Simgenet SMG818-V5 IP MPLS TE Router

Routing Platform Overview:

• The IP/MPLS Routing Platform software was developed by Simgenet. This platform provides all system communication protocols without requiring any licenses.
• The hardware components were selected from industrial-grade equipment and are capable of continuous operation under very harsh conditions.
• The Simgenet Universal Routing Platform software runs on a Linux OS.
• Configurable via a web-based interface.
• Can operate in point-to-point or point-to-multipoint modes alongside equipment from other vendors.
• Supports fiber SFP modules for 10/100/1000 Mbps and 10G/25G/40G/100G Ethernet over distances of 0–80 km or 0–120 km.
• For longer fiber spans (up to approximately 400 km), optical boosters are employed.
• Depending on hardware capacity, it can deliver up to 1.6 Tbps of routing and switching throughput.
• A high-performance router designed for large-scale, high-speed IP/MPLS networks.
• Equipped with advanced routing and switching features, it offers ideal solutions for service providers, enterprises, data centers, telecom operators, railway and tramway systems, power generation plants, 154/400 kV transformer substations, ISPs, and IT infrastructures.
• Fiber and Ethernet interfaces can be customized to meet specific project requirements.

Main Features:

• Supports all universal dynamic routing protocols endorsed by major vendors worldwide
• Supports dynamic routes, static routes, and default routes
• Offers remote access options

Supported Routing Protocols:

• RIPv2 (Routing Information Protocol version 2)
• OSPF (Open Shortest Path First)
• BGP (Border Gateway Protocol)
• IS-IS (Intermediate System to Intermediate System)
• IP-MPLS (Multiprotocol Label Switching)
• MPLS L3VPN
• MPLS Traffic Engineering
• VXLAN (Virtual Extensible LAN)

Remote Access Options:

• OpenVPN
• Site-to-Site VPN

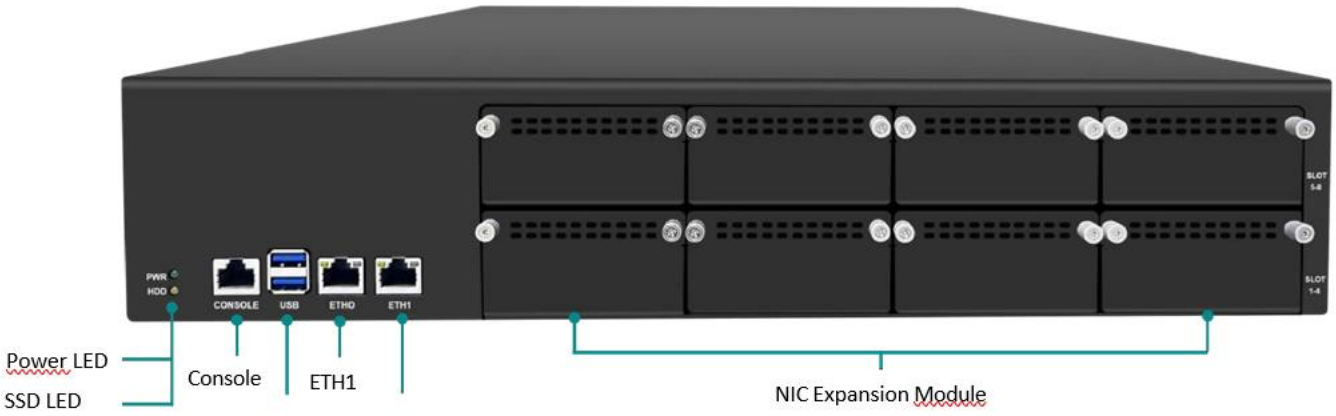
User-Friendly Interface:

• The web interface is intuitive and easy to use.

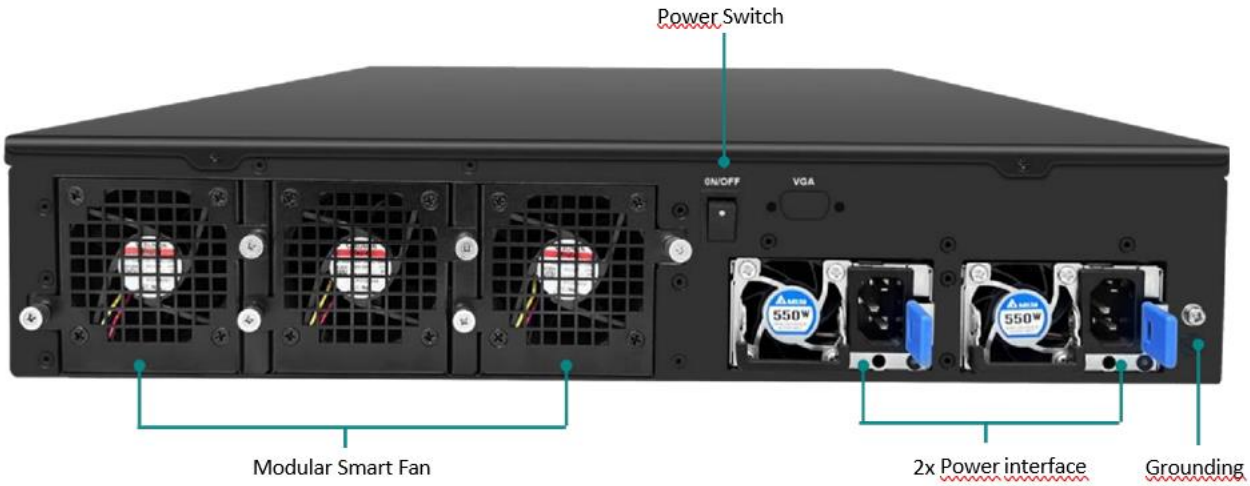
Connecting to the Router via Web Interface:

You can use this information for the following models:

Interface Layout



Front View



Rear View

The router's default LAN0 IP address is configured as https://10.3.3.10/16. You can access the router's web interface using browsers such as Chrome or Firefox.

Default username : **admin**
Default Password : **simgenet**

iLO / IPMI Port Connection Information:

http:// 10.3.255.210/16
username: **ADMIN**
password : **ilo.1270**

Hardware

LR-LINK
Professional NIC Solution Supplier

IP MPLS Software :

Simgenet Engineering

SimgeNet
Mühendislik

2U Rackmount Hardware Platform,
4th/5th Generation Intel® Xeon® Scalable Processors

- Supports single-core 4th/5th Gen Intel® Xeon® Scalable Processors
- Onboard Intel® C741 chipset
- Supports 8* PCIe5.0 NIC expansion
- DDR5 4400/4800MHz RDIMM slots, supporting up to 4TB
- Supports SATA, mSATA, M.2 (NVMe) and other storage
- Comply with CCC, EMC, RoHS, CE, FCC and other certificat

Product Specifications

Category	Parameter	Specification
Platform	CPU	Supports single- core 4th/ 5th Gen Intel® Xeon® Scalable Processors
	BIOS	UEFI
	Chip	Intel® C741
Memory	Type	Support DDR5 4400/4800 MHz ECC RDIMM
	Capacity	Supports up to 4TB
	Memoryslot	16 x DDR5 DIMM
Network	Interface	Supports up to 66 network interfaces, NIC module definition
	Networkchip	NIC module definition
	Bypass	NIC module definition
I/OInterface	Console	1 x RJ45 CONSOLE
	USB	2 x USB3.0
Expansion	NICExpansion	8 x PCIe 8X(GEN5，x8)
	PCIe	1 x PCIe 16X(GEN5，x16)
	miniPCIe	1 x miniPCIe
Storage	SATA	4 x SATA
	M.2	1 x M.2(NVMe)
	mSATA	1 x mSATA
Display	Display Interface	1 x VGA(Optional)
Power	Power	AC 90～264V @ 47～63Hz，Built-in CRPS 550W redundant power supply
Control and signal	Indicator	1 x power indicator, 1 x status indicator
	Button	1 x Switch Button
	PANEL	1 x PANEL pin
Cooling	Coolingfan	3 x hot-swappable smart fan modules
Mechanical and Environmental	Dimensions	19-inch 2U rackmount, 440 x 592 x 88 mm (W x D x H)
	Operatingtemperature	0 °C ~ 5 0 °C
	Storageenvironment	Storage temperature: -40° C ~70°C , Storage humidity: 10～95%, non-condensing
System and Software	Operatingsystem	Linux, FreeBSD9.2 or above, Windows7 or above
	Software	Provide GPIO/ Bypass/Watchdog routines
Certification	Certification	Comply with CCC, EMC, RoHS, CE, FCC and other certification standards

