

Cisco 3 Gbps and 6 Gbps Wideband Shared Port Adapter (SPA) for the Cisco uBR10012

Product Overview

Offer high-speed broadband connectivity at high scale and IP video services with low capital costs with the Cisco® 3 Gbps and 6 Gbps Wideband Shared Port Adapters. They are the next-generation high-density SPAs for the Cisco uBR10012 Universal Broadband Router. The Cisco 3 Gbps and 6 Gbps Wideband SPAs (Figure 1 and Figure 2) provide dramatically increased density, as compared to the Cisco 1 Gbps Wideband SPA for the Cisco uBR10012. Provisioned with the Cisco 3 Gbps Wideband SPA, the Cisco uBR10012 also provides cable operators with an easy, flexible upgrade path toward a Converged Cable Access Platform (CCAP) and an all-IP infrastructure. The higher-density Cisco 3 Gbps Wideband SPA also reduces operational requirements, capital expenditures (CapEx), and rack space requirements. A Cisco uBR10012 equipped with eight Cisco uBR-MC3GX60V Broadband Processing Engines and eight Cisco 3 Gbps SPAs can provide up to 1152 Data Over Cable System Interface Specification (DOCSIS®) downstream channels or 864 Euro-DOCSIS downstream channels at line rate.

Starting from Cisco IOS® Release 12.2(33)SCI, the Cisco 3 Gbps Wideband SPA can be upgraded to 6-Gbps capability through the field-programmable device (FPD) image upgrade. Each Cisco 6 Gbps Wideband SPA card can provide up to 144 DOCSIS downstream channels or 108 Euro-DOCSIS downstream channels at line rate (or 120 Euro-DOCSIS downstream channels with slight over subscription).

The Cisco uBR10012 can support two Cisco 10000 Series SPA Interface Processor-600 (SIP-600). Each Cisco 10000 Series SIP-600 can support up to four Cisco 6 Gbps Wideband SPA cards, or a total of 576 DOCSIS downstream channels or 432 Euro-DOCSIS downstream channels per Cisco 10000 Series SIP-600 with about 2:1 oversubscription due to the bandwidth limit of 11.2 Gbps per Cisco 10000 Series SIP-600.

Figure 1. Cisco 3 Gbps Wideband SPA for the Cisco uBR10012 Universal Broadband Router



Figure 2. Cisco 6 Gbps Wideband SPA for the Cisco uBR10012 Universal Broadband Router



Features and Benefits

High-Density SPA Expands Downstream Bandwidth

- Cisco 3 Gbps Wideband SPA capacity for 72 DOCSIS downstream channels or 54 Euro-DOCSIS downstream channels at line rate, which can be upgraded to 144 DOCSIS downstream channels or 120 Euro-DOCSIS downstream channels starting from Cisco IOS 12.2(33)SCI Release.
- Cisco 3 Gbps Wideband SPAs that work in conjunction with the existing Cisco uBR-MC3GX60V to double the available downstream bandwidth of the Cisco uBR10012 system (With FPD image upgrade to 6-Gbps capacity, available downstream bandwidth of the Cisco uBR10012 system can be tripled with some level of oversubscription.)
- Support for 1 Gbps or more per service group.
- Cisco 6 Gbps Wideband SPA capacity for 144 DOCSIS downstream channels or 108 Euro-DOCSIS downstream channels at line rate (or 120 Euro-DOCSIS downstream channels with slight over subscription).

Small Form Factor Promotes Industry-Leading Density

- Single-wide, half-height SPA form factor, which allows up to eight Cisco 3 Gbps or 6 Gbps Wideband SPAs to be equipped using two Cisco 10000 Series SPA Interface Processor-600 jacket cards.

Link Redundancy Assures High Availability

- Three 1 Gigabit Ethernet Small Form-Factor Pluggable (SFP) ports or 1 + 1 redundant 10 Gigabit Ethernet Enhanced Small Form-Factor Pluggable (SFP+) ports (The Cisco 6 Gbps Wideband SPA only supports 10-Gigabit interface).
- Connectivity to third-party edge quadrature amplitude modulations (QAMs) using three dedicated 1 Gigabit Ethernet interfaces or dual 10 Gigabit Ethernet interfaces.

