# Cisco 12000 Series — IP Backbone Routers

## Product Overview

The Internet is rapidly becoming an electronic agent for commerce, entertainment, communication, and information retrieval. New network-enabled intranet applications and powerful desktop computers are driving an exponential increase in network traffic. Service Providers and Enterprises are rapidly deploying packet switching infrastructures to handle this tremendous growth in data traffic.

The Cisco 12000 Series is Cisco's premier routing product family designed and developed for the core of service provider and enterprise IP backbones. The Cisco 12000 GSR family includes three 2.5G/slot models and three 10G/slot models. The 2.5G/slot models consist of the Cisco 12008, 12012 and the 12016 (supports line cards with various speeds up to OC-48c/STM-16c). The 10G/slot models consist of the Cisco 12406, 12410 and the 12416 (supports line cards with various speeds up to OC-192c/STM-64c).

### Cisco 12000, 2.5G/slot Chassis Offerings

The 12008 model provides a 40 Gbps switch fabric and has eight slots that can be used to support interfaces ranging from DS1 to OC-48c/STM-16c. This model can support a maximum of 7 OC-48c/STM-16c POS interfaces for a total of 28 Mpps switching capacity.

The 12012 model provides a 60 Gbps switch fabric and has 12 slots that can be used to support interfaces ranging from DS1 to OC-48c/STM-16c. This model can support a maximum of 11 OC-48c/STM-16c POS interfaces for a total of 44 Mpps switching.

The 12016 model provides a 80 Gbps switch fabric and has 16 slots for interfaces ranging from DS1 to OC-48c/STM-16c. This model can support a maximum of 15 OC48c/STM-16c POS interfaces for a total of 60 Mpps switching. By conveniently swapping the field replaceable switch fabric, customers can easily upgrade the 12016 to a 320Gbps switching capacity (12416 equivalent) model.

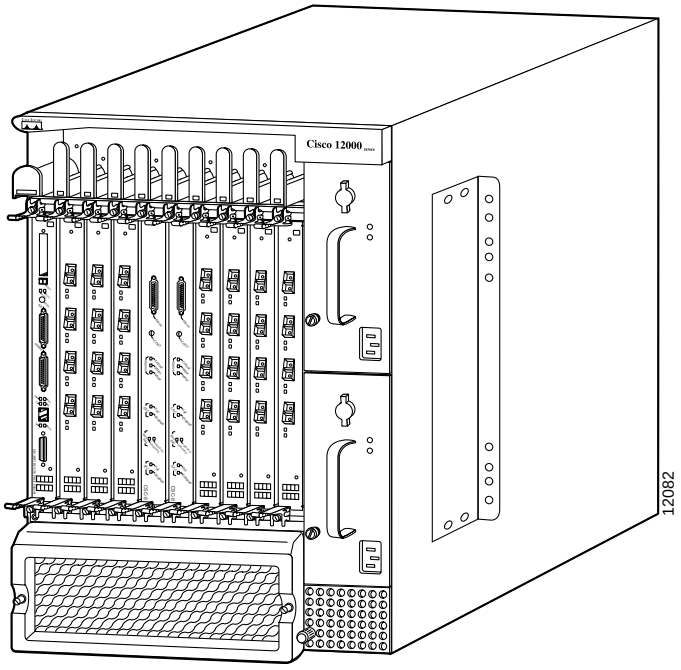
### Cisco 12000, 10G/slot Chassis Offerings

The 12010 provides a 100 Gbps switch fabric and has 10 slots that can be used to support interfaces ranging from DS1 to OC-192c/STM-64c. This model can support a maximum of nine OC-192c/STM-64c interfaces for a total of 225 Mpps switching capacity.

The 12416 provides a 320 Gbps switch fabric and has 16 slots for interfaces ranging from DS1 to OC-192c/STM-64c. This model can support a maximum of fifteen OC-192c/STM-64c POS interfaces for a total of 375 Mpps switching capacity.

The Cisco 12000, 10G/slot chassis is fully compatible with existing GSR line cards, providing flexibility and investment protection.

**Figure 18-2: Cisco 12008 Series, Front View**




The Cisco 12000 Series products are built to meet the bandwidth, performance, services and reliability requirements of today's IP core backbones.

## Scalable Bandwidth

- Modular, multigigabit crossbar switching fabric allows bandwidth to scale in either 40Gbps (12008), 60Gbps (12012), 80Gbps (12016), 200Gbps (12410) or 320Gbps (12416).
- High density, high speed interfaces ranging from DS1 to OC-192c/STM64c, that can be easily added as needed.
- Packet over SONET/SDH interfaces at 155 Mbps (OC3/STM1), 622 Mbps (OC12c/STM4c), 2.5 Gbps (OC48c/STM16c), and 10Gbps (OC192c/STM64c) data rates.
- Asynchronous Transfer Mode (ATM) interfaces at 155 Mbps (OC3/STM1) and 622 Mbps (OC12c/STM4c) data rates
- LAN interfaces 1 Gbps (Gigabit Ethernet) and others to follow
- Frame based interfaces (PPP, Frame Relay) at 45 Mbps (DS3), 155 Mbps (OC3/STM1), 622 Mbps (OC12c/STM4c)
- Channelized interfaces at 622 Mbps (OC-12) channelized to 45 Mbps (DS-3), 622 Mbps (OC-12/STM-4) channelized to 155 Mbps (OC-3/STM-1), and 45 Mbps (T3) channelized to DS-1 (1.5Mbps)
- Scalable Performance
- Innovative switch fabric design supports virtual output queues (VoQs) that eliminate head-of-line blocking (HOLB) and increase overall system efficiency and supports partial fulfillment for multicast traffic where replication of multicast traffic is performed by the switch fabric.
- Distributed architecture delivers scalable Layer 3 switching performance through intelligent line cards that can be added incremental interfaces are required
- Micro-programmable application specific integrated circuits (ASICs) based queuing provides line rate forwarding for unicast and multicast traffic that fills SONET/SDH transmission facilities to capacity, ensuring best return on investment on expensive bandwidth

## Scalable Services

- Industry leading Cisco IOS software

- State of the art queuing and congestion management techniques: Random Early Detection (RED), Weighted RED (WRED) and Deficit Round Robin (DRR) that provides an enhanced Weighted Fair Queuing mechanism
- MPLS Switching support to deliver the scalable traffic engineering features
- Carrier Class Design
- Redundancy in all key system components, i.e. processors, switch fabric, line cards, power and cooling, to minimize network disruption in the event of a failure
- Hot-swap capability enables components to be added or removed without service disruption
- Switch fabric redundancy provides fail-over to backup fabric with no data or user session loss
- APS/MPS enables SONET/SDH resiliency capabilities for providing interface redundancy
- Network Equipment Building System (NEBS) and European Telecommunications Standards Institute (ETSI) compliance for installation in service provider central-offices.

# Key Features and Benefits

## Cisco 12000 Series Architecture

System Level

The Cisco 12000 Series is based on a high speed distributed routing architecture combined with state-of-the-art switching core that delivers Layer 3 routing at gigabit speeds.