Network Expansion Module

Model	Chip	Interface	Bypass	PCIe Bus
LREM3500PF-4SFP-M	Intel® I350-AM4	4 x GbE SFP	None	PCIe 8X
LREM3501BP-4T-M	Intel® I350-AM4	4 x GbE RJ45	2 (Gen3)	PCIe 8X
LREM1001PF-8SFP-M	Intel® I350-AM4	8 x GbE SFP	None	PCIe 8X
LREM3500BP-8T-M	Intel® I350-AM4	8 x GbE RJ45	4 (Gen3)	PCIe 8X
LREM5991PF-2SFP+-M	Intel® 82599ES	2 x 10G SFP+	None	PCIe 8X
LREM7100PF-4SFP+-M	Intel® XL710 BM1	4 x 10G SFP+	None	PCIe 8X
LREM7100PF-2QSFP+-M	Intel® XL710 BM2	2 x 40G QSFP+	None	PCIe 8X
LREM8100PF-2QSF28-M	Intel® E810	2 x 100G QSFP28	None	PCIe 8X

Network Interface Cards

1- LREM3500PF-4SFP-M

PCIe x8 Quad optical port Gigabit SFP mezzanine Ethernet network adapter (based on Intel I350)

Overview

LREM3500PF-4SFP is a PCI Express x4 (x8 interface) quad-port mezzanine Gigabit Ethernet network adapter developed on the basis of Intel I350 master control scheme. The adapter is used in a sandwich structure and is widely used in data transmission such as firewalls, gateways, and data monitoring to adapt to non-stop operation around the clock.

Intel I350 master control chip is adopted, which has a wide range of system compatibility and stability. Each network port has an independent gigabit channel network port, which works independently of each other.

Support the safe transmission of gigabit optical fiber on the application site. In gigabit Ethernet connection, four gigabit optical fiber ports can work in full duplex mode at the same time, and four network ports can be converged to increase network traffic bandwidth or any network port can be converged. PCI Express channel resources can be saved in the space of 1U chassis.

Key Features

1· Used in data transmission such as firewall, gatekeeper, data monitoring, etc.
2·Has a wide range of system compatibility and stability.
3·Each network port has an independent Gigabit channel network port and works independently of each other.
4·Support aggregation to increase network traffic bandwidth

Specifications

controller	Intel I350
Cable media	Fiber
Cable Type	1000Base-SX, 1000Base-LX, AOC
Power consumption (max)	6.0W
Connector	4* 1G SFP
PCIe bus	PCI Express v2.1 (2.5GT/s & 5.0GT/s) x4（x8）
Data rate supported per port	1000Mbps
Power supply	PCIe

Technical Features

Protocol Support	IEEE 802.3z 1000BASE-X Gbit/s Ethernet IEEE 802.1Q VLANs IEEE 802.3x IEEE 1588 IEEE 802.3az - Energy Efficient Ethernet (EEE)
PXE	No
DPDK	Yes
WoL	Yes
iSCSI	No
Jumbo frame	Yes
FCoE	No

LED Indicators

LED indicator	1000Mbps：Orange+ Orange

Environment Features

Operating temperature	0 ˚Cto 55 ˚C(32 ˚Fto 131 ˚F)
Storage temperature	-40 ˚Cto 85 ˚C(-40 ˚Fto 185 ˚F)
Storage humidity	90% non condensing relative humidity at 35 ˚C
Authentication	FCC, RoHS, CE

Physical Features

PCB size (unit: mm))	167*72*1.6
Adapter	*1
Product warranty card	*1

System support

WindowsXP, vista, 7, 8/8.1, 10	Linux Stable Kernel version 2.6.x / 3.x / 4.x or later
Windows Server 2003 / R2	CentOS / RHEL 6.x / 7.x or later
Windows Server 2008 / R2	Ubuntu 14.x/16.x or later
Windows Server 2012 / R2	FreeBSD 9 / 10 / 11 or later
Windows Server 2016 / R2	Vmware ESX/ESXi 4.x/ 5.x / 6.x or later
Windows Server 2019 / R2	

Ordering information

Model	Explain	Remarks
LREM3500PF-4SFP-M	PCIe x8 Quad optical port Gigabit SFP mezzanine Ethernet network adapter	Based on Intel I350

2- LREM3501BP-4T-M

PCIe x8 Quad-port with Dual-Bypass Mezzanine 1G Ethernet Network Adapter (Intel I350 Based)

LREM3501BP-4T is a PCI Express x4 (x8 interface) four-port with dual-bypass mezzanine Gigabit Ethernet network adapter developed based on the Intel I350 main control solution. The adapter belongs to the mezzanine card structure. It is applied to data transmission such as firewall, gatekeeper, data monitoring, etc., and is suitable for non-stop operation all day. The Intel I350 main control chip is adopted, which has a wide range of system compatibility and stability. Each network port has an independent Gigabit channel network port and works independently of each other. The adapter has a network aggregation function to support network redundancy or increase the network bandwidth to ensure that a large amount of data to communicate is the smooth flow of the network. The adapter has a two-way Bypass function to support the network to ensure the smoothness of the network in the event of a sudden machine downtime. Support 10/100/1000M speed transmission at the application site. In the Gigabit Ethernet connection, four gigabit ports can be allowed to work in full-duplex mode at the same time, and four network ports can be aggregated to increase network traffic bandwidth or any network port can be used for aggregation. Can save PCI Express channel resources in the space of 1U chassis.

Key Features

- It is mostly used in data transmission such as firewalls, gatekeepers, and data monitoring.
- The Intel I350 main control chip is adopted, which has a wide range of system compatibility and stability,
- Supports dual bypass.
- Each network port has an independent Gigabit channel network port and works independently of each other.

Specifications

Controller	Intel I350
Baffle Height	*
Power Consumption	5.04W
System Support	Windows XP/Vista7/8/8.1/10
	Windows Server 2003 R2/2008 R2/2012 R2/2016 R2/2019 R2;
	Linux Stable Kernel version 2.6.32.x/3.x/4.x or later;
	Linux CentOS/RHEL 6.x / 7.x or later;
	Ubuntu 14.x/15.x/16.x or later;
	VMware ESX/ESXi 4.x/5.x/6.x or later
Bus Type	PCIe v2.1 x4 (x8 interface)
Data rate supported per port	10/100/1000MbE
Connector	4*8-Pin RJ45

Technical Features

Protocol Support	IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3z IEEE 802.1Q VLANs IEEE 802.3x IEEE 1588 IEEE 802.3az - Energy Efficient Ethernet (EEE)
iSCSI	No
WoL	No
Jumbo Frames	YES
DPDK	Yes
PXE	Yes
FCoE	No

Storage Temperature	-55 ℃ to +105 ℃ (-67 ℉ to +221 ℉)
Storage Humidity	Maximum: 90% non-condensing relative humidity at 35 ℃

Physical Features

Size(mm)	167.65*67.4
Weight(g)	*

LED Indicators

LED Indicators	1000Mbps, Green + Green
	100Mbps, Green + Yellow
	10Mbps, Green

Order Information

P/N	Description
LREM3501BP-4T	PCIe x8 Quad-port with dual-bypass Mezzanine 1G Ethernet Network Adapter (Intel I350 Based)

3- LREM1001PF-8SFP-M

PCI e x8 Eight-port Gigabit port Ethernet network adapter(MUCSE RNP N10-X8)

Overview

LRES1001PF-8SFP is a PCI Express x8 eight-port horizontal plug-in gigabit SFP ethernet network adapter developed by Shenzhen Lianrui Electronics Co., Ltd. on the basis of MUCSE RNP N10L-X8 master control solution. The adapter can be used in data transmission application scenarios such as firewalls, gatekeepers, and data monitoring, and is suitable for 24H non-stop operation.

LRES1001PF-8SFP supports 1Gbps speed transmission at the application site. In the gigabit ethernet connection, eight gigabit ethernet ports can be allowed to work in full-duplex mode at the same time, and multiple network ports can be aggregated to increase network traffic bandwidth or any network port can be aggregated. PCI Express channel resources can be saved in the space of the chassis.

