SİMGENET MÜHENDİSLİK ENERJİ SAN.TİC.LTD.ŞTİ.
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Simgenet Endustriel IP MPLS TE Routing Platforms

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/200G 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)
• EIGRP (Enhanced Interior Gateway Routing Protocol)
• 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:

• IPSec VPN
• OpenVPN
• Site-to-Site VPN

E1 G.703 / 2048 Technology:

• The platform supports and can operate E1 G.703 / 2048 technology

RS-232 TCP Serial Server (RS-232 over TCP/IP):

• Can function as a TCP serial server (P2MP) over RS-232 at 0–921,600 baud
• Configurable via the web interface

Other Supported Protocols:

• VRRP, NAT, Policy-Based Routing, BFD, Multicast, RPKI, Static Routing, ARP, DHCP Relay, DHCP

Server, DNS Forwarding, LLDP, SNMP, PPPoE Server, IPsec, L2TP, OpenConnect, PPTP Server, SSTP, VRF, SYSLOG, QoS

User-Friendly Interface:

• The web interface is intuitive and easy to use.

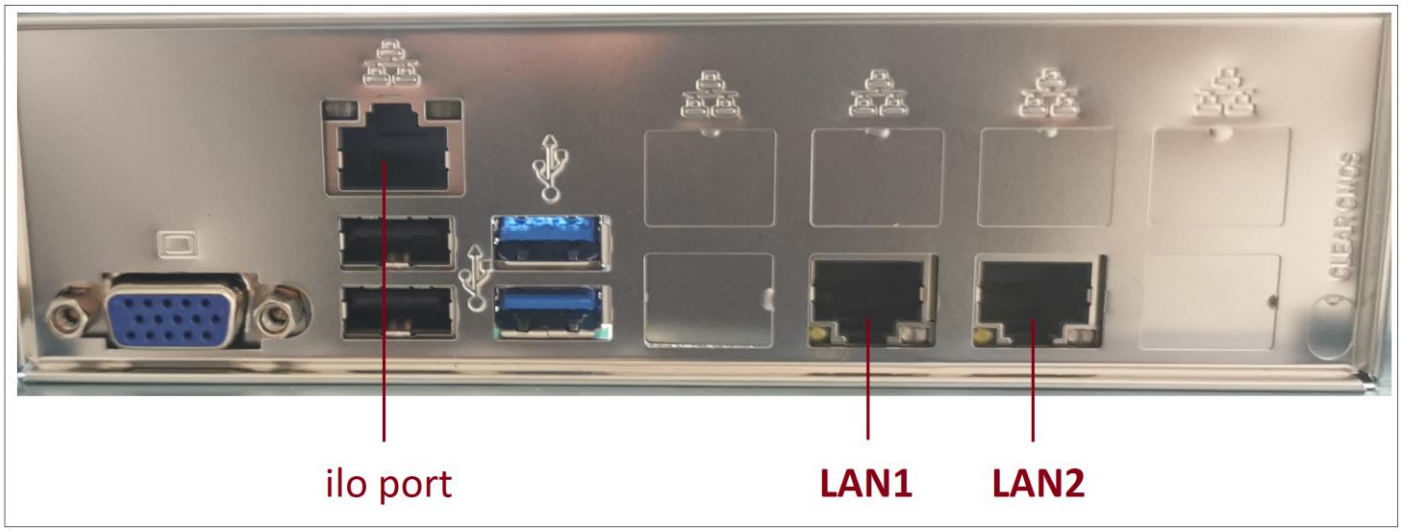
Connecting to the Router via Web Interface:

You can use this information for the following models:

Simgenet Endustriel IP MPLS Router SMG1000 Series Model A
Simgenet Endustriel IP MPLS Router SMG1000 Series Model B

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**

Simgenet SMG1000 Universal IP/MPLS TE Routing Platforms

Simgenet Endustriel IP MPLS Router SMG1000 Series Model A
Simgenet Endustriel IP MPLS Router SMG1000 Series Model B

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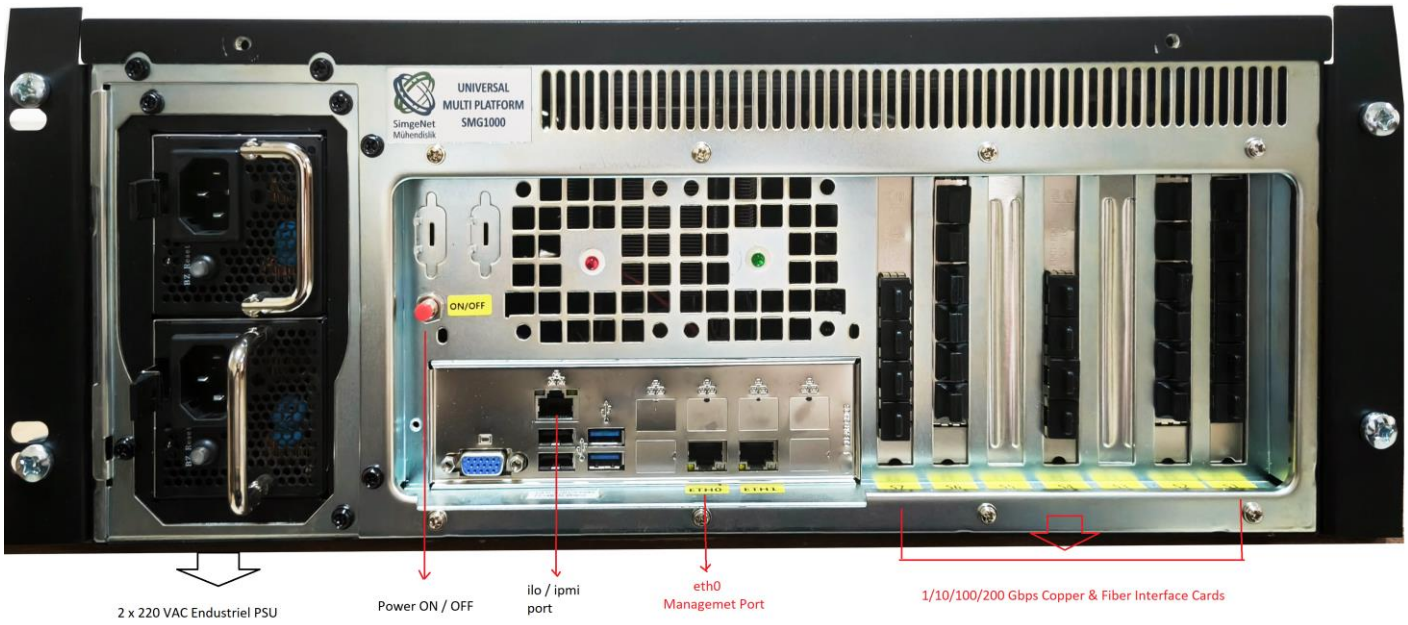
Front View:

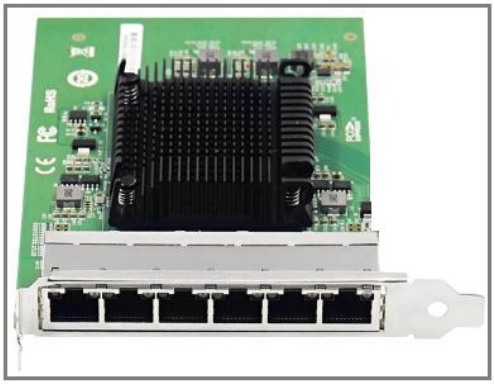


Interfaces:

Ethernet Interfaces 1x Gbps :

Copper Port 1Gigabit Ethernet Adapter

- PCIe x4 V3.0 , Intel I350 Based cipset, Power : 11 Watt
- 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)
- 8-pin RJ45 connectors are designed
- -10 ℃to 55 ℃



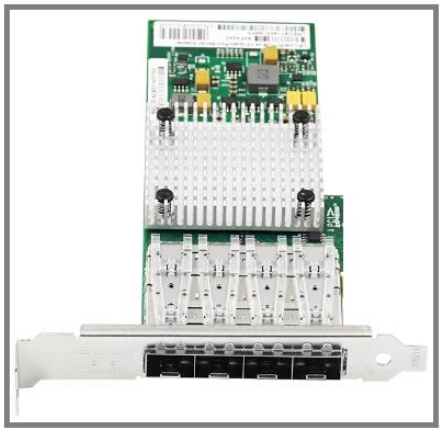
Ethernet Interfaces 4x 1Gbps :

4x Copper Port 1Gigabit Endustriel Ethernet Adapter

- PCIe x4 V3.0 , Intel I350 Based cipset, Power : 5 Watt
- 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)
- 8-pin RJ45 connectors are designed
- -10 ℃to 55 ℃

Fiber Interfaces 4x 1Gbps :

