



APPENDIX **A**

Technical Specifications

This appendix provides specifications information about the Cisco uBR10012 router, router components, and cards used in the router.

- [Cisco uBR10012 Chassis and Chassis Components, page A-1](#)
- [Network Uplink Cards and Cable Interface Line Cards, page A-8](#)

Cisco uBR10012 Chassis and Chassis Components

[Table A-1](#) lists the physical specifications for the Cisco uBR10012 universal broadband router and its components.

Table A-1 Cisco uBR10012 Router and Router Components Physical Specifications

Description	Specifications
Chassis specifications	<ul style="list-style-type: none">• Weight: 235 lb (106.6 kg) fully configured chassis• Height: 31.25 in. (79.4 cm)—18 Rack Units (RU)• Width: 17.2 in. (43.7 cm)• Depth: 22.75 in. (57.8 cm)• Mounting: 19 in. rack mountable (front or rear), 2 units per 7 ft. rack <p>Note Mounting in 23 in. racks is possible with optional third-party hardware.</p>
Temperature range	<ul style="list-style-type: none">• Operating: 41° F to 104° F (5 to 40° C)• Storage: -40° F to 158° F (-40 to 70° C)
Relative humidity	<ul style="list-style-type: none">• Operating—nominal: 5% to 85%• Storage: 5% to 95% percent
Operating altitude	-197 to 13,123 ft. (-60 to 4000 m)
Airflow	280 cfm ¹ (approximately) through the system fan assembly module (low speed, normal operating temperatures, with clean air filter) 450 cfm (approximately) through the system fan assembly module (high speed, chassis temperature at air outlet exceeds 40° C, with clean air filter)
Operating vibrations	5 to 200 Hz, 1 g (1 octave/min), 200 to 500 Hz, 2 g (1 octave/min)
Chassis power consumption	Not to exceed 2400 W ² (8189btu ³)

Table A-1 Cisco uBR10012 Router and Router Components Physical Specifications (continued)

Description	Specifications
<p>DC Power entry modules (PEM)— 34-1651-04, 34-1651-05</p> <p>Power supply monitoring cable</p> <p>Supports two separate input feeds (–48 to –60VDC) by means of built-in two-position terminal blocks.</p>	<p>Part Number: UBR10-PWR-DC (Primary)</p> <p>Part Number: UBR10-PWR-MON-CAB Part Number: UBR10-PWR-MON-CAB= (Spare)</p> <ul style="list-style-type: none"> • Dimensions <ul style="list-style-type: none"> Height: 19.25 in (48.894 cm) Width: 6 in. (15.24 cm) Depth: 5 in. (12.4 cm) • Weight: 10 lbs. (4.54 kg) • Temperature range <ul style="list-style-type: none"> Operating: 41° F to 104° F (5° C to 40° C) Storage: -40° F to 158° F (-40° C to 70° C) <p>The Power output, DC input voltage and DC input current vary for the Cisco DC PEM entry modules. See Table 2-2 on page 2-8.</p>
<p>DC Power entry modules (PEM)—341-0388-01</p>	<p>Part Number: UBR10-PWR-DC-PLUS (Primary) Part Number: UBR10-PWR-DC-PLUS= (Spare)</p> <ul style="list-style-type: none"> • Dimensions: <ul style="list-style-type: none"> Height: 19.25 in. (48.894 cm) Width: 6 in. (15.24 cm) Depth: 5 in. (12.4 cm) • Weight: 16 lbs. (7.25 kg) • DC-input Voltage: –48 to –60 VDC nominal –40.5 to –72 VDC minimum to maximum • DC-input Current Connections: 50 A + 50 A • Power Output: 3300 W maximum • Temperature range: <ul style="list-style-type: none"> Operating: 41° F to 104° F (5° C to 40° C) Storage: -40° F to 158° F (-40° C to 70° C) • Relative Humidity: <ul style="list-style-type: none"> Operating: 5% to 85%, non-condensing Storage: 5% to 95%, non-condensing • Operating Altitude: –197 to 13,693 feet (–60 to 4000 m)

