

# Catalyst 8540 12.0 Multiservice Router Software Features

The 12.0 MSR delivers hardware and software features for the LightStream 1010 and Catalyst 8500 family of switches. The new hardware features include the 16-port OC-3c Multimode fiber (short-reach), the four-port channelized E1-RJ48, and one-port channelized DS3-BNC Frame Relay interfaces. The software features for the OC-3c Module include Frame Relay, Network Interworking/Service Interworking (NIW)/(SIW), Network Clock Distribution Protocol, Private Network-Network Interface (PNNI) Alternate Link Selection, PNNI Explicit Paths, Simple Gateway Control Protocol/Virtual Switch Controller (SGCP)/(VSC) integration, and TAG class of service (COS).

## Route Processor Redundancy

The Catalyst 8500 multiservice switch-router supports a single-route processor in slot four or eight, or a redundant configuration with route processors in both slots.

The route processor cards are one to one redundant and follow the enhanced-high-system availability (EHSA) design model. Currently, the EHSA model that the route processor cards follow allows for failover to occur with minimal data loss and therefore disruption to user traffic is minimal. During a failover, transit permanent virtual circuits (PVCs) are preserved. The static and running configuration, and the network clock and calendar clock configuration are also preserved. In addition, network clock redundancy is ensured in the hardware if the system has route processors (RPs) with the Stratum 3 clock module. All switched virtual circuits (SVC) and PVCs terminating on RPs PVC must be cleared and re-established by their end-points. TAG virtual circuits (VCs) bindings are also reestablished when the new RP takes over.

## Switch Fabric Availability

The Catalyst 8540 supports the installation of three switch processors (SPs). In a basic configuration, two SPs in any two slots of 5, 6, and 7 are required at all times to maintain operation. In the redundant configuration, a third SP is inserted in the system and is managed by the RP. In the event that one of the SPs fails, the backup SP can be inserted into the switching path. Since the SP is actively involved in moving data through the switch, some data loss upon failure is expected.

## PNNI Explicit Path

The PNNI explicit path allows the user to manually configure up to 3 fully specified or partially constrained paths to be used for routing a soft-VC or soft-virtual path (VP) connection.

## PNNI Alternate Link Selection

PNNI alternate link selection allows the user to configure one or more parallel links as backup links to be used only when all of the other nonbackup links are down or full. This applies to all service categories, especially universal broadband route (UBR) where the current design requires the traffic to be load balanced on all links.

## TAG COS

With the TAG COS support, users can set up four VCs with differentiated service between a source and a destination.

## Network Clock Distribution Protocol

Using the Network Clock Distribution Protocol, users can configure the network clocking hardware of the LightStream1010 with (FC-PFQ) or the Catalyst 8500 for automatic distribution of a clock-signal through the node for use by the physical interfaces and for the network-wide distribution of a clock-signal between nodes. This feature eliminates any loop problems that might occur as a result of errors in configuring the clocking statically.

## Simple Gateway Control Protocol

With the addition of SGCP, the LightStream 1010 and Catalyst 8500 can act as a voice over ATM gateway, and using common channel signaling (CCS), and SGCP, allow an external call agent to control Circuit Emulation Service (CES) interfaces on the switch to dynamically create the bearer channels for the CES circuits.

## Twelve-Bit Virtual Path Identifier (VPI)

The Catalyst 8540 can now accommodate up to six interfaces per port module to configure eight-bit VPI on that interface.

## Frame Relay Network and Service Interworking

This release contains the support for the channelized DS3 Frame Relay port module for the LightStream1010 and Catalyst 8500. Network Interworking (FRF.5) and Service Interworking (FRF.8) PVCs and soft-VCs are supported as for the E1 module. PVC preservation upon central processing unit (CPU) switchover in the Catalyst 8540 is also supported.

Table 1 Ordering and Availability Information

Product Number	Product Description
SRF-8510MSR5-9	C8510 IISP and PNNI feature set
SRF-8540MSR5-9	C8540 IISP and PNNI feature set



### Corporate Headquarters

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 526-4100

### European Headquarters

Cisco Systems Europe s.a.r.l.  
Parc Evolic, Batiment L1/L2  
16 Avenue du Quebec  
Villebon, BP 706  
91961 Courtaboeuf Cedex  
France  
<http://www-europe.cisco.com>  
Tel: 33 1 69 18 61 00  
Fax: 33 1 69 28 83 26

### Americas

**Headquarters**  
Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-7660  
Fax: 408 527-0883

### Asia Headquarters

Nihon Cisco Systems K.K.  
Fuji Building, 9th Floor  
3-2-3 Marunouchi  
Chiyoda-ku, Tokyo 100  
Japan  
<http://www.cisco.com>  
Tel: 81 3 5219 6250  
Fax: 81 3 5219 6001

Cisco Systems has more than 200 offices in the following countries. Addresses, phone numbers, and fax numbers are listed on the

Cisco Connection Online Web site at <http://www.cisco.com/offices>.

Argentina • Australia • Austria • Belgium • Brazil • Canada • Chile • China • Colombia • Costa Rica • Croatia • Czech Republic • Denmark • Dubai, UAE Finland • France • Germany • Greece • Hong Kong • Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Singapore Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela