APPENDIX A

Cisco XR 12406 Router Technical Specifications and Warnings

This appendix provides technical specifications, regulatory information, and translated safety warnings and agency approvals for the Cisco XR 12406 Router.

Specifications

This section lists the Cisco XR 12406 Router specifications in these tables:

- For physical specifications, see Table A-1 on page A-1
- For electrical specifications for systems equipped with the AC-input power subsystem, see Table A-2 on page A-2
- For electrical specifications for systems equipped with the DC-input power subsystem, see Table A-3 on page A-3
- For a list of the environmental specifications, see Table A-4 on page A-4

Table A-1 Cisco XR 12406 Router Physical Specifications

Description	Value
Chassis height	18.5 in (46.9 cm)
Chassis width	17.3 in (43.9 cm)

Table A-1 Cisco XR 12406 Router Physical Specifications (continued)

Description	Value
Chassis depth	28.0 in (71.1 cm), including cable-management system
Weight • Chassis, minimum configuration • Chassis fully configured, using all card slots, and 2 AC input power supplies	 140 lb (64 kg) 205 lb (93 kg)

The electrical specifications and values listed in Table A-2 are for a Cisco XR 12406 Router system equipped with the AC-input power distribution unit (PDU) and AC-input power supply modules.

Table A-2 AC-Input Power Supply Electrical Specifications

Description	Value
Rated input voltage[1]	Original Cisco XR 12000 series routers: 100–240 VAC nominal (range: 85 to 264 VAC) 220–240 VAC (UK) Enhanced Cisco XR 12000 series routers: supports 220 VAC only.
Rated input line frequency[1]	50/60 Hz nominal (range: 47 to 63 Hz) 50/60 Hz UK
Input current rating[1]	15A maximum @ 200 VAC
Source AC service requirement[1]	20A North America; 16A international; 13A UK
Nominal output voltage and current	–54.5 VDC @ 30A maximum
Total AC input power	1708 VA (original series) 2600 VA (enhanced series)
Redundancy	2 AC-input power supply modules are required for 2N redundancy

1. For each AC-input power supply module.

Caution To ensure that the chassis configuration complies with the required power budgets, use the on-line power calculator. Failure to properly verify the configuration may result in an unpredictable state if one of the power units fails. Contact your local sales representative for assistance.

The electrical specifications and values listed in Table A-3 are for a Cisco XR 12406 Router system equipped with the DC-input PDU and DC-input power entry modules (PEMs).

Table A-3 DC Power Entry Module Electrical Specifications

Description	Value
Rated input voltage[1]	–48 VDC nominal in North America –60 VDC nominal in the European Community (range: –40.5 to –75 VDC)
Input current rating[1]	60A maximum @ 40.5 VDC
Source DC service requirement[1]	60A
Nominal output voltage and current	–48 VDC @ 40A maximum
Total DC input power	1630 VA (original series) 2600 VA (enhanced series)
Redundancy	2 DC-input PEMs are required for 2N redundancy

1. For each DC-input PEM.

Caution To ensure that the chassis configuration complies with the required power budgets, use the on-line power calculator. Failure to properly verify the configuration may result in an unpredictable state if one of the power units fails. Contact your local sales representative for assistance.

Table A-4 Cisco XR 12406 Router Environmental Specifications

Description	Value
Temperature	32° to 104°F (0° to 40°C) operating –4° to 149°F (–20° to 65°C) non-operating
Humidity	10 to 90% noncondensing operating 5 to 95% noncondensing non-operating
Altitude	0 to 10,000 ft. (0 to 3,050 m) operating 0 to 30,000 ft. (0 to 9,144 m) non-operating
Heat dissipation	5,828 Btu/hr maximum (AC original series) 8,871 Btu/hr maximum (AC enhanced series) 5,562 Btu/hr maximum (DC original series) 8,871 Btu/hr maximum (DC enhanced series)
Cooling	Facing the router, right-side-to-back cooling
Shock	5 to 500 Hz, 0.5g[1] (0.1 oct/min[2]) operating 5 to 100 Hz, 1g (0.1 oct/min) non-operating 100 to 500 Hz, 15g (0.2 oct/min) 500 to 1,000 Hz, 1.5g (0.2 oct/min)

1. g = Gravity
2. oct/min = Octave per minute

Caution Exhaust from other equipment vented directly into the Cisco XR 12406 Router air inlet may cause overheating. Install the router so that it is protected from a direct flow of hot air from other equipment.

