Installation Guide

for

**OmniVista 2500 NMS Enterprise
Version 4.2.1.R01
(Maintenance Release 1)**

Alcatel·Lucent
Enterprise

February 2017

Revision E

Part Number 060444-10

READ THIS DOCUMENT

**OmniVista 2500 NMS
for**

**VMware ESXi: 5.5 and 6.0
VirtualBox: 5.0.10
MS Hyper-V: 2012 R2 and 2016**

Table of Contents

OmniVista 2500 NMS Enterprise 4.2.1.R01 (Maintenance Release 1) Installation Guide

This document details the OmniVista 2500 NMS Enterprise 4.2.1.R01 Maintenance Release 1 (MR 1) (OV 2500 NMS-E 4.2.1.R01 (MR1)) installation/upgrade process. OV 2500 NMS-E 4.2.1.R01 MR 1 can be installed as a <u>fresh installation</u> from a download file available on the Customer Support website; or you can <u>upgrade from OV 2500 NMS-E 4.2.1.R01 GA</u> using the OmniVista 2500 NMS Software Repository. If you are upgrading from an earlier release (3.5.7 – 4.1.2.R03), you must first upgrade to 4.2.1.R01 GA. See the *OmniVista 2500 NMS-E 4.2.1.R01 Installation Guide (Rev. D) for details.*

This guide is specific to installing/upgrading to OV 2500 NMS-E 4.2.1.R01 (MR1). For information on VA Menu options, and procedures for upgrading from an Evaluation License, see the *OmniVista 2500 NMS-E 4.2.1.R01 Installation Guide (Rev. D).* Specific platform support and recommended system configuration information are available in the *OmniVista 2500 NMS-E 4.2.1.R01 Release Notes (Rev. C).*

For information on getting started with OmniVista 2500 NMS after installation (e.g., using the Web GUI, discovering network devices) see the *Getting Started Guide* in the OmniVista 2500 NMS on-line help (accessed from Help link at the top of the main OmniVista 2500 NMS Screen).

Installing OV 2500 NMS-E 4.2.1.R01 (MR1)

OV 2500 NMS-E 4.2.1.R01 (MR 1) is distributed as a Virtual Appliance only. It is run as a service using VirtualBox. There are no other standalone installers (e.g., Windows/Linux). OV 2500 NMS-E 4.2.1.R01 (MR 1) is installed as a Virtual Appliance, and can be deployed on the following hypervisors: VMware ESXi, VirtualBox, Hyper-V:

- VMware ESXi: 5.5 and 6.0
- VirtualBox: 5.0.10
- MS Hyper-V: 2012 R2 and 2016.

The sections below detail each of the steps required to deploy OV 2500 NMS-E 4.2.1.R01 (MR 1) as Virtual Appliance on <u>VMware</u>, <u>VirtualBox</u>, and <u>Hyper-V</u>. If you are upgrading from OV 2500 NMS-E 4.2.1.R01 GA, see <u>Upgrading from OV 2500 NMS-E 4.2.1.R01 GA</u>.

> **Note:** If you are deploying OV 2500 NMS-E 4.2.1.R01 on a standalone Windows or Linux machine, you must first install Virtual Box on the machine. Virtual Box is available as a free download. See <u>Appendix A</u> for details.

Deploying the Virtual Appliance in VMware ESXi

Note that in the instructions below, vCenter is used for demonstration purposes.

1. Download and unzip the OVF package.

2. Log into vCenter and open the vSphere client.

3. Select the Host on which you want to install OV 2500 NMS-E 4.2.1.R01 (MR 1), click on **File - Deploy OVF Template**. The Deploy OVF Template Wizard appears.
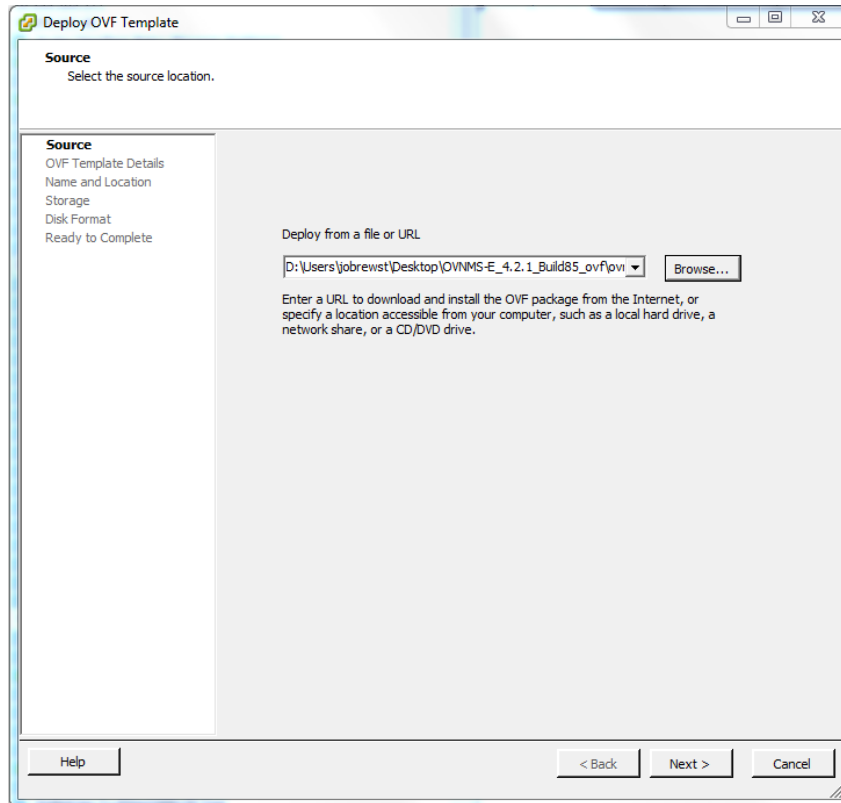
4. Click on the **Browse** button and locate the OV 2500 NMS-E 4.2.1.R01 (MR 1) Application file in the unzipped OVF folder (e.g., ovnmse-4.2.1.R01-85.0.ovf).

5. Select the file and click **Open** (or double click on the file). The file will appear in the "Deploy from a file or URL" field. Click **Next**. The OVF Template Details Screen appears.
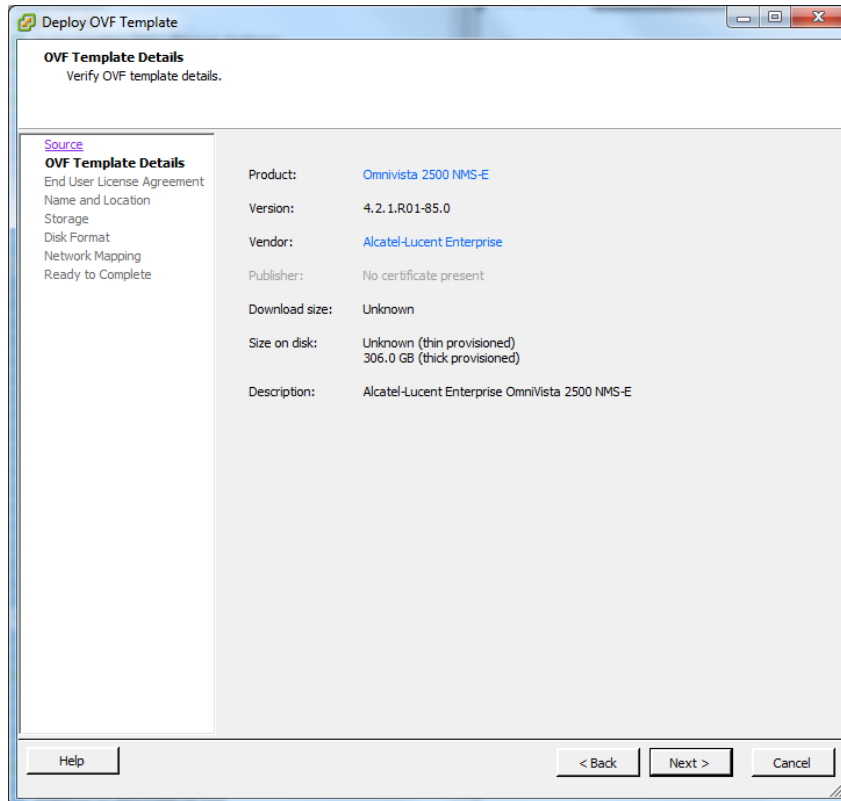
6. Review the OVF details and click **Next**. The End User License Agreement Screen appears.
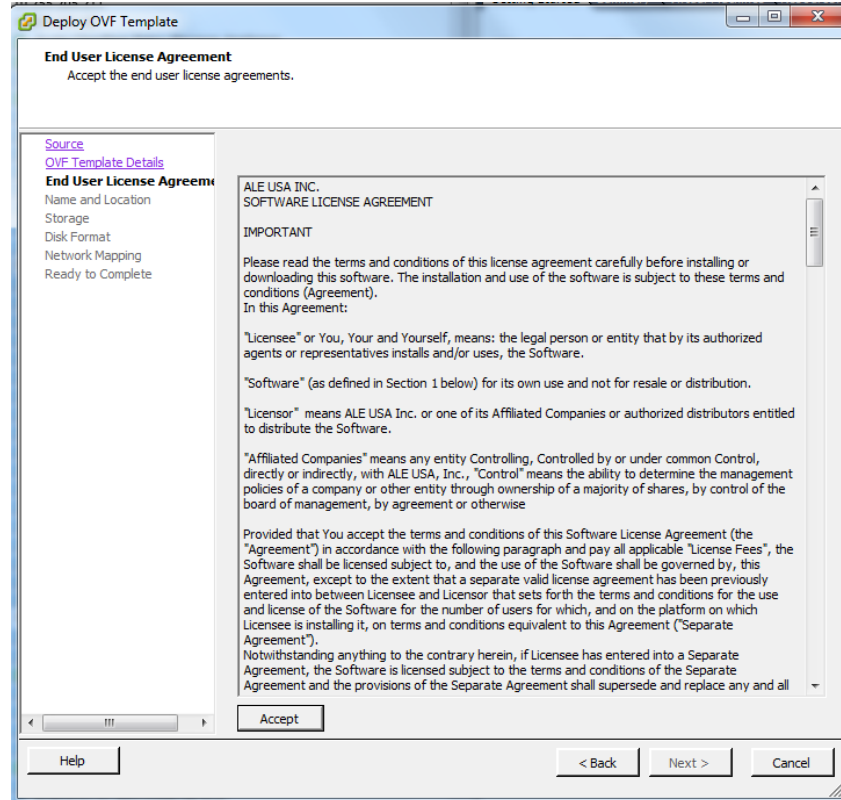
7. Review the License Agreement, click **Accept**, then click **Next**. The Name and Location Screen appears.
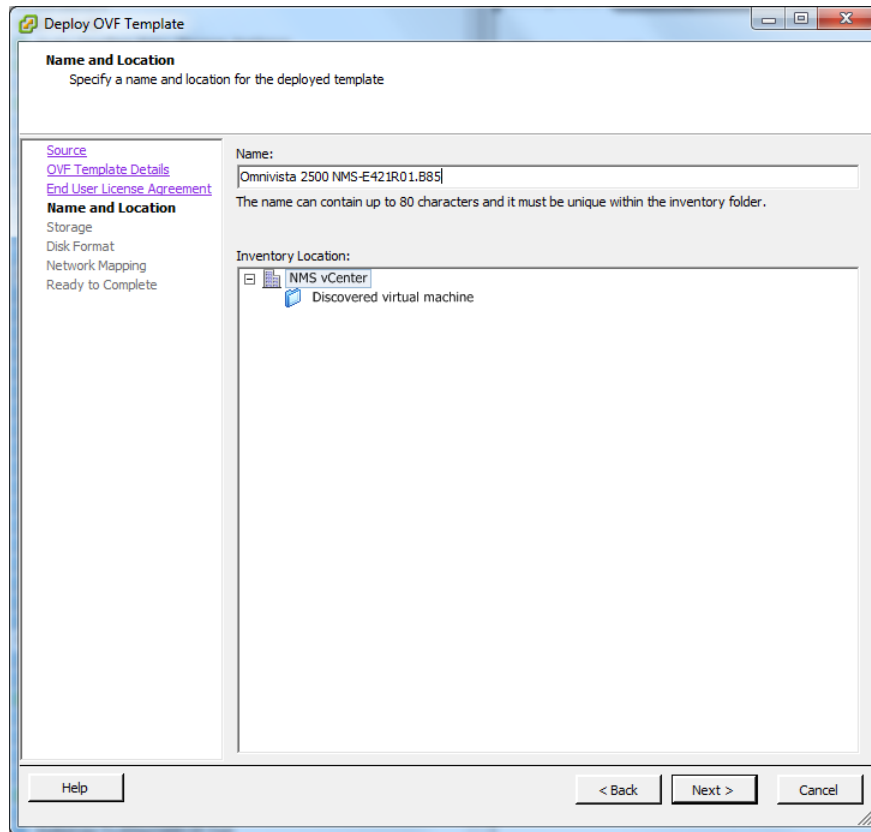
8. Specify a Name and Inventory Location for the deployed template (e.g., Omnivista 2500 NMS-E421R01.B85), then click **Next**.

