

# Active Fabric Manager (AFM) Installation Guide 2.5



# Notes, Cautions, and Warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your computer.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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2014 - 4

Rev. A0X

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# Configure Active Fabric Manager as a Virtual Appliance

You can deploy the Active Fabric Manager (AFM) as virtual appliance on a VMware® ESX® virtual machine. In this guide, you learn how to configure the AFM as a virtual appliance. The instructions in this document assume you have already installed and configured an ESX host where you plan to run AFM. For additional information about installing and configuring the ESX virtual host machine, consult the VMware documentation.

 **NOTE:** To deploy the AFM using the RPM installation instead of the OVF, see [RPM Installation](#).

**To configure AFM as a virtual appliance:**

1. [Review the Prerequisites](#)
2. [Deploy the OVF Template](#)
3. [Start the AFM VM](#)
4. [Manage the AFM Virtual Appliance](#)
5. [Perform Initial Configuration](#)

## Prerequisites

 **NOTE:** If you are using the AFM VM as a syslog and a TFTP or FTP server, you do not need to gather the following information.

Before you begin, gather the following information:

- Obtain your local or remote DHCP information.
- Define whether you want to use a Telnet or SSH session within the fabric
- Obtain the SNMP community string. By default, it is private for set and public for get.
- Syslog IP addresses — IP address of remote syslog server.
- TFTP or FTP server address — IP address of TFTP or FTP server for the Dell Networking Operating System FTOS software images and configuration files during bare metal provisioning (BMP). If you are using an FTP server, obtain the user name and password.
- If you are using the **Active Link Settings** option, gather the following OMNM server information:
  - OMNM server IP address
  - Communication protocol (HTTP or HTTPS)
  - User name and password

See [OMNM Requirements](#).

# Hardware Requirements

**Table 1. Hardware Requirements**

Hardware	Requirement
Processor	Intel® Xeon® E5620 2.4Ghz, 12M Cache, Turbo, HT, 1066MHz Max Mem
System Type	64-bit operating system
Memory	32GB Memory (8x4GB), 1333MHz Dual Ranked LV RDIMMs for 2 Processors, Advanced ECC
Disk Space	1TB 7.2K RPM SATA 3.5 Hot Plug Hard Drive

## Virtual Appliance Requirements

AFM runs as a virtual appliance. It requires the following software to host the solution:


- VMware® vSphere® Hypervisor (ESXi) 5.1 and higher (must meet virtual appliance, port access, and listening port requirements)

 **NOTE:** VMware® vCenter™ is required for HA and FT.

## Deploy the OVF with HA and FT

The following are required to implement High Availability (HA) and Fault Tolerance (FT) using a VMware® ESX® Virtual Machine:


- VMware® vCenter™ 5.0 Standard License
- ESXi® 5.0 Enterprise Plus License
- Dell M1000e chassis, if you are using MXL blade or IOA blade switches.
- Shared storage for the OVF

 **NOTE:** By default, the AFM VM CPU is set to 2. To use the HA feature, change the virtual CPU to 1.

## Deploy the OVF without HA and FT

The following are required to deploy AFM without the HA/FT solution, using a VMware® ESX® Virtual Machine:


- VMware® ESXi® 5.0 Open Source License
- Servers (rack or blade switch). If you are using MXL blade or IOA blade switches, requires a M1000e blade chassis.
- Shared storage for the OVF

 **NOTE:** By default, the AFM VM CPU is set to 2.

## Deploy the OVF with HA

When you deploy the AFM with HA only using a VMware® ESX® VM, the requirements are as follows:

- VMware® ESXi® 5.0 Open Source License
- Shared storage for the OVF

 **NOTE:** By default, the AFM VM CPU is set to 2. To use the HA feature, change the virtual CPU to 1.

## AFM Client Browser Requirements

- Internet Explorer® 9 and higher
- Firefox® 12 and higher


## OMNM Requirements

The following is required to use the OMNM feature on the AFM:

- OMNM Server, Release 5.3 and higher
- The OMNM server is **not** installed on the same server as the AFM. To activate the performance statics, login directly as write permission into Dell OMNM web service.

For information about how to install and configure OMNM, see the following URL:

<http://www.dell.com/support/Manuals/us/en/555/Product/dell-openmanage-network-manager>.

 **Important:** By default, the web service is turn off in the OMNM server.

**To use the OMNM web service:**

1. On the OMNM server go to the server installation directory.
2. Navigate to the **installed.properties** file at **C:\ProgramFiles\Dell\OpenManage\Network Manager\owareapps\installprops\lib**
3. Turn off Application Server and Synergy Network Management server.
4. Add the following three lines in the **installed.properties** file:

```
com.dorado.core.ws.disable=false
com.dorado.core.ws.legacy.soap.enabled=true
oware.webservices.authrequired=false
```
5. Turn on the **Resource Monitoring** option to enable performance monitoring.
6. Start the application server and synergy network management server.

## Port Usage

The following table lists the default ports used by the various AFM services. To troubleshoot connectivity issues with the AFM server, use the following table:

**Table 2. Ports**

Port	Description
20 & 21	FTP
22	SSH and SCP (communication to switches and CLI access to AFM server)
23	Telnet (communication to switches)
67 & 68	DHCP
69	TFTP
80	AFM server port listening for client connection and requests
8080	OMNM client connection
8089	OMNM web service port
8443	OMNM client HTTPS connection
123	NTP
161	For the SNMP get and set protocol between AFM server and switch.
162	For the SNMP trap listener between AFM server and switch.
443	For the HTTPS communication protocol where the AFM takes requests from the client browser.
5432	Database server
8080	TCP/UDP
61616	ActiveMQ

## Disabling VMotion on an ESX/ESXi Host

For information on how to disable VMotion® on an VMware® ESX/ESXi® host, see the VMware documentation at [http://kb.vmware.com/selfservice/microsites/search.do?language=en\\_US&cmd=displayKC&externalId=1010376](http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1010376) or perform a search in the VMware knowledge using the key words "Disabling VMotion® on an ESX/ESXi host".




# Step 1: Deploy the OVF Template

You can deploy the Open Virtualization Format (OVF) template with the VMware ESX virtual machines.


## Deploy the OVF Template Using a VMware ESX Virtual Machine

Before you can configure and use AFM, deploy the provided OVF template on a VM on your ESX/ESXi server.


 **Important:** By default, the AFM VM CPU is set to 2. To use the HA, FT, or both, change the virtual CPU to 1.

**To deploy the AFM OVF with the vSphere client:**

1. Start the VMware® vSphere 5.1 client on your ESX® server or vCenter™.
2. Copy the AFM OVF template files from the directory where you have stored the AFM package to the location that the vSphere client can access it.

 **NOTE:** If you are using HA or HA with FT, make sure that the OVF uses shared storage. To enable FT, select the virtual host and then right click to select the **Fault Tolerance > Turn On Fault Tolerance** option.

3. In the vSphere client, select **File > Deploy OVF Template**.
4. Choose the **Deploy from file** option and browse to where you copied the AFM OVF file.
5. Select the AFM.ovf file and then click the **Next** button.


 **Important:** At the **Disk Format** screen, make sure you select the **Thick Provision Lazy Zero** option to ensure that the AFM has the required disk space for all storage to be immediately allocated.

6. Start the VM. See [Step 2: Start the VM](#).




## Step 2: Start the Virtual Machine

After you have completed the OVF wizard and finished deploying the template, you can start the AFM VM console.

 **NOTE:** Before you start the VM console, modify the VM settings as needed using the **Edit Settings** option.

1. Start the VM by clicking on its name and choosing **Power > Power On**.
2. Open the VM **Console** by right clicking on its name and choosing **Open Console**.
3. Open the **Console**, and log in with the default credentials. The first time you log in from the console or SSH using **superuser**, if there is an IP assigned to the VM, the AFM prompts you to change the password for **superuser**. This password is used for both the web URL login and console login.

 **Important:** The AFM user name is **superuser** and password is **Superuser1**.

When the software requires an ESXi Shell CLI command, the ESXi Shell CLI user name is **superuser** and the password is **Superuser1**.


