



Technical Specifications

This appendix provides the technical specifications for the Cisco 6015 system. The appendix contains the following sections:

- [Hardware Specifications, page A-1](#)
- [Software Specifications, page A-11](#)



Note

For information on site and safety requirements, see [Chapter 2, “Preparing for Installation.”](#)

A.1 Hardware Specifications

This section details the specifications for the following hardware components:

- Cisco 6015 chassis
- Quad-port flexi ATU-C line card (4xflexi)
- Octal-port Discrete Multitone (DMT) ATU-C line card (8xDMT)
- Octal-port DMT ATU-C over ISDN line card (8xDMT over ISDN)
- Octal-port single-pair high-speed digital subscriber line, also known as symmetric high bit-rate digital subscriber loop (G.SHDSL) line card (8xG.SHDSL)
- DS3+T1/E1 inverse multiplexing over ATM (IMA) NI-2 card and industrial temperature (ITEMP) DS3+T1/E1 IMA NI-2 card
- OC-3c/OC-3c NI-2 card
- Input/Output (I/O) module
- DSL interface module
- DC power entry module (PEM)
- Fan module

A.1.1 Cisco 6015 System Specifications

Table A-1 lists the hardware specifications of the Cisco 6015 system.

Table A-1 Hardware Specifications

Specification		Description
Dimensions	Cisco 6015	3 RUs ² —5.25 in. x 17.48 in. x 11.02 in. (13.34 cm x 44.40 cm x 27.99 cm)
	AC/DC converter tray ¹	1 RU—1.75 in. x 19 in. x 13 in. (4.45 cm x 48.26 cm x 33.02cm)
	AC/DC converter	1 RU—1.75 in. x 5.75 in. x 13 in. (4.45 cm x 14.61 cm x 33.02 cm)
Weight	Cisco 6015	Empty—Approximately 14.5 lb (6.59 kg)
	AC/DC converter	Loaded—Approximately 26.04 lb (11.84 kg) 6 lb (2.73 kg)
Network interface		DS3+T1/E1IMA <ul style="list-style-type: none"> • DS3 WAN uplink • T1/E1 interface configured as either WAN or subtend • T1/E1 interfaces can be configured in up to four IMA groups ATM OC-3c (single- or multimode fiber)
ADSL interface		CAP—Up to 7.168 Mbps downstream/1.088 Mbps upstream per port DMT—Up to 8.032 Mbps downstream/1024 kbps upstream per port G.lite—Up to 1.536 Mbps downstream/512 kbps upstream per port
SHDSL interface		TC-PAM ³ —Up to 2.312 Mbps downstream/upstream
Craft interface		Console terminal connection on the NI-2 card
Management access		<ul style="list-style-type: none"> • RJ-45 interface for craft alarm discovery • RJ-45 Ethernet • ATM in-band management
External alarm contacts		Single dry contact alarm input, Normally Open (NO)
Power requirements		<ul style="list-style-type: none"> • -48/-60V DC • 120/240 AC, with optional AC/DC converter Note See Chapter 2, “Preparing for Installation,” for detailed power requirements.
Commercial operating requirements	Temperature	41 to 104°F (5 to 40°C)—Operating 23 to 131°F (-5 to 55°C)—Short-term operating
	Altitude	-197 to 13,123 feet (-60 to 4000 meters)
	Humidity	5 to 90% (noncondensing)

Table A-1 Hardware Specifications (continued)

Specification		Description
Outside Plant operating requirements	Temperature	–40 to 149°F (–40 to 65°C)—Operating
	Altitude	–197 to 13,123 feet (–60 to 4000 meters)
	Humidity	5 to 95% (noncondensing)
Subtending		<ul style="list-style-type: none"> I/O module One OC-3c connection on the OC-3c/OC-3c NI-2 card

- For additional hardware specifications for the AC/DC converter or converter tray, refer to the AC/DC converter documentation.
- RU = rack unit. An RU is equal to 1.75 inches (4.45 cm).
- TC-PAM = trellis coded pulse amplitude modulation.

A.1.2 4xflexi Specifications

Table A-2 lists the specifications for the 4xflexi.