9. If you have configured a Resource Pool, the Resource Pool Screen (below) appears. Select the host server and click **Next**.
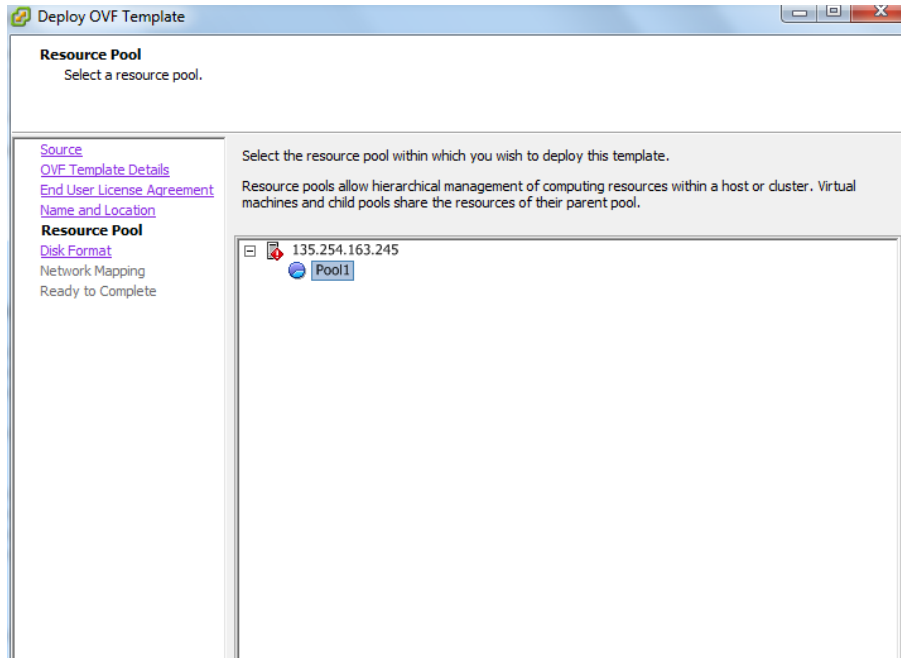
If a host server only has storage configured, the Disk Format Screen will appear. If you have multiple storage locations configured, the Storage Screen (below) appears. Select the destination storage where the template is to be deployed, then click **Next**.
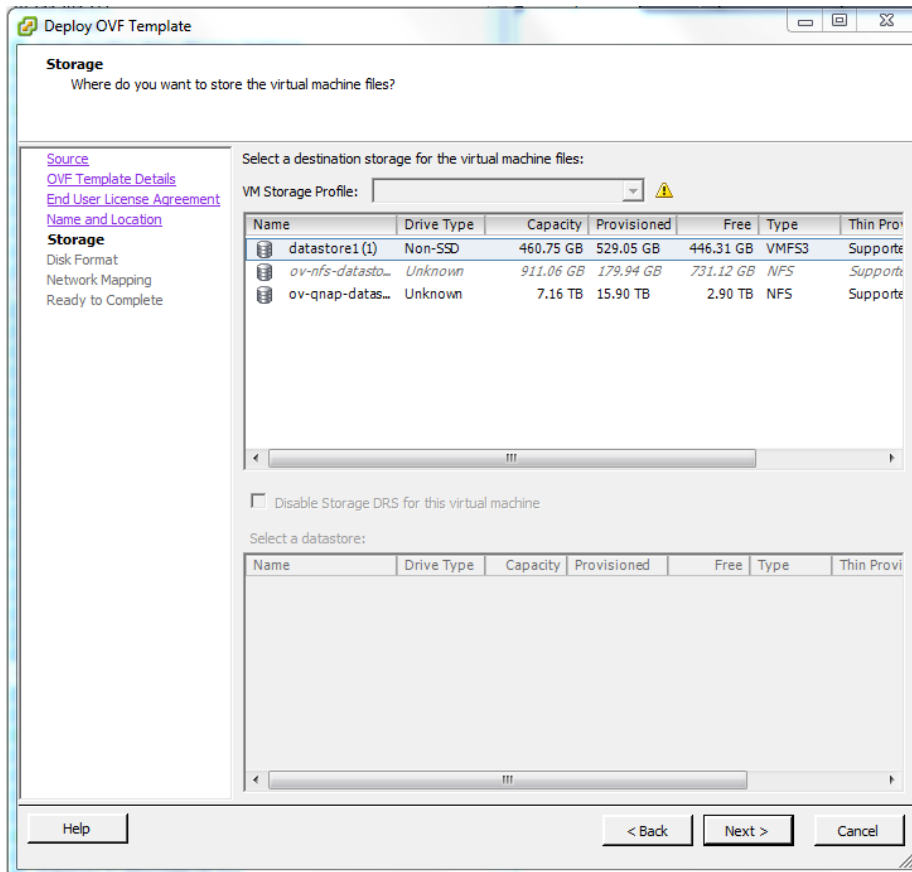
The Disk Format Screen appears.
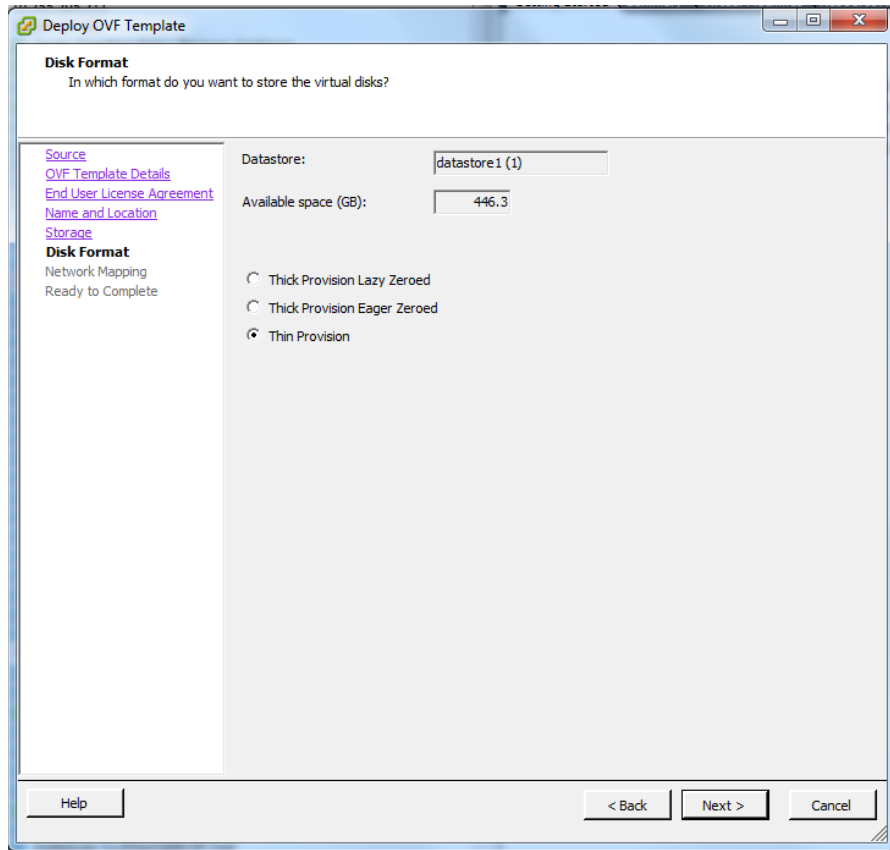
10. Select **Thin Provision**, then click **Next**. The Network Mapping Screen appears.
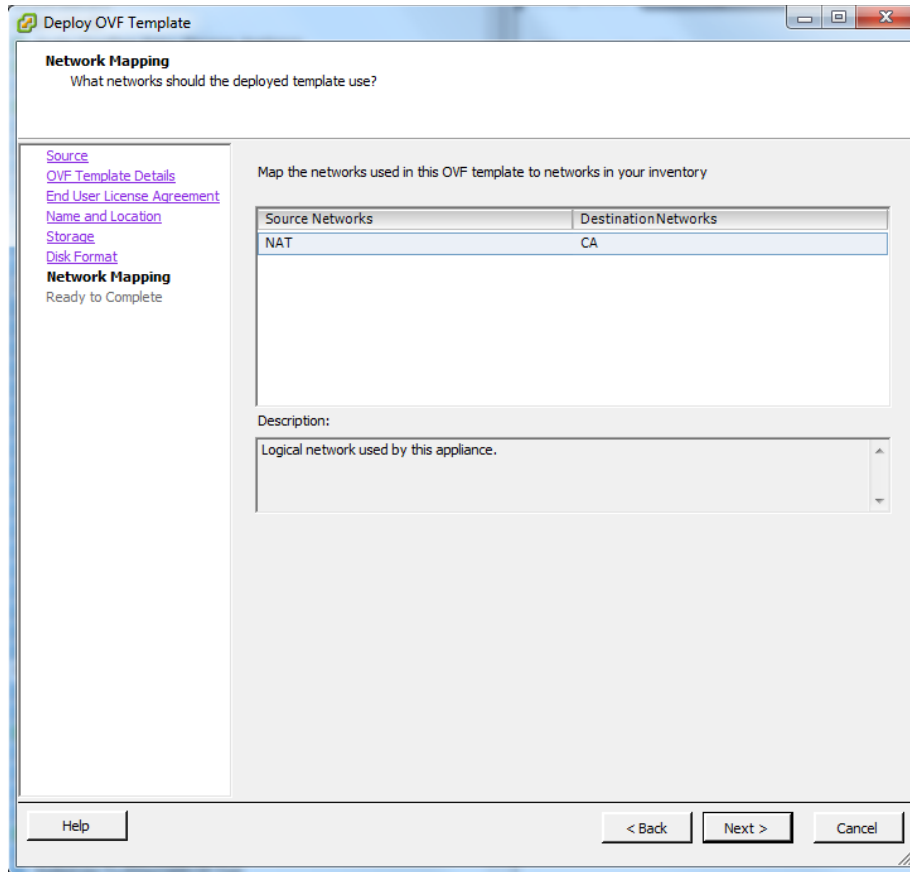
11. Select network that the deployed OVF template will use, then click **Next**. The Ready to Complete Screen appears.
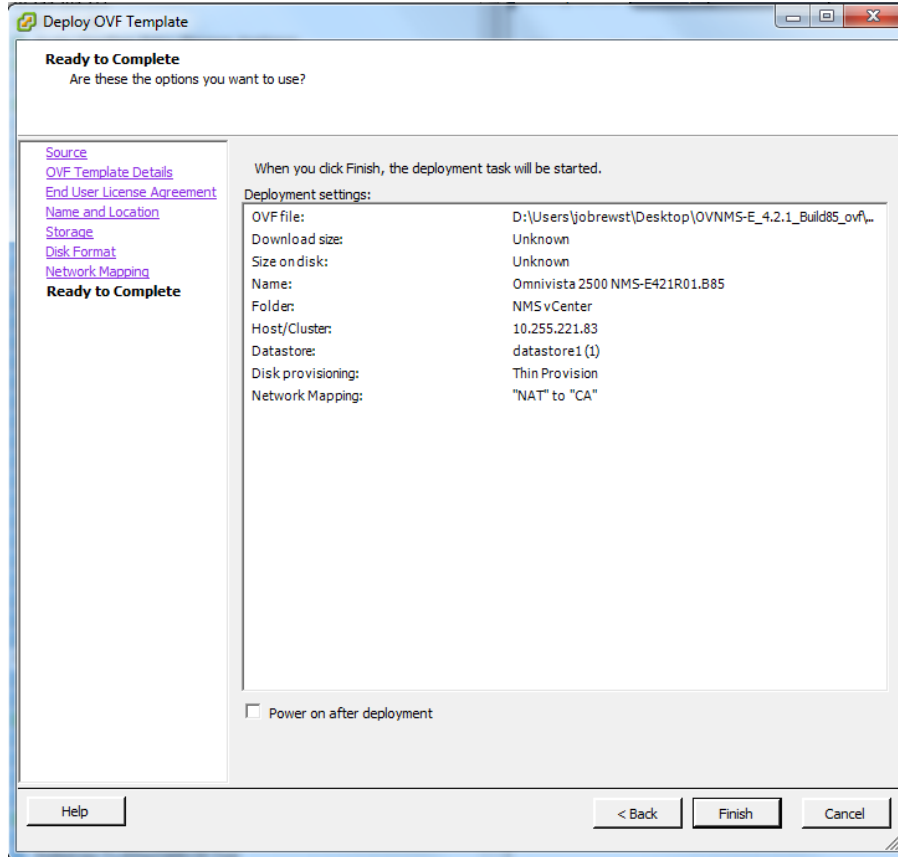
12. Review the configuration and click **Finish**. (You can select the "Power on after deployment" option to automatically power on the VA when deployment is complete.) A status window appears and displays the progress of the deployment. If you select the "Close this dialog when completed" option, the progress window will automatically close when the deployment is complete. If not, click **Close** at the completion of the deployment to close the window.
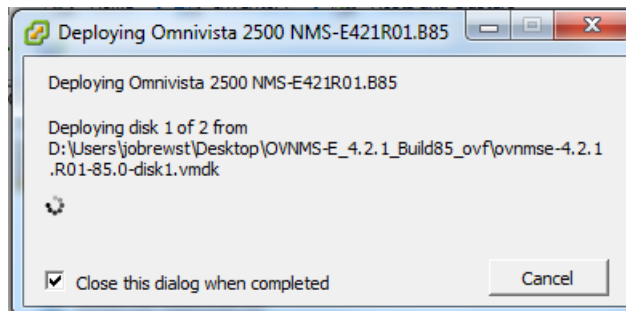
13. If the new Virtual Appliance was not powered on via the deployment wizard, power on the VM now. Right-click on the VM in the Navigation Tree and select **Power - Power On**.

