



**Huawei CX318 Pass Through Module  
V100R001**

**White Paper**

**Issue      04**  
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# About This Document

## Purpose

The white paper of the CX318 10GE pass through module of the E9000 server describes the CX318 in terms of the functions, appearance, ports, physical structure, logical structure, technical specifications, and certifications.





## Intended Audience


This document is intended for:

- Huawei presales engineers
- Channel partner presales engineers
- Huawei enterprise presales engineers

## Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 <b>DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 <b>NOTICE</b>	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

Symbol	Description
 NOTE	<p>Calls attention to important information, best practices, and tips.</p> <p>NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.</p>

## Change History

### Issue 04 (2017-03-27)

This issue is the fourth official release.

Mode	Change Description
Added	Added product model descriptions to <a href="#">1.2 Appearance</a> .

### Issue 03 (2017-02-17)

This issue is the third official release.

Mode	Change Description
Modified	Changed the altitude in <a href="#">1.6 Technical Specifications</a> .
Added	Added a Mezz1 networking diagram in <a href="#">1.3 Ports</a>

### Issue 02 (2016-11-22)

This issue is the second official release.

Mode	Change Description
Added	Added the description about the working temperature's compliance with the ASHRAE Class A3 standard in <a href="#">1.6 Technical Specifications</a> .

### Issue 01 (2016-04-20)

This issue is the first official release.

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# 1 Overview

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## About This Chapter

### [1.1 Functions](#)

This topic describes the functions and ports of the CX318 pass through module.

### [1.2 Appearance](#)

This topic describes the CX318 in terms of its appearance, panel, and installation positions in the chassis.

### [1.3 Ports](#)

This topic describes the ports on the CX318.

### [1.4 Indicators](#)

This topic describes the indicators on the CX318.

### [1.5 Software and Hardware Compatibility](#)

This topic describes mezzanine cards that can work with the CX318 and pluggable optical modules and cables supported by ports on the CX318 panel.

### [1.6 Technical Specifications](#)

This topic describes the physical, environmental, and power specifications of the CX318.

### [1.7 Networking](#)

The CX318 provides passthrough network ports for NICs on compute nodes to communicate with external networks.

## 1.1 Functions

This topic describes the functions and ports of the CX318 pass through module.

The CX318 Pass Through Module (short for CX318) is the 10GE pass through module of the E9000 server and provides external network ports for the compute nodes, storage nodes, or service process nodes installed in the front slots of the E9000. Each CX318 provides a maximum of 32 10GE ports.

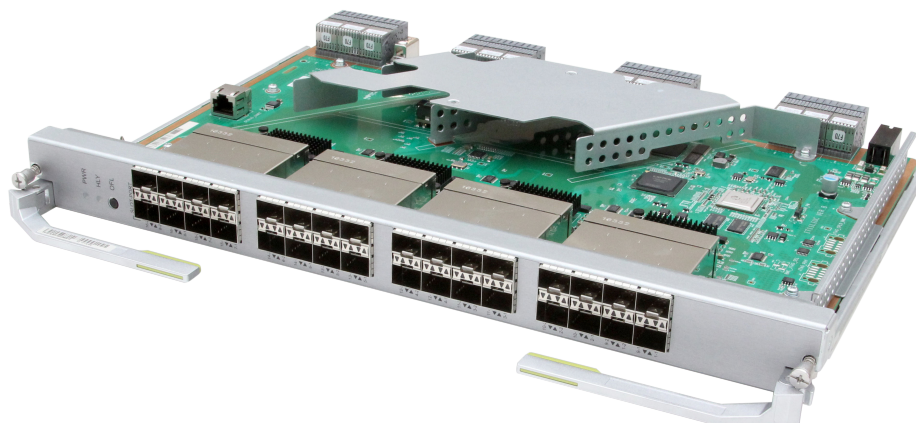
## 1.2 Appearance

This topic describes the CX318 in terms of its appearance, panel, and installation positions in the chassis.

### Appearance

[Figure 1-1](#) shows the CX318.

