



# Connecting Cisco NAM Enhanced Network Modules to the Network

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This guide describes how to connect Cisco Network Analysis Module (NAM) enhanced network modules to your network. It contains the following sections:

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## NAM Enhanced Network Modules

NAM enhanced network modules monitor and analyze network traffic using remote monitoring (RMON) extensions for switched networks (SMON), and other management information bases (MIBs). (See [Figure 1 on page 2](#).)

NAM enhanced network modules ship with the following hardware. (See [Table 1](#).)

**Table 1** Hardware in NAM Enhanced Network Modules

Model	Hard Disk	Memory	Daughter Card	CompactFlash
NME-NAM-80S	80 GB (SATA)	512 MB	Included	64 MB
NME-NAM-120S	120 GB (SATA)	1 GB	Included	64 MB



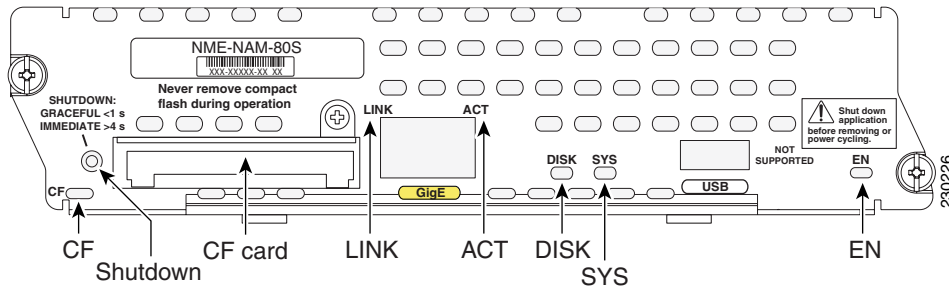
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Americas Headquarters:  
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

The module LEDs are shown in [Figure 1](#). The NME-NAM-120S LEDs are identical to the NME-NAM-80S LEDs.

The LED behavior is described in [Table 2](#).

**Figure 1** NME-NAM-80S Faceplate



**Table 2** LED Behavior

LED	Description
CF	Status of the CompactFlash Off—CompactFlash is not used Flashing—Application detected CompactFlash at boot up
Shutdown	Press the SHUTDOWN button for less than 2 seconds to gracefully shut down the module. Press the SHUTDOWN button for more than 4 seconds to cause an immediate module shutdown, which may impact file operations that are in progress.
Link	Status of Gigabit Ethernet link On—Link is enabled Off—Link is disabled
ACT	Status of Gigabit Ethernet activity On—Active Off—Inactive
DISK	Status of hard drive activity On—Active Off—Inactive
SYS	Status of system shutdown <b>Note</b> Do not remove power without first shutting down the application. On—Application is stable. Off—System is shut down and ready for host power down Flashing—System shutdown is in progress
EN	Status of the enhanced network module On—Detected by the host Cisco IOS software and enabled Off—Disabled

## Shutting Down NAM Enhanced Network Modules

Press the shutdown button on the network module faceplate for less than 2 seconds to perform a graceful shutdown of the network module before removing power from the router or before starting an online insertion and removal (OIR) sequence on the router. The application may take up to 2 minutes to fully shut down.

**Caution**

If you press the shutdown button for *more than 4 seconds*, a non-graceful shutdown of the hard disk will occur and may cause file corruption on the network module's hard disk. After a non-graceful shutdown, the HD and SYS LEDs remain lit. Press the shutdown button for *less than 2 seconds* to gracefully reboot the network module.

## Connecting NAM Enhanced Network Modules

**Caution**

To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the NAM enhanced network module (NME-NAM-80S) only to intra-building or non-exposed wiring or cabling. The intrabuilding cable must be shielded and the shield must be grounded at both ends. The intra-building port(s) of the equipment or subassembly must not be metallicly connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallicly to OSP wiring.