4. Once the VM is powered on, an IP address is automatically assigned to the VM when the DHCP is available. If no IP is assigned to the VM (which means that the DHCP is not enabled), AFM prompts you with following message: "There is no IP address assigned. Press the <Enter> to start doing network configuration.". If this message is displayed, press the **Enter** key and do the following:
  - a. Select the **Configure System** option and press the **Enter** button.
  - b. When the network configuration warning message appears, Enter 'Y' to continue.  
The **Select Action** screen displays.
  - c. Select the **Device configuration** option. To navigate between elements, use the **Tab** and down arrow keys.  
The **Network Configuration** screen displays.
  - d. In the **Static IP** field, specify the static IP Address of the AFM server. To verify connectivity, ping the IP address assigned to the AFM. If the destination host is unreachable assign the same IP address.
  - e. Select **OK** to save your changes.
  - f. Select **Quit** to exit this screen.
5. Manage the AFM virtual appliance. See [Step 3: Manage the AFM Virtual Appliance](#)



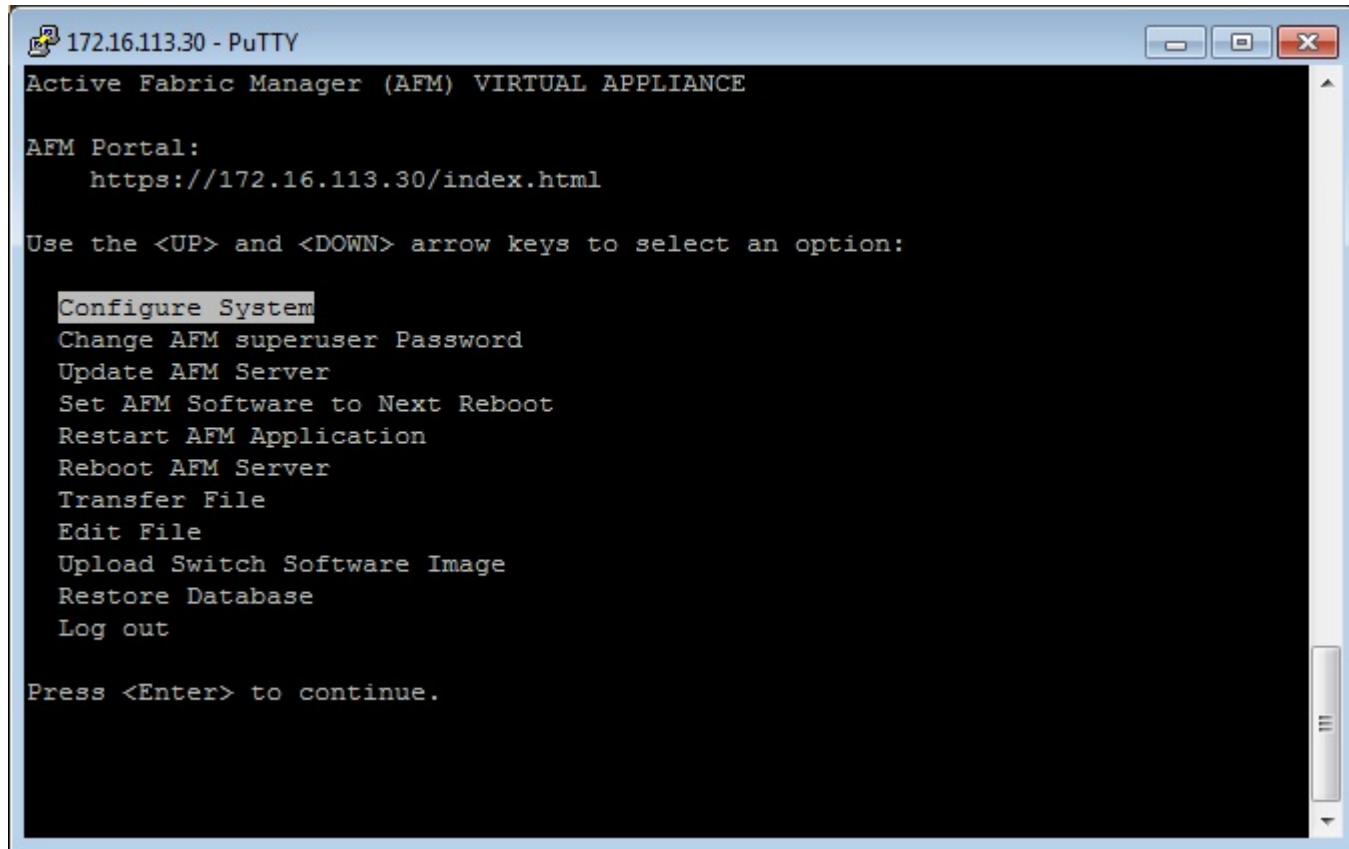
## Step 3: Manage the AFM Virtual Appliance

After you have deployed the AFM OVF and performed the initial configuration, you can use the AFM Virtual Appliance to perform the following tasks:

- [Configure the System](#)
- [Change the AFM superuser password](#)
- [Update the AFM Server](#)
- [Set AFM Software to the Next Reboot](#)
- [Restart AFM Application](#)
- [Restart the AFM Server \(VM\)](#)
- [Transfer Files](#)
- [Edit Files](#)
- [Upload Switch Software Image](#)
- [Restore Database](#)
- [Log out](#)

 **NOTE:** To access the AFM virtual appliance, go to the AFM VM, click the **Console** button and then login as superuser. The first time you log in from the console or SSH using "superuser", if there is an IP assigned to the VM, the AFM prompt you to change the password for "superuser". This password is used for both the web URL login and console login. If no IP is assigned to the VM (which means that the DHCP is not enabled), AFM prompts you to do the network configuration. The VM then reboots.

The AFM virtual appliance options are shown in the following screen shot.

The image shows a PuTTY terminal window titled "172.16.113.30 - PuTTY". The terminal output is as follows:

```
Active Fabric Manager (AFM) VIRTUAL APPLIANCE

AFM Portal:
  https://172.16.113.30/index.html

Use the <UP> and <DOWN> arrow keys to select an option:

  Configure System
  Change AFM superuser Password
  Update AFM Server
  Set AFM Software to Next Reboot
  Restart AFM Application
  Reboot AFM Server
  Transfer File
  Edit File
  Upload Switch Software Image
  Restore Database
  Log out

Press <Enter> to continue.
```

Figure 1. AFM Virtual Appliance Options

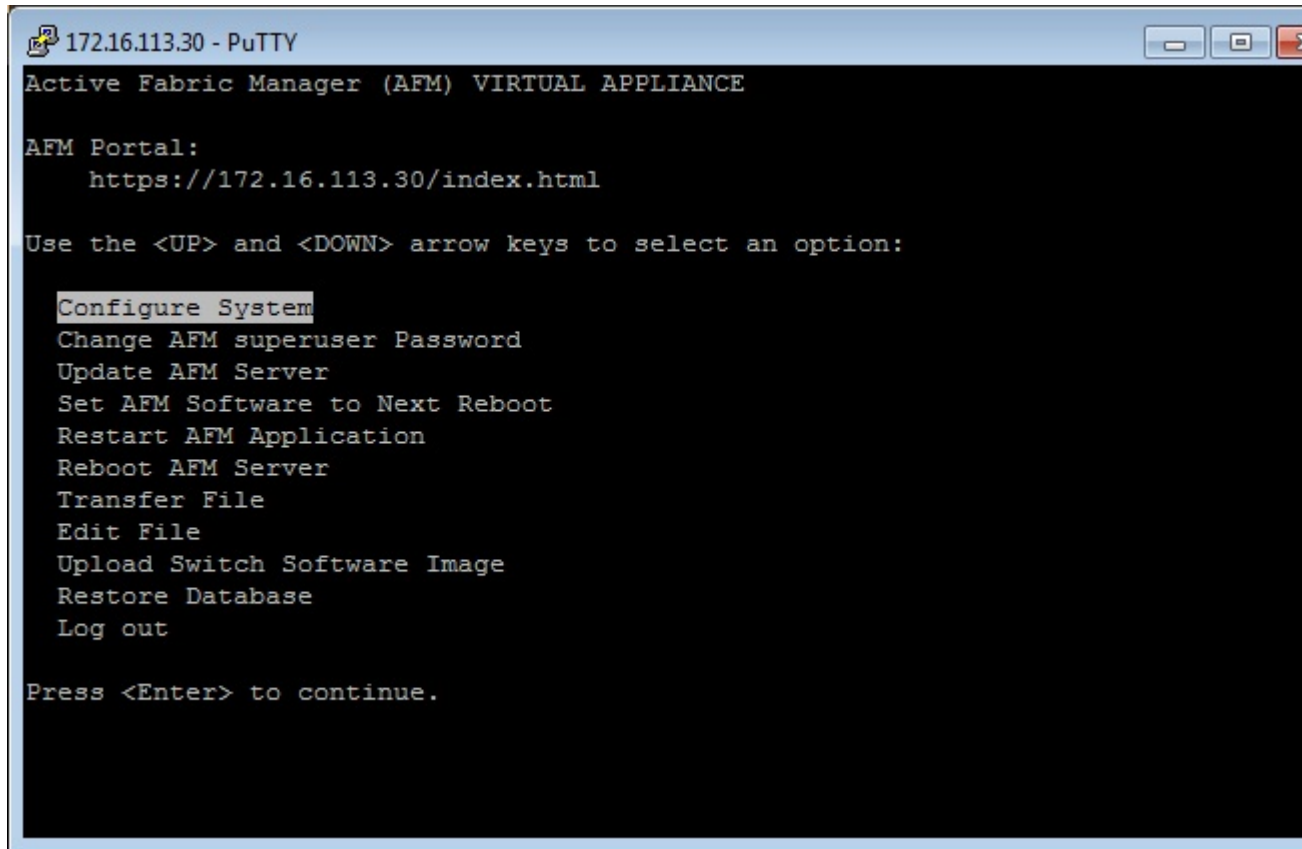
## Configuring the System

To configure the device settings, use the **Configure System** option.

- **Device configuration** (Network Configuration) — Use this option to use a static IP to the AFM Ethernet controller, change another device **eth0** attribute, or add a new device such as a new interface.
- **DNS configuration** — Use this option to configure the AFM DNS settings.