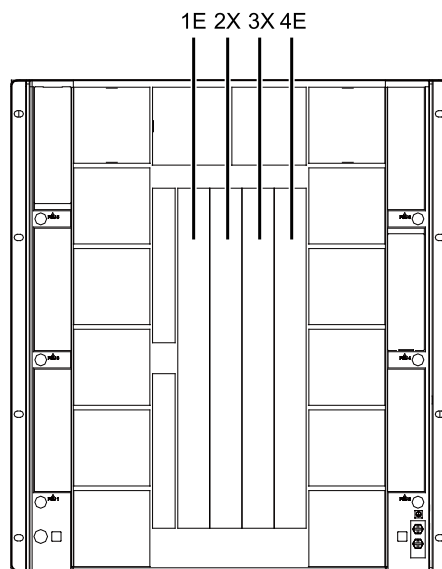
**Figure 1-1** Appearance



### Installation Positions

The CX318 is installed in a rear slot of the E9000 chassis. [Figure 1-2](#) shows the positions and slot numbers for installing the CX318s in a chassis.

**Figure 1-2** Installation positions and slots



 **NOTE**

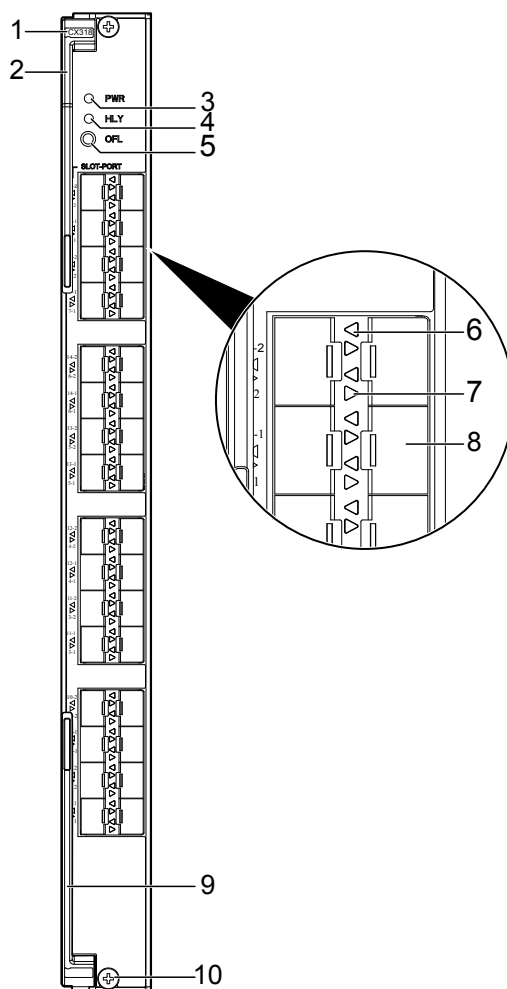
The CX318 panel provides more ports than other switch modules. For ease of cable routing and maintenance, you are advised to install the CX318 in slot 1E or 4E.

**Panel**

**Figure 1-3** shows the CX318 panel.



Figure 1-3 Panel



1	Product model	2	Customization label (with an ESN label)
3	PWR indicator	4	HLY indicator
5	OFL button/indicator (reserved)	6	Connection status indicator of the 10GE optical port
7	Data transmission status indicator of the 10GE optical port	8	10GE optical port (connector)
9	Ejector lever	10	Captive screw

**NOTE**

The numbers on the left side are port serial numbers. The arrow direction of a triangle indicates the direction of a port.

**ESNs**

An Equipment Serial Number (ESN) is a string that uniquely identifies a server. An ESN is required when you apply for technical support from Huawei.

Figure 1-4 shows the ESN format.

**Figure 1-4** ESN example



No.	Description
1	Indicates the ESN ID (two digits).
2	Indicates the item identification code (eight characters).
3	Indicates the vendor code (two characters).
4	Indicates the year and month (two characters). The first character indicates the year. The digits 1 to 9 indicate 2001 to 2009, and the letters A to Z indicate 2010 to 2035. The second character indicates the month. The digits 1 to 9 indicate January to September, and the letters A to C indicate October to December.
5	Indicates the sequence number (six digits).
6	Indicates RoHS compliance (one character).
7	Indicates the internal model number of the board.

## 1.3 Ports

This topic describes the ports on the CX318.

### Overview

[Table 1-1](#) describes the ports on the CX318.