Once the Virtual Appliance is powered on, go to Completing the OmniVista 2500 NMS-E 4.2.1.R01 Installation to complete the installation.

Deploying the Virtual Appliance in VirtualBox

Note that in the instructions below, VirtualBox 5.0.10 in Windows 7 is used for demonstration purposes.

> **Note:** If you are deploying OV 2500 NMS-E 4.2.1.R01 on a standalone Windows or Linux machine, you must first install Virtual Box on the machine. Virtual Box is available as a free download. See Appendix A for details.

1. Download and unzip the OVF package.

2. Log into Windows 7 and open the Oracle VM VirtualBox tool.
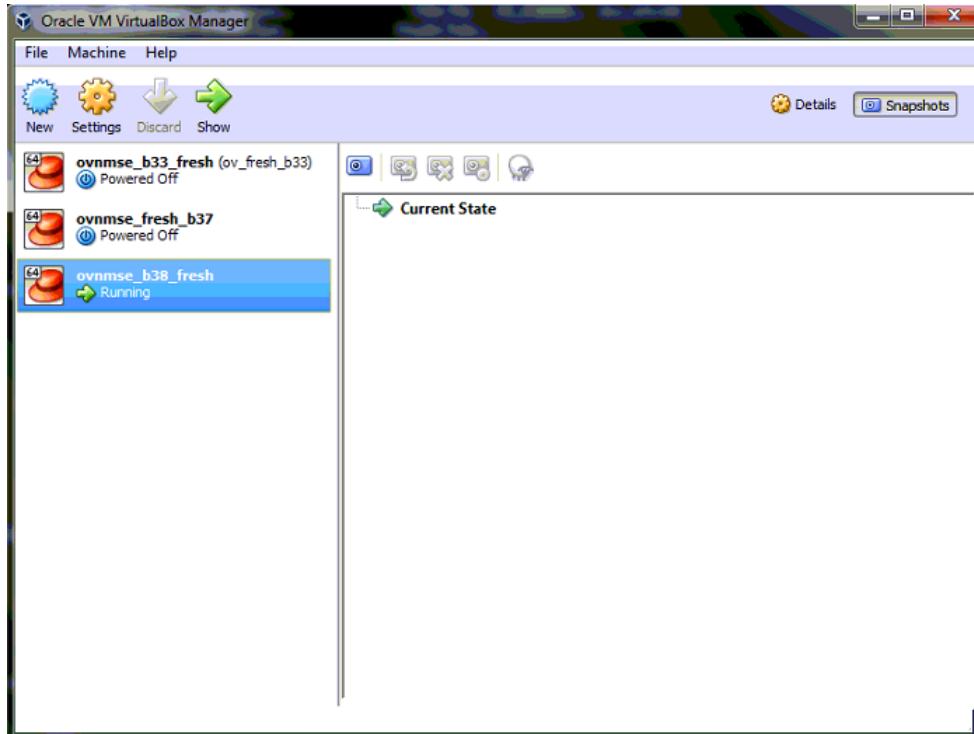
3. Click **File > Import Appliance**.
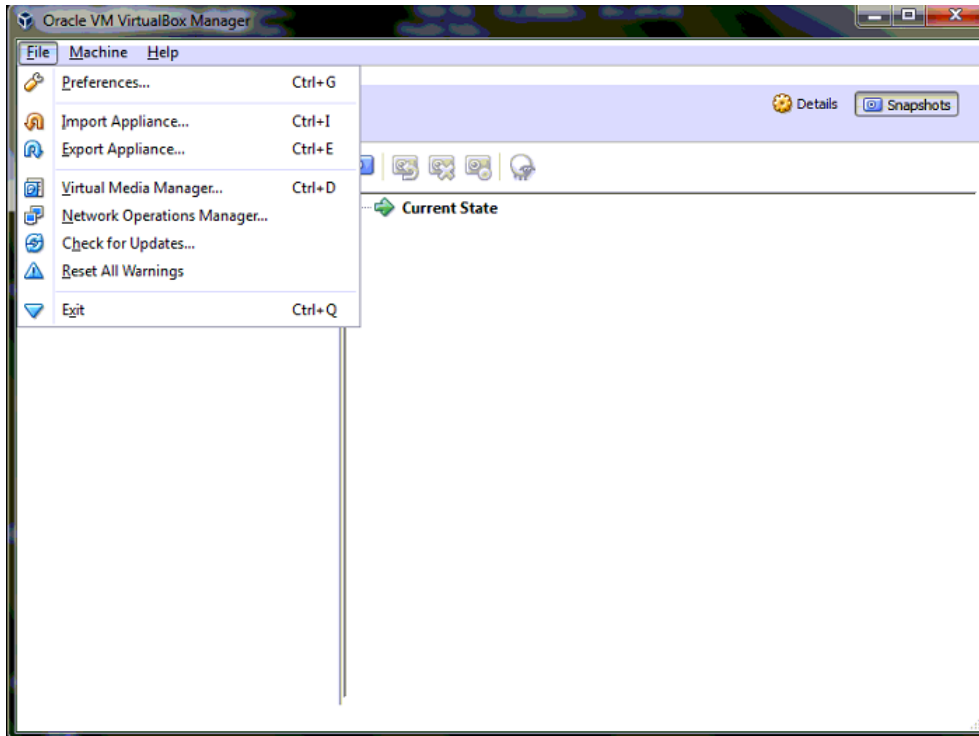
4. Click **browse** icon then select the **folder** which you extracted at step 1 above, then click **Next**.
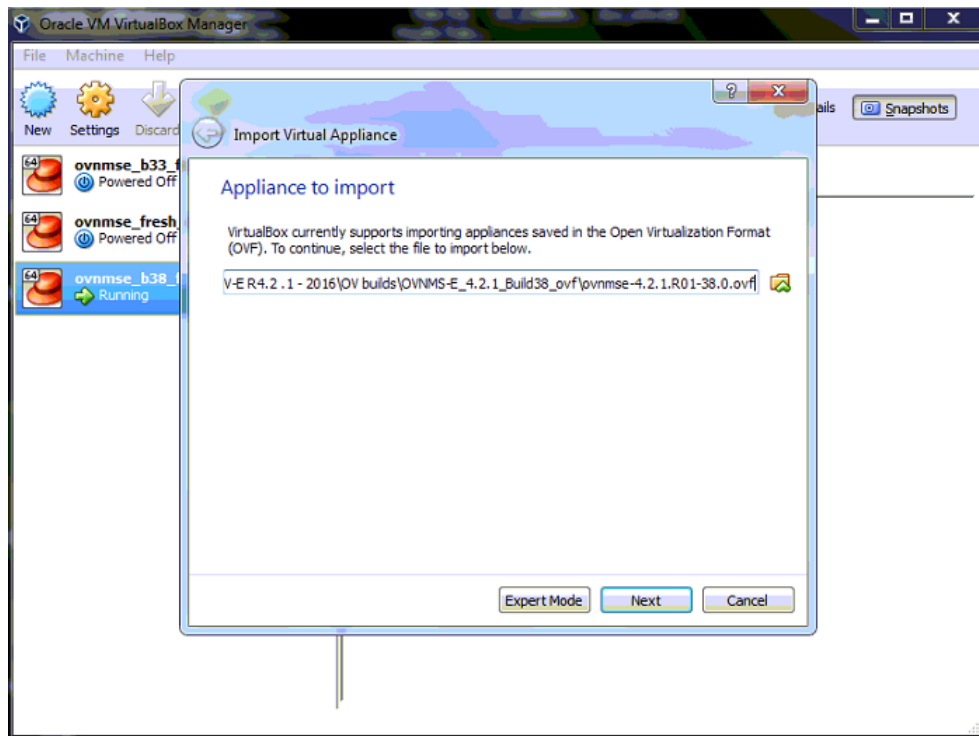
