

**DATA SHEET**

## CISCO 12000 SERIES PERFORMANCE ROUTER PROCESSOR-1

Service providers face the challenge of scaling their public and private packet infrastructure control planes to meet the ever-growing demands of global IP/Multiprotocol Label Switching (IP/MPLS) connectivity and service availability. The Cisco Performance Route Processor-1 is the next generation route processor for the Cisco 12000 Series. It delivers state-of-the-art technology to address the unique route processing requirements of carrier-grade IP and MPLS packet infrastructures.

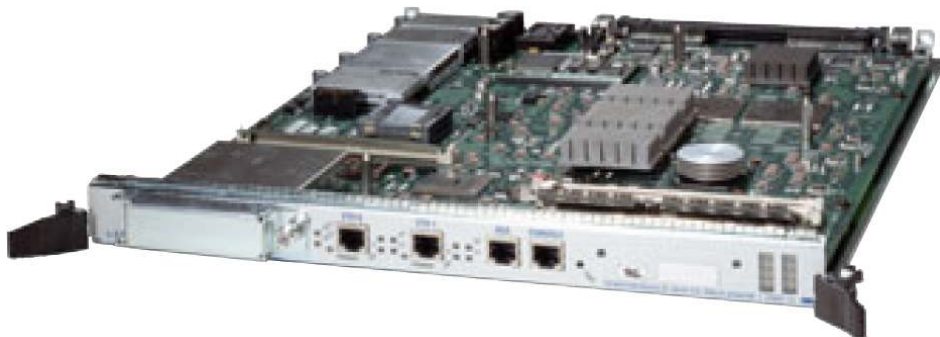
### PRODUCT OVERVIEW

The Cisco 12000 Series is the premier Internet routing platform for service provider backbone and high-speed edge applications. It features a unique modular, fully distributed system architecture. The Cisco Performance Route Processor (PRP-1) (Figure 1) is the main system processor for the Cisco 12000 Series Router, providing the following essential functions:

- Executes routing protocol stacks
- Performs all protocol communication with other routers
- Builds and distributes forwarding information to all line cards
- Uploads Cisco IOS® system images to all installed line cards at power up
- Provides out-of-band system console and auxiliary ports, two 10/100 Ethernet ports for router configuration, and maintenance
- Monitors and manages power and temperature of system components such as line cards, power supplies, and fans

**Figure 1**

Cisco 12000 Series Performance Route Processor-1



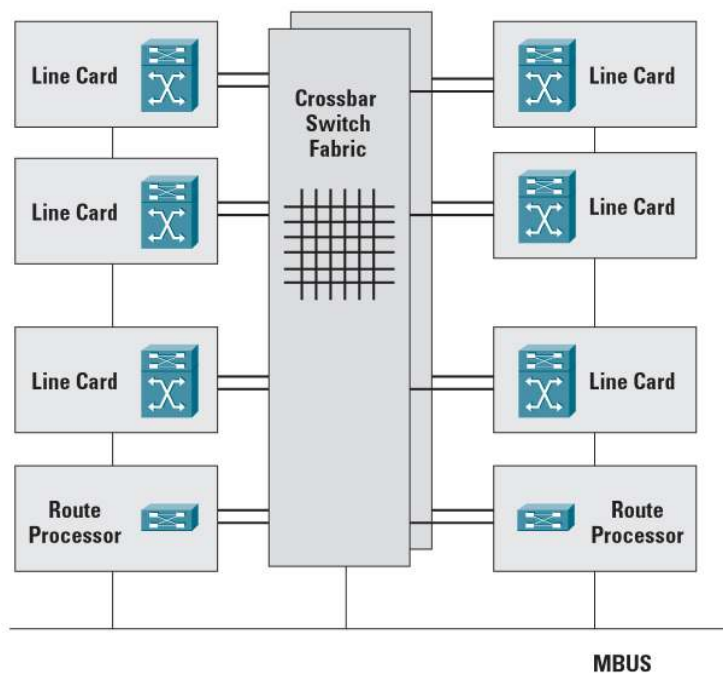
## APPLICATIONS

### Cisco 12000 Series High Availability

The Cisco 12000 Series delivers comprehensive solutions that enable service providers to deliver high service availability. When two Cisco PRP-1s are installed as shown in Figure 2, Cisco Nonstop Forwarding (NSF) and Stateful Switchover (SSO) provide full and automatic recovery from catastrophic route processor failures without impacting in-service traffic, enabling service providers to raise network availability for Cisco 12000 Series-based infrastructures to 99.999%. Service providers can seize new revenue opportunities by offering high service availability that customers demand for mission-critical applications.