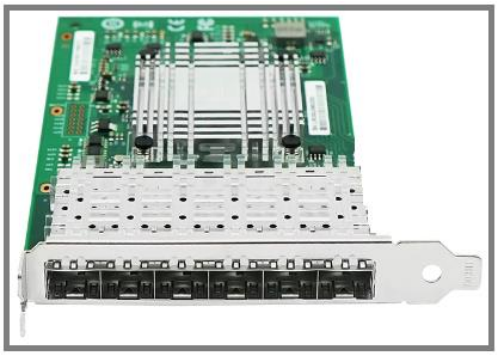
4x Quad Port SFP Gigabit Server Adapter



- IEEE 802.3z 1000BASE-X Gbit/s Ethernet
- IEEE 802.3x Full Duplex and flow control
- IEEE 802.3az Energy Efficient Ethernet
- IEEE 802.3ad Link aggregation for parallel links
- IEEE 802.10 VLAN
- PCIe x4 V3.0 , Intel I350 Based cipset, Power : 3.4 Watt
- -10 ℃to 55 ℃

Fiber Interfaces 6 x 1Gbps :

6x Quad Port SFP 1 Gigabit Ethernet Adapter



- IEEE 802.3z 1000BASE-X Gbits Ethernet
- IEEE 802.3x Full Duplex and flow control
- IEEE 802.3az Energy Efficient Ethernet
- IEEE 802.3ad Link aggregation for parallel links
- IEEE 802.10 VLAN
- PCIe x4 V3.0 , Intel I350 Based cipset, Power : 3.4 Watt
- -10 ℃to 55 ℃

Fiber Interfaces 4 x 10 Gbps :

4Port 10 Gbps SFP+ Ethernet Adapter

- Quad-port 10GbE SFP+ server adapters
- PCI Express (PCle) v3.0, 8.0 GT/S, x8 lanes, Power : 7.4 Watt
- SFP+ Connectivity
- PXE,iSCSI boot
- Network Virtualization
- IEEE 802.1 and 10G Ethemet specification compliance
- Data Plane Development Kit (DPDK) support
- Excellent small packet performance for network appliances and Network Functions Virtualization (NFV)
- Low Profile and full-Height bracket
- PCIe x8 V3.0 , Intel XXV710 Based cipset, -10 ℃to 55 ℃

Fiber Interfaces 2x 25 Gbps :

2Port 25 Gbps Dual Ethernet Server Adapter

- Single-port/Dual-port 1/10/25 Gigabit network adapter
- PCI Express (PCIe) 3.0, 8.0 GT/s, x8 lanes, Power : 14 Watt
- SFP28 Connectivity
- Network Virtualization
- IEEE P802.3by 25 Gb/s
- IEEE 802.11ae 10GBase-SR, 10GBase-LR, 10GBase-ER, 10GBase-ZR
- IEEE 802.3aq 10GBase-LRM
- IEEE 802.3z 1000BASE-SX, 1000BASE-LX
- IEEE 802.1Qbg Virtual Bridging
- IEEE 802.1Qbb Priority Flow Control
- IEEE 802.1az Enhanced Transmission Selection
- Low Profile and Full Height Bracket
- PCIe x8 V3.0 , Intel XXV710 Based cipset, -10 ℃to 55 ℃

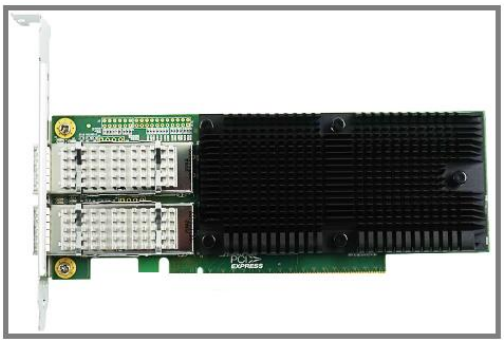
Fiber Interfaces 2x 40 Gbps :

2Port 40 Gbps Dual Ethernet Server Adapter

- Single-port/Dual-port 40Gigabit network adapter
- PCI Express (PCIe) 3.0, 8.0 GT/s, x8 lanes, Power : 5.6 Watt
- QSFP+ Connectivity
- Network Virtualization
- IEEE 802.3ba 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
- Low Profile and Full Height Bracket
- PCIe x8 V3.0 , Intel XL710 Based cipset, -10 ℃to 55 ℃

Fiber Interfaces 2x 100 Gbps :

2 Port 100 Gbps Dual Ethernet Server Adapter



- Single-port/Dual-port 10/25/50/100 Gigabit network adapter
- PCI Express (PCIe) 4.0, 8.0 GT/s, x16 lanes, Power : 27.1 Watt
- QSFP28 Connectivity
- Network Virtualization
- IEEE 802.3bj 100GBASE Ethernet
- IEEE 802.3x Full Duplex and flow control
- IEEE 802.3az Energy Efficient Ethernet (EEE)
- IEEE 802.3AS
- IEEE 802.1Q VLAN
- IEEE 802.1Qaz
- IEEE 802.1Qbb
- IEEE 802.1x
- IEEE 802.1bd
- IEEE1588 v1&v2
- Low Profile and Full Height Bracket
- PCIe x16 V3.0 , Intel cipset, -10 ℃to 55 ℃

Next Generation E1 G.703 Card :

E1 Interface Technical Specifications

Number of interfaces per E1 Interface Card	1/2/4/16 Port
Conformity (electrical)	G703
Frame structure	As per ITU (CCITT) G.704
Signaling	Channel Associated Signaling
PCM sampling rate	8,000 samples/sec
Bit rate	2048 Kbps ± 50 ppm
Code	HDB3
Nominal impedance	120 Ohms balanced / 75 Ohms unbalanced
Peak voltage of a mark For 120 Ω Balanced Interface 75 Ω Unbalanced Interface	 3.0 V ± 0.3 V 2.37 V ± 0.237 V
Peak voltage of a space For 120 Ω Balanced Interface 75 Ω Unbalanced Interface	 0 V ± 0.3 V 0 V ± 0.237 V
Nominal pulse width	244 ns
Pulse mask	As per ITU (CCITT) Rec. G.703
Output Jitter	<0.05 UI (in the frequency range of 20 Hz to 100 KHz)
Permissible Attenuation	6dB at 1 MHz
Return loss at: 51.2 KHz to 102.4 KHz 102.4 KHz to 2048 KHz 2048 KHz to 3072 KHz	 >12dB >18dB >14dB
Jitter tolerance	As per ITU (CCITT) G.823
Frame alignment	As per ITU (CCITT) G.732
Loss and recovery of frame alignment	As per Clause 3 of ITU (CCITT) G.732
Loss and recovery of multi-frame alignment	As per Clause 5.2 of ITU (CCITT) G.732

Endustriel RS-232/422/485 Serial Cards 4 port/ 8 port/ 16 port

Features and Benefits

- 921.6 kbps maximum baudrate for fast data transmission
- 128-byte FIFO and on-chip H/W, S/W flow control
- Variety of connection cables and boxes available for R$-232/422/485
- Low-profile form factor fits small-sized PCs
- Easy maintenance with built-in LEDs and management sofware

Serial Interface:

Comm. Controller	16C550C compatible
Bus	PCI Express 1.0
Connector	VHDCI 68
FIFO	128 bytes
Max. No. of Boards per PC	8
No. of Ports	8
Serial Standards	RS-232, RS-422, RS-485
Baudrate	50 bps to 921.6 kbps (supports non-standard baudrates
Data Bits	5,6,7,8
Stop Bits	1, 1.5,2
Parity	None, Even, Odd, Space, Mark
Flow Control	None, RTS/CTS, XON/XOFF

Standards and Certifications:

EMC	EN 55032/35
EMI	CISPR 32, FCC Part 15B Class B
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 Kv IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV IEC 61000-4-5 Surge: Power: 2 KV IEC 61000-4-6 CS: 150kHz to 80 MHz: 3V/m; Signal: 3V/m IEC 61000-4-8 PFMF

Serial Signals

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	Tx+, Tx-, Rx+, Rx-, GND
RS-485-4w	Tx+. Tx-, Rx+, Rx-, GND
RS-485-2w	Data+, Data-. GND

Hardware & Software Capacity Details:

About the Ethernet Technology in Use:

Offloading & Latency support is available

Providing technical explanations about Ethernet cards and communication latency is very important. What is referred to here is the principle by which network interface cards (Ethernet cards) assume certain functions themselves to avoid placing load on the host processor (CPU). This process is commonly called “offloading.”

What is Latency?

Latency is the time it takes for data packets to travel from the source to the destination. Low latency is particularly critical in time-sensitive (real-time communication) applications.

Offloading Mechanism and CPU Load:

Under normal conditions, data packet processing (for example, TCP/IP and routing operations) is performed by the host processor (CPU). This can both reduce the CPU’s availability for other tasks and introduce additional delays.

Offloading Process:

The Ethernet cards we use in the router offload these data processing tasks onto themselves. For example, TCP offloading delegates the processing of TCP packets to the Ethernet card’s onboard processor (typically a microcontroller).
This onboard processor manages network traffic, freeing the CPU from this load so it can allocate more resources to other operations and prevent increased latency.

