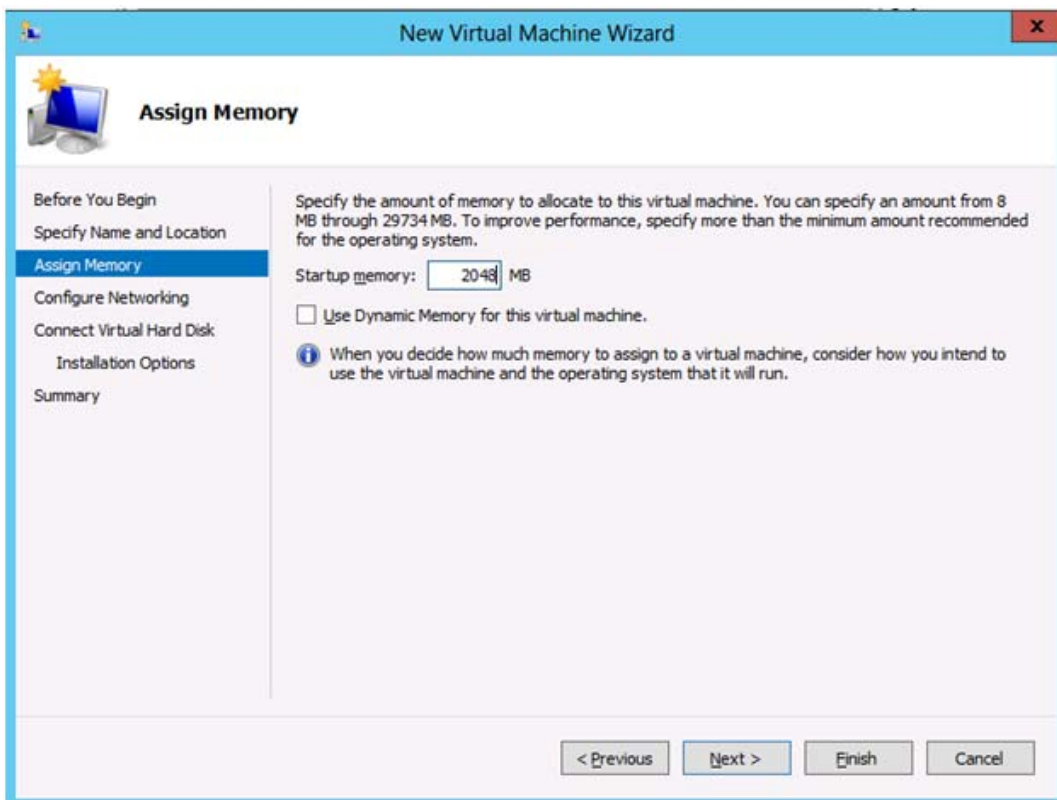
3. Connect to the server.
4. Run the New Virtual Machine Wizard.



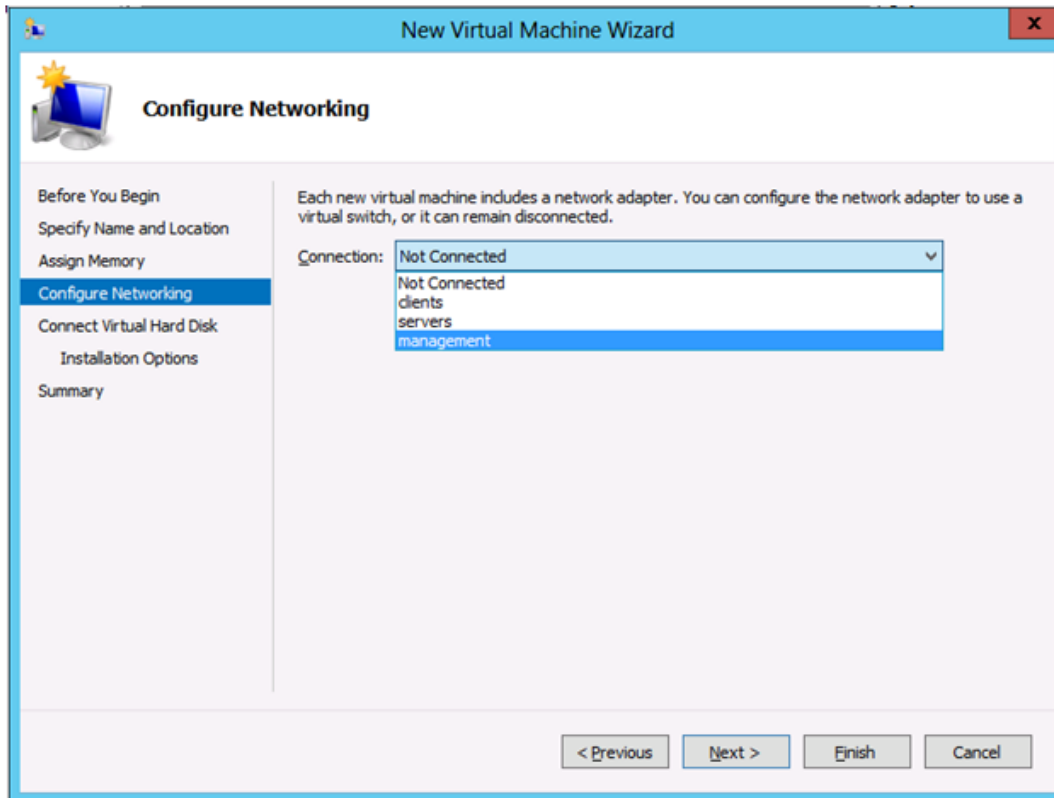
5. Click **Next**.



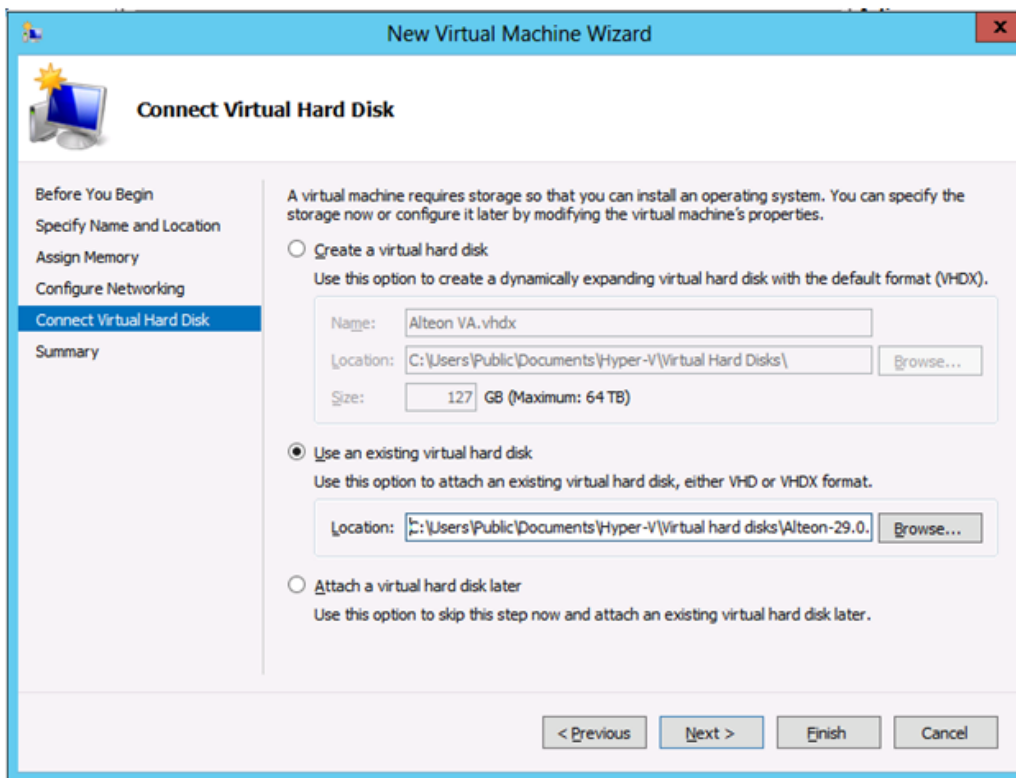
6. Enter a name for the virtual machine and click **Next**. You can keep the default location provided.



