Cisco CRS Series Forwarding Processor 40 Gigabit

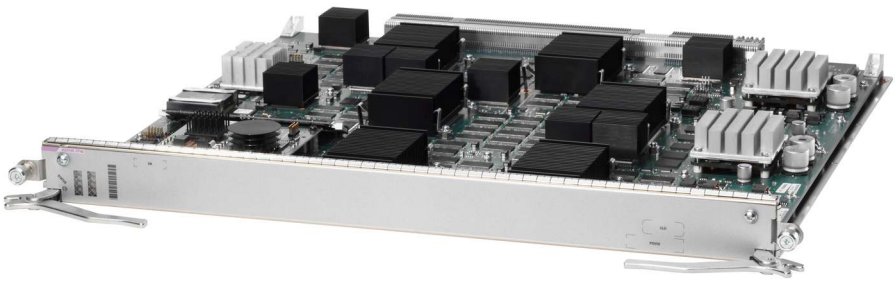
The Cisco® CRS-1 Carrier Routing System is the industry's first carrier router offering continuous system operation, unprecedented service flexibility, and system longevity. The Cisco CRS-1 is powered by Cisco IOS® XR Software-a unique self-healing, distributed operating system. As part of a video-enabled IP Next-Generation Network (NGN), the Cisco CRS-1 Series delivers continuous, always-on operation that easily scales to support the massive bandwidth requirements of visual networking experiences such as high-definition IPTV and Cisco TelePresence. These services demand a platform that delivers predictable forwarding performance and efficient, intelligent fabric-based multicast replication. The Cisco CRS-1 Series enables the Internet and NGNs to handle the approaching zettabyte era of carrier IP communications while protecting network investments for decades to come.

Product Overview

The Cisco CRS-1 Series Forwarding Processor 40G card provides 40-Gbps distributed forwarding-engine capability for the Cisco CRS Series. The 40G card is responsible for the data-plane processing tasks, and all network traffic flows through it. The 40G card performs all baseline packet routing operations, including Layer 3 forwarding, quality-of-service (QoS) classification, policing and shaping, security access control lists (ACLs), VPNs, load balancing, and NetFlow. Performance highlights of the 40G card include hardware-assisted policing, and jitter- and latency-minimizing multicast packet replication.

This data sheet provides detailed product specifications for the Cisco CRS-1 Series Forwarding Processor 40G card (Figure 1).

Figure 1. Cisco CRS-1 Series Forwarding Processor 40G



Key Features and Benefits

The Cisco CRS-1 Series Forwarding Processor 40G card offers many advantages:

- Supported across 4-slot and 8-slot CRS-3 chassis

- Supported across both the 4-slot and 8-slot Cisco CRS-1 Series chassis
- Supported across 4-slot and 8-slot CRS-3 chassis
- Paired with a variety of interface modules, providing deployment flexibility
- Provides Layer 3 forwarding with wire-rate performance at 40 Gbps and predictable throughput with features enabled such as Unicast Reverse Path Forwarding (uRPF) and large access control lists (ACLs).
- Additional services such as class-of-service (CoS) processing, Multicast, Traffic Engineering (TE), and NetFlow, are also performed at 40-Gbps line rate
- Supports several forwarding protocols including IPv4, IPv6, and Multiprotocol Label Switching (MPLS)
- Enhances performance with hardware-based prefix lookup for IPv4, IPv6, and MPLS

Product Specifications

Table 1. Product Specifications

Feature	Description
Chassis Compatibility	Supported across 4-slot and 8-slot CRS-3 chassis Compatible with both 4-slot and 8-slot Cisco CRS-1 chassis
Interface Module Compatibility	Supports following PLIMs: 4-10GE, 42-1GE, 20-1GE-FLEX, 2-10GE-WL-FLEX, 4-10GBE-WL-XFP, 8-10GBE-WL-XFP, 4-10GE-ITU/C and CRS-CGSE-PLIM. The CGSE PLIM is supported with CRS-FP40 starting XR 4.1.1.
Software Compatibility	Cisco IOS XR Software Release 3.8.1 or later for CRS-1 Cisco IOS XR Software Release 4.0.0 or later for CRS-3
Features	IP features: • IPv4 unicast services • IPv6 unicast services • IPv4/IPv6 ECMP • IPv4/IPv6 Load Balancing Forwarding features: • Access control lists (ACLs/xACLs) • Quality of service/class of service (QoS/CoS) using Modular QoS CLI (MQC) • IP packet classification/marking • Queuing (both ingress and egress) • Policing (both ingress and egress) • Diagnostic and network management support IPv4 Multicast features: • Multicast Reverse Path Forwarding (RPF) • Multicast Nonstop Forwarding (NSF) • Multicast Forwarding Information Base (MFIB) MPLS features: • MPLS forwarding • MPLS load balancing • UNI • LMP Security features: • Control packet policing • Dynamic control plane protection • GTSM RFC 3682 (Formally BTSH)
Memory	• 2 GB of route table memory • 1 GB of packet buffer memory per side (2 GB total per line card [ingress and egress])
Performance	40 Gbps line rate performance
Reliability and Availability	• Line-card online insertion and removal (OIR) support