For the fiber Ethernet cards we use, the Mellanox and/or Intel-chipset Ethernet adapters support numerous critical protocols related to offloading operations and peer-to-peer (P2P) connectivity:

Since the selected hardware can be customized per your project requirements, our technical team will provide the correct configuration guidance once you inform us of the intended use cases before placing your order.

CPU Offloading Features:

- The Mellanox adapter supports a variety of CPU-offload operations, including RDMA over Converged Ethernet (RoCE), stateless TCP/UDP/IP offload, LSO (Large Send Offload), LRO (Large Receive Offload), checksum offload, RSS (Receive-Side Scaling), TSO (TCP Segmentation Offload), VLAN insertion/removal, and flow steering.

Offloading for Overlay Networks:

- The card provides stateless offloads for overlay networks and tunnel protocols such as NVGRE and VXLAN, offloading both encapsulation and decapsulation to hardware.

Virtualization & SR-IOV Support:

- SR-IOV technology delivers up to 8 Physical Functions (PFs) per physical port and up to 256 Virtual Functions (VFs) per PF. This enables more VMs and tenants to run on the same hardware, optimizing server utilization and reducing complexity.

Mellanox PeerDirect® Communication Acceleration:

- PeerDirect eliminates unnecessary internal data copies between PCIe-attached devices (e.g., GPU to CPU), providing high-efficiency RDMA access and significantly reducing application runtime.

RDMA over Converged Ethernet (RoCE) & Low Latency:

- The ConnectX-4 Lx EN adapter supports RoCE, enabling low-latency, high-performance services over Ethernet by leveraging Data Center Bridging (DCB) capabilities and the adapter's advanced hardware congestion-control mechanisms.

I/O Virtualization & Multi-Host Technology:

- SR-IOV ensures dedicated adapter resources and guaranteed isolation for each VM. Mellanox Multi-Host lets one adapter connect to up to four independent hosts, improving utilization while reducing cost, power, and cabling complexity.

Considering these features, the Mellanox MCX4121A-XCAT card can effectively offload processing in multi-adapter setups, reducing CPU load. It also supports P2P communication and data transfers between adapters, facilitating efficient inter-card communication.

Technical Advantages:

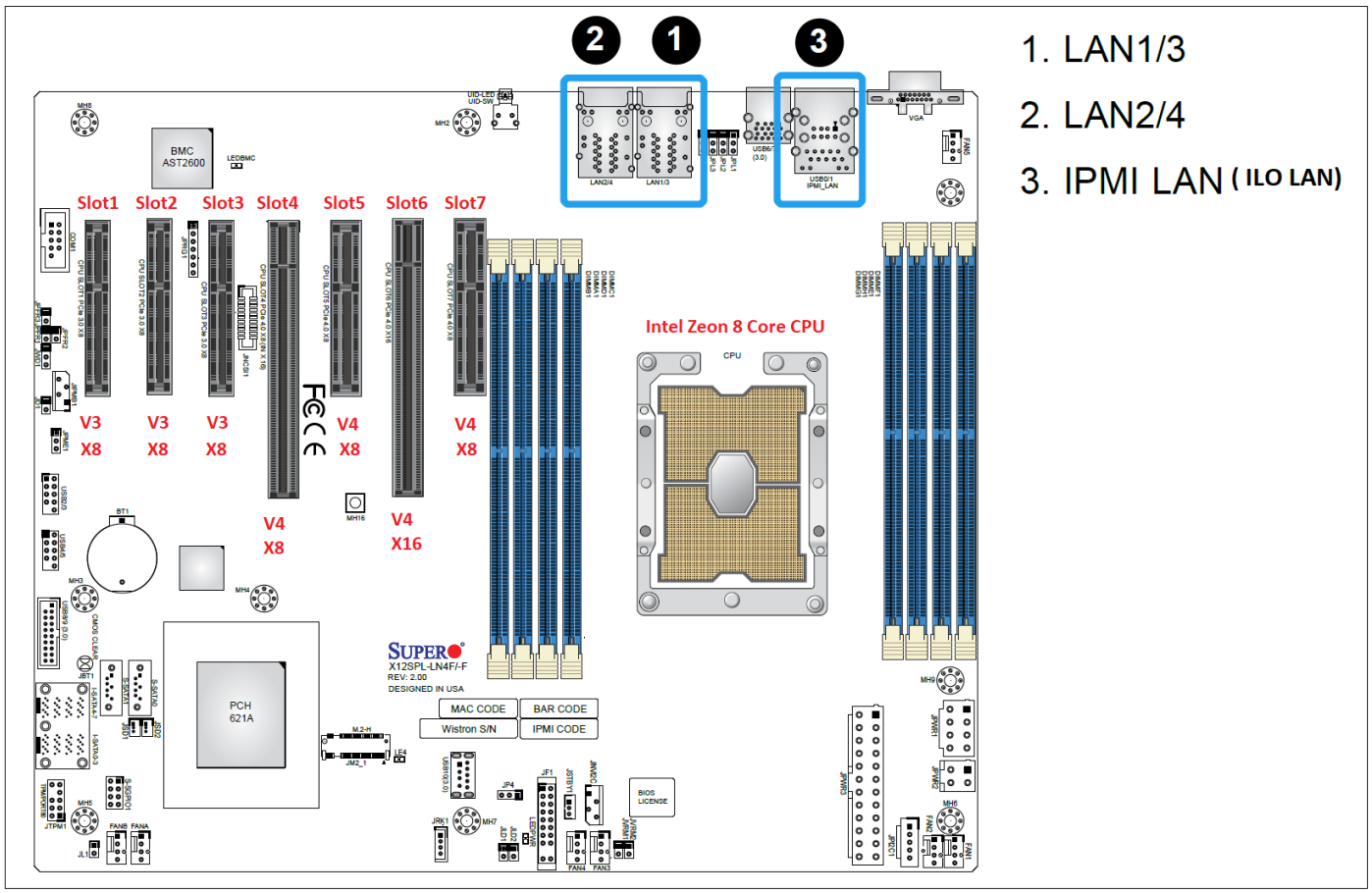
- **Lower Latency:** By handling network processing on the adapter itself, the CPU is relieved of packet-processing tasks, reducing end-to-end latency.
- **Increased Efficiency:** With the CPU freed from heavy network workloads, it can allocate more resources to other tasks, boosting overall system performance.

These capabilities make the card well suited for high-performance and mission-critical environments.

Simgenet Endustriel IP MPLS Router SMG1000 Series Model A	
Simgenet SMG1000 Model A	* 3rd Gen Intel® Xeon® Scalable processors, Single Socket LGA-4189 (Socket P+) supported, CPU TDP supports Up to 270W TDP Intel® C621A * Up to 2TB 3DS ECC RDIMM, DDR4-3200MHz; Up to 2TB 3DS ECC LRDIMM, DDR4-3200MHz * 2 PCI-E 4.0 x8, * 1 PCI-E 4.0 x16, * 1 PCI-E 4.0 x8 (in x16 slot) * 3 PCI-E 3.0 x8 * M.2 Form Factor: 2280/22110
Intel Core CPU	Zeon ICX 4309Y 2P 8C/2.8G/105W 8 Core
Memory	16GB DDR4-3200 ECC RDIMM
M.2 SSD Drive	Endüstriyel Class 128GB PCIe3.0x4BICs4 M.2 2280(WideTemp)
Onboard Ethernet Adaptor	2x Onboard Dual Port 1GbE RJ45 LAN Port 1x 1GbE RJ45 IPMI LAN (ILO) Port
PSU (Power Supply)	1x 220 VAC 500 Watt High Efficiency Power Supply Optional : Redundant 500 watt 220 VAC High Efficiency Power Supply

Simgenet Endustriel IP MPLS Router SMG1000 Series Model A Slot & Port Capacity:

Slot No	Slot Capacity		Bandwidth Capacities per Slot	Other Technologies Supported by Slots
Slot 1	PCIe V3	X8	4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card
Slot 2	PCIe V3	X8	4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card
Slot 3	PCIe V3	X8	4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card
Slot 4	PCIe V4	X8 in X16	1 x100 Gb , 4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card
Slot 5	PCIe V4	X8	4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card
Slot 6	PCIe V4	X16	2 x 100 Gb or 1x 200 Gb 1 x100 Gb , 4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card
Slot 7	PCIe V4	X8	4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card



1. LAN1/3
2. LAN2/4
3. IPMI LAN (ILO LAN)

Order Details:

Table 1 : Ordering Information Mellanox ConnectX-4 Lx Ethernet Adapter Card			
Order No	*Max Network Speed*	Interface Type	Supported Ethernet Speeds (GbE)
1	*2x 10GbE*	SFP28	10, 1
2	*1x 25GbE*		25, 10, 1
3	*2x 25GbE*		25, 10, 1
4	*1x 50GbE*		50, 40, 25, 10, 1
SFP Module			
5	Endustriel Fiber 10Gb SFP Module 10 Km		10 Gbps
6	Endustriel Fiber 10Gb SFP Module 20 Km		
7	Endustriel Fiber 10Gb SFP Module 40 Km		
8	Endustriel Fiber 10Gb SFP Module 80 Km		
9	Endustriel Fiber 10Gb SFP Module 100 Km		
10	100 - 300 Km arası için çözüm sorunuz !		
11	Endustriel Fiber 25Gb SFP Module 10 Km		25 Gbps
12	Endustriel Fiber 25Gb SFP Module 20 Km		
13	Endustriel Fiber 25Gb SFP Module 40 Km		
14	Endustriel Fiber 25Gb SFP Module 80 Km		
15	Endustriel Fiber 25Gb SFP Module 100 Km		
16	100 - 300 Km arası için çözüm sorunuz !		
17	Endustriel Fiber 50Gb SFP Module 10 Km		50 Gbps
18	Endustriel Fiber 50Gb SFP Module 20 Km		
19	Endustriel Fiber 50Gb SFP Module 40 Km		
20	Endustriel Fiber 50Gb SFP Module 80 Km		
21	Endustriel Fiber 50Gb SFP Module 100 Km		
22	100 - 300 Km arası için çözüm sorunuz !		