Table A-1 Cisco uBR10012 Router and Router Components Physical Specifications (continued)

Description	Specifications
AC Power entry modules (PEM) 34-1966-02 100—120 VAC operation is not supported	Part Number: UBR10-PWR-AC (Primary) Part Number: UBR10-PWR-AC= (Spare) <ul style="list-style-type: none"> • Dimensions: <ul style="list-style-type: none"> Height: 19.25 in. (48.89 cm) Width: 6 in. (15.24 cm) Depth: 5 in. (12.4 cm) • Weight: 14.7 lbs (6.65 kg) • AC input voltage rating: 200-240 VAC @ 50/60Hz • AC operating voltage rating: 180-255 VAC @ 50/60Hz • AC input power connections: 13 A • DC output voltage: 54 VDC maximum • DC output current: 45.3 A maximum • Power output: 2650W maximum • Temperature range: <ul style="list-style-type: none"> Operating: 23 to 122 F (-5 to 50 C) Storage: -13 to 158 F (-25 to 70 C)

Table A-1 Cisco uBR10012 Router and Router Components Physical Specifications (continued)

Description	Specifications
AC Power entry modules (PEM) 341-0387-01 100—120 VAC operation is not supported	Part Number: UBR10-PWR-AC-PLUS (Primary) Part Number: UBR10-PWR-AC-PLUS= (Spare) <ul style="list-style-type: none"> • Dimensions: <ul style="list-style-type: none"> Height: 19.4 in. (49.3 cm) Width: 6 in. (15.2 cm) Depth: 5 in. (12.7 cm) • Weight: 19 lbs (8.64 kg) • AC input voltage rating: 200-240 VAC @ 50 or 60Hz • AC operating voltage rating: 180-255 VAC @ 50 or 60Hz • AC input power connections: 16 A + 16 A • DC output voltage: <ul style="list-style-type: none"> 57.5 VDC nominal 59.0 VDC maximum • DC output current: <ul style="list-style-type: none"> 58 A nominal 59 A maximum • Power output: 3300 W maximum • Temperature range: <ul style="list-style-type: none"> Operating: 41° to 104° F (5° to 40° C) Storage: -40° to 158° F (-40° to 70° C) • Relative Humidity: <ul style="list-style-type: none"> Operating: 5% to 85%, non-condensing Storage: 5% to 95%, non-condensing • Operating Altitude: -197 to 13,693 feet (-60 to 4000 m)

Table A-1 Cisco uBR10012 Router and Router Components Physical Specifications (continued)

Description	Specifications
AC power shelf 2400W AC-input power shelf and DC PEM bundle	UBR10-PWR-AC-EXT= <ul style="list-style-type: none"> • Chassis dimensions <ul style="list-style-type: none"> Height: 3.46 in. (87.9 cm) Width: 19 in. (482.26 cm) Depth: 12.00 in. (304.2 cm) Mounting: 19-inch rack mountable (2 rack units) • Weight <ul style="list-style-type: none"> Shelf only: 7 lb. (3.2 kg) Each power module only: 7 lb. (3.2 kg) Fully configured shelf: 28 lb. (12.8 kg) • AC-input voltage and frequency: 100,120 to 200,240 VAC, 50/60 Hz • AC voltage and current: <ul style="list-style-type: none"> 110 VAC at 15A maximum with power factor correction (PFC) 240 VAC at 7.4 A maximum with power factor correction (PFC) • AC power cable receptacle: IEC-320 15A receptacle that accepts right-angle cords • Temperature range: <ul style="list-style-type: none"> Operating: 41 F to 104 F (5 C to 40 C) Storage: -40 F to 158 F (-40 C to 70 C)
Visual alarm indicator relay contacts	Rated for a maximum of 60 VDC and 1 A.
Timing, Communication, and Control Plus (TCC+) Card	Part Number: UBR10-TCC+-T1 <ul style="list-style-type: none"> • Power consumption: 40 W² (136.5 BTU³) per hour • Weight: 1.5 lb (0.5636 kg) • Height: 4.73 in (12.01 cm) • Depth: 10.00 in (25.4 cm) • Width: 1.55 in (3.937 cm) • MTBF: 431,348 hours
DOCSIS Timing & Control Card (DTCC)	Part Number: UBR10-DTCC <ul style="list-style-type: none"> • Power consumption: 12 Watts (40.94 BTU¹ per hour) • Weight: 1.5 lb. (.68 kg) • Height: 4.73 in. (12.0142 cm) • Depth: 10 in. (25.4 cm) • Width: 1.548 in. (3.93192 cm) • MTBF: 431,348 hours