**To configure device settings:**

1. Select the **Configure System** option and press the **Enter** button.



```
172.16.113.30 - PuTTY
Active Fabric Manager (AFM) VIRTUAL APPLIANCE

AFM Portal:
  https://172.16.113.30/index.html

Use the <UP> and <DOWN> arrow keys to select an option:

Configure System
Change AFM superuser Password
Update AFM Server
Set AFM Software to Next Reboot
Restart AFM Application
Reboot AFM Server
Transfer File
Edit File
Upload Switch Software Image
Restore Database
Log out

Press <Enter> to continue.
```

Figure 2. Configure System

The following network configuration warning message displays.

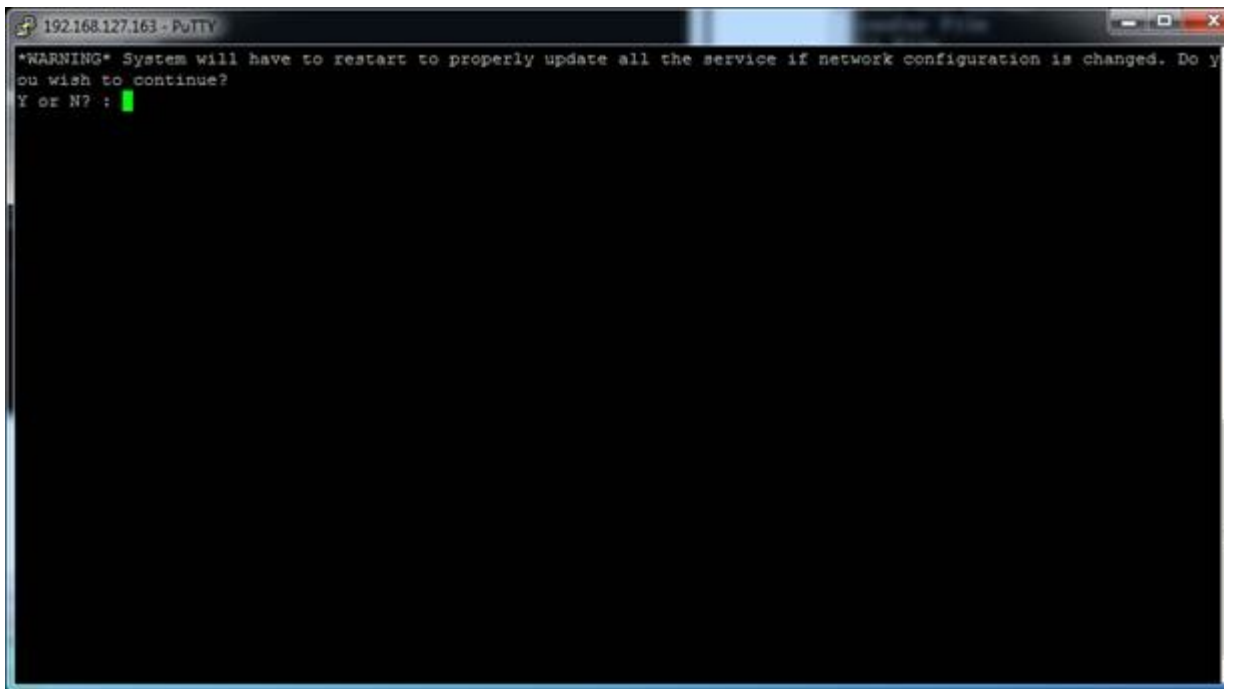


Figure 3. Network Configuration System Warning Message

2. Enter 'Y' to continue.

The **Select Action** screen displays.

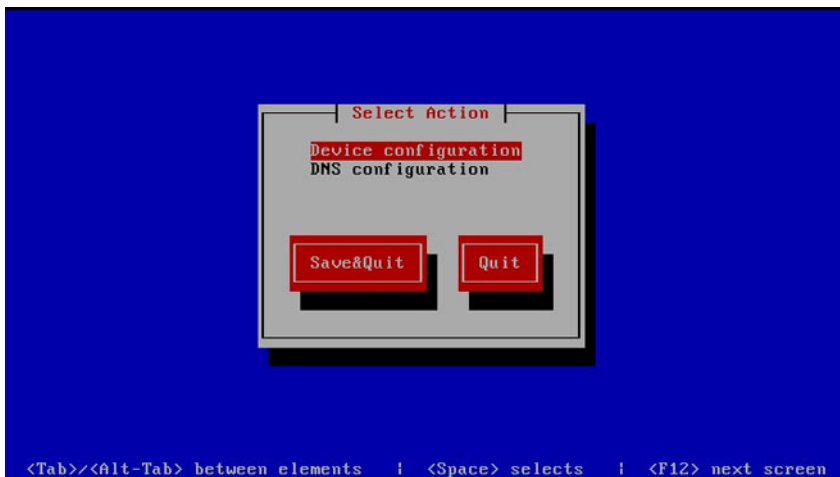


Figure 4. Select Action Screen

3. Select the **Device configuration** option. To navigate between elements, use the **Tab** and down arrow keys.

The **Network Configuration** screen displays.



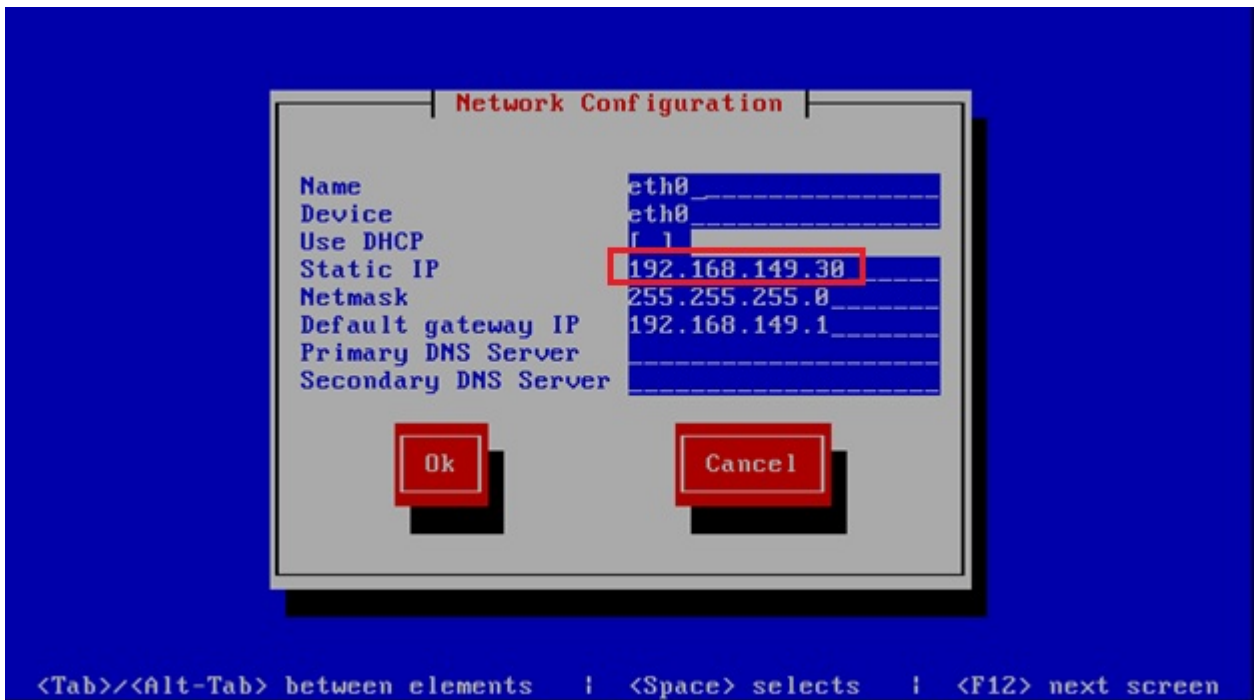


Figure 5. Network Configuration Settings

4. Modify the following settings as needed:
  - **Name** – Assign the name of AFM Server
  - **Device** – Assign or select the NIC Card to be used.
  - **Use DHCP** – Select to enable DHCP to assign an IP address to the VM
  - **Static IP** – Specify the static IP Address of the AFM server. When you change the AFM IP address, the system prompts you to restart the AFM server. After you restart the AFM server, complete the following tasks:
    1. Verify connectivity to the AFM server. Ping the AFM server IP address and validate that the IP address has changed.
    2. Login to the AFM using the new IP address using the following format: **https://new\_ip\_address/afm**
    3. Navigate to the **Administration > Settings > System Information** screen.
    4. Click the **Edit** option and then select the new AFM server IP address from the **System IP Address** pull-down menu.
    5. Validate the following information to ensure that new AFM IP address is being used.
      - **TFTP/FTP settings** (Validate only local settings)
      - **SNMP Configuration** – Make sure that the new AFM IP address has been applied to the SNMP configuration to ensure that the traps are being registered to the switch and that AFM can receive the alarms.