5. Review the configuration and click **Import**.
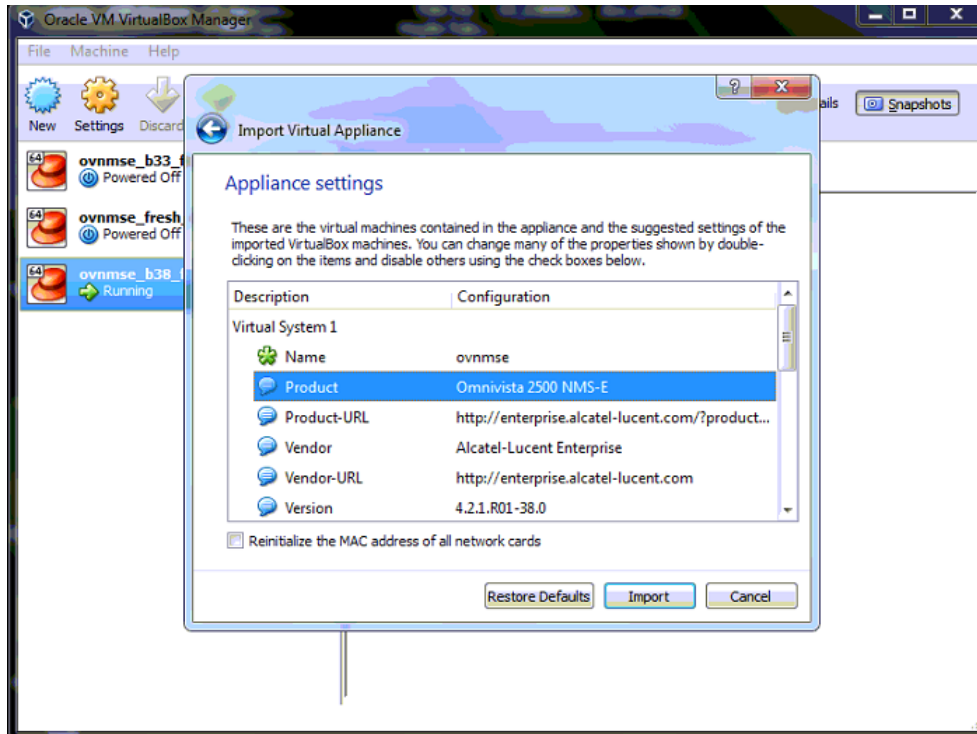
6. The **Software License Agreement** window displays, click on **Agree**.
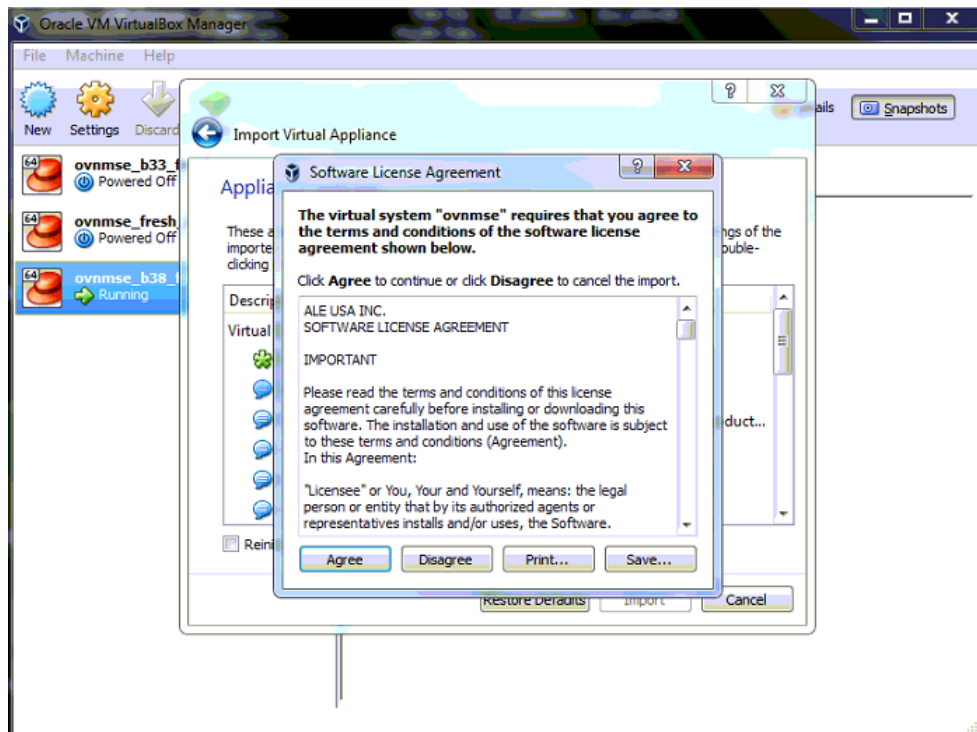
7. A status window appears and displays the progress of the deployment.
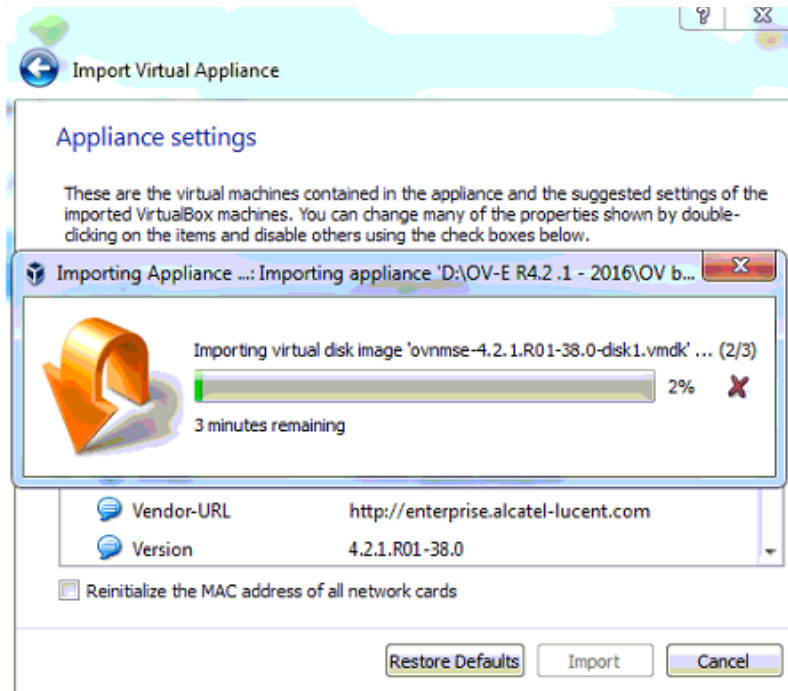
8. After the process is completed, right-click on the VM in the Navigation Panel and select **Start - Normal Start**.
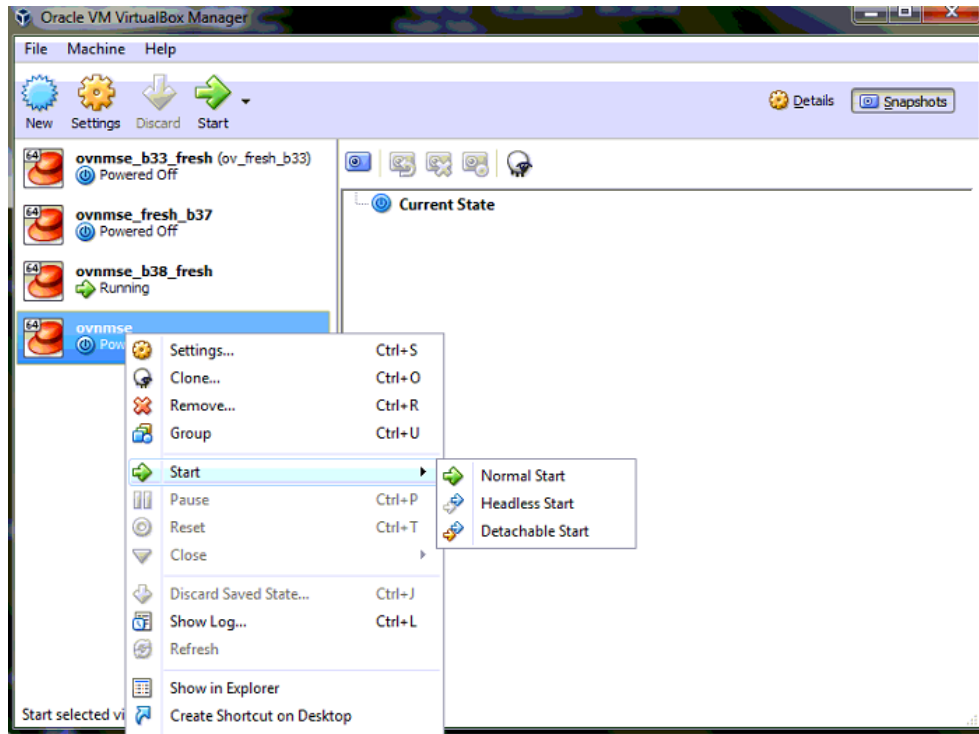
9. Configure the Network Adapter. Right-click on the VA and select **Settings**.
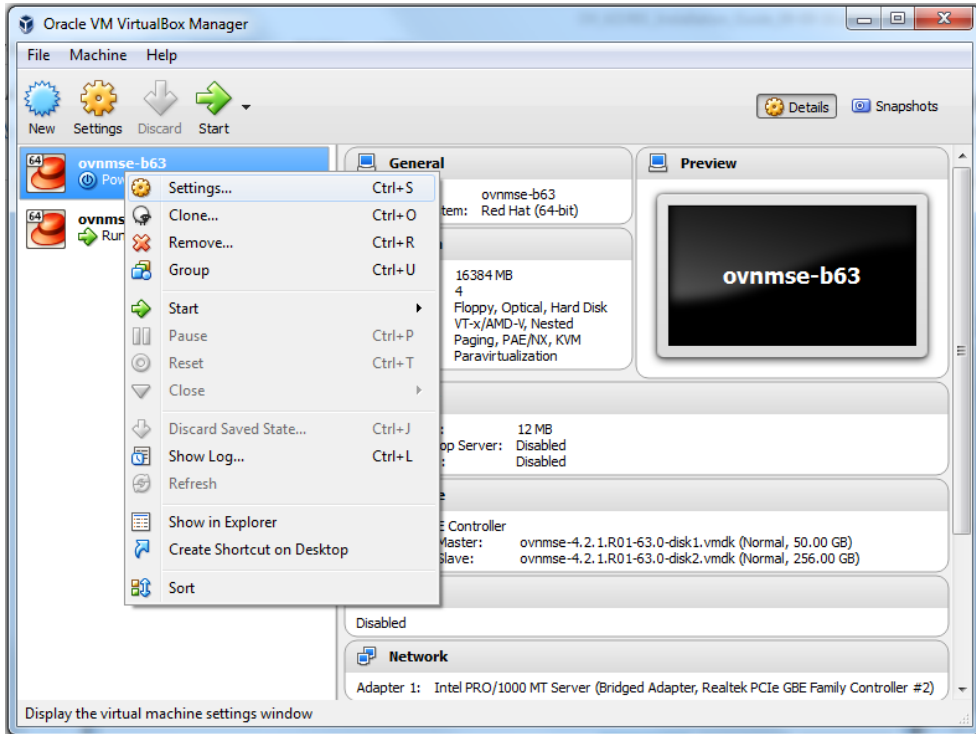
**10.** Select **Network**, then select the Network Adaptor that you created when you configured VirtualBox.
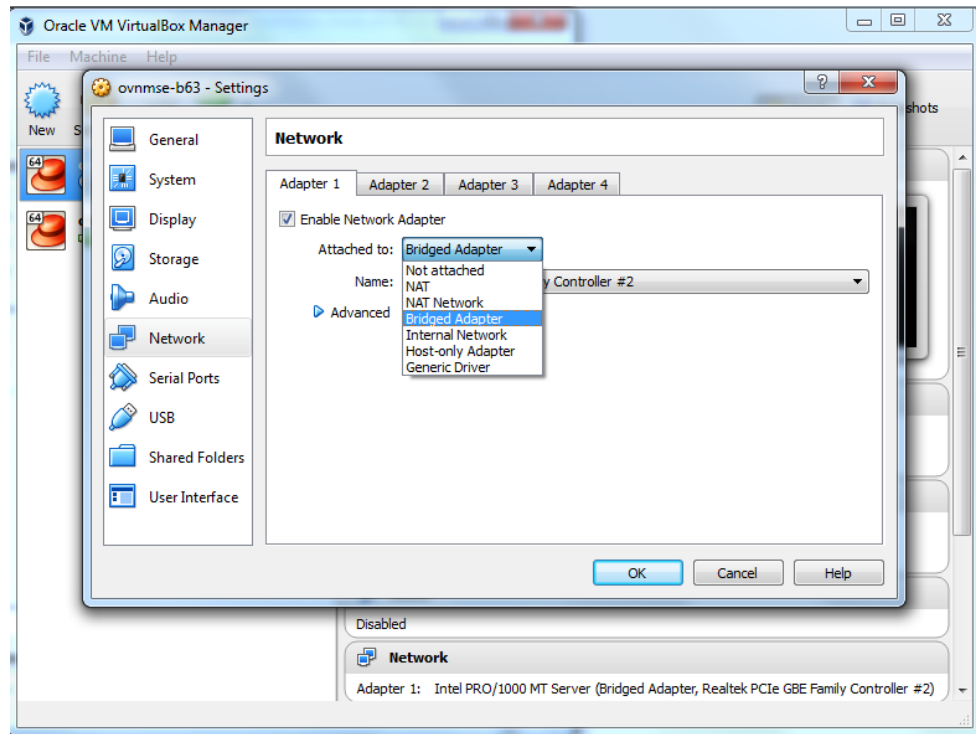
Once the Virtual Appliance is powered on, go to Completing the OmniVista 2500 NMS-E 4.2.1.R01 Installation to complete the installation.