7. Assign the startup memory to 2048 MB (minimum) and click **Next**.

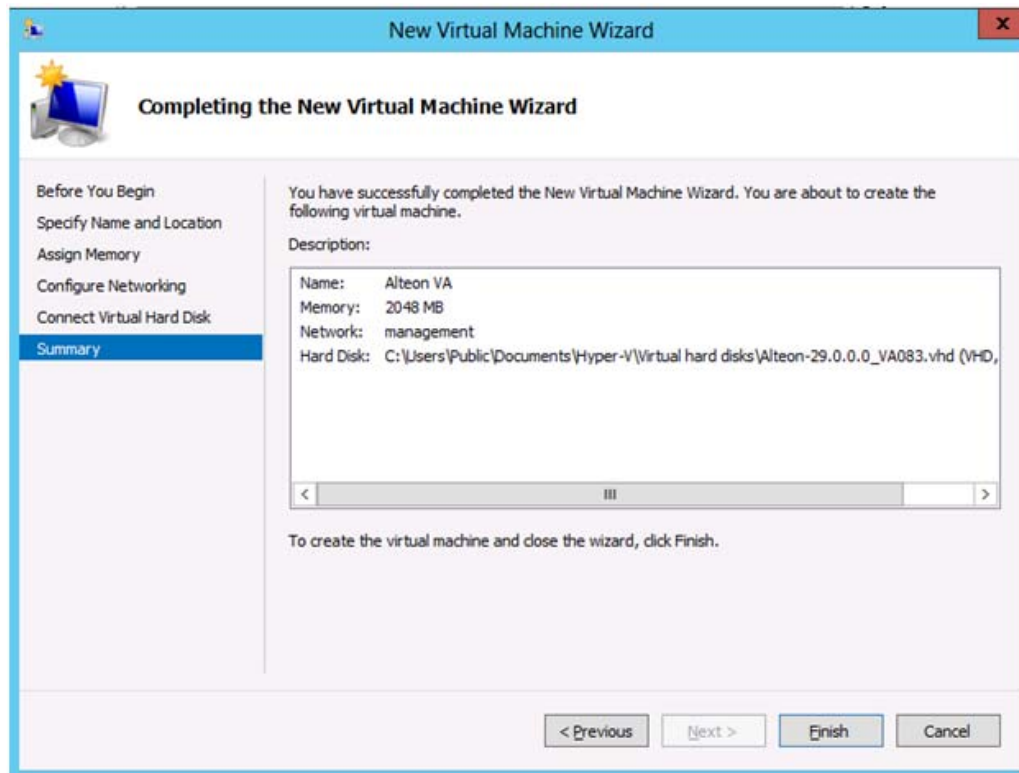


8. Select a network connection from the drop-down list and click **Next**.

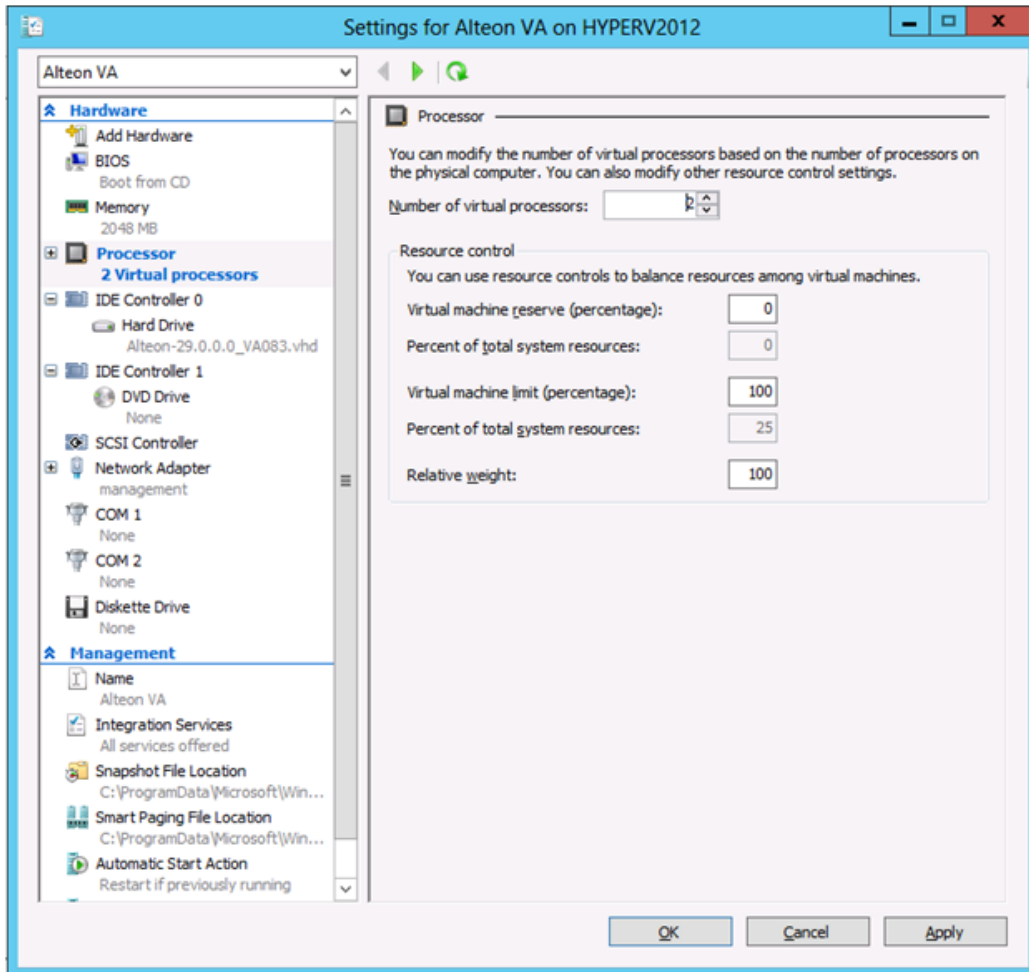


9. Select **Use an existing virtual hard disk**.

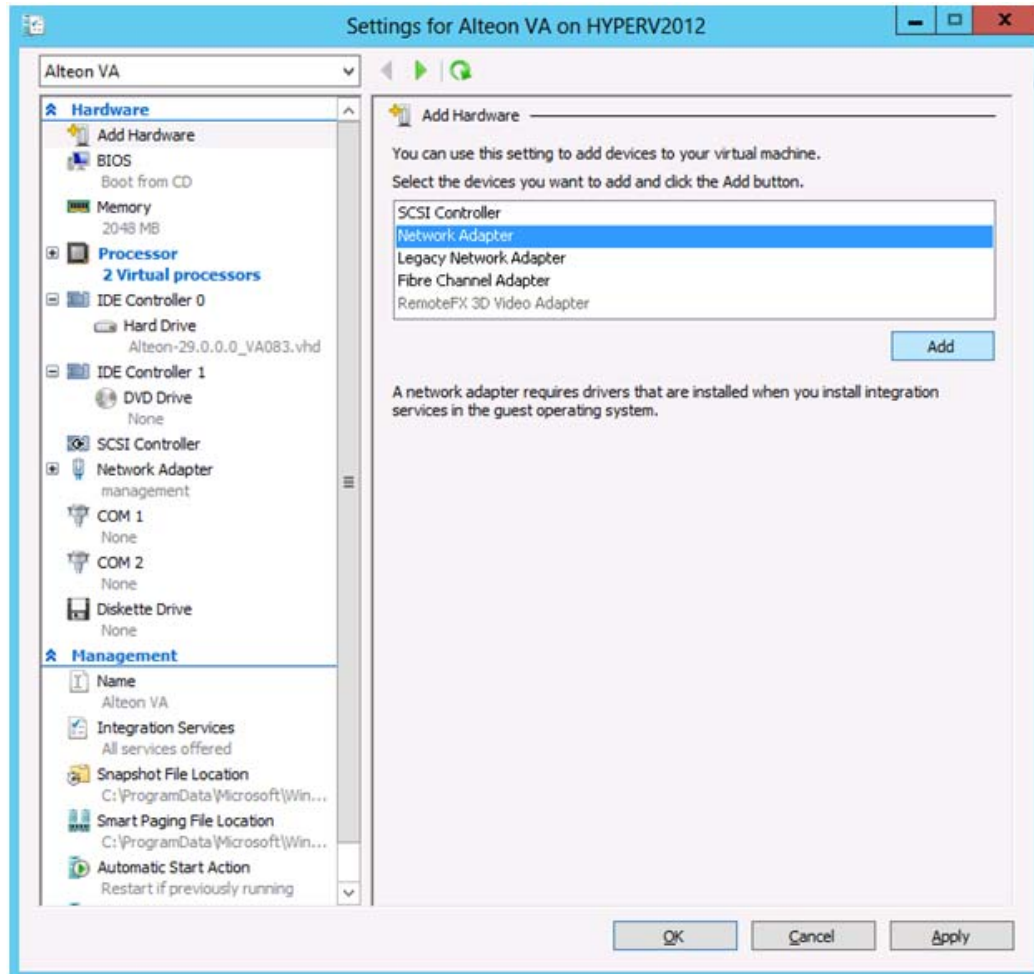
10. Click **Browse** and navigate to select the location of Alteon VA virtual hard disk.
11. Click **Next** to view a summary of the configuration of the virtual machine created.



12. Click **Finish** to close the wizard.
13. In the Hyper-V Manager, right-click the virtual machine that you created and select **Settings**.

