



Cisco C880 M4 Server Hardware Installation Manual

for Servers with E7-8800 v2, v3, and v4 CPUs

March, 2017

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CHAPTER 1 Installation Data

It explains the various data used while installing various drawings for device configuration, device overview, installation specification and layout.

1.1 Configuration Contents of Device

It shows the name and contents of configuration of each device.

TABLE 1.1 Name and Contents of Configuration of Each device

Equipment Name	Content Configuration
Cisco C880 Server	Maximum 4 SB (Maximum 8 CPU), Maximum 4 IOU are available.

Remarks

Each device shown in “[TABLE 1.1 Name and Contents of Configuration of Each device](#)” is installed in 19 inch rack of EIA standard.

For the details on 19 inch rack, contact the distributor where you purchased your product, or your sales representative.

1.2 External Overview of Device

This section describes the external overview of device.

1.2.1 External Overview of Device (Main equipment)

External Overview of device (Front view, Rear view, Top view, Right side view) of Cisco C880 Server is shown below.

FIGURE 1.1 Cisco C880 Server (E7-8800 v3 and E7-8800 v4 CPUs) front view

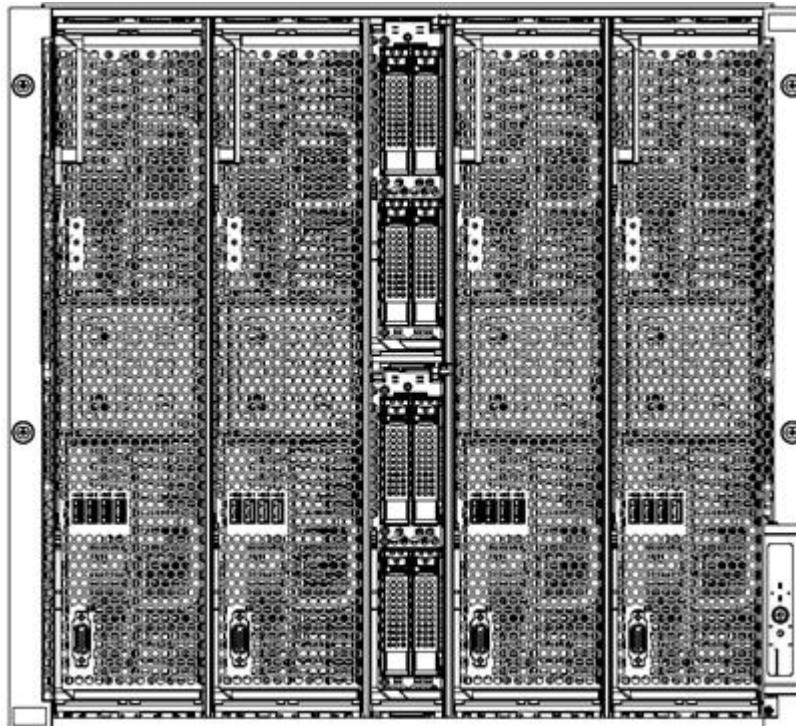


FIGURE 1.2 Cisco C880 Server (E7-8800 v2 CPU) front view

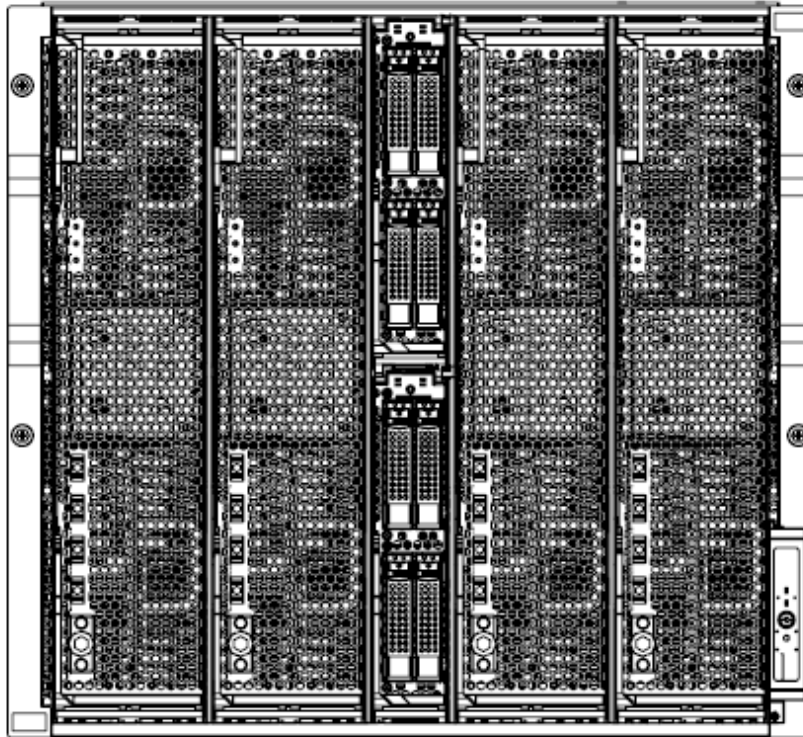


FIGURE 1.3 Cisco C880 Server rear view

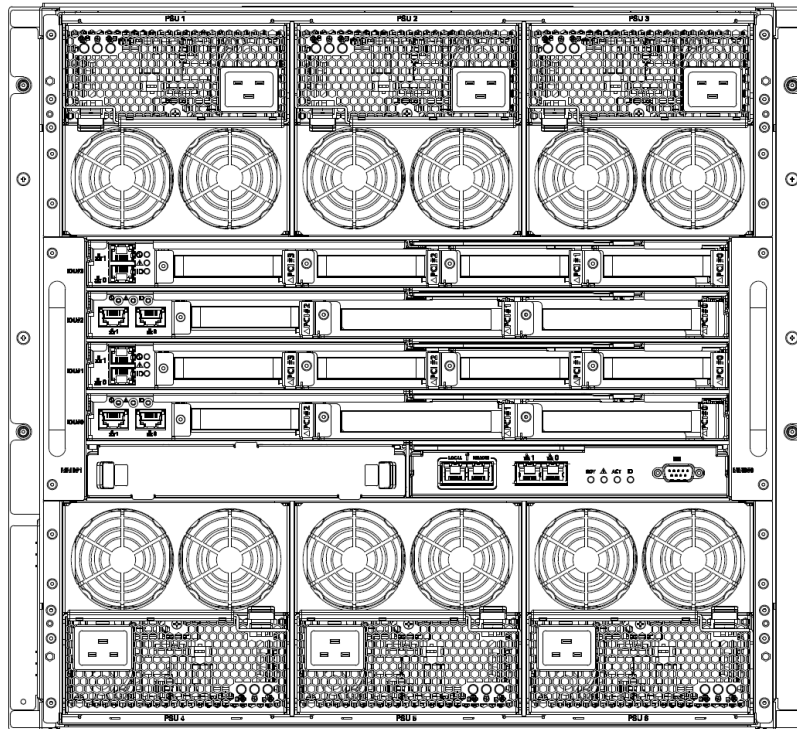


FIGURE 1.4 Cisco C880 Server top view

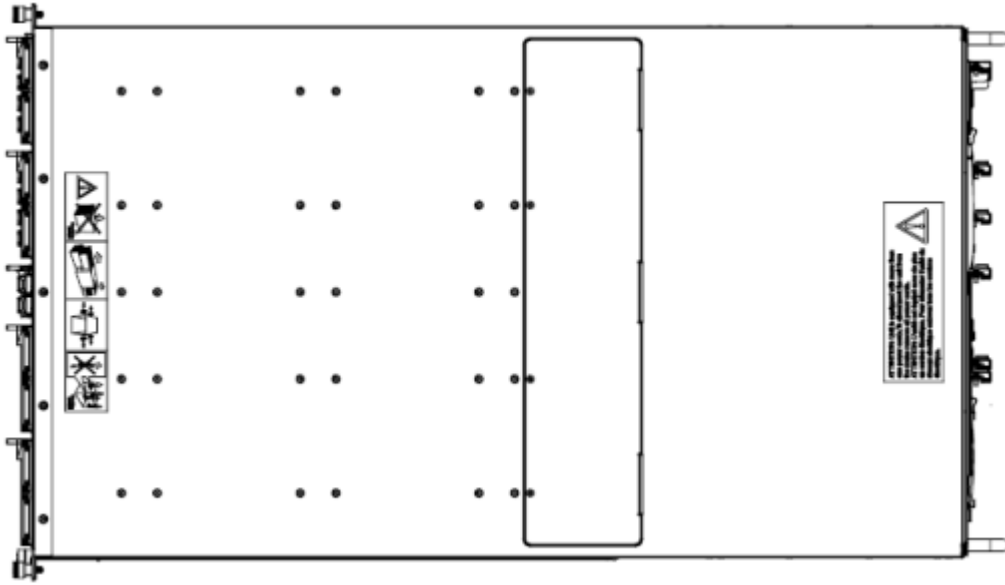
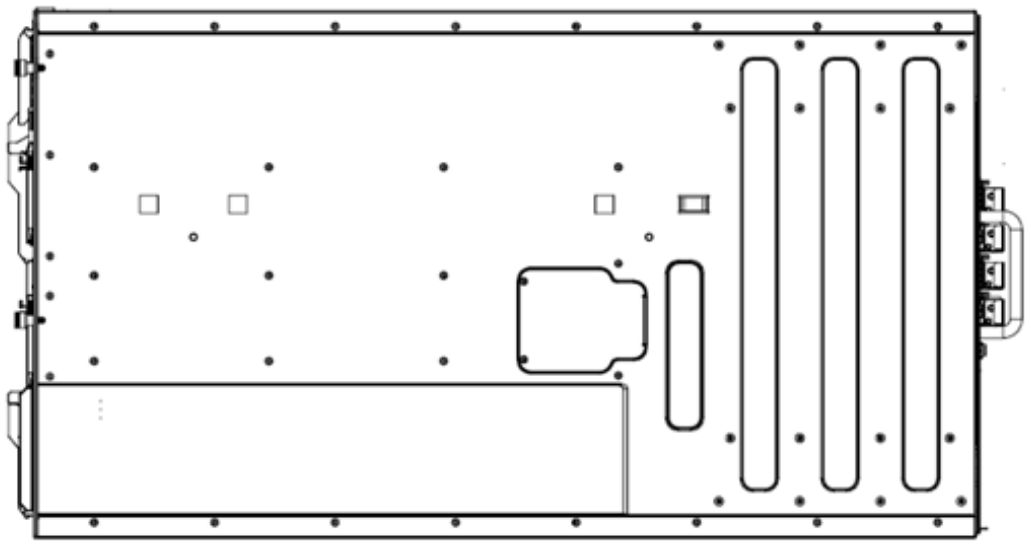


FIGURE 1.5 Cisco C880 Server right side view



1.3 Installation Specifications

This section explains installation specification of each model.