Table A-1 Cisco uBR10012 Router and Router Components Physical Specifications (continued)

Description	Specifications
Fan assembly module	Part Number: UBR10-FAN-ASSY (Primary) Part Number: UBR10-FAN-ASSY= (Spare) <ul style="list-style-type: none"> • Product number (cable): UBR10-FAN-CAB= • Power consumption: 250 W²—4 amps, not to exceed 6 amps at startup (1365 BTU³) per hour • Weight: 30 lb (13.61 kg) • Height: 5.60 in. (14.22 cm) Depth: 16.15 in. (41.02 cm) Width: 19.00 in. (48.26 cm) • Temperature range: Operating: 41° to 104° F (5° to 40° C) Storage: -40° to 158° F (-40° to 70° C) • Relative humidity: Operating: 5% to 85% Storage: 5% to 95% • Operating altitude: -197 to 13,123 ft (-60 to 4000 m)
Fan assembly module	Part Number: UBR10012-FAN-PLUS (Primary) Part Number: UBR10012-FAN-PLUS= (Spare) <ul style="list-style-type: none"> • Product number (cable): UBR10-FAN-CAB= • Power consumption: 224 W max (4 amps, not to exceed 6 amps at startup)Weight: 22 lbs (10 kg) • Height: 5.85 in. (14.9 cm) Width: 17 in. (43.2 cm) Depth: 20 in. (50.8 cm) • Acoustic: Sound Power (dB [re 1E-12] watts) < 78 dB up to 80.6° F (27° C) • Temperature range: Operating: 41° to 104° F (5° to 40° C) Storage: -40° to 158° F (-40° to 70° C) • Relative humidity: Operating: 5% to 85% Storage: 5% to 95% • Operating altitude: -197 to 13,123 ft (-60 to 4000 m)

Table A-1 Cisco uBR10012 Router and Router Components Physical Specifications (continued)

Description	Specifications
LCD module	Part number: module-UBR10-DSPL= Part number: cable-UBR10-DSPL-CAB= <ul style="list-style-type: none"> • Power consumption: 2W² (6.824 BTU³) per hour • Weight: 0.4 lb (0.1814 kg) • Height: 4.0 in. (10.16 cm) Depth: 4.8 in. (12.19 cm) Width: 1.4 in. (3.56 cm) • MTBF: module-231,576 hours • MTBF: cable-N/A
Performance routing engine (PRE)	PRE1 modules: <ul style="list-style-type: none"> • ESR-PRE1 (Primary and redundant) ESR-PRE1= (Spare) PRE2 modules <ul style="list-style-type: none"> • ESR-PRE2 (Primary and redundant) ESR-PRE2/R= (Spare) PRE4 modules <ul style="list-style-type: none"> • ESR-PRE4 (Primary and redundant) ESR-PRE4/R= (Spare) Max per chassis: 2 Power consumption: <ul style="list-style-type: none"> • PRE and PRE1: 80 Watts (273 BTU per hour) PRE2: 200 Watts (682.4 BTU¹ per hour) PRE4: 210 Watts (716.5 BTU¹ per hour) Weight: <ul style="list-style-type: none"> • PRE and PRE1: 7.5 lb (3.41 kg) PRE2: 8.45 lb (3.84 kg) PRE4: 9.0 lb (4.09 kg) • Height: 16.0 in. (40.64 cm) Depth: 9.97 in. (25.32 cm) Width: 1.91 in. (4.84 cm) MTBF: <ul style="list-style-type: none"> • PRE and PRE1: 116,904 hours PRE2: 122,426 hours PRE4: 106,574 hours Three interface ports: <ul style="list-style-type: none"> • RJ-45 IEEE 802.3 Ethernet 100Base-T RJ-45 auxiliary (AUX) port for modem access RJ-45 console (CON) port for terminal access

