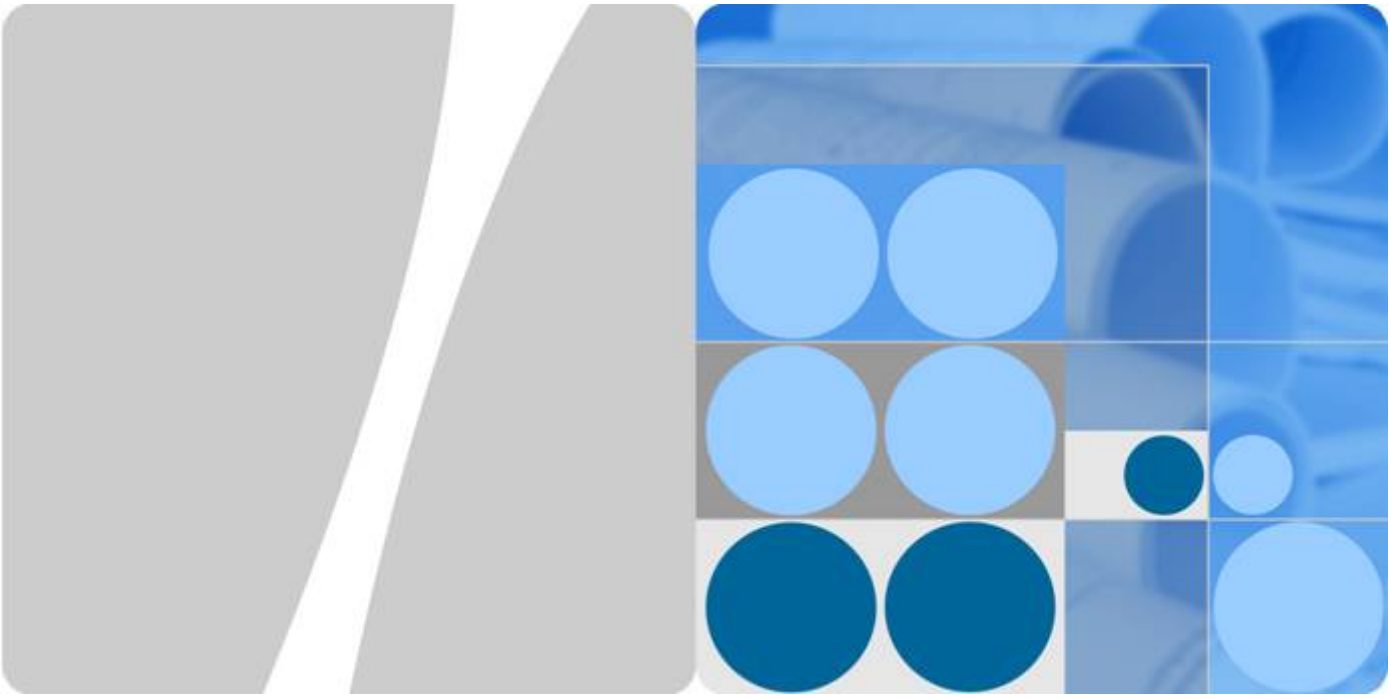

Huawei MZ111 NIC

V100R001

White Paper

Issue 06

Date 2016-11-21

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About This Document

Purpose

This document describes the MZ111 in terms of its functions, appearance, features, applications, and technical specifications. You can obtain comprehensive information about the MZ111 by reading this document.

Intended Audience

This document is intended for:

- Huawei presales engineers
- Channel partner presales engineers
- Enterprise presales engineers

Symbol Conventions

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

Symbol	Description
 DANGER	Alerts you to a high risk hazard that could, if not avoided, result in serious injury or death.
 WARNING	Alerts you to a medium or low risk hazard that could, if not avoided, result in moderate or minor injury.
 CAUTION	Alerts you to a potentially hazardous situation that could, if not avoided, result in equipment damage, data loss, performance deterioration, or unanticipated results.
 NOTE	Provides additional information to emphasize or supplement important points in the main text.