The Cisco 12000 Series is optimized for performing routing and packet forwarding functions to transport IP datagrams across a network. The routing function is performed in the Gigabit Route Processors (GRP) responsible for running the routing protocols and building the routing tables from the network topology. This information is then used to build the forwarding tables distributed to the line cards. In addition, the GRP is also responsible for the system control and administrative functions.

- The packet forwarding functions are performed by each of the line card (LC). A copy of the forwarding tables computed by the GRP is distributed to each of the line cards in the system. Each line card performs independent lookup of a destination address for each datagram received on a local copy of the forwarding table and the datagram is switched across a crossbar switch fabric to the destination line card.

  All cards are installed from the front of the chassis and plug into a passive backplane. This backplane contains serial lines that interconnect all of the line cards to the switch fabric cards as well as other connections for power and maintenance functions. Each slot in the Cisco 12000 Series has up to 4 serial line connections (1.25 Gbps), one to each of the switch fabric cards (see below) to provide a total capacity of 5 Gbps per slot (2.5 Gbps full duplex). The 12410/12416 utilizes 4 sets of 4 serial line connections in each slot, providing each slot with a switching capacity of 10 Gbps full duplex.

- Switch Fabric

  At the heart of the Cisco 12000 Series is a multi-gigabit crossbar switch fabric that is optimized to provide high capacity switching at gigabit rates. The crossbar switch enables high performance for two reasons: connections from the line cards to a centralized fabric are point-to-point links that can operate at very high speeds; multiple bus transactions can be supported simultaneously increasing the aggregate bandwidth of the system. A Cisco 12000 Series switching fabric must be configured to full fabric (40 Gbps for 12008, 60 Gbps for 12012, 80 Gbps for 12016, 200Gbps for 12410, and 320Gbps for 12416) in order to support all the current line cards. Please note that the number of fabric cards needed to be installed for a full fabric set will differ according to each chassis.

  The switch fabric includes two card types: Switch Fabric Cards (SFC) and Clock and Scheduler Cards (CSC). Each Cisco 12000 Series must have at least one CSC in the chassis. The CSC handles requests from line cards, issues grants to access the fabric and provides a reference clock to all the cards in the system to synchronize data transfer across the crossbar. The SFC receives the scheduling information and clocking reference from the CSC cards and performs the switching functions.

It provides the following key functions:

- Gigabit speed interconnections between line cards (5 Gbps per slot)
- State-of-the-art scheduling algorithm combined with Virtual Output Queues to eliminate head-of-line blocking (HOLB) achieving 99% efficiency
- Hardware based multicast
- High Availability via redundancy (1:4 for SFC, 1:1 for CSC) with loss-less failover and hot-swap capability.
- Gigabit Route Processor

  The Gigabit Route Processor (GRP) is a high performance engine that provides the routing intelligence for the Cisco 12000 Series. It is dedicated to determining the network topology and calculating the best path across the network. The GRP has the following hardware characteristics:

- 200 MHz R5000 CPU
- 128MB CPU DRAM default for 2.5Gbps packet forwarding line cards or below
- 256 CPU DRAM default for 10Gbps packet forwarding line cards (OC192c/STM-64c and 4OC48c/STM-16c)
- 512 KB Layer 2 cache
- 512 KB configuration NVRAM
- 8 MB boot Flash
- Two PCCMIA Type II software upgrades
- Ethernet (RJ45 and MII connectors) for Network Management access
- Local Console and modem ports (DB-25 EIA/TIA-232c)

It provides the following key functions:

- Process Interior Gateway Protocols (IGP) such as IS-IS, IGRP, EIGRP to determine the network topology
- Process External Gateway Protocols (EGP) such as BGP
- Create and maintain the routing table (up to 1 million route entries)
- Distribute and update Express Forwarding (EF) tables on the line cards and maintain copies of each line card's EF tables for card initialization
- General maintenance functions such as diagnostics, console support and line card monitoring
- In-band management through SNMP MIB, Telnet, BOOTP and TFTP
- Line Card

  Line cards connect the Cisco 12000 Series to other devices via electrical or optical media. The line cards are designed for the transmission of IP packets over PPP, Frame Relay or ATM interfaces. The features and functions of the line cards are interface specific.

## Packet over SONET/SDH (POS)

POS interfaces on the Cisco 12000 Series enable connections to other Cisco 12000 Series or other Cisco routers, such as Cisco 7500 or 7200 via optical interfaces. These interfaces can be circuits provisioned over a SONET/SDH infrastructure or dark fibers (native fiber links) connections or wavelengths of Wave Division Multiplexing (WDM) systems. The Cisco 12000 Series offers the following POS interfaces:

- 4 OC3/STM1 port per line card
- 1 OC12c/STM4c ports per line card
- 4 OC12c/STM4c ports per line card
- 6 Channelized T3 ports to (DS1) per line card
- 1 Channelized OC12 port (to DS3) per line card

- 1 Channelized OC12/STM4 port (to STS3c/STM1) per line card
- 1 OC48c/STM16c ports per line card
- 4 OC48c/STM16c ports per line card
- 1 OC192c/STM64c port per line card

### Asynchronous Transfer Mode (ATM)

ATM interfaces on the Cisco 12000 Series enable connections to other Cisco 12000 Series or other Cisco routers, such as Cisco 7500 or 7200 via ATM networks. The Cisco 12000 Series offers the following ATM interfaces:

- 4 OC3c/STM1c ports per line card
- 1 OC12c/STM4c ports per line card

### Ethernet

Gigabit Ethernet (GE) and Fast Ethernet (FE) interfaces on the Cisco 12000 Series enable connections to other Cisco 12000 Series or other Cisco routers, such as Cisco 7500 or 7200 via fiber optic links. The Cisco 12000 Series offers the following Gigabit Ethernet interfaces:

- 1 GE port per line card
- 3 GE port per line card
- 8 port FE line card

### Dynamic Packet Transport (DPT)

Based on the Spatial Reuse Protocol (SRP), Cisco's Dynamic Packet Transport (DPT) technology is a media-independent MAC layer implementation that operates over a dual ring network topology. DPT transports IP packets over long transmission distances at multi-gigabit speeds, while providing support for bandwidth scalability and packet survivability. DPT interfaces on the Cisco 12000 Series enable connections to other Cisco 12000 Series, Cisco 7200 or 7500 routers, and ONS 15190 IP Transport Concentrators. The Cisco 12000 Series offers the following DPT interfaces:

- 2 OC12c/STM4c ports per line card
- OC-48 one-port line card

## Specifications

### Hardware

**Table 18-13: Power Requirements for the Cisco12000 Chassis**

| Specification | 12008 | 12012 | 12016/12416 | 12410 |
|---|---|---|---|---|
| DC Input Voltage (nominal) | -48 or -60 VDC | -48 or -60 VDC | -48 or -60 VDC | -48 or -60 VDC |
| DC Input Voltage (range) | -40.5 to -75 VDC | -40.5 to -75 VDC | -40.5 to -75 VDC | -40.5 to -75 VDC |
| AC Input Voltage (nominal) | 200, 208, 220, 240 VAC (50/60 Hz) | 200, 208, 220, 240 VAC (50/60 Hz) | 200, 208, 220, 240 VAC (50/60 Hz) | 200, 208, 220, 240 VAC (50/60 Hz) |
| AC Input Voltage (range) | 180-264 VAC (47-63 Hz) | 180-264 VAC (47-63 Hz) | 170-264 VAC (47-63 Hz) | 170-264 VAC (47-63 Hz) |
| Input Supply Power (each) | DC: 1620 W (1 each) | DC: 2381 W (1 each) | DC: 2105 W (2 each) | DC: 2430 W (1 each) |
| | AC: 1932 VA (1 each) | AC: 1475 VA (2 each) | AC: 2477 VA (2 each) | AC: 2791 VA (1 each) |

| Specification | 12008 | 12012 | 12016/12416 | 12410 |
|---|---|---|---|---|
| Input Supply Power (total) | DC: 1620 W (1 each) | DC: 2381 W (1 each) | DC: 4210 W (2 each) | DC: 2430 W (1 each) |
| | AC: 1932 VA (1 each) | AC: 2950 VA (2 each) | AC: 4954 VA (2 each) | AC: 2791 VA (1 each) |
| DC Input Current (each maximum) | 40.0A max. at -40.5VDC | 58.8A max. at -40.5VDC | 52.0A max. at -40.5VDC | 60.0A max. at -40.5VDC |
| | 33.8A max. at -48VDC | 49.6A max. at -48VDC | 43.9A max. at -48VDC | 50.0A max. at -48VDC |
| | 27.0A max. at -60 VDC | 39.7A max. at -60 VDC | 35.1A max. at -60 VDC | 40.0A max. at -60 VDC |
| | 21.6A max. at -75 VDC | 31.7A max. at -75 VDC | 28.1A max. at -75 VDC | 32.0A max. at -75 VDC |
| AC Input Current (each maximum) | 10.7 A max. at 180VAC | 8.2A max. at 180VAC | 14.6A max. at 170VAC | 16.4A max. at 170VAC |
| | 9.7A max. at 200VAC | 7.4A max. at 200VAC | 12.4A max. at 200VAC | 14.0A max. at 200VAC |
| | 9.3A max. at 208VAC | 7.1A max. at 208VAC | 11.9A max. at 208VAC | 13.4A max. at 208VAC |
| | 8.8A max. at 220VAC | 6.7A max. at 220VAC | 11.2A max. at 220VAC | 12.7A max. at 220VAC |
| | 8.1A max. at 240VAC | 6.1A max. at 240VAC | 10.3A max. at 240VAC | 11.6A max. at 240VAC |
| | 7.3A max. at 264VAC | 5.6A max. at 264VAC | 9.4A max. at 264VAC | 10.6A max. at 264VAC |
| Input Cabinet Power (max) | DC: 1620 W | DC: 2381 W | DC: 4210 W | DC: 2430 W |
| | AC: 1835 W | AC: 2801 W | AC: 4706 W | AC: 2791 W |
| Heat Dissipation (total maximum) | DC: 1620W@5,530 Btu/hr | DC: 2381W@8,129 Btu/hr | DC: 4210W@14,373 Btu/hr | DC: 2430W@8,296 Btu/hr |
| | AC: 1835W@6,265 Btu/hr | AC: 2801W@9,563 Btu/hr | AC: 4706W@16,066 Btu/hr | AC: 2791W@9,528 Btu/hr |
| Power Supply Configuration | DC: 1 min, 2 for 2N Redund. | DC: 1 min, 2 for 2N Redund. | DC: 4 req for 2N Redund. | DC: 2 req for 2N Redund. |
| | AC: 1 min, 2 for 2N Redund. | AC: 2 min, 3 for N+1 Redund. | AC: 3 req for N+1 Redund. | AC: 2 req for 2N Redund. |
| | | | AC: 4 req for 2N Red. | |
| Notes: | Power calculations are maximum to support seven 1 port OC48 line cards | Power calculations are maximum to support eleven 1 port OC48 line cards | Power calculations are maximum to support fifteen 1 port OC-48 cards for 12016; and fifteen 1 port OC192c/STM-64c line cards | Power calculations are maximum to support eight 1 port OC192c/STM-64c line cards |
| | AC input power is limited to 1100VA before power supply upgrade. | | | |

**Table 18-14: Physical and Environmental Specifications for the Cisco 12000**

| Description | | Cisco 12008 | Cisco 12012 | Cisco 12016/12416 | Cisco 12410 |
|---|---|---|---|---|---|
| Vibration/ Noise level | Operating | 5 to 200 Hz, 0.5 g (1 oct/min.) | Same as Cisco 12008 | Same as Cisco 12008 | 0.35 Grms from 3 to 500 Hz |
| | Storage | 200 to 500 Hz, 2 g (1 oct/min.) | Same as Cisco 12008 | Same as Cisco 12008 | 1.0 Grms from 3 to 500 Hz |
| Temperature | Operating | 32 to 104˚F (0 to 40˚C) | Same as Cisco 12008 | Same as Cisco 12008 | 32 to 122˚F (0 to 50˚C) |
| | Storage | -4 to 149˚F (-20 to 65˚C) | Same as Cisco 12008 | Same as Cisco 12008 | -4 to 149˚F (-20 to 65˚C) |
| Humidity | Operating | 10 to 85% noncondensing | Same as Cisco 12008 | Same as Cisco 12008 | 10 to 85% noncondensing |
| | Storage | 5 to 90% noncondensing | Same as Cisco 12008 | Same as Cisco 12008 | 5 to 95% noncondensing |

| Description | | Cisco 12008 | Cisco 12012 | Cisco 12016/12416 | Cisco 12410 |
|---|---|---|---|---|---|
| Dimensions (H x W x D) | Unit | 24.85 x 17.4 x 21.2 in.<br>(63.1 x 44.2 x 53.8 cm) | 56.0 x 17.3 x 21.0 in.<br>(142.2 x 43.9 x 53.3 cm) | 72.5 x 118.75 x 22.0 in.<br>(184.2 x 47.6 x 55.9 cm)<br>Includes front covers, rack mount flanges, and cable-management system | 37.0 x 17.39 x 23.0 in<br>(93.98 x 44.17 x 58.42 cm) |
| | Shipping | 33.5 x 25.0 x 39.5 in.<br>(90.2 x 63.5 x 1003. cm) | 67.0 x 24.88 x 39.39 in.<br>(170.2 x 63.2 x 100 cm) | 89 X 34 X 40 in.<br>(226 x 86.3 x 101.6 cm) | Not Available |
| Weight | Unit | 187 lbs (84.9 kg) | 380 lb (172.5 kg) | 415 lb (188 kg);<br>440 lb (220 kg) for 4 AC Configuration | 275 lb (124.74 kg) |
| | Shipping | 220 lbs (100 kg) | 492 lb (223.4 kg) | 580 lb (263.6 kg);<br>620 lb (281.2 kg) for 4 AC Configuration | Not Available |

