

# Cisco Catalyst 6800 Series 8-Port 40 Gigabit Ethernet Module

## Delivering secure and predictable performance for next-generation campus networks

### Product overview

The Cisco Catalyst<sup>®</sup> 6800 Family Switches offer a 8-port 40-Gigabit Ethernet module to serve a variety of high-bandwidth needs for the next-generation enterprise. Working in conjunction with the Catalyst<sup>®</sup> Supervisor Engine 2T/2TXL (VS-S2T-10G & VS-S2T-10GXL) or Catalyst Supervisor Engine 6T/6TXL (C6800-SUP6T & C6800-SUP6T-XL), they can serve different needs on campus deployments. The line card includes two variants: the Catalyst 6800 8-port 40-Gigabit Ethernet Fiber Module non-XL and the Catalyst 6800 8-port 40-Gigabit Ethernet Fiber Module XL.

The modules support hardware-based multicast replication, Quality of Service (QoS), Access Control Lists (ACLs), jumbo frames, and low latency to enable secure and predictable performance for bandwidth-intensive applications. Both share a common ASIC architecture and support the same set of features in hardware. The eight-port 40-Gigabit Ethernet Modules can also operate in performance mode. They include hardware features such as Virtual Switching System (VSS), Location ID Separation Protocol (LISP), Security Group Tagging (SGT) and Access Control (SGACL), MACsec (802.1ae), traffic shaping, and Hierarchical Quality of Service (HQoS), Software-Defined Access (SDA) among others. The line cards also have front-facing passive UHF RFID technology, providing the latest Auto-ID capabilities for asset management. They support Quad Small Form-Factor Pluggable (QSFP) transceivers. The modules are designed to meet the increasing demand for aggregation of 40-Gigabit Ethernet streams in campus deployments, as well as for 40-Gigabit Ethernet transport in the core.

### 6800 Series 8-Port 40 Gigabit Ethernet Module

The 6800 Series 8-Port 40 Gigabit Ethernet Module is suitable for deployment in all aggregation and core networks.

- **Two models:** C6800-8P40G, an 8-port 40 Gigabit Ethernet module with DFC4-E (Figure 1), and C6800 8P40G-XL, an 8-port 40 Gigabit Ethernet module with DFC4-EXL
- **Backplane connection:** 160-Gbps backplane bandwidth in Catalyst 6807-XL chassis
- **Chassis/slot support:** Can occupy slots 1–2 and 5–7 in a Cisco Catalyst 6807-XL
- **Supervisor engine:** Compatible with Supervisor Engine 2T, Supervisor Engine 2TXL, Supervisor Engine 6T, and Supervisor Engine 6TXL
- **Distributed forwarding and performance:** Comes equipped with dual (2) DFC4-E or DFC4-EXL daughter cards

Figure 1. 6800 Series 8-Port 40 Gigabit Ethernet Module

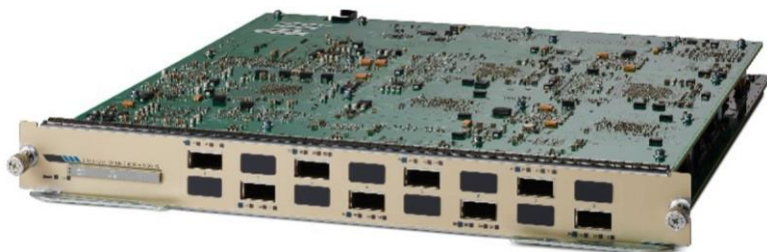


Table 1 summarizes the primary features of the Cisco Catalyst 6800 Series 40 Gigabit Ethernet Modules.