The main controller used by LRES1001PF-8SFP has independent intellectual property rights and independent controllability, which is of great significance for breaking foreign monopoly and ensuring national information security. At the same time, the controller has made major innovations in the hierarchical DMA queue architecture, virtual machine hot migration network seamless switching and cross-slicing, and the overall technology has reached the international advanced level. Including the average transmission delay, the actual small packet transmission rate and other indicators have reached the highest level disclosed in the industry. It has passed

Key Features

- A horizontal plug-in Ethernet network adapter based on MUCSE N10L-X8 main control
- With a rate of 1G
- It can enhance DPDK to be more efficient and flexible in packet forwarding and packet processing.

Specifications

Controller	Mucse RNP N10L-X8
Cable medium	Optical Fiber
Fiber Type	1000Base-SX、1000Base-LX、AOC
Power(min)	3.696W
Power(max)	7.848W
System Support	Deepin 20 /20.6 /20.9
	Galaxy Unicorn v10 SP1
	Galaxy Unicorn v10
	NeoKylin 7.6
	RHEL/CentOS 7.3 /7.6 /7.9
	RHEL/CentOS 8.2 /8.3
	Ubuntu 16.04.3 /18.04.5 /20.04.1
	ZTE New Fulcrum 5.0.5 /3.2.2
	Tongxin UOS 20
	Asianux Server v7.0
	Zhongke Fangde desktop operating system 4.0
	Zhongke Fangde server operating system
	Emind OS
Bus Type	PCIe v3.0 (8.0GT/s) x8
Data rate per port	1Gbps
Connector	8*1G SFP
Power Supply	PCIe

Technical Features

Protocol Support	IEEE 802.3z 1000BASE-X Gbit/s Ethernet IEEE 802.1Q VLANs IEEE 802.3x IEEE 1588 IEEE 802.3az - Energy Efficient Ethernet (EEE)
PXE	No
DPDK	Yes
WoL	No
iSCSI	No
Jumbo Frames	Yes
UEFI	No
SCAN CHAIN	No
SR-IOV	No
1588 PTP	No
Jumbo DataFrame Max	9.5KB

Environment Features

Operating Temperature	0℃ to 70℃ (32℉ to 158℉)
Storage Temperature	-40℃ to 85℃ (-40℉ to 185℉)
Storage Humidity	Maximum: 90% non-condensing relative humidity at 35 ℃
Certification	FCC, CE, RoHS

Physical Features

PCB Size(mm)	167*72*1.6
Package Size(mm)	270*150*55
Weight(g)	*

LED Indicators

1Gbps	Connection Status	Green Link +Orange Link
	Transfer status	Green Blink+Orange Link

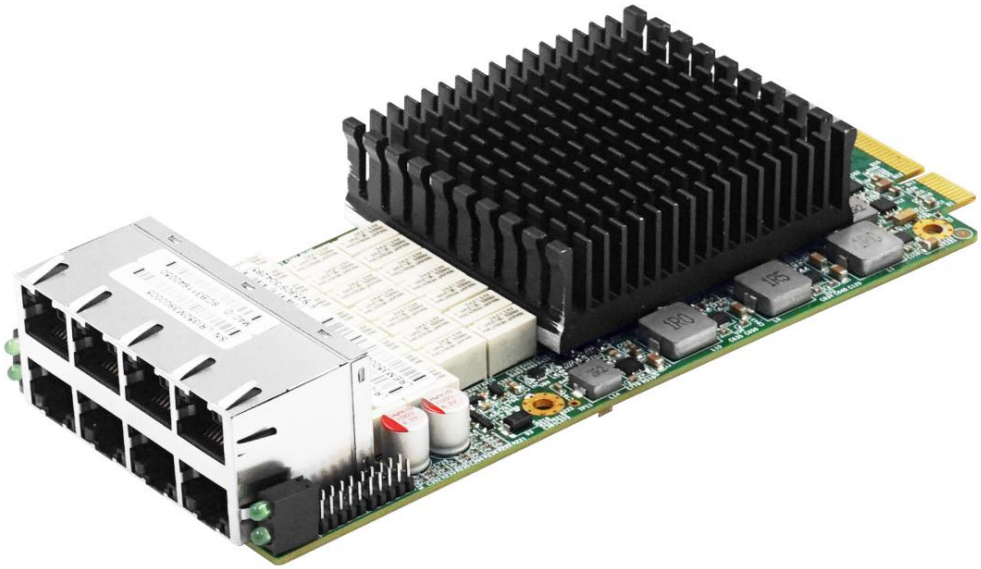
Order Information

P/N	Description
LRES1001PF-8SFP-M	PCI e x8 Eight-port Gigabit port Ethernet network adapter(MUCSE RN P N10-X8)

4-LREM3500BP-8T-M

PCIe x8 Eight-ports gigabit bypass sandwich Ethernet network adapter
(based on Intel I350)

Overview



LREM3500PT-8T is a PCI Express x8 interface 8-port BYPASS sandwich gigabit Ethernet network adapter developed by Shenzhen Lianrui Electronics Co, Ltd. on the basis of Intel I350 master control scheme. The adapter is a sandwich structure used for data transmission such as firewall and network gate, and is suitable for non-stop operation around the clock.

Intel I350 master control chip is adopted, which has a wide range of system compatibility and stability. Each network port has an independent gigabit channel network port, which works independently of each other.

It supports 10/100/1000Mbps link rate work on the application site. In gigabit Ethernet connection, eight network ports can work in full duplex mode at the same time, and eight network ports can be converged to increase network traffic bandwidth or any network port can be converged. PCI Express channel resources can be saved in the space of 1U chassis.

Controller	Intel I350
Cable medium	Copper
Cable Type	1000Base-T Cat 5E/6 or higher: up to 100m 100Base-Tx Cat5/5E/6or higher: up to 100m 10Base-T Category 3/4/5/5E/6 or higher: up to 100m
Power consumption (max)	15.1W
Connector	8* 8-Pin RJ45 (double row)
Data rate supported per port	10/100/1000Mbps
Power supply	PCIe

Technical Features

Protocol Support	IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.1Q VLANs IEEE 802.3x IEEE 1588 IEEE 802.3az - Energy Efficient Ethernet (EEE)
PXE	No
DPDK	YES
WoL	NO
İSCSI	NO
Jumbo frame t	YES
FCoE	NO

LED Indicators

LED Indicators	1000Mbps：Green+Orange
	100Mbps: Orange + Orange
	10Mbps: Orange

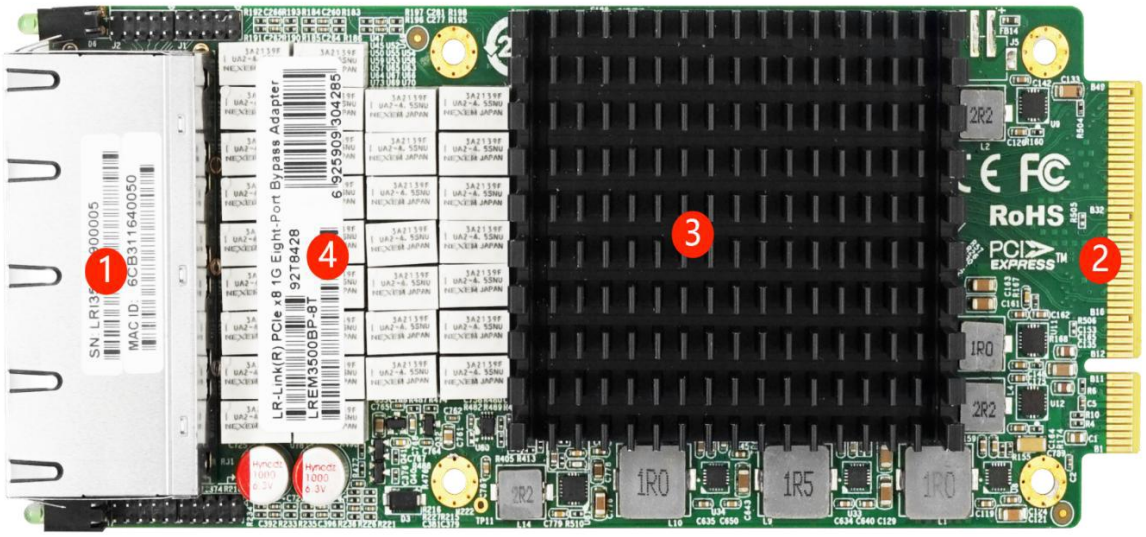
Physical Features

Operating temperature	0 ℃ to 55 ℃(32 ℉ to 131 ℉)
Storage temperature	-40 ℃ to 85 ℃ (-40 ℉ to 185 ℉)
Storage humidity	90% non condensing relative humidity at 35 ℃
Authentication	FCC，RoHS，CE

System support

Windows XP/ Vista/ 7/ 8/8.1/ 10	Linux Stable Kernel version 2.6.x / 3.x / 4.x or later
Windows Server 2003 / R2	CentOS / RHEL 6.x / 7.x or later
Windows Server 2008 / R2	Ubuntu 14.x/16.x or later
Windows Server 2012 / R2	FreeBSD 9 / 10 / 11or later
Windows Server 2016 / R2	Vmware ESX/ESXi 4.x/ 5.x / 6.x or later

Product Structure



PS: The figure is for reference, and the specific object shall prevail.