Table 2 : Ordering Information Mellanox ConnectX®-5 EN Card Up to 100Gb/s Ethernet Adapter Cards			
Order No	*Max Network Speed*	Interface Type	Supported Ethernet Speeds (GbE)
23	*2x 25GbE*	SFP28	25,10,1
24	*2x 40GbE*		40,25,10,1
25	*1x 50GbE*		50,40,25,10,1
26	*2x 50GbE*		50,40,25,10,1
27	*1x 100GbE*		100,50,40,25,10,1
28	*2x 100GbE*		100,50,40,25,10,1
SFP Module			
29	Endustriel Fiber 100Gb SFP Module 10 Km		100 Gbps
30	Endustriel Fiber 100Gb SFP Module 20 Km		
31	Endustriel Fiber 100Gb SFP Module 40 Km		
32	Endustriel Fiber 100Gb SFP Module 80 Km		
33	100 - 300 Km arası için çözüm sorunuz !		

Table 3 : Ordering Information NVIDIA CONNECTX-6 DX Ethernet SmartNIC			
Order No	*Max Network Speed*	Interface Type	Supported Ethernet Speeds (GbE)
34	*2x 200 GbE*		10/25/40/50/100/ 200GbE
SFP Module			
35	SFP Module için çözüm sorunuz !		

Table 4 : Ordering Information Intel Ethernet Cards (RJ 45)			
Order No	*Max Network Speed*	Interface Type	Supported Ethernet Speeds (GbE)
36	*4x 10/100/1000 Gigabit Coper Endustriel Ethernet Network Adapter*	RJ 45	4x 1 Gbps
37	*6x 10/100/1000 Gigabit Coper Endustriel Ethernet Network Adapter*		6x 1 Gbps
38	4x 10G Copper Ethernet Network Adapter Intel		4x 10 Gbps

Table 5 : Ordering Information Simgenet Endustriel IP MPLS Router SMG1000 Series Model A	
Order No	*Order Details*
39	SMG1000 Chasisies IP MPLS Routing Platform including: * 3rd Gen Intel® Xeon® Scalable processors, Single Socket LGA-4189 (Socket P+) supported, CPU TDP supports Up to 270W TDP Intel® C621A * Up to 2TB 3DS ECC RDIMM, DDR4-3200MHz; Up to 2TB 3DS ECC LRDIMM, DDR4-3200MHz * 2 PCI-E 4.0 x8, 1 PCI-E 4.0 x16, 1 PCI-E 4.0 x8 (in x16 slot) , 3 PCI-E 3.0 x8 * M.2 Form Factor: 2280/22110 * Zeon ICX 4309Y 2P 8C/2.8G/105W 8 Core * 16GB DDR4-3200 ECC RDIMM * Endüstriyel Class 128GB PCIe3.0x4BICs4 M.2 2280(WideTemp) * 2x onboard Dual Port 1GbE RJ45 LAN Port 1x onboard 1GbE RJ45 IPMI LAN (ILO) Port
40	1x 220 VAC 500 watt High Efficiency Power Supply
41	2x 220 VAC 500 watt (redundant PSU) High Efficiency Power Supply

Table 6 : Ordering Information RS232/485 /422 , E1 G.703 (2048 Mbps)	
Order No	*Order Details*
42	E1 G.703 Card 120 ohm 2 port
43	E1 G.703 Card 120 ohm 4 port
44	E1 G.703 Card 120 ohm 8 port (yakın zaman içinde desteklenecek)
45	E1 G.703 Card 120 ohm 16 port (yakın zaman içinde desteklenecek)
46	RS232 Card 2 Port 0 to 115200 Bd
47	RS232 Card 4 Port 0 to 115200 Bd
48	RS232 Card 8 Port 0 to 115200 Bd
49	RS232 Card 8 Port 0 to 921 Kbps
50	RS232 Card 16 Port 0 to 921 Kbps
51	RS232 Card 16 Port 0 to 921 Kbps

Simgenet Endustriel IP MPLS Router SMG1000 Series Model B

Simgenet Endustriel IP MPLS Router SMG1000 Series Model B	
Simgenet SMG1000 Model B	* 3rd Gen Intel® Xeon® Scalable processors, Single Socket LGA-4189 (Socket P+) supported, CPU TDP supports Up to 270W TDP Intel® C621A * Up to 2TB 3DS ECC RDIMM, DDR4-3200MHz; Up to 2TB 3DS ECC LRDIMM, DDR4-3200MHz * 3 PCI-E 5.0 x8, * 2 PCI-E 5.0 x16, * M.2 Form Factor: 2280/22110
Intel Core CPU	Zeon ICX 4309Y 2P 8C/2.8G/105W 8 Core
Memory	16GB DDR4-3200 ECC RDIMM
M.2 SSD Drive	Endüstriyel Class 128GB PCIe3.0x4BICs4 M.2 2280(WideTemp)
Onboard Ethernet Adaptor	2x Onboard Dual Port 1GbE RJ45 LAN Port 1x 1GbE RJ45 IPMI LAN (ILO) Port
PSU (Power Supply)	1x 220 VAC 500 Watt High Efficiency Power Supply Optional : Redundant 500 watt 220 VAC High Efficiency Power Supply

Simgenet Endustriel IP MPLS Router SMG1000 Series Model B Slot & Port Capacity:

Slot No	Slot Capacity:		Bandwidth capacities for each slot	Other technologies supported by the slots
Slot 1	PCIe 5	X8	4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card
Slot 2	PCIe 5	X8	4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card
Slot 3	PCIe V5	X8	2 x 200 Gb or 2x 100 Gb 1 x100 Gb , 1x200Gb, 4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card
Slot 4	PCIe V5	X8 in X16	2x 200 Gb or 2 x 100 Gb 1 x100 Gb , 1x200Gb, 4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card
Slot 5	PCIe V5	X8	4x10Gb, 2x10Gb , 6x1Gb, 4x1Gb	E1 G.703 Card , RS232 & RS422 Serial Card