1.3.1 Installation Specifications

TABLE 1.2 Installation Specifications

Items			Contents		
			Cisco C880 Server (E7-8800 v2 CPU)	Cisco C880 Server (E7-8800 v3 and E7-8800 v4 CPUs)	
Dimensions [mm (in.)]	Width		445(17.52)		
	Depth (*1)		782(30.79)		
	Length		438(17.25) 10U		
Mass [kg (lb)] (*2)			143(315)		
Conditions for air conditioner	Max. calorific value [kJ/h (BTU/h)]	Interruptible power source	21,600(20,500)	19,872(18,835)	
		High efficiency power supply (*13)	20,900(19,800)	19,224(18,221)	
	Displacement [m3/min (ft ³ /min)] (*3)	Recommended environmental temperature	12(424)		
		Max.	28(989)		
	Temperature and Humidity conditions (*4)	At the time of operation	Temperature [°C (°F)]	(*5)	
			Humidity [%RH]	20 to 80	
			Max wet bulb temperature [°C (°F)]	29 (84.2)	
		Downtime (*6)	Temperature [°C (°F)]	0 to 50 (32 to 122)	
			Humidity [%RH]	8 to 80	
			Max wet bulb temperature [°C (°F)]	29 (84.2)	
	Noise [dB] (*7, *8)		60		
	Acoustic power level [B] (*8)		7.8		
	Permissible Vibration [m/s ² (gal)]	At the time of operation (Including standby)		4.0 (400) (Composite seismic wave)	
Downtime (*9)		10.0 (1000) (Composite seismic wave)			
Permissible dust level [mg/m ³]		0.15			
Power supply conditions	Input voltage and source resultant pulse number		200 to 240 VAC±10 % 1φ		
	Frequency and fluctuating Range		50/60 Hz + 2/-4%		
	Max power consumption / apparent power	At the time of operation	Interruptible power source (*13)	6.00 kW/6.19 kVA	5.52 kW/5.69kVA
			High efficiency power supply (*13)	5.81 kW/5.99 kVA	5.34 kW/5.51kVA
	Downtime		0.084 kW		
	Power factor (*10)		0.95 or more		
	Inrush current [A] [Rush hours] (*11)		20 or less		
Leak current [mA] (*12)		6.9 or less			

*1: Dimensions without protrusions

*2: Numeric value when each optional device is mounted for maximum number of options.

However, rail for mounting rack (5.7kg) and cable type are not included.

Mass as per the installation configuration can be calculated using formula as shown below.

Device mass = 77 + (9.6 * A) + (2.5 * B) + (1.8 * C) + (3.3 * D) [kg]

A = Number of mounted SB (Minimum 1 to Maximum 4)

B= Number of mounted IOU (Minimum 1 to Maximum 4)

C= Number of mounted PSU (Minimum 2 to Maximum 6)

D= Number of mounted DU (Minimum 0 to Maximum 2)

*3: There are cases when device is overloaded or when abnormality is detected, FAN rotates at high-speed even if recommended environmental temperature is used.

- *4: Protect from condensation.
- *5: Temperature condition changes according to the installation location above sea level.
 - For 0 to 1000 m (0 to 3281 ft) above sea level, temperature range at the time of installation: 5 to 35°C (41 to 95°F)
 - For 1000 to 1500 m (3281 to 4921 ft) above sea level, temperature range at the time of installation: 5 to 33°C (41 to 91.4°F)
 - For 1500 to 2000 m (4921 to 6562 ft) above sea level, temperature range at the time of installation: 5 to 31°C (41 to 87.8°F)
 - For 2000 to 3000 m (6562 to 9843 ft) above sea level, temperature range at the time of installation: 5 to 29°C (41 to 84.2°F)Error of + 100m in the sea level settings of the location of installation is permissible.
- *6: Downtime is the condition in which the device is packed and maintained.
- *7: Level of noise which is actually heard varies as per the mounting condition of the position from where the noise is heard or the position of rack.
- *8: Level of noise and the level of acoustic power changes according to the Hardware configuration, the processing load and the environmental temperature.
- *9: Downtime is the condition in which the device is installed. However, the power is switched off.
- *10: Value at the time of operations.
- *11: Value of 1 input cable
- *12: Value of 1 device
- *13: Interruptible power supply is the built-in PSU (80 PLUS SILVER supported), high efficiency power supply is the built-in PSU (80 PLUS PLATINUM supported)

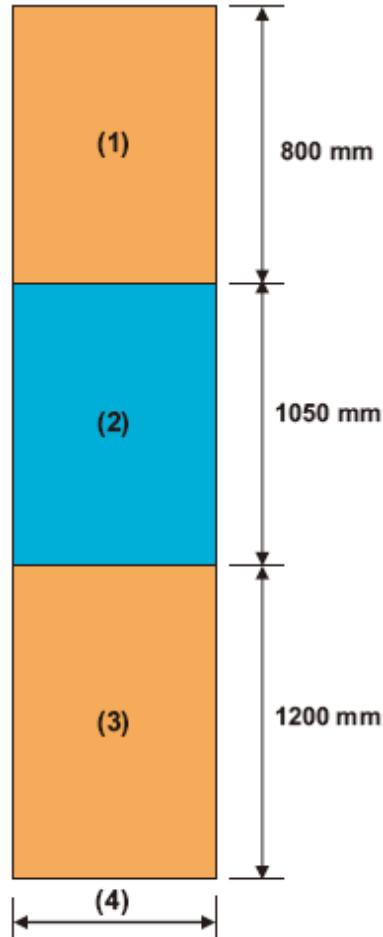
1.4 Installation Area

Here, the installation area and the service area when the Cisco C880 Server is installed on 19-inch rack are explained.

The installation area and the service area differ according to the installed 19-inch rack.

For details on the 19-inch racks, contact the distributor where you purchased your product, or your sales representative.

FIGURE 1.6 Service Area at the time of installing 19 inch rack model



Number	Description		
(1)	Rear side maintenance area		
(2)	Rack		
(3)	Front side maintenance area		
(4)	Rack width	Model 2724/2737/2742, PCRM1 724S/742S/724A/742A	700 mm
		Model 2616/2624/2642, PCRM1 616S/624S/642S	600 mm

1.5 Flow of Cooling Air and Exhaust Air of Installation

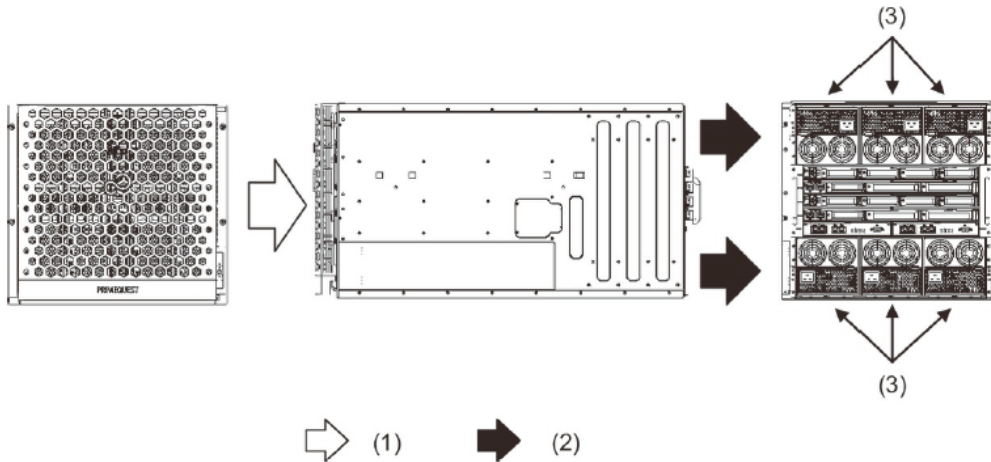
Here, the flow of the cooling air and the exhaust of each device are explained.

Note

Flow of cooling air and exhaust air should be considered while studying the installation of a device. If device is installed without considering them, it may get affected by inhaling the exhaust air from the other device. Especially, the device detecting the intake air temperature may raise alarm indicating abnormality.

1.5.1 Flow of Cooling Air and Exhaust Air (Main Cabinet)

FIGURE 1.7 Flow of Cooling Air and Exhaust Air (Main Cabinet)



Number	Description
(1)	Inspiration
(2)	Exhaust
(3)	Location of exhaust

1.6 Installation Environment

This section describes the installation environment of the base cabinet.

1.6.1 Dust

Suspended Particles

Suspended particles in a computer room should not exceed 0.15mg/m³. A computer is designed in such a way that it withstands the suspended particles. This value is permissible in an ordinary office. However, this value can be maintained in the ordinary computer room if there is less outdoor air infiltration having suspended particles like dust and if there is no smoke of cigarettes.

Dust Removal

The suspended particles like dust are collected in the filter of an air conditioner. The dust should be removed from the computer room by cleaning floor surfaces and underfloor periodically. Cleaning is necessary in the following cases.