Deploying the Virtual Appliance in Hyper-V

Note that in the instructions below, Hyper-V in Windows 2012 is used for demonstration purposes.

1. Download and unzip the OVF Hyper-V package.

2. Log into Windows 2012 and open the Hyper-V tool.
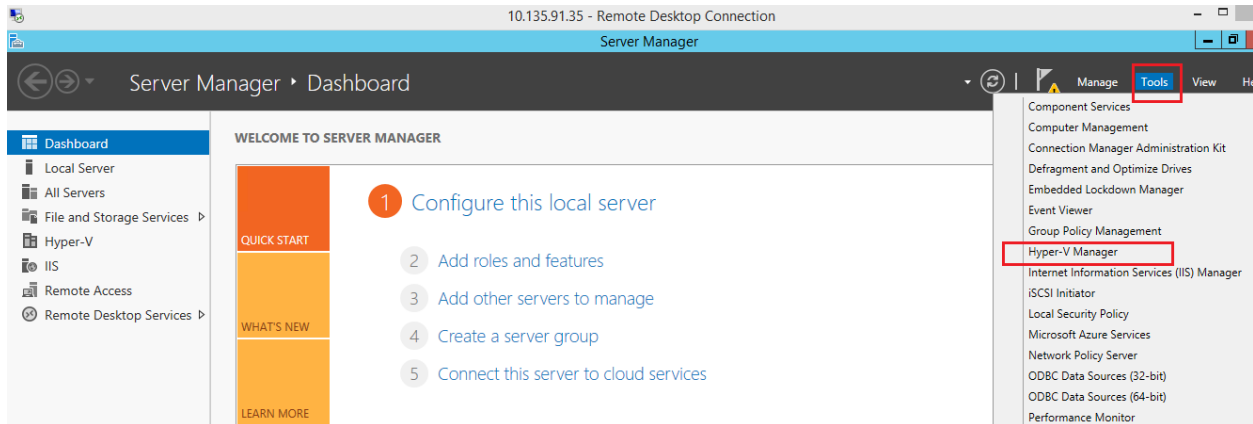
3. Select the Host on which you want to install OmniVista 2500 NMS, click on **Actions > Import Virtual Machine**.
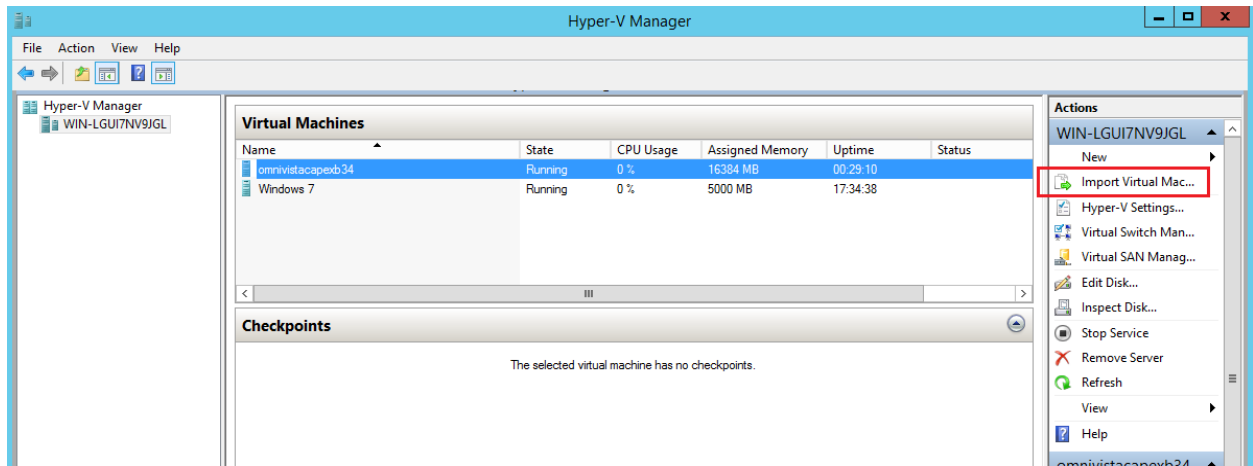
4. The Import Virtual Machine Wizard appears.
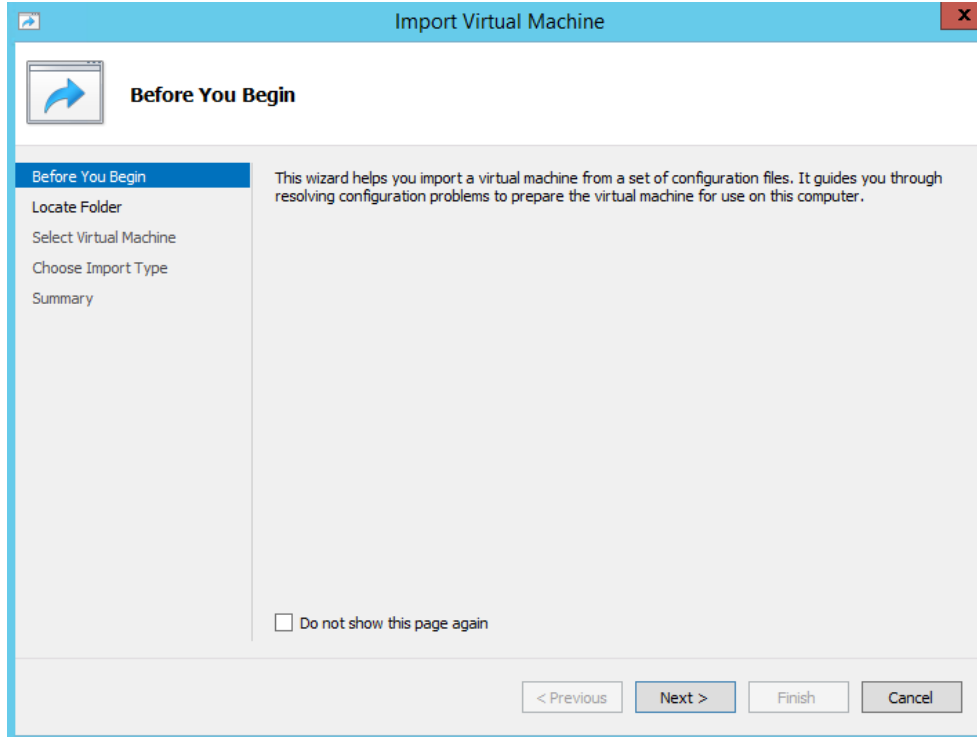
5. Click **Next** to go to the Locate Folder Screen, select the **Folder** that you extracted in Step 1, then click **Next**.
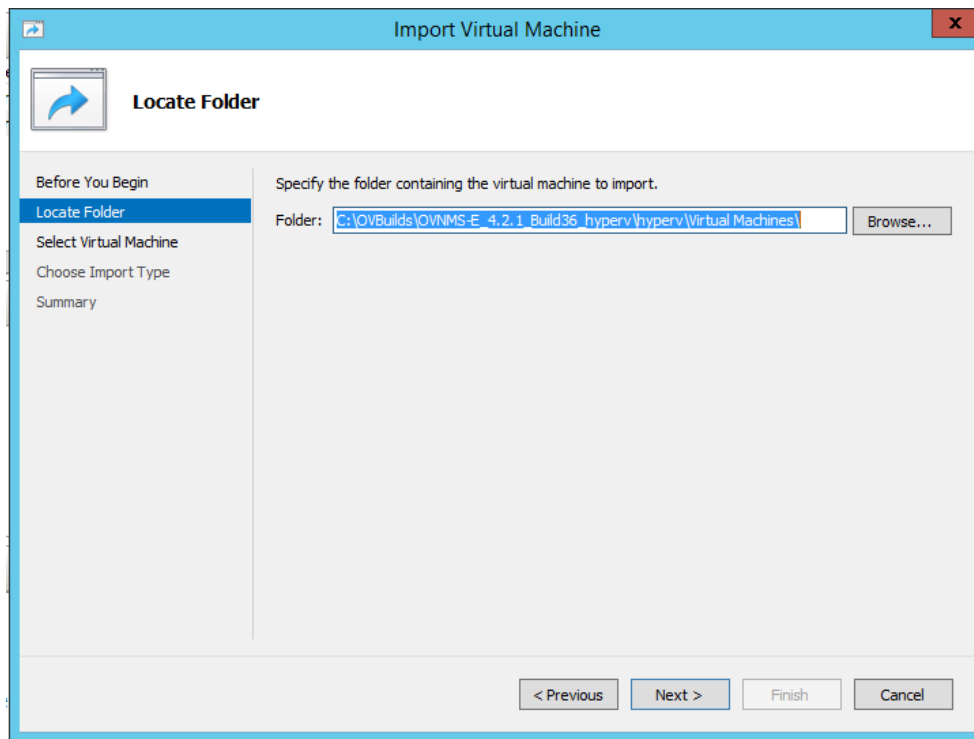