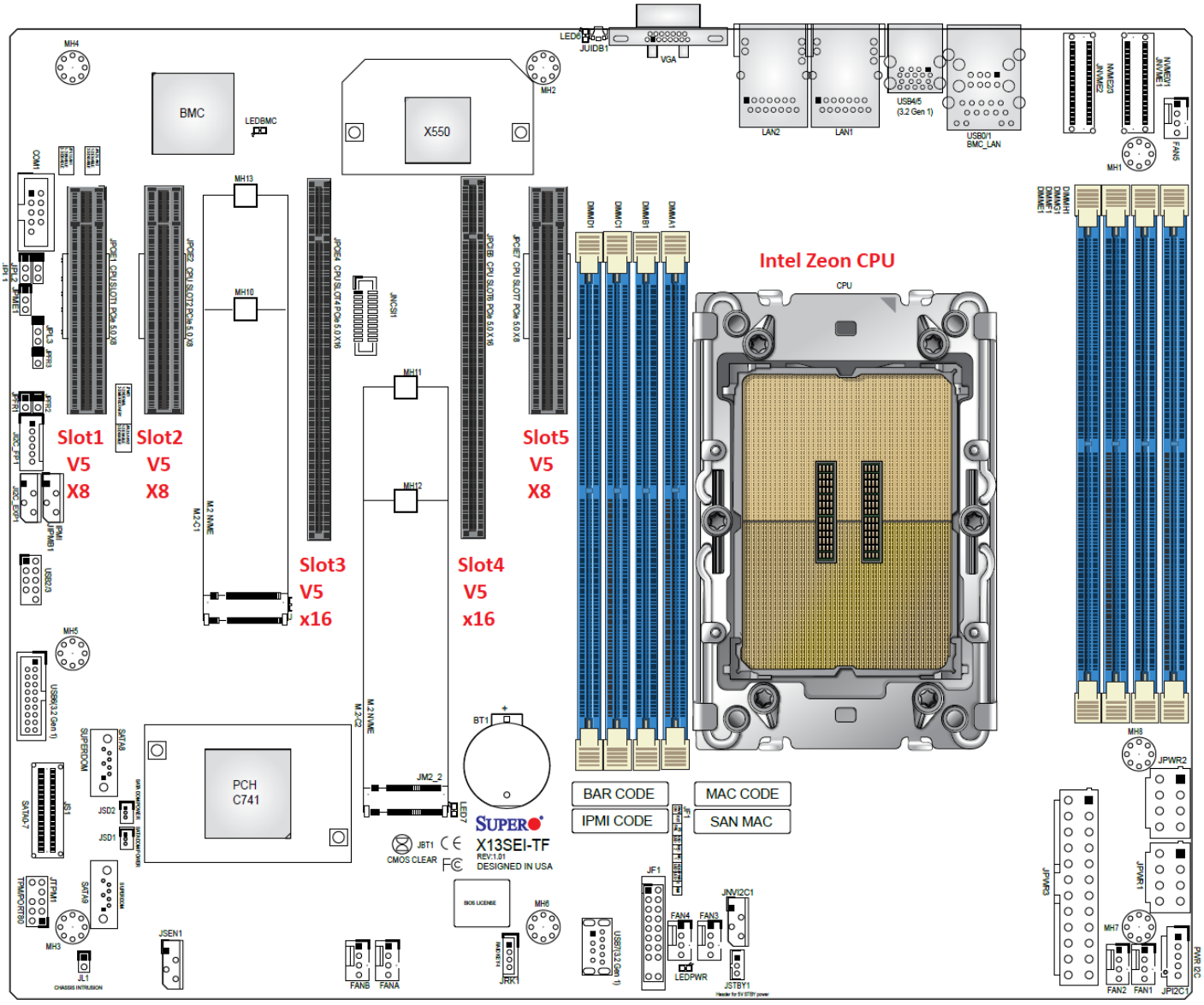

Intel Zeon CPU
Slot1
V5
X8
Slot2
V5
X8
Slot3
V5
x16
Slot4
V5
x16
Slot5
V5
X8
BAR CODE
MAC CODE
IPMI CODE
SAN MAC
PCH
C741
BMC
X550
SUPERO
X13SEI-TF

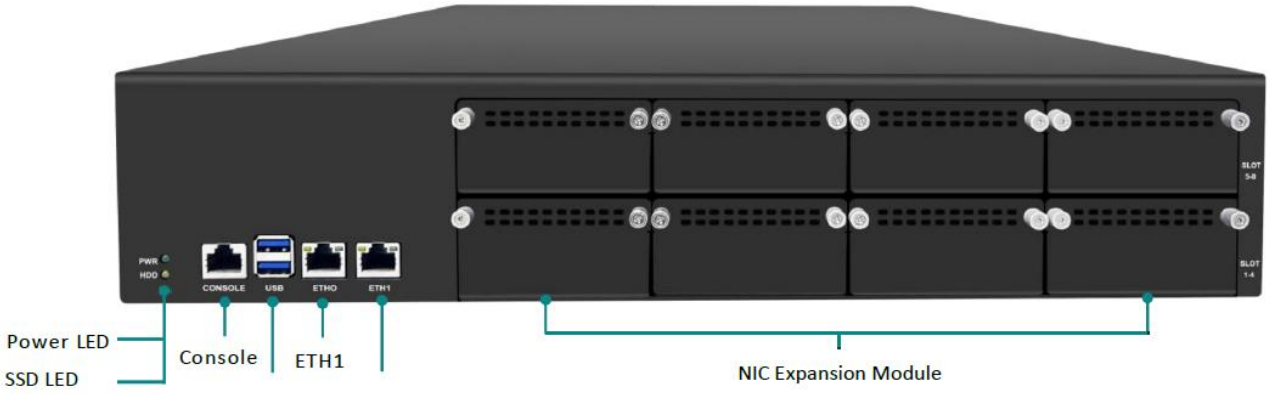
Table 7 : Ordering Information
Simgenet Endustriel IP MPLS Router SMG1000 Series Model B

Order No	*Order Details*
52	SMG1000 Chasisies IP MPLS Routing Platform
	including: * 3rd Gen Intel® Xeon® Scalable processors, Single Socket LGA-4189 (Socket P+) supported, CPU TDP supports Up to 270W TDP Intel® C621A * Up to 2TB 3DS ECC RDIMM, DDR4-3200MHz; Up to 2TB 3DS ECC LRDIMM, DDR4-3200MHz * 2 PCI-E 4.0 x8, 1 PCI-E 4.0 x16, 1 PCI-E 4.0 x8 (in x16 slot) , 3 PCI-E 3.0 x8 * M.2 Form Factor: 2280/22110 * Zeon ICX 4309Y 2P 8C/2.8G/105W 8 Core * 16GB DDR4-3200 ECC RDIMM * Endüstriyel Class 128GB PCIe3.0x4BICs4 M.2 2280(WideTemp) * 2x onboard Dual Port 1GbE RJ45 LAN Port 1x onboard 1GbE RJ45 IPMI LAN (ILO) Port
53	1x 220 VAC 500 watt High Efficiency Power Supply
54	2x 220 VAC 500 watt (redundant PSU) High Efficiency Power Supply

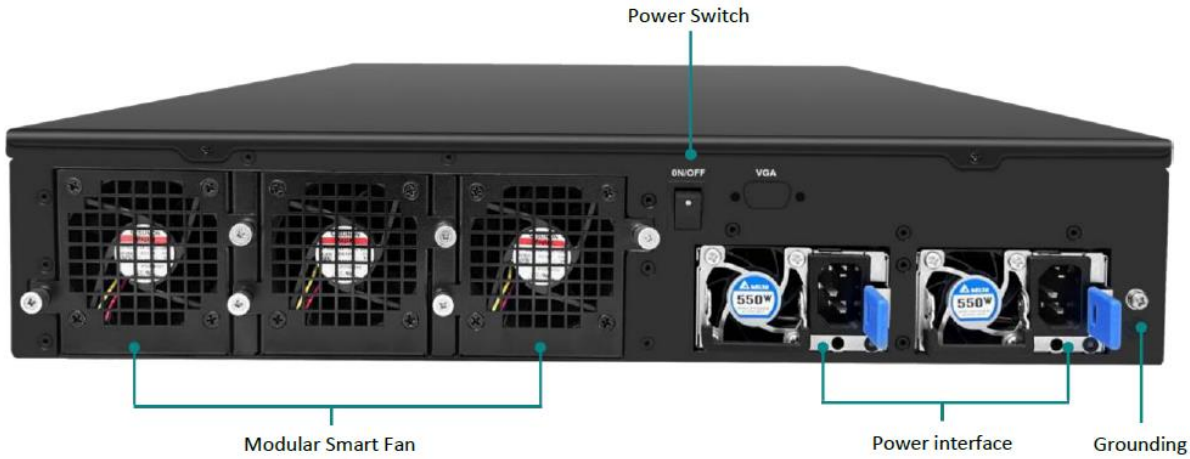
Other IP MPLS Router Models:

Simgenet HS818-V5 IP MPLS Router

Interface Layout



Front View



Rear View

2x 220VAC PSU

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

Technical Explanation – LREM8100PF-2QSF28-M (Intel® E810)

This network card is equipped with the Intel® E810 chipset and offers a total combined RX+TX bandwidth of approximately **150 Gbps**. However, this does not mean that each port cannot operate at 100 Gbps RX and 100 Gbps TX simultaneously. Data transmission can be asymmetric depending on the traffic pattern of the application.

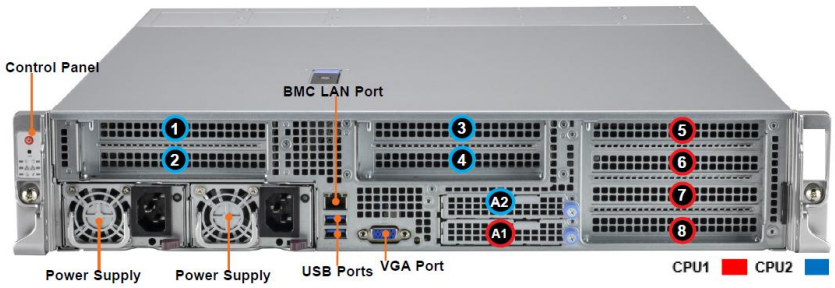
For example, one port may handle **100 Gbps in the RX direction** and **50 Gbps in the TX direction**. Such scenarios may vary based on application-specific traffic flow and usage models. In this case, the card can deliver a total of **150 Gbps** traffic on a single port (100 Gbps RX + 50 Gbps TX).
However, it is important to note the following:

This card **may not be suitable** for scenarios where both ports are expected to operate simultaneously at **100 Gbps RX and 100 Gbps TX** each (i.e., a total of **200 Gbps: 2 x (100 RX + 100 TX)**).
For such high-bandwidth requirements, it is recommended to use **two separate LREM8100PF-2QSF28-M cards**, each installed in a dedicated PCIe slot. This setup can provide up to **200 Gbps or more** of combined RX+TX bandwidth.