- **Syslog IP Address** – The first system log entry is typically the AFM server. Make sure that the new IP address has been applied to the first system log entry. By default, the AFM IP address uses the first system log entry.
6. Click on the refresh icon on the top right of the **Settings** screen to verify that the new AFM IP address has been applied.
  7. On the AFM Virtual Appliance console, login as superuser and then select the **Restart AFM Application** option. When the AFM application starts, the AFM server uses the new IP address.
  8. Redeploy all the fabrics with the new IP address to register the trap host and system log IP address.

**Netmask** – Specify the subnet mask of the static IP address for the AFM Server.

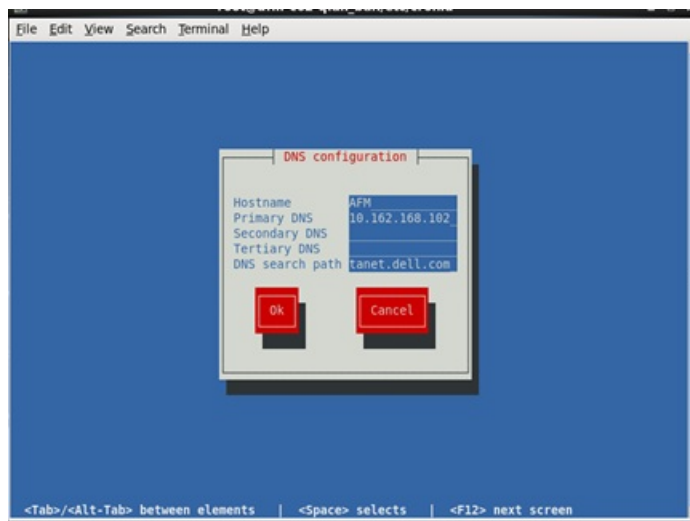
- **Default gateway IP** – Specify the gateway IP Address of the AFM server.
  - **Primary DNS Server** – Specify the primary DNS server address. To enable the DNS server on AFM Server, use this option.
  - **Secondary DNS Server** – Specify the secondary DNS server address.
5. Select **OK** to save your changes.
  6. Select **Quit** to exit this screen.

**To configure AFM DNS settings:**

1. Select the **Configure System** option.
2. Select the **DNS configuration** option.

To navigate between elements, use the **Tab** and down arrow.

3. Modify the following settings as needed:



**Figure 6. DNS Settings**

- **Hostname** – Configure the hostname for the AFM server.
- **Primary DNS** – Configure the primary DNS.

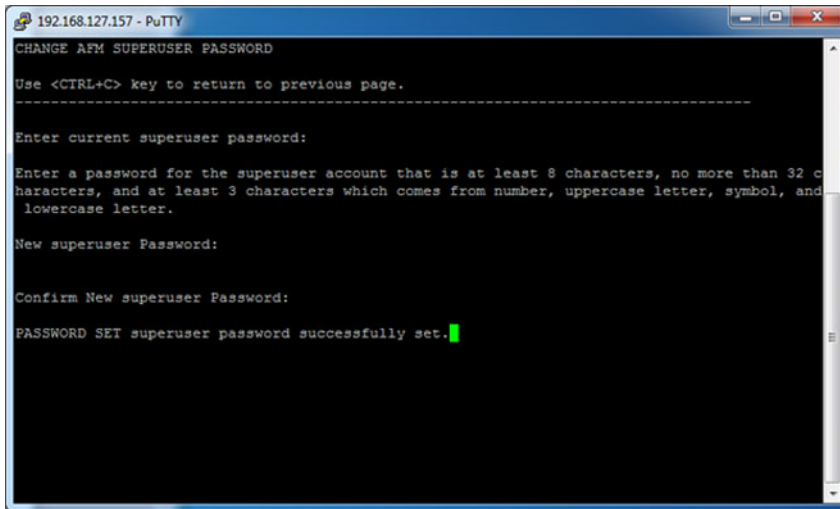
- **Secondary DNS** – (Optional) Configure the secondary DNS.
  - **Tertiary DNS** – (Optional) Configure Third DNS.
  - **DNS search path**—Configure the DNS search path.
4. Select the **OK** option to save your changes.
  5. Select **Quit** to exit this screen.

## Changing the AFM Superuser Password

To change the AFM superuser password:

1. Select the **Change AFM Superuser Password** option.
2. Press the **Enter** button.

The **CHANGE AFM SUPERUSER PASSWORD** screen displays.



3. In the **Enter current superuser password** field, enter the superuser password. For example, **Superuser1**.

 **NOTE:**

The password must have 8 to 32 characters and include at least 3 categories from the following:

- a. lowercase alphabetic character
  - b. uppercase alphabetic character
  - c. digit number (0-9)
  - d. special character
4. Press the **Enter** button.
  5. In the **Confirm New Superuser Password** field, enter the new superuser password one more time to confirm the superuser password.
  6. Press the **Enter** button to return to the main menu.

# Update the AFM Server

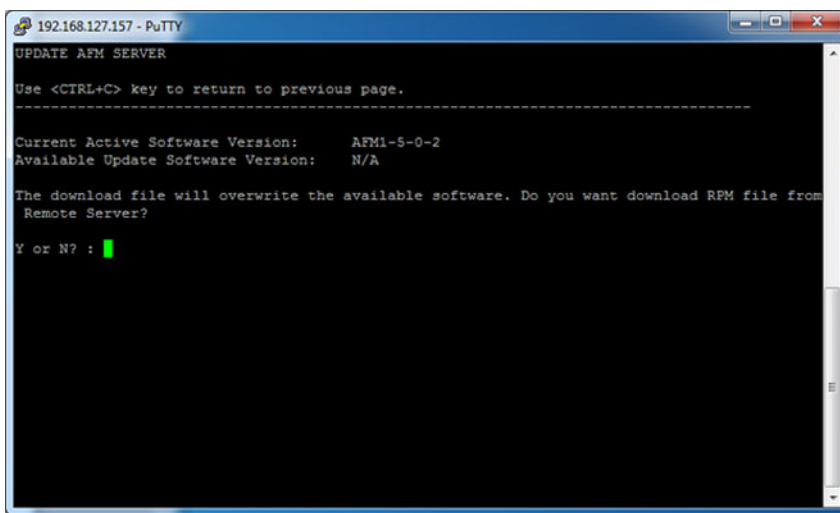
To upgrade the AFM server:

1. [Update the AFM Server](#)
2. [Set AFM Software to Next Reboot](#)
3. [Restart AFM Application](#) or [4. Reboot the AFM server.](#)


To update the AFM server:

1. Select the **Update AFM Server** option and press the **Enter** button.

The **UPDATE AFM Server** screen displays.



2. Enter 'y' to download the latest AFM software package (RPM format) file from remote URL to available partition or enter 'n' to download the (AFM software package RPM format) file from the local workstation (where the AFM console is launched) to the AFM server.
3. If the location is a remote server, enter the URL location of the RPM file on the remote server and then click the **Enter** button using the following formats:

 **Important:** The RPM file name must start with AFM and must end with ".noarch.rpm"; for example, **AFM2.5.0.79.noarch.rpm**

- **https://ipaddress/path\_to\_rpm.file**
  - **ftp://ipaddress/path\_to\_rpm.file**
  - **sftp://ipaddress/path\_to\_rpm.file**
4. If the location is local, enter the absolute path of the RPM file and then click the **Enter** button.
  5. If required, enter you username and password.
  6. Press the **Enter** button to return to the main menu.

**NOTE:**

To use the new RPM on the active partition, [Set the AFM Software to Next Reboot](#) and then [Restart the AFM Application](#).

## Setting the AFM Software to the Next Restart

There are two versions of the AFM software package: one in the current partition and the other in the available partition.

To select the AFM software and partition for the next reboot:

1. Select the **Set AFM Software to Next Restart** option and press the **Enter** button.
2. Enter 'y' and then the **Enter** button to apply the available update on the next reboot.
3. Press the **Enter** button to return to the main menu.

## Restarting the AFM Application

To restart the AFM application:

1. Select the **Restart AFM Application** option and press the **Enter** button.

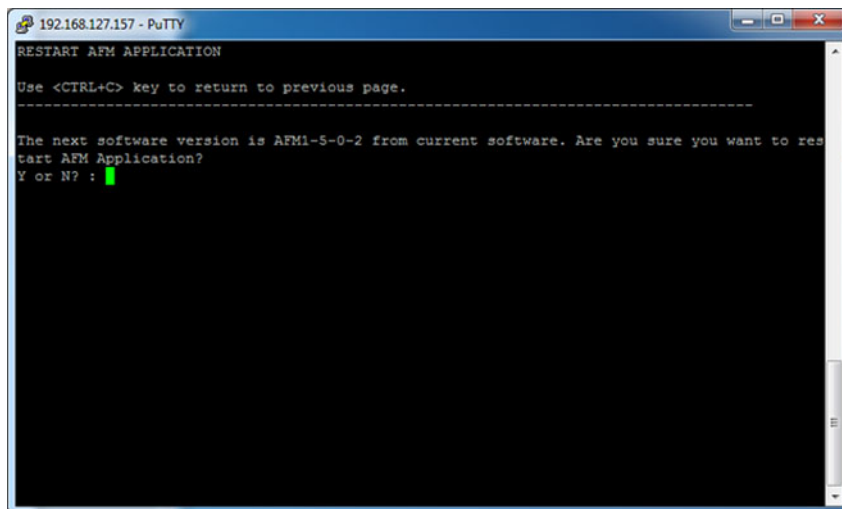


Figure 7. Restarting the AFM Application

2. Enter **y** to restart the application.
3. Press the **Enter** button to return to the main menu.

## Rebooting the AFM Server (VM)


To reboot the AFM Server VM:

1. Select the **Reboot AFM Server** option and press the **Enter** button.
2. Enter **y** to reboot the AFM Server VM.

3. Press the **Enter** button to return to the main menu.

## Transferring Files

To transfer all files from the AFM server to the remote server using the FTP or TFTP:

 **NOTE:** The FTP or TFTP was performed during the AFM server initial configuration set up.

1. Select the **Transfer File** option.

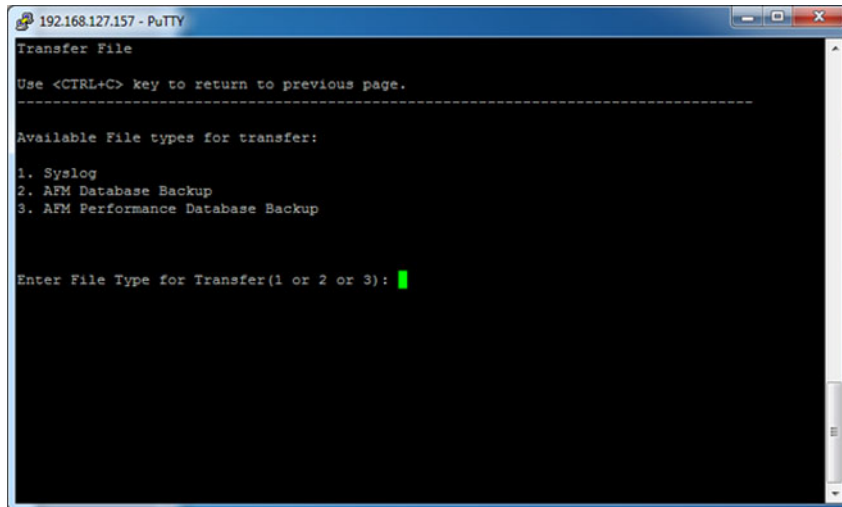


Figure 8. Transfer Files

2. Press the **Enter** button.
3. Enter the file type to transfer:
  - **1. Syslog**
  - **2. AFM Database Backup**
  - **3. AFM Performance Database Backup**
4. Press the **Enter** button.
5. Click **y** to upload all the files to the FTP or TFTP server.
6. Press the **Enter** button.
7. Press the **Enter** button to return to the main menu.

## Editing AFM Files

You can edit the following types of files using the **Edit File** option:

- **1. logback.xml** — The **logback.xml** file contains the database logging file and enables or disables debugging. By default, the logging level is set to **INFO**. The logging levels are as follows: **ALL**, **DEBUG**, **ERROR**, **INFO**, **OFF**, **TRACE**, or **WARN**.

The typical use case is change the logging level from **INFO** to **DEBUG**,

```
<logger name="com.dell.indigo" level="INFO" /> change to <logger name="com.dell.indigo" level="DEBUG" />
```

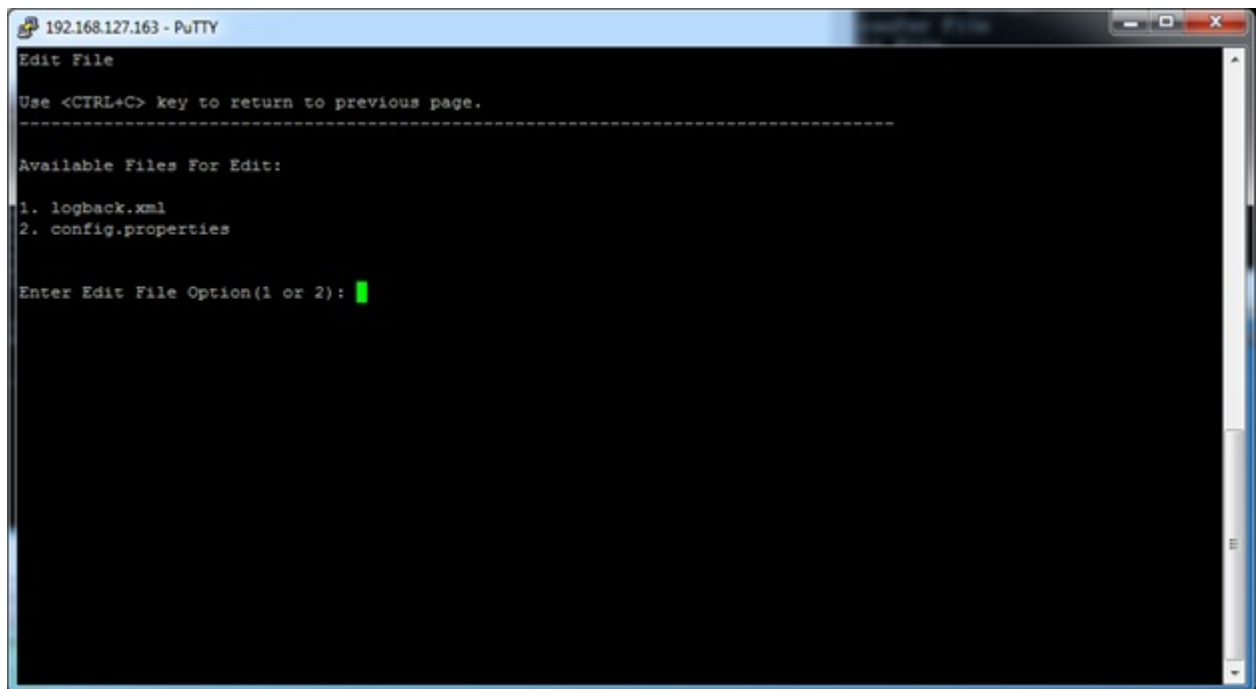
```
<logger name="com.dell.dfm" level="INFO" /> changed to <logger name="com.dell.dfm" level="DEBUG" />
```

```
<logger name="com.dell.wnm" level="INFO" /> changed to <logger name="com.dell.wnm" level="DEBUG" />
```

**2. config.properties** — The **config.properties** file contains the system level configuration for the database backup. It performs the database backup based on Linux cron job.

**To edit a logback.xml AFM system file:**

1. Select the **Edit File** option.
2. Enter the edit file option **1** to select the **1.logback.xml** option.



**Figure 9. Edit AFM File System**

3. Press the **Enter** button.
4. Search for "com.dell.dfm" and "com.dell.wnm" keyword. Change the logging level from "level=INFO" to "level=DEBUG".

For example:

```

<logger name="com.dell.dfm" level="DEBUG">
    <appender-ref ref="DCM-MESSAGE" />
    <!-- appender-ref ref="DCM-ERROR" />
    <appender-ref ref="DCM-TRACE" /-->
</logger>

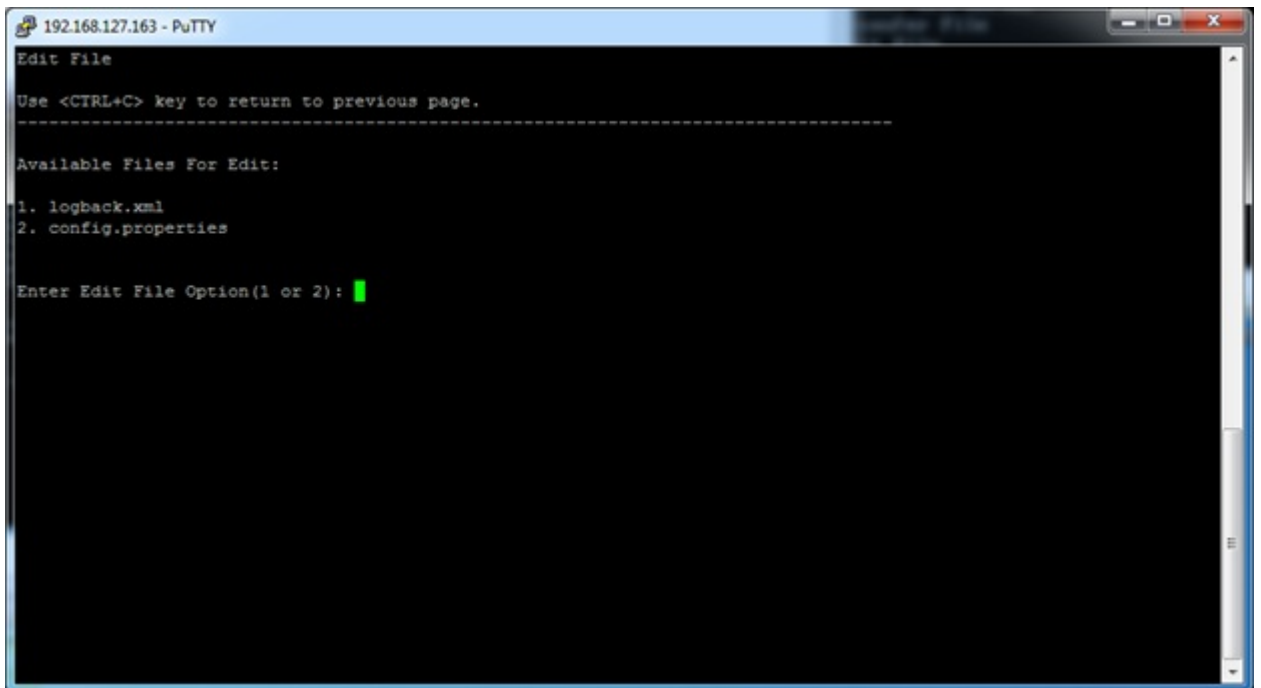
<logger name="com.dell.wnm" level="DEBUG">
    <appender-ref ref="WNM-MESSAGE" />
    <!-- appender-ref ref="WNM-ERROR" />
    <appender-ref ref="WNM-TRACE" /-->
</logger>

```

5. Save the file using the **vi** editor commands such as **:w** (save file) and quit **:q**: (quit editing).
6. Press the **Enter** button to return to the main menu.