Backward Compatibility

- Compatible with currently supported line cards and SPA.
- RF spanning support
 - Downstream channels from the Cisco 3 Gbps or 6 Gbps Wideband SPA can be associated with a service group hosted on different line cards, like Cisco uBR-MC3GX60V and Cisco uBR-MC20X20V Broadband Processing Engines.
 - Downstream channels from the 3 Gbps or 6 Gbps Wideband SPA can be associated with upstream channels from a Cisco uBR-MC3GX60V or Cisco uBR-20X20V Broadband Processing Engines in one MAC domain.

Flexibility with Cisco Software Licensing

- Software license support allows incremental investment for effective use of capital.
- Minimum configuration includes base hardware and licenses for 16 downstream channels.
- Additional optional licenses are available in increments of 1 downstream channel, up to the full capacity of 144 downstream channels (Annex B) or 120 downstream channels (Annex A).
- Cisco Software Licensing infrastructure facilitates licensing.

SIP throughput monitoring

- Starting from Cisco IOS 12.2(33)SCI.
- Provide customer with a way to monitor the SPA Interface Processor (SIP) throughput.
- Warning message will be automatically prompted on console when the SIP throughput exceeds the pre-defined threshold.

Product Specifications

Table 1 provides product specifications for the Cisco 3 Gbps and 6 Gbps Wideband SPAs.

Table 1. Product Specifications

Feature	Description
Physical	<ul style="list-style-type: none">• Occupies one single half-height SPA slot (half slot)• One SFP and two SFP+ connectors, which support three 1 Gigabit Ethernet modules or dual 10 Gigabit Ethernet modules• Hot-swappable; either side sub slot (0 or 1) can be used• Weight: 1.32 lb (0.6 kg)• Dimensions (H x W x D): 6.69 x 0.75 x 6.69 in (170 x 19 x 170 mm)
Software compatibility	Compatible with Cisco IOS Software Release 12.2(33)SCH and later Cisco IOS Software Release 12.2 images supported on the Cisco uBR10012 Universal Broadband Router
Power	Unit power: 30W
Reliability and availability	Mean time between failures (MTBF): >500,000 hr
Environmental	<ul style="list-style-type: none">• Operating altitude: -197 to 13,123 ft (-60 to 4000m)• Conforms to IEC/EN/UL/CSA 60950 requirements up to 2000m• Storage temperature: -4 to 149°F (-20 to 65°C)• Operating temperature, nominal: 41 to 104°F (5 to 40°C)• Storage relative humidity: 5 to 95%• Operating relative humidity: 10 to 90%
Supported SFP¹	10 Gigabit Ethernet model <ul style="list-style-type: none">• SFP-10G-SR-X• SFP-10G-LR-X 1 Gigabit Ethernet model <ul style="list-style-type: none">• SFP-GE-T• SFP-GE-Z• GLC-SX-MMD• GLC-ZX-SMD• GLC-LH-SMD