**Table 1-1** Ports

Port	Type	Quantity	Description
10 GE optical port	Enhanced small form-factor pluggable (SFP+)	32	The CX318 has four 2*4 SFP+ connectors and provides thirty-two 10GE optical ports. Each port has a green connection status indicator and a yellow data transmission status indicator.

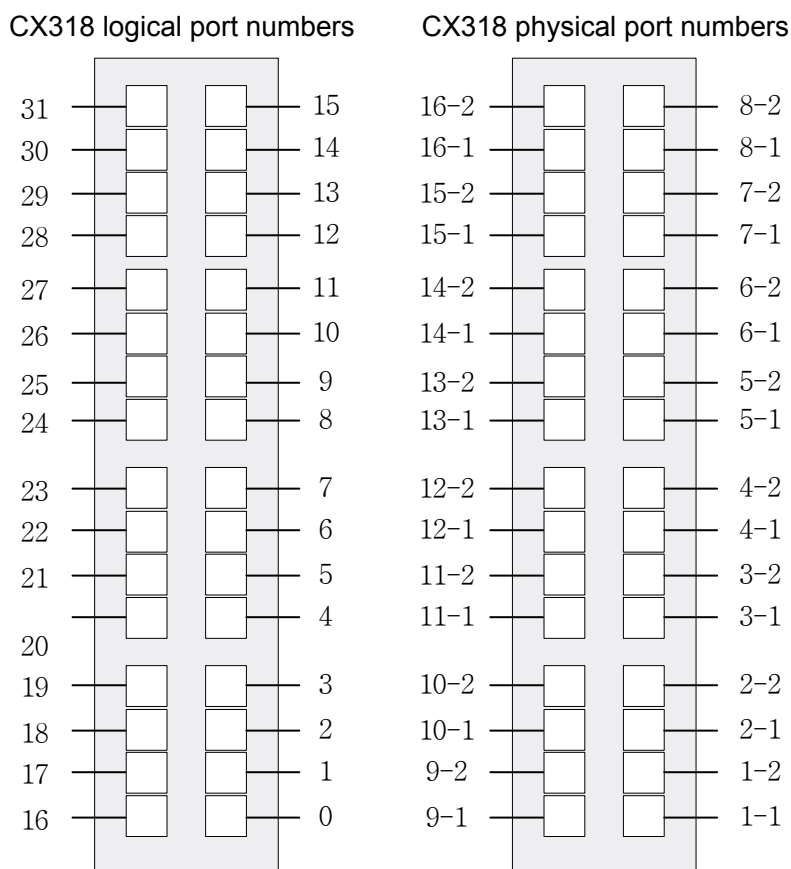
The logical numbers of the 32 ports are 0 to 31, which are used for running commands remotely. A physical port number is in *slot number-port number* format. Physical port numbers are used for locating ports when you connect network cables and view the mapping between panel ports and server slots. The 16 front half-width slots of the E9000 server are

numbered 1 to 16. Each slot maps to two ports: *slot number-1* and *slot number-2*. For example, half-width slot 7 maps to ports 7-1 and 7-2, and half-width slot 15 maps to ports 15-1 and 15-2.

Each full-width slot has four ports and maps to two half-width slots. For example, full-width slot 7 maps to half-width slots 7 and 15, and it has ports 7-1, 7-2, 15-1, and 15-2.

**Figure 1-5** shows the CX318 port naming rules.

**Figure 1-5** Port naming rules



## Port Mapping Between a Pass Through Module and a Mezzanine Card

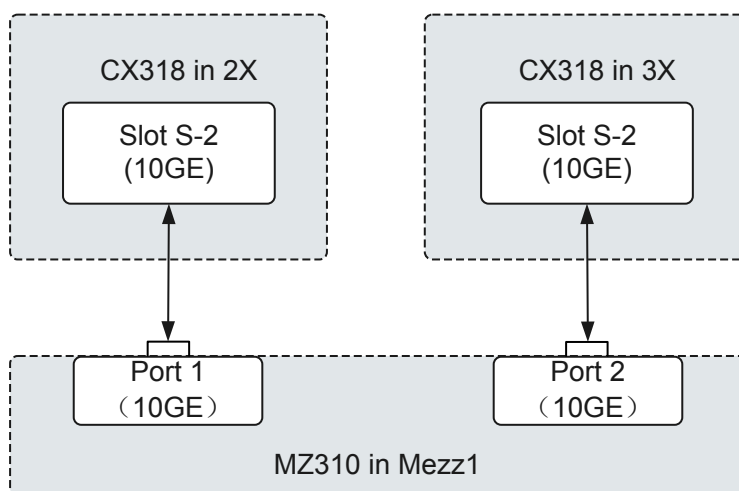
### Port Mapping Between the CX318 and the MZ510, and MZ310

The CX318 typically works with the MZ510 or MZ310. The port relationships of MZ310 and MZ510 are the same. The following content uses the MZ310 as an example.