Change History

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This issue is the first official release.

Contents

Figures

Tables

1 Overview

About This Chapter

1.1 Functions

The MZ111 is an Ethernet NIC. It is used for E9000 compute nodes and provides four GE ports for compute nodes to connect to switch modules in the chassis.

The MZ111 uses the Broadcom BCM5720 chip and supports NIC applications.

1.2 Appearance

The MZ111 can be installed in slot Mezzanine1 (Mezz1 for short) or Mezzanine2 (Mezz2 for short) on a half-width E9000 compute node.

The MZ111 provides network ports for connecting to switch modules:

- When the MZ111 is installed in slot Mezz1, its four GE ports connect to switch modules in slots 2X and 3X.
- When the MZ111 is installed in slot Mezz2, its four GE ports connect to switch modules in slots 1E and 4E.

Figure 1-1 MZ111 appearance

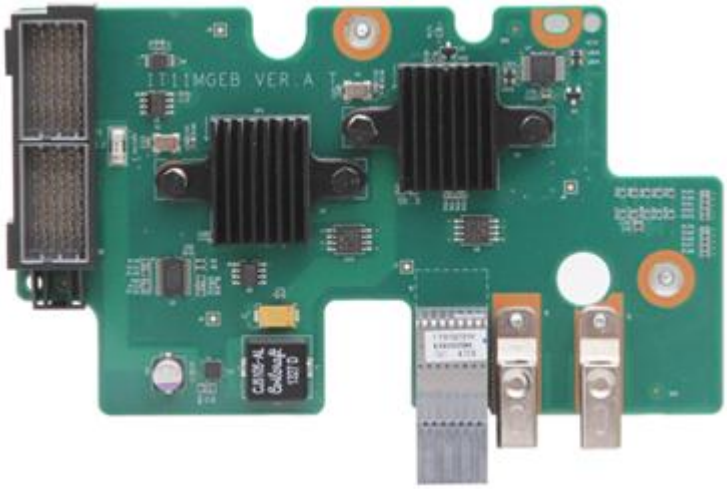


Figure 1-2 MZ111 installation positions on a half-width compute node

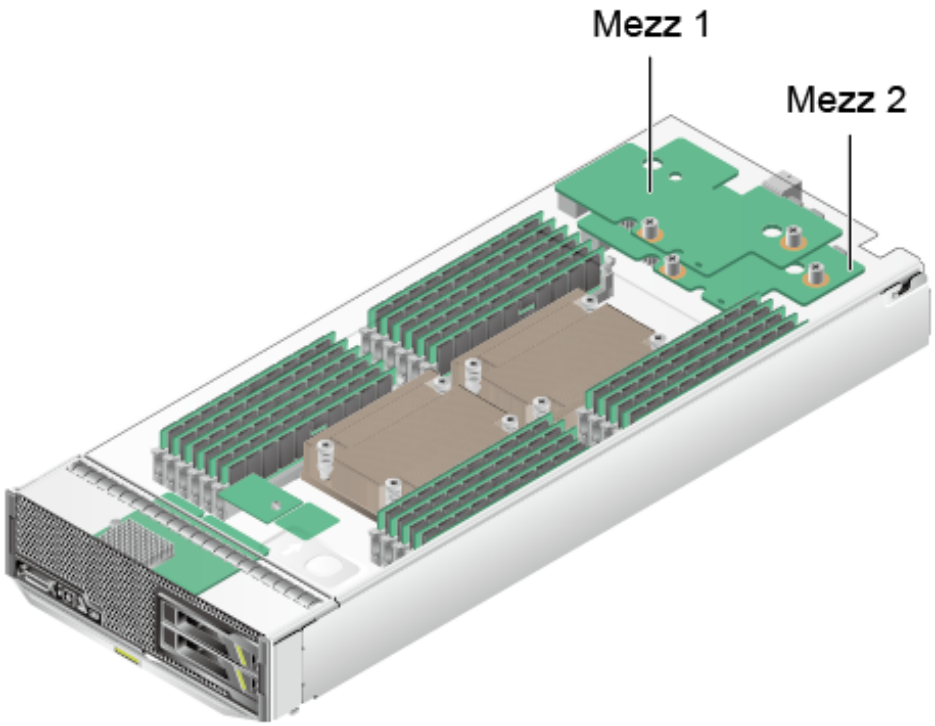
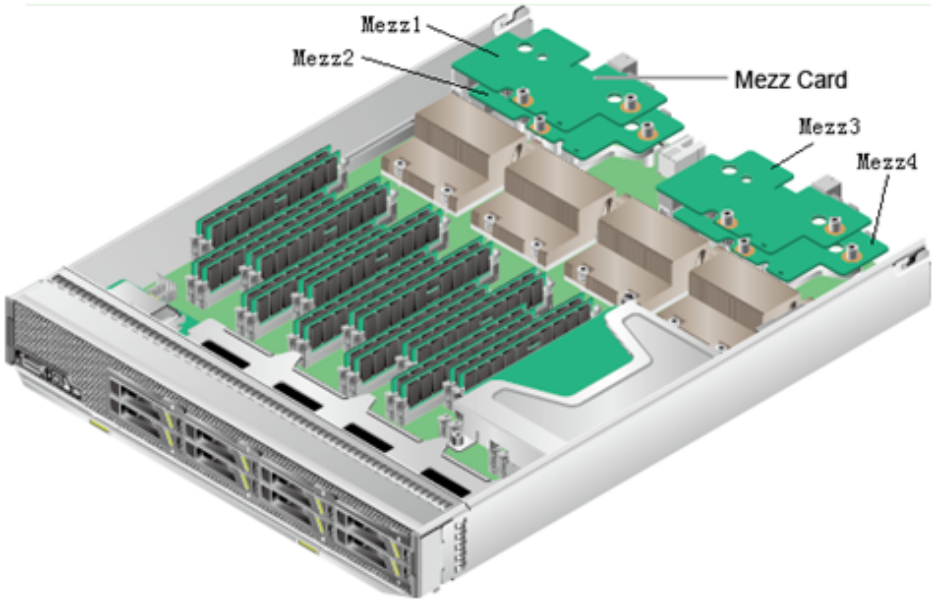


Figure 1-3 MZ111 installation positions on a full-width compute node



2 Features

About This Chapter

2.1 Feature List

The MZ111 supports the following features and performance specifications:

- NetQueue and Virtual Machine Queue (VMQ)