6. Select the Virtual Machine to import (Default = **OmniVista-2500 NMS-E-4.2.1.R01**), then click **Next**.
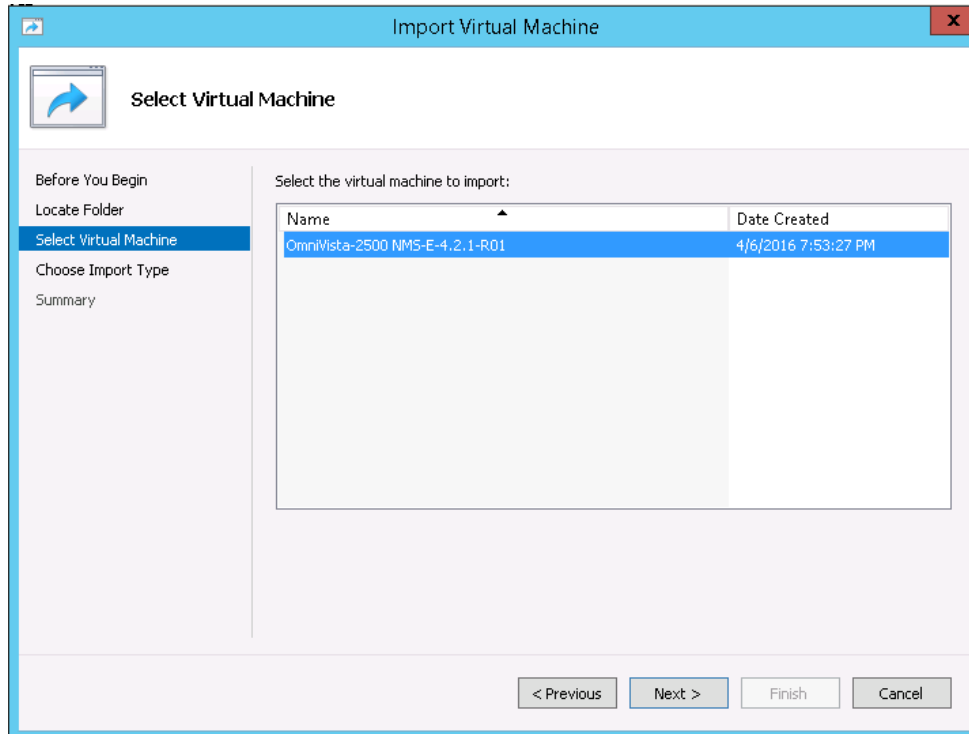
7. Select the default Import Type: **Copy the virtual machine (create a new unique ID)**, then click **Next**.
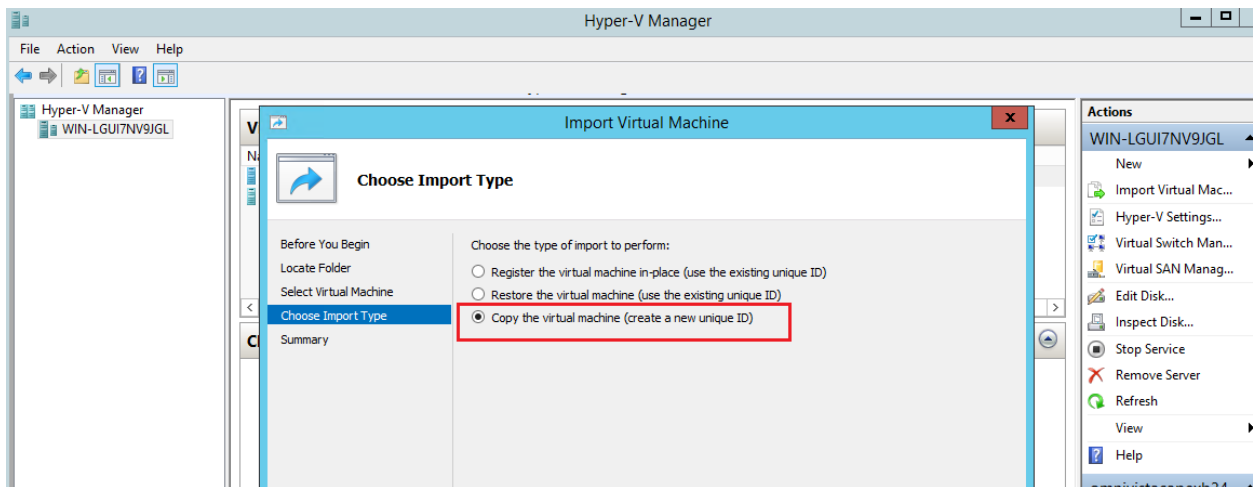
8. Specify folders to store the Virtual Machine files (or accept the default folders), then click **Next**.
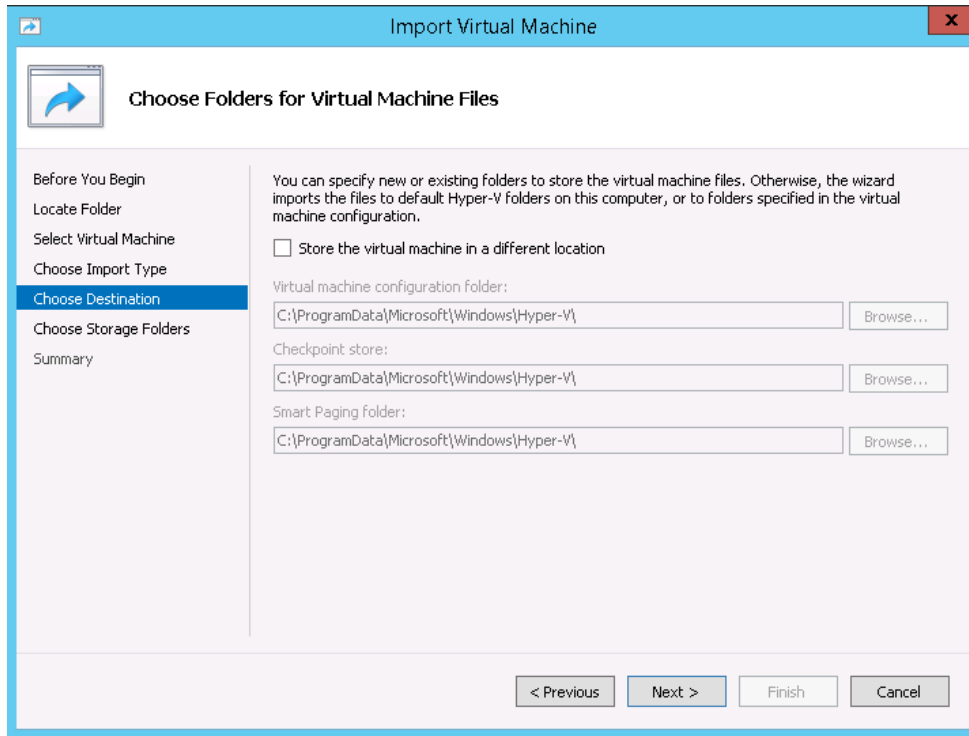
9. Choose folders to store the Virtual Hard Disks or accept the default location and click **Next**.
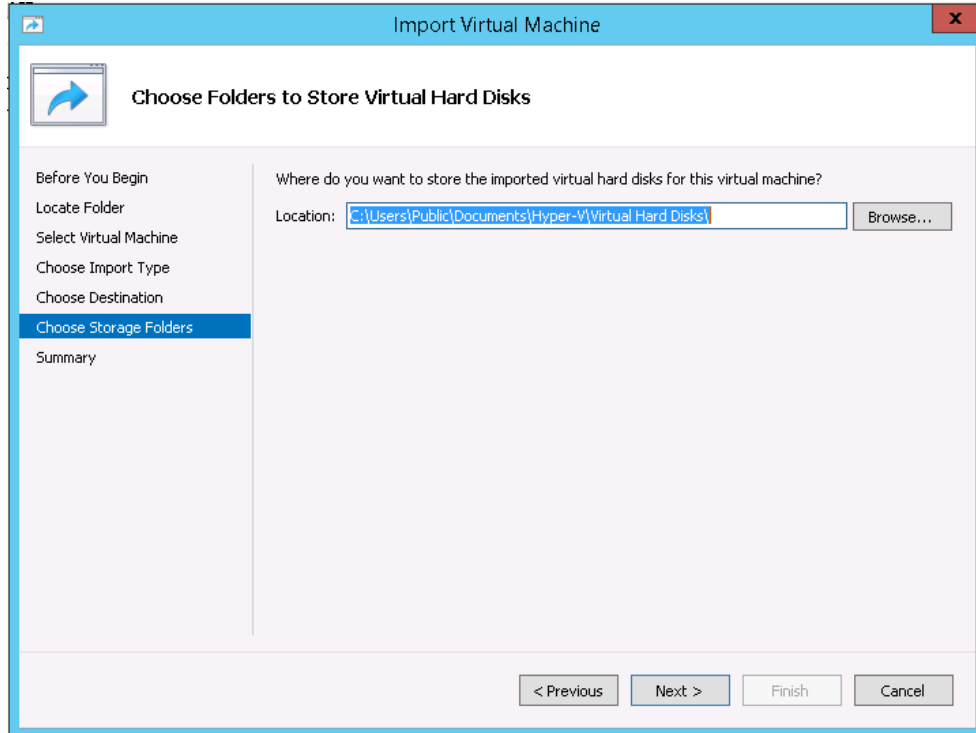
10. Review the import configuration and click **Finish**. (Click **Previous** to return to a screen and make changes.)