All slots of the **HS818-V5 chassis** support **1/10/40/100 Gbps** bandwidth.

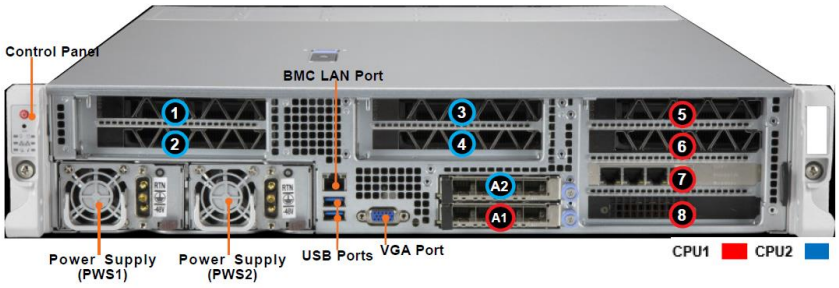
1/10/100/200 Gbps , 2x 48VDC PSU , 2x 220VAC PSU

Simgenet SMG1001 IP MPLS TE Router



2x 220VAC PSU

Simgenet SMG1001 IP MPLS TE Router



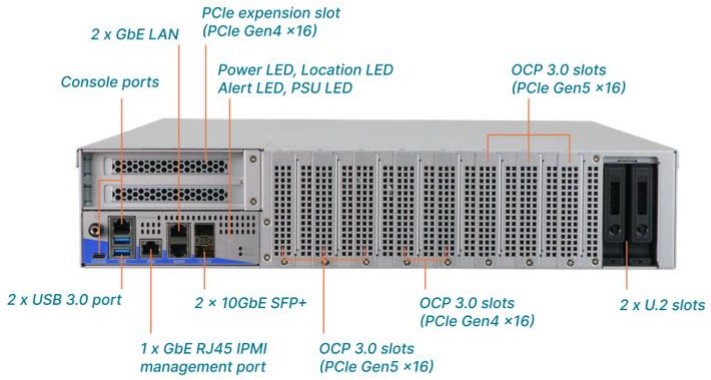
2x 48VDC PSU

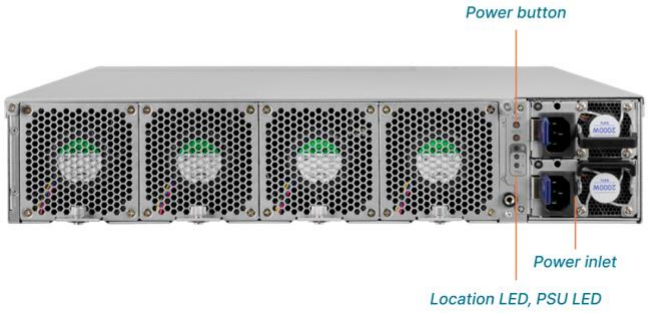
8x 100Gbps Fiber interface , 2x 220VAC PSU

Simgenet 9030 IP MPLS Router

1/10/100/200 Gbps Copper / Fiber Interface , 2x 220VAC PSU

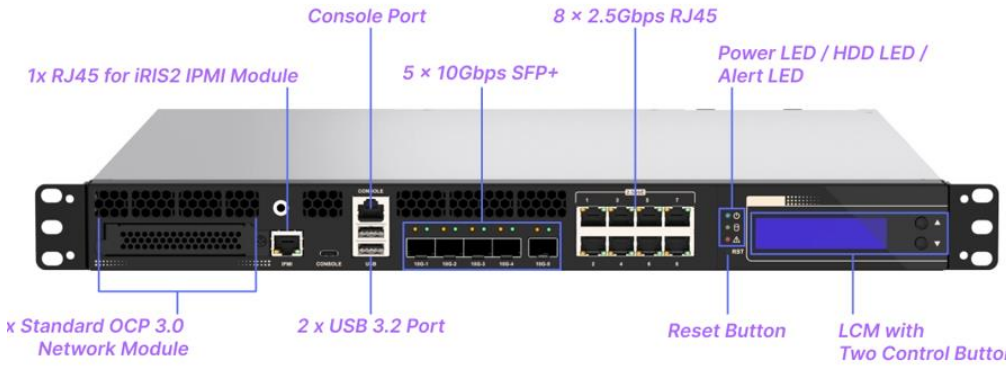
Simgenet 9040 IP MPLS Router

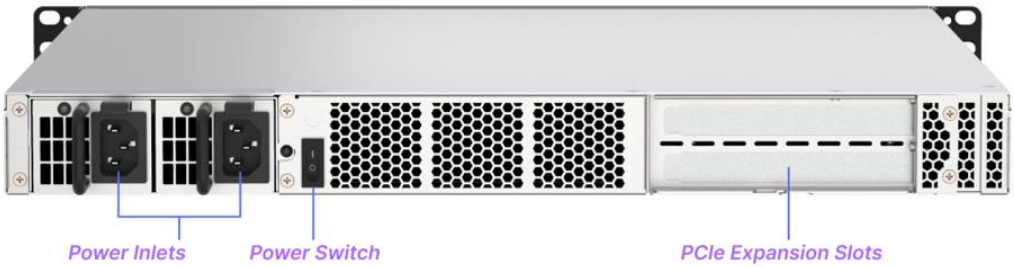




1/10 Gbps Fiber / Coper interface , 2x 220VAC PSU

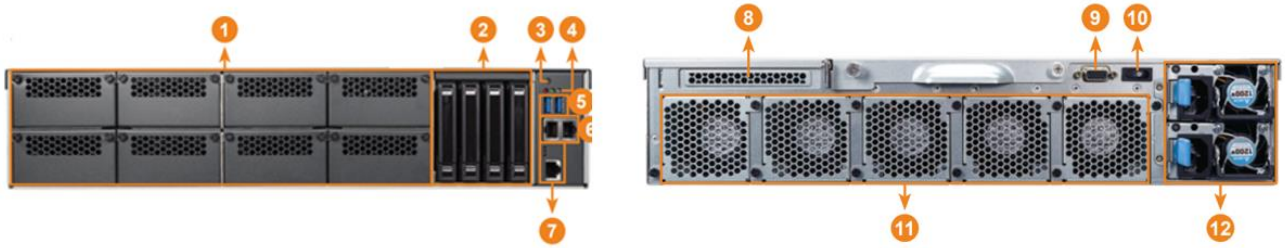
Simgenet 7030A IP MPLS Router





1/10/100/200 Gbps Copper / Fiber Interface , 2x 220VAC PSU

Simgenet SMG005 IP MPLS Router



1. 8 x Networking Module slot
2. 4 x 2.5" drive bay
3. Reset button
4. Power status
   HDD status
   Alert LED
5. 2 x USB 3.2 Gen 1
6. 1 x MGMT LAN
   1 x IPMI LAN
7. Console port
   1 x USB type C
   1 x RJ-45
8. PCIe expansion slot
9. VGA port
10. Power switch
11. 5 x hot-swappable fan
12. Power inlet

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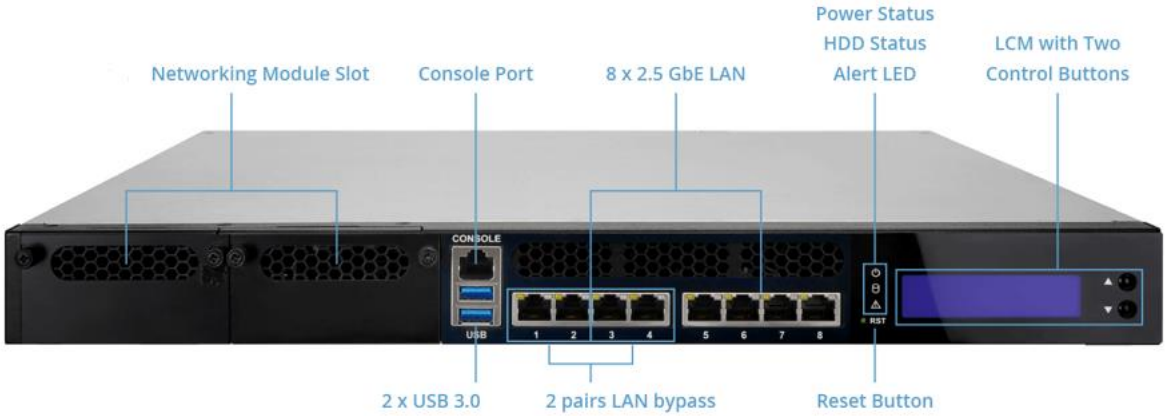
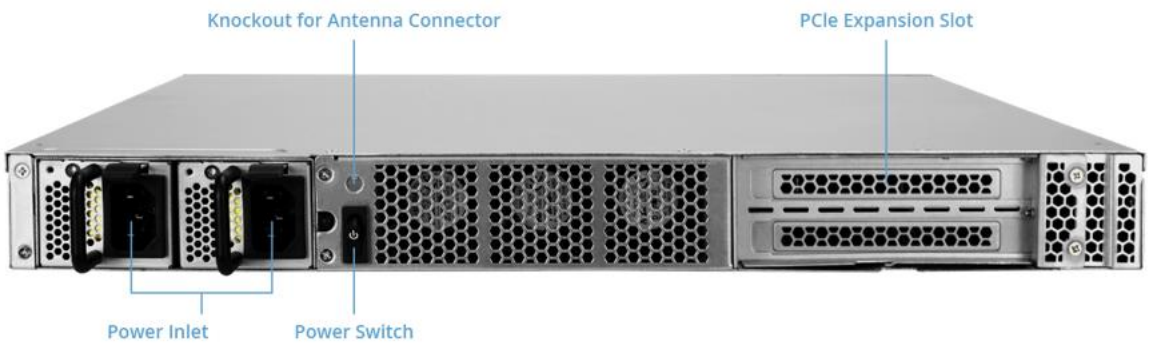
1 Gbps Copper Interface , 2x 220VAC PSU