- Ethernet Preboot Execution Environment (PXE)
- TCP/IP/UDP Checksum Offload, Large Send Offload (LSO), and TCP Segmentation Offload (TSO) (UDP stands for User Datagram Protocol.)
- Receive Side Scaling (RSS) and Transmit Side Scaling (TSS)
- 802.1Q VLAN, supporting a maximum of 4094 VLANs
- Energy-Efficient Ethernet (EEE)
- IEEE 1588 and IEEE 802.1AS
- Jumbo frames of 9 KB

NOTE

Certain functions are related to OS and switch features. For details, contact Huawei technical support.

2.2 Feature Description

I/O Virtualization

The MZ111 supports I/O virtualization features, including NetQueue and VMQ. The MZ111 provides 17 receive queues and 16 transmit queues. Each queue sends 17 Message Signaled Interrupt Extended (MSI-X) interrupts to the host system.

802.1Q VLAN

The MZ111 supports a maximum of 4094 VLANs. Each GE port supports a maximum of 4094 VLANs. The VLAN IDs are integers ranging from 1 to 4094.

The MZ111 does not tag or untag packets, but transparently transmits them. VLAN IDs are specified by the operating system (OS) on an E9000 compute node.

RSS and TSS

The MZ111 supports RSS and TSS. RSS supports queue-based MSI-X interrupts and UDP RSS Hash. TSS supports multiple TX queues and queue-based MSI-X interrupts.

2.3 Standards Compliance

Table 2-1 lists the standards and protocols that the MZ111 complies with.