- When the computer room is ready, and before bringing in the computers
- At the time of repairing the computer room
- At the time of shifting the computers and re-arranging the devices

1.6.2 Corrosive Gas

Corrosive gas and salty wind cause corrosion, malfunctioning, and damage of the device, and reduce life of the device remarkably.

Corrosive gas should be removed by providing suitable air cleaning equipment. In addition, positive clear air pressure in the room prevents an entering of the corrosive gas from the outside. The chemical factory area, thermal water/ volcanic zone etc. are considered as a source of corrosive gas.

TABLE 1.3 Permissible Level of Corrosive Gas

Name of gas	Permissible level
Hydrogen sulfide (H ₂ S)	7.1ppb or less
Sulfur dioxide (Sulfur oxide)(SO ₂)	37ppb or less
Hydrogen chloride (HCL)	6.6ppb or less
Chlorine (Cl ₂)	3.4ppb or less
Hydrogen fluoride (HF)	3.6ppb or less
Nitrogen dioxide (Nitrogen oxides)(NO ₂)	52ppb or less
Ammonia(NH ₃)	420ppb or less
Ozone(O ₃)	5ppb or less
Fluid vapor	0.2mg/m ³ or less

1.6.3 Sea Water (Salt Damage)

A large number of sea-salt particles are suspended in air by the salty wind near the sea-coast. If the sea-salt particles remain in the computer, moisture and chemically condensed substances cause insulation failure, and corrosion degradation of the components. Therefore, the computer should be installed at a place which is far from the sea-coast.

Installation standards to prevent damage due to sea salt particles are shown below.

Standards: The computer should be installed at a place which is at least 0.5km away from the sea-coast (Excluding the case having air-conditioner which prevents an entering of air from outside)

CHAPTER 2 **Connected Information**

This section describes the connection summary of cable and cable used in Cisco C880 Server.

2.1 Connection of signal cable

This section describes the notes for connection of signal cable, cable list and cable procure.

2.1.1 Details of external interface connection

Mounting position of external interface connecting part of Cisco C880 Server is shown in the section below. When calculating the length of the connection cable, you should take account into the mounting position.

External interface connection (Cisco C880 Server (E7-8800 v3 and E7-8800 v4 CPUs) in base cabinet)

External interface connection figure of Cisco C880 Server (E7-8800 v3 and E7-8800 v4 CPUs) in base cabinet is shown in the section below. This figure is uncovered front surface (face). The front cover must be attached in normal operation.

FIGURE 2.1 External interface connection figure of Cisco C880 Server (E7-8800 v3 and E7-8800 v4 CPUs) (Front surface)

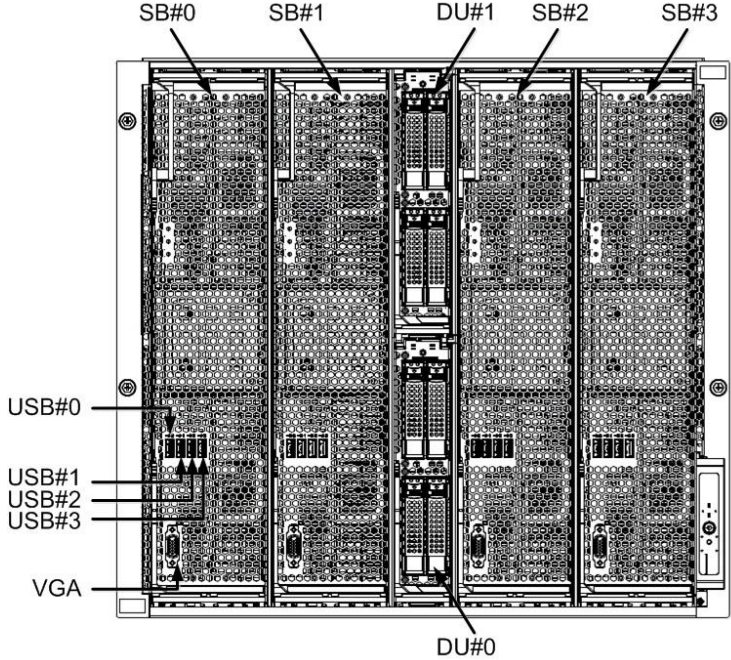
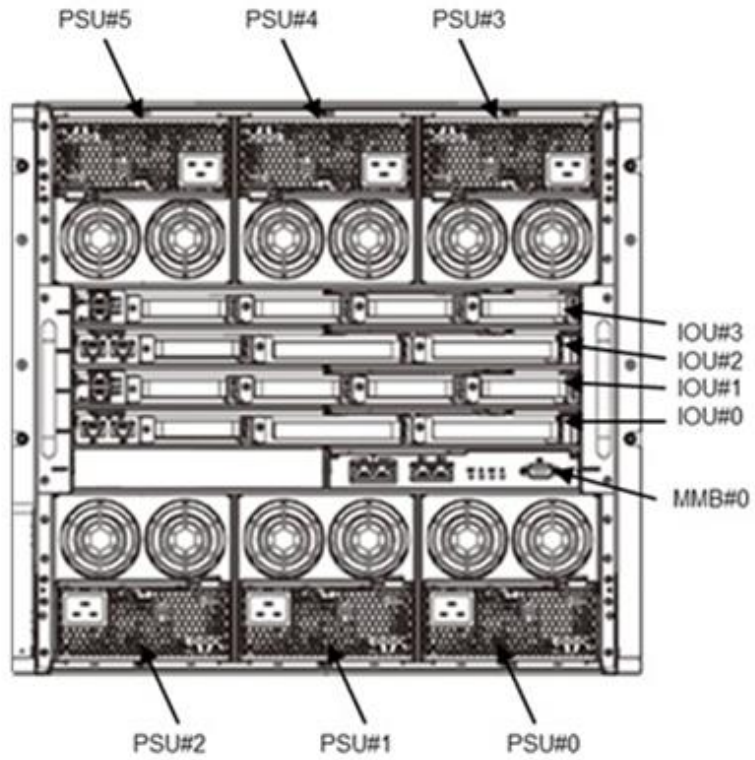


FIGURE 2.2 External interface connection figure of Cisco C880 Server (E7-8800 v3 and E7-8800 v4 CPUs) (Back surface)



External interface connection

External interface connection figure of Cisco C880 Server (E7-8800 v2 CPU) in base cabinet is shown in the section below. This figure is uncovered front surface (face). The front cover must be attached in normal operation.

FIGURE 2.3 External interface connection figure of Cisco C880 Server (E7-8800 v2 CPU) (Front surface)

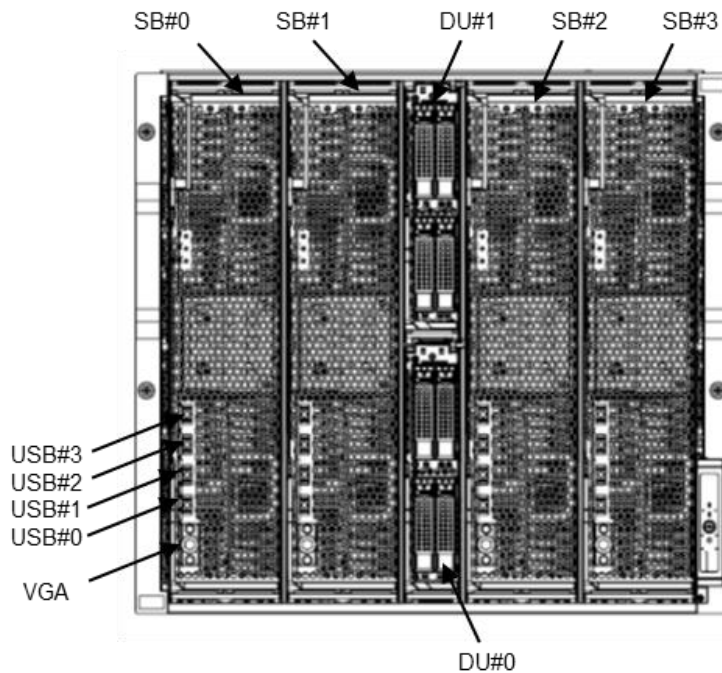
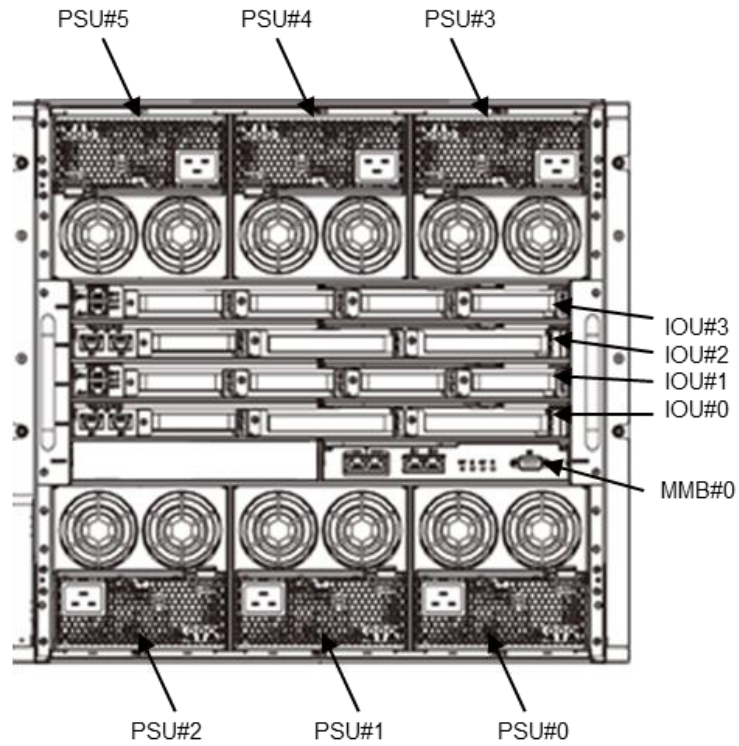
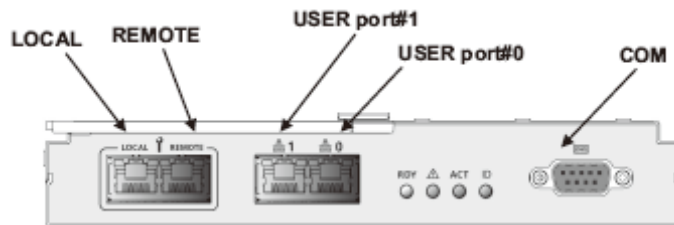