**Figure 2**

Two Cisco PRP-1s enhance Cisco 12000 Series availability



### Scaling the Cisco 12000 Series to Support the Largest Network Infrastructures

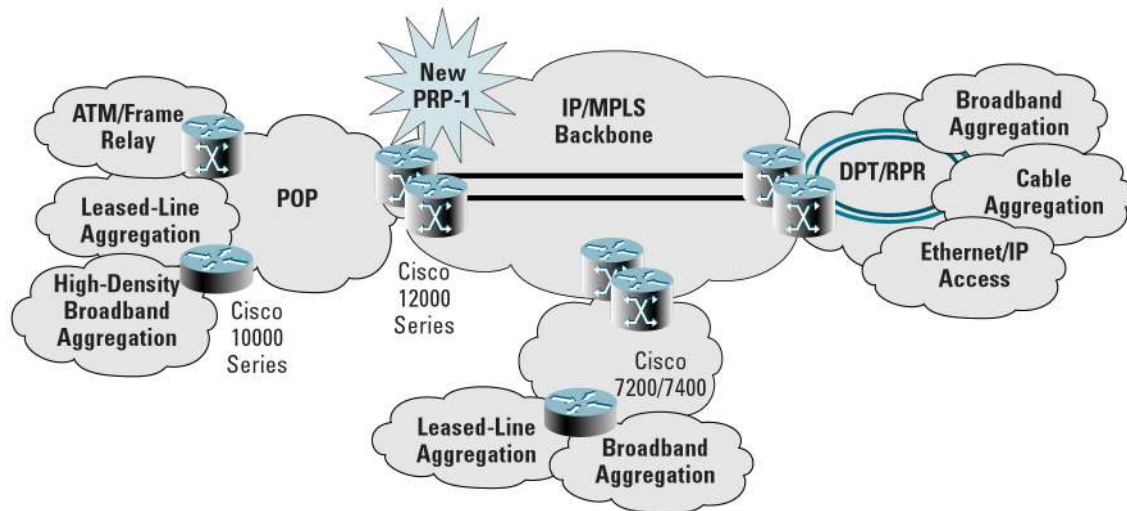
The Cisco PRP-1 has the memory capacity to support more than 1 million routes, providing extensive headroom to address the largest public and private applications well into the future. The Cisco PRP-1, with its advanced Power PC processor, has the performance to support the fastest route convergence necessary for gigabit and terabit routing applications. The Cisco PRP-1 calculates and updates the routing table and all other control plane activities, including:

- Open Shortest Path First (OSPF), Intermediate System-to-Intermediate System (IS-IS), and Border Gateway Protocol (BGP) routing updates
- Layer 2 “keepalives”
- OSPF, IS-IS, and BGP calculations

- Automatic Protection Switching/Multiplex Section Protection (Packet over SONET [POS] line cards)
- High availability features such as Hot Standby Router Protocol/Virtual Router Redundancy Protocol (HSRP/VRRP), Route Processor Redundancy Plus, Cisco NSF, and Cisco SSO

**Figure 3**

PRP-1 enables Cisco 12000 Series to scale to support the largest network infrastructures



## KEY FEATURES AND BENEFITS

The Cisco PRP-1 is the default route processor in Cisco's 12000 family of routers

- Establishing a new benchmark in IP routing convergence for gigabit and terabit routing applications.
- Supporting more than 1 million routes, providing extensive headroom to address the largest public and private applications of today and tomorrow.
- An enhanced switch fabric interface greatly increasing the rate at which BGP and Interior Gateway Protocol (IGP) updates are transmitted to neighboring routers.
- The industry's most complete high availability feature set ensures maximum service availability:
  - Cisco NSF
  - Cisco SSO
  - Redundant Route Processor Plus
  - HSRP/VRRP
  - Non-service impacting online insertion and removal (OIR)
  - MPLS-Fast reroute (MPLS-FRR)
  - Dynamic Packet Transport-Intelligent Protection Switching (DPT-IPS)
  - Synchronous Optical Network (SONET) Automatic Protection Switching (APS)
  - Synchronous Digital Hierarchy (SDH) Multiplex Section Protection (MSP)