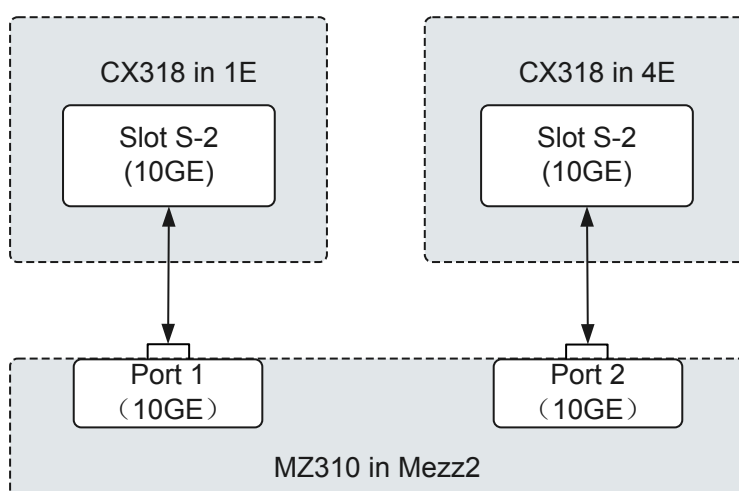
10GE optical ports 1 and 2 on the MZ310 in Mezz1 on the compute node in slot S connect to the Slot S-2 ports on the CX318 switch modules in slots 2X and 3X respectively. Slot S-1 ports on the two switch modules are idle. **Figure 1-6** shows the port mapping between the CX318 switch modules and the MZ310 in Mezz1.

10GE optical ports 1 and 2 on the MZ310 in Mezz1 on the compute node in slot S connect to the Slot S-2 ports on the CX318 switch modules in slots 1E and 4E respectively. Slot S-1 ports on the two switch modules are idle. **Figure 1-7** shows the port mapping between the CX318 switch modules and the MZ310 in Mezz2.

**Figure 1-6** Port mapping between the CX318 switch modules and the MZ310 in Mezz1



**Figure 1-7** Port mapping between the CX318 switch modules and the MZ310 in Mezz2



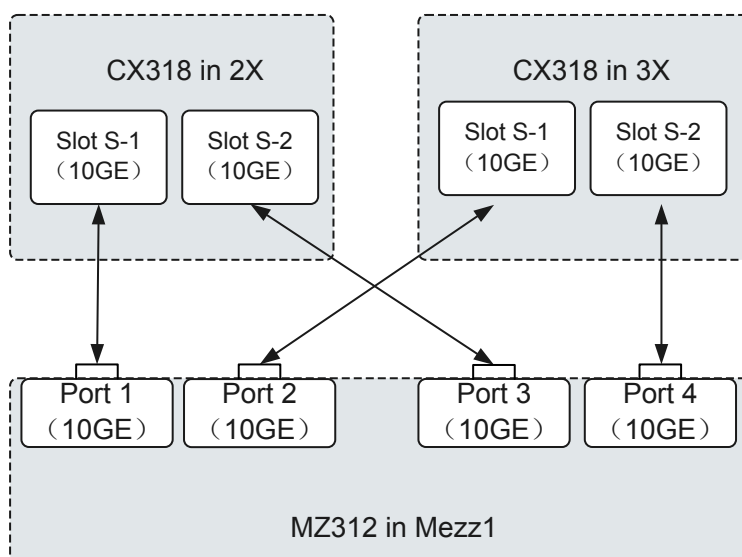
### Port Mapping Between the CX318 and the MZ512, MZ311, and MZ312

The CX318 typically works with the MZ512, MZ311, or MZ312. The port relationships of MZ512, MZ311, and MZ312 are the same. The following content uses the MZ312 as an example.

