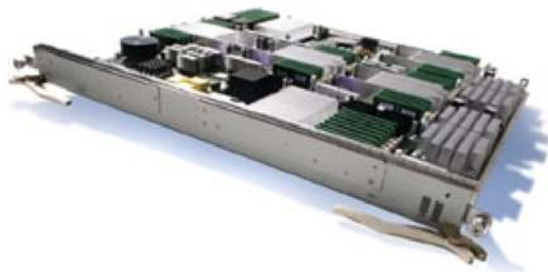


## Cisco CRS Modular Services Card (LC)

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 designed for always-on operation while scaling system capacity up to 92 Tbps. The innovative system architecture combines the Cisco Silicon Packet Processor, the first programmable 40-Gbps application-specific integrated circuit (ASIC), with the Cisco Service Separation Architecture for unprecedented service flexibility and speed to service. The Cisco CRS-1 marks a new era in carrier IP Communications by powering the foundation for network and service convergence today while protecting investments for decades to come.

This data sheet provides detailed product specifications for the Cisco CRS-1 Modular Services Card. For more information about the Cisco CRS-1 or about other interfaces available for the Cisco CRS-1, visit:

<http://www.cisco.com/go/crs>



### Product Specifications

**Table 1.** Product Specifications

Feature	Description
<b>Chassis Compatibility</b>	<ul style="list-style-type: none"> <li>• Compatible with all current Cisco CRS-1 Line-Card Chassis</li> <li>• Compatible with 4-slot, 8-slot, 16-slot and Multi-chassis CRS-3 chassis</li> <li>• Always paired with an interface module (IM)</li> </ul>
<b>Software Compatibility</b>	Cisco IOS® XR Software Release 2.0 & 3.0 or higher for CRS-1 Cisco IOS XR Software Release 4.0.0 or later for CRS-3

Feature	Description
<b>Features</b>	<p><b>IP Features:</b></p> <ul style="list-style-type: none"> <li>• IPv4 unicast services</li> <li>• IPv6 unicast services</li> <li>• IPv4/IPv6 ECMP</li> <li>• IPv4/IPv6 Load Balancing</li> </ul> <p><b>Forwarding Features:</b></p> <ul style="list-style-type: none"> <li>• Access control lists (ACLs/xACLs)</li> <li>• Quality of service/class of service (QoS/CoS) using Modular QoS CLI (MQC)</li> <li>• IP packet classification/marketing</li> <li>• Queuing (both ingress and egress)</li> <li>• Policing (both ingress and egress)</li> <li>• Diagnostic and network management support</li> </ul> <p><b>IPv4 Multicast Features:</b></p> <ul style="list-style-type: none"> <li>• Multicast Reverse Path Forwarding (RPF)</li> <li>• Multicast Nonstop Forwarding (NSF)</li> <li>• Multicast Forwarding Information Base (MFIB)</li> </ul> <p><b>MPLS Features:</b></p> <ul style="list-style-type: none"> <li>• MPLS forwarding</li> <li>• MPLS load balancing</li> <li>• UNI</li> <li>• LMP</li> </ul> <p><b>Security Features:</b></p> <ul style="list-style-type: none"> <li>• Control packet policing</li> <li>• Dynamic control plane protection</li> <li>• GTSM RFC 3682 (Formally BTSH)</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>• Configurable with 2GB of route table memory</li> <li>• 1 GB of packet buffer memory per side (2 GB total per line card [ingress and egress])</li> </ul>
<b>Performance</b>	40Gbps line rate performance
<b>Reliability and Availability</b>	<ul style="list-style-type: none"> <li>• Line-card online insertion and removal (OIR) support</li> <li>• Out of resource management</li> <li>• Process Re-startability</li> <li>• MPLS Fast Reroute (FRR)</li> </ul>
<b>MIBs</b>	<ul style="list-style-type: none"> <li>• CISCO-MEMORY-POOL-MIB</li> <li>• Cisco Process MIB</li> <li>• CISCO-CDP-MIB</li> <li>• IF-MIB (RFC 2233/RFC 2863)</li> </ul>
<b>Network Management</b>	<ul style="list-style-type: none"> <li>• Enhanced command-line interface (CLI)</li> <li>• Extensible Markup Language (XML) interface</li> <li>• XML schemas</li> <li>• Craft Works Interface (CWI)</li> <li>• Simple Network Management Protocol (SNMP) and MIB support</li> </ul>
<b>Programmatic Interfaces</b>	XML Schema support
<b>Physical Dimensions</b>	<ul style="list-style-type: none"> <li>• Occupies one slot</li> <li>• Weight: 18.7 lb (8.38 kg)</li> <li>• Height: 20.6 in. (52.2 cm)</li> <li>• Depth: 18.62 in. (47.25 cm)</li> <li>• Width: 1.8 in. (4.49 cm)</li> </ul>
<b>Power</b>	350W