11. Configure the Network Adapter. Right-click on the VA and select **Settings**.
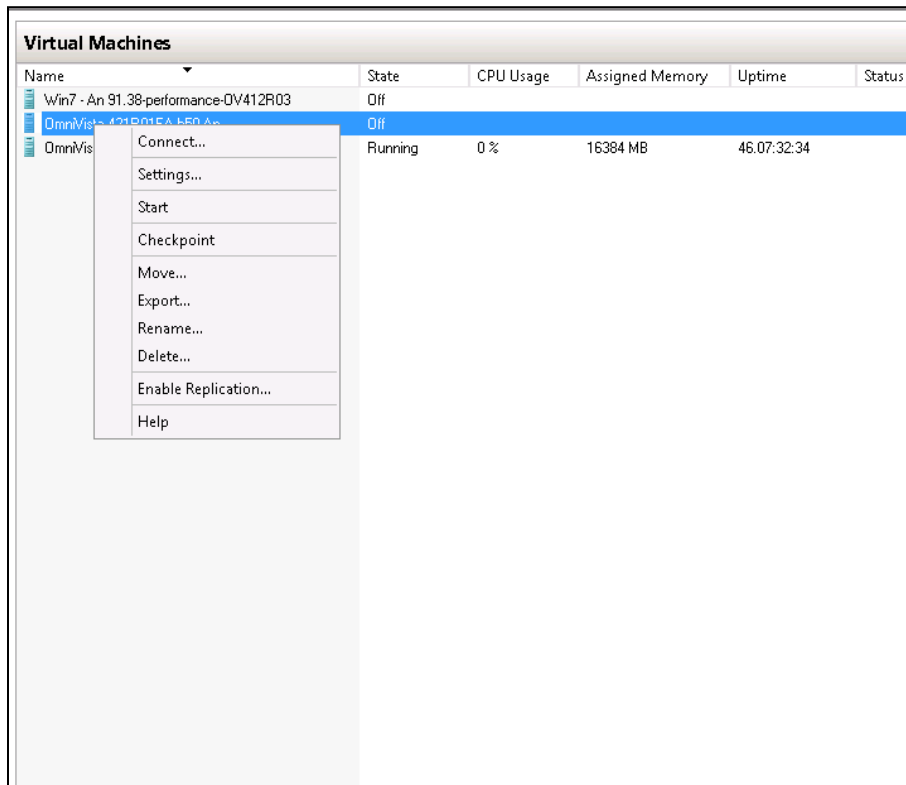
12. Select **Network Adapter**, then select the Virtual Switch that you created when you configured Hyper-V.
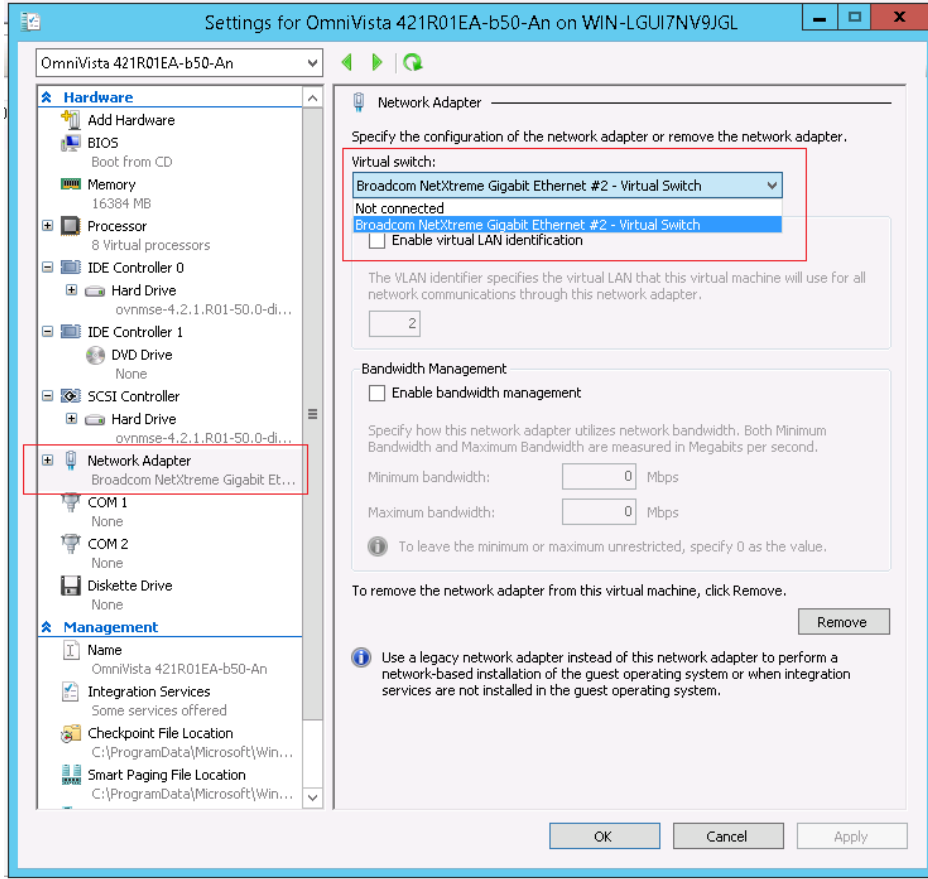
After the process is completed, right-click on the VM in the Navigation Panel and select **Start**. Once the Virtual Appliance is powered on, go to Completing the OmniVista 2500 NMS-E 4.2.1.R01 (MR 1) Installation to complete the installation.

Completing the OmniVista 2500 NMS-E 4.2.1.R01 (MR 1) Installation

Follow the steps in the following sections to complete the OV 2500 NMS-E 4.2.1.R01 (MR 1) installation.

1. Launch the Console for the new VM. (In vCenter, this can be done by right-clicking on the VM in the Navigation Tree and selecting **Open Console**.) The password prompt appears.

2. Specify a new administrative password, then re-enter to confirm the new password. Press
Enter to configure System IP.

> **Note:** Follow the guidelines on the screen when creating the password. Be sure to store the
> password in a secure place. Users will be prompted for the password at the end of the
> installation. Lost passwords cannot be retrieved.

```
******************************************************************************
* Configure IP                                                              *
******************************************************************************
(*) Please input IPv4: 10.255.221.228
Please input subnet mask [255.0.0.0]: 255.255.255.0
Would you like to configure:
        IPv4: 10.255.221.228
        subnet mask: 255.255.255.0
[y|n] (y): y
The configuration has been set
Press [Enter] to continue
```

3. Enter an IPv4 address.

4. Enter the IPv4 network mask.

5. Press **y** and **Enter** to confirm, then press **Enter** to continue.

6. The **Memory Configuration Based on Network Size** option is displayed.

```
******************************************************************************
* Memory Configuration Based on Network Size                                *
******************************************************************************
Choose the number of devices:
[1] Low (lower than 500)
[2] Medium (500-2000)
[3] High (2000-5000)
[4] Very High (5000-10000)
(*) Type your option: _
```

Select the number of devices OV 2500 NMS-E 4.2.1.R01 (MR 1) will manage. To select a
range, enter its corresponding number at the command prompt (e.g., enter **2** for Medium).
Ranges include:

- Low (fewer than 500 devices)
- Medium (500 to 2,000 devices)
- High (2,000 to 5,000 devices)
- Very High (5,000 to 10,000 devices).

Press **y** and **Enter** to confirm, then press **Enter** to display the Configure the Virtual Appliance
Main Menu.

7. The Configure The Virtual Appliance Main Menu is displayed.

```
************************************************************************
* Configure The Virtual Appliance                                     *
************************************************************************
* [1] Help                                                            *
* [2] Display Current Configuration                                   *
* [3] Configure IP                                                    *
* [4] Configure Ports                                                 *
* [5] Configure Default Gateway                                       *
* [6] Configure Hostname                                              *
* [7] Configure DNS Server                                            *
* [8] Configure Timezone                                              *
* [9] Configure Route                                                 *
* [10] Configure Network Size                                         *
* [11] Configure Keyboard Layout                                      *
* [12] Update SSL Certificate                                         *
* [13] Configure NTP Client                                           *
* [14] Configure Proxy                                                *
* [15] Import JRE CA Certificate                                      *
* [0] Exit                                                            *
************************************************************************
```

8. Enter **2** and press **Enter** to display the current configuration.

```
************************************************************************
* Current configuration                                              *
************************************************************************
Product Name: Alcatel-Lucent Enterprise OmniVista 2500 NMS 4.2.1.R01 MR
Build Number: 85
Patch Number: 0
Build Date: 01/24/2017

IPv4 Address: 10.255.221.228
NetMask: 255.255.255.0

HTTP Port: 80
HTTPS Port: 443

Default gateway v4:

Hostname: omnivista


Timezone: America/Los_Angeles

Data LVM size: 256G
Data LVM available (free) space: 235G

Network Size: Low (lower than 500) devices


License CORE: Not Yet Applied
License VMM: Not Yet Applied

Proxy Status: Disabled
Proxy is not set

Press [Enter] to continue
_
```

The current OV appliance configuration is displayed. You can go to the Configure The Virtual Appliance Menu to configure additional settings (e.g., Default Gateway, Proxy, DNS) that may be required to access OV 2500 NMS-E 4.2.1.R01 (MR 1) and perform upgrades. Please configure other settings as required. See the *OmniVista 2500 NMS-E 4.2.1.R01 Installation Guide (Rev. D) for VA Menu information.*

Note: OV 2500 NMS-E 4.2.1.R01 (MR 1) makes an HTTPS connection to the OmniVista 2500 NMS External Repository for upgrade software, Application Visibility Signature Files, and ProActive Lifecycle Management. If the OmniVista 2500 NMS Server has a direct connection to the Internet, a Proxy is not required. Otherwise, a Proxy should be configured to enable OV 2500 NMS-E 4.2.1.R01 (MR 1) to connect to the OmniVista 2500 NMS External Repository.

9. Press **Enter**. The Virtual Appliance Menu is displayed again.

10. After completing all required settings (and after all services are running), enter *https://<OVServerIPaddress>* in a supported browser to launch OV 2500 NMS-E 4.2.1.R01 (MR 1).

Note: If you changed the default HTTPs port (443) during VA configuration, you must enter the port after the IP address (e.g., *https://<OVServerIPaddress>:<HTTPsPort>).*

Upgrading From OV 2500 NMS-E 4.2.1.R01 GA

Follow the steps below to use the "Upgrade/Restore" option in the Virtual Appliance Menu to upgrade from OV 2500 NMS-E 4.2.1.R01 GA to OV 2500 NMS-E 4.2.1.R01 (MR 1). Remember, if you are upgrading from an older version (3.5.7 or 4.1.2.R03), you must first upgrade to 4.2.1.R01 GA before upgrading to 4.2.1.R01 (MR 1). See the *OmniVista 2500 NMS-E 4.2.1.R01 Installation Guide (Rev. D) for details*. **It is recommended that you perform a VM backup prior to the upgrade.**

Note: OV 2500 NMS-E 4.2.1.R01 makes an HTTPS connection to the OmniVista 2500 NMS External Repository for software upgrades. If the OmniVista 2500 NMS Server has a direct connection to the Internet, a Proxy is not required. If a Proxy has not been configured, select **2 - Configure The Virtual Appliance** on the Virtual Appliance Menu, then select **14 – Configure Proxy**.