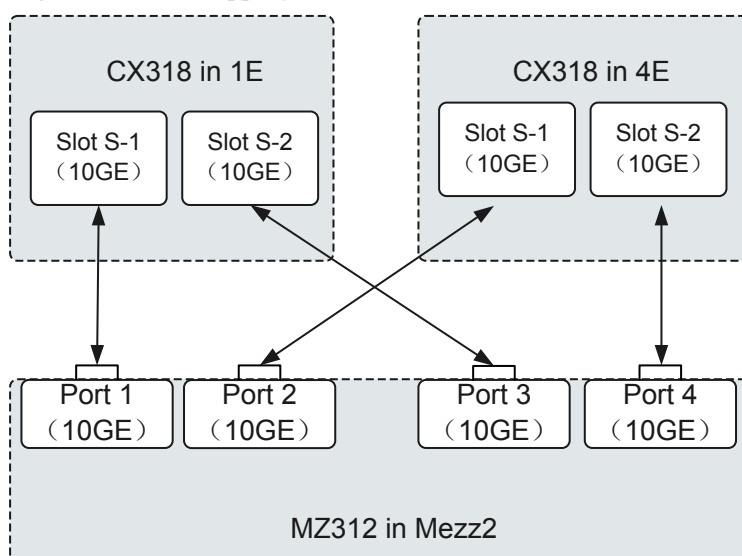
The MZ312 provides four 10GE ports.

- If the MZ312 is in Mezz1, ports 1 and 3 connect to Slot S-1 and Slot S-2 ports on the CX318 in slot 2X, and port 2 and 4 connect to Slot S-1 and Slot S-2 ports on the CX318 in slot 3X. **Figure 1-8** shows the port mapping between the CX318 switch modules and the MZ312 in Mezz1.
- If the MZ312 is in Mezz2, ports 1 and 3 connect to Slot S-1 and Slot S-2 ports on the CX318 in slot 1E, and port 2 and 4 connect to Slot S-1 and Slot S-2 ports on the CX318 in slot 4E. **Figure 1-9** shows the port mapping between the CX318 switch modules and the MZ312 in Mezz2.

**Figure 1-8** Port mapping between the CX318 switch modules and the MZ312 in Mezz1



**Figure 1-9** Port mapping between the CX318 switch modules and the MZ312 in Mezz2



## 1.4 Indicators

This topic describes the indicators on the CX318.

You can observe the indicators to determine the current operating status of the CX318. [Table 1-2](#) describes the indicators on the CX318.

**Table 1-2** Indicators

Indicator	Meaning	Color	Description
PWR indicator	Power indicator	Green	<ul style="list-style-type: none"><li>● Off: The module is not powered on.</li><li>● Blinking green: The module is being powered on.</li><li>● Steady green: The module is working properly.</li></ul>
HLY indicator	Healthy indicator	Red and green	<ul style="list-style-type: none"><li>● Off: The module is not powered on.</li><li>● Steady green: The module is working properly.</li><li>● Blinking red (1 Hz): A major alarm is generated.</li><li>● Blinking red (4 Hz): A critical alarm is generated.</li><li>● Blinking red (5 Hz): The CX318 is not installed properly.</li></ul> <p><b>NOTE</b> It is difficult to distinguish a blinking frequency of 4 Hz from a blinking frequency of 5 Hz. When the HLY indicator is quickly blinking red, you are advised to check whether the device is securely inserted and then check whether a critical alarm is generated.</p>
Connection status indicator of the 10GE optical port	Connection status indicator of the 10GE optical port	Green	<ul style="list-style-type: none"><li>● Off: The port is not properly connected or not connected.</li><li>● Steady green: The port is properly connected.</li></ul>
Data transmission status indicator of the 10GE optical port	Data transmission status indicator of the 10GE optical port	Yellow	<ul style="list-style-type: none"><li>● Off: No data is being sent or received over the port.</li><li>● Blinking yellow: Data is being sent or received over the port.</li></ul>

## 1.5 Software and Hardware Compatibility

This topic describes mezzanine cards that can work with the CX318 and pluggable optical modules and cables supported by ports on the CX318 panel.