## Line Card and GRP Memory Options

There are two configurable memory types on the GRP:

- Flash (PCMCIA)
- DRAM used to hold system software, routing tables, and other data

Default GRP memory is 20 MB PCMCIA Flash, and 128 MB DRAM, expandable to 256 MB

There are two configurable memory types on each of the Cisco 12000 line cards:

- Packet memory (buffers)

  Default packet memory:

  128 MB (64 MB Tx, 64 MB Rx) for Engine 0 or 256 MB (128 MB Tx/128 MB Rx) for Engine 1 and 2 - Line card dependent

  512 MB (256 MB Tx, 256 MB Rx) for Engine 4; optional upgrade of (512 MB Tx, 512 MB Rx)

- Route table memory

  Default route table memory is:

  128MB for line cards with 2.5Gbps packet forwarding engines(Engine 0, 1, and 2)

  256MB for line cards with 10Gbps packet forwarding engines.

## Software

The system software is based on IOS Version 11.2 or IOS Version 12.0(S), but it has been optimized to support IP only. A software license is required for each Cisco 12000 series system. The license must accompany each system and chassis purchase, and is tied to the Cisco 12000 chassis serial number. If you are ordering only Cisco 12000 GSR spares, you need not order a software license.

**Table 18-15: Software Features for Cisco 12000 Series**

| | |
|---|---|
| Routing Protocols | Interior: RIP, OSPF, IS-IS, ISO/CLNP, EIGRP, EGP<br>Exterior: BGP |
| Routed Protocols | TCP/IP, UDP/IP |

| | |
|---|---|
| BGP4 Support | • Route Reflections<br>• MED (Multi-Exit Discriminators)<br>• Communities<br>• DPA (Destination Preference Attribute)<br>• Flat/Weighted Route Dampening<br>• Confederations<br>• Next Hop-Self<br>• GP Multipath<br>• Static Routing (IGP) |
| Management | SNMP, Telnet, MIB II |

# Ordering Information

## Where to buy Cisco products

Visit http://www.cisco.com/public/ordering_info.shtml

## Configuration Guidelines

This section provides helpful information for planning your Cisco 12000 and chassis configuration. The Cisco 12008 supports eight slots and the Cisco 12012 supports 12 slots. Either one or two of the slots are used for gigabit route processors, depending upon whether redundancy is required. In the Cisco 12012, 11 slots are available for a variety of fully hot-swappable line cards. Seven such slots are available in the Cisco 12008.

Cisco 12000 Series chassis slots are universal and can be populated with any combination of GRPs and line cards. The following table shows one possible configuration.

**Table 18-16: Slot Guidelines for Cisco 12008, Cisco 12012, and Cisco 12016/12416**

| Slot Number | Cisco 12008 | Cisco 12012 | Cisco 12016/12416 |
|---|---|---|---|
| 0 | GRP | GRP | GRP |
| 1 | Redundant GRP (if required) or line card | Line card | Redundant GRP (if required) or line card |
| 2 - 3 | Line card | Line card | Line card |
| 4 - 7 | Line card | Line card | Line card |
| 8-11 | N/A | Redundant GRP for slot 11 or Line card | Line card |
| 12-15 | N/A | N/A | Line card |

**Table 18-17: Slot Guidelines for Cisco 12000 Series**

| Slot Number | Cisco 12008 |
|---|---|
| 0 | GRP |
| 1 - 8 | Line card |
| 9 | Redundant GRP or Line card |
| 10-15 | N/A |

At the heart of the Cisco 12000 Series is a multigigabit crossbar switching fabric that provides synchronized gigabit-speed interconnections for all of the other cards in the system. The switching fabric for the Cisco 12016, 12012 and 12008 consists of up to four switching cards, supplemented by a fifth card that provides 1:4 or 1:1 redundancy. The switching cards for the Cisco 12008, 12012, 12410, and 12016/12416 are not interchangeable.

**Note** Redundancy in all key system components (processors, switch fabric, line cards, cooling and power) minimizes possible network disruption if a failure occurs. The following table shows the valid redundancy options for each Cisco 12000 Series product.

**Table 18-18: Redundancy Matrix for Cisco 12000**

| System Element | Cisco 12008/12012/12410/12016/12416 |
|---|---|
| Switch cards | Yes |
| GRP | Yes |
| Line cards (APS) | Yes |
| Fans | Yes |
| Power supplies | Yes |

## Ordering Information

Use the following steps to make up your order for a router in the Cisco 12000 Series:

- Select the base system. Cisco 12000 Series12/60 for the 60 Gbps Cisco 12012, or Cisco 12000 Series8/40 for the 40 Gbps Cisco 12008 or Cisco 12000 Series 16/80-AC for the 80 Gbps Cisco 12016 AC system, or Cisco 12000 Series16/80-DC for the 80 Gbps Cisco 12016 DC System.
- Add the following to the order:
  - Base system software license
  - Type of power supply (AC/DC) [DC power is the default] - no choice on the Cisco 12000 Series16/80 - two bundles
  - Proper power cord (AC only)
  - Increased GRP memory (if necessary)
- Add the required line card and increase the line card's packet buffer and DRAM memory, if necessary.
- Add redundant components:
  - Switch cards
  - GRP (two max.)
  - Power supplies

**Table 18-19: Sample Configurations for Cisco 12008**

| Description | Product Number |
|---|---|
| Cisco 12008 , 40 Gbps; 1 GRP, 1 CSC, 3 SFCs, 1 DC | GSR 8/40 |
| 256 MB GRP and LC program/route memory (2 x 128 MB) | MEM-GRP/LC-256 |
| Cisco 12008 GSR redundant DC supplies (2 DC supplies) | PWR-GSR8-DC/2 |
| IP IOS | SFGSR-11.2.9 |
| Cisco 12008 GSR scheduler/fabric/alarm | GSR8-CSC/ALRM= |
| 1-port OC48c/STM16 SONET/SDH Short Reach 1310nm with SC connector | OC48E/POS-SR-SC |
| 256 MB GRP and LC program/route memory (2 x 128 MB) - default | MEM-GRP/LC-256 |