FIGURE 2.4 External interface connection figure of Cisco C880 Server (E7-8800 v2 CPU) (Back surface)



Details of external interface (MMB)

FIGURE 2.5 Details of external interface (MMB)



Details of external interface (IOU_1GbE/IOU_10GbE)

FIGURE 2.6 Details of external interface (IOU_1GbE)

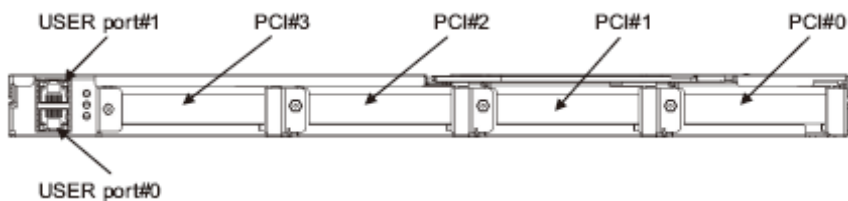
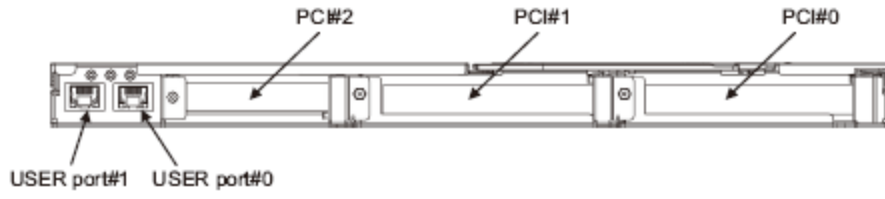
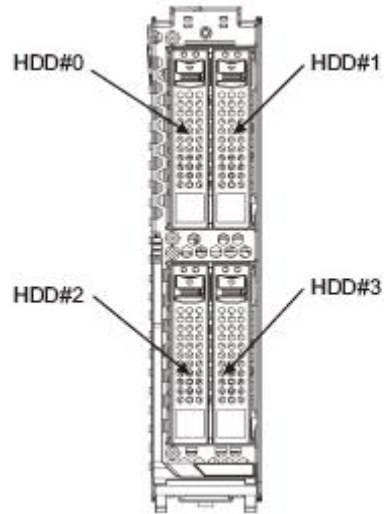


FIGURE 2.7 Details of external interface (IOU_10GbE)



Details of external interface (DU)

FIGURE 2.8 Details of external interface (DU)



2.2 Power cable connection

Input power system of Cisco C880 Server is described in this section.

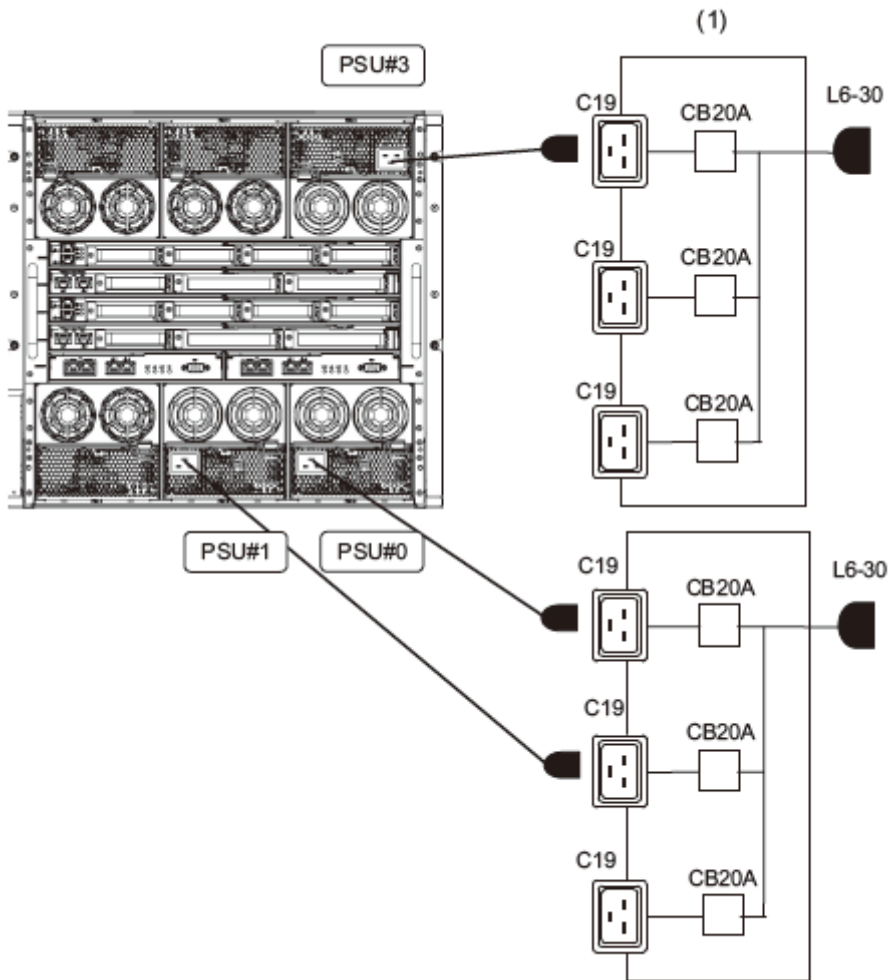
2.2.1 Power Cables Connections

This section shows the figure of input power of Cisco C880 Server.

Standard Configuration of 200 V (Single power feed and no Redundant Power Feed) with Power Distribution Box Connection

It is necessary to arrange three PSUs, three FANUs, three power cables (200 V IEC60320 C20) and two power distribution box (200 V IEC60320 C19x3type) for 200 V standard configuration. When the power distribution box is used, it is necessary to secure the breaker characteristic of distribution panel. See “2.5 Cutoff Characteristics of Distribution Panel (At the time of connecting power distribution box).”

FIGURE 2.9 200V Standard Configuration (single power feed and no redundant power feed) with Power Distribution Box Connection



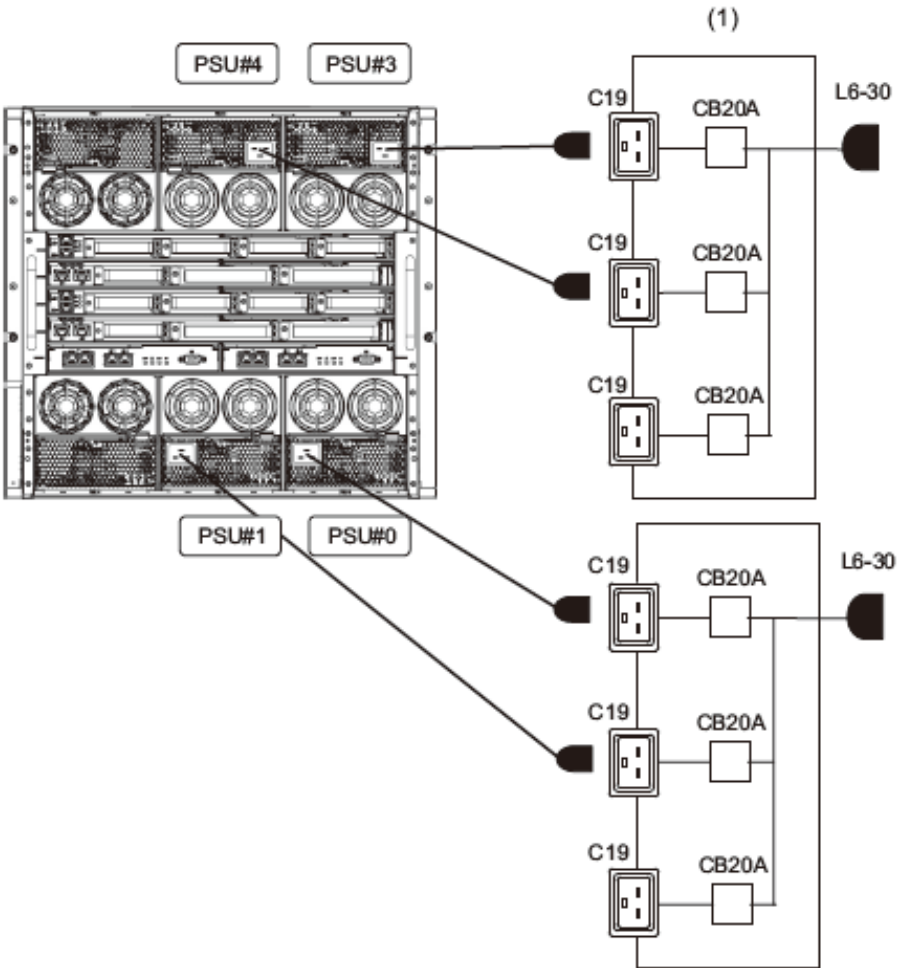
Number	Description
(1)	Power distribution box (200V C 19 × 3 type)

200 V Redundant Power Feed Configuration (single power feed, redundant power feed) with Power Distribution Box Connection

It is necessary to arrange four PSUs, two FANUs, four Power cables (200 V IEC60320 C20) and two power distribution boxes (200 V IEC60320 C19×3type) for 200 V Redundant Power Feed configuration (with single power feed, redundant power feed).

When the power distribution box is used, it is necessary to secure the breaker characteristic of distribution panel. See “2.5 Cutoff Characteristics of Distribution Panel (At the time of connecting power distribution box).”