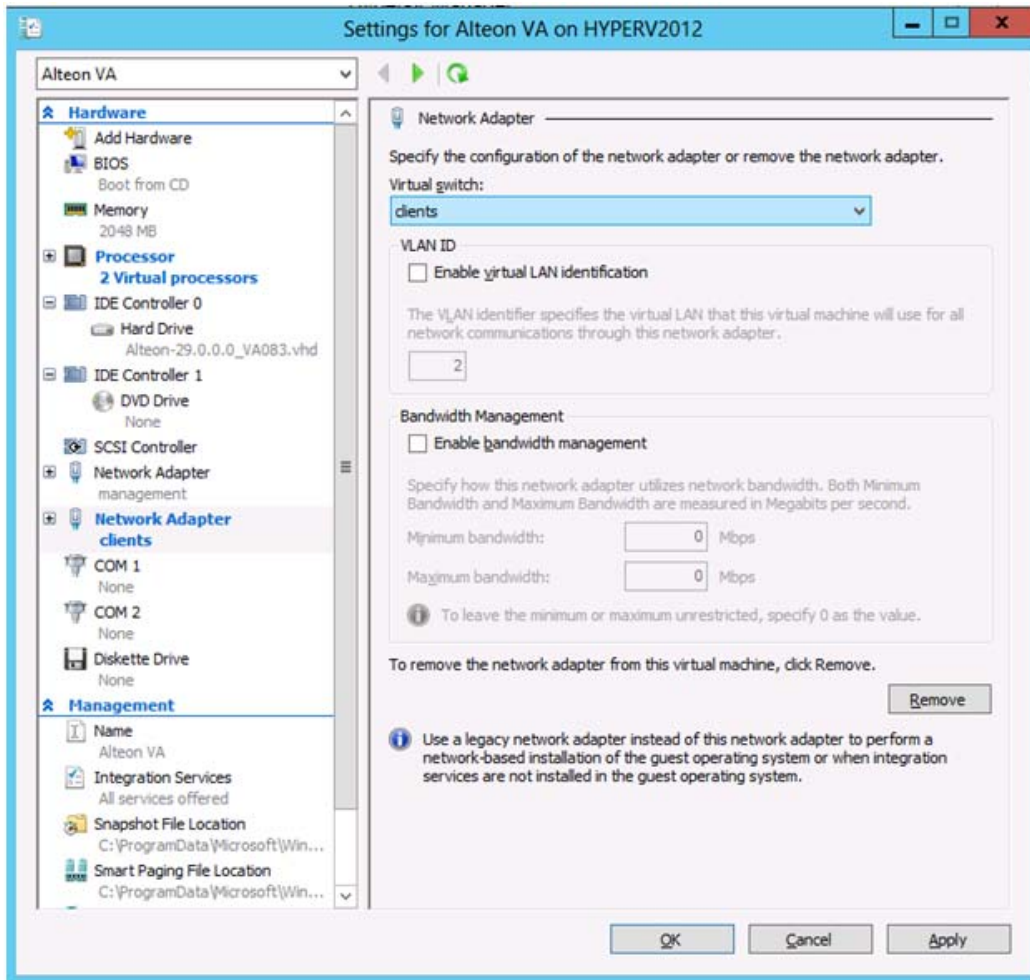


14. Select **Processor** and set the number of virtual processors to **2**.



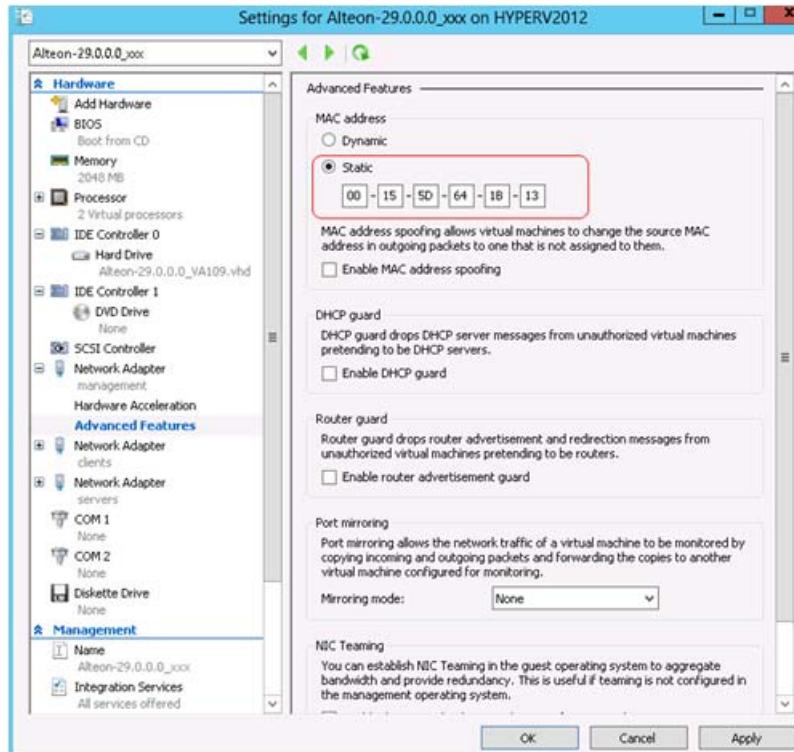
15. Select **Add Hardware** and select **Network Adapter** from the drop-down list.
16. Click **Add**.
17. Select a second separate virtual switch (for example, clients) and click **Apply**.





18. Similarly, select **Add Hardware > Network Adapter** and select a third separate virtual switch and click **Apply**.
19. For the Network Adapter-management, select **Advanced Features**.
20. Set the MAC Address policy to **Static** and enter the MAC address.





21. Similarly, for each network interface as required, set the MAC Address policy to **Static** and enter the MAC address.
22. You can now run the Alteon VA Virtual Machine.

## Initial Deployment of Alteon VA

After installing the Radware package, you must now deploy the Alteon VA for the appropriate environment, as follows:

- [Deploying Alteon VA for VMware Only, page 45.](#)
- [Deploying Alteon VA for All Environments, page 46.](#)



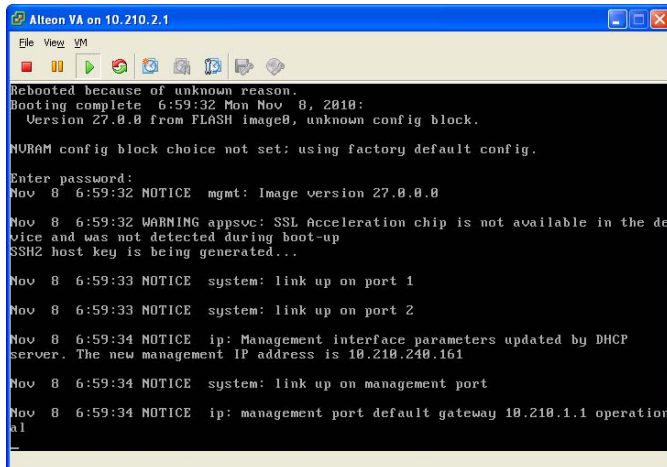
**Note:** Accessing Alteon VA via the console using a Japanese language keyboard layout may not work properly. In such a case you can access using SSH or Telnet.

### Deploying Alteon VA for VMware Only



#### To deploy Alteon VA for VMware

1. Login to the vSphere client interface.
2. From the **Home > Inventory** drop-down menu, select **Templates and VMs**.
3. Right-click the desired Alteon VA from the list, and then select **Open Console**.



```
Alteon VA on 10.210.2.1
Rebooted because of unknown reason.
Booting complete 6:59:32 Mon Nov 8, 2018:
Version 27.0.0 from FLASH image0, unknown config block.
NVRAM config block choice not set: using factory default config.
Enter password:
Nov 8 6:59:32 NOTICE mgmt: Image version 27.0.0.0
Nov 8 6:59:32 WARNING appsvc: SSL Acceleration chip is not available in the de
vice and was not detected during boot-up
SSH2 host key is being generated...
Nov 8 6:59:33 NOTICE system: link up on port 1
Nov 8 6:59:33 NOTICE system: link up on port 2
Nov 8 6:59:34 NOTICE ip: Management interface parameters updated by DHCP
server. The new management IP address is 10.210.240.161
Nov 8 6:59:34 NOTICE system: link up on management port
Nov 8 6:59:34 NOTICE ip: management port default gateway 10.210.1.1 operation
al
```



**Note:** To exit the console, release the cursor and click CTRL+ALT.

## Deploying Alteon VA for All Environments



### To deploy Alteon VA for all environments

1. To get the management IP address, do one of the following:
  - In the vSphere interface, click the *Summary* tab of your defined Alteon VA to view the IP address of the management network.
  - In the Alteon VA console, enter **/info/sys/mgmt**.
2. To disable the DHCP, enter **/cfg/sys/mmgmt/dhcp disable**, and configure the management network manually using the CLI as follows:
  - a. To configure the IP address, enter **/cfg/sys/mmgmt/addr ip address**
  - b. To configure the mask, enter **/cfg/sys/mmgmt/mask mask**
  - c. To configure the gateway, enter **cfg/sys/mmgmt/gw default gw**
  - d. To enable the configuration, enter **/cfg/sys/mmgmt/ena**
3. Enable the management interface access, as follows:
  - To configure Telnet, enter **/cfg/sys/access/tnet e**
  - To configure SSH, enter **/cfg/sys/access/ssh/on**
  - To configure HTTPS, enter **/cfg/sys/access/https/e**
4. To apply the configuration, enter **apply**.
5. To save the configuration, enter **save**.

For more information on configuring Alteon VA, see the *Alteon Application Switch Operating System Application Guide*.

Further configuration of Alteon VA can be performed through one of the management interfaces. Once the license is set and the IP addresses have been configured on the data ports, Alteon VA is able to receive configurations through the data ports.