Simgenet 5030 IP MPLS Router





Network Expansion Modules (For 2U Rack Mount System)



	PuIM-100G2SF-E810	PuIM-10G2SF/T-X710	PuIM-10G4SF/T-XL710
Chipset	Intel® E810	Intel® X710	Intel® XL710
Bypass	N/A	N/A	N/A
Host Interface	PCIe Gen4 x8	PCIe Gen3 x8	PCIe Gen3 x8
LAN Interface	QSFP28	SFP+	SFP+
Speed	1GbE / 10GbE / 25GbE / 50GbE / 100GbE	1GbE/10GbE	1GbE/10GbE
LAN Port Number	2	2	4
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)



	PuIM-10G4SF/T-XL710-BP	PuIM-1G4SF/T-I350	PuIM-1G8SF/T-I350
Chipset	Intel® XL710	Intel® I350-AM4	Intel® I350-AM4
Bypass	Two pairs	N/A	N/A
Host Interface	PCIe Gen3 x8	PCIe Gen2 x4	2 PCIe Gen2 x4
LAN Interface	SFP+	SFP	SFP
Speed	1GbE/10GbE	1GbE	1GbE
LAN Port Number	4	4	8
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)




	PuIM-1G4T/T-I350	PuIM-1G4T/T-I350-BP	PuIM-1G8T/T-I350	PuIM-1G8T/T-I350-BP
Chipset	Intel® I350-AM4	Intel® I350-AM4	Intel® I350-AM4	Intel® I350-AM4
Bypass	N/A	Two pairs	N/A	Four pairs
Host Interface	PCIe Gen2 x4	PCIe Gen2 x4	2 PCIe Gen2 x4	2 PCIe Gen2 x4
LAN Interface	RJ45	RJ45	RJ45	RJ45
Speed	1GbE	1GbE	1GbE	1GbE
LAN Port Number	4	4	8	8
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)

Network Expansion Modules (For 1U Rack Mount System)


	PulM-100G2SF-CX6	PulM-40G2SF-XL710
Chipset	Mellanox ConnectX-6	Intel® XL710
Bypass	N/A	N/A
Host Interface	PCIe Gen4 x16	PCIe Gen3 x8
LAN Interface	QSFP28	QSFP+
Speed	1GbE / 10GbE / 25GbE / 50GbE / 100GbE	1GbE/ 10GbE/ 40GbE
LAN Port Number	2	2
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing
Dimensions (mm)	162.2 (L) x 74 (W) x 41.85 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)



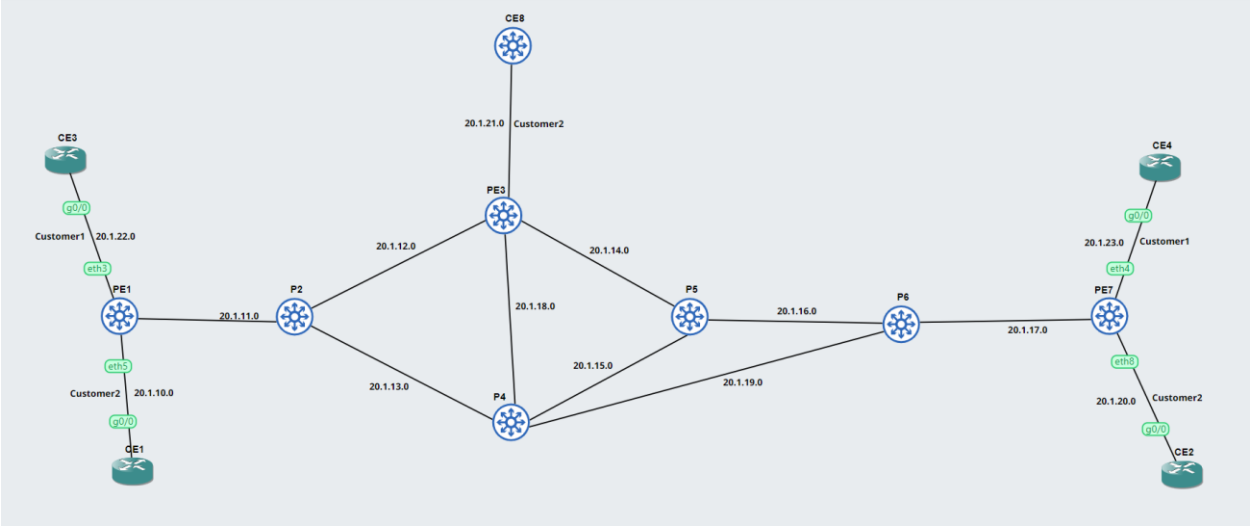
	PulM-10G2SF-X710	PulM-10G4SF-XL710	PulM-10G4SF-XL710-BP
Chipset	Intel® X710	Intel® XL710	Intel® XL710
Bypass	N/A	N/A	Two pairs
Host Interface	PCIe Gen3 x8	PCIe Gen3 x8	PCIe Gen3 x8
LAN Interface	SFP+	SFP+	SFP+
Speed	1GbE/ 10GbE	1GbE/10GbE	1GbE/10GbE
LAN Port Number	2	4	4
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)


	PulM-1G4SF-I350	PulM-1G8SF-I350
Chipset	Intel® I350-AM4	Intel® I350-AM4
Bypass	N/A	N/A
Host Interface	PCIe Gen2 x4	2 PCIe Gen2 x4
LAN Interface	SFP	SFP
Speed	GbE	GbE
LAN Port Number	4	8
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)



	PuIM-1G4T-I350	PuIM-1G4T-I350-BP	PuIM-1G8T-I350
Chipset	Intel® I350-AM4	Intel® I350-AM4	Intel® I350-AM4
Bypass	N/A	two pairs	N/A
Host Interface	PCIe Gen2 x4	PCIe Gen2 x4	2 PCIe Gen2 x4
LAN Interface	RJ45	RJ45	RJ45
Speed	GbE	GbE	GbE
LAN Port Number	4	4	8
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)

Example Mesh Network Topologies



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*

detect-multiplier (2-255): Bağlantı kaybı tespit zamanlayıcısını belirlemek için kullanılan algılama çarpanını yapılandırır. Bu değer, karşı tarafın iletim aralığı ile çarpılır.

- receive-interval (10-60000): Bu sistem tarafından kontrol paketlerinin alınabileceği minimum aralığı yapılandırır. Varsayılan değer 300 milisaniyedir.
- transmit-interval (10-60000): Bu sistem tarafından BFD kontrol paketlerini göndermek için kullanılmak istenen minimum iletim aralığıdır. Varsayılan değer 300 milisaniyedir.
- echo receive-interval <disabled|(10-60000)>: Bu sistemin echo paketlerini alabileceği minimum aralığı yapılandırır. Devre dışı bırakıldığında, bu sistem echo paketleri almak istemiyor anlamına gelir. Varsayılan değer 50 milisaniyedir.
- echo transmit-interval (10-60000): Bu sistem tarafından BFD echo paketlerini göndermek için kullanılmak istenen minimum iletim aralığıdır. Varsayılan değer 50 milisaniyedir.
- echo-mode: Echo iletim modunu etkinleştirir veya devre dışı bırakır. Bu mod varsayılan olarak devre dışıdır. Echo modu, karşı taraf da FRR olduğunda ve dağıtılmamış BFD kullanılmıyorsa çalışır.

- shutdown: Peer'i etkinleştirir veya devre dışı bırakır. Peer devre dışı bırakıldığında, karşı tarafa bir 'yönetimsel aşağı' mesajı gönderilir.
- passive-mode: Oturumu pasif olarak işaretler: Pasif bir oturum, bağlantıyı başlatmaya çalışmaz ve yanıtlamaya başlamadan önce karşı taraftan kontrol paketleri bekler.
- minimum-ttl (1-254): Yalnızca çoklu hop oturumları için, gelen bir BFD kontrol paketi için beklenen minimum TTL'yi yapılandırır. Bu özellik, paket doğrulama gereksinimlerini sıkılaştırmak ve diğer oturumların BFD kontrol paketlerini almamak için kullanılır.