## Product and Part Numbers

**Part Numbers for the Cisco 12000**

| Part Description | Part Number |
|---|---|
| **Cisco 12000 Series of Gigabit Switch Routers (GSR)** | |
| Cisco 12416 320 Gbps; 1GRP, 2CSC, 3SFC, 2 Alarm, 3AC | GSR 16/320-AC |
| Same As GSR16/320-AC But W/ 4AC And Requires 8 Foot Rack | GSR 16/320-AC4 |
| Cisco 12416 320 Gbps; 1GRP, 2CSC, 3SFC, 2 Alarm, 4DC | GSR 16/320-DC |
| Cisco 12410 200 Gbps; 1GRP, 2CSC, 5SFC, 2 Alarm, 3AC | 12410/200 |
| Cisco 12016 80 Gbps; 1GRP, 2CSC, 3SFC, 2Alarm, 3AC, 8Rails | GSR16/80-AC-8R |
| Same As GSR16/80-AC-8R But W/ 4AC And Requires 8 Foot Rack | GSR16/80-AC4-8R |
| Cisco 12016 80 Gbps; 1GRP, 2CSC, 3SFC, 2Alarm, 4DC, 8Rails | GSR16/80-DC-8R |
| Cisco12012 GSR 60Gbps;1GRP,1CSC,3SFC,1DC | GSR12/60 |
| Cisco12008 GSR 40Gbps;1GRP,1CSC-GSR8,3SFC-GSR8,1DC | GSR8/40 |
| **Cisco 12000 Series Processors** | |
| Route Processor, 128MB and 20MB Flash, ECC support | GRP-B |
| Route Processor, 128MB and 20MB Flash, ECC support, Spare | GRP-B= |
| GSR Route Processor, Redundant Option | GRP-B/R |
| **Cisco 12000 Series GSR Base System Software/ IOS Software** | |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | I120K5Z-12.0.13S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 56 | S120K3Z-12.0.13S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 56 | S120K3Z-12.0.13S= |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | S120K5Z-12.0.13S |

| Part Description | Part Number |
|---|---|
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | S120K5Z-12.0.13S= |
| Cisco 12000 Series IOS SERVICE PROVIDER | S120Z-12.0.13S |
| Cisco 12000 Series IOS SERVICE PROVIDER | S120Z-12.0.13S= |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 56 | S120K3Z-12.0.12S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 56 | S120K3Z-12.0.12S= |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | S120K5Z-12.0.12S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | S120K5Z-12.0.12S= |
| Cisco 12000 Series IOS SERVICE PROVIDER | S120Z-12.0.12S |
| Cisco 12000 Series IOS SERVICE PROVIDER | S120Z-12.0.12S= |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 56 | S120K3Z-12.0.11S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | S120K5Z-12.0.11S= |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 56 | S120K3Z-12.0.11S= |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | S120K5Z-12.0.11S |
| Cisco 12000 Series IOS SERVICE PROVIDER | S120Z-12.0.11S |
| Cisco 12000 Series IOS SERVICE PROVIDER | S120Z-12.0.11S= |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | I120K5Z-12.0.12S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | I120K5Z-12.0.11S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | I120K5Z-12.0.10S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | I120K5Z-12.0.9S |
| Cisco 12000 Series IOS BOOT IMAGE | S120-12.0.9S= |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 56 | S120K3Z-12.0.9S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 56 | S120K3Z-12.0.9S= |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | S120K5Z-12.0.9S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | S120K5Z-12.0.9S= |
| Cisco 12000 Series IOS SERVICE PROVIDER | S120Z-12.0.9S |
| Cisco 12000 Series IOS SERVICE PROVIDER | S120Z-12.0.9S= |
| Cisco 12000 Series IOS BOOT IMAGE | S120-12.0.10S |
| Cisco 12000 Series IOS BOOT IMAGE | S120-12.0.10S= |

| Part Description | Part Number |
|---|---|
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 56 | S120K3Z-12.0.10S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 56 | S120K3Z-12.0.10S= |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | S120K5Z-12.0.10S |
| Cisco 12000 Series IOS SERVICE PROVIDER/SECURED SHELL 3DES | S120K5Z-12.0.10S= |
| Cisco 12000 Series IOS SERVICE PROVIDER | S120Z-12.0.10S |
| Cisco 12000 Series IOS SERVICE PROVIDER | S120Z-12.0.10S= |
| **Cisco 12000 Series Switch Fabric and Clock Schedulers** | |
| Cisco 12016 80 Gbps GSR Scheduler/ Fabric Spare | GSR16/80-CSC= |
| Cisco 12016 80 GbpsGSR Switch Fabric Spare | GSR16/80-SFC= |
| Cisco 12016/12416 Alarm Card Spare | GSR16-ALRM= |
| Cisco 12012 GSR Scheduler/Fabric | GSR12-CSC= |
| Cisco 12012 Redundant GSR Scheduler/ Fabric | GSR12-CSC/R |
| Cisco 12012 GSR Switch Fabric | GSR12-SFC= |
| Cisco 12008 GSR Scheduler/Fabric/Alarm | GSR8-CSC/ALRM |
| Cisco 12008 GSR Scheduler/Fabric/Alarm spare | GSR8-CSC/ALRM= |
| Cisco 12008 Redundant CSC | GSR8-CSC/ALRM/R |
| Cisco 12008 GSR Switch Fabric | GSR8-SFC= |
| **Cisco 12016 Power Supply** | |
| GSR16 DC POWER SUPPLY | PWR-GSR16-DC |
| Cisco 12016 GSR DC Power Supply Spare (1 DC Power Supply) | PWR-GSR16-DC= |
| Cisco 12016 GSR DC Power Supply Shelf Spare | PWR-GSR16-DC-SH= |
| GSR16 AC POWER SUPPLY | PWR-GSR16-AC |
| Cisco 12016 GSR AC Power Supply Spare (1 AC Power Supply) | PWR-GSR16-AC= |
| Cisco 12016 GSR AC Power Supply Shelf Spare | PWR-GSR16-AC-SH= |
| Cisco 12016 GSR AC Power Supply Cord, US | CAB-GSR16-US |
| Cisco 12016 GSR AC Power Supply Cord, Australia | CAB-GSR16-AU |
| Cisco 12016 GSR AC Power Supply Cord, Europe | CAB-GSR16-EU |
| Cisco 12016 GSR AC Power Supply Cord, Italy | CAB-GSR16-IT |
| Cisco 12016 GSR AC Power Supply Cord, UK | CAB-GSR16-UK |
| Cisco 12016 GSR AC Power Supply Cord, US Spare | CAB-GSR16-US= |