## Obtaining and Installing a Permanent License for Alteon VA

Alteon VA license options include 200 Mbps, 500 Mbps and 1 Gbps throughput licenses with 1 Mbps license for development, testing and staging environments.



**Note:** Radware offers a 30-day free trial version of the Alteon VA including all the features and capabilities of the licensed version. You can download the trial version at:

<http://www.redhatmarketplace.com>.

By the end of the evaluation period, you have to purchase Alteon VA and install a permanent license to continue using it.



### To obtain and install a permanent license

1. To obtain a permanent license, you have to provide the VM MAC address to Radware Technical Support.
2. To get the VM MAC address, enter **/oper/swkey** in the CLI.
3. After receiving the license, enter the CLI command **/oper/swkey license\_string**, where *license\_string* is the license provided to you by Radware Technical Support. A confirmation message is displayed when the license installation is complete.

This procedure gives you perpetual use of Alteon VA. If you purchased a 200 Mbps, 500 Mbps, or 1 Gbps throughput license, you also must install it using the **/oper/swkey** command.



**Note:** When deploying a VM from a snapshot, the MAC address of the virtual machine changes and the license becomes invalid. In order for the VA to operate properly, you must either get a new VA license with the new MAC address or manually set the old MAC address on the new VM.



## Chapter 4 – Maintenance and Software Upgrade

This chapter describes how to maintain and upgrade your Alteon platform and how to upgrade your licenses. It includes the following topics:

- [Managing Configuration Files, page 49](#)
- [Upgrading the Alteon Application Switch, page 49](#)
- [Licensing Mechanism, page 52](#)



**Note:** For more information on licenses, contact Radware Technical Support.

### Managing Configuration Files

To ensure off-device configuration backup, you should always save existing configurations of each Alteon platform. It is advised to save configurations periodically on the physical platform.

For information on managing the configuration files, see the *Alteon Application Switch Operating System Command Reference*.

### Upgrading the Alteon Application Switch

You can upgrade your Alteon platform with newer software releases from Radware. Your maintenance contract determines whether you are entitled to new software versions with new features or only maintenance versions.

Check with Radware Technical Support for version availability before performing software download or upgrade.



#### Notes

- Alteon VA installation and upgrade up to version 30.0 requires a minimum 2 GB memory
- Alteon VA installation and upgrade to version 30.0.1 and up requires a minimum 3 GB memory
- Alteon VA upgrades from versions earlier than 29.5 is not supported due to kernel changes.

Before you can upgrade the platform, you first need to download the new software image file.

### Downloading the Software Image File

You can download the software image from the Radware website:

<http://portals.radware.com/Customer/Home/Downloads/Application-Delivery-Load-Balancing/?Product=Alteon>

Select the **Download Software** icon for the product version and platform you want to upgrade.

Make this file available on the host and run FTP/TFTP/SCP server for the directory where the Alteon software is located.

The image filename is in the following format (depending on platform/version):

- Alteon-(VX-)<version>-<platform>.img  
Example: Alteon-29.4.0.0-10000.img

AlteonOS-<version>-<platform>(-VX)(-ADC).img

- Examples:
  - AlteonOS-29.4.0.0-4416.img
  - AlteonOS-29.4.0.0-6000.img
  - AlteonOS-29.4.0.0-6000-VX.img
  - AlteonOS-29.4.0.0-6000-ADC.img

An upgrade password is required when you upgrade to a higher major version, identified by the two left-most numbers. For example, an upgrade from 29.0.x to 29.3.x.

You must obtain this password before you load the upgrade file onto the Alteon platform. If you do not supply the correct password during the upgrade process, you cannot upgrade, Alteon aborts the upgrade process, and reverts to the installed version of software.

You can obtain this password from the Radware corporate Web site at:

<http://portals.radware.com/Customer/Home/Tools/Password-Generator/>

The upgrade password is based on the base MAC address (of the first interface) of your platform and on the version software file size.

An upgrade to a minor version (for example, from 29.3.1.0 to 29.3.2.0) does not require a password.

## Upgrading the Alteon

An upgrade enables the new features and functions on the platform without altering the existing configuration. In exceptional circumstances, new firmware versions are incompatible with legacy configuration files from earlier versions. This most often occurs when you attempt to upgrade from very old firmware to the most recently available version.



### Notes

- Radware recommends saving the existing configuration before upgrading.
- Disable session mirroring before upgrading.
- Perform any required configuration changes before upgrading.



### To upgrade the Alteon software version

1. Save the configuration of the main (primary) and backup (secondary) platforms and upload them to the server.

Use the **all** option to ensure the configuration includes all vADCs.

Supply a passkey to include all private keys needed for a full configuration backup.



**Note:** This full configuration backup will be needed in case of a future downgrade.

2. Load the new software to the backup platform.

Enter the command **/boot/gtimg**



**Note:** For more information on the upgrade command and options, see the *Alteon Application Switch Operating System Command Reference*.

3. Disable all data ports on the backup platform.

Enter the command **/cfg/port x/dis**

Apply and save the configuration.



**Note:** Alternatively, you can disable the data ports on the platform that they are connected to.

4. Upgrade the backup platform to the new image.

Enter the command **/boot/image**

5. Enable all data ports on the backup platform.

Enter the command **/cfg/port x/ena**

Apply and save the configuration.



**Note:** If you disabled the data ports, enable them.

6. Verify that VRRP status changed to backup.
7. Perform failover to the backup platform by disabling all the data ports of the master platform (as [step 3](#) above). Ensure that a VRRP failover was activated by verifying that the secondary platform VRRP status is now master/active.
8. Load new software to the main platform.
9. When the system reboots, the upgrade of the main platform to the new software release starts.
10. Once the upgrade procedure finishes and the Alteon prompt displays, log into the system.
11. Enable all data ports on the main platform.
12. Return to the main platform if needed.



#### Notes

- Due to changes in the configuration file structure to support new features and update current ones, after the upgrade it is possible that the **diff** or **diff flash** will not be empty. To fix this, you must **apply** and **save** the entire configuration file. If no change was performed to the configuration (that is, the **diff** is empty), perform any change in the configuration and perform the **apply** and **save** (for example perform the command **/cfg/sys/idle X/apply/save**).
- When you install a new software image on hardware platforms, the currently loaded BIOS is updated if it does not match the new BIOS. If you are instructed by Radware Technical Support to do so, you can force the BIOS installation even if the version remains unchanged, using the following syntax: **/boot/image image1|image2 -f**

## Downgrading the Alteon (Rollback)



**Note:** Before performing upgrade, back up your current configuration. In case of version rollback, after the downgrade, boot Alteon from the factory configuration and manually upload the saved configuration.

Validation is performed on saved configurations. Upon downgrade, parameters that were changed and/or added since the previous version may not be supported and you may experience unapplied configuration parameters.

When downgrading to a version earlier than 28.1.5.0 (29.4.0.0 for Alteon 10000) the configuration is restored to the factory default, preserving the IPv4 management interface access. Therefore, Radware recommends saving the configuration and reload it after the rollback.



## Notes

- When downgrading an ADC-VX system to a version that does not support ADC-VX, Alteon does not boot and you must set the vADC version using the command `/boot/image adc`.
- Due to changes in the configuration file structure to support new features or change of existing ones, after the downgrade it is possible that the **diff** or **diff flash** will not be empty. To fix this, you must **apply** and **save** the entire configuration file. If no change was performed to the configuration (that is, the **diff** is empty), perform any change in the configuration and perform the **apply** and **save** (for example perform the command `/cfg/sys/idle X/apply/save`).

## Licensing Mechanism

The Radware licensing mechanism is designed to provide an easy path for adding product capabilities and scaling up capacity after the initial product purchase, without service interruption. There is no need for Alteon platform replacement or even reboot.

A Radware license is based on the MAC address of the Alteon platform and is a one-time license; once a license is changed, the old license key cannot be re-used.

There are two types of licenses: capabilities license and capacity licenses.

### Capabilities License

This license is available on all platforms and allows customers to add product-specific capabilities.

This license is accumulative - it can enable multiple license-based capabilities (features). When you purchase subsequent features, the permanent license string is modified to include the new supported features.

The licensed capabilities include:

- **slb**—Basic Load Balancing (always present - provided by default)
- **cookie**—Cookie Persistency
- **global**—Global Server Load Balancing
- **llb**—Inbound Link Load Balancing
- **bwm**—Bandwidth Management
- **ados**—Advanced Denial of Service (ADoS) Protection
- **itm**—Bandwidth Management plus Security

The capabilities license string that you get from Radware Technical Support has the following syntax:

**aas-slbf- [<feature1>-<feature2>-<featureN>-password**

where

- *feature1* through *featureN* are strings separately representing licensed Alteon features.
- *password* is a generated string based on the Base MAC address of the platform.

### Capacity Licenses

These licenses define the capacity levels enabled on the Alteon platform and allow for smooth on-demand capacity scalability, by installing new software keys on the Alteon platform.



Capacity levels are monitored and alerts can be sent to the console, Telnet and SSH interfaces and Syslog servers when a configured threshold is passed or a capacity level is reached, thus advising when capacity increase is required. For more information, see the **/cfg/sys/alerts** menu in the *Alteon Application Switch Operating System Command Reference*.