Feature	Description
Regulatory compliance	<p>Safety</p> <ul style="list-style-type: none"> • UL60950 and CAN/CSA-C22.2 No. 60950 • IEC/EN 60950 • 73/23/EEC/IEC/EN 60950 • AS/NZS 60950 <p>Electromagnetic Emissions</p> <ul style="list-style-type: none"> • EN55022: Class A • CISPR 22: Class A • CFR 47 Part 15 Class A • ICES -003 • VCCI • AS/NZS:CISPR22 • CNS-13438 Class A <p>Electromagnetic Immunity</p> <ul style="list-style-type: none"> • EN55024 • EN61000-3-2 • EN61000-3-3 • EN61000-4-2: ESD immunity • EN61000-4-3: Radiated RF field immunity • EN61000-4-4: Immunity to electrical fast transients • EN61000-4-5: Surge immunity • EN61000-4-6: RF conducted immunity
Network Equipment Building System (NEBS)	<p>Designed to meet the requirements of:</p> <ul style="list-style-type: none"> • Level 3 • GR-1089 Core 2011
Mechanical	<ul style="list-style-type: none"> • IEC 68-2-1, IEC 68-2-2, IEC 68-2-56: Operational temperature and humidity • IEC 68-2-41: Operational Altitude • IEC 68-2-27: Operating shock • IEC 68-2-64, IEC 68-2-6, IEC 68-2-47: Operating and nonoperating vibration • IEC 68-2-40: Nonoperating altitude • IEC 68-2-27, IEC 68-2-32: Nonoperating mechanical shock • IEC 68-2-1, IEC68-2-2: Nonoperational Temperature • IEC 68-2-3: Nonoperating humidity • IEC 68-2-14, IEC 68-2-33: Nonoperating temperature shock
LEDs	<ul style="list-style-type: none"> • One SPA status LED (amber or green): Off indicates that power is off, or SPA is in reset status. Solid amber indicates that the SPA power is on and good, and the SPA is being configured. Solid green indicates the SPA is ready and operational • One license LED (green): Solid amber indicates that there is no license installed or invalid license. Flashing green indicates the license is available for 1~71 channels. Solid green indicates that the SPA has been equipped with full license (72 channels) • One status LED for each 10 or 1 Gigabit Ethernet interface (amber or green): Off indicates that the optical module is not present. Solid amber indicates that the optical module is detected by hardware. Solid green indicates the port is linked with the opposite. Flashing green indicates that there is traffic through the optical links
10 and 1 Gigabit Ethernet optical connectivity options¹	<ul style="list-style-type: none"> • GLC-SX-MMD (SFP-GE-S) optics support a maximum distance of 1804 ft (550m) • GLC-LH-SMD (SFP-GE-L) optics support a maximum distance of 6.21 mile (10 km) • GLC-ZX-SMD (SFP-GE-Z) optics support a maximum distance of 43.5 mile (70 km) • SFP-GE-T support a maximum distance 328 ft (100m) • SFP-10G-SR-X optics support a maximum distance of 984 ft (300m) • SFP-10G-LR-X optics support a maximum distance of 6.21 mile (10 km)

Feature	Description
MIBs	<p>Standard MIBs</p> <ul style="list-style-type: none"> • IF-MIB (RFC-2233) • IP-FORWARD-MIB (RFC-4292) • ENTITY-MIB (RFC-2737) • MIBII (RFC1213) • EtherLike-MIB (RFC-2665) • IGMP-MIB (RFC-2993) • RMON-MIB (RFC-1757) • IP-MIB • ENTITY-SENSOR-MIB <p>Expression MIBs</p> <ul style="list-style-type: none"> • Simple Network Management Protocol Version 2 Structure of Managed Information (SNMPv2 SMI) • SNMPv2-TC • SNMPv2-MIB • IANAifType-MIB <p>Simple Network Management Protocol Version 3 (SNMPv3) MIBs</p> <ul style="list-style-type: none"> • SNMP-FRAMEWORK-MIB (RFC-2571) • SNMP-MPD-MIB (RFC-2572) • SNMP-NOTIFICATION-MIB (RFC-2573) • SNMP-TARGET-MIB (RFC-2573) • SNMP-USM-MIB (RFC-2574) • SNMP-VACM-MIB (RFC-2575) <p>DOCSIS and EuroDOCSIS MIB</p> <ul style="list-style-type: none"> • DOCS-IF-MIB (RFC 4546) • DOCS-CABLE-DEVICE-MIB (RFC-2669) • DOCS-BPI-PLUS-MIB • DOCS-QOS-MIB • DOCS-CABLE-DEVICE-TRAP-MIB • DOCS-SUBMGT-MIB • DOCS-IF3-MIB • DOCS-QOS3-MIB • DOCS-DRF-MIB • DOCS-LOADBAL3-MIB • DOCS-DIAG-MIB • DOCS-SUBMGT3-MIB • CLAB-TOPO-MIB • DOCS-MCAST-AUTH-MIB • DOCS-MCAST-MIB • DOCS-SEC-MIB • DOCS-IETF-BPI2-MIB • DOCS-IETF-QOS-MIB <p>Cisco DOCSIS MIBs</p> <ul style="list-style-type: none"> • CISCO-DOCS-EXT-MIB • CISCO-DOCS-REMOTE-QUERY-MIB • CISCO-DOCS-QOS-EXT-MIB • CISCO-CABLE-SPECTRUM-MIB • CISCO-CABLE-AVAILABILITY-MIB • CISCO-DOCS-EXT-CAPABILITY-MIB • CISCO-CABLE-WIDEBAND-MIB