1. Open a Console on the OV 2500 NMS-E 4.2.1.R01 GA Virtual Appliance.

2. On the Virtual Appliance Menu, select option **4 - Upgrade/Restore VA**.

```
********************************************************************************
* Upgrade VA                                                                  *
********************************************************************************
* [1] Help                                                                    *
* [2] 4.2.1.R01 (Current Release)                                             *
* [3] Enable Repository (Selected - ALE Central Repo)                         *
* [4] Configure Custom Repositories                                           *
* [5] Configure "Update Check Interval" (Selected - Disabled)                 *
* [6] Restore OV2500 NMS Data                                                 *
* [0] Exit                                                                     *
********************************************************************************
(*) Type your option:
```

3. On the Upgrade VA Menu, select option **2 - 4.2.1.R01 (Current Release)**. Information on the current installation is displayed and OmniVista checks the OV Repository for the latest upgrade packages.

```
********************************************************************************
(*) Type your option: 2

Current version of Virtual Appliance
Product Name: Alcatel-Lucent Enterprise OmniVista 2500 NMS 4.2.1.R01 GA
Build Number: 70
Patch Number: 0

Checking available packages for 4.2.1.R01 operation is in progress...
Upgrade information for 4.2.1.R01
Available Packages
Name        : ovnmse
Arch        : x86_64
Version     : 4.2.1.R01
Release     : 84.0.el7
Size        : 381 M
Repo        : CustomRepo1_4.2.1.R01
Summary     : Alcatel-Lucent Enterprise OmniVista 2500 NMS-E
URL         : http://enterprise.alcatel-lucent.com/?product=OmniVista2500NetworkManagementSystem&amp
;page=overview
License     : ALE USA Inc.
Description : Alcatel-Lucent Enterprise OmniVista 2500 NMS-E

Would you like to upgrade the package [y|n] (n):
```

In the example above, the current Build Number is 70 (shown in the "Current Version" section at the top of the screen). The available upgrade is Build 84 (shown in the "Available Packages" section - Release: 84.0.e17).

> **Note:** If you are unable to connect to the ALE Central Repository, you will receive the following error message instead of the screen above: "Please check the connectivity of your repository configuration". Configure the Proxy and/or DNS Settings and try again. Proxy and DNS configuration is available in the Configure The Virtual Appliance Menu (from the Virtual Appliance Menu, select **2 - Configure The Virtual Appliance** to access the menu).

> **4.** At the "Would you like to upgrade the package" prompt, type **y** and press **Enter**. You will be reminded to perform a backup before proceeding with the upgrade.

```
Would you like to upgrade the package [y|n] (n): y
This operation can result in data loss or corruption. We advise taking a VM snapshot prior to this.
Are you ready to proceed [y|n] (n): _
```

5. Type **y** and press **Enter** to begin the upgrade. The upgrade may take 30 – 45 minutes. When the upgrade is complete, a "Completion" message will appear and the VM will automatically reboot.

6. When the reboot is complete, log into the VM. You can verify the upgrade by going to the Virtual Appliance Menu and selecting option **4 - Upgrade/Restore VA**, then selecting option **2 - 4.2.1.R01 (Current Release)**. The current OmniVista Release information is displayed (e.g., Build Number: 84).

```
Current version of Virtual Appliance
Product Name: Alcatel-Lucent Enterprise OmniVista 2500 NMS 4.2.1.R01 MR
Build Number: 84
Patch Number: 0

Checking available packages for 4.2.1.R01 operation is in progress...
No package available for 4.2.1.R01
Press [Enter] to continue
```

Appendix A – Installing Virtual Box

If you are deploying OV 2500 NMS-E 4.2.1.R01 on a standalone Windows or Linux machine, you must first install Virtual Box on the machine. Virtual Box is available as a free download.

Go to https://www.virtualbox.org/wiki/Download_Old_Builds_5_0_pre18. Scroll down to **Virtual Box 5.0.10** and click on the applicable download link (e.g., Windows Hosts, Linux Hosts). The sections below provide procedures for installing Virtual Box on Windows or Linux Hosts. See the Oracle VM Virtual Box documentation for additional information.

Supported Hosts

Virtual Box runs on the following host operating systems:

- **Windows Hosts:**
  - Windows Vista SP1 and later (32-bit and 64-bit).
  - Windows Server 2008 (64-bit)
  - Windows Server 2008 R2 (64-bit)
  - Windows 7 (32-bit and 64-bit)
  - Windows 8 (32-bit and 64-bit)
  - Windows 8.1 (32-bit and 64-bit)
  - Windows 10 RTM build 10240 (32-bit and 64-bit)
  - Windows Server 2012 (64-bit)
  - Windows Server 2012 R2 (64-bit).
- **Linux Hosts (32-bit and 64-bit):**
  - Ubuntu 10.04 to 15.04
  - Debian GNU/Linux 6.0 ("Squeeze") and 8.0 ("Jessie")
  - Oracle Enterprise Linux 5, Oracle Linux 6 and 7
  - Redhat Enterprise Linux 5, 6 and 7
  - Fedora Core / Fedora 6 to 22
  - Gentoo Linux
  - openSUSE 11.4, 12.1, 12.2, 13.1
  - Mandriva 2011.

Installing Virtual Box on Windows Hosts

The Virtual Box installation can be started by double-clicking on the downloaded executable file (contains both 32- and 64-bit architectures), **or** by entering:

```
VirtualBox.exe –extract
```

on the command line. This will extract both installers into a temporary directory in which you will find the usual .MSI files. You can then perform the installation by entering:

```
msiexec /i Virtual Box-<version>-MultiArch_<x86|amd64>.msi
```

In either case, this will display the installation welcome dialog and allow you to choose where to install Virtual Box to and which components to install. In addition to the Virtual Box application, the following components are available:

- USB Support:
  - This package contains special drivers for your Windows host that Virtual Box requires to fully support USB devices inside your virtual machines.
- Networking
  - This package contains extra networking drivers for your Windows host that Virtual Box needs to support Bridged Networking (to make your VM's virtual network cards accessible from other machines on your physical network).
- Python Support
  - This package contains Python scripting support for the Virtual Box API. For this to work, an working Windows Python installation on the system is required.

The Virtual Box 5.0.10 Setup Wizard will guide you through the installation. Depending on your Windows configuration, you may see warnings about "unsigned drivers", etc. Please allow these installations as otherwise Virtual Box might not function correctly after installation.

With standard settings, Virtual Box will be installed for all users on the local system; and the installer will create a "Virtual Box" group in the Windows "Start" menu which allows you to launch the application and access its documentation.

Installing Virtual Box on Linux Hosts

Virtual Box is available in a number of package formats native to various common Linux distributions. In addition, there is an alternative generic installer (.run) which should work on most Linux distributions.

Note: If you want to run the Virtual Box graphical user interfaces, the following packages must be installed before starting the Virtual Box installation (some systems will do this for you automatically when you install Virtual Box):

- Qt 4.8.0 or higher;
- SDL 1.2.7 or higher (this graphics library is typically called `libsdl` or similar).

Specifically, Virtual Box, the graphical Virtual Box manager, requires both Qt and SDL. VBoxSDL, our simplified GUI, requires only SDL. If you only want to run VBoxHeadless, neither Qt nor SDL are required.

Installing Virtual Box From a Debian/Ubuntu Package

Download the appropriate package for your distribution. The following examples assume that you are installing to a 32-bit Ubuntu Raring system. Use `dpkg` to install the Debian package:

```
sudo dpkg -i virtualbox-5.0_5.0.10_Ubuntu_raring_i386.deb
```

You will be asked to accept the Virtual Box Personal Use and Evaluation License. Unless you answer "yes" here, the installation will be aborted.

The installer will also search for a Virtual Box kernel module suitable for your kernel. The package includes pre-compiled modules for the most common kernel configurations. If no suitable kernel module is found, the installation script tries to build a module itself. If the build process is not successful, a warning is displayed and the package will be left unconfigured. In this case, check `/var/log/vbox-install.log` to find out why the compilation failed. You may have to install the appropriate Linux kernel headers.

After correcting any problems, enter `sudo rcvboxdrv setup` to start a second attempt to build the module. If a suitable kernel module was found in the package or the module was successfully built, the installation script will attempt to load that module.

Once Virtual Box has been successfully installed and configured, you can start it by selecting "Virtual Box" in your start menu or from the command line.

Using the Alternative Installer (VirtualBox.run)

The alternative installer performs the following steps:

- It unpacks the application files to the target directory, `/opt/Virtual Box/`, which cannot be changed.
- It builds the Virtual Box kernel modules (`vboxdrv, vboxnetflt` and `vboxnetadp`) and installs them.
- It creates `/sbin/rcvboxdrv`, an init script to start the Virtual Box kernel module.
- It creates a new system group called `vboxusers`.
- It creates symbolic links in `/usr/bin` to the a shell script (`/opt/Virtual Box/VBox`) which does some sanity checks and dispatches to the actual executables, `Virtual Box, VBoxSDL, VBoxVRDP, VBoxHeadless` and `VboxManage`.
- It creates `/etc/udev/rules.d/60-vboxdrv.rules`, a description file for udev, if that is present, which makes the USB devices accessible to all users in the `vboxusers` group.
- It writes the installation directory to `/etc/vbox/vbox.cfg`.

The installer must be executed as root with either `install` or `uninstall` as the first parameter.

```
sudo ./VirtualBox.run install
```

If you do not have the "sudo" command available, run the following as root instead:

```
./VirtualBox.run install
```

Then put every user requiring access to USB devices from Virtual Box guests into the group `vboxusers`, either through the GUI user management tools or by running the following command as root:

```
sudo usermod -a -G vboxusers username
```

> **Note:** The `usermod` command of some older Linux distributions does not support the `-a` option (which adds the user to the given group without affecting membership of other groups). In this case, determine the current group memberships using the `groups` command and add these groups in a comma-separated list to the command line after the `-G` option (e.g., `usermod -G group1,group2,vboxusers username`.)

Performing a Manual Installation

If, for any reason, you cannot use the shell script installer described previously, you can also perform a manual installation. Invoke the installer by entering:

```
./VirtualBox.run --keep --noexec
```

This will unpack all the files needed for installation in the `install` directory under the current directory. The Virtual Box application files are contained in `VirtualBox.tar.bz2` which you can unpack to any directory on your system. For example:

```
sudo mkdir /opt/Virtual Box
sudo tar jxf ./install/VirtualBox.tar.bz2 -C /opt/Virtual Box
```

or as root:

```
mkdir /opt/Virtual Box
tar jxf ./install/VirtualBox.tar.bz2 -C /opt/Virtual Box
```

The sources for VirtualBox's kernel module are provided in the `src` directory. To build the module, change to the directory and issue the following command:

```
make
```

If everything builds correctly, issue the following command to install the module to the appropriate module directory:

```
sudo make install
```

If you do not have sudo, switch the user account to root and enter:

```
make install
```

The Virtual Box kernel module needs a device node to operate. The above make command will tell you how to create the device node, depending on your Linux system. The procedure is slightly different for a classical Linux setup with a `/dev` directory, a system with the now deprecated `devfs` and a modern Linux system with `udev`.

On certain Linux distributions, you might experience difficulties building the module. You will have to analyze the error messages from the build system to diagnose the cause of the problems. In general, make sure that the correct Linux kernel sources are used for the build process. Note that the `/dev/vboxdrv` kernel module device node must be owned by root:root and must be read/writable only for the user.

Next, you will have to install the system initialization script for the kernel module:

```
cp /opt/Virtual Box/vboxdrv.sh /sbin/rcvboxdrv
```

(assuming you installed Virtual Box to the `/opt/Virtual Box` directory) and activate the initialization script using the right method for your distribution, you should create VirtualBox's configuration file:

```
mkdir /etc/vbox
echo INSTALL_DIR=/opt/Virtual Box > /etc/vbox/vbox.cfg
```

and, for convenience, create the following symbolic links:

```
ln -sf /opt/Virtual Box/VBox.sh /usr/bin/Virtual Box
ln -sf /opt/Virtual Box/VBox.sh /usr/bin/VBoxManage
ln -sf /opt/Virtual Box/VBox.sh /usr/bin/VBoxHeadless
ln -sf /opt/Virtual Box/VBox.sh /usr/bin/VBoxSDL
```