For details about the software and hardware that are compatible with the CX318, see [Huawei Server Compatibility Checker](#).

## Supported Mezzanine Cards

The CX318 connects to mezzanine cards of compute nodes. [Table 1-3](#) describes models and specifications of the supported mezzanine cards.

**Table 1-3** Supported mezzanine cards

Model	Specifications
MZ310	2-port 10GE NIC (Network Interface Card) mezzanine card
MZ311	4-port 10GE RDMA(Remote Direct Memory Access) over Converged Ethernet (RoCE) dual-chip mezzanine card
MZ312	4-port 10GE dual-chip NIC (Network Interface Card) mezzanine card
MZ510	2-port 10GE CNA (Converged Network Adapter) mezzanine card
MZ512	4-port 10GE CNA (Converged Network Adapter) dual-chip mezzanine card

## Supported Pluggable Optical Modules and Cables

**Table 1-4** Supported pluggable optical modules and cables

Module/Cable	Description
SFP+ multi-mode optical module (10GE)	Supports 10GBASE-SR.
SFP+ single-mode optical module (10GE)	Supports 10GBASE-LR.
DAC passive cable (10GE, 1 m, 3 m, or 5 m)	Supports 10GBASE-CR.
DAC active cable (10GE, 7 m or 10 m)	Supports 10GBASE-CR.
Note: The table is for reference only. For details about the components that can be purchased, consult the local Huawei sales representatives.	

## 1.6 Technical Specifications

This topic describes the physical, environmental, and power specifications of the CX318.

[Table 1-5](#) describes the CX318 technical specifications.

**Table 1-5** Technical specifications

Category	Item	Specifications
Physical specifications	Dimensions (H x W x D)	388.55 mm x 35.06 mm x 272.15 mm (15.30 in. x 1.38 in. x 10.71 in.)
	Color	Silver white
	Weight	2.5 kg
Environmental specifications	Temperature	<ul style="list-style-type: none"> <li>● Operating temperature: 5°C to 40°C (41°F to 104°F) (ASHRAE Class A3 compliant)</li> <li>● Storage temperature: -40°C to +65°C (-40°F to +149°F)</li> <li>● Long-term storage temperature: 21°C to 27°C (69.8°F to 80.6°F)</li> </ul>
	Temperature change rate	15°C/h (27°F/h)
	Humidity	<ul style="list-style-type: none"> <li>● Operating humidity: 5% RH to 85% RH (non-condensing)</li> <li>● Storage humidity: 5% RH to 95% RH (non-condensing)</li> <li>● Long-term storage humidity: 30% RH to 69% RH (non-condensing)</li> </ul>
	Altitude	<p>At an altitude of 900 m (2952.72 ft), the highest operating temperature is 40°C (104°F).</p> <p>When the device is used at an altitude of 900 m to 5000 m, the highest operating temperature decreases by 1°C (1.8°F) as the altitude increases by 300 m (984.24 ft).</p>
Input power supply	Rated input voltage	12V DC
Power consumption	Maximum power consumption	50 W

## 1.7 Networking

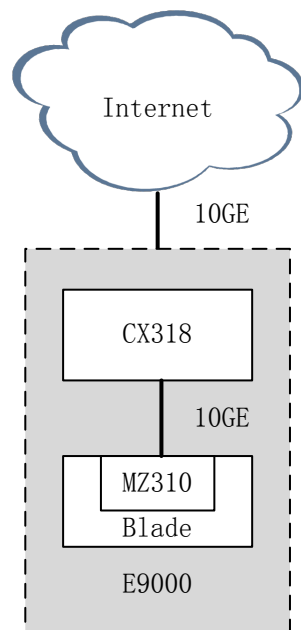
The CX318 provides passthrough network ports for NICs on compute nodes to communicate with external networks.

### Networking Between the CX318 and the MZ310, MZ311, or MZ312

The MZ310, MZ311, or MZ312 can be used together with the CX318 passthrough module to connect to external networks through the network ports on the panel of the CX318. [Figure 1-10](#) shows the networking between the MZ310 and the CX318.