To connect NAM enhanced network modules to an external device, use a straight-through two-pair Category 5e unshielded twisted-pair (UTP) cable, and connect the RJ-45 Gigabit Ethernet port on the network module to a switch, hub, repeater, server, or other Gigabit Ethernet network device.

**Note**

RJ-45 cables are not available from Cisco Systems, Inc. These cables are widely available and must be Category 5e cables.

## Online Insertion and Removal of Cisco NAM Enhanced Network Modules Procedure

Some Cisco routers allow you to replace network modules without switching off the router or affecting the operation of other interfaces. This feature is called online insertion and removal (OIR). OIR of a module provides uninterrupted operation to network users, maintains routing information, and ensures session preservation.

**Caution**

Unlike other network modules, NAM enhanced network modules use hard disks. Online removal of disks without proper shutdown can result in file system corruption and might render the disk unusable. The operating system on the network module must be shut down in an orderly way before removing or powering down the module.

**Caution**

Cisco routers support OIR with similar modules only. 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 a description of informational and error messages that may appear on the console during this procedure, see the hardware installation guide for your router.

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

**Step 1** Initiate a network module session using the following command:

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

```
Trying 10.10.10.1, 2065 ... Open
```

**Step 2** Save the running configuration of the network module using the following command from the **Router # prompt**:

```
root@nam.localdomain# config upload ftp://username@host/path
```

**Step 3** Exit the network module session by pressing **Control-Shift-6**, followed by **x**.

**Step 4** On the router, clear the integrated-service-engine console session using the following command:

```
Router# service-module integrated-service-engine slot/unit session clear
```

**Step 5** Perform a graceful shutdown of the network module disk drive by using the following command:

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

**Step 6** Shut down the network module interface:

```
Router (config)# interface integrated-service-engine slot/unit  
Router (config-if)# shutdown  
Router (config-if)# exit
```

**Step 7** Unplug all network interface cables from the network module.

**Step 8** Loosen the two captive screws holding the network module in the chassis slot.

**Step 9** Slide the network module out of the slot.

**Step 10** 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 fill the unoccupied chassis slots to provide proper airflow.

**Step 11** Push the module into place until you feel its edge connector mate securely with the connector on the backplane.

**Step 12** Reconnect the network interface cables previously removed in [Step 7](#).

**Step 13** 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 14** Initiate a network module session with the following command:

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

```
Trying 10.10.10.1, 2129 ... Open
```

- Step 15** Restore the network module running configuration by using the following command from the service module prompt:

```
root@nam.localdomain# config network ftp://username@host/path/filename
```

- Step 16** Exit the network module session by pressing **Control-Shift-6**, followed by **x**.

- Step 17** On the router, clear the network module session by using the following command:

```
Router# service-module integrated-service-engine slot/unit session clear
```

## Related Documents

For additional information, see the following documents and resources.

Related Topic	Document Title
NAM software installation and administration, configuration, and operation	<i>Cisco Branch Router Series (NME-NAM) Installation and Configuration Note</i> <a href="http://www.cisco.com/en/US/docs/net_mgmt/network_analysis_module_software/3.6/branch_router/configuration/guide/BR_incfg.html">http://www.cisco.com/en/US/docs/net_mgmt/network_analysis_module_software/3.6/branch_router/configuration/guide/BR_incfg.html</a>
Regulatory compliance and safety information	<i>Cisco Network Modules and Interface Cards Regulatory Compliance and Safety Information</i> <a href="http://www.cisco.com/en/US/docs/routers/access/interfaces/rcsi/IOHrcsi.html">http://www.cisco.com/en/US/docs/routers/access/interfaces/rcsi/IOHrcsi.html</a>
Cisco IOS software website and reference documentation	<i>Cisco IOS Software</i> <a href="http://www.cisco.com/web/psa/products/index.html?c=268438303">http://www.cisco.com/web/psa/products/index.html?c=268438303</a>

## 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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