Alarm Card Alarm Relay Connector Specifications

The alarm card alarm relay connector is a standard DB-9 connector. The relay interface is rated at max 2A, 60V, or 50VA, whichever is greater. The connector pins and their definitions are listed in Table A-5.

Table A-5 Alarm Card Alarm Relay Contact Connector Pinout

Pin	Name	Definition
1	Critical_NO	Critical, normally open contact
2	Critical_C	Critical, common contact
3	Major_NO	Major, normally open contact
4	Minor_NO	Minor, normally open contact
5	Minor_C	Minor, common contact
6	Critical_NC	Critical, normally closed contact
7	Major_NC	Major, normally closed contact
8	Major_C	Major, common contact
9	Minor_NC	Minor, normally closed contact

Compliance Information

Compliance information for the Cisco XR 12406 Router is presented in the following tables:

- Table A-6, "Electromagnetic Emissions Requirements"
- Table A-7, "Immunity Tests"
- Table A-8, "Network Equipment Building Systems—NEBS"
- Table A-9, "European Telecommunication Standards Institute—ETSI"
- Table A-10, "Safety Approval Requirement"

Table A-6 Electromagnetic Emissions Requirements

Country	Standard Requirements	Class: Up to 1 GHz
Australia	AS/NZS 3548:1995	A
Canada	ICES003-1998/CISPR22:1996	A
Hungarian	MSZEN55022	A
Japan	VCCI V-3/99.04	A
Korea	EN55022-1998/EN50082-1	A
New Zealand	AS/NZS 3548:1995	A
Singapore	CISPR22:1996	A
Taiwan	BSMI/CNS 13438	A
USA	FCC CFR 47-PART 15 1998	A[1]
China/others	CISPR22:1997	A
Europe/EU	EN55022-1998/EN55024-ITE	B
ETSI	EN 300386-2/EN55022	B (Noncentral office)

1. Up to 40 GHz

Table A-7 Immunity Tests

Test Type or Specification	Applies to	Class/Level/Criteria
Electrostatic Discharge EN61000-4-2:1995	System/enclosure	Level 4/8KV contact, 15KV air/B
Radiated Immunity IEC61000-4-3:1995 ENV50140:1993	System/enclosure	Level 3/10V/m/A 1KHz 80% AM (80MHz - 1 GHz)
Fast Transients EN61000-4-4:1995	AC power lines DC lines Signal lines	Level 4/4 KV 2.5 kHz Rep Freq/B Level 4/4 KV 2.5 kHz Rep Freq/B Level 4/1 KV 5kHz Rep Freq/A Level 4/2 KV 5kHz Rep Freq/B
Surge Immunity EN61000-4-5:1995	AC power line (live-neutral) 2 ohms AC power line (live-earth) 12 ohms DC power line (live-earth) DC Power line (return-earth) Signal lines 2 ohms	Class 4/2KV/B Class 4/4KV/B Class 4/500V/B Class 4/500V/B Indoor: 500V Outdoor: 4KV/R
Conducted RF Immunity EN61000-4-6:1996+ ENV50141:1993	AC power line DC power line Signal lines	Level 3/10V/A (150kHz-80MHz)
Voltage Dips + Sag Interruptions AC Power Lines EN61000-4-11:1995	AC power lines	30% 10 ms (0.5 period)/B 30% 5000ms (25 periods) 60% 100 ms (5 periods)/C 60% 1000 ms (50 periods) >95% 10ms (0.5 period)/C >95% 5000 ms (250 periods)

Table A-8 Network Equipment Building Systems—NEBS

NEBS Requirements
SR-3580—NEBS criteria levels (Level 3-compliant)
GR-1089-Core—NEBS EMC and safety
GR-63-Core—NEBS physical protection

Table A-9 European Telecommunication Standards Institute—ETSI

ETSI Specifications
ETS 300 386-1—Levels for equipment with a “high priority of service” that is installed in “locations other than telecommunication centers.”
ETS 300 386-2:1997—Levels for equipment with a “high priority of service” that is installed in “locations other than telecommunications centers.”
ETSI 300 132-2: September 1996—DC power supply interfaces at the input to telecommunications equipment Sections 4.8, 4.9.