Table 2-1 Standards compliance

Standard	Protocol
IEEE 802.3x	Flow Control and Back Pressure

Standard	Protocol
IEEE 802.3z	1000BASE-X
IEEE 802.3az	Energy-Efficient Ethernet
IEEE 802.1AS	Time Synchronization
IEEE 802.1Q	VLAN Tagging

3 Applications

About This Chapter

3.1 Compatible Compute Nodes

The MZ111 can be installed in slot Mezz1 or Mezz2 on a half-width compute node. **Table 3-1** lists the compute nodes that support the MZ111 and its installation positions on them.

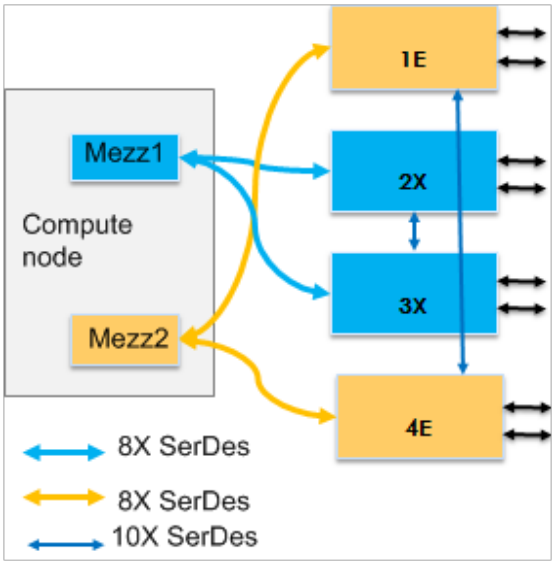
Table 3-1 Compute nodes that support the MZ111

Compute Node	Number of Mezz Module Slots	MZ111 Installation Position
CH140	2	Mezz1 and Mezz2
CH140 V3	2	Mezz1 and Mezz2

3.2 Connected I/O Modules

MZ111s can connect to I/O modules (switch modules or interface boards). **Figure 3-1** shows the connections between the MZ111s on a half-width compute node and the ports on I/O modules.

Figure 3-1 Connections between the MZ111s on a half-width compute node and the ports on I/O modules



There are two or four groups of Serializer/Deserializer (SerDes, known as high-speed interconnect line) between each compute node and I/O module slots.

- Mezz1: 8X SerDes for connecting to I/O module slots 2X and 3X
- Mezz2: 8X SerDes for connecting to I/O module slots 1E and 4E

NOTE

The MZ111 provides four ports, and only 2X of each 8X SerDes is used.

Table 3-2 describes the I/O modules to which the MZ111 can connect.

Table 3-2 I/O modules to which the MZ111 can connect

I/O Module	I/O Module Slot	MZ111 (Mezz1)	MZ111 (Mezz2)	Typical Configuration	Remarks
CX110	2X/3X	√	X	Yes	-
	1E/4E	X	√	No	-
CX111	2X/3X	√	X	Yes	-
	1E/4E	X	√	Yes	-
CX116	2X/3X	√	X	No	It is recommended that the CX116 not be installed in slot 2X or 3X.
	1E/4E	X	√	Yes	-

3.3 MZ111 Networking

The MZ111 can connect to I/O modules (switch modules or interface boards) to provide Ethernet services.

The MZ111 can work with the CX110 switch module to provide 4 Gbit/s interface bandwidth, and connect to the Internet through GE or 10GE ports on the CX110. See **Figure 3-2**.

Figure 3-2 Connection between the MZ111 and the CX110

The MZ111 can work with the CX111 switch module to provide 4 Gbit/s interface bandwidth, and connect to the Internet through GE or 10GE ports on the CX111. See **Figure 3-3**.

Figure 3-3 Connection between the MZ111 and the CX111

The MZ111 can work with the CX116 pass through module to provide 4 Gbit/s interface bandwidth, and connect to the Internet through GE ports on the CX116 in pass-through mode. See **Figure 3-4**.

Figure 3-4 Connection between the MZ111 and the CX116

3.4 Supported OSs

Table 3-3 lists the OSs supported by the MZ111.