Table 1. 40 Gigabit Ethernet Module primary features

Feature	8-Port 40 Gigabit Ethernet Module (non-XL)	8-Port 40 Gigabit Ethernet Module (XL)
Switch fabric connection	160 Gbps in 6807-XL chassis	160 Gbps in 6807-XL chassis
Oversubscription	In C6807-XL: 8 ports: Oversubscription mode 2:1	In C6807-XL: 8 ports: Oversubscription mode 2:1
Throughput (per module)	IPv4: up to 120 Mpps IPv6: up to 60 Mpps	IPv4: up to 120 Mpps IPv6: up to 60 Mpps
Maximum 40G port density per chassis (not including supervisor uplinks)	40 ports (6807-XL chassis)	40 ports (6807-XL chassis)
Maximum port density per VSS (not including supervisor uplinks)	80 ports (6807-XL chassis)	80 ports (6807-XL chassis)
Can be used to form VSS virtual switch link	Yes (on all ports)	Yes (on all ports)
Performance mode	Yes Per port-group	Yes Per port-group
Forwarding engine features	<ul style="list-style-type: none"> <li>• Equipped with DFC4-E for distributed forwarding, supporting: <ul style="list-style-type: none"> <li>◦ 256K IPv4 and MPLS forwarding entries, 128K IPv6 entries</li> <li>◦ 64K IPv4/IPv6 Multicast routes</li> <li>◦ 64K ACL entries (shared between QoS and security)</li> <li>◦ 1M NetFlow entries (with 2 forwarding engines)</li> </ul> </li> <li>• Both models support a MAC address table of 128K</li> <li>• In addition to the increased NetFlow entries, supports Flexible NetFlow, Sampled NetFlow, and Egress NetFlow</li> <li>• Increased MPLS and VPLS performance of up to: <ul style="list-style-type: none"> <li>• 120 Mpps for MPLS forwarding and up to 60 Mpps for VPLS forwarding</li> </ul> </li> <li>• Support for 16K bridge domains, allowing the standard 4K VLANs to be reused across these bridge domains</li> <li>• IPv4 Internet Group Management Protocol Version 3 (IGMPv3) snooping in hardware</li> <li>• IPv6 Multicast Listener Discovery version 2 (MLDv2) snooping in hardware</li> <li>• Protocol Independent Multicast (PIM) source registers in hardware</li> <li>• IPv4 and IPv6 in IPv6 tunneling, IPv4 and IPv6 in MPLS tunneling (6PE/6VPE)</li> <li>• IPv6 in IPv4 tunneling (Intra-Site Automatic Tunnel Addressing Protocol [ISATAP], 6to4, GRE)</li> <li>• QoS support for uniform, short pipe, and pipe mode tunnel; hierarchical QoS</li> <li>• Fast Link Notification (FLN) for hardware port state detection within 50 ms</li> </ul>	<ul style="list-style-type: none"> <li>• Equipped with DFC4-EXL for distributed forwarding, supporting: <ul style="list-style-type: none"> <li>◦ 1M IPv4 and MPLS forwarding entries, 512K IPv6 entries</li> <li>◦ 64K IPv4/IPv6 Multicast routes</li> <li>◦ 256K ACL entries (shared between QoS and security)</li> <li>◦ 2M NetFlow entries (with 2 forwarding engines)</li> </ul> </li> <li>• Both models support a MAC address table of 128K</li> <li>• In addition to the increased NetFlow entries, supports Flexible NetFlow, Sampled NetFlow, and Egress NetFlow</li> <li>• Increased MPLS and VPLS performance of up to: <ul style="list-style-type: none"> <li>• 120 Mpps for MPLS forwarding and up to 60 Mpps for VPLS forwarding</li> </ul> </li> <li>• Support for 16K bridge domains, allowing the standard 4K VLANs to be reused across these bridge domains</li> <li>• IPv4 Internet Group Management Protocol Version 3 (IGMPv3) snooping in hardware</li> <li>• IPv6 Multicast Listener Discovery version 2 (MLDv2) snooping in hardware</li> <li>• Protocol Independent Multicast (PIM) source registers in hardware</li> <li>• IPv4 and IPv6 in IPv6 tunneling, IPv4 and IPv6 in MPLS tunneling (6PE/6VPE)</li> <li>• IPv6 in IPv4 tunneling (Intra-Site Automatic Tunnel Addressing Protocol [ISATAP], 6to4, GRE)</li> <li>• QoS support for uniform, short pipe, and pipe mode tunnel; hierarchical QoS</li> <li>• Fast Link Notification (FLN) for hardware port state detection within 50 ms</li> </ul>