Feature	Description
	Cisco Generic MIBs <ul style="list-style-type: none"> • CISCO-SYSLOG-MIB • CISCO-SMI-MIB • CISCO-TC-MIB • CISCO-PRODUCTS-MIB • CISCO-FLASH-MIB • CISCO-CONFIG-MAN-MIB • CISCO-CONFIG-COPY-MIB • CISCO-MEMORY-POOL-MIB • CISCO-BULK-FILE-MIB • CISCO-SONET-MIB • CISCO-TCP-MIB • CISCO-RTTMON-MIB • CISCO-FTP-CLENT-MIB • CISCO-IPMROUTE-MIB • CISCO-QUEUE-MIB • CISCO-IMAGE-MIB • CISCO-ENVMON-MIB • CISCO-ENTITY-VENDORTYPE-OID-MIB • CISCO-PRODUCTS-MIB

¹ Cisco 6 Gbps Wideband SPA only supports the 10 Gigabit Ethernet interface (1+1)

Product System Requirements and Compatibility

Hardware Requirements

- Cisco uBR10012 Performance Routing Engine 5 is required
- Both Cisco 3 Gbps and 6 Gbps Wideband SPAs are supported with Cisco uBR-MC20X20V Broadband Processing Engines, Cisco uBR-MC3GX60V Broadband Processing Engines and Cisco 1 Gbps Wideband SPA
- Cisco 10000 Series SPA Interface Processor-600 carrier card is required

Software Requirements

- Cisco IOS Software Release 12.2(33)SCH and later images are required for Cisco 3 Gbps Wideband SPA.
- Cisco IOS Software Release 12.2(33)SCI and later images are required for Cisco 6 Gbps Wideband SPA.

Ordering Information

To place an order, visit the [Cisco Ordering homepage](#). Table 2 lists the ordering information for the Cisco 3 Gbps and 6 Gbps Wideband SPA.

Table 2. Ordering Information

Product Name	Part Number
3G SPA Hardware	
UBR10012 High Density Downstream Shared Port Adapter; Base HW	SPA-UBR10-DS-HD
UBR10012 High Density Downstream Shared Port Adapter; Base HW Spare	SPA-UBR10-DS-HD=
Spare SPA w/ 0 License	SPA-UBR10-DS-SP=
6G SPA Hardware	
UBR10012 High Density Downstream Shared Port Adapter 6G	SPA-UBR10-DS-6G
UBR10K High Density Downstream Shared Port Adapter 6G, SPARE	SPA-UBR10-DS-6G=
Spare 6G SPA w/ 0 License	SPA-UBR10-6G-SP=

Product Name	Part Number
Software License	
1 DS license: Must configure with SPA-UBR10-DS-HD only	SWLIC-SPA-UBR10-DS
1 Count DS license for SPA	L-SPA-UBR10-DS
PAK Container For SPA	L-SPA-UBR10-SWLIC=
SFP Optics	
1000BASE-ZX Gigabit Ethernet SFP (DOM)	SFP-GE-Z
1000BASE-T SFP (NEBS 3 ESD)	SFP-GE-T
1000BASE-SX SFP transceiver module, MMF,850nm, DOM	GLC-SX-MMD
1000BASE-ZX SFP transceiver module, SMF, 1550nm, DOM	GLC-ZX-SMD
1000BASE-LX/LH SFP transceiver module, MMF/SMF, 1310nm, DOM	GLC-LH-SMD
10G SFP+ Optics	
10GBASE-SR SFP Module for Extended Temp range	SFP-10G-LR-X
10GBASE-SR SFP Module for Extended Temp range	SFP-10G-SR-X

Configuration Note:

1. A minimum configuration of 16 downstream channel licenses is required when purchasing Cisco 3 Gbps and 6 Gbps Wideband SPA hardware
2. FPD image upgrade has to be performed in the field to upgrade Cisco 3 Gbps Wideband SPA to 6 Gbps capability
3. Cable customer can purchase 6 Gbps Wideband SPA from Cisco directly

Service and Support

Cisco offers a wide range of services programs to help accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, promoting 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, see [Cisco Technical Support Services](#) or [Cisco Advanced Services](#).

For More Information

For more information about the Cisco uBR10012 platform, visit <http://www.cisco.com/en/US/products/hw/cable/ps2209/index.html> or contact your local account representative.



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