**To edit a config.properties AFM system file:**

1. Select the **Edit File** option.
2. Enter the edit file option **2** and then select the **2. config.properties** option.



**Figure 10. Edit AFM File System**



3. Press the **Enter** button.
4. To change the time of the cron job, search for "**2am**" or "**1am**" keyword. You can change the "**2am**" to "**3am**" for backup postgres DB or change it from "**1am**" to "**4am**" for the Hbase.

For example,

```
# The folder to store backed up database files. If the folder does not exist, the backup program will try to create it
```

```
wnm.database.backup.folder=/data/backup/postgres
```

```
# The backup job will be started every day at 2am.
```

```
wnm.database.backup.schedule=0 0 2am * * ?
```

```
# ***** Database parameter : END *****
```

```
# ***** HBASE parameter : Start *****
```

```
# The folder to store backed up database files. If the folder does not exist, the backup program will try to create it
```

```
wnm.database.hbase.backup.folder=/data/backup/hbase
```

```
#The backup job will be started every day at 1am.
```

```
wnm.database.hbase.backup.schedule=0 0 1am * * ?
```

5. Save the file using the **vi** editor commands such as **:w** (save file) and quit **:q**: (quit editing).
6. Press the **Enter** button to return to the main menu.

## Uploading Switch Software Image

To upload a new switch software image (which is not already packaged as part of AFM server) to the AFM local FTP/TFTP server from a remote URL, use the **Upload Switch Software Image** option.

**To upload switch software from the AFM:**

1. Select the **Upload Switch Software Image** option and press the **Enter** button.

Enter a switch model option: **1, 2, 3, 4, 5, 6, 7, 8**, or 9.

```
UPLOAD Switch Software Image

Use <CTRL+C> key to return to previous page.
-----
---

Choose a switch model:

1. MXL Blade
2. S4810
3. S4820T
4. S55
5. S60
6. Z9000
7. S6000
8. S5000
9. IOA

Enter switch model option (1, 2, 3, 4, 5, 6, 7, 8 or 9): █
```

Figure 11. AFM Virtual Appliance Upload Software Image Screen

- 1. MXL Blade
- 2. S4810
- 3. S4820T
- 4. S55
- 5. S60
- 6. Z9000
- 7. S6000
- 8. S5000
- 9. IOA

For FTP, enter your user name and password. This option transfers the FTOS image file into the / **data/FTOS/**<SwitchModel> directory. It also copies the files into the TFTP/FTP location.

- 2. Enter the URL location to upload the switch software image using the formats listed in the **Upload Switch Software Image** screen.
- 3. Press the **Enter** button to return to the main menu.

# Restoring Database

To restore the AFM configuration database:

1. Select the **Restore Database** option.

The **RESTORE DATABASE** screen displays.

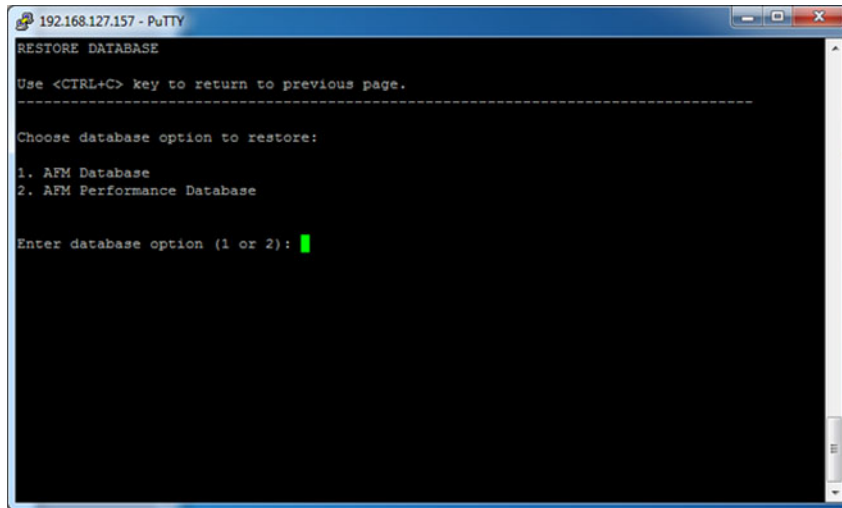


Figure 12. AFM Restore Database Options

2. Enter **1** for the **1. AFM Database** option.

The **AFM DATABASE FILES** screen displays.

3. Enter an AFM database file option.
4. Enter "Y" to restore the database process and restart the AFM application.

To restore the AFM performance database:

1. Select the **Restore Database** option.

The **RESTORE DATABASE** screen displays.

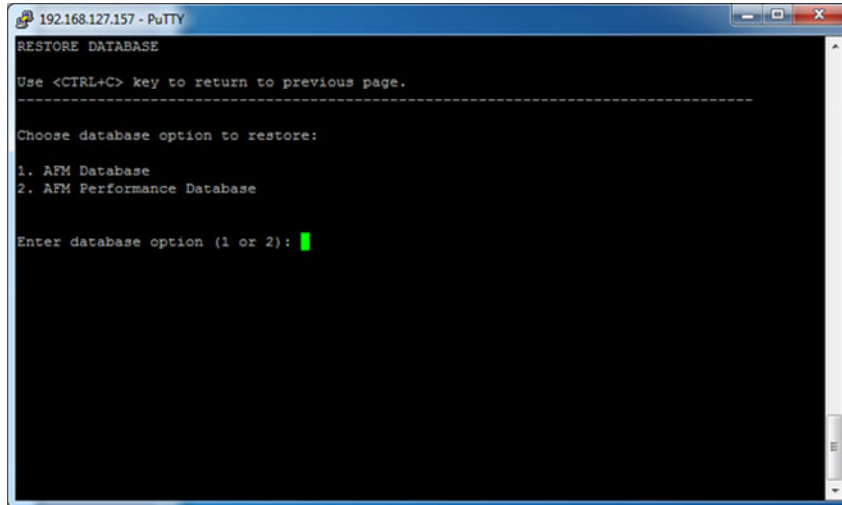


Figure 13. Restore Performance Database Option

2. Enter **2** for **2. AFM Performance Database** option.

The **PERFORMANCE DATABASE FILES** screen displays.

3. Enter a performance database file option. For example, enter "1".
4. Enter "Y" to restore the selected performance database and restart the AFM application.

## Logging Out of the AFM Virtual Appliance

To log out from the AFM virtual appliance:

1. Select the **Log out** option.
2. Press the **Enter** button.

## Step 4: Perform Initial Configuration

After you deploy the AFM server as a virtual appliance, the AFM setup wizard is displayed when the browser client is connected for the first time.

**AFM Setup**

Step	Status
Introduction	✓
License Agreement	✓
System	✓
SNMP and CLI	✓
Service Protocols	✓
Syslog IP Addresses	✓
Active Link Settings	✓
Summary	▶

**Summary**

To change all default credentials, go to Administration > Settings page.

**System Information:**

System Hostname	WN7X64-5P7Z5R1
System IP Address	10.162.102.3

**Switch SNMP Configuration:**

Read Community String	public
Write Community String	private
Trap Host	10.162.102.3
Trap Port	162
SNMP Port	161

**Switch CLI Credentials:**

Protocol	Telnet
User Name	admin
Privilege Level	15

**TFTP/FTP Settings:**

Server Location	local
File Transfer Protocol	TFTP
IP Address	10.162.102.3

**NTP Server Settings (Optional):**

Primary IP Address	Not Configured
Secondary IP Address	Not Configured

**DHCP Server Settings:**

Server Location	local
-----------------	-------

**Syslog IP Address(es)**

IP Address	10.162.102.3
------------	--------------

**Active Link Server Settings (Optional):**

Active Link Type	Not Configured
------------------	----------------

Step 8 of 8

**Figure 14. AFM Setup Wizard**

The following services are configured through the AFM setup wizard:


- System (SNMP, switch CLI, and Telnet credentials)
- Service Protocols (TFTP, FTP, NTP, and DHCP)
- (Optional) Active Link Settings

**To perform initial configuration:**

1. Start a browser.
2. In the **URL** field, enter the following information using this format to login to the AFM using one of the following URL syntax:

- `http://vm_ip_address`
- `https://vm_ip_address`

3. Enter your user name and password. The AFM Setup wizard starts and displays the **Introduction** screen.


 **Important:** Specify the user name as "superuser".

Review the **Introduction** screen.