Table 3-3 OSs supported by the MZ111

OS	Version	Remarks
Redhat	RHEL 6.5	-
	RHEL 6.7	-
	RHEL 7.0	-
	RHEL 7.1	-
	RHEL 7.2	-
Suse	SLES 11.3	-
	SLES 11.4	-
	SLES 12.0	-
	SLES 12.1	-
VMware	Vmware ESXi 5.5.2	-
	Vmware ESXi 5.5.3	-
	Vmware ESXi 6.0.1	-
	Vmware ESXi 6.0.2	-
Windows	Windows 2008 R2 SP1	-
	Windows 2012	-
	Windows 2012 R2	-

The preceding table is for reference only. Compatible OSs for the MZ111 vary with the compute node type. For details, see the ***Huawei Server Compatibility Checker***.

3.5 Connected Ethernet Switches

Table 3-4 lists the Ethernet switches to which the MZ111 can connect.

Table 3-4 Ethernet switches to which the MZ111 can connect

Category	Vendor	Model	Remarks
Ethernet switch	Huawei	CX110	The CX110 is a GE switch module on the E9000.
		CX111	The CX111 is a GE switch module on the E9000.
		S9300	The MZ111 connects to the S9300 through the CX116 on the E9000.
		S5300	The MZ111 connects to the S5300 through the CX116 on the E9000.
	Cisco	Nexus 2148T	Nexus 2148T is a Cisco Fabric Extender. The MZ111 connects to the Nexus 2148T through the CX116 on the E9000.
		Nexus 2224TP	Nexus 2224TP is a Cisco Fabric Extender. The MZ111 connects to the Nexus 2224TP through the CX116 on the E9000.
		Nexus 2232TM	Nexus 2232TM is a Cisco Fabric Extender. The MZ111 connects to the Nexus 2232TM through the CX116 on the E9000.
		Nexus 2248TP	Nexus 2248TP is a Cisco Fabric Extender. The MZ111 connects to the Nexus 2248TP through the CX116 on the E9000.

4 Technical Specifications

About This Chapter

4.1 Technical Specifications

Table 4-1 lists the technical specifications for the MZ111.

Table 4-1 Technical specifications

Item	Specifications
Dimensions (length x width)	148 mm x 85 mm (5.83 in. x 3.35 in.)
Power supply	12 V DC
Net weight	0.14 kg (0.31 lb)
Maximum power consumption	5 W
Temperature	Operating temperature: 5°C to 40°C (41°F to 104°F) (ASHRAE Class A3 compliant)
	Storage temperature: –40°C to +65°C (–40°F to +149°F)
Temperature change rate	15°C/h (27°F/h)
Humidity	Operating humidity: 5% RH to 85% RH (non-condensing)
	Storage humidity: 5% RH to 95% RH (non-condensing)
Altitude	● 40°C (104°F) at 1800 m (5905.44 ft) ● 30°C (86°F) at 3000 m (9842.40 ft) When the MZ111 is used at an altitude between 1800 m and 3000 m, the highest operating temperature decreases by 1°C (1.8°F) as the altitude increases by 120 m (393.70 ft).
PCIe port bandwidth	2 x 10 Gbit/s (2 x PCIe 2.0 x2)
Port rate	1.25 Gbit/s
Number of ports	4
Port type	Ethernet
Chip model/manufacturer	BCM5720/Broadcom

A Acronyms and Abbreviations

E	
EEE	Energy-Efficient Ethernet
L	
LSO	Large Segmentation Offload
M	
MSI	Message Signaled Interrupt
MSI-X	Message Signaled Interrupt-Express
N	
NIC	network interface card
O	
OS	operating system
P	
PCIe	Peripheral Component Interconnect Express
PXE	Preboot Execution Environment
R	

RSS	Receive Side Scaling
T	
TCP	Transmission Control Protocol
TSO	TCP Segmentation Offload
TSS	Transmit Side Scaling
U	
UDP	User Datagram Protocol
V	
VLAN	virtual local access network
VMQ	Virtual Machine Queue