| Part Description | Part Number |
|---|---|
| Cisco 12016 GSR AC Power Supply Cord, Australia Spare | CAB-GSR16-AU= |
| Cisco 12016 GSR AC Power Supply Cord, Europe Spare | CAB-GSR16-EU= |
| Cisco 12016 GSR AC Power Supply Cord, Italy Spare | CAB-GSR16-IT= |
| Cisco 12016 GSR AC Power Supply Cord, UK Spare | CAB-GSR16-UK= |
| **Cisco 12012 Power Supply Options** | |
| Cisco 12012 GSR AC Supply Option (2 AC Supplies) | PWR-GSR12-AC/2 |
| Cisco 12012 GSR AC Supply Spare (1 AC Supply) | PWR-GSR12-AC= |
| Cisco 12012 GSR Redundant AC Supplies (4 AC Supplies) | PWR-GSR12-AC/4 |
| Cisco 12012 GSR DC Supply | PWR-GSR12-DC |
| Cisco 12012 GSR DC Supply | PWR-GSR12-DC= |
| Cisco 12012 GSR Redundant DC Supplies (2 DC Supplies) | PWR-GSR12-DC/2 |
| Cisco 12012 GSR AC Power Supply Cord, US | CAB-GSR12-US |
| Cisco 12012 GSR AC Power Supply Cord, US | CAB-GSR12-US= |
| Cisco 12012 GSR AC Power Supply Cord, Australia | CAB-GSR12-AU= |
| Cisco 12012 GSR AC Power Supply Cord, Europe | CAB-GSR12-EU= |
| Cisco 12012 GSR AC Power Supply Cord, Italy | CAB-GSR12-IT= |
| Cisco 12012 GSR AC Power Supply Cord, UK | CAB-GSR12-UK= |
| Cisco 12012 GSR AC Power Supply Cord, Argentina | CAB-GSR12-ACR |
| **Cisco 12008 Power Supply Options** | |
| Cisco 12016 GSR DC Power Supply Spare (1 DC Power Supply) | PWR-GSR16-DC= |
| Cisco 12016 GSR AC Power Supply Spare (1 AC Power Supply) | PWR-GSR16-AC= |
| Cisco 12008 GSR AC Supply Option (1 AC Supply) | PWR-GSR8-AC |
| Cisco 12008 GSR AC Supply Spare (1 AC Supply) | PWR-GSR8-AC= |
| Cisco 12008 GSR Redundant AC Supplies (2 AC Supplies) | PWR-GSR8-AC/2 |
| Cisco 12008 GSR DC Supply | PWR-GSR8-DC |
| Cisco 12008 GSR DC Supply | PWR-GSR8-DC= |
| Cisco 12008 GSR Redundant DC Supplies (2 DC Supplies) | PWR-GSR8-DC/2 |
| Cisco 12008 GSR AC Power Supply Cord, US | CAB-GSR8-US |
| Cisco 12008 GSR AC Power Supply Cord, US | CAB-GSR8-US= |

| Part Description | Part Number |
|---|---|
| Cisco 12008 GSR AC Power Supply Cord, Australia | CAB-GSR8-AU |
| Cisco 12008 GSR AC Power Supply Cord, Australia | CAB-GSR8-AU= |
| Cisco 12008 GSR AC Power Supply Cord, Europe | CAB-GSR8-EU |
| Cisco 12008 GSR AC Power Supply Cord, Europe | CAB-GSR8-EU= |
| Cisco 12008 GSR AC Power Supply Cord, Italy | CAB-GSR8-IT |
| Cisco 12008 GSR AC Power Supply Cord, Italy | CAB-GSR8-IT= |
| Cisco 12008 GSR AC Power Supply Cord, UK | CAB-GSR8-UK |
| Cisco 12008 GSR AC Power Supply Cord, UK | CAB-GSR8-UK= |
| Cisco 12008 GSR AC Power Supply Cord, Argentina | CAB-GSR8-ACR |
| **Cisco 12000 Series Line Cards** | |
| 4 Port OC-48c/STM-16c SONET/SDH 1310nm SR with SC | 4OC48/POS-SR-SC |
| 4 Port OC-48c/STM-16c SONET/SDH 1310nm SR with FC | 4OC48/POS-SR-FC |
| 4 Port OC-48c/STM-16c SONET/SDH 1550nm LR with SC | 4OC48/POS-SR-SC |
| 4 Port OC-48c/STM-16c SONET/SDH 1550nm LR with FC | 4OC48/POS-LR-FC |
| 1 Port OC-192c/STM-64c SONET/SDH 1310nm SR with SC | OC192/POS-SR-SC |
| 1 Port OC-192c/STM-64c SONET/SDH 1550nm IR with SC | OC192/POS-IR-SC |
| 4 Port OC-48c/STM-16c SONET/SDH 1310nm SR with SC Spare | 4OC48/POS-SR-SC= |
| 4 Port OC-48c/STM-16c SONET/SDH 1310nm SR with FC Spare | 4OC48/POS-SR-FC= |
| 4 Port OC-48c/STM-16c SONET/SDH 1550nm LR with SC Spare | 4OC48/POS-SR-SC= |
| 4 Port OC-48c/STM-16c SONET/SDH 1550nm LR with FC Spare | 4OC48/POS-LR-FC= |
| 1 Port OC-192c/STM-64c SONET/SDH 1310nm SR with SC Spare | OC192/POS-SR-SC= |
| 1 Port OC-192c/STM-64c SONET/SDH 1550nm IR with SC Spare | OC192/POS-IR-SC= |
| 4port OC3/STM1 Packet Over SONET/ SDH Line Card, Single-Mode | LC-4OC3/POS-SM |
| 4port OC3/STM1 Packet Over SONET/ SDH Line Card, Single-Mode | LC-4OC3/POS-SM= |
| 4port OC3/STM1 Packet Over SONET/ SDH Line Card, Multi-Mode w | LC-4OC3/POS-MM |
| 4port OC3/STM1 Packet Over SONET/ SDH Line Card, Multi-Mode | LC-4OC3/POS-MM= |
| 1port OC12/STM4 Packet Over SONET/ SDH Line Card, Single-Mode | LC-1OC12/POS-SM |

| Part Description | Part Number |
|---|---|
| 1port OC12/STM4 Packet Over SONET/ SDH Line Card, Single-Mode | LC-1OC12/POS-SM= |
| 1 port OC12/STM4 Packet Over SONET/ SDH Line Card, Multi-Mode | LC-1OC12/POS-MM |
| 1port OC12/STM4 Packet Over SONET/ SDH Line Card, Multi-Mode | LC-1OC12/POS-MM= |
| Single mode Long reach Quad OC-3 POS/ STM1linecard | 4OC3/POS-LR-SC= |
| 4 port OC3/STM1 ATM Line Card intermediate reach | 4OC3/ATM-IR-SC |
| 4 port OC3/STM1 ATM Line Card intermediate reach, spare | 4OC3/ATM-IR-SC= |
| 4 port OC3/STM1 multimode ATM line card | 4OC3/ATM-MM-SC |
| 4 port OC3/STM1 multimode ATM line card, spare | 4OC3/ATM-MM-SC= |
| 4 port OC-12/STM4 ATM LC Intermediate Reach spare | 4OC12/ATM-IR-SC= |
| 4 port OC-12/STM4 ATM Line Card multimode spare | 4OC12/ATM-MM-SC= |
| 4 Port OC-12/STM-4 SONET/SDH Single Mode IR with SC | 4OC12E/POS-IR-SC |
| 4 port OC-12/STM4 SONET/SDH Single-Mode IR with SC= | 4OC12E/POS-IR-SC= |
| 4 Port OC-12/STM-4 SONET/SDH Multi-mode with SC | 4OC12E/POS-MM-SC |
| 4 port OC-12/STM4 SONET/SDH Multi-Mode with SC= | 4OC12E/POS-MM-SC= |
| 1 port OC12/STM4 ATM Line Card, Single-Mode | LC-1OC12/ATM-SM |
| 1port OC12/STM4 ATM Line Card, Single-Mode | LC-1OC12/ATM-SM= |
| 1 port OC12/STM4 ATM Line Card, Multi-Mode | LC-1OC12/ATM-MM |
| 1port OC12/STM4 ATM Line Card, Multi-Mode | LC-1OC12/ATM-MM= |
| SRP Single Ring OC12 Linecard - multimode optics | OC12/SRP-MM-SC |
| OC12 SRP single ring linecard, multimode, spare | OC12/SRP-MM-SC= |
| OC12 SRP MM line card | OC12/SRP-MM-SC-B |
| OC12 SRP MM line card | OC12/SRP-MM-SC-B= |
| SRP Single Ring OC12 Linecard - SingleMode, IR optics | OC12/SRP-IR-SC |
| OC12 SRP single ring linecard, single mode, IR, spare | OC12/SRP-IR-SC= |
| OC12 SRP IR line card | OC12/SRP-IR-SC-B |
| OC12 SRP IR line card | OC12/SRP-IR-SC-B= |
| SRP Single Ring OC12 Linecard - SingleMode, LR optics | OC12/SRP-LR-SC |
| OC12 SRP single ring linecard, single mode, LR, spare | OC12/SRP-LR-SC= |