4. Click the **Next** button to go to the **License Agreement** screen.
5. Check the **I Accept the terms of the license Agreement** option and then the **Next** button.

The System Screen displays.


6. From the **System IP Address** pull-down menu, select the IP address to manage the AFM and then click the **Next** button.

 **NOTE:** If there are multiple network interface card (NIC) adapter cards on the AFM, select the IP address to manage the AFM.

The **SNMP and CLI** screen displays.

7. In the **Switch SNMP Configuration** area, configure the following settings:
  - a. In the **Read Community String** field, enter the read community string; for example, "public".
  - b. In the **Write Community String** field, enter the write community string; for example, "private".
8. In the **Switch CLI Credentials (FTOS CLI user credentials)** area, configure the following settings:
  - a. From the **Protocol** pull-down menu, select one of the following protocols: **Telnet** or **SSHv2**.
  - b. In the **User Name** field, enter the user name.
  - c. In the **Password** field, enter the password.
  - d. In the **Confirm Password** field, enter confirm the password.
  - e. In the **Enable Password** field, enter the enable password.
  - f. In the **Confirm Enable Password** field, confirm the enable password
9. Click the **Next** button to go to the **Service Protocols** screen.
10. In the **TFTP/FTP Settings** area, select one of the following options:


- **Local — Provisioned the AFM as a TFTP or FTP server**


 **Important:** When you use the **Local** option, the TFTP or FTP server must be in the same subnet.

- If you select the local TFTP server option, the TFTP server uses the AFM management IP address.
- If you select the local FTP server option, the FTP server uses the AFM management IP address. Enter the AFM user name and password.

- **Remote — Use an external TFTP/FTP server**
    - If you select the FTP protocol and remote options, enter the FTP server IPv4 address, user name and password.
    - If you select the TFTP protocol and remote options, enter the TFTP IPv4 address.
11. From the **File Transfer Protocol** pull-down menu, select one of the following options:
    - **TFTP**
    - **FTP** (default) — When you select this option, enter the FTP username and password.
  12. (Optional) In the **NTP Server Settings** area synchronize the system clock of the AFM to the remote the NTP time servers using the following settings:
    - a. In the **Primary IP Address** field, enter the primary NTP IPv4 address.
    - b. In the **Secondary IP Address** field, enter the secondary NTP IPv4 address.
  13. In the **DHCP Server Settings** select one of the following settings:
    - **Local — Provision the AFM as a DHCP server.** When you select this option, the AFM automatically integrates the generated **dhcpd.config** file into the DHCP server on the AFM during pre-deployment.
      - 👉 **Important:** AFM can be provisioned as a local DHCP server only when the AFM server belongs to the same subnet as the network switches management interface subnet.
    - **Remote — Use an external DHCP server.** When you select this option, you must manually install the **dhcpd.conf** file that is generated during pre-deployment into the DHCP server before you deploy the fabric.
  14. Click the **Next** button to go to the **Syslog IP Addresses** screen.
  15. In the **Syslog IP Addresses** area, you can configure up to **8** syslog IP addresses to log events on the switches in the fabric. By default, the first syslog IP address entry is the AFM system IP address. The AFM server logs all the system and switch events to the syslog server. The log file is located in the following directory: **/var/log/afm/afm.log**.
  16. Click the **Next** button.
 


The **Active Link Settings** screen displays.
  17. (Optional). In the **Active Link Settings** area, configure the following settings to display additional performance statistics through the AFM using a Dell OpenManage Network Manager (ONNM) server. AFM provides integration with the Dell OMNM web application as view only.
    - a. Check the **Integrated to Dell OpenManage Network Manager (OMNM)** option.
    - b. In the **Active Link IP Address** field, specify the Active Link server IP address of the element management system.
    - c. In the **Communication Protocol** area, select one of the following protocols:
      - **Use HTTP protocol to connect through AFM Server**
      - **Use HTTPS protocol to connect through AFM Server**
    - d. In the **User Name**, specify the EMS user name.
    - e. In the **Password** field, specify the EMS user password.

 **NOTE:** After installing AFM, you can later edit these settings at the **Administrative > Settings > Active Link Settings** screen.

 **Important:** Do **not** install the OMNM software onto the same server as the AFM. To activate performance statistics, login directly as write permission into Dell OMNM web service. For OMNM requirements, see and [Prerequisites](#) and [OMNM Requirements](#).

18. Click the **Next** button to go to the **Summary** screen.

19. Carefully review your AFM setup settings and then click the **Finish** button. After you click the **Finish** button the AFM UI displays the **Getting Started** screen.

 **NOTE:** After installing AFM, you can edit these settings later at the **Administration > Settings** screen.



# RPM Installation

Instead of using the OVF with the CentOS 6.2 64 bit architecture, you can use the RPM to install the AFM software. For information about using the OVF to deploy the AFM, see [Deploying the OVF](#).

## Pre-requisites

Before you begin, install the following:

1. CentOS 6.x 64-bit.

For information about installing CentOS 6.x, see <http://www.centos.org/modules/tinycontent/index.php?id=30>. We recommend that you use the CentOS 6.2 64 bit architecture.

2. PostgreSQL 64 bit software, version 9.1

The PostgreSQL core distribution and download URL is located at <http://www.postgresql.org/download/linux/redhat/>.

3. Download the install script from iSupport. The name of the install file is **AFM-INSTALLER-2.5.0.rpm**.

## Step 1: Configuring CentOS

Because the default iptables configuration on the CentOS does **not** allow access to HTTP (TCP Port 80) and HTTPS (TCP Port 443) ports used by web server, make sure that you configure your firewall to allow access to these ports so that they can be used for HTTP services.

**To configure the firewall on CentOS to allow the HTTP and HTTPS port to connect to the AFM server:**

1. Set the hostname of web server. The following example shows you how to set the hostname to **Centos62**.

```
# vi /etc/sysconfig/network
```

```
NETWORKING=yes
```

```
HOSTNAME=Centos62
```

```
GATEWAY=10.16.148.254
```

```
:wq
```

2. Add the hostname in **etc/hosts** file. The following example, adds the IP address **10.16.148.119** and hostname **Centos62** to this file.

```
# vi /etc/hosts
```

```
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
```

```
:::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
```

### 10.16.148.119 Centos62

3. Configure the IP table to accept the webserver port 443 and 80. AFM uses HTTPs port 443 and HTTP port 80 for the webserver.

#### # vi /etc/sysconfig/iptables

```
# Firewall configuration written by system-config-firewall
# Manual customization of this file is not recommended.

*filter

:INPUT ACCEPT [0:0]

:FORWARD ACCEPT [0:0]

:OUTPUT ACCEPT [0:0]

-A INPUT -m state --state ESTABLISHED,RELATED -j ACCEPT
-A INPUT -p icmp -j ACCEPT
-A INPUT -i lo -j ACCEPT
-A INPUT -p tcp -m state --state NEW --dport 80 -j ACCEPT
-A INPUT -p tcp -m state --state NEW --dport 443 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 22 -j ACCEPT
-A INPUT -j REJECT --reject-with icmp-host-prohibited
-A FORWARD -j REJECT --reject-with icmp-host-prohibited

COMMIT
```

4. After the firewall configuration has been modified to accept the port numbers, restart the iptables to accept the changes using the **service iptables restart** command and then use the **service iptables status** command to check the status of the service.

#### #service iptables restart

```
iptables: Flushing firewall rules: [ OK ]
iptables: Setting chains to policy ACCEPT: filter [ OK ]
iptables: Unloading modules: [ OK ]
iptables: Applying firewall rules: [ OK ]
```

#### #service iptables status

Table: filter

Chain INPUT (policy ACCEPT)

num	target	prot	opt	source	destination	
1	ACCEPT	all	--	0.0.0.0/0	0.0.0.0/0	state RELATED,ESTABLISHED
2	ACCEPT	icmp	--	0.0.0.0/0	0.0.0.0/0	
3	ACCEPT	all	--	0.0.0.0/0	0.0.0.0/0	
4	ACCEPT	tcp	--	0.0.0.0/0	0.0.0.0/0	state NEW tcp dpt:80
5	ACCEPT	tcp	--	0.0.0.0/0	0.0.0.0/0	state NEW tcp dpt:443
6	ACCEPT	tcp	--	0.0.0.0/0	0.0.0.0/0	state NEW tcp dpt:22
7	REJECT	all	--	0.0.0.0/0	0.0.0.0/0	reject-with icmp-host-prohibited

Chain FORWARD (policy ACCEPT)

num	target	prot	opt	source	destination	
1	REJECT	all	--	0.0.0.0/0	0.0.0.0/0	reject-with icmp-host-prohibited


Chain OUTPUT (policy ACCEPT)

num target prot opt source destination

num target prot opt source destination

## Step 2: Install the AFM RPM Software on the Linux CentOS Machine

To install the AFM Package Manager (RPM) Software on the Linux CentOS Machine

 **NOTE:** Before you begin, make sure you obtain the AFM installer RPM file from iSupport.:  
**AFM2.5.0.<label#>.noarch.rpm**

1. Download the AFM RPM files, RPM: **AFM2.5.0.<label#>.noarch.rpm** from iSupport. For information about iSupport, see [Technical Support](#).
2. Search for the existing AFM package by using the RPM option of **-qa**

```
# rpm -qa | grep AFM
```

```
AFM2.5.0.<label#>.noarch
```

3. If AFM already exists, you can erase the package by using the RPM option of **"-e -- nodeps -- noscripts --notriggers"** with the package name. The package name is return from the option of **"-qa"**. As show in the following example,, **AFM2.5.0.<label#>.noarch** is returned from **-qa**:

```
# rpm -e -vv --nodeps --noscripts --notriggers AFM2.5.0.<label#>.noarch
```

4. Clean up the existing directory if the following directory already exists: **/opt/dell/dfm and /usr/hbase**.

```
# rm -rf /opt/dell/dfm
```


```
# rm -rf /usr/hbase
```

5. Verify the installed version of OpenSSL using the following command:

```
rpm -qa | grep openssl
```

The correct version is: **openssl-1.0.0-20.el6.x86\_64** If not, install the correct version of OpenSSL.