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.

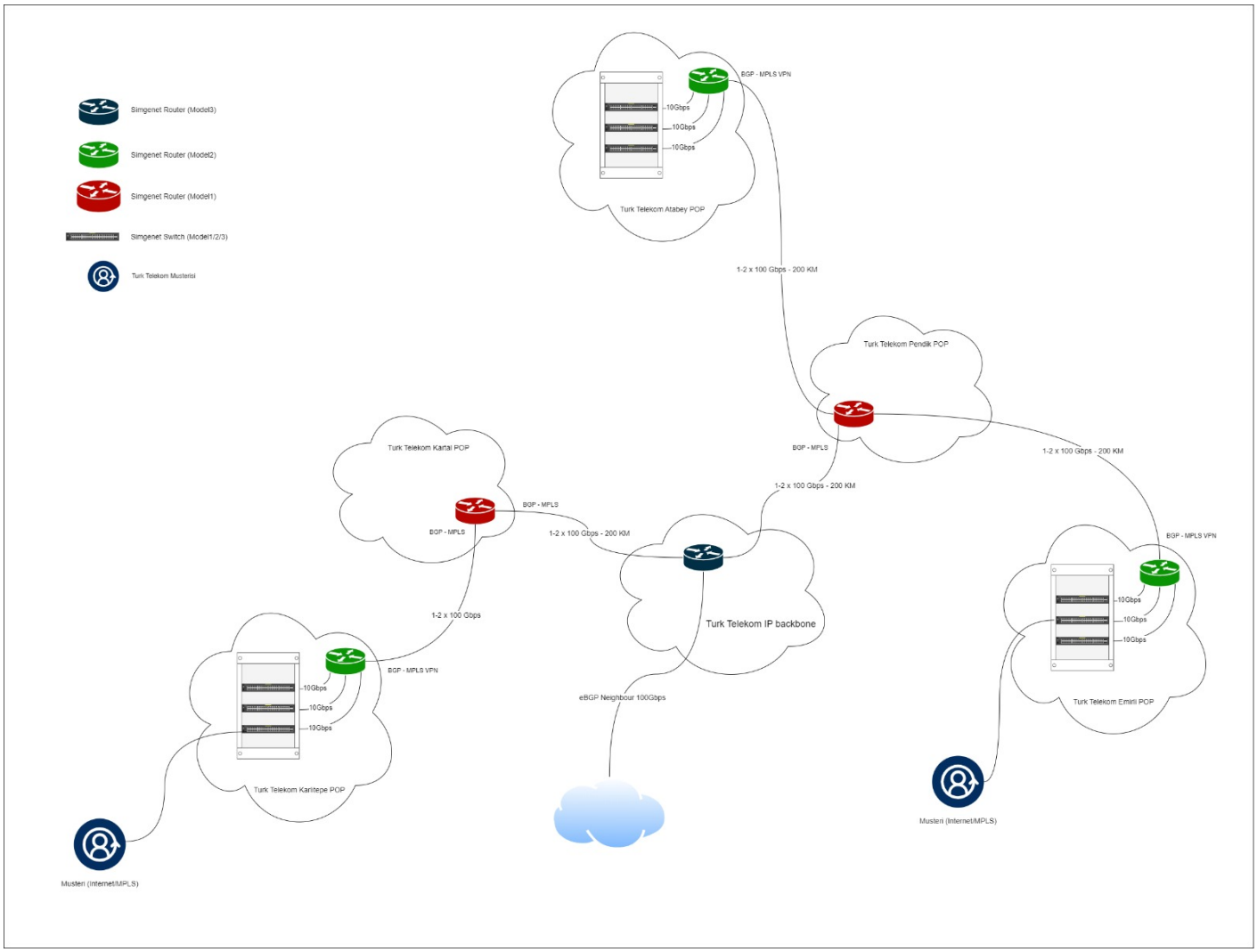
VRRPv3

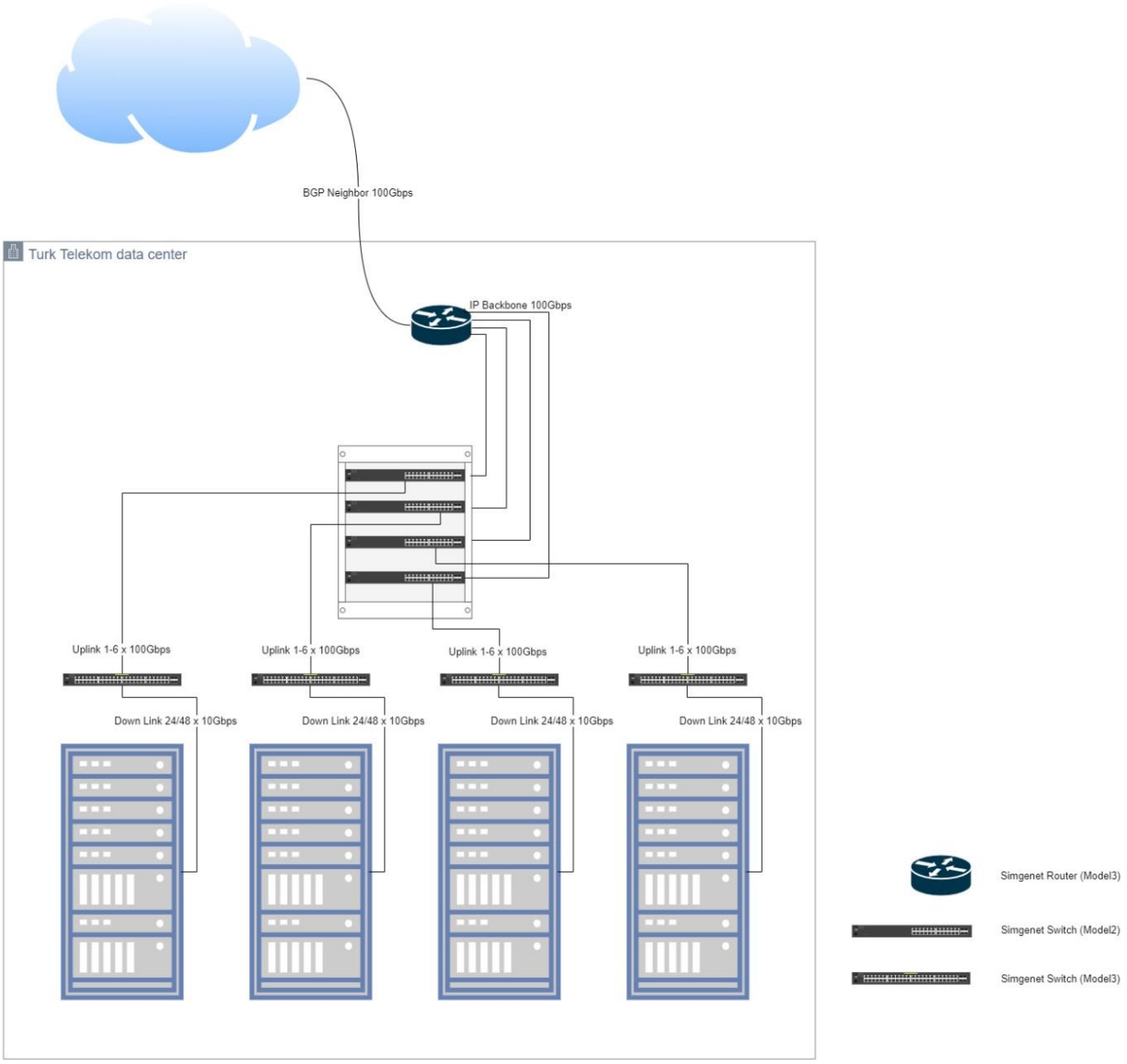
RFC 5798

BMP BMP (BGP Monitoring Protocol)

RFC 7854 and the more recent RFC 9069 are supported.

Example Applications :




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)

QUALITY STANDARDS:
Simgenet Industrial IP MPLS Router SMG1000 Series Model A / B:
Domestic Goods Certificate

İSTANBUL TİCARET ODASI

YERLİ MALI BELGESİ

TÜRKİYE ODALAR VE BORSALAR BİRLİĞİ TOBB

Belgenin Veriliş Tarihi : 19.09.2023 Belgenin Geçerlilik Tarihi : 19.09.2024 Belge No : 20231046118370

Üretici Ünvanı: SİMGENET MÜHENDİSLİK ENERJİ SANAYİ VE TİCARET LİMİTED ŞİRKETİ

İşyeri Adresi: ORHANTEPE MAH. BANKALAR CAD. TOMURCUK SOK. NO:12/A KARTAL/İSTANBUL