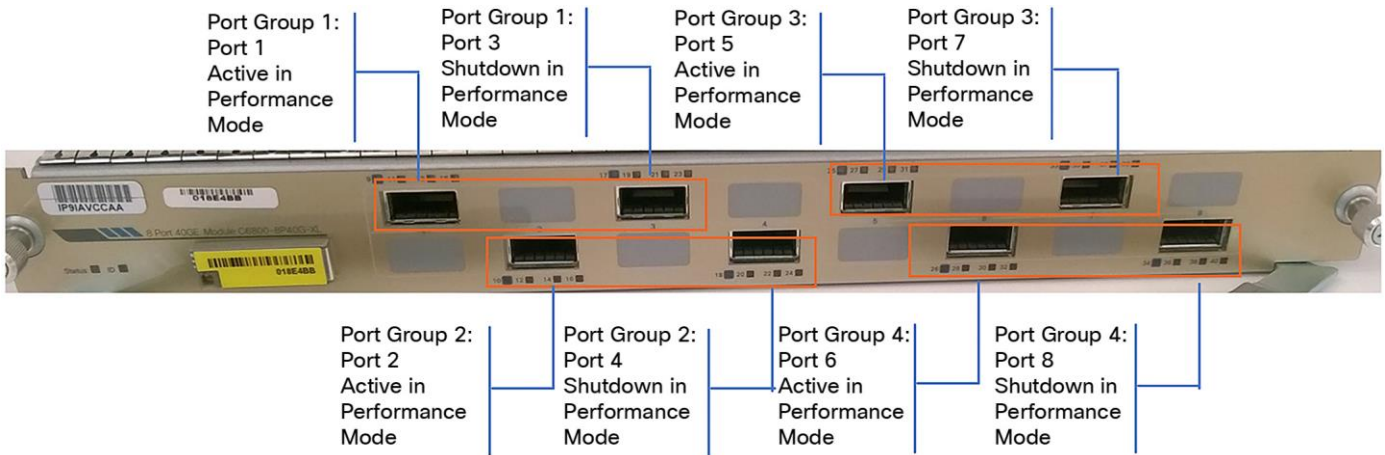
Feature	8-Port 40 Gigabit Ethernet Module (non-XL)	8-Port 40 Gigabit Ethernet Module (XL)
<b>Queues</b>	<ul style="list-style-type: none"> <li>• MACsec (802.1ae) link-layer hardware AES 128-bit encryption</li> <li>• LISP hardware encapsulation</li> <li>• Virtual Switch Header (VSH) and Virtual Network Tag (Vntag) hardware encapsulation for VSS</li> </ul> Receive: <ul style="list-style-type: none"> <li>• 1p7q4t (default)</li> <li>• 2p6q4t (configurable)</li> </ul> Transmit: <ul style="list-style-type: none"> <li>• 1p7q4t (default)</li> <li>• 2p6q4t (configurable)</li> </ul>	<ul style="list-style-type: none"> <li>• MACsec (802.1ae) link-layer hardware AES 128-bit encryption</li> <li>• LISP hardware encapsulation</li> <li>• Virtual Switch Header (VSH) and Virtual Network Tag (Vntag) hardware encapsulation for VSS</li> </ul> Receive: <ul style="list-style-type: none"> <li>• 1p7q4t (default)</li> <li>• 2p6q4t (configurable)</li> </ul> Transmit: <ul style="list-style-type: none"> <li>• 1p7q4t (default)</li> <li>• 2p6q4t (configurable)</li> </ul>
<b>Queuing mechanisms</b>	<ul style="list-style-type: none"> <li>• Class of Service (CoS)-based queue mapping</li> <li>• Differentiated Services Code Point (DSCP)-based queue mapping</li> </ul>	<ul style="list-style-type: none"> <li>• Class of Service (CoS)-based queue mapping</li> <li>• Differentiated Services Code Point (DSCP)-based queue mapping</li> </ul>
<b>Scheduler</b>	Ingress queuing: <ul style="list-style-type: none"> <li>• Deficit Weighted Round Robin (DWRR)</li> </ul> Egress queuing: <ul style="list-style-type: none"> <li>• DWRR               <ul style="list-style-type: none"> <li>◦ WRED</li> </ul> </li> <li>• Shaped Round Robin (SRR)               <ul style="list-style-type: none"> <li>◦ WRED</li> </ul> </li> <li>• Class-Based Weighted Fair Queuing (CBWFQ)               <ul style="list-style-type: none"> <li>◦ 2-Level Traffic Shaping (HQoS)                   <ul style="list-style-type: none"> <li>◦ Low-Latency Queuing (LLQ)</li> </ul> </li> </ul> </li> </ul>	Ingress queuing: <ul style="list-style-type: none"> <li>• Deficit Weighted Round Robin (DWRR)</li> </ul> Egress queuing: <ul style="list-style-type: none"> <li>• DWRR               <ul style="list-style-type: none"> <li>◦ WRED</li> </ul> </li> <li>• Shaped Round Robin (SRR)               <ul style="list-style-type: none"> <li>◦ WRED</li> </ul> </li> <li>• Class-Based Weighted Fair Queuing (CBWFQ)               <ul style="list-style-type: none"> <li>◦ 2-Level Traffic Shaping (HQoS)                   <ul style="list-style-type: none"> <li>◦ Low-Latency Queuing (LLQ)</li> </ul> </li> </ul> </li> </ul>
<b>Port buffers</b>	Oversubscription mode: <ul style="list-style-type: none"> <li>• 1 GB per port (egress)</li> <li>• 4.8 MB per port (ingress)</li> </ul> Performance mode: <ul style="list-style-type: none"> <li>• 2 GB per port (egress)</li> <li>• 10 MB per port (ingress)</li> </ul>	Oversubscription mode: <ul style="list-style-type: none"> <li>• 1 GB per port (egress)</li> <li>• 4.8 MB per port (ingress)</li> </ul> Performance mode: <ul style="list-style-type: none"> <li>• 2 GB per port (egress)</li> <li>• 10 MB per port (ingress)</li> </ul>
<b>Hardware multicast replication</b>	<ul style="list-style-type: none"> <li>• Ingress and egress replication mode</li> <li>• Approximately 20 Gbps per replication engine</li> <li>• 8 replication engines per module</li> </ul>	<ul style="list-style-type: none"> <li>• Ingress and egress replication mode</li> <li>• Approximately 20 Gbps per replication engine</li> <li>• 8 replication engines per module</li> </ul>
<b>Jumbo frame support</b>	Up to 9216 bytes	Up to 9216 bytes