Feature	Description
	• Out of resource management • Process re-startability • MPLS Fast Reroute (FRR)
MIBs	• CISCO-MEMORY-POOL-MIB • Cisco Process MIB • CISCO-CDP-MIB • IF-MIB (RFC 2233/RFC 2863)
Network Management	• Enhanced command-line interface (CLI) • Extensible Markup Language (XML) interface • XML schemas • Simple Network Management Protocol (SNMP) and MIB support
Programmatic Interfaces	XML Schema support
Physical Dimensions	• Occupies one slot • Weight: 12 lb (5.44 kg) • Height: 20.6 in. (52.2 cm) • Depth: 18.62 in. (47.25 cm) • Width: 1.8 in. (4.49 cm)
Power	330W
Environmental Conditions	• Storage temperature: –40℃ to 70℃ (–40℉ to 158℉) • Operating temperature: – Normal: 5℃ to 40℃ (41℉ to 104℉) – Short term: –5℃ to 50℃ (23℉ to 122℉) short ter m • Relative humidity: – Normal: 5% to 85% – Short-term: 5% to 90% but not to exceed 0.024 kg water/kg of dry air Short-term refers to a period of not more than 96 consecutive hours and a total of not more than 15 days in 1 year. (This refers to a total of 360 hours in any given year, but no more than 15 occurrences during that 1-year period.)

Approvals and Compliance

Table 2. Compliance and Agency Approvals

Feature	Description
Safety Standards	• UL/CSA/IEC/EN 60950-1 • IEC/EN 60825 Laser Safety • ACA TS001 • AS/NZS 60950 • FDA – Code of Federal Regulations Laser Safety
EMI	• FCC Class A • ICES 003 Class A • AS/NZS 3548 Class A • CISPR 22 (EN55022) Class A • VCCI Class A • BSMI Class A • IEC/EN 61000-3-2: Power Line Harmonics • IEC/EN 61000-3-3: Voltage Fluctuations and Flicker
Immunity (Basic Standards)	• IEC/EN-61000-4-2: Electrostatic Discharge Immunity (8kV Contact, 15kV Air) • IEC/EN-61000-4-3: Radiated Immunity (10V/m) • IEC/EN-61000-4-4: Electrical Fast Transient Immunity (2kV Power, 1kV Signal) • IEC/EN-61000-4-5: Surge AC Port (4kV CM, 2kV DM) • IEC/EN-61000-4-5: Signal Ports (1kV) • IEC/EN-61000-4-5: Surge DC Port (1kV) • IEC/EN-61000-4-6: Immunity to Conducted Disturbances (10Vrms)

Feature	Description
	• IEC/EN-61000-4-8: Power Frequency Magnetic Field Immunity (30A/m) • IEC/EN-61000-4-11: Voltage DIPS, Short Interruptions, and Voltage Variations
ETSI and EN	• EN300 386: Telecommunications Network Equipment (EMC) • EN55022: Information Technology Equipment (Emissions) • EN55024: Information Technology Equipment (Immunity) • EN50082-1/EN-61000-6-1: Generic Immunity Standard
Network Equipment Building Systems (NEBS)	This product is designed to meet the following requirements (qualification in progress): • SR-3580: NEBS Criteria Levels (Level 3) • GR-1089-CORE: NEBS EMC and Safety • GR-63-CORE: NEBS Physical Protection

Ordering Information

To place an order, visit the Cisco Ordering Home Page.

Table 3. Ordering Information

Product Part Number	Product Name
CRS-FP40 (=)	Cisco CRS-1 Series Forwarding Processor 40G

To Download the Software

To download Cisco IOS Software, visit the Cisco Software Center.

Service and Support

Cisco offers numerous innovative services programs to accelerate customer success. These programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you to protect your network investment, optimize network operations, and prepare the network for new applications to extend network intelligence and the power of your business. For more information about Cisco services, visit: Cisco Technical Support Services or Cisco Advanced Services.

For More Information

For more information about the Cisco CRS-1 Series Forwarding Processor 40G card, contact your local account representative or visit Cisco at: www.cisco.com/go/crs

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Printed in USA C78-553673-01 04/12