| Part Description | Part Number |
|---|---|
| OC12 SRP LR line card | OC12/SRP-LR-SC-B |
| OC12 SRP LR line card | OC12/SRP-LR-SC-B= |
| OC12 SRP single ring linecard, single mode 1550, XR | OC12/SRP-XR-SC |
| OC12 SRP single ring linecard, single mode 1550, XR | OC12/SRP-XR-SC= |
| OC48 SRP Linecard, Single Mode, Long Reach | OC48/SRP-LR-SC= |
| OC48 SRP Linecard, Single Mode, Short Reach | OC48/SRP-SR-SC= |
| Two OC48/SRP-LR-SC Line Cards with MATE Cable | OC48/SRP-LR-PAIR= |
| Two OC48/SRP-SR-SC Line Cards with MATE Cable | OC48/SRP-SR-PAIR= |
| 1 Port OC-48c/STM-16c SONET/SDH 1310nm SR with SC | OC48E/POS-SR-SC |
| 1 port OC48c/STM16 SONET/SDH Enhanced 1310nm SR with SC Spar | OC48E/POS-SR-SC= |
| 1 Port OC-48c/STM-16c SONET/SDH 1310nm SR with FC | OC48E/POS-SR-FC |
| 1 port OC48c/STM16 SONET/SDH Enhanced 1310nm SR with FC Spar | OC48E/POS-SR-FC= |
| 1 Port OC-48c/STM-16c SONET/SDH 1550nm LR with FC | OC48E/POS-1550-FC |
| 1 port OC48c/STM16 SONET/SDH Enhanced 1550nm LR with FC | OC48E/POS-1550-FC= |
| 1 Port OC-48c/STM-16c SONET/SDH 1550nm LR with SC | OC48E/POS-1550-SC |
| 1 port OC48c/STM16 SONET/SDH Enhanced 1550nm LR with SC | OC48E/POS-1550-SC= |
| 8 port OC3/STM1 SONET/SDH Single-Mode LC with LC conn Spare | 8OC3/POS-SM= |
| 8 port OC3/STM1 SONET/SDH Multi-Mode LC with MTRJ conn Spare | 8OC3/POS-MM= |
| 16 port OC3/STM1 SONET/SDH Single-Mode LC with LC conn Spare | 16OC3/POS-SM= |
| 16 port OC3/STM1 SONET/SDH Multi-Mode LC with MTRJ conn | 16OC3/POS-MM= |
| GSR12000 three-port GE line card | 3GE-GBIC-SC |
| GSR12000 three-port GE line card | 3GE-GBIC-SC= |
| GSR12000 single port Gigabit Ethernet line card | GE-GBIC-SC-B |
| GSR12000 single port Gigabit Ethernet line card | GE-GBIC-SC-B= |
| GSR12000 single port Gigabit Ethernet line card, Spare | GE-SX/LH-SC= |
| 1000base-SX GBIC module, multimode,standardized for GSR12000 | GBIC-SX-MM |
| 1000base-SX GBIC module, multimode fiber, SC connector | GBIC-SX-MM= |
| 1000base-LH GBIC module,singlemode,standardized for GSR12000 | GBIC-LH-SM |

| Part Description | Part Number |
|---|---|
| 1000base-LH GBIC module, singlemode fiber, SC connector | GBIC-LH-SM= |
| GBIC very long reach GBIC module for the GE line card | GBIC-ZX-SM |
| GBIC very long reach GBIC module for the GE line card | GBIC-ZX-SM= |
| 6 port DS3 line card | 6DS3-SMB |
| 6 port DS3 line card | 6DS3-SMB= |
| 12 port DS3 line card | 12DS3-SMB |
| 12 port DS3 line card | 12DS3-SMB= |
| Channelized OC-12/STM-4 with four STS-3c/STM-1 POS paths | CHOC12/STS3-IR-SC= |
| 1 port Channelize OC-12 with 12 DS3s | LC-OC12-DS3 |
| 1 port Channelize OC-12 with 12 DS3s spare | LC-OC12-DS3= |
| GSR 8-port 100baseFX, SC connector, version B | 8FE-FX-SC-B |
| GSR 8-port 100baseFX, SC connector, version B | 8FE-FX-SC-B= |
| Eight port Fast Ethernet 100baseTX interface, RJ45 connector | 8FE-TX-RJ45= |
| 8-port 100baseTX, RJ45 connector type, version B | 8FE-TX-RJ45-B |
| 8-port 100baseTX, RJ45 connector type, version B | 8FE-TX-RJ45-B= |
| Cisco Optical Regenerator (OC-48 bidirectional regenerator) | OR-OC48/STM16-SC |
| **Cisco 12000 Series Memory Options and Upgrades** | |
| 20MB PCMCIA Flash Memory | MEM-GRP-FL20 |
| 20MB PCMCIA Flash Memory | MEM-GRP-FL20= |
| 64MB GRP and L.C. Upgrade Kit (1x64MB) | MEM-GRP/LC-64= |
| 128MB GRP and L.C. Program/Route Memory (1x128MB) | MEM-GRP/LC-128 |
| 128MB GRP and L.C. Upgrade Kit (1x128MB) | MEM-GRP/LC-128= |
| 256MB GRP and L.C. Program/Route Memory (2x128MB) | MEM-GRP/LC-256 |
| 256MB GRP and L.C. Upgrade Kit (2x128MB) | MEM-GRP/LC-256= |
| Line Card Buffer Memory,64MB/64MB (Tx/Rx) | MEM-LC-PKT-128= |
| Line Card Buffer Memory,128MB/128MB (Tx/Rx) | MEM-LC1-PKT-256= |
| Line Card Buffer Memory,256MB/256MB (Tx/Rx) | MEM-PKT-512-UPG |
| Line Card Buffer Memory,256MB/256MB (Tx/Rx) | MEM-PKT-512-UPG= |
| **Cisco 12000 Series System Upgrades** | |

