

Overview

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Note

In the text of this document, the product name, Network Capacity Expansion, is abbreviated as NCE except in command names and command output examples.

Prerequisites for the Network Capacity Expansion Service Module

Router

Plan software upgrades or downgrades for times when you can take all applications that run on the host router out of service or off line.

Ensure that you have the appropriate Cisco access router to serve as the host router. The Network Capacity Expansion Service Module is supported on the Cisco access routers listed below:

Module	Platform
AIM - TPO - 1	Cisco 1841, 2801, 2811, 2821, 2851, 3825, 3845
AIM - TPO - 2	Cisco 1841, 2801, 2811, 2821, 2851, 3825, 3845
NME - TPO	Cisco 2811, 2821, 2851, 3825, 3845

Ensure that the host router is running the Cisco IOS release 12.4(20)T or later software. To learn which Cisco IOS release software your router is currently running, run the **show version** command.

Module

To install and remove a Network Capacity Expansion Advanced Integrated Module (AIM), see:

- *Installing and Upgrading Internal Modules in Cisco 1800 Series Routers (Modular)* in [Cisco 1800 Series Hardware Installation Guide \(Modular\)](#).
- *Installing and Upgrading Internal Modules in Cisco 2800 Series Routers (Modular)* in [Cisco 2800 Series Hardware Installation](#).
- *Installing and Upgrading Internal Modules in Cisco 3800 Series Routers* in [Cisco 3800 Series Hardware Installation](#).

To install and remove a Network Capacity Expansion Service Module (NME), see:

- [Network Capacity Expansion Enhanced Network Modules](#)
- *Installing Network Modules in Cisco 2800 Series Routers* in [Cisco 2800 Series Hardware Installation](#).
- *Installing Network Modules in Cisco 3800 Series Routers* in [Cisco 3800 Series Hardware Installation](#).

Run the **show running-config** command to obtain the slot and unit number of the service module in the host router. You need this information for the “[Setting Up the Transport-opt Interface](#)” section on [page 2-1](#) and the “[Software Upgrade or Downgrade](#)” section on [page 2-6](#).

From the host-router CLI, use the **show running-config** command as follows:

```
Router> enable
Router# show running-config
```

In the configuration output, the following line shows the NCE AIM (Transport-Opt-Service-Engine) in slot 0, unit 1:

```
interface Transport-Opt-Service-Engine0/1
```

The AIM is installed on the router motherboard and the motherboard is always installed in slot 0—so the AIM always shows that it is installed in slot 0. The AIM can be installed on the motherboard, as unit 0 or 1 and shows 0 or 1 for the unit number.

The NME can be installed in any network module slot on the router. The NME always shows 0 as the unit number:

```
interface Transport-Opt-Service-Engine2/0
```

File Server

Verify that your download FTP or TFTP server is accessible:

- FTP server—Use for installations, backups, and restores.
- TFTP server—Use (on the FTP server machine) for boothelper operations to recover from a failed installation.

Restrictions for the Network Capacity Expansion Service Module



Note

If a customer purchased modules before March 15 2009 and is using L2 mask-based load balancing, please make sure that all the boards on the headend side have unique MAC address. If not, please use the interim bootloader to upgrade the MAC address in the NCE module and then upgrade to 2.0.1 release.

Upgrade or Downgrade

You can perform a software upgrade or downgrade only on an inactive system. Plan upgrades or downgrades for times when you can take all the applications that run on the host router out of service or off line.

Configuration

You can check the software version running on the module by accessing the router's Cisco IOS command-line interface (CLI).

Information About the Network Capacity Expansion Service Module

The Network Capacity Expansion (NCE) is an application that resides on a module that plugs into a host Cisco router running Cisco IOS software. [Table 1-1](#) lists and describes the three types of service modules that are available for the various system configurations.

Table 1-1 Network Capacity Expansion Service Modules

Module	Peers	TCP Connections
AIM-TPO-1	5	1024
AIM-TPO-2	10	2048
NME-TPO	50	12500

The service module is a standalone transport-optimization engine with own startup and run-time configurations. The module does not have an external console port. Instead, you launch and configure the module through the router, by means of a configuration session on the service module. After the session, you return to the router CLI and clear the session.

This arrangement—host router plus module (the module is sometimes referred to as an appliance or blade or, with installed software, a service engine)—provides a router-integrated application platform for accelerating data-intensive TCP-based applications.

Hardware Interfaces

The host router and service module use several interfaces for internal and external communication (see [Figure 1-1](#)). Each interface is configurable—the router is configured by using the Cisco IOS CLI, and the module is configured by using the module firmware’s CLI.

Figure 1-1 Router and Module Interfaces



	On This Hardware Interface...	Configure These Settings...	Using This Configuration Interface
1	Router interface to external link (FastEthernet <i>slot/port</i>)	Standard router settings	Router’s Cisco IOS CLI
2	Router interface to module (Transport-Opt-Service-Engine <i>slot/port</i>)	Module’s IP address and default gateway router	
3	Module interface to router (GigaEthernet 0/1)	All other module and NCE application settings	Module’s NCE CLI