Feature	Description
<b>Environmental Conditions</b>	<ul style="list-style-type: none"> <li>• Storage Temperature: -40°C to 70°C (-40°F to 158°F)</li> <li>• Operating Temperature: <ul style="list-style-type: none"> <li>◦ Normal: 5°C to 40°C (41°F to 104°F)</li> <li>◦ Short term: -5°C to 50°C (23°F to 122°F) short term</li> </ul> </li> <li>• Relative Humidity: <ul style="list-style-type: none"> <li>◦ Normal: 5% to 85%</li> <li>◦ Short-term: 5% to 90% but not to exceed 0.024 kg water/kg of dry air</li> </ul> </li> </ul> <p>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.)</p>

## Approvals and Compliance

**Table 2.** Compliance and Agency Approvals

Feature	Description
<b>Safety Standards</b>	<ul style="list-style-type: none"> <li>• UL/CSA/IEC/EN 60950-1</li> <li>• IEC/EN 60825 Laser Safety</li> <li>• ACA TS001</li> <li>• AS/NZS 60950</li> <li>• FDA – Code of Federal Regulations Laser Safety</li> </ul>
<b>EMI</b>	<ul style="list-style-type: none"> <li>• FCC Class A</li> <li>• ICES 003 Class A</li> <li>• AS/NZS 3548 Class A</li> <li>• CISPR 22 (EN55022) Class A</li> <li>• VCCI Class A</li> <li>• BSMI Class A</li> <li>• IEC/EN 61000-3-2: Power Line Harmonics</li> <li>• IEC/EN 61000-3-3: Voltage Fluctuations and Flicker</li> </ul>
<b>Immunity (Basic Standards)</b>	<ul style="list-style-type: none"> <li>• IEC/EN-61000-4-2: Electrostatic Discharge Immunity (8kV Contact, 15kV Air)</li> <li>• IEC/EN-61000-4-3: Radiated Immunity (10V/m)</li> <li>• IEC/EN-61000-4-4: Electrical Fast Transient Immunity (2kV Power, 1kV Signal)</li> <li>• IEC/EN-61000-4-5: Surge AC Port (4kV CM, 2kV DM)</li> <li>• IEC/EN-61000-4-5: Signal Ports (1kV)</li> <li>• IEC/EN-61000-4-5: Surge DC Port (1kV)</li> <li>• IEC/EN-61000-4-6: Immunity to Conducted Disturbances (10Vrms)</li> <li>• IEC/EN-61000-4-8: Power Frequency Magnetic Field Immunity (30A/m)</li> <li>• IEC/EN-61000-4-11: Voltage DIPS, Short Interruptions, and Voltage Variations</li> </ul>
<b>ETSI and EN</b>	<ul style="list-style-type: none"> <li>• EN300 386: Telecommunications Network Equipment (EMC)</li> <li>• EN55022: Information Technology Equipment (Emissions)</li> <li>• EN55024: Information Technology Equipment (Immunity)</li> <li>• EN50082-1/EN-61000-6-1: Generic Immunity Standard</li> </ul>
<b>Network Equipment Building Systems (NEBS)</b>	<p>This product is designed to meet the following requirements (qualification in progress):</p> <ul style="list-style-type: none"> <li>• SR-3580: NEBS Criteria Levels (Level 3)</li> <li>• GR-1089-CORE: NEBS EMC and Safety</li> <li>• GR-63-CORE: NEBS Physical Protection</li> </ul>

## Ordering Information

To place an order, visit: [Cisco Ordering Home Page](#)

**Table 3.** Ordering Information

Product Part Number	Product Name
CRS-MSC (=)	Cisco CRS-1 Modular Services Card

### To Download the Software

To download Cisco IOS Software, visit: [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 Modular Services Card, contact your local account representative or visit Cisco at: <http://www.cisco.com/go/crs>



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San Jose, CA

Asia Pacific Headquarters  
Cisco Systems (USA) Pte. Ltd.  
Singapore

Europe Headquarters  
Cisco Systems International BV  
Amsterdam, The Netherlands

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