## Line card mode of operation

Cisco Catalyst 6800 8-Port 40-Gigabit Ethernet Fiber Module can operate in Oversubscription Mode (2:1) or in performance mode to provide line-rate operation.

Ports are numbered from Left to right as shown in Figure 2, Odd Number ports on TOP and Even Number Ports on Bottom.

Figure 2. 6800 Family 8-Port 40-Gigabit Ethernet fiber module port groups and performance mode



- Oversubscribed mode (Default)
  - Both the 40G Ports in a Port Group are active
  - Provides 2:1 Oversubscription
  - Default Mode of operation
  - Ingress & Egress buffers allocated per port-group is shared across both ports.
- Performance Mode
  - One of the port (3,4,7 & 8) in Port-Group are shutdown
  - Ports 1, 2, 5 & 6 operates in Line Rate
  - Ingress & egress buffers are double for active port

Feature	8-Port 40 Gigabit Ethernet Module (non-XL)	8-Port 40 Gigabit Ethernet Module (XL)
40 Gigabit Ethernet ports	<b>8 ports 40GE</b> Numbered left to right: <ul style="list-style-type: none"> <li>• Top row has odd numbered ports: FortyGigabitEthernet 1,3,5,7</li> <li>• Bottom row has even numbered ports: FortyGigabitEthernet 2,4,6,8</li> </ul>	<b>8 ports 40GE</b> Numbered left to right: <ul style="list-style-type: none"> <li>• Top row has odd numbered ports: FortyGigabitEthernet 1,3,5,7</li> <li>• Bottom row has even numbered ports: FortyGigabitEthernet 2,4,6,8</li> </ul>
Port groups	<b>4 port groups</b> 2 Port-sets per port group Port-group 1: <ul style="list-style-type: none"> <li>• 1, 3</li> </ul> Port-group 2: <ul style="list-style-type: none"> <li>• 2, 4</li> </ul> Port-group 3: <ul style="list-style-type: none"> <li>• 5, 7</li> </ul> Port-group 4: <ul style="list-style-type: none"> <li>• 6, 8</li> </ul>	<b>4 port groups</b> 2 Port-sets per port group Port-group 1: <ul style="list-style-type: none"> <li>• 1, 3</li> </ul> Port-group 2: <ul style="list-style-type: none"> <li>• 2, 4</li> </ul> Port-group 3: <ul style="list-style-type: none"> <li>• 5, 7</li> </ul> Port-group 4: <ul style="list-style-type: none"> <li>• 6, 8</li> </ul>

## Product specifications

Table 2 lists product specifications of the 6800 Series 40 Gigabit Ethernet modules.