The capacity license string that you get from Radware Technical Support has the following syntax:

**<capacity type>-<capacity level>-password**

where

- *capacity type* is the capacity type enabled by the license.
- *capacity level* is the capacity level enabled by the license.
- *password* is a generated string based on the Base MAC address of the platform.

The following types of capacity licenses are available on Alteon platforms:

- **Throughput License**  
The throughput license determines the maximum throughput allowed, measured as total outbound throughput via all data ports and enables throughput capacity upgrade.  
License string: **<throughput level>-password**
- **SSL License**  
The SSL license controls the number of new SSL connections per second (new SSL handshakes) that Alteon can process and enables SSL offload capacity upgrade.  
License string: **aas-ssl-<SSL CPS level>-password**
- **Compression Throughput License**  
The Compression Throughput license defines the HTTP compression capacity level and enables capacity upgrade (compression throughput in Mbps).  
License string: **aas-compression-<compression throughput level>-password**
- **Alteon FastView License**  
The FastView license defines the throughput level optimized using FastView and enables capacity upgrade (throughput in Mbps).  
License string: **aas-fastview-<fastview throughput level>-password**



#### Notes

- The FastView license includes a compression license matching the FastView license capacity.
- The capacity of the FastView license must be equal to, or greater than, the capacity of the Alteon throughput license. Upgrade the FastView capacity license before you upgrade the Alteon throughput license.
- **Alteon APM License**  
This license defines the Application Performance Monitoring capacity level and enables capacity upgrade (sampled pages per minute).  
License string: **aas-apm-<Pages per Minute level>-password**

## Time-Based License

A time-based license includes a start date and an end date. The license takes effect only within the time frame of the license, from 00:00 on the start date until 23:59 on the end date.

A license can have a future start date in the following cases:

- There is no previous active license for that capability.
- There is a previous active license that expires at a maximum of one day before the new license starts (*new-license-start-date* is equal to or earlier than *old-license-end-date + 1*).

Expiration warnings (console, syslog, SNMP traps) are issued 30 days, 15 days, 10 days, 5 days, 4 days, 3 days, 2 days, and 1 day before the license expires and each day after expiration.

A grace period is given after the expiration date. When the grace period passes, the capability is deactivated and an error is issued. The license will appear as **Expired**.

If you have a time-based throughput license, when the license expires the throughput is reset to default.

Time-based licenses are implemented for:

- APM  
License string—`aas-apm-<apm level>-<start date>-<end date>`  
When the APM license expires, the APM script injection performed by the Alteon Proxy stops and APM-related script is not performed.
- FastView  
License string:  
(version 30.0) `aas-fv-<fv level>-<start date>-<end date>`  
(version 30.1) `aas-fastview-<start date>-<end date>`  
and `aas-fastview+<start date>-<end date>`  
When the FastView license expires, the Alteon Proxy stops accelerating traffic.

### *Time-Based License Install Scenarios (Examples)*

- Alteon has active license **apm-100-01mar2013-28feb2014**, and on 1 January, 2014 license **apm-100-01mar2014-28feb2015** is installed.  
Behavior: The APM capability becomes active until 28 February, 2015 and is reported as **Expired** on 28 February, 2015.
- Alteon has active license **apm-100-01mar2013-28feb2014**, and on 1 January, 2014 license **apm-100-01feb2014-31jan2015** is installed.  
Behavior: The APM capability becomes active until 31 January, 2015 and is reported as **Expired** on 31 January, 2015.
- Alteon has active license **apm-100-01mar2013-28feb2014**, and on 1 January, 2014 license **apm-500-01feb2014-31jan2015** is installed.  
Behavior: The APM capability becomes active until 31 January, 2015, but from 1 February, 2014 it allows for 500 PPM. It is reported as **Expired** on 31 January, 2015, but until 1 February, 2014 it is reported as APM 100 PgPM, and then as APM 500 PgPM.
- Alteon has active license **apm-100-01mar2013-28feb2014**, and on 1 January, 2014 license **apm-100-01jun2014-31may2015** is installed.  
Behavior: The license is not accepted and generates the following message: "This license cannot be accepted at this time. Please try again after <current active end date>".
- Alteon has an expired license or no license installed and on 1 January, 2014 license **apm-100-01feb2014-31jan2015** is installed.  
Behavior: The APM capability becomes active on 1 February, 2014 at 00:00. The status reported before that date is **Pending** to start on 1 February, 2014, and from 1 February the status is **Expired** on 31 January, 2015.
- Alteon has an expired license or no license installed and on 1 February, 2014 license **apm-100-01jan2014-31dec2015** is installed.  
Behavior: The APM capability becomes active immediately.

### *Temporary Evaluation License*

Radware provides a temporary license for new features that you want to evaluate after you have upgraded to a new version of Alteon and have installed at least one permanent license. A temporary evaluation license lasts for 30 days, and is disabled after that period if you do not upgrade it to be included as part of your permanent license. The license expiration timer is based on the Alteon platform uptime and not calendar days. To obtain a temporary evaluation license, contact Radware Technical Support.

The same command can be used for installing permanent and evaluation licenses.

## New License Installation

To install a new license, enter the **/oper/swkey** command, and enter the license key provided to you by Radware Technical support.

## Checking License Status

You can view license information using the **/info/swkey** command. The following are examples of the displayed information for the different types of Alteon platforms:

Figure 2: Standalone License Information

```
>> Standalone ADC - Information# swkey
```

Feature License:	aas-slb-Fwheyia9
Throughput License:	20Gbps-1B23yfHp
SSL License:	aas-ssl-1000-k5PCAbd6
Compression License:	aas-compression-100-Zu3Xyala
FastView License:	aas-fv-600-01APR2013-30MAR2014-vQlLmjdB
APM License:	aas-apm-100-01APR2013-30MAR2014-vQlLmjdB
AppWall License:	aas-appwall-HMlNlu8
Authentication License:	Default

<u>Software feature</u>	<u>Status</u>
itm	Permanent
GSLB	Temporary, 23 days left
bwm	Permanent
llb	Expired
cookie	Permanent
appwall	Permanent

<u>Capacity License</u>	<u>License</u>	<u>Peak Usage</u>	<u>Current Usage</u>
Throughput	8Gbps	4.39 Kbps	1.33 Kbps
SSL	1000 CPS	0 CPS	0 CPS
Compression	Unlimited	0 Mbps	0 Mbps
FastView	0 PgPS	0 PgPS	
APM	10 PgPM	0 PgPM	
Authentication	1000 Users	1000 Users	

Figure 3: ADC-VX, Global Administrator License Information

ADC-VX - Information# swkey				
Feature License:	aas-cookie-ESRV-10-K6P1U4w3			
vADC License:	aas-vadc-3-xAhIwQNO			
Throughput License:	8Gbps-f2RyyPLF			
SSL License:	aas-ssl-Unlimited-1skGUB23			
Compression License:	Default			
FastView License:	aas-fv-100-16APR2014-23MAY2112-60Jp2AFL			
APM License:	Default			
AppWall License:	aas-appwall-HM1Nlu8			
Authentication License:	Default			
<u>Software featureStatus</u>				
fastview	Expires on 23/5/2112			
slb	Permanent			
services	Permanent			
cookie	Permanent			
Capacity License	License	Peak Usage	Current Usage	Status
-----	-----	-----	-----	-----
Throughput	2Gbps	5.33 Mbps	1.2 Kbps	Permanent
SSL	500 CPS	0 CPS	0 CPS	
Compression	Unlimited	0 Mbps	0 Mbps	
FastView	100 PgPM	3 PgPM	0 PgPM	
APM	10 PgPM	0 PgPM	0 PgPM	
Capacity License	License	Allocated		
Services	10	0		
vADC	2	2		
Throughput	8.00 Gbps	1.4 Gbps		
SSL	unlimited	unlimited		
Compression	1000 Mbps	100 Mbps		
APM	1000 PgPM	0 PgPM		
vADC	Thrput <Mbps>	SSL <CPS>	Compression <Mbps>	APM <PgPM> Features
1	700	0	50	0
2	700	500	50	0

Figure 4: ADC-VX, vADC Administrator License Information

vADC 2 - Information# swkey			
<u>Software feature Status</u>			
slb	ENA		
cookie	ENA		
Capacity License	License	Peak Usage	Current Usage
Throughput	700Mbps	0 bps	0 bps
SSL	500 CPS	0 CPS	0 CPS
Compression	50 Mbps	0 Mbps	0 Mbps
APM	0 PgPM	0 PgPM	0 PgPM

## Chapter 5 – System Recovery

This chapter contains the following:

- [Alteon VA Recovery and License Migration Procedure, page 57](#)
- [Recovery and License Migration Procedure for Alteon VA over VMware vSphere \(ESX\) Hypervisor, page 57](#)
- [Recovery and License Migration Procedure for Alteon VA over KVM Hypervisor, page 59](#)
- [Recovery and License Migration Procedure for Alteon VA over KVM \(REHV Environment\) Hypervisor, page 62](#)
- [Recovery and License Migration Procedure for Alteon VA over Microsoft Hyper-V Hypervisor, page 64](#)

### *Alteon VA Recovery and License Migration Procedure*

Creating a new VM machine to replace a failed machine (recovery procedure) requires the re-installation of the VA licenses. Since the Alteon licenses are dependent on the virtual MAC address assigned to the original VA, in order to use the same licenses, the new VA has to have the same MAC address as the original VA. Otherwise, the new VA will need new licenses.