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The Cisco 12000 Series Router is part of Cisco's family of multimillion packets-per-second (pps) IP and MPLS routing platforms for building profitable networks in today's communications economy. The Cisco 12000 Series is the premier high-end routing platform for service provider backbone and edge applications, enabling service providers to meet the challenge of building packet networks to satisfy services demand while increasing profitability. The Cisco 12000 Series offers the only portfolio of 10 Gbps per slot systems and interfaces (including POS, Dynamic Packet Transport/Resilient Packet Ring [DPT/RPR], and Gigabit Ethernet [GbE]), delivering 10G economies of scale anywhere in the network. The Cisco 12000 Series provides the highest reliability, the richest set of service enablers, the lowest total cost of ownership, and the only proven investment protection, including systems that can be upgraded in the field to increase switching capacity. This innovative combination of features and capabilities enables service providers to build the most competitive IP and MPLS networks.

## SPECIFICATIONS

**Table 1.** Technical Specifications

| Description                   | Specification  |
|-------------------------------|--|
| <b>Chassis compatibility</b>  | Cisco 12816, 12810, 12416, 12410, 12406, 12404, 12016, 12012, and 12008 Routers  |
| <b>Software compatibility</b> | 12.0(22)S  |
| <b>Protocols</b>              | <ul style="list-style-type: none"> <li>▪ Cisco Discovery Protocol (CDP)</li> <li>▪ Internet Control Message Protocol (ICMP)</li> <li>▪ Layer 3 routing protocols, including BGPv4, OSPFv2, IS-IS, Enhanced Interior Gateway Routing Protocol (EIGRP), Routing Information Protocol (RIP), RIPv2, IPv4, and IPv6</li> <li>▪ Multicast forwarding with support for source-based and shared distribution trees and the following protocols: <ul style="list-style-type: none"> <li>– Protocol Independent Multicast—dense mode (PIM-DM)</li> <li>– PIM—sparse mode (PIM-SM)</li> <li>– AutoRP</li> <li>– Internet Group Management Protocol (IGMP)v1/v2</li> <li>– Cisco Group Management Protocol (CGMP)</li> <li>– Multiprotocol BGP (MBGP)</li> <li>– Multicast Source Discovery Protocol (MSDP)</li> </ul> </li> <li>▪ MPLS virtual private network (VPN) control plane</li> <li>▪ MPLS Traffic Engineering control plane (RFCs 2702 and 2430)</li> </ul> |
| <b>Memory</b>                 | <ul style="list-style-type: none"> <li>▪ 512 MB default route memory, configurable to 2 GB</li> <li>▪ 64 MB Boot Flash</li> <li>▪ 2 MB nonvolatile RAM (NVRAM)</li> <li>▪ 64 MB Advanced Technology Attachment (ATA) PC Card (included), up to 1 GB ATA PC Card for each of two available slots</li> </ul>   |
| <b>Options</b>                | <ul style="list-style-type: none"> <li>▪ Two 1 GB synchronous dynamic RAM (SDRAM)</li> <li>▪ One 1 GB SDRAM</li> <li>▪ 128 MB ATA PC Card</li> <li>▪ 256 MB ATA PC Card</li> <li>▪ 1 GB ATA PC Card</li> </ul>   |
| <b>Main Processor</b>         | 667 MHz PowerPC processor  |

| Description                         | Specification   |
|-------------------------------------|---|
| <b>Connectivity</b>                 | <ul style="list-style-type: none"> <li>▪ Console port (RJ-45 connector)</li> <li>▪ Auxiliary port (RJ-45 connector)</li> <li>▪ Two 10/100 Ethernet ports (RJ-45 connectors)</li> </ul>  |
| <b>Reliability and availability</b> | <ul style="list-style-type: none"> <li>▪ Cisco NSF</li> <li>▪ Cisco SSO</li> <li>▪ HSRP/VRRP</li> <li>▪ Route Processor Redundancy Plus</li> <li>▪ OIR</li> <li>▪ MPLS-FRR</li> <li>▪ DPT-IPS</li> <li>▪ APS/MSP</li> </ul>   |
| <b>Network management</b>           | <ul style="list-style-type: none"> <li>▪ Cisco IOS Software command-line interface (CLI)</li> <li>▪ Simple Network Management Protocol (SNMP), including SONET/Synchronous Digital Hierarchy (SONET/SDH) Management Information Base (MIB) (RFC 2558)</li> <li>▪ Cisco 12000 Manager</li> </ul> |
| <b>Indicators</b>                   | Alphanumeric and LED status display   |