| Part Description | Part Number |
|---|---|
| Cisco 12416 80 Gbps GSR Scheduler/ Fabric Spare | GSR16/320-CSC= |
| Cisco 12416 80 Gbps GSR Switch Fabric Spare | GSR16/320-SFC= |
| Cisco 12410 200 Gbps GSR Scheduler/ Fabric Spare | GSR12410/200-CSC= |
| Cisco 12410 200 Gbps GSR Switch Fabric Spare | GSR12410/200-SFC= |
| Cisco12008 10Gbps to 40Gbps Upgrade Kit;3SFCs | GSR8/10-40-UPG= |
| Cisco12012 15Gbps to 60Gbps Upgrade Kit;3SFCs | GSR12/15-60-UPG= |
| **Cisco 12016 Spares and Accessories** | |
| Cisco 12016 GSR Blower Assembly Spare | GSR16-BLOWER= |
| Same As GSR16-CHASSIS= But With 8 Rails | GSR16-CHASSIS-8R= |
| Cisco 12016 80 Gbps GSR Backplane Spare | GSR16/80-BCKPLNE= |
| INVALID PRODUCT-SEE 'ACS-GSR16-CBLM-B=', 'ACS-GSR16-CBLM-T= | 'ACS-GSR16-CCBLM= |
| Cisco 12016 GSR Air Filter Kit | ACS-GSR16-FLTR= |
| GSR 12016 Plastic Covers Spare Kit | ACS-GSR16-PLSTC= |
| **Cisco 12012 Spares and Accessories** | |
| GSR12 Air Filter Upgrade Kit | GSR12-FLT-UPG= |
| Enhanced Air Filter for GSR12 | GSR12-FLTR-ENH= |
| Cisco 12012 GSR Blower Assy Spare | GSR12-BLOWER= |
| Cisco 12012 GSR Card Cage Assy Spare | GSR12-CARDCAGE= |
| Cisco 12012 GSR Alarm Card | GSR12-ALRM= |
| Cisco 12012 GSR Shipping Container Spare | PKG-GSR12= |
| Cisco 12012 GSR Chassis Cable Management Kit Spare | ACS-GSR12-CCBLM= |
| Cisco 12012 GSR Air Filter Spare | ACS-GSR12-FLTR= |
| Cisco 12012 GSR Top Blower Plastic Cover | ACS-GSR12-TOPCVER= |
| Cisco 12012 GSR Bottom Blower Plastic Cover | ACS-GSR12-BTMCVER= |
| Cisco 12012 GSR DC Power Supply Plastic Cover | ACS-GSR12-PWRCVR= |
| Cisco 12000 Series Line Card Cable Management Kit Spare | ACS-GSR-LCCBLM= |
| Cisco 12012 Series Blank Power Supply Panel Spare | MAS-GSR12-PWRBLNK= |
| Cisco 12000 Series Blank Line Card Panel Spare | MAS-GSR-BLANK= |
| **Cisco 12008 Spares and Accessories** | |
| Cisco 12008 GSR Chassis Assy Spare | CHAS-GSR8= |
| Cisco 12008 GSR System blower assy spare | GSR8-SYSBLOWER= |

| Part Description | Part Number |
|---|---|
| Cisco 12008 GSR Pwr Supply blower assy spare | GSR8-PWRBLOWER= |
| Cisco 12008 Top Trim | GSR8-TTRIM= |
| Cisco 12008 GSR Shipping Container Spare | PKG-GSR8= |
| Cisco 12008 GSR Chassis Cable Management Kit Spare | ACS-GSR8-CCBLM= |
| Cisco 12008 GSR Rack Mount Kit Spare | ACS-GSR8-RMK= |
| Cisco 12008 Series Blank Power Supply Panel Spare | MAS-GSR8-PWRBLNK= |
| Cisco 12008 GSR System Air Filter upgrade kit | GSR8-FLTASM-UPG= |
| **Cisco 12000 Lines Cards Accessories** | |
| Cable pair SMB to BNC - female | 2CBLE-SMB-BNC-F |
| Cable pair SMB to BNC - female -spare | 2CBLE-SMB-BNC-F= |
| Cable pair SMB to BNC - male | 2CBLE-SMB-BNC-M |
| Cable pair SMB to BNC - male - spare | 2CBLE-SMB-BNC-M= |
| **Cisco GSR Manager Version 2.0** | |
| Cisco GSR Manager Version 2.0 | GSR-EMS-2.0 |
| GSR Management License Spare | GSR-MGMT-LIC= |

## Documentation

For part numbers for product specific documentation, visit

http://www.cisco.com/univercd/cc/td/doc/pcat/swdo__d1.htm

**Table 18-20: Cisco 12000 Documentation Ordering Information**

| Description | Product Number |
|---|---|
| Regulatory Compliance and Safety Information for the Cisco 12000 Series Gigabit Switch Router | 78-4347-01 |
| Cisco 12008 Installation and Configuration Guide | 78-4953-01 |
| Cisco 12008 AC Input Power Supply Replacement Instructions | 78-4954-01 |
| Cisco 12008 DC Input Power Supply Replacement Instructions | 78-4955-01 |
| Cisco 12000 Memory Replacement Instructions | 78-4338-02 |
| Cisco 12000 Route Processor Installation and Configuration | 78-4339-02 |
| Cisco 12008 Switch Card Replacement Instructions | 78-4956-01 |
| Cisco 12008 Fan Tray Replacement Instructions | 78-4957-01 |
| Cable-Management System Replacement Instructions | 78-4958-01 |
| Quad OC-3c/STM-1 Packet Over-SONET Line Card Installation and Configuration | 78-4333-02 |
| OC-12c/STM-4 Packet Over-SONET Line Card Installation and Configuration | 78-4341-02 |
| Asynchronous Transfer Mode Line Card Installation and Configuration | 78-4344-02 |
| Cisco 12008 Packing/Unpacking Instructions | 78-4960-02 |
| **Services and Support** | |
| There are no special support or service requirements for the GSR series. You can obtain technical support from the Technical Assistance Center (TAC), and SmartNet contracts are available.<br>For Cisco services and support information, access the following URL: http://www.cisco.com/public/Support_root.shtml | |

| Description | Product Number |
|---|---|
| **Training** | |
| Cisco provides a broad range of comprehensive educational offerings including seminars and events and certification programs to help customer and partners stay current on Cisco's products, solutions, and technologies. | |
| For Cisco training information, access the following URL: http://www.cisco.com/warp/public/10/wwtraining/index.shtml | |
| **Documents** | |
| The Channelized OC-12 to DS3 Line Card Installation and Configuration Guide can be ordered by using Part Number 78-5011-01. | |
| For Cisco documentation information, access the following URLs on the World Wide Web: | |
| http://www.cisco.com | |
| http://www-china.cisco.com | |
| http://www-europe.cisco.com. | |