1.8*1G RJ45
2.PCI Express x8
3.Radiator
4.Reserved bypass

4- LREM5991PF-2SFP+-M

PCIe x8 Dual-port 10G SFP+ Mezzanine Ethernet Network Adapter (Intel 82599)

Overview

Key Features

•The product is used in data transmission such as firewalls and gatekeepers;
•Has a wide range of system compatibility and stability;
•Each network port has an independent 10 Gigabit channel and works independently of each other;
•Support network aggregation to increase network traffic bandwidth.

Specifications

Controller	Intel 82599
Baffle Height	*
Fiber Type	10GBase-SR、10GBase-LR、10GBase-Cu
Power Consumption	8.0W
System Support	Windows 7/8/8.1/10
	Windows Server 2003 R2/2008 R2/2012 R2/2016 R2/2019 R2
	CentOS / RHEL 6.x/7.x or later
	Ubuntu 16.10 or later
	Linux Kernel 4.x/5.x or later
	VMware ESXi 5.x/6.x or later

Bus Type	PCI Express v3.0 (8.0GT/s) x8 , compatible x16
Data Rate per Port	10000MbE
Connector	2*SFP+

Technical Features

Standards Compliant	IEEE 802.3ae 10GBase-X IEEE 802.3x Full Duplex and flow control IEEE 802.3az Energy Efficient Ethernet (EEE) IEEE 802.3ad IEEE 802.1Q VLAN
RDMA(RoCE、iWARP)	No
iSCSI	Yes
WoL	No
Jumbo Frames	Yes
DPDK	Yes
PXE	Yes
FCoE	Yes
VMDq、SR-IOV	Yes

5- LREM7100PF-4SFP+-M

PCIe x8 Quad-port 10G SFP + Mezzanine Ethernet Network Adapter (Intel XL710)

Overview

LREM7100PF-4SFP+ is a four-port 10G SFP + mezzanine fiber ethernet network card developed based on the Intel XL710 chip solution. The adapter card meets the needs of next-generation data centers by providing unparalleled features for server and network virtualization. Provide reliable performance in flexible LAN and SAN networks. The adapter card has a flexible quad-port 10GbE link rate and is convenient for use in firewalls, gateways, and other device environments.

This adapter card can be bundled and aggregated into groups through multiple ports to achieve fault tolerance and redundancy to ensure network performance and expand network bandwidth. It can implement real-time self-detection and route communication from the failed port to other members of the same group Run for uninterrupted high-performance communication. In addition to the stateless offload, the adapter card can also be distributed to the CPU core on network traffic, which improves network throughput. At the same time, the LSO and GSO are uninstalled from the host software, thereby reducing the verification of CPU overhead. Free up CPU resources to handle other applications. The adapter card is an ideal solution for deploying multiple networks and deploying critical network applications and environments on high-performance servers. The adapter card is based on the Intel Intel XL710 Ethernet MAC + PHY (Media Access Controller and Physical Interface Transceiver) quad-port controller.

The design of LREM7100PF-4SFP+ server adapter card has excellent performance in multi-processor systems. It is used to meet the needs of new and old server markets for network traffic and data distribution, processing, virtualization and big data operations in the current and future long periods. When used with Microsoft's receiving end expansion or scalable I / O in Linux, the card can effectively balance the network load among multiple central processing units (CPUs)

Specifications

Controller	Intel XL710
Baffle Height	*
Fiber Type	10GBase-SR、10GBase-LR、10GBase-Cu
Power Consumption	7.4W
System Support	Windows 7/8/8.1/10
	Windows Server 2008 R2/2012 R2/2016 R2/2019 R2
	CentOS / RHEL 6.x/7.x or later
	Ubuntu 16.10 or later
	Linux Kernel 4.x/5.x or later
	VMware ESXi 5.x/6.x or later
Bus Type	PCI Express v3.0 (8.0GT/s) x8 , compatible x16
Data Rate per Port	10000MbE
Connector	4*SFP+

Technical Features

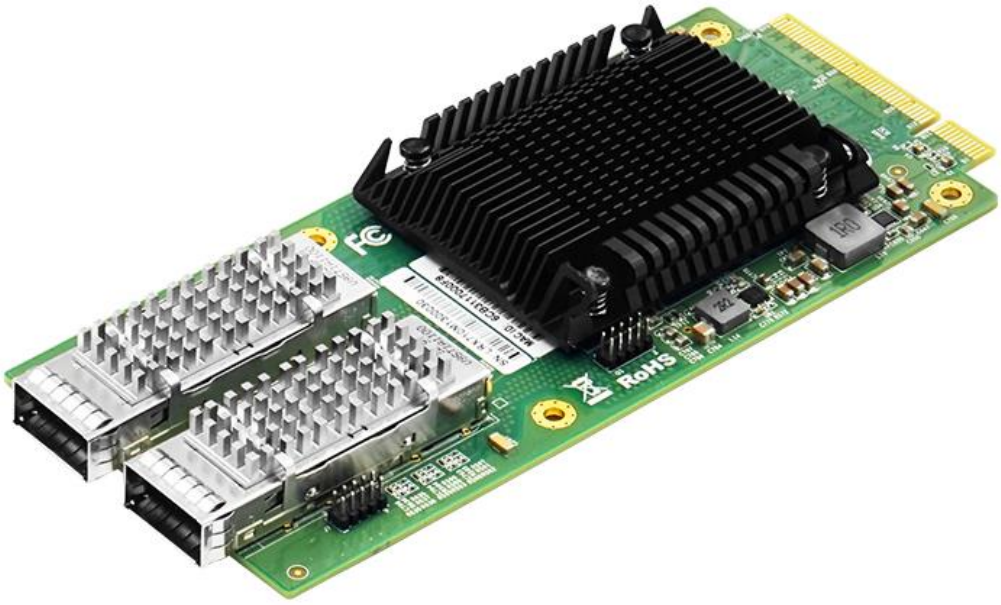
Standards Compliant	IEEE 802.3ae 10GBase-X IEEE 802.3x Full Duplex and flow control IEEE 802.3az Energy Efficient Ethernet (EEE) IEEE 802.3ad IEEE 802.1Q VLAN

RDMA(RoCE、iWARP)	No
iSCSI	Yes
WoL	No
Jumbo Frames	Yes
DPDK	Yes
PXE	No
FCoE	No
VMDq、SR-IOV	Yes

6- LREM7100PF-2QSFP+M

PCIe x8 Dual-port 40G QSFP+ Mezzanine Ethernet Network Adapter (Intel XL710)

Overview



LREM7100PF-2QSFP+ is a dual-port 40G mezzanine fiber Ethernet network card developed by Shenzhen Lianrui Electronics Co., Ltd. based on the Intel XL710 chip solution. The adapter card adopts a mezzanine structure, which is convenient for use on security platforms such as firewalls and gateways. At the same time, it provides unparalleled features for device and network virtualization functions to meet the needs of data transmission.

This network card product has a single-port 40 Gigabit large-bandwidth data transmission performance, so that the network system is no longer the bottleneck of the application.