Table A-10 Safety Approval Requirement

Category	Approval Agency and Requirement
Safety Certification	UL 1950 CSA-22.2 No. 950 EN60950 ACA TS001 AS/NZS 3260 IEC60950 EN60825

Regulatory, Compliance, and Safety Information

This section includes regulatory, compliance, and safety information in the following sections:

Translated Safety Warnings and Agency Approvals

The complete list of translated safety warnings and agency approvals is available in the *Regulatory Compliance and Safety Information for Cisco 12000 Series Routers* publication (Document Number 78-4347-19).

Electromagnetic Compatibility Regulatory Statements

FCC Class A Compliance

This equipment was tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the installation guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you are required to correct the interference at your own expense.

Modifying the equipment without Cisco authorization may result in the equipment no longer complying with FCC requirements for Class A digital devices. In that event, your right to use the equipment may be limited by FCC regulation and you may be required to correct any interference to radio or television communication at your own expense.

You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Cisco equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the equipment to one side or the other of the television or radio.
- Move the equipment farther away from the television or radio.
- Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

CISPR 22

This apparatus complies with CISPR 22/EN55022 Class B radiated and conducted emissions requirements.

Canada

English Statement of Compliance

This class A digital apparatus complies with Canadian ICES-003.

French Statement of Compliance

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Europe (EU)

This apparatus complies with EN55022 Class B and EN55024 standards when used as ITE/TTE equipment, and EN300386 for Telecommunications Network Equipment (TNE) in both installation environments, telecommunication centers and other indoor locations.

VCCI Class A Notice for Japan

Warning **This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.** Statement 191

警告 これは、情報処理装置等電波障害自主規制協議会（VCCI）の規定に基づくクラスA装置です。この装置を家庭環境で使用すると、電波妨害を引き起こすことがあります。この場合には､使用者が適切な対策を取るように要求されることがあります。

Class A Notice for Hungary

Warning **This equipment is a class A product and should be used and installed properly according to the Hungarian EMC Class A requirements (MSZEN55022). Class A equipment is designed for typical commercial establishments for which special conditions of installation and protection distance are used.** Statement 256

Figyelmeztetés a felhasználói kézikönyv számára: Ez a berendezés "A" osztályú termék, felhasználására és üzembe helyezésére a magyar EMC "A" osztályú követelményeknek (MSZ EN 55022) megfeleloen kerülhet sor, illetve ezen "A" osztályú berendezések csak megfelelo kereskedelmi forrásból származhatnak, amelyek biztosítják a megfelelo speciális üzembe helyezési körülményeket és biztonságos üzemelési távolságok alkalmazását.

Class A Notice for Taiwan and Other Traditional Chinese Markets

Warning **This is a Class A Information Product, when used in residential environment, it may cause radio frequency interference, under such circumstances, the user may be requested to take appropriate countermeasures.** Statement 257