Table A-1 Cisco uBR10012 Router and Router Components Physical Specifications (continued)

Description	Specifications
PRE PC media card options	<ul style="list-style-type: none"> Slot 0, Slot 1
PRE4 CompactFlash Disk options	<ul style="list-style-type: none"> Disk0 512 MB—Part Number: ESR-PRE-CF-512MB(=) 1 GB—Part Number: ESR-PRE-CF-1GB(=)
PRE DRAM memory options	<ul style="list-style-type: none"> 40 MB—Part Number: ESR-PRE-MEM-FD40 128 MB—Part Number: ESR-PRE-MEM-FD128 512 MB—Part Number: ESR-PRE-MEM-512M

1. cfm = Cubic feet per minute
2. W = Watts
3. BTU = British thermal units

Network Uplink Cards and Cable Interface Line Cards

Table A-2 lists the physical specifications for the cards used with the Cisco uBR10012 router.

Table A-2 Cards Used in the uBR10012 Router

Description	Specifications
Cisco Gigabit Ethernet line card	<ul style="list-style-type: none"> UBR10-1GE and UBR10-1GE= Power consumption: 25 W¹ (85.3 BTU²) Weight: 4.75 lb (2.16 kg) Height: 16.0 in. (40.64 cm) Depth: 9.97 in. (25.32 cm) Width: 1.12 in. (2.83 cm) MTBF: 183,4431 hours <p>Gigabit Ethernet Converter (GBIC) Types:</p> <ul style="list-style-type: none"> 1000Base-SX (SFP-GE-S), multimode 1000Base-LX/LH (SFP-GE-L), single mode 1000Base-ZX (GLC-ZX-SM), single-mode

Table A-2 Cards Used in the uBR10012 Router (continued)

Description	Specifications
Cisco Half-Height Gigabit Ethernet line card	<ul style="list-style-type: none"> • ESR-HH-1GE and ESR-HH-1GE= • Power consumption:15.98 W (54.53 BTU²) • Weight: 2 lb (0.9 kg) • Height: 7.8 in. (19.8 cm) Depth: 11.0 in. (27.9 cm) Width: 1.3 in. (3.3 cm) • MTBF: 449,330 hours <p>Gigabit Ethernet Converter (GBIC) Types:</p> <ul style="list-style-type: none"> • 1000Base-SX (SFP-GE-S) • 1000Base-LX/LH (SFP-GE-L) • 1000Base-ZX (GLC-ZX-SM) • 1000Base-T (GLC-T)
Slot splitter card	<ul style="list-style-type: none"> • ESR-HH-CARRIER • Weight: 2.28 lb (1.05 kg) • Height: 16.0 in. (40.64 cm) Depth: 10.50 in. (26.67 cm) Width: 1.80 in. (3.00 cm)
Half-height slot blank cover	<ul style="list-style-type: none"> • ESR-HH-COVER
Full-height slot blank cover	<ul style="list-style-type: none"> • ESR-COVER
SFP optical power budget—1000Base-SX GBIC	<ul style="list-style-type: none"> • Power budget: 7.5 dB • Transmit power: -9.5 to 0 dBm • Receive power: -17 to 0 dBm
SFP optical power budget—1000Base-LX/LH GBIC	<ul style="list-style-type: none"> • Power budget: 7.5 dB (multimode fiber), 8 dB (single mode) • Transmit power: -11.5 to -3 dBm (multimode fiber), -11 to -3 dBm (single mode) • Receive power: -19 to -3 dBm (multimode and single mode fiber)
SFP optical power budget—1000Base-ZX GBIC	<ul style="list-style-type: none"> • Power budget: 23 dB • Transmit power: 0 to 4.77 dBm • Receive power: -23 to 0 dBm
Cisco OC-12 Packet Over SONET (POS) line card	<ul style="list-style-type: none"> • UBR10-1OC12/P-SMI, UBR10-1OC12/P-SMI= • Power: 28W¹ (95.54 BTU²) • Weight: 4.75 lb (2.16 kg) • Height: 16.0 in. (40.64 cm) Depth: 9.97 in. (25.32 cm) Width: 1.12 in. (2.83 cm) • MTBF:329,349 hours

