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# Cisco 6400 Node Switch Processor Frequently Asked Questions

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## Questions

### Introduction

**What is a Node Switch Processor?**

**What are the features of the NSP?**

**How many NSPs can be supported in one Cisco 6400 UAC chassis?**

**What hardware upgrades are available for the NSP?**

**How do you read the LED indicators on the NSP?**

**How do you configure the ATM interface on the NSP?**

**How do you switch traffic to a node route processor in the Cisco 6400 UAC?**

**Related Information**

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## Introduction

This document covers frequently asked questions about the Cisco 6400 Node Switch Processor.

### Q. What is a Node Switch Processor?

A. A Node Switch Processor (NSP) is the main system processor card in the Cisco 6400 Universal Access Concentrator (UAC) and resides in chassis slot 0A or 0B. The NSP contains the Asynchronous Transfer Mode (ATM) switch engine and processor and most memory components. The NSP runs the system software, which maintains and executes the management functions that control the system.

### Q. What are the features of the NSP?

A. The NSP supports the following functions and features:

- ◆ 64-bit, 100-MHz RISC central processor unit (R4700)
- ◆ 64 MB parity-protected DRAM memory (upgradable to 128 MB)
- ◆ 5-Gbps nonblocking ATM switch fabric
- ◆ CBR, VBR-RT, VBR-NRT, ABR, UBR, and GFR traffic classes
- ◆ Per flow virtual connection (VC) or virtual path (VP) queuing with strict priority, rate, and weighted round robin scheduling
- ◆ Up to 32,000 point-to-point VCs
- ◆ Up to 32,000 point-to-multipoint VC roots with up to 254 leaves per root
- ◆ Dual leaky bucket usage parameter control (UPC) (ITU-T I.371/ATM Forum UNI compliant)
- ◆ Early packet discard (EPD)/partial packet discard (PPD)
- ◆ Per VC/VP CBR shaping
- ◆ 64,000 cells of shared ATM payload memory (parity-protected SRAM)
- ◆ Out-of-band ATM traffic management
- ◆ 8 MB boot Flash memory

- ◆ 512 KB NVRAM for storing system configuration information
- ◆ Console and auxiliary serial (EIA/TIA–232) ports
- ◆ Network Management Ethernet (10BaseT) port
- ◆ Dual PCMCIA card slots
- ◆ 1+1 NSP redundancy based on EHSA protocols
- ◆ Digital thermometers for monitoring temperature
- ◆ Custom–designed PLL to attenuate clock jitter, meeting jitter and wander requirements of the GR253 standard
- ◆ Network timing derived from any node line card (NLC) interface
- ◆ Stratum 4 accuracy when internally timed

**Q. How many NSPs can be supported in one Cisco 6400 UAC chassis?**

A. Up to two NSP modules are supported. If you use two modules, one must be configured as the primary and the other as a standby for redundancy.

**Q. What hardware upgrades are available for the NSP?**

A. NSP ships with 64 MB DRAM, an 8–MB Boot–Flash SIMM, and an 8–MB PCMCIA flash card. DRAM is upgradable to 128 MB and the PCMCIA flash card is upgradable to 20 MB. Also, an upgrade of a 220 MB Flash disk is available.

**Q. How do you read the LED indicators on the NSP?**

A.

LED	Status	Condition
Status	Steady Yellow Blinking Yellow Steady Green Blinking Green Off	Cisco is not running System is booting NSP is active (primary) NSP is standby NSP has no
FAIL	Yellow Off	NSP has failed NSP has not failed

**Q. How do you configure the ATM interface on the NSP?**

A. Like the LS1010 ATM switch, the NSP will be configured for all cross connects. It will take the packets coming in its ATM interface(s) and will cross connect them to other ATM interfaces on modules in various slots of the 6400 chassis. It will build the PVC this way and map the individual virtual path identifier (VPI) and virtual channel identifier (VCI). Following is a typical configuration for the ATM interface related to slot 7, subslot 0 and port 0 of the chassis:

```
Router(config)#interface ATM7/0/0
Router(config-if)#atm pvc 1 131 interface ATM1/0/0 1 131
Router(config-if)#atm pvc 1 140 interface ATM1/0/0 1 140
Router(config-if)#atm pvc 4 47 interface ATM1/0/0 4 47
```

In this example the packet comes in the interface and is forwarded to the ATM interface related to slot 1, subslot 0, and port 0 of the chassis. Also, each packet comes in with its own

VPI and VCI. The NSP forwards the packet to the other interfaces with the original VPI and VCI or if the configuration was changed, a different VPI and VCI.

## **Q. How do you switch traffic to a node route processor in the Cisco 6400 UAC?**

**A.** To point an ATM VC to a node route processor (NRP), follow the standard method of configuring the ATM interfaces on the NSP. The ATM interface associated with a specific NRP is denoted by x/0/0, where x is the slot number of the NRP in the Cisco 6400 UAC chassis. Note that this is different from looking at the ATM interface on the NRP. An NRP refers to its own ATM interface as atm0/0/0, regardless of the slot where it is plugged in.

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## **Related Information**

- **Cisco DSL Product Support Information**
- **Technical Support – Cisco Systems**

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