Connecting Cisco Application Performance Assurance Enhanced Network Modules to the Network

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This guide describes how to connect Cisco Application Performance Assurance enhanced network modules to your network. It contains the following sections:

Application Performance Assurance Enhanced Network Module

The Application Performance Assurance enhanced network module (NME-APA) actively manages traffic flow based on multiple criteria such as business priorities, application or protocol recognition, user awareness and other criteria as described in the *Cisco Application Performance Assurance Enhanced Network Module User Guide*.

This section provides information about the following network modules:

- The NME-APA-E2—Supports the Cisco 2811, 2821, and 2851 Integrated Services Routers.
- The NME-APA-E3— Supports the Cisco 3825 and 3845 Integrated Services Routers

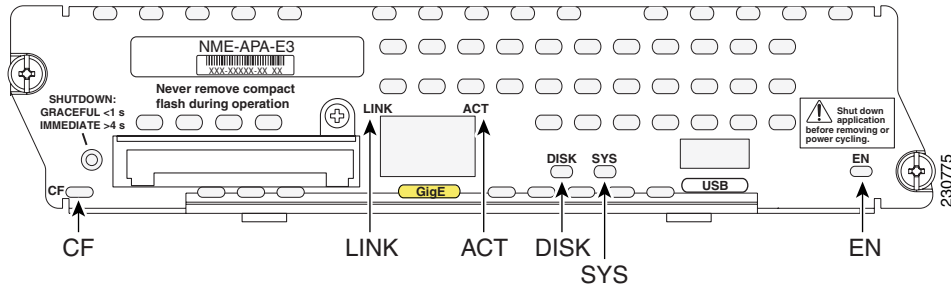Both are shipped from the factory, preinstalled with the following hardware listed below.

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Table 1 **NME-APA Hardware**

Model	Hard Disk	Memory	Compact Flash Memory	USB	RJ45
NME-APA-E2	80 GB (SATA)	1 GB	None	Not Used	Not Used
NME-APA-E3	80 GB (SATA)	1 GB	None	Not Used	Not Used

Figure 1 **NME-APA Faceplate**

Table 2 **LED Colors Functions**

LED	Color	Function	Notes
CF	Green	Status of compact flash On—CF detected Off—No CF detected	There is no compact flash memory. Therefore this LED is unused.
LINK	Green	Status of Gigabit Ethernet (GE) link On—Link is up Off—Link is down	Gigabit Ethernet is not supported. Therefore this LED is unused.
ACT	Green	Status of GE activity On—Active Off—Inactive	Gigabit Ethernet is not supported. Therefore this LED is unused.
DISK	Green	Status of disk On—Active Off—Inactive	

Table 2   LED Colors Functions

LED	Color	Function	Notes
SYS	Green	Status of system ON – Shutdown complete and the system is ready for power off OFF – Shutdown not complete	This LED functions only when a shutdown is attempted. This LED is off until the system shutdown is complete and the module can be safely powered off, Then the LED turns green.
EN	Green	Status of the network module On—Detected by the host Cisco IOS software and enabled Off—Disabled	This LED is off when the NME-APA card is plugged into a chassis that does not support it. This LED turns on briefly when detecting a card type, then goes off after determining the card type is not supported. Note that a network module that is shut down is not disabled.

Shutting Down and Removing the NME-APA

Enhanced network modules contain hard disks. Removing a module without a graceful shutdown may result in disk file corruption. Before removing power from the router or starting an online insertion and removal (OIR) sequence, perform a graceful shutdown by pressing the Reset button on the network module for less than 1 second, or using an appropriate command-line interface command.

Note   See the *Cisco Application Performance Assurance Enhanced Network Module User Guide* for details about shutting down the application software on the network module.

Caution   Do not remove or insert a module with power on unless it is an NME-APA-E3 in a Cisco 3845 Integrated Services Router.

The application may take 3 minutes to fully shut down. See the *Cisco Application Performance Assurance Enhanced Network Module User Guide* for instructions on shutting down the software application on the module.

Caution   Pressing the shutdown button for *more than 4 seconds* initiates a non-graceful shutdown of the hard disk which may cause file corruption. After a non-graceful shutdown, the HD and SYS LEDs remain lighted.

Connecting the Application Performance Assurance Enhanced Network Module

The external RJ-45 connector on the NME-APA is not supported at this time; we recommend that you do not make any connections to it.