FIGURE 2.10 200 V Redundant Power Feed Configuration (single power feed, redundant power feed) with Power Distribution Box Connection



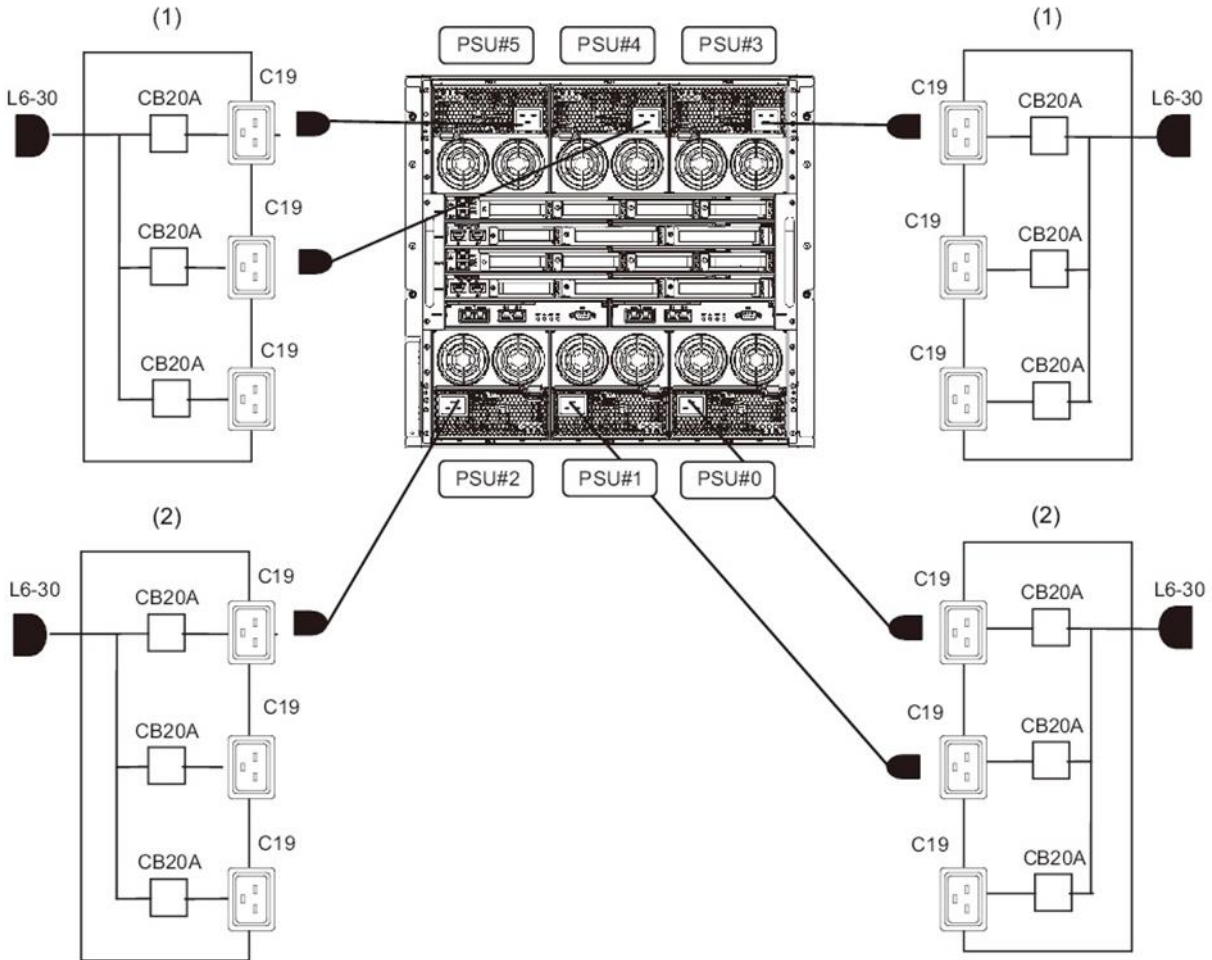
Number	Description
(1)	Power distribution box (200V C 19 × 3 type)

200 V Dual Power Feed Configuration with Power Distribution Box Connection

It is necessary to arrange six PSUs, six power cables (200 V IEC60320 C20) and four power distribution boxes (200 V IEC60320 C19×3type) for 200 V dual power feed configuration.

When the power distribution box is used, it is necessary to secure the breaker characteristic of distribution panel. See “2.5 Cutoff Characteristics of Distribution Panel (At the time of connecting power distribution box).”

FIGURE 2.11 200 V Dual Power Feed Configuration with Power Distribution Box Connection



Number	Description
(1)	Power distribution box (200V C 19 × 3 type) AC#0
(2)	Power distribution box (200V C 19 × 3 type) AC#1


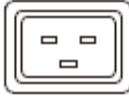
2.3 Connection Specifications of Input Power

This section describes the connection specifications of Input power of the base cabinet of Cisco C880 Server.

2.3.1 Input Power Connection Specifications (Base Cabinet)

Following table shows the input power connection specifications of the main unit.

TABLE 2.1 Power Cable Specifications (Base Cabinet)

Destination	Plug format	Remarks	
100 V	Parallel 2-pole plug with earthing-contact "NEMA standard 5-15P"	Connection at wall-mount power distribution	
		Recipient power distribution format 	Power distribution "NEMA standard 5-15R" for parallel 2-pole plug with earthing - contact (125V 15A)
200 V	IEC60320-C20 type	Connection at power distribution box	
		Recipient outlet format 	IEC60320-C19type



Remarks

- Power cable supplied with the device and power cord supplied with the option part, are used for the power cable which is connected to the device. However, the supplied power cable is not used for the other products.
- Power distribution box which is suitable to recipient power distribution format is used

2.3.2 Power Distribution Box and Distribution Panel

Following table shows the power supply cable specifications of power distribution box and distribution panel.

TABLE 2.2 Power Supply Cable Specifications of Power Distribution Box and Distribution Panel

Destination	Plug format	Remarks	
200V for countries other than Japan	NEMAL6-30P	Recipient power distribution format 	NEMA L6-30R (30A-220V)
200V for Brazil	IEC60309-32A	Recipient power distribution format 	IEC60309-32A (32A-250V)

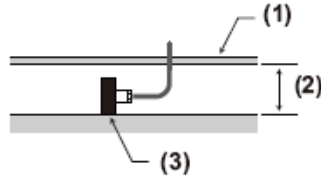
Remarks

Power cable supplied with the device and power cord supplied with the option part, are not used for the power cable which is connected to the device. However, the supplied power cable is not used for the other products.

2.4 Free Access Underfloor Connection of Power Cable

If the height of underfloor is less than 300mm (11.8 in.), the power distribution is set to sideways.

FIGURE 2.12 When Underfloor Height is less than 300mm (11.8 in)

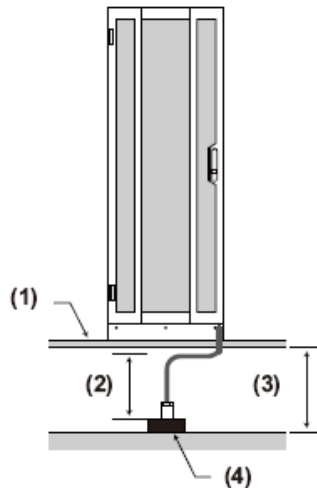


Number	Description
(1)	Free access floor
(2)	Less than 300mm (11.8 in)
(3)	Recipient power distribution

The connector format and cable bend radius of power cable are considered at the time of connecting the power cable of power distribution box (or base cabinet) under the free access floor. It is recommended that the under floor height is 300 mm (11.8 in) or more.

The recipient power distribution should be arranged near the device.

FIGURE 2.13 When the under floor height is 300 mm (11.8 in) or more.



Number	Description
(1)	Free access floor
(2)	200 mm (9.8 in)
(3)	300 mm (11.8 in) or more
(4)	Recipient power distribution

Remarks

The above figure shows an example of 19-inch rack mounted with the device.

2.5 Cutoff Characteristics of Distribution Panel (At the time of connecting power distribution box)

At the time of connecting the distribution panel through power distribution box, protection should be coordinated so that the breaker of the device (or power distribution box) trips before the breaker of the distribution panel trips. Such protection should be maintained. Therefore, the distribution panel should have the characteristic conditions shown in "TABLE 2.3 Characteristic Condition of Distribution Panel Breaker".

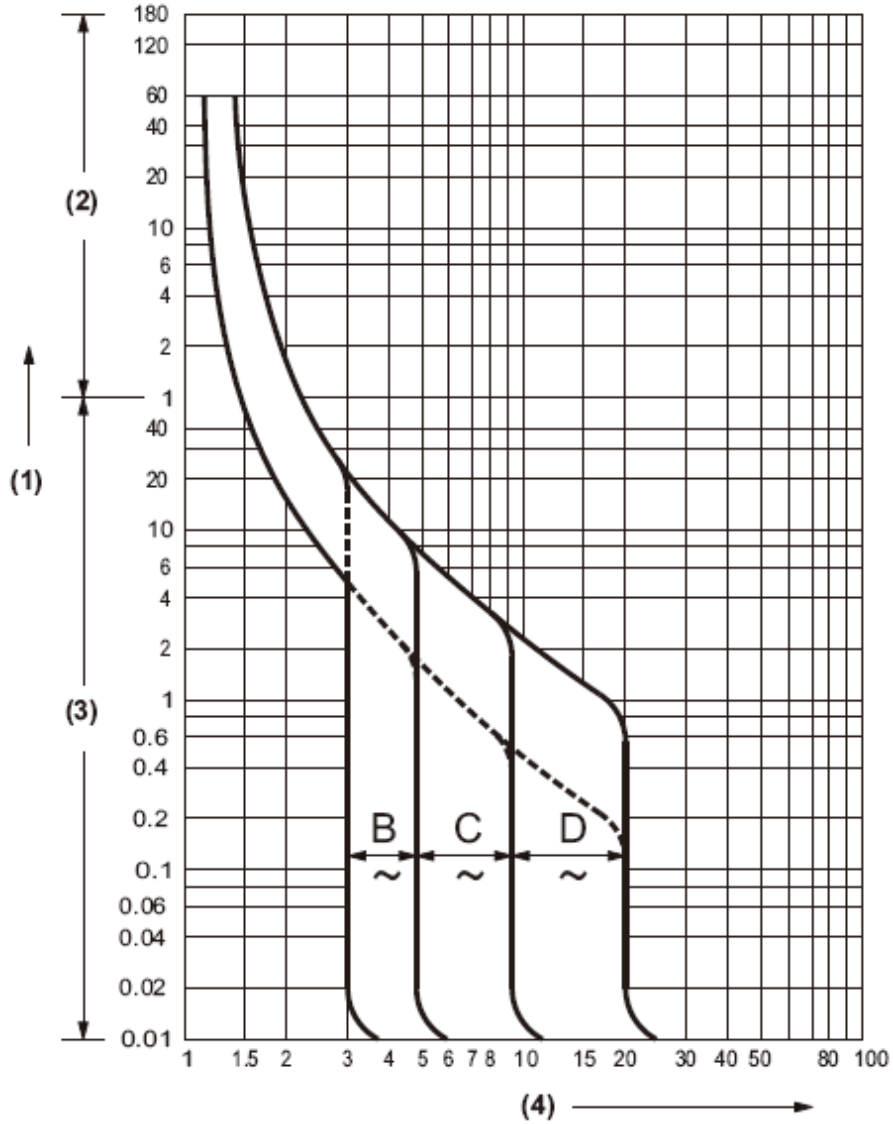
It is necessary to use Distribution panel Breaker suitable to these conditions.