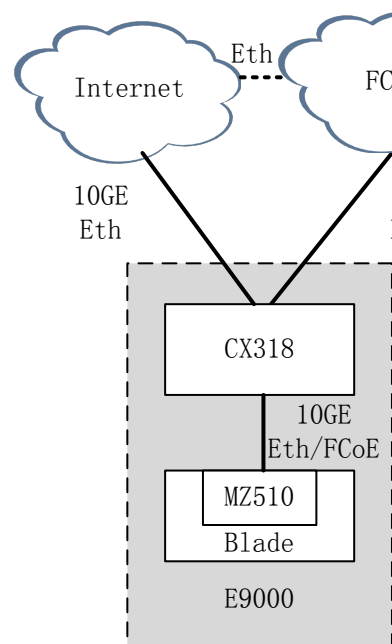
**Figure 1-10** Networking between the MZ310 and the CX318



## Networking Between the CX318 and the MZ510 or MZ512

The MZ510 and MZ512 can be used together with the CX318 passthrough module to connect to external networks through the network ports on the panel of the CX318. [Figure 1-11](#) shows the networking between the MZ510 and CX318.

**Figure 1-11** Networking between the MZ510 and CX318



**NOTE**

Ports on a CX318 cannot be connected to each other or another CX318.

# 2 Standards and Certifications

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## About This Chapter

### [2.1 Standards Compliance](#)

This topic describes the international and industrial standards and communication protocols that the CX318 complies with.

### [2.2 Certifications](#)

This topic describes the certifications that the E9000 has passed.

## 2.1 Standards Compliance

This topic describes the international and industrial standards and communication protocols that the CX318 complies with.

### International Standards

**Table 2-1** lists the international standards.

**Table 2-1** Standards and protocol compliance

Standard	Protocol
IEEE 802.3ap	10 Gigabit Ethernet

### Industrial Standards

**Table 2-2** lists the industrial standards.

**Table 2-2** Industrial standards

Standard	Description
ECMA TR/70	Environmental protection
EN60950	Safety (Europe)
GR-929	Reliability
IEC 812	Procedure for Failure Mode and Effects Analysis (FMEA)
IEC 863	Reliability, maintainability, and availability compliance standard
IEC60950	Safety
IEC60825-1/2/6	Safety
IEC60215	Safety
Telcordia SR-332	Reliability
IEC61000	EMC standard
UL60950	Safety (North America)

## 2.2 Certifications

This topic describes the certifications that the E9000 has passed.

**Table 2-3** lists the certifications.

**Table 2-3** Certifications

Country /Region	Certification	Standard
Europe	WEEE	2002/96/EC, 2012/19/EU
Europe	RoHS	2002/95/EC, 2011/65/EU, EN 50581: 2012
Europe	REACH	EC NO. 1907/2006
Europe	CE	Safety: EN 60950-1: 2006+A11: 2009+A1: 2010+A12: 2011 EMC: <ul style="list-style-type: none"> <li>● EN 55022: 2010</li> <li>● CISPR 22: 2008</li> <li>● EN 55024: 2010</li> <li>● CISPR 24: 2010</li> <li>● ETSI EN 300 386 V1.6.1: 2012</li> <li>● ETSI ES 201 468 V1.3.1: 2005</li> </ul>
China	RoHS	SJ/T-11363-20006 SJ/T-11364-20006 GB/T 26572-2011
China	China Environmental Labeling	GB/T24024: 2001 idt ISO14024: 1999 HJ 2507-2011
Australia	C-tick	AS/NZS CISPR22: 2009
America	UL	UL 60950-1
America	FCC	FCC Part 15 (Class A)
America	NTRL-UL	UL 60950-1, 2nd Edition, 2011-12-19 (Information Technology Equipment - Safety - Part 1: General Requirements) CSA C22.2 No.60950-1-07, 2nd Edition, 2011-12 (Information Technology Equipment-Safety-Part 1: General Requirements)
Canada	IC	ICES-003 Class A
Nigeria	SONCAP	IEC 60950-1: 2005 (2nd Edition) + A1: 2009 EN 60950-1: 2006+A11: 2009+A1: 2010 + A12: 2011
Kingdom of Saudi Arabia (KSA)	SASO	IEC 60950-1: 2005 (2nd Edition) + A1: 2009 EN 60950-1: 2006+A11: 2009+A1: 2010 + A12: 2011
Global	CB	IEC 60950-1
Japan	VCCI	VCCI V-4: 2012