Online Insertion and Removal of NME-APA-E3

Only Cisco 3845 Integrated Services Routers (ISRs) allow replacing NME-APA-E3 modules without first removing power from the router. This ability is called online insertion and removal (OIR). While traffic monitoring stops during a module's removal, OIR provides uninterrupted network connectivity.

Enhanced network modules contain hard disks that require graceful shutdown. Removing a module without graceful shutdown may result in disk file corruption.

⚠
Caution   Before removing power from the router or starting an online insertion and removal (OIR) sequence, perform a graceful shutdown by pressing the Reset button on the network module for less than 1 second, or using an appropriate CLI command.

⚠
Caution   OIR operates only with modules that are the same type. If you remove a module, install another module exactly like it in its place. If you remove a 2-slot module (along with any installed WAN or voice interface cards), install another module and card combination exactly like it.

For descriptions of informational and error messages that may appear on the console during this procedure, see the hardware installation guide for your router.

Saving the NME-APA Configuration File

The NME-APA has its own configuration file which is separate from that of the router. Save the existing configuration file before you replace the module to ensure that the new module will operate exactly as the old module did.

To perform online removal of a network module and insertion of a replacement, follow these steps in privileged EXEC mode:

Step 1   Telnet to the NME-APA:

```
Router# telnet 10.10.10.2

Trying 10.10.10.2...
Connected to 10.10.10.2.
Escape character is '^]'.

User Access Verification

Username:
Password:
NME-APA> enable
```

```
Password:

NME-APA#
```

Step 2 Save the running configuration of the network module by using the following command:

```
NME-APA# copy running-config startup-config
Writing general configuration file to temporary location...
Backing-up general configuration file...
Copy temporary file to final location...
NME-APA#>copy startup-config backup.config
```

Step 3 Confirm that your **backup.config** file is created by entering the following command and reviewing the file list:

```
NME-APA# dir
File list for /root/tffs0/
    200    Thu Apr  5 10:25:42 200       .                     DIR
     72    Thu Mar 22 03:45:31 200       ..                    DIR
     80    Thu Mar 22 03:45:31 200       app                   DIR
    136    Thu Mar 22 03:45:31 200       engage                DIR
     48    Thu Mar 22 03:46:14 200       images                DIR
   1663    Thu Apr  5 10:25:42 200       backup.config
    512    Thu Apr  5 10:24:56 200       system                DIR
```

Step 4 Back up the configuration file to a host:

```
NME-APA# copy backup.config ftp://[[[username[:password]@]location]/directory/source-file
```

Step 5 Exit the network module session by entering the following command:

```
NME-APA# logout

Are you sure? y

*** CLI session terminated due to timeout ***

Connection to 172.29.52.242 closed by foreign host.
```

Step 6 Telnet to the NME-APA's router as follows:

```
Router# telnet 10.10.10.1

Trying 10.10.10.1, 2065 ... Open

Press RETURN to get started!

router> enable

router#
```

Step 7 Perform a graceful shutdown of the network module by pressing the **Reset** button on the NME-APA and waiting for the SYS LED to turn green. Or you can use the following command:

```
Router# service-module integrated-service-engine slot/unit shutdown

Do you want to proceed with shutdown?[confirm]Y
Use service module reset command to recover from shutdown.

WARNING: Confirm that the service-module status shows 'is Shutdown' before remo!
```

Step 8 Confirm that the NME-APA has shut down by using the following command (Shutdown takes several minutes):

```
Router# service-module integrated-service-engine slot/unit status

Service Module is Cisco Integrated-Service-Engine1/0
Service Module supports session via TTY line 66
Service Module is Shutdown
Service Module status is not available
```

> ✎
> **Note** Before the module shuts down, the returned text reads "Service Module **is being** Shutdown." When the module has completely shut down, the returned text reads "Service Module **is** Shutdown"

Step 9 Do not exit from the router telnet session. The "Replacing the NME-APA" section on page 6 assumes that you have not exited the session.

Replacing the NME-APA

To physically remove the old module and replace it with a new one, follow these steps.

Step 1 If you have not previously performed the "Saving the NME-APA Configuration File" procedure on page -4, perform the procedure now.

- If you are replacing an NME-APA-E3 in a Cisco 3845 ISR continue to Step 2. If you are replacing an NME-APA-E2, remove power from the router before you continue directly to Step 2.

Step 2 Unplug all network interface cables from the network module.

Step 3 Loosen the two captive screws holding the network module in the chassis slot.

Step 4 Slide the network module out of the slot.

Step 5 Align the replacement network module with the guides in the chassis slot, and slide it gently into the slot.