**Table 2.** Power Requirements

| Description  | Specification |
|--------------|---------------|
| <b>Power</b> | 60 watts      |

**Table 3.** Physical and Environmental Specifications

| Description                   | Specification  |
|-------------------------------|--|
| <b>Temperature</b>            | Operating: 32° to 104°F (0° to 40°C)<br>Storage: -4° to 149°F (-20° to 65°C)       |
| <b>Humidity</b>               | Operating (noncondensing): 10–90%<br>Storage (noncondensing): 5–95%                |
| <b>Weight</b>                 | 6.0 lb (2.7 kg)  |
| <b>Dimensions (H x W x D)</b> | 14.5 x 1.25 x 18.5 in. (36.8 x 3.2 x 45.7 cm)<br>Width (occupies single thin slot) |

**Table 4.** Regulatory Approvals

| Description                                      | Specification   |
|--|---|
| <b>Safety</b>                                    | UL 60950<br>CSA 22.2-No. 60950<br>EN60950<br>IEC 60950 CB Scheme<br>ACA TS001<br>AS/NZS 3260  |
| <b>EMI</b>                                       | FCC Class A<br>ICES 003 Class A<br>AS/NZS 3548 Class B<br>CISPR 22 Class B<br>EN55022/EN50082-1 Class B<br>ETSI EN 300 386 (EN55022 Class B)<br>VCCI Class B  |
| <b>Immunity</b>                                  | EN 61000-4-2, ESD Level 4 (15-kV air, 8-kV contact)<br>EN 61000-4-3, radiated immunity Level 3 (10 V/m)<br>EN 61000-4-4 EFT Level 4<br>EN 61000-4-5 surge<br>EN 61000-4-6 conducted immunity Level 3 (10V)<br>EN 61000-4-11 Voltage dips and sags<br>EN 55024 |
| <b>ETSI</b>                                      | EN 300 386/EN 300 386-2 Class B   |
| <b>Network Equipment Building Systems (NEBS)</b> | This product is designed to meet the following requirements (qualification in progress):<br>SR-3580—NEBS: criteria levels (Level 3 compliant)<br>GR-63-Core—NEBS: physical protection<br>GR-1089-Core—NEBS: EMC and safety                                    |

**ORDERING INFORMATION**

| Product description   | Part number      |
|---|------------------|
| Cisco 12000 Series Performance Router Processor-1, 512 MB SDRAM, 64 MB Boot Flash, 64 MB Flash disk | PRP-1            |
| Cisco 12000 Series One 512 MB SDRAM, available as spare only  | MEM-PRP-512M     |
| Cisco 12000 Series One 1 GB SDRAM   | MEM-PRP-1G       |
| Cisco 12000 Series Two 1 GB SDRAM, available as factory upgrade only                                | 2MEM-PRP-1G      |
| Cisco 12000 Series 64 MB ATA PC Card (Flash disk), available as spare only                          | MEM-12KRP-FD64M  |
| Cisco 12000 Series 128 MB ATA PC Card (Flash disk)  | MEM-12KRP-FD128M |
| Cisco 12000 Series 256 MB ATA PC Card (Flash disk)  | MEM-12KRP-FD256M |
| Cisco 12000 Series 1 GB ATA PC Card (Flash disk)  | MEM-12KRP-FD1G   |



## **SERVICE AND SUPPORT**

Cisco offers a wide range of service support offerings for its service provider customers. Cisco has earned the highest customer satisfaction ratings in the industry by providing the world-class service and support necessary to deploy, operate, and optimize service provider networks. Whether the goal is speed to market, maximizing network availability, or enhancing customer satisfaction and retention, Cisco is committed to the success of its service provider customers.

## **FOR MORE INFORMATION**

For more information on Cisco service and support programs and benefits, go to <http://www.cisco.com/en/US/support/index.html>.

For more information about the Cisco 12000 Series and the Cisco family of next generation routers, visit Cisco at <http://www.cisco.com/go/12000>, or call Cisco.



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