Table 2. Product specifications

Product	Specifications
<b>Supervisor engines supported</b>	Cisco Catalyst 6500 Series Supervisor Engine 2T and 2TXL Cisco Catalyst 6800 Series Supervisor Engine 6T and 6TXL
<b>Chassis supported</b>	<ul style="list-style-type: none"> <li>• Cisco Catalyst 6807-XL chassis</li> <li>• Not supported in 6500 non-E Series chassis, 6500-E Series chassis, and 7600 Series chassis</li> </ul>
<b>Slot requirements</b>	<ul style="list-style-type: none"> <li>• Can occupy slots 1–2 and 5–7 in a Cisco Catalyst 6807-XL chassis</li> </ul>
<b>Onboard memory</b>	2 GB default
<b>Minimum Cisco IOS® Software release</b>	15.5(1)SY
<b>Standard protocols</b>	IEEE 802.1d, IEEE 802.1p, IEEE 802.1q, IEEE 802.1s, IEEE 802.1w, IEEE 802.3x, IEEE 802.3ad, IEEE 802.3ba
<b>Physical specifications</b>	<ul style="list-style-type: none"> <li>• Occupies one slot in 6807-XL chassis</li> <li>• Dimensions (H x W x D): 1.73 x 15.4 x 16.4 inches (4.39 x 39.11 x 41.65 cm)</li> <li>• Weight: <ul style="list-style-type: none"> <li>◦ 12.52 lb (5.68kg) for C6800-8P40G</li> <li>◦ 12.79 lb (5.80kg) for C6800-8P40G-XL</li> </ul> </li> </ul>
<b>Environmental conditions</b>	<p>Operating temperature:</p> <ul style="list-style-type: none"> <li>• Agency-certified for operation: 32° to 104°F (0° to 40°C)</li> <li>• Design and tested for operation: 32° to 130°F (0° to 55°C)</li> <li>• Storage temperature: -40° to 167°F (-40° to 75°C)</li> <li>• Relative humidity: 10 to 90 percent, noncondensing</li> </ul> <p>Operating altitude:</p> <ul style="list-style-type: none"> <li>• Agency-certified for operation: -500 to 6500 ft (-150 to 2000 m)</li> <li>• Designed and tested for operation: -500 to 10K ft (-150 to 3000 m)</li> </ul>
<b>Regulatory compliance</b>	<p>6800 Series 40 Gigabit Ethernet module, when installed in a system, complies with the following EMC and safety standards:</p> <ul style="list-style-type: none"> <li>• EMC Standards: <ul style="list-style-type: none"> <li>• FCC Part 15 (CFR 47) Class A</li> <li>• ICES-003 Class A</li> <li>• VCCI Class A</li> <li>• EN55022 Class A</li> <li>• EN55024</li> <li>• CISPR24</li> <li>• CISPR 22 Class A</li> <li>• AS/NZS CISPR 22 Class A</li> <li>• ETS 300 386</li> <li>• KN 22 Class A</li> <li>• EN 50082-1</li> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> <li>• EN61000-6-1</li> <li>• CNS13438 Class A</li> <li>• KN6100 -4 Series</li> </ul> </li> <li>• Safety Standards: <ul style="list-style-type: none"> <li>• UL 60950-1</li> <li>• CAN/CSA C22.2 No. 60950</li> <li>• EN 60950-1</li> <li>• IEC 60950-1</li> <li>• AS/NZS 60950-1</li> <li>• IEC 60825 Class 1</li> <li>• EN 60825 Class 1</li> <li>• 21CFR 1040</li> </ul> </li> </ul>

Product	Specifications
ETSI	<ul style="list-style-type: none"> <li>ETS 300 019-2-1, Class 1.1 Storage</li> <li>ETS 300 019-2-2, Class 2.1 and 2.2 Transportation</li> <li>ETS 300 019-2-3, Class 3.1E Stationary Use</li> </ul>
Network management	<ul style="list-style-type: none"> <li>ETHERLIKE-MIB (RFC 1643)</li> <li>IF-MIB (RFC 1573)</li> <li>Bridge MIB (RFC 1493)</li> <li>CISCO-STACK-MIB</li> <li>CISCO-VTP-MIB</li> <li>CISCO-CDP-MIB</li> <li>RMON MIB (RFC 1757)</li> <li>CISCO-PAGP-MIB</li> <li>CISCO-STP-EXTENSIONS-MIB</li> <li>CISCO-VLAN-BRIDGE-MIB</li> <li>CISCO-VLAN-MEMBERSHIP-MIB</li> <li>ENTITY-MIB (RFC 2037)</li> <li>HC-RMON</li> <li>RFC1213-MIB (MIB-II)</li> <li>SMON-MIB</li> </ul>
Power requirements	<ul style="list-style-type: none"> <li>C6800-8P40G: 587.60 watts</li> <li>C6800-8P40G-XL: 587.60 watts</li> <li>Go to <a href="http://www.cisco.com/go/powercalculator">http://www.cisco.com/go/powercalculator</a> for easy power consumption calculation</li> </ul>
Indicators	<ul style="list-style-type: none"> <li>Status: green (operational), red (faulty), and orange (module booting)</li> <li>Link: green (port enabled and connected), orange (port disabled), and off (port enabled and not connected)</li> <li>Blue beacon: Used to identify a specific module in a fully populated system within a multisystem environment</li> </ul>

