

Cisco CRS Series Forwarding Processor 40 Gigabit

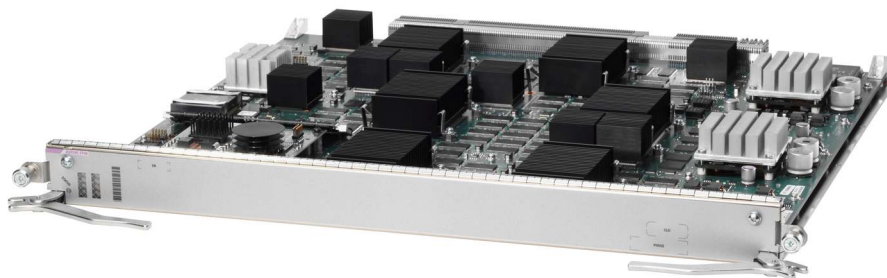
The Cisco® CRS-1 Carrier Routing System is the industry's first carrier router offering continuous system operation, unprecedented service flexibility, and system longevity. The Cisco CRS-1 is powered by Cisco IOS® XR Software—a unique self-healing, distributed operating system. As part of a video-enabled 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/marketing • 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°C to 70°C (–40°F to 158°F) • Operating temperature: – Normal: 5°C to 40°C (41°F to 104°F) – Short term: –5°C to 50°C (23°F to 122°F) short term • 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

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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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