TABLE 2.3 Characteristic Condition of Distribution Panel Breaker

Power input	Device Name	Breaker capacity of Distribution panel Breaker	
		For Japan/general overseas/North America	For Europe
AC200 - 240 V	Power distribution box	30A	32A

Cutoff characteristic is Long-time delay type and the cutoff characteristic equivalent to D (IEC898or IN0641 part II) shown in "FIGURE 2.14 Characteristics of Breaker of Distribution Panel" or cutoff characteristics slower than these characteristics is used.

FIGURE 2.14 Characteristics of Breaker of Distribution Panel



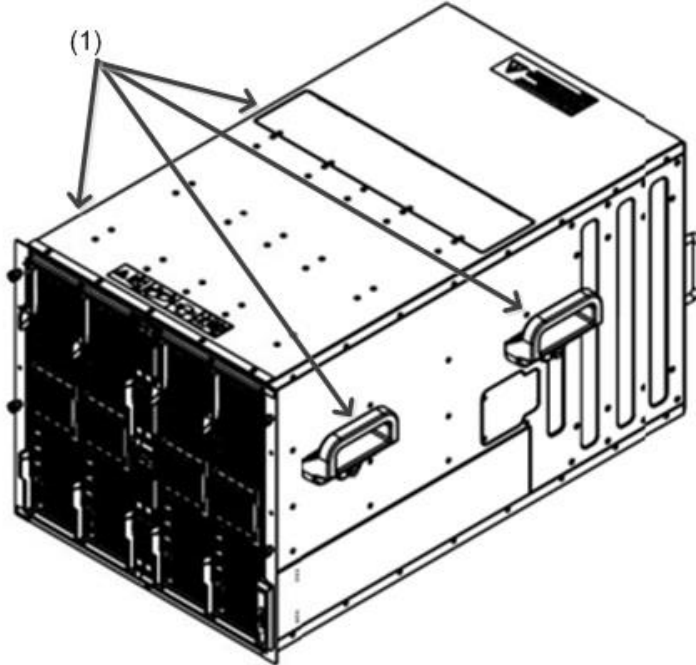
Number	Description
(1)	Operating time
(2)	Minutes
(3)	Seconds
(4)	Electric current (Amplification of rated current)

APPENDIX A Racks

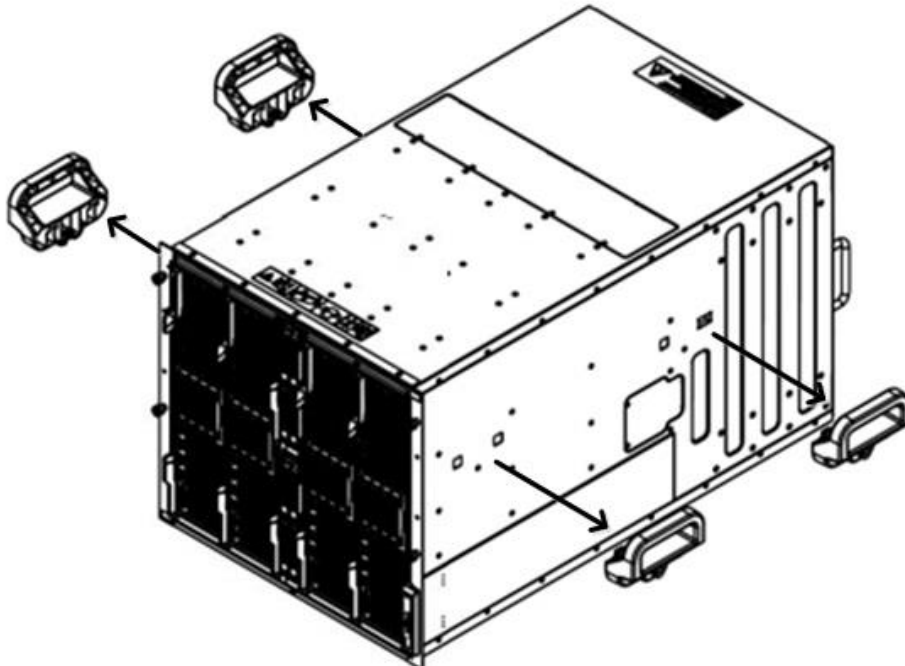
This appendix provides information on the mounting racks for the Cisco C880 Server.

Remarks

- Equipment is not lifted by the handle attached to the main part equipment right-and-left side.



- Please remove the steering wheel by minus driver before installing the device in the rack. installing to the rack.



A.1 Rack Mounting

The Cisco C880 Server (including peripheral devices) has been developed and its operation guaranteed with the basic assumption that it is mounted in a rack. For safe use of a unit mounted in a rack, contact the distributor where you purchased your product, or your sales representative.

When mounting the Cisco C880 Server products in a rack manufactured by another company, customers need to confirm on their own responsibility that the rack meets the Cisco C880 Server product specifications and requirements.

See [A.2.2 Requirements for mounting in](#) .

A.2 Rack Mounting Requirements

This section describes rack mounting requirements.

A.2.2 Requirements for mounting in a third party's rack

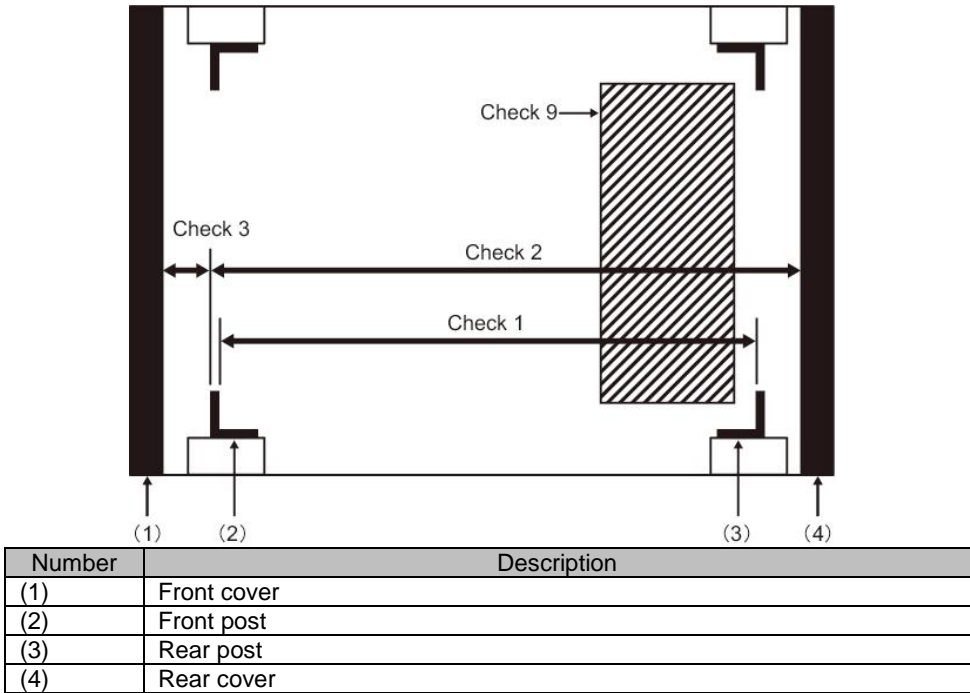
When mounting the Cisco C880 Server products in a rack manufactured by another company, customers need to confirm on their own responsibility that the rack meets the Cisco C880 Server product specifications and requirements.