## System requirements

### Pluggable Optics for 40 Gigabit Ethernet Modules

Please refer to "Cisco 40-Gigabit Ethernet Transceiver Modules Compatibility Matrix" for the most up-to-date information:  
[http://www.cisco.com/c/en/us/td/docs/interfaces\\_modules/transceiver\\_modules/compatibility/matrix/40GE\\_Tx\\_Matrix.html](http://www.cisco.com/c/en/us/td/docs/interfaces_modules/transceiver_modules/compatibility/matrix/40GE_Tx_Matrix.html).

## Ordering information

Table 3 provides part numbers for specific models to assist you with ordering.

Table 3. Part numbers for ordering

Part Numbers	Description
<b>6800 Series 40 Gigabit Ethernet Modules</b>	
C6800-8P40G	Catalyst 6800 8-port 40GE with dual integrated dual DFC4-E
C6800-8P40G-XL	Catalyst 6800 8-port 40GE with dual integrated dual DFC4-EXL
C6800-8P40G=	Catalyst 6800 8-port 40GE with dual integrated dual DFC4-E spare
C6800-8P40G-XL=	Catalyst 6800 8-port 40GE with dual integrated dual DFC4-EXL spare

## Warranty information

The Cisco Catalyst 6800 Series comes with a Cisco 1-year hardware warranty. Adding a contract for a technical service offering such as Cisco Smart Net Total Care™ Service to your device coverage provides access to the Cisco Technical Assistance Center (TAC) and can provide a variety of hardware replacement options to meet critical business needs, updates for licensed OS software, and registered access to the extensive Cisco.com knowledge base and support tools.

For more information about Cisco warranties, go to <http://www.cisco.com/go/warranty>.

For information about Cisco Technical Services, go to <http://www.cisco.com/go/ts>.

Table 4 shows the Cisco technical services available for the Cisco Catalyst 6800 Series

Table 4. Cisco Technical Services for Cisco Catalyst 6800 Series

Technical Services
<p><b>Cisco Smart Net Total Care Service</b></p> <ul style="list-style-type: none"> <li>• Around-the-clock, global access to the Cisco TAC</li> <li>• Unrestricted access to the extensive Cisco.com resources, communities, and tools</li> <li>• Next-business-day, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement<sup>1</sup> and onsite parts replacement and installation available</li> <li>• Ongoing operating system software updates within the licensed feature set<sup>2</sup></li> <li>• Proactive diagnostics and real-time alerts on Smart Call Home enabled devices</li> </ul> <p><b>Cisco Focused Technical Support Services</b></p> <p>3 levels of premium, high-touch services are available:</p> <ul style="list-style-type: none"> <li>• Cisco High-Touch Operations Management Service</li> <li>• Cisco High-Touch Technical Support Service</li> <li>• Cisco High-Touch Engineering Service</li> </ul> <p>Valid Cisco Smart Net Total Care or SP Base contracts on all network equipment are required.</p>

<sup>1</sup> Advance hardware replacement is available in various service-level combinations. For example, 8x5xNBD indicates that shipment will be initiated during the standard 8-hour business day, 5 days a week (the generally accepted business days within the relevant region), with Next Business Day (NBD) delivery. Where NBD is not available, same day ship is provided. Restrictions apply; please review the appropriate service descriptions for details.

<sup>2</sup> Cisco operating system updates include the following: maintenance releases, minor updates, and major updates within the licensed feature set.

## Cisco and partner services

We and our partners can help you create an innovative, secure, intelligent edge in enterprise networks. These are services tailored to your company: Through a discovery process that begins with understanding your business objectives, we help you integrate the Cisco Catalyst 6800 Series 40 Gigabit Ethernet line cards into your architecture and incorporate network services onto that platform. Sharing knowledge and leading practices, we support your success every step of the way as you deploy, absorb, manage, and scale new technology. Choose from a flexible suite of support services designed to meet your business needs and help you maintain high-quality network performance while controlling operational costs. For additional information about Cisco Services, visit <http://www.cisco.com/go/services>.

## Cisco Capital

### Financing to help you achieve your objectives

Cisco Capital<sup>®</sup> can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more](#).

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