Table A-2 Cards Used in the uBR10012 Router (continued)

Description	Specifications
Cisco OC12SML-DPT WAN line card	<ul style="list-style-type: none"> • USB-SRP-OC12SML, USB-SRP-OC12SML= • Power consumption: 110 W¹ (375.3 BTU²) • Weight: 6 lb (2.72 kg) • Height: 16 in. (40.64 cm) Depth: 10.56 in. (26.82 cm) Width: 2.38 in. (6.05 cm) • MTBF: 153,624 hours
Cisco uBR10012-OC48 DPT/POS interface module Single-mode, short-reach modules Single-mode, long-reach modules	<ul style="list-style-type: none"> • Spares (2)—UBR10-SRP-OC48SMS= Spare (1)—ESR1048/P/SRPMS= • Spares (2)—UBR10-SRP-OC48SML= Spare (1)—ESR1048/P/SRPML= • Power consumption: 28 W¹ (95.54 BTU²) • Weight: 4.75 lb (2.16 kg) • Height: 16 in. (40.64 cm) Depth: 9.87 in. (25.32 cm) Width: 1.12 in. (2.83 cm) <p>MTBF:</p> <ul style="list-style-type: none"> • SMS—216,018 hours • SML—215,068 hours
Cisco uBR10-MC5X20S/U cable interface line cards	<ul style="list-style-type: none"> • Cisco UBR10-MC5X20S= • Cisco UBR10-MC5X20U= • Power consumption: 185W¹ (631.2 BTU²/hr) • Weight: 16 lb (7.26 kg) • Width: 1.36 in (3.55 cm) Height: 20 in. (50.80 cm) Depth: 16 in. (10.64 cm) • Cisco UBR10-MC5X20S MTBF: 38, 922 hours • Cisco UBR10-MC5X20U MTBF: 40,256 hours
Cisco UBR-MC20X20V cable interface line card	<ul style="list-style-type: none"> • UBR-MC20X20V-20D= • UBR-MC20X20V-5D= • UBR-MC20X20V-0D= • Power consumption: 250W¹ (853 BTU/hr²) • Weight: 16 lb (7.26 kg) • Width: 1.36 in (3.45 cm) Height: 20 in. (50.80 cm) Depth: 16 in. (40.64 cm) • MTBF: Supports 5 9s availability

Table A-2 Cards Used in the uBR10012 Router (continued)