LREM7100PF-2QSFP+ is based on the Intel XL710 high-performance Ethernet controller. In addition to managing the MAC and PHY Ethernet layer functions, the controller manages PCI Express data sheet traffic at its switching links and physical / logical layer. Using hardware acceleration, the controller offloads tasks from the host, such as TCP / UDP / IP checksum calculation and TCP segmentation.

LREM7100PF-2QSFP+ is based on the high-speed PCI Express v3.0 x8 interface, and is backward compatible with PCI Express v2.0 and PCI Express v2.1 transfer rate interfaces.

LREM7100PF-2QSFP+ supports Intel® PRO Smart Installation and a new Intel® PROSet designed for Microsoft Device Manager to simplify the installation and management process. The Intel PROSet program simplifies the adapter installation process.

Key Features

•The adapter card adopts a sandwich structure, which is convenient for use on security platforms such as firewalls and gateways.
•The single-port 40 Gigabit high-bandwidth data transmission performance of this network card product makes the network system no longer the bottleneck of the application.
•Using hardware acceleration, the controller offloads tasks from the host, such as TCP/UDP/IP checksum calculation & TCP segmentation.
• PCI Express v3.0 x8 interface, compatible with PCIe v2.0 and PCIe v2.1.

Specifications

Controller	Intel XL710
Baffle Height	*
Fiber Type	40GBase-SR、40GBase-LR、40GBase-Cu
Power Consumption	5.6W
System Support	Windows 7/8/8.1/10
	Windows Server 2008 R2/2012 R2/2016 R2/2019 R2
	CentOS / RHEL 6.x/7.x or later
	Ubuntu 16.10 or later
	Linux Kernel 4.x/5.x or later
	VMware ESXi 5.x/6.x or later
Bus Type	PCI Express v3.0 (8.0GT/s) x8 , compatible x16
Data Rate per Port	10000MbE
Connector	2*QSFP+

Technical Features

	IEEE802.3ba 40 Gigabit Ethernet IEEE 802.3x Full Duplex and flow control IEEE 802.3BD IEEE 802.1AS IEEE 802.1Q VLAN IEEE 802.3AD IEEE 802.3az - Energy Efficient Ethernet (EEE) IEEE 802.3ap
iSCSI	Yes
WoL	No
Jumbo Frames	Yes
DPDK	Yes

PXE	No”
FCoE	Yes
VMDq、SR-IOV	Yes

Ordering

P/N	Description
LREM7100PF-2QSFP+	PCIe x8 Dual-port 40G QSFP + Mezzanine Ethernet Network A

7- LREM8100PF-2QSF28-M

100G Dual-port QSFP28 Ethernet Network Adapter

Overview

Specifications

Controller Intel E810	Controller Intel E810
Connectors 2 * 100G QSFP28	Connectors 2 * 100G QSFP28
Host Connector PCIe 8X	Host Connector PCIe 8X
Power Supply PCIe	Power Supply PCIe
Power Consumption 39.5W(max)	Power Consumption 39.5W(max)
Heat Dissipation Fan cooling design	Heat Dissipation Fan cooling design
Operating Temperature 0°C to 40°C	Operating Temperature 0°C to 40°C
Storage Temperature -	Storage Temperature -40°C to 85°C

40°C to 85°C	
Storage Humidity Maximum: 90% non-condensing relative humidity at 35 °C	Storage Humidity Maximum: 90% non-condensing relative humidity at 35 °C
Dimension 171.5 * 72.5 mm	Dimension 171.5 * 72.5 mm
Certification FCC,CE,RoHS	Certification FCC,CE,RoHS

RFC Standards Supported by the Simgenet IP MPLS TE Router

BGP

• **RFC 1771** *A Border Gateway Protocol 4 (BGP-4). Y. Rekhter & T. Li. March 1995.*
• **RFC 1965** *Autonomous System Confederations for BGP. P. Traina. June 1996.*
• **RFC 1997** *BGP Communities Attribute. R. Chandra, P. Traina & T. Li. August 1996.*
• **RFC 1998** *An Application of the BGP Community Attribute in Multi-home Routing. E. Chen, T. Bates. August 1996.*
• **RFC 2385** *Protection of BGP Sessions via the TCP MD5 Signature Option. A. Heffernan. August 1998.*
• **RFC 2439** *BGP Route Flap Damping. C. Villamizar, R. Chandra, R. Govindan. November 1998.*
• **RFC 2545** *Use of BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing. P. Marques, F. Dupont. March 1999.*
• **RFC 2796** *BGP Route Reflection An alternative to full mesh IBGP. T. Bates & R. Chandrasekeran. June 1996.*
• **RFC 2842** *Capabilities Advertisement with BGP-4. R. Chandra, J. Scudder. May 2000.*
• **RFC 2858** *Multiprotocol Extensions for BGP-4. T. Bates, Y. Rekhter, R. Chandra, D. Katz. June 2000.*
• **RFC 2918** *Route Refresh Capability for BGP-4. E. Chen, September 2000.*
• **RFC 3107** *Carrying Label Information in BGP-4. Y. Rekhter & E. Rosen. May 2001.*
• **RFC 3765** *NOPEER Community for Border Gateway Protocol (BGP) Route Scope Control. G.Huston. April 2001.*
• **RFC 4271** *A Border Gateway Protocol 4 (BGP-4). Updates RFC1771. Y. Rekhter, T. Li & S. Hares. January 2006.*
• **RFC 4360** *BGP Extended Communities Attribute. S. Sangli, D. Tappan, Y. Rekhter. February 2006.*
• **RFC 4364** *BGP/MPLS IP Virtual Private Networks (VPNs). Y. Rekhter. February 2006.*
• **RFC 4456** *BGP Route Reflection An alternative to full mesh IBGP. T. Bates, E. Chen, R. Chandra. April 2006.*
• **RFC 4486** *Subcodes for BGP Cease Notification Message. E. Chen, V. Gillet. April 2006.*
• **RFC 4659** *BGP-MPLS IP Virtual Private Network (VPN) Extension for IPv6 VPN. J. De Clercq, D. Ooms, M. Carugi, F. Le Faucheur. September 2006.*
• **RFC 4724** *Graceful Restart Mechanism for BGP. S. Sangli, E. Chen, R. Fernando, J. Scudder, Y. Rekhter. January 2007.*
• **RFC 4760** *Multiprotocol Extensions for BGP-4. T. Bates, R. Chandra, D. Katz, Y. Rekhter. January 2007.*
• **RFC 4893** *BGP Support for Four-octet AS Number Space. Q. Vohra, E. Chen May 2007.*
• **RFC 5004** *Avoid BGP Best Path Transitions from One External to Another. E. Chen & S. Sangli. September 2007 (Partial support).*
• **RFC 5065** *Autonomous System Confederations for BGP. P. Traina, D. McPherson, J. Scudder. August 2007.*
• **RFC 5082** *The Generalized TTL Security Mechanism (GTSM). V. Gill, J. Heasley, D. Meyer, P. Savola, C. Pingnataro. October 2007.*
• **RFC 5291** *Outbound Route Filtering Capability. E. Chen, Y. Rekhter. August 2008.*
• **RFC 5292** *Address-Prefix-Based Outbound Route Filter for BGP-4. E. Chen, S. Sangli. August 2008.*
• **RFC 5492** *Capabilities Advertisement with BGP-4. J. Scudder, R. Chandra. February 2009.*
• **RFC 5575** *Dissemination of Flow Specification Rules. P. Marques, N. Sheth, R. Raszuk, B. Greene, J. Mauch, D. McPherson. August 2009.*
• **RFC 5668** *4-Octet AS Specific BGP Extended Community. Y. Rekhter, S. Sangli, D. Tappan October 2009.*
• **RFC 6286** *Autonomous-System-Wide Unique BGP Identifier for BGP-4. E. Chen, J. Yuan. June 2011.*
• **RFC 6472** *Recommendation for Not Using AS_SET and AS_CONFED_SET in BGP. W. Kumari, K. Sriram. December 2011.*
• **RFC 6608** *Subcodes for BGP Finite State Machine Error. J. Dong, M. Chen, Huawei Technologies, A. Suryanarayana, Cisco Systems. May 2012.*
• **RFC 6810** *The Resource Public Key Infrastructure (RPKI) to Router Protocol. R. Bush, R. Austein. January 2013.*
• **RFC 6811** *BGP Prefix Origin Validation. P. Mohapatra, J. Scudder, D. Ward, R. Bush, R. Austein. January 2013.*
• **RFC 6938** *Deprecation of BGP Path Attributes: DPA, ADVERTISER, and RCID_PATH / CLUSTER_ID. J. Scudder. May 2013.*
• **RFC 6996** *Autonomous System (AS) Reservation for Private Use. J. Mitchell. July 2013.*
• **RFC 7196** *Making Route Flap Damping Usable. C. Pelsser, R. Bush, K. Patel, P. Mohapatra, O. Maennel. May*