TABLE A.1 Structural condition of rack

Number of Check	Term	Condition	Reference
Length of rack			
Check1	Allowable spacing between posts	685 to 790mm (26.7 to 31.1 in.)	FIGURE A.1 Length of rack
Check2	Length between front post and rear cover	860mm(33.9 in.) or more	FIGURE A.1 Length of rack
Check3	Length between front post and front cover	60mm(2.4 in.) or more	FIGURE A.1 Length of rack
Width of rack			
Check4	distance between the left and right posts (common to the front and rear posts)	450mm(17.7 in.) or more	FIGURE A.2 Width of rack FIGURE A.3 Format of rack posts
Check5	Distance between holes on the left and right device mounting posts (common to the front and rear posts):	465mm(18.3 in) or more (EIA standard)	FIGURE A.2 Width of rack FIGURE A.3 Format of rack posts
Check6	Bracket installation space	There must not be interference thing (post for reinforcement or option) in the shaded portion of figure.	FIGURE A.2 Width of rack
Format of rack			
Check7	Pitch of hole	EIA standard, universal pitch	FIGURE A.3 Format of rack posts
Check8	Format and size of hole	Length of each side of a square hole: 9x9(0.35 in.) to 10x10 mm (0.39 in.)	FIGURE A.3 Format of rack posts
Check9	Cable takeout port	The cable can be taken out of the bottom or rear.	FIGURE A.1 Length of rack
Check10	Loading Carrying Capacity of rack	Total weight must be less than loading Carrying Capacity of rack. Note Loading Carrying Capacity of rack may change when anti-earthquake measures are given.	-
Check11	Open area ratio of rack	Open area ratio of rack of front cover and rear cover must be more than 60%.	-
Check12	Measure to prevent the rack from toppling	Measure to prevent the rack from toppling must be performed.	-

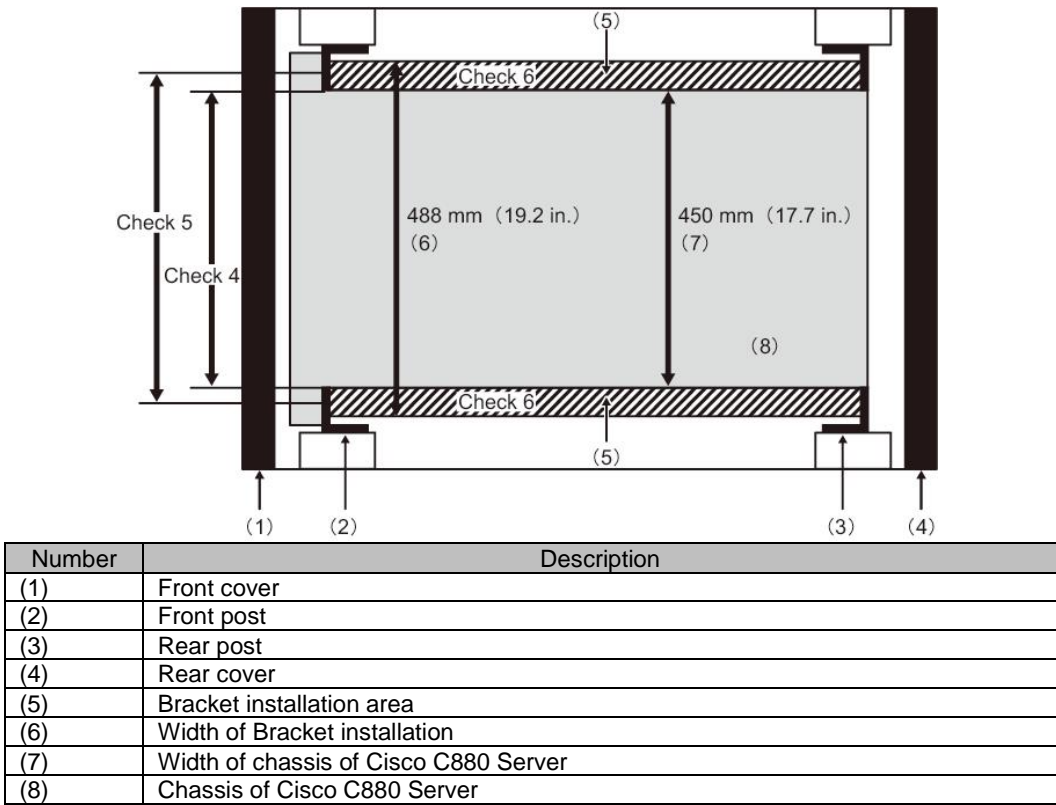
Length of rack

FIGURE A.1 Length of rack



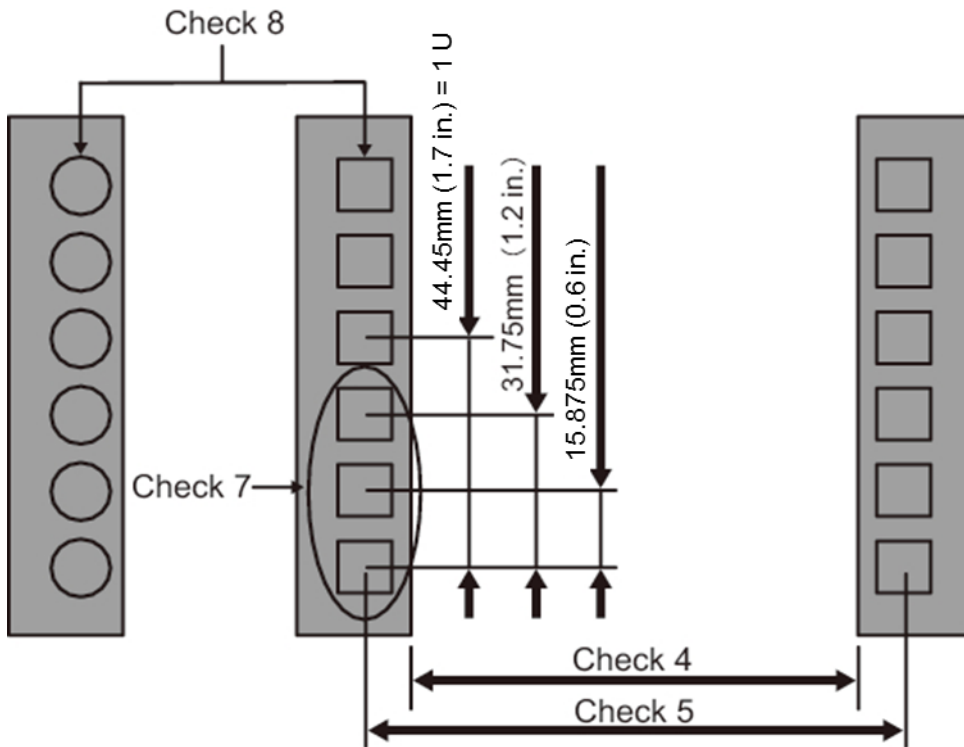
Width of rack

FIGURE A.2 Width of rack



Format of rack posts

FIGURE A.3 Format of rack posts



Other conditions

Besides structural conditions, the following conditions must also be considered.

- Cooling of devices mounted in the rack
Install the rack such that the temperature inside the rack satisfies the temperature conditions in “[1.3 Installation Specifications](#)”.
Especially, cover the front of empty spaces in the rack and take other such necessary measures to prevent exhaust air from devices from recirculating to the air intake.
- Securing the maintenance work area (service area)
Secure the service area required for the maintenance work performed by a certified service engineer.
Referring to the rack service areas in [1.4 Installation Area](#) and to the installation manual of the rack used, determine the service areas.

APPENDIX B Rack Mounting Procedure

B.1 Mounting Location in 19-inch Rack

C880 M4 mounting conditions are:

- The bottom of the unit is higher than 2U from rack base.
- The bottom of the unit is lower than 1060 mm from floor.

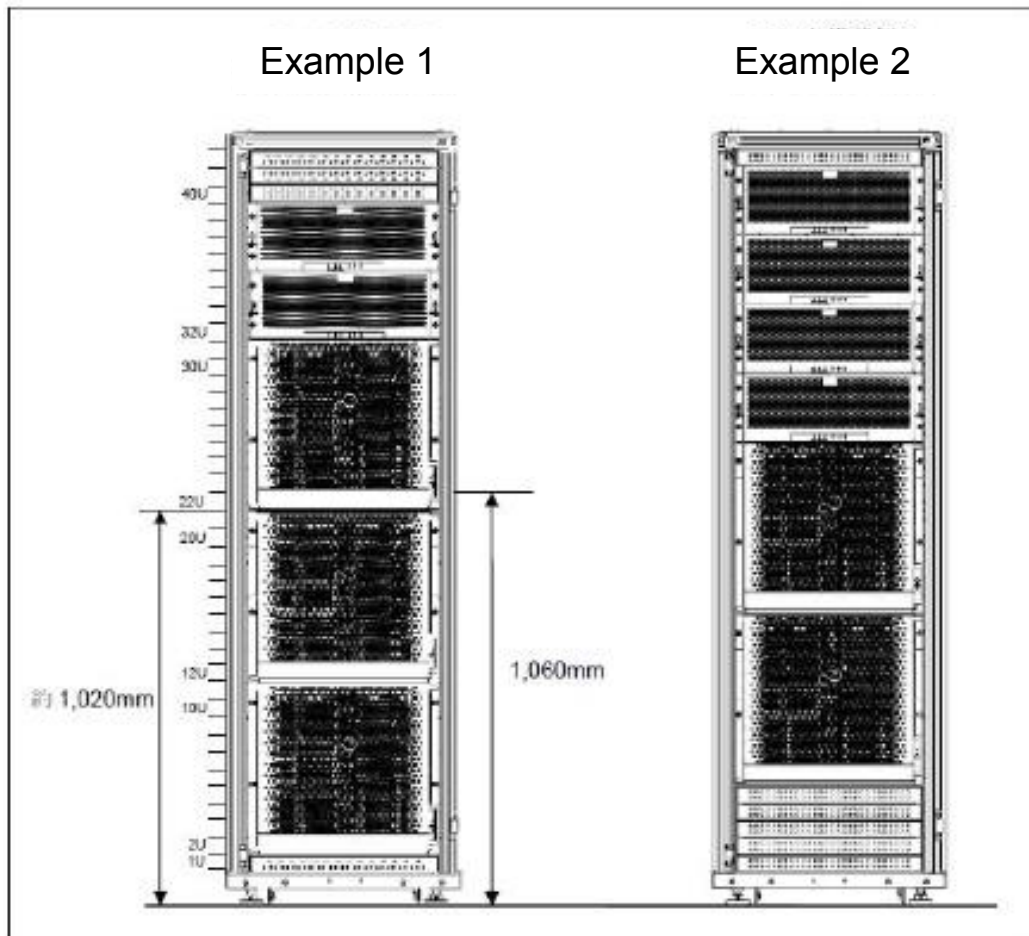


FIGURE B.1 Mounting Location in 19-inch Rack

B.2 Rack mounting work flow

TABLE B.1 Rack mounting work flow

sequence	Work item
1	Confirming the components of the rail kit
2	Confirming rail mount position
3	Mounting the right side rail
4	Mounting the binder
5	Mounting the left side rail
6	Mounting the binder
7	Mounting the C880 M4 cabinet in the rack
8	Securing the C880 M4 cabinet with screws

B.3 Confirming the components of the rail kit

TABLE B.2 shows components of the rail kit.
Please confirm the components.