Description	Specifications
Cisco uBR-MC3GX60V cable interface line card	<ul style="list-style-type: none"> • UBR-MC3GX60V= • Power consumption: 246W (839 BTU/hr) • Weight: 11.6 lb (5.26 kg) • Width: 1.38 in (3.50 cm) Height: 21.5 in. (54.61 cm) Depth: 17 in. (43.18 cm) • MTBF: Supports 5 9s availability
Cable kit (3m MCX to F cables) Cable kit with pre configured cables Cable extraction tool Universal cable holder MCX connector strip tool F connector strip tool MCX connector crimper tool F connector crimper tool MCX fixed pin connector F connector MCX connector to F connector adapter 75-ohm precision miniature video cable Shrink tubing	<ul style="list-style-type: none"> • PN-74-2984-01, White Sands Engineering (or Asheridge Communications Limited)² • PN-74-2984-01-DNS, White Sands Engineering (or Asheridge Communications Limited) • RTOOLWSE, White Sands Engineering (or Asheridge Communications Limited) • PN-133-8447-026, Johnson Components³ PN-29-4442-02, White Sands Engineering (or Asheridge Communications Limited) • PN-CPT-7538-125, White Sands Engineering (or Asheridge Communications Limited) • PN-CPT-753, White Sands Engineering (or Asheridge Communications Limited) • PN-C47-10120, White Sands Engineering (or Asheridge Communications Limited) • PN-ACT-270, White Sands Engineering (or Asheridge Communications Limited) • PN-MCXFP, White Sands Engineering (or Asheridge Communications Limited) • PN-ASFP, White Sands Engineering (or Asheridge Communications Limited) • PN-53140137, White Sands Engineering (or Asheridge Communications Limited) • PN-YR46940/WS940, Belden⁴, single strand bonded foil 1855A type • Size: 1/4 inch Shrink ratio: 2:1 Recovered wall thickness: 0.025 inch Inside diameter after recovery: 0.125 inch

1. W = Watts

2. Whitesands Engineering at the following URL: <http://www.whitesandsengineering.com/> (Asheridge Communications Limited is the European and Middle Eastern partner for White Sands Engineering and their URL is <http://www.ashcatv.com>)3. Johnson Components at the following URL: <http://www.johnsoncomponents.com/>4. Belden Electronics division at the following URL: <http://www.belden.com/>

SIP and SPA

Table A-3 lists the SPAs used with the Cisco uBR10012 router.

Table A-3 SPA used with the Cisco uBR10012 router

Description	Specifications
Cisco Wideband SPA	<ul style="list-style-type: none"> • Part Number: SPA-24XDS-SFP • Per port Bandwidth: 1 Gbps • Number of ports: 1+1 redundant • Total Bandwidth: 1 Gbps • Power consumption: 20 • MTBF: 500,000 hours <p>SFP Modules</p> <ul style="list-style-type: none"> • GLC-SX-MM • GLC-LH-SM • GLC-ZX-SM

Table A-3 SPA used with the Cisco uBR10012 router

Description	Specifications
1-Port 10-Gigabit Ethernet SPA	<ul style="list-style-type: none"> • Part Number: SPA-1X10GE-L-V2 • Per port Bandwidth: 10 Gbps • Number of ports: 1 • Total Bandwidth: 10 Gbps • Power consumption: 25 • MTBF: 411, 892 hours <p>SFP Modules</p> <ul style="list-style-type: none"> • XFP-10GLR-OC192SR • XFP-10GER-OC192IR • XFP-10GZR LR-2 • XFP-10G-MM-SR • DWDM-XFP-xx.xx
5-Port Gigabit Ethernet SPA	<ul style="list-style-type: none"> • Part Number: SPA-5X1GE-V2 • Per port Bandwidth: 1 Gbps • Number of ports: 5 • Total Bandwidth: 1 Gbps • Power consumption: 18.1 • MTBF: 674,351 hours <p>SFP Modules</p> <ul style="list-style-type: none"> • SFP-GE-T • SFP-GE-S • SFP-GE-L • SFP-GE-Z

Table A-4 lists the SIPs used with the Cisco uBR10012 router

Table A-4 SIP used with the Cisco uBR10012 router

Description	Specification
Cisco Wideband SIP	<ul style="list-style-type: none"> • Part Number: UBR10-2XDS-SIP • Power consumption: 115 • Weight: 10 lb (4.54 kg) • MTBF: 380,625 hours
Cisco SIP-600	<ul style="list-style-type: none"> • Part Number: 10000-SIP-600 • Power consumption: 160² • Weight: 10 lb (4.6 kg) • Height: 16 inches (41.5 cm) Width: 2.44 inches (6.32 cm) Depth: 10.4 inches (27 cm) • MTBF: 280, 449 hours