In order to migrate the VA licenses to the new machine, it is crucial that a list of license strings and MAC address should be maintained for each VA, since in case of disaster, the VA licenses and MAC addresses may not be otherwise available.

This section describes the procedure for migrating existing VA licenses to a newly installed machine and the Alteon VA recovery procedure in case of disaster recovery.

This procedure is detailed for the following hypervisor types:

- VMware vSphere (ESX)
- KVM
- Microsoft Hyper-V Server



**Note:** Do not start the appliance before the procedure is completed. If the appliance is started before the Linux UDEV subsystem recognizes the new MAC addresses and creates a new rule file, should you later change the MAC addresses and start the system again, the UDEV will add the new MAC addresses to the rule file. The new NICs will receive non-acceptable names - eth4, eth5, and eth6.

### *Recovery and License Migration Procedure for Alteon VA over VMware vSphere (ESX) Hypervisor*

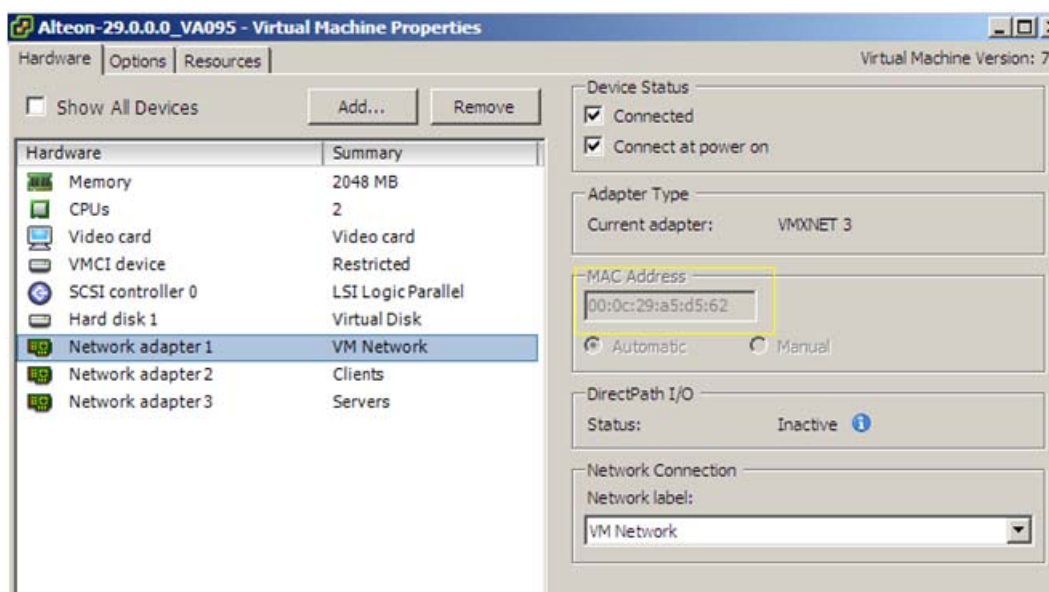
This section describes the recovery and licensing procedures for the Alteon VA running on a VMware vSphere (ESX) Hypervisor.

## Retrieving Current MAC Addresses



To retrieve the current MAC addresses of a running Alteon

1. Log in to the vSphere using vSphere client.
2. Right-click the running Alteon VA appliance and select **Edit Settings**.
3. In the *Hardware* tab, there is a list of the available virtual hardware. Alteon is equipped with three vNICs.
4. Click on **Network adapter 1** and the issued MAC addresses displays, as shown in the figure below.



5. Similarly, you can retrieve the MAC addresses for Network adapters 2 and 3.

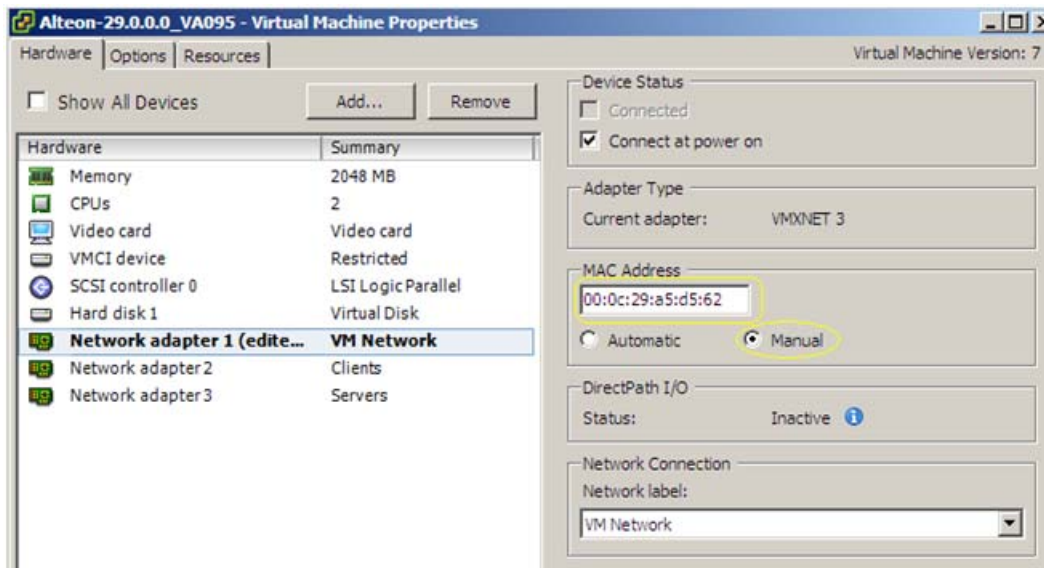
## Recovery Procedure

Once you have the original MAC addresses recorded, you can perform the following recovery procedure which creates a new VM machine to replace a failed machine. This recovery procedure includes the re-installation of the VA licenses.



To perform VA system recovery

1. In the **Deploy OVF Template** pane, deploy the Alteon VA appliance.
2. When the deployment procedure is completed, (do not power on the appliance yet) right-click on the Alteon VA appliance and select **Edit Settings**.
3. In the *Hardware* tab, select **Network adapter 1** and set the MAC Address policy to **Manual**.



4. Enter the original MAC address for Network adapter 1.
5. Similarly, change the MAC address for network adapters 2 and 3.
6. Click **OK**.
7. Boot up the appliance.
8. For each VA, re-install the original licenses by running the command:  
`/oper/swkey [license-key]`

## Recovery and License Migration Procedure for Alteon VA over KVM Hypervisor

This section details the recovery and licensing procedures for the Alteon VA running on a KVM Hypervisor.

### Recovery Procedure

Once you have the original MAC addresses recorded, you can perform the following recovery procedure which creates a new VM machine to replace a failed machine. This recovery procedure includes the re-installation of the VA licenses.



**Note:** Each VA on the new installed machine has to have the exact addresses for each interface as the original VA (i.e. mmgt to mmgt, data1 to data1 and data2 to data2).



#### To perform VA system recovery

1. Install a new machine.  
The VMs on the new machine must be identical to the original machine.
2. Edit the KVM domain (VM) XML definition file to change the MAC addresses of the VAs to the original MAC addresses. Enter the command: `virsh edit <domain_name>`

In the following file example, the MAC addresses for each interface are bolded:

```
<domain type='kvm' id='1'>
  <name>Alteon-28-1-8-10</name>
  <uuid>b0f72715-e5ba-cb99-e97e-c0f4ce1fa842</uuid>
  <memory unit='KiB'>2118656</memory>
  <currentMemory unit='KiB'>2118656</currentMemory>
  <vcpu placement='static'>2</vcpu>
  <os>
    <type arch='x86_64' machine='rhel6.3.0'>hvm</type>
    <boot dev='hd' />
  </os>
  <features>
    <acpi />
    <apic />
    <pae />
  </features>
  <clock offset='utc' />
  <on_poweroff>destroy</on_poweroff>
  <on_reboot>restart</on_reboot>
  <on_crash>restart</on_crash>
  <devices>
    <emulator>/usr/libexec/qemu-kvm</emulator>
    <disk type='file' device='disk'>
      <driver name='qemu' type='raw' cache='writeback' />
      <source file='/var/lib/libvirt/images/Alteon-28-1-8-10' />
      <target dev='vda' bus='virtio' />
      <alias name='virtio-disk0' />
      <address type='pci' domain='0x0000' bus='0x00' slot='0x05' function='0x0' />
    </disk>
    <controller type='ide' index='0'>
      <alias name='ide0' />
      <address type='pci' domain='0x0000' bus='0x00' slot='0x01' function='0x1' />
    </controller>
    <controller type='usb' index='0'>
      <alias name='usb0' />
      <address type='pci' domain='0x0000' bus='0x00' slot='0x01' function='0x2' />
    </controller>
    <interface type='bridge'>
      <mac address='52:54:00:5d:08:a7' />
      <source bridge='mngmnt' />
      <target dev='vnet0' />
      <model type='virtio' />
      <alias name='net0' />
      <address type='pci' domain='0x0000' bus='0x00' slot='0x03' function='0x0' />
    </interface>
    <interface type='bridge'>
      <mac address='52:54:00:ff:69:3e' />
      <source bridge='clients' />
      <target dev='vnet1' />
      <model type='virtio' />
      <alias name='net1' />
      <address type='pci' domain='0x0000' bus='0x00' slot='0x04' function='0x0' />
    </interface>
    <interface type='bridge'>
      <mac address='52:54:00:0c:de:fb' />
      <source bridge='servers' />
```



```
<target dev='vnet2' />
<model type='virtio' />
<alias name='net2' />
<address type='pci' domain='0x0000' bus='0x00' slot='0x07' function='0x0' />
</interface>
<serial type='pty'>
  <source path='/dev/pts/1' />
  <target port='0' />
  <alias name='serial0' />
</serial>
<console type='pty' tty='/dev/pts/1'>
  <source path='/dev/pts/1' />
  <target type='serial' port='0' />
  <alias name='serial0' />
</console>
<input type='mouse' bus='ps2' />
<graphics type='vnc' port='5900' autoport='yes' />
<video>
  <model type='cirrus' vram='9216' heads='1' />
  <alias name='video0' />
  <address type='pci' domain='0x0000' bus='0x00' slot='0x02' function='0x0' />
</video>
<memballoon model='virtio'>
  <alias name='balloon0' />
  <address type='pci' domain='0x0000' bus='0x00' slot='0x06' function='0x0' />
</memballoon>
</devices>
<seclabel type='none' />
</domain>
```