Table A-2 4xflexi Specifications

Specification	DMT Mode	CAP Mode	G.lite Mode
Standards supported	ITU G.dmt (G.992.1) ANSI T1.413	RADSL ¹	ITU G.lite (G.992.2)
Power consumption	17.5W	13.5W	13W
Maximum data rates (per port)			
Downstream	8.032 Mbps	7.168 Mbps	1.536 Mbps
Upstream	864 kbps	1.088 Mbps	512 kbps
External interfaces	4 (no connectors on card)		
Internal hardware	AMD 186-based 3.3V 18-MHz CPU 128-KB SRAM 512K flash		
Dimensions	Height: 6.07 in. (15.42 cm) Depth: 8.50 in. (21.59 cm) Width: 0.88 in. (2.24 cm)		
Weight	0.875 lb (0.4 kg)		
Minimum software and network management requirement	Cisco IOS—Release 12.1(4)DA CDM ² —Release 3.2 (optional)		

- RADSL = rate-adaptive digital subscriber line.
- CDM = Cisco DSL Manager

A.1.3 8xDMT Specifications

Table A-3 lists the specifications for the 8xDMT.

Table A-3 8xDMT Specifications

Specification	Description
Standards supported	<ul style="list-style-type: none"> • ANSI T1.413-Issue 2, Category 1 only • ANSI T1.413-Issue 2, Annex F (Reduced NEXT)\ • Universal Test & Operations PHY for ATM, Level 2; A standard for transport of ATM cells over a 16-bit parallel data bus. Refer to the ATM Forum document af-phy-0039.000. • ITU G.992.1, Annex A (G.dmt) • ITU G.992.2. (G.lite) • ITU G.994.1. (G.hs)
External interfaces	8 (no connectors on card)
Data rates (per port)	Upstream: Up to 1024 kbps Downstream: Up to 8.064 Mbps
Internal hardware	<ul style="list-style-type: none"> • 40 MHz Motorola MPC850 microprocessor • 8MB SDRAM • 1 Mb boot flash • 1 kb serial EEPROM
Dimensions	Height: 6.07 in. (15.42 cm) Depth: 8.50 in. (21.59 cm) Width: 0.88 in. (2.24 cm)
Weight	0.875 lb (0.4 kg)
Power consumption	24W
Minimum software and network management requirement	Commercial version: <ul style="list-style-type: none"> • Cisco IOS—Release 12.1(6)DA • CDM¹—Release 3.3(2) (optional) Outside-plant version: <ul style="list-style-type: none"> • Cisco IOS—Release 12.2(5)DA • CDM—Release 3.4 (optional)

1. CDM = Cisco DSL Manager

A.1.4 8xDMT Over ISDN Specifications

Table A-4 lists the specifications for the 8xDMT over ISDN.

Table A-4 8xDMT Over ISDN Specifications

Specification	Description
Standards supported	<ul style="list-style-type: none"> • Universal Test & Operations PHY for ATM, Level 2; standard for transport of ATM cells over a 16-bit parallel data bus. Refer to ATM Forum document af-phy-0039.000. • ITU G.992.1 (G.dmt), Annex B/ETSI • ITU G.994.1 (G.hs) • ETSI TS 101 388 V.1.1.1/(draft) TM6(98)12 • TS102 080 v1.3.2 -Support for 2B1Q and 4B3T ISDN
External interfaces	8 (no connectors on card)
Data rates (per port)	Upstream: Up to 1024 kbps Downstream: Up to 7.616 Mbps
Framing mode	Overhead Framing Mode 3 supported
Internal hardware	<ul style="list-style-type: none"> • 40 MHz Motorola MPC850 microprocessor • 64 MB SDRAM • 16 Mb boot Flash • 1 KB serial EEPROM
Dimensions	Height: 6.07 in. (15.42 cm) Depth: 8.62 in. (21.89 cm) Width: 0.88 in. (2.24 cm)
Weight	0.875 lb (0.4 kg)
Power consumption	24 W
Minimum software and network management requirement	Cisco IOS—Release 12.2(5) DA CDM—Release 3.3(3-2) (optional)

A.1.5 8xG.SHDSL Specifications

Table A-5 lists the specifications for the 8xG.SHDSL.

Table A-5 8xG.SHDSL Line Card Specifications

Specification	Description
Standards supported	TC-PAM without OPTIS ITU G.991.2 ITU G.994.1 ETSI SDSL, TM6(00)10 ETSI SDSL DRAFT (TS 101 524)
Power consumption	11.3W at 136 kbps 15.0W at 1.554 Mbps 16.5W at 2.312 Mbps
Maximum data rates (per port)	2.312 Mbps
Maximum data rate (per card) Minimum software Cisco IOS 12.1(7)DA2	18.5 Mbps downstream 5.0 Mbps for odd ports upstream 5.0 Mbps for even ports upstream
Maximum data rate (per card) Minimum software Cisco IOS 12.2(7)	18.5 Mbps downstream 18.5 Mbps upstream
External interfaces	8 (no connectors on card)
Internal hardware	MPC850 3.3V power 40-Mhz CPU
Dimensions	Height: 6.07 in. (15.42 cm) Depth: 8.50 in. (21.59 cm) Width: 0.88 in. (2.24 cm)
Weight	0.70 lb (0.32 kg)
Minimum software and network management requirement	Cisco IOS 12.1(7)DA2 CDM 3.3.3 (optional)
Minimum requirements for rate adaptive DSL.	Cisco IOS 12.2(7) CDM 3.4 (optional)

A.1.6 DS3+T1/E1 IMA and ITEMP DS3+T1/E1 IMA NI-2 Cards Specifications

Table A-6 lists the specifications for the DS3+T1/E1 IMA and the ITEMP DS3+T1/E1 IMA NI-2 cards.

Table A-6 DS3+T1/E1 IMA and ITEMP DS3+T1/E1 IMA NI-2 Card Specifications

Specification	Description
Internal hardware	150 MHz RC64475 CPU Galileo GT64120 system controller 1M x 32 bootflash 4M x 32 Flash 512 KB boot EPROM
Dimensions	Height: 12.38 in. (31.45 cm) Depth: 8.50 in. (21.59 cm) Width: 1.80 in. (4.57 cm)
Weight	3.0 lb (1.36 kg)
External interfaces	One DS3 (44.736 Mbps) coaxial port Eight T1(1.544 Mbps)/E1 (2.048 Mbps) RJ-48 ports
Connector type	DS3—BNC ¹ E1/T1—RJ-48 ²
Impedance	DS3—75 ohms (nominal) T1—100 ohms (nominal) E1—120 ohms (nominal)
Line encoding	DS3—B3ZS T1—AMI or B8ZS E1—AMI or HDB3
Framing	DS3—C-bit parity, optionally PLCP with M23, otherwise ADM ³ T1—SF or ESF E1—PCM30 or CRC4
Transmission distance	DS3—Short haul: <225 feet (68.58 meters), long haul: 225 to 450 feet (68.58 to 137.16 meters) T1/E1—Short haul: 0 to 655 feet (0 to 199.64 meters), long haul: >655 feet (199.64 meters) no span power

Table A-6 DS3+T1/E1 IMA and ITEMP DS3+T1/E1 IMA NI-2 Card Specifications (continued)

Power consumption	32.5W
Minimum software and network management requirement	Commercial environment: <ul style="list-style-type: none"> • Cisco IOS—Release 12.1(4)DA • CDM—Release 3.2 (optional) Outside-plant environment: <ul style="list-style-type: none"> • Cisco IOS—Release 12.2(5)DA • CDM—Release 3.4 (optional)

1. The BNC connectors are located on the I/O module.
2. The E1 and T1 connectors are located on the I/O module.
3. ADM = add drop multiplexor

A.1.7 OC-3c/OC-3c NI-2 Card Specifications

Table A-7 lists the specifications of the single-mode and multimode versions of the OC-3c/OC-3c NI-2 card.

Table A-7 OC-3c/OC-3c NI-2 Card Specifications

Specification	Description
Internal hardware	150 MHz RC64475 CPU Galileo GT64120 system controller 1 M x 32 bootflash ¹ (4 MB) 4 M x 32 Flash (16 MB) 512 KB boot EPROM
Dimensions	Height: 12.38 in. (31.45 cm) Depth: 8.50 in. (21.59 cm) Width: 1.80 in. (4.57 cm)
Weight	3.0 lb (1.36 kg)
Layer 2 protocol	ATM
Power consumption	33.5W
Minimum software and network management requirement	Cisco IOS—Release 12.2(5)DA CDM—Release 3.2 (optional)

Table A-7 OC-3c/OC-3c NI-2 Card Specifications (continued)

	Single Mode Card	Multimode Card
External interfaces	Two OC-3c/STM-1 (155 Mbps) single-mode ports	Two OC-3c/STM-1 (155 Mbps) multimode ports
Connector type	SC-PC	SC-PC
Fiber type	Intermediate reach single mode	Multimode
Average transmitted power	-15 to -8 dBm	-20 to -14 dBm
Average received power	-8 dBm	-11 dBm
Transmission distance	Up to 20 km (12 miles)	Up to 2 km (1.2 miles)
Wavelength	1310 nm	1300 nm

1. The version of the OC-3c/OC-3c NI-2 card with enhanced upstream bandwidth features (NI2-155SM-155SM2 and NI2-155MM-155MM2) has a 2M x 32 bootflash (8 MB).

A.1.8 I/O Module Specifications

Table A-8 lists the specifications for the I/O module.

Table A-8 I/O Module Specifications

Specification	Description	
Dimensions	Height: 1.688 in. (4.29 cm) Depth: 9.375 in. (23.813 cm) Width: 3.375 in. (8.573 cm)	
Weight	0.64 lb (0.29 kg)	
External interfaces	One DS3 (44.736 Mbps) coaxial port Eight T1 (1.544 Mbps)/E1 (2.048 Mbps) RJ-48 ports	
Connector type	DS3—BNC ¹ E1/T1—RJ-48	
Power consumption	3W	
Minimum software and network management requirement	Use with a DS3+T1/E1 IMA NI-2 card in a commercial environment	Cisco IOS—Release 12.1(4)DA CDM ² —Release 3.2
	Use with an ITEMP DS3+T1/E1 IMA NI-2 card in an outside-plant environment	Cisco IOS—Release 12.1(6)DA CDM—Release 3.4
	Use with an OC-3c/OC-3c NI-2 card in a commercial environment	Cisco IOS—Release 12.2(5)DA CDM—Release 3.2

1. BNC = Bayonet-Neill Concelman.
2. CDM = Cisco DSL Manager

A.1.9 DSL Interface Module Specifications

Table A-9 lists the specifications for the DSL interface module.

Table A-9 DSL Interface Module Specifications

Specification	Description
Dimensions	Height: 1.375 in. (3.493 cm) Depth: 9.375 in. (23.813 cm) Width: 3.375 in. (8.573 cm)
Weight	0.71 lb (0.32 kg)
Data connectors	Two 50-pin Champ connectors
Power consumption	Not applicable.
Minimum software and network management requirement	Cisco IOS—Release 12.1(4)DA CDM—Release 3.2 (optional)

A.1.10 DC PEM Specifications

Table A-10 lists the specifications for the DC PEM.

Table A-10 DC PEM Specifications

Specification	Description
Dimensions	Height: 1.56 in. (3.96 cm) Depth: 9.875 in. (25.08 cm) Width: 3.375 in. (8.573 cm)
Weight	1.08 lb (0.49 kg)
Power consumption	20W
Minimum software and network management requirement	Cisco IOS—Release 12.1(4)DA CDM—Release 3.2 (optional)

A.1.11 Fan Module Specifications

Table A-11 lists the specifications for the fan module.

Table A-11 Fan Module Specifications

Specification	Description
Dimensions	Height: 5.0 in. (12.7 cm) Depth: 9.375 in. (23.813 cm) Width: 1.125 in. (2.86 cm)
Weight	0.87 lb (0.40 kg)
Power consumption	9W
Minimum software and network management requirement	Cisco IOS—Release 12.1(4)DA CDM—Release 3.2 (optional)

A.2 Software Specifications

Table A-12 lists Cisco 6015 system software specifications.

Table A-12 Software Specifications

Specification	Description
Management protocols	IOS software support for SNMP to Cisco EMF ¹
Management applications	<ul style="list-style-type: none"> • Cisco IOS • CDM
Management interfaces	In band—ATM VC Out of band—10BaseT Ethernet, console, auxiliary

1. EMF = Element Management Framework