> ✎
> **Note** If the router is not fully configured with network modules, make sure that blank panels are installed on the unoccupied chassis slots to provide proper airflow.

Step 6 Push the module into place until you feel its edge connector mate securely with the connector on the backplane. Tighten the captive screws that secure the module in the slot.

Step 7 Reconnect the network interface cables that you removed in Step 2.

- If you are replacing an NME-APA-E3 in a 3845 ISR continue to Step 8. If you are replacing an NME-APA-E2, power up the router before continuing to the next step.

Step 8 Check that the network module LEDs are on and that the power (PWR) and enable (EN) LEDs on the front panel are also on. This inspection ensures that connections are secure and that the new unit is operational.

Step 9 Confirm that the NME-APA is running by using the following command:

```
Router# service-module integrated-service-engine slot/unit status
Service Module is Cisco Integrated-Service-Engine1/0
Service Module supports session via TTY line 66
Service Module is in Steady state
Getting status from the Service Module, please wait.
Network Module Enhanced - Application Performance Assurance 0.1.2.1
NME-APA running on BRYCE
```

Step 10 Exit the router Telnet session:

```
Router # exit
```

Configuring the Replacement NME-APA

Follow these steps to configure the replacement module exactly like the original.

The module will not respond to Telnet commands until it has finished restarting. You must wait several minutes before performing Step 2. The exact time depends on the system configuration.

Step 1 If you have not performed the "Saving the NME-APA Configuration File" procedure on page -4, perform the procedure now.

Step 2 Telnet to the NME-APA:

```
Router# telnet 10.10.10.2

Trying 10.10.10.2...
Connected to 10.10.10.2.
Escape character is '^]'.

User Access Verification

Username:
Password:
NME-APA> enable

Password:

NME-APA#
```

Step 3 Restore the network module's running configuration from the file saved in the "Saving the NME-APA Configuration File" procedure on page -4 by using the following command from the service module prompt:

```
NME-APA# copy ftp://[[[username[:password]@]location]/directory]/backup.config
NME-APA# copy /directory/source-file /directory/destination-file
NME-APA# copy running-config startup-config
```

Step 4 Exit the network module session by using the following command:

```
NME-APA# logout
```

Confirming the Startup Configuration (Optional)

To confirm that the startup configuration file was restored properly, you can use a reload command on the module.

Step 1 Telnet to the NME-APA's router:

```
Router# telnet 10.10.10.1

Trying 10.10.10.1, 2065 ... Open

Press RETURN to get started!

router> enable

router#
```

Step 2 Reload the NME-APA:

```
Router# service-module integrated-service-engine slot/unit reload
Do you want to proceed with reload?[confirm]
Trying to reload Service Module Integrated-Service-Engine1/0.
```

Step 3 After several minutes check the module status and logout:

```
router# service-module integrated-Service-Engine slot/unit status
Service Module is Cisco Integrated-Service-Engine1/0
Service Module supports session via TTY line 66
Service Module is in Steady state
Getting status from the Service Module, please wait..
Network Module Enhanced - Application Performance Assurance 0.1.2.1
NME-APA running on BRYCE

router# logout
Connection to 172.29.52.241 closed by foreign host.
```

Step 4 After a few minutes, telnet to the NME-APA.

✎

Note The module will not accept a telnet session until it has restarted the application which may take several minutes.

```
Router# telnet 10.10.10.1

Trying 10.10.10.1...
Connected to 10.10.10.1.
Escape character is '^]'.

User Access Verification

Username:
Password:
NME-APA> enable

Password:

NME-APA#
```

Step 5 Check the running configuration and confirm that it is correct:

```
NME-APA# show running-config
#This is a general configuration file (running-config).
```

```
                    #Created on 14:48:18  UTC  MON  April  9  2007
                    .
                    .
                    .
```

Step 6   Log out of the module:

```
NME-APA# logout
Are you sure? y


*** CLI session terminated due to timeout ***

Connection to 172.29.52.242 closed by foreign host.
```

Related Documents

For additional information, see the following documents and resources.

Related Topic	Document Title
Application Performance Assurance software installation and administration, configuration, operation, and user guides	http://www.cisco.com/en/US/products/ps9559/tsd_products_support_model_home.html
Regulatory compliance and safety information	*Cisco Network Modules and Interface Cards Regulatory Compliance and Safety Information* http://www.cisco.com/en/US/docs/routers/access/interfaces/rcsi/IOHrcsi.html
Cisco IOS software website and reference documentation	*Cisco IOS Software* http://www.cisco.com/web/psa/products/index.html?c=268438303

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

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