2014.
• **RFC 7300** *Reservation of Last Autonomous System (AS) Numbers. J. Haas, J. Mitchell. July 2014.*
• **RFC 7313** *Enhanced Route Refresh Capability for BGP-4. K. Patel, E. Chen, B. Venkatachalapathy. July 2014.*
• **RFC 7606** *Revised Error Handling for BGP UPDATE Messages. E. Chen, J. Scudder, P. Mohapatra, K. Patel. August 2015.*
• **RFC 7607** *Codification of AS 0 Processing. W. Kumari, R. Bush, H. Schiller, K. Patel. August 2015.*
• **RFC 7611** *BGP ACCEPT_OWN Community Attribute. J. Uttaro, P. Mohapatra, D. Smith, R. Raszuk, J. Scudder. August 2015.*
• **RFC 7911** *Advertisement of Multiple Paths in BGP. D. Walton, A. Retana, E. Chen, J. Scudder. July 2016.*
• **RFC 7947** *Internet Exchange BGP Route Server. E. Jasinska, N. Hilliard, R. Raszuk, N. Bakker. September 2016.*
• **RFC 7999** *BLACKHOLE Community. T. King, C. Dietzel, J. Snijders, G. Doering, G. Hankins. October 2016.*
• **RFC 8050** *Multi-Threaded Routing Toolkit (MRT) Routing Information Export Format with BGP Additional Path Extensions. C. Petrie, T. King. May 2017.*
• **RFC 8092** *BGP Large Communities Attribute. J. Heitz, Ed., J. Snijders, Ed, K. Patel, I. Bagdonas, N. Hilliard. February 2017.*
• **RFC 8093** *Deprecation of BGP Path Attribute Values 30, 31, 129, 241, 242, and 243. J. Snijders. February 2017.*
• **RFC 8097** *BGP Prefix Origin Validation State Extended Community. P. Mohapatra, K. Patel, J. Scudder, D. Ward, R. Bush. March 2017.*
• **RFC 8195** *Use of BGP Large Communities. J. Snijders, J. Heasley, M. Schmidt. June 2017.*
• **RFC 8203** *BGP Administrative Shutdown Communication. J. Snijders, J. Heitz, J. Scudder. July 2017.*
• **RFC 8212** *Default External BGP (EBGP) Route Propagation Behavior without Policies. J. Mauch, J. Snijders, G. Hankins. July 2017.*
• **RFC 8277** *Using BGP to Bind MPLS Labels to Address Prefixes. E. Rosen. October 2017.*
• **RFC 8538** *Notification Message Support for BGP Graceful Restart. K. Patel, R. Fernando, J. Scudder, J. Haas. March 2019.*
• **RFC 8654** *Extended Message Support for BGP. R. Bush, K. Patel, D. Ward. October 2019.*
• **RFC 9003** *Extended BGP Administrative Shutdown Communication. J. Snijders, J. Heitz, J. Scudder, A. Azimov. January 2021.*
• **RFC 9012** *The BGP Tunnel Encapsulation Attribute. K. Patel, G. Van de Velde, S. Sangli, J. Scudder. April 2021.*
• **RFC 9072** *Extended Optional Parameters Length for BGP OPEN Message. E. Chen, J. Scudder. July 2021.*
• **RFC 9234** *Route Leak Prevention and Detection Using Roles in UPDATE and OPEN Messages. A. Azimov, E. Bogomazov, R. Bush, K. Patel, K. Sriram. May 2022.*
• **RFC 9384** *A BGP Cease NOTIFICATION Subcode for Bidirectional Forwarding Detection (BFD). J. Haas. March 2023.*

ISIS

ISIS (Intermediate System to Intermediate System) is a routing protocol which is described in *ISO10589*, **RFC 1195**, **RFC 5308**. ISIS is an IGP (Interior Gateway Protocol). Compared with RIP, ISIS can provide scalable network support and faster convergence times like OSPF. ISIS is widely used in large networks such as ISP (Internet Service Provider) and carrier backbone networks.
RFC 3277 ,

OSPF

• **RFC 2328** *OSPF Version 2. J. Moy. April 1998.*
• **RFC 2370** *The OSPF Opaque LSA Option R. Coltun. July 1998.*
• **RFC 3101** *The OSPF Not-So-Stubby Area (NSSA) Option P. Murphy. January 2003.*
• **RFC 2740** *OSPF for IPv6. R. Coltun, D. Ferguson, J. Moy. December 1999.*
• **RFC 3137** *OSPF Stub Router Advertisement, A. Retana, L. Nguyen, R. White, A. Zinin, D. McPherson. June 2001*

RIP

• **RFC 1058** *Routing Information Protocol. C.L. Hedrick. Jun-01-1988.*
• **RFC 2082** *RIP-2 MD5 Authentication. F. Baker, R. Atkinson. January 1997.*
• **RFC 2453** *RIP Version 2. G. Malkin. November 1998.*
• **RFC 2080** *RIPng for IPv6. G. Malkin, R. Minnear. January 1997.*

BFD

• **RFC 5880** *Bidirectional Forwarding Detection (BFD), D. Katz, D. Ward. June 2010*
• **RFC 5881** *Bidirectional Forwarding Detection (BFD) for IPv4 and IPv6 (Single Hop), D. Katz, D. Ward. June 2010*
• **RFC 5882** *Generic Application of Bidirectional Forwarding Detection (BFD), D. Katz, D. Ward. June 2010*
• **RFC 5883** *Bidirectional Forwarding Detection (BFD) for Multihop Paths, D. Katz, D. Ward. June 2010*

MPLS

• **RFC 2858** *Multiprotocol Extensions for BGP-4. T. Bates, Y. Rekhter, R. Chandra, D. Katz. June 2000.*
• **RFC 4364** *BGP/MPLS IP Virtual Private Networks (VPNs). Y. Rekhter. Feb 2006.*
• **RFC 4447** *Pseudowire Setup and Maintenance Using the Label Distribution Protocol (LDP), L. Martini, E. Rosen, N. El-Aawar, T. Smith, and G. Heron. April 2006.*
• **RFC 4659** *BGP-MPLS IP Virtual Private Network (VPN) Extension for IPv6 VPN. J. De Clercq, D. Ooms, M. Carugi, F. Le Faucheur. September 2006*
• **RFC 4762** *Virtual Private LAN Service (VPLS) Using Label Distribution Protocol (LDP) Signaling, M. Lasserre and V. Kompella. January 2007.*
• **RFC 5036** *LDP Specification, L. Andersson, I. Minei, and B. Thomas. October 2007.*
• **RFC 5561** *LDP Capabilities, B. Thomas, K. Raza, S. Aggarwal, R. Aggarwal, and JL. Le Roux. July 2009.*
• **RFC 5918** *Label Distribution Protocol (LDP) 'Typed Wildcard' Forward Equivalence Class (FEC), R. Asati, I. Minei, and B. Thomas. August 2010.*
• **RFC 5919** *Signaling LDP Label Advertisement Completion, R. Asati, P. Mohapatra, E. Chen, and B. Thomas. August 2010.*
• **RFC 6667** *LDP 'Typed Wildcard' Forwarding Equivalence Class (FEC) for PWid and Generalized PWid FEC Elements, K. Raza, S. Boutros, and C. Pignataro. July 2012.*
• **RFC 6720** *The Generalized TTL Security Mechanism (GTSM) for the Label Distribution Protocol (LDP), C. Pignataro and R. Asati. August 2012.*
• **RFC 7552** *Updates to LDP for IPv6, R. Asati, C. Pignataro, K. Raza, V. Manral, and R. Papneja. June 2015.*

VRRP

• **RFC 3768** *Virtual Router Redundancy Protocol (VRRP). R. Hinden. April 2004.*
• **RFC 5798** *Virtual Router Redundancy Protocol (VRRP) Version 3 for IPv4 and IPv6. S. Nadas. June 2000.*