6. Run the installer **rpm -ivh AFM.rpm file**. This will extract the required RPMs and install it.

 **NOTE:** The dependencies for this RPM include unzip, DHCP, tftp-server and postgresql91 packages.

```
# rpm -ivh AFM.rpm file
```

7. After the installer has completed installing all the RPMs, go to the following directory: **/opt/dell/dfm/bin**.

This file contains all the applications including hbase software.

8. Run the **dfmDB.sh** script to install the postgresSQL Database.

```
# /opt/dell/dfm/bin/dfmDB.sh
```

9. Start the hbase server using the **/usr/hbase/hbase-0.94.1/bin/start-hbase.sh** command.

10. Create the hbase table for the HBase database using the **/usr/hbase/hbase-0.94.1/bin/initTable.sh** command to run the script. When you run the script the first time, you will receive error messages. Ignore the messages run the script again to clear the error messages. Your output should look similar to the following:

```
/usr/hbase/hbase-0.94.1/bin/initTable.sh
```

```
0 row(s) in 3.0460 seconds
```

```
0 row(s) in 1.1920 seconds
```

```
0 row(s) in 1.0470 seconds
```

```
0 row(s) in 2.0710 seconds
```

```
0 row(s) in 0.2530 seconds
```

```
0 row(s) in 1.0560 seconds
```

```
0 row(s) in 2.1750 seconds
```

```
0 row(s) in 0.1950 seconds
```

```
0 row(s) in 1.0770 seconds
```

```
0 row(s) in 2.1620 seconds
```

```
0 row(s) in 0.3120 seconds
```

0 row(s) in 1.0470 seconds  
0 row(s) in 2.1200 seconds  
0 row(s) in 0.2780 seconds  
0 row(s) in 1.0680 seconds  
0 row(s) in 2.1250 seconds  
0 row(s) in 0.1780 seconds  
0 row(s) in 1.0540 seconds  
0 row(s) in 2.1300 seconds  
0 row(s) in 0.3530 seconds  
0 row(s) in 1.0800 seconds  
0 row(s) in 2.1860 seconds  
0 row(s) in 0.1700 seconds  
0 row(s) in 1.0590 seconds  
0 row(s) in 2.1360 seconds  
0 row(s) in 0.2000 seconds  
0 row(s) in 1.0550 seconds  
0 row(s) in 2.0990 seconds  
0 row(s) in 0.2750 seconds  
0 row(s) in 1.0630 seconds  
0 row(s) in 2.1860 seconds  
0 row(s) in 0.1620 seconds  
0 row(s) in 1.0570 seconds  
0 row(s) in 2.1250 seconds  
0 row(s) in 0.1730 seconds  
0 row(s) in 1.0620 seconds  
0 row(s) in 2.0980 seconds  
0 row(s) in 0.1860 seconds  
0 row(s) in 1.0810 seconds  
0 row(s) in 2.0790 seconds  
0 row(s) in 0.1780 seconds

0 row(s) in 1.0530 seconds

11. Link the AFM startup script, **dfmserver**, to the AFM as show below.

```
# cd /etc/init.d
# ln -s /opt/dell/dfm/bin/dfmServer.sh dfmserver
#cd /etc/rc3.d
# ln -s ../init.d/dfmserver S99dfmserver
#cd /etc/rc3.d
# ln -s ../init.d/dfmserver K01dfmserver
```

12. Restart the AFM server by using the **dfmServer.sh script** which starts up AFM 2.5 software including the apache service, PostgreSQL DB, and HBase DB.

```
# /etc/init.d/dfmserver start

Starting AFM Server
waiting to start postgres ...Starting postgresql-9.1 servic[ OK ]

Done

Starting HBASE Server

waiting to start HBASE ...starting master, logging to /usr/hbase/hbase-0.94.1/bin/./logs/hbase-
root-master-Centos62.out

Done

waiting to start AFM Web Service...nohup: ignoring input and appending output to `nohup.out'

Done
```

13. To verify that all the servers (AFM, HBASE) are running correctly after restarting the AFM server, enter the **ps -ef |grep java** command.

## Upgrading the RPM

This section describes how to upgrade the RPM and migrate the database.

When you upgrade the RPM, install the new RPM installation to a new location. The data migration requires that you manually run it to upgrade the database. The current data migration supports the upgrade from AFM 2.0.0 to release AFM 2.5.0.x:

### To upgrade the RPM and perform data migration:

1. Stop the watchdog software process and then stop the AFM server.

```
# ps -ef|grep watchdfm
# kill -9 <dfm_pid>
# /etc/init.d/dfmServer stop
```

2. Save the existing AFM release (for example, AFM 2.0.0.0)

```
# mv /opt/dell/dfm /opt/dell/dfm_old
```

3. Extract the AFM 2.5 RPM in the **/opt/dell/dfm** directory

```
# rpm -ivhF AFM_ 2.5.0.<label#>.noarch
```

4. Create the file **dfmboot** in **/etc/sysconfig/dfmboot** directory with the following content:

```
# vi /etc/sysconfig/dfmboot
RUN_FIRSTBOOT=NO DFM_CURBOOTDIR=/opt/dell/dfm_old DFM_NEXTBOOTDIR=/opt/
dell/dfm
```

5. Create a new directory as **/usr/share/dfmscripts** and copy the **restartDFM.sh** script into the location.

```
# mkdir -f /usr/share/dfmscripts
# cp /opt/dell/dfm/db/restartDFM.sh /usr/share/dfmscripts/restartDFM.sh
# chmod +x /usr/share/dfmscripts/restartDFM.sh
```

6. The RPM installation is now completed and ready to use. Now link the startup script to the new directory to restart the AFM server upon any reboot..

```
# cd /etc/init.d
# rm /etc/init.d/dfmServer
```

```
# ln -s /opt/dell/dfm/bin/dfmServer.sh /etc/init.d/dfmServer
```

7. The **restartDFM.sh** script migrates the data from the old release to the new release. After the database is completed, it links the startup script and restarts the AFM server.

```
# /usr/share/dfmscripts/restartDFM.sh
```



# Technical Support

iSupport provides a range of documents and tools to assist you with effectively using Dell Networking equipment and mitigating the impact of network outages. Through iSupport you can obtain technical information regarding Dell Networking products, access to software upgrades and patches, and open and manage your technical assistance center (TAC) cases. Dell Networking iSupport provides integrated, secure access to these services.

## Accessing iSupport Services

The URL for iSupport is [www.force10networks.com/support/](http://www.force10networks.com/support/). To access iSupport services you must have a user identification (userid) and password. If you do not have one, you can request one at the website:

1. On the Dell Networking iSupport page, click the **Account Request** link.
2. Fill out the **User Account Request** form, and then click **Send**. You will receive your user identification and password by E-Mail.
3. To access iSupport services, click the **Log in** link, and enter your user identification and password.

## Contacting the Technical Assistance Center

How to Contact Dell  
Networking TAC

Log in to iSupport at <http://www.force10networks.com/CSPortal20/Main/Login.aspx> and select the **Service Request**.

Your name, company name, phone number, and E-mail address

- Preferred method of contact
- Model number
- Serial Number
- Service Tag
- Software version number
- Symptom description
- Screen shots illustrating the symptom, including any error messages. These can include:
  - Output from the show tech command or the show tech linecard command.
  - Output from the show trace command or the show trace linecard command.
  - Console captures showing the error messages.
  - Console captures showing the troubleshooting steps taken.
  - Saved messages to a syslog server, if one is used.

Managing Your Case	Log in to iSupport and select the Service Request tab to view all open cases and RMAs.
Downloading Software	Log in to iSupport and select the Software Center tab.
Technical Documentation	Log in to iSupport, and select the Documents tab. This page can be accessed without logging in via the Documentation link on the iSupport page.
Contact Information	E-mail: <a href="mailto:Dell-Force10_Technical_Support@Dell.com">Dell-Force10_Technical_Support@Dell.com</a> Web: <a href="http://www.force10networks.com/support/">www.force10networks.com/support/</a> Telephone: US and Canada: 1.866.965.5800 /International: 1.408.965.5800