Throughput License: 8Gbps				
Permanent License: aas-cookie-ESRV-28-MXRxnVDz				
vADC License: aas-vadc-3-xAhIwQNO				
Allocated Capacity units: 10(28)				
Available system Throughput: 19.80G				
Software feature      Status				
-----				
slb                      Permanent				
GSLB                    Temporary, 23 days left				
bwm                      Permanent				
llb                        Expired				
Services (1/28)                      Permanent				
vadc (1/3)                              Permanent				
throughput                              8Gbps				
vADC	Thrput (Mb)	SSL	Compression	Features
-----	-----	-----	-----	-----
28	200	0	0	global, bwm
Capacity License		License	Peak Usage	Current Usage
-----		-----	-----	-----
Throughput		200 Mbps	13.07 Mbps	4.10 Kbps
SSL		5000 CPS	2 CPS	2 CPS
Compression		500 Mbps	2 Mbps	2 Mbps
License strings:				
-----				
Software features:		aas-slb-llb-4Up1qjTh		
Throughput:		8Gbps-3ftw2evZ		
SSL:		Default		
Compression:		Default		

- For each VA, re-install the original licenses by running the command:

```
/oper/swkey [license-key]
```

## Recovery and License Migration Procedure for Alteon VA over KVM (REHV Environment) Hypervisor

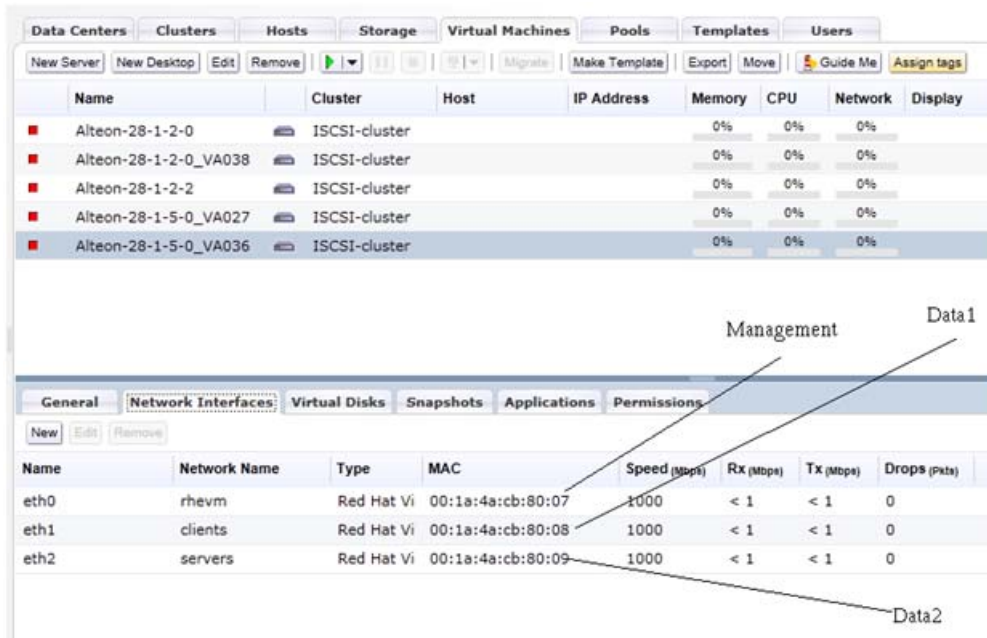
This section details the recovery and licensing procedures for the Alteon VA running on a KVM (REHV Environment) Hypervisor.

### Retrieving Current MAC Addresses



#### To retrieve the current MAC addresses of a running Alteon

- Log in to the RHEV-M host using an administrative account.
- In the main window, click on the relevant appliance.
- In the **Network Interfaces** tab, the issued MAC addresses can be seen, as shown in the figure below.



Name	Cluster	Host	IP Address	Memory	CPU	Network	Display
Alteon-28-1-2-0	ISCSI-cluster			0%	0%	0%	
Alteon-28-1-2-0_VA038	ISCSI-cluster			0%	0%	0%	
Alteon-28-1-2-2	ISCSI-cluster			0%	0%	0%	
Alteon-28-1-5-0_VA027	ISCSI-cluster			0%	0%	0%	
Alteon-28-1-5-0_VA036	ISCSI-cluster			0%	0%	0%	

Name	Network Name	Type	MAC	Speed (Mbps)	Rx (Mbps)	Tx (Mbps)	Drops (Pkts)
eth0	rhevm	Red Hat Vi	00:1a:4a:cb:80:07	1000	< 1	< 1	0
eth1	clients	Red Hat Vi	00:1a:4a:cb:80:08	1000	< 1	< 1	0
eth2	servers	Red Hat Vi	00:1a:4a:cb:80:09	1000	< 1	< 1	0

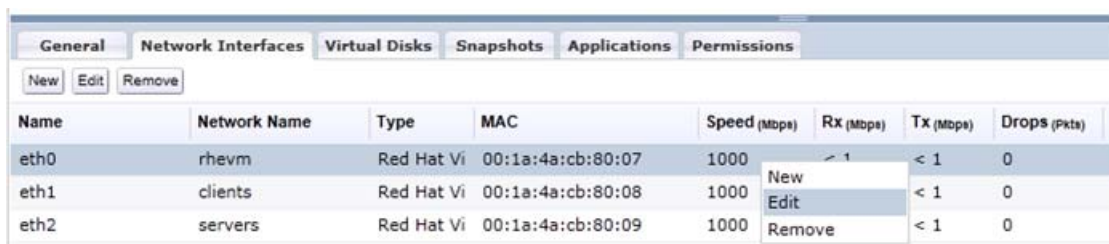
## Recovery Procedure

Once you have the original MAC addresses recorded, you can perform the following recovery procedure which creates a new VM machine to replace a failed machine. This recovery procedure includes the re-installation of the VA licenses.



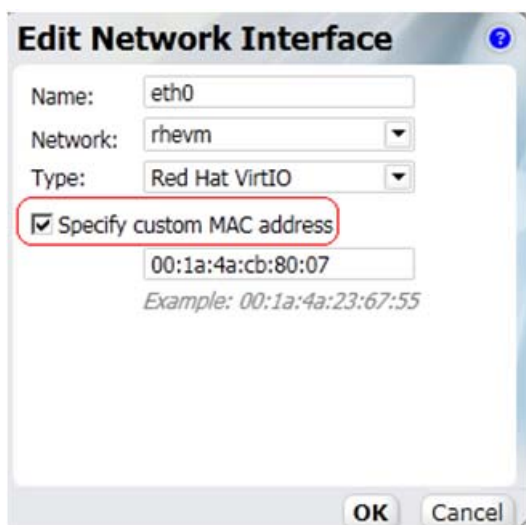
### To perform VA system recovery

1. Log in to the RHEV-M host using an administrative account.
2. In the main window, click on the relevant appliance.
3. In the **Network Interfaces** tab, right-click on the network interface row and select **Edit**.