SNMP

When SNMP support is enabled, the following RFCs are also supported:
• **RFC 1227** *SNMP MUX protocol and MIB. M.T. Rose. May-01-1991.*
• **RFC 1657** *Definitions of Managed Objects for the Fourth Version of the Border Gateway Protocol (BGP-4) using SMIv2. S. Willis, J. Burruss, J. Chu, Editor. July 1994.*
• **RFC 1724** *RIP Version 2 MIB Extension. G. Malkin & F. Baker. November 1994.*
• **RFC 1850** *OSPF Version 2 Management Information Base. F. Baker, R. Coltun. November 1995.*
• **RFC 2741** *Agent Extensibility (AgentX) Protocol. M. Daniele, B. Wijnen. January 2000.*

Router Advertisement

• **RFC 2462** (IPv6 Stateless Address Autoconfiguration)
• **RFC 4861** (Neighbor Discovery for IP Version 6 (IPv6))
• **RFC 6275** (Mobility Support in IPv6)
• **RFC 4191** (Default Router Preferences and More-Specific Routes)
• **RFC 8106** (IPv6 Router Advertisement Options for DNS Configuration)

Bidirectional Forwarding Detection

• **RFC 5880**
• **RFC 5881**
• **RFC 5882**
• **RFC 5883**

LDP

RFC 5036 , **RFC 6720**, **RFC 6667**, **RFC 5919**, **RFC 5561**, **RFC 7552**, **RFC 4447** , **RFC 3031**.

EIGRP

RFC 7868

EVPN

RFC 7432 , RFC 9135 (Integrated Routing and Bridging in Ethernet VPN), **RFC 9136,** (IP Prefix Advertisement in Ethernet VPN), **RFC 8584** (Framework for Ethernet VPN Designated Forwarder Election Extensibility), and **RFC 8365** (A Network Virtualization Overlay Solution Using Ethernet VPN).
All-Active Layer-2 Multihoming for devices (MHD) via LACP Ethernet Segments as well as both Symmetric and Asymmetric IRB. FRR implements MAC-VRFs using a "VLAN-Based Service Interface" (**RFC 7432**) and performs processing of Symmetric IRB routes following the "Interface-less IP-VRF-to-IP-VRF Model" (**RFC 9136**).

SEGMENT ROUTING

• mcp: Minimum Cost Path [RFC5541]
• mlp: Minimum Load Path [RFC5541]
• mbp: Maximum residual Bandwidth Path [RFC5541]
• mbc: Minimize aggregate Bandwidth Consumption [RFC5541]
• mll: Minimize the Load of the most loaded Link [RFC5541]
• mcc: Minimize the Cumulative Cost of a set of paths [RFC5541]
• spt: Shortest Path Tree [RFC8306]
• mct: Minimum Cost Tree [RFC8306]
• mplp: Minimum Packet Loss Path [RFC8233]
• mup: Maximum Under-Utilized Path [RFC8233]
• mrup: Maximum Reserved Under-Utilized Path [RFC8233]
• mtd: Minimize the number of Transit Domains [RFC8685]
• mbn: Minimize the number of Border Nodes [RFC8685]
• mctd: Minimize the number of Common Transit Domains [RFC8685]
• msl: Minimize the number of Shared Links [RFC8800]
• mss: Minimize the number of Shared SRLGs [RFC8800]
• msn: Minimize the number of Shared Nodes [RFC8800]

VNC and VNC-GW

This chapter describes how to use VNC (Virtual Network Control) services, including NVA (Network Virtualization Authority) and VNC-GW(VNC Gateway) functions. Background information on NVAs, NVE (Network Virtualization Edge) s, UN (Underlay Network) s, and VN (Virtual Network) is available from the IETF. VNC-GW s support the import/export of routing information between VNC and CE (customer edge) routers operating within a VN. Both IP/Layer 3 (L3) VNs, and IP with Ethernet/Layer 2 (L2) VNs are supported.
BGP, with IP VPNs and Tunnel Encapsulation, is used to distribute VN information between NVAs. BGP based IP VPN support is defined in **RFC 4364**, and **RFC 4659**. Encapsulation information is provided via the Tunnel Encapsulation Attribute, **RFC 5512**.
The protocol that is used to communicate routing and Ethernet / Layer 2 (L2) forwarding information between NVAs and NVEs is referred to as the Remote Forwarder Protocol (RFP). *OpenFlow* is an example RFP. Specific RFP implementations may choose to implement either a *hard-state* or *soft-state* prefix and address registration model. To support a *soft-state* refresh model, a *lifetime* in seconds is associated with all registrations and responses.
RFC 7432.