TABLE B.2 Components of the rail kit

Name	Drawing No.	Qty	Remarks
RAIL LEFT	SNP:A3C40122926	1	See Figure B.2
RAIL RIGTH	SNP:A3C40124429	1	
BINDER	SNP:A3C40108821	2	
M5 screw with plug washer	SNP:A3C40063207	6	
CENTERING SCREW	SNP:A3C40121631	10	
CAGE NUT	SNP:0007000120	4	



FIGURE B.2 Components of the rail kit

B.4 Rack Mounting Procedure

Please follow the steps below to mount C880 M4 cabinet on a 19-inch rack.

1. Check the installation position for C880 M4 cabinet.
2. Referring to FIGURE B.3 and FIGURE B.4, check the position to install rail, screw, binder, and cage nuts.
3. Loosen a screw (3) shown in FIGURE B.5, and adjust the length of rail on left side.
4. Insert the knob, (4) in FIGURE B.5, into the rear rack post and adjust the position.
5. As (5) in FIGURE B.5 shows, fasten the left side rail to the rear rack post by using three centering screws.
6. As (7) in FIGURE B.5 shows, fasten the left side rail to the front rack post by using three of M5 screw with plug washers.
7. Tighten the screw, (8) in FIGURE B.5, and adjust its length.
8. "B" in FIGURE B.4 shows, use two centering screws and fasten binder on the rear rack post.
9. Similarly, install the right rail and mounting binder.
10. As (2) in FIGURE B.3 shows, put the cage nuts to the front-both-side pillar for fixing C880 M4 cabinet.
11. Install C880 M4 cabinet into the rack.
12. With four knob screws shown in red circle on FIGURE B.6, fasten C880 M4 cabinet to the rack.

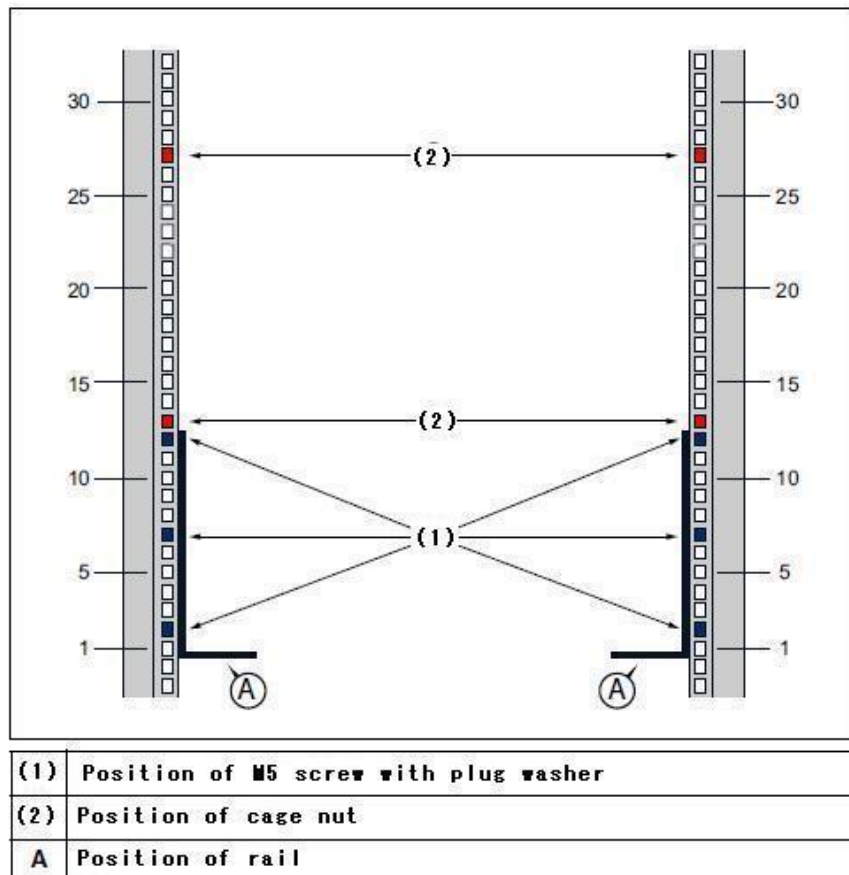


FIGURE B.3 Position to install rail (front side)

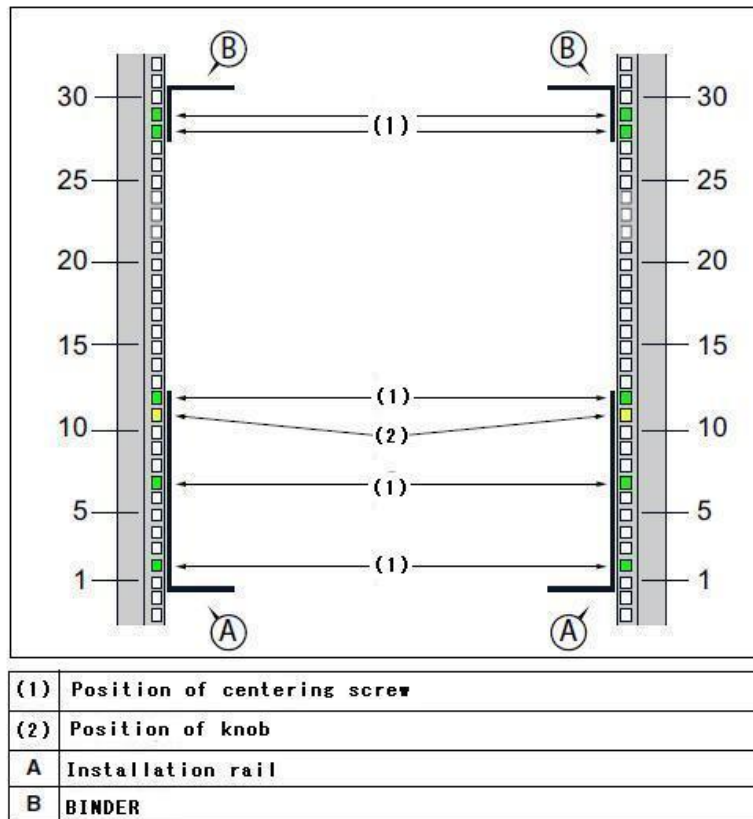


FIGURE B.4 Position to install rail (rear side)

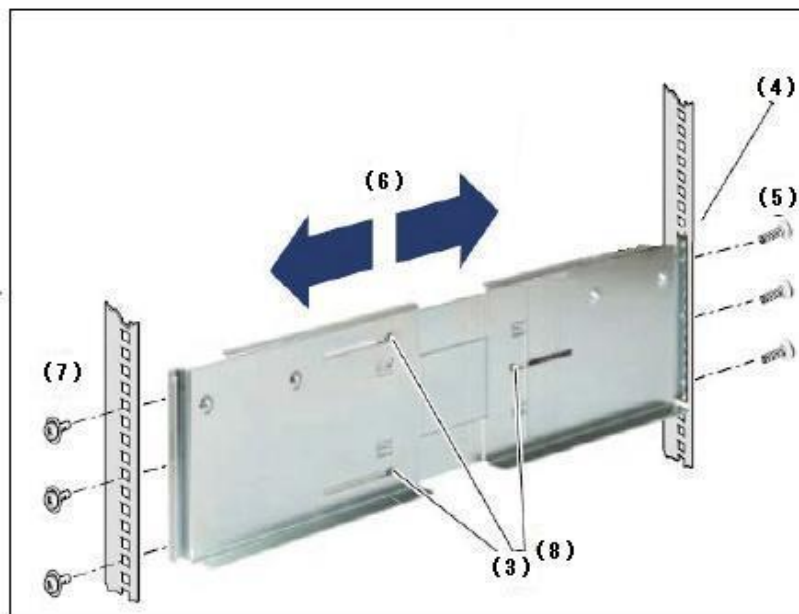


FIGURE B.5 Left side rail

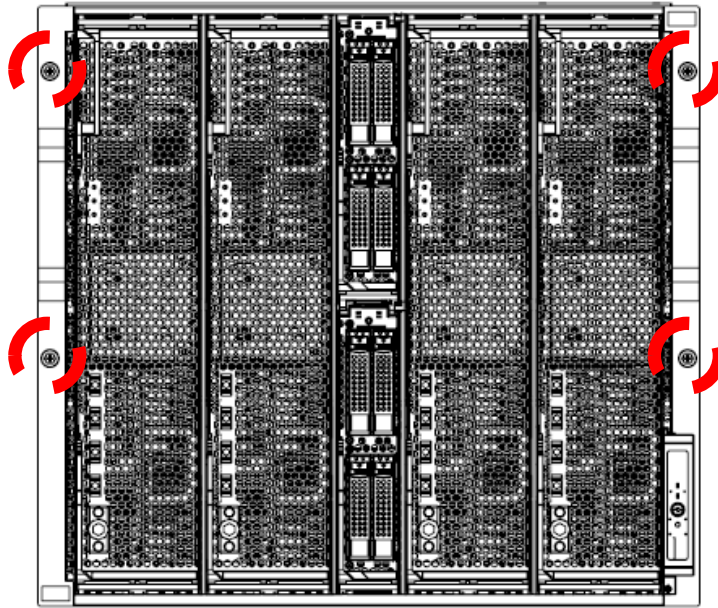


FIGURE B.6 Four knob screws on the front side of C880 M4 cabinet