Name	Network Name	Type	MAC	Speed (Mbps)	Rx (Mbps)	Tx (Mbps)	Drops (Pkts)
eth0	rhevm	Red Hat Vi	00:1a:4a:cb:80:07	1000	< 1	< 1	0
eth1	clients	Red Hat Vi	00:1a:4a:cb:80:08	1000	< 1	< 1	0
eth2	servers	Red Hat Vi	00:1a:4a:cb:80:09	1000	< 1	< 1	0

4. In the Edit Network Interface window, select **Specify custom MAC address** and enter the original MAC address.



5. Click **OK**.
6. Similarly, change the MAC address for each network interface.
7. Boot up the appliance.
8. For each VA, re-install the original licenses by running the command:  
`/oper/swkey [license-key]`

## *Recovery and License Migration Procedure for Alteon VA over Microsoft Hyper-V Hypervisor*

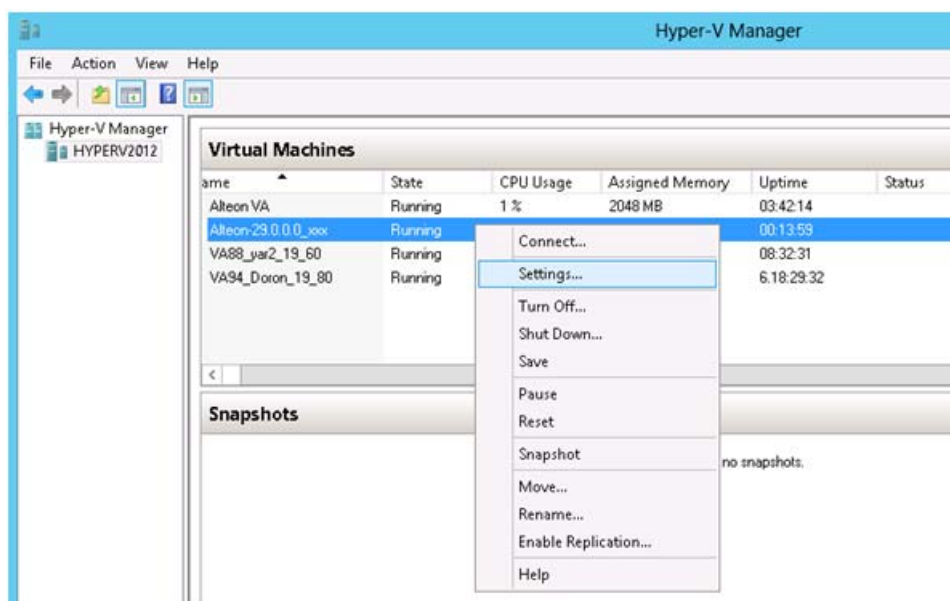
This section details the recovery and licensing procedures for the Alteon VA running on a Microsoft Hyper-V Hypervisor.

### *Retrieving Current MAC Addresses*

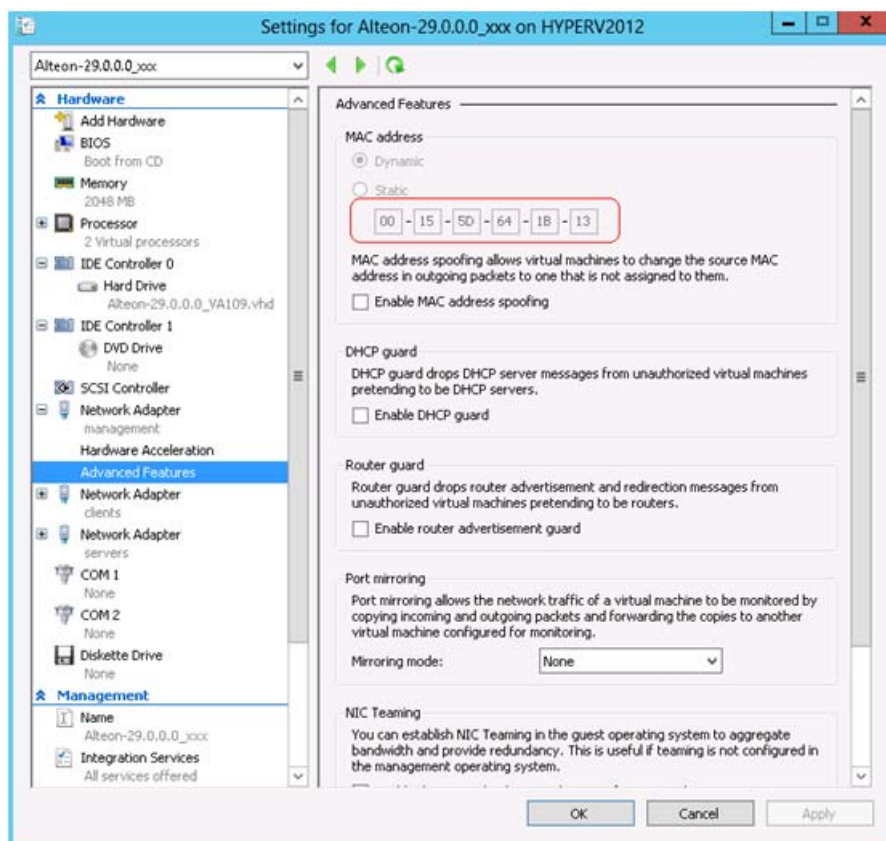


**To retrieve the current MAC addresses of a running Alteon**

1. Log in to the Hyper-V host or connect remotely over RDP.
2. Open the Hyper-V manager.
3. Choose the required appliance from the list of installed virtual machines.
4. Right-click on the row and select **Settings**.



- In the *Settings* window, under **Network Adaptor > Management**, select the **Advanced Features** option. The MAC address issued for the management interface displays.



- Similarly, find the MAC addresses for each network adaptor interface as necessary.

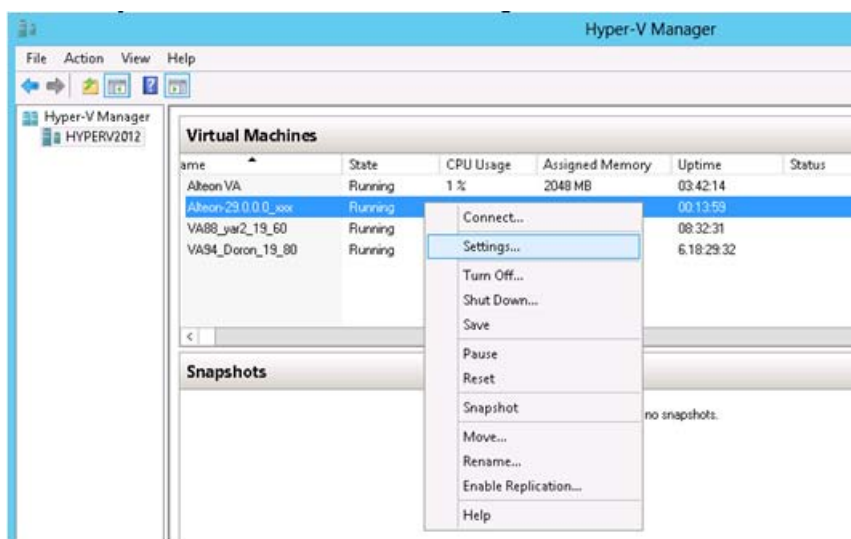
## Recovery Procedure

Once you have the original MAC addresses recorded, you can perform the following recovery procedure which creates a new VM machine to replace a failed machine. This recovery procedure includes the re-installation of the VA licenses.

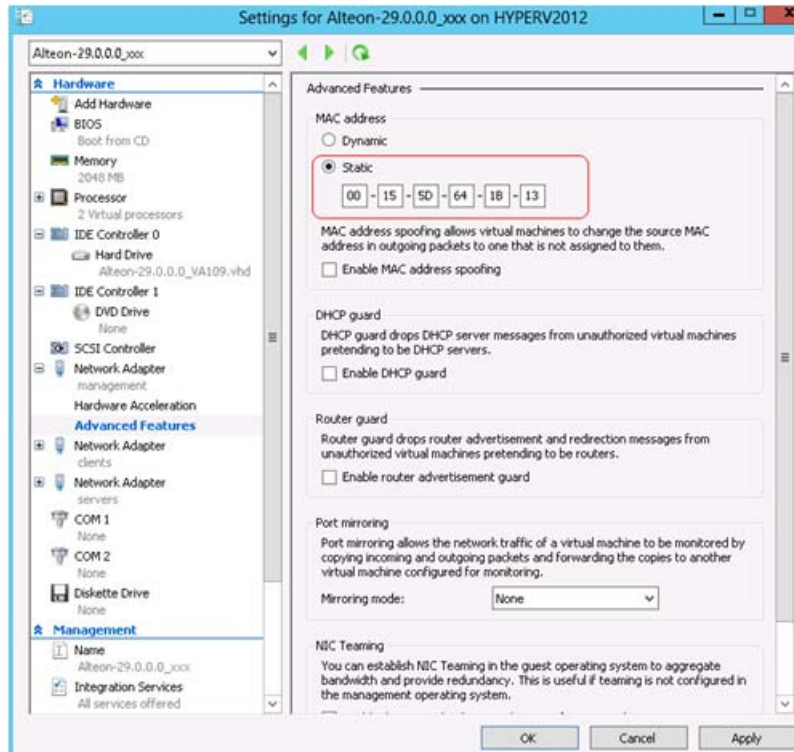


### To perform VA system recovery

1. Log in to the Hyper-V host or connect remotely over RDP.
2. Open the Hyper-V manager.
3. Select the VM appliance from the list. Make sure the appliance is not running
4. Right-click on the row and select **Settings**.



5. For Network Adapter-management, select **Advanced Features**.
6. Set the MAC Address policy to **Static** and enter the original MAC address.



7. Similarly, change the MAC address for each network interface as required.
8. Click **OK**.
9. Boot up the appliance.
10. For each VA, re-install the original licenses by running the command:  
`/oper/swkey [license-key]`





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