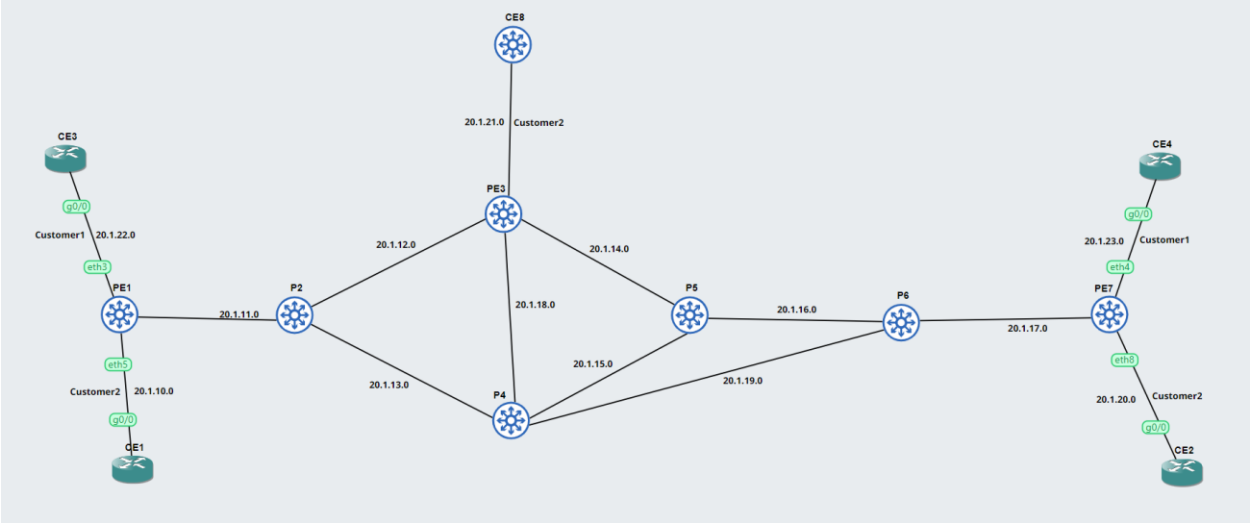
VRRPv3

RFC 5798

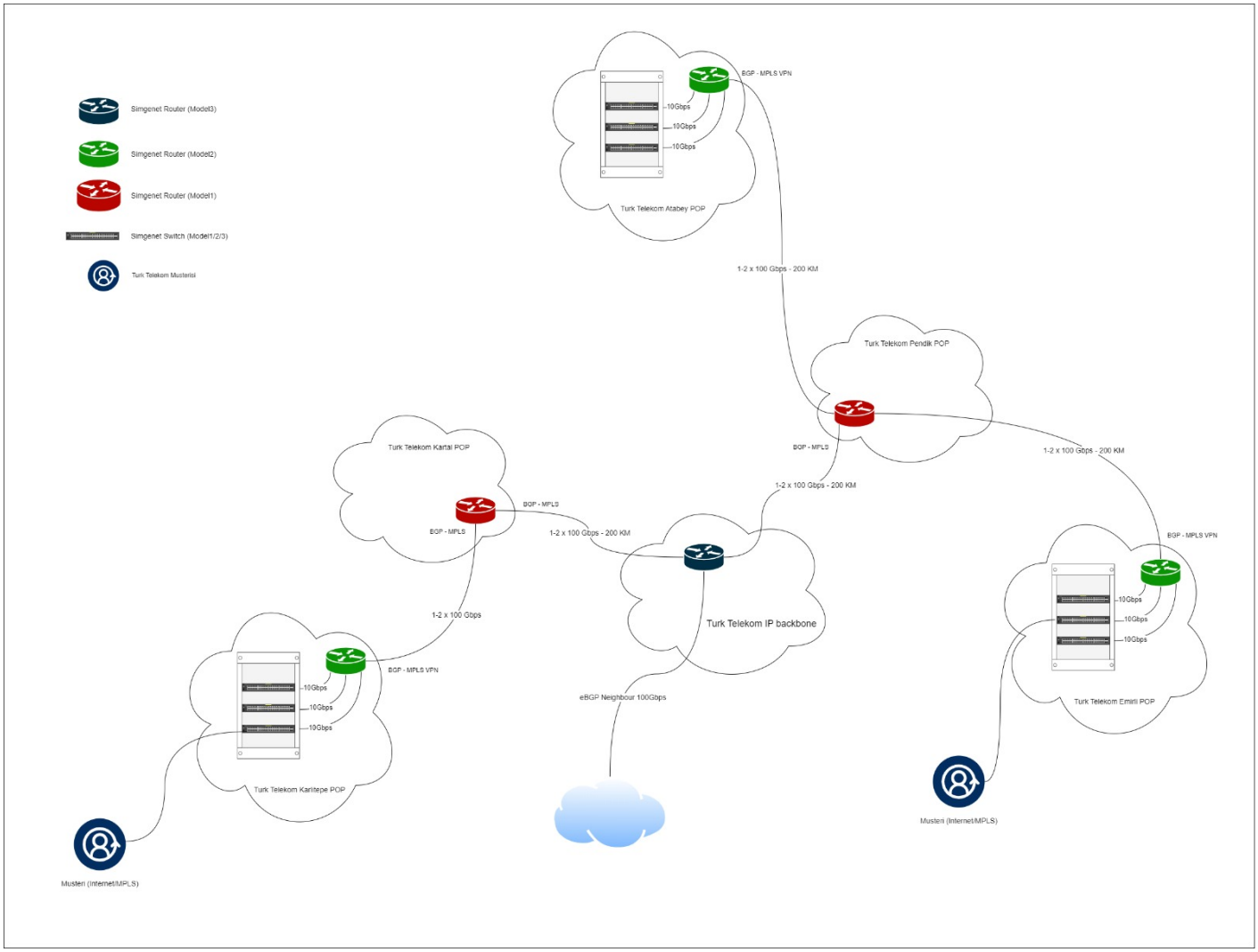
BMP BMP (BGP Monitoring Protocol)

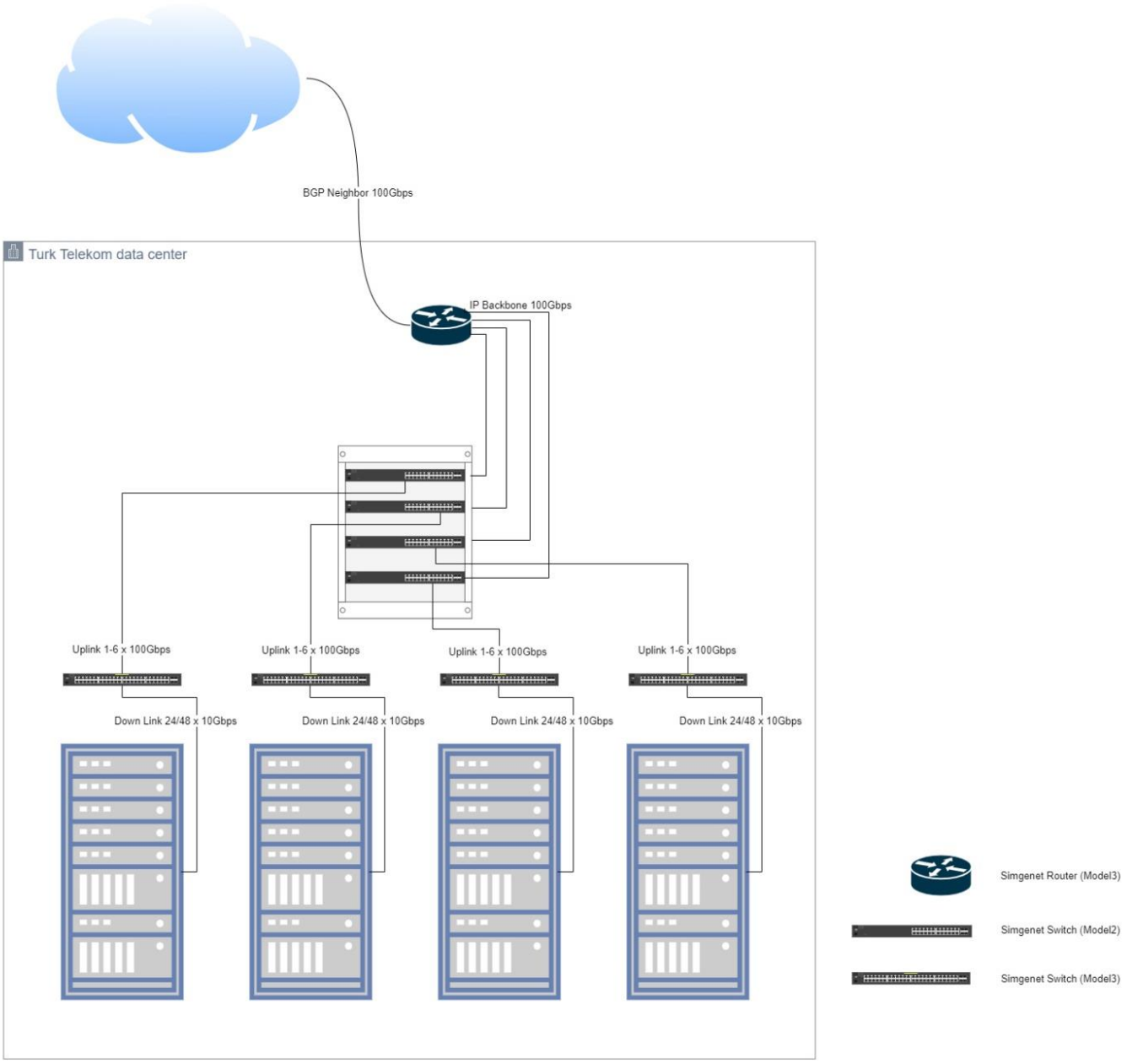
RFC 7854 and the more recent RFC 9069 are supported.

Example Mesh Network Topologies



Example Applications :


Simgenet Router (Model3)
Simgenet Router (Model2)
Simgenet Router (Model1)
Simgenet Switch (Model1/2/3)
Turk Telekom Musterisi
BGP - MPLS VPN
10Gbps
10Gbps
10Gbps
Turk Telekom Atabey POP
1-2 x 100 Gbps - 200 KM
Turk Telekom Pendik POP
BGP - MPLS
1-2 x 100 Gbps - 200 KM
Turk Telekom Kartal POP
BGP - MPLS
BGP - MPLS
1-2 x 100 Gbps - 200 KM
1-2 x 100 Gbps
Turk Telekom IP backbone
BGP - MPLS VPN
10Gbps
10Gbps
10Gbps
Turk Telekom Kartepe POP
eBGP Neighbour 100Gbps
BGP - MPLS VPN
10Gbps
10Gbps
10Gbps
Turk Telekom Emirli POP
Musteri (Internet/MPLS)
Musteri (Internet/MPLS)


BGP Neighbor 100Gbps
Turk Telekom data center
IP Backbone 100Gbps
Uplink 1-6 x 100Gbps
Uplink 1-6 x 100Gbps
Uplink 1-6 x 100Gbps
Uplink 1-6 x 100Gbps
Down Link 24/48 x 10Gbps
Down Link 24/48 x 10Gbps
Down Link 24/48 x 10Gbps
Down Link 24/48 x 10Gbps
Simgenet Router (Model3)
Simgenet Switch (Model2)
Simgenet Switch (Model3)

Thanks
Best Regards

SİMGENET MÜHENDİSLİK ENERJİ SAN.TİC.LTD.ŞTİ.
Orhantepe Mah. Bankalar Cad. Tomurcuk Sok No:12A Kartal / İstanbul

ÖZGÜR YAZAR

GSM : +90 555 600 45 06
E-mail : ozgur.yazar@simgenet.net
info@simgenet.net
Web : www.simgenet.net
Whatsapp : +90 555 600 45 06