



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-6](#)

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 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—nominal: 5 to 85 percent• 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)</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) Part Number: UBR10-PWR-DC\R (Redundant)</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) • DC input voltage <ul style="list-style-type: none"> -48 to -60 VDC nominal -40.5 to -72 VDC minimum to maximum • DC input current: 48 A@ -48 VDC • Heat dissipation: 360 Btu1/hr. • Power consumption: 2400W maximum (8189BTU³) • MTBF:150,00 hours minimum • Temperature range <ul style="list-style-type: none"> Operating: 41\xb0 F to 104\xb0 F (5\xb0 C to 40\xb0 C) Storage: -40\xb0 F to 158\xb0 F (-40\xb0 C to 70\xb0 C)
<p>AC PEM</p> <p>100—120 VAC operation is not supported</p>	<p>Part Number: UBR10-PWR-AC (Primary) Part Number: UBR10-PWR-AC\R (Redundant) Part Number: UBR10-PWR-AC= (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: 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 current rating: 13 A • DC output voltage: -54 VDC maximum • DC output current: 45.3 A maximum • Power consumption: 2650W maximum • MTBF:150,000 - minimum • Heat dissipation: 8200 Btu1/hr. • Temperature range <ul style="list-style-type: none"> Operating: 23 to 122\xb0 F (-5 to 50\xb0 C) Storage: -13 to 158\xb0 F (-25 to 70\xb0 C)

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	<ul style="list-style-type: none"> • Part Number: UBR10-TCC+-T1 • 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
Fan assembly module	<ul style="list-style-type: none"> • Part Number: UBR10-FAN-ASSY • 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) • MTBF: fans—248,509 hours • MTBF: fan control—596,659

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

Description	Specifications
LCD module	<ul style="list-style-type: none"> • Part number: module-UBR10-DSPL= Part number: cable-UBR10-DSPL-CAB= • 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)	<p>PRE1 modules:</p> <ul style="list-style-type: none"> • ESR-PRE1 (Primary and redundant) ESR-PRE1= (Spare) <p>PRE2 modules</p> <ul style="list-style-type: none"> • ESR-PRE2 (Primary and redundant) ESR-PRE2/R= (Spare) <p>PRE4 modules</p> <ul style="list-style-type: none"> • ESR-PRE4 (Primary and redundant) ESR-PRE4/R= (Spare) <p>Max per chassis: 2</p> <p>Power consumption:</p> <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) <p>Weight:</p> <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) <p>MTBF:</p> <ul style="list-style-type: none"> • PRE and PRE1: 116,904 hours PRE2: 122,426 hours PRE4: 106,574 hours <p>Three interface ports:</p> <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 PRE4 CompactFlash Disk options PRE DRAM memory options	<ul style="list-style-type: none"> • Slot 0, Slot 1 • Disk0 <ul style="list-style-type: none"> 512 MB—Part Number: ESR-PRE-CF-512MB(=) 1 GB—Part Number: ESR-PRE-CF-1GB(=) • 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
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

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

Description	Specifications
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
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

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

Description	Specifications
Cisco uBR10-LCP2-uBR-MC28C cable interface line card	<ul style="list-style-type: none"> • UBR10-LCP2-MC28C, UBR10-LCP2-MC28C= • Power consumption: 110 W¹ (375.3 BTU²) • Weight: 12 lb (5.44 kg) • Height: 21.25 in. (53.96 cm) Depth: 16.5 in. (41.91 cm) Width: 1.4 in. (3.56 cm) • MTBF: 229,494 hours
Cisco uBR10-LCP2-MC16C/MC16E/MC16S cable interface line card	<ul style="list-style-type: none"> • UBR10-LCP2-MC16E, UBR10-LCP2-MC16E= • UBR10-LCP2-MC16C, UBR10-LCP2-MC16C= • UBR10-LCP2-MC16S, UBR10-LCP2-MC16S= • Power consumption: 80 W¹ (273.15 BTU²) • Weight: 12 lb (5.44 kg) • Height: 21.25 in. (53.96 cm) Depth: 16.5 in. (41.91 cm) Width: 1.4 in. (3.56 cm) <p>MTBF</p> <ul style="list-style-type: none"> • UBR10-LCP2-MC16C — 138,769 hours • UBR10-LCP2-MC16E — 134,698 hours • UBR10-LCP2-MC16S — 110,946 hours
Cisco uBR10-LCP Adapter Card Cisco uBR10-LCP2 Adapter Card ³ Note The adapter card is used with Cisco MC16x and Cisco MC28x cable interface line cards	<ul style="list-style-type: none"> • UBR10-LCP • UBR10-LCP2
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

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

Description	Specifications
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
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)⁴ • 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 Components⁵ 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, Belden⁶, 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. BTU = British thermal units

3. Faster CPU, faster SDRAM access

4. 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>)
5. Johnson Components at the following URL: <http://www.johnsoncomponents.com/>
6. Belden Electronics division at the following URL: <http://www.belden.com/>