警告 這是甲類資訊產品，在居住環境中使用時，可能會造成射頻干擾，
在這種情況下，使用者會被要求採取某些適當的對策。

Class A Notice for Korea

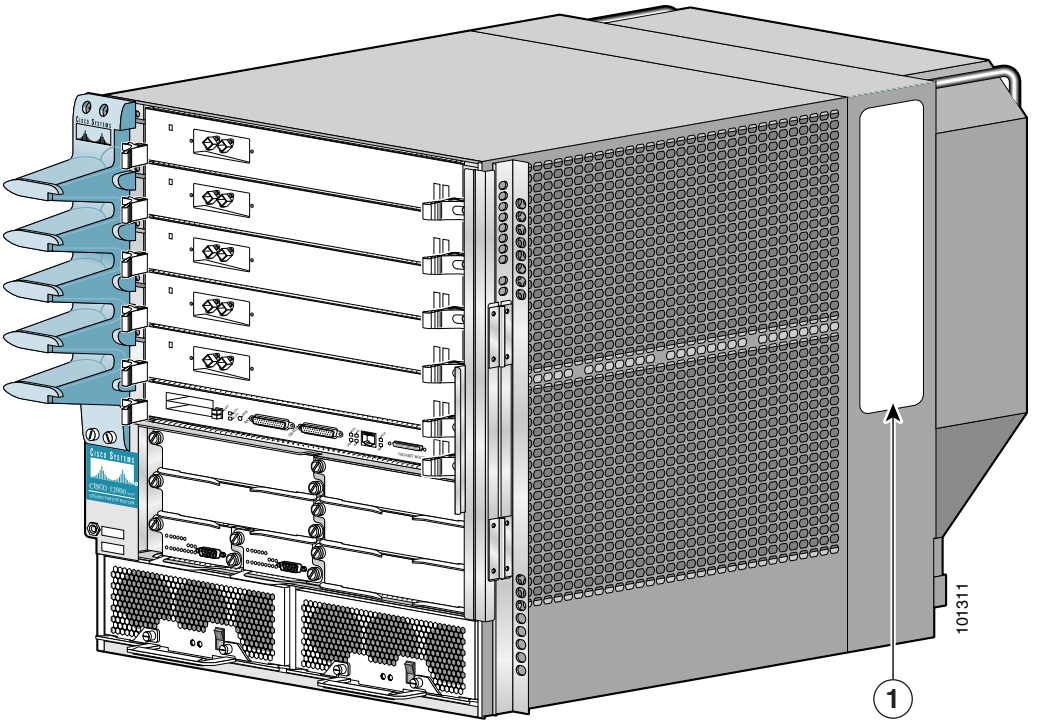
Warning **This is a Class A Device and is registered for EMC requirements for industrial use. The seller or buyer should be aware of this. If this type was sold or purchased by mistake, it should be replaced with a residential-use type.** Statement 294

주의 A급 기기 이 기기는 업무용으로 전자파 적합 등록을 한 기기이
오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약
잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Compliance Label

The compliance information label is located on the Cisco 12006 and Cisco 12406 Router as shown in Figure A-1.

Figure A-1 Compliance Information Label



1	Compliance information label

Router Performance Upgrades and Model Identification

The compliance information label on the side of the chassis also identifies the Cisco XR 12000 Series Router by its model number. The model number indicates the router is in the Cisco XR 12000 Series, the maximum switching capacity the router supports, and the number of line card and RP slots in the chassis.

For example, the Cisco XR 12406 router features 120 Gbps switching capacity in a 6-slot, 10-Gigabit per slot chassis. Table A-11 shows the Cisco XR 12406 Router model comparison information based on chassis slot counts, maximum switching capacity, and switch fabric type.

Table A-11 Cisco XR 12406 Router Model Comparison

Model	Chassis Slots	Switching Capacity	Switch Fabric Identification
12406	6	120 Gbps	SFC and CSC

On Cisco XR 12000 series routers that support switching capacity increases through switch fabric upgrades, observe the following administrative considerations after you perform the upgrade and verify its installation:

- The switch fabric upgrade does not include a new label that identifies the router by the new model number. The compliance label on the router chassis does not change. This could confuse technicians who might service the router in the future. We recommend that the upgrade technician take any required administrative steps to make the new, post-upgrade router identity outwardly obvious.
- If steps are not taken to identify a router with upgraded switch fabric, the alternative methods for identifying an upgraded router are through either Cisco IOS XR software commands or the Cisco identification labels on the switch fabric cards (SFCs and CSCs) installed in the router. Table A-11 lists the router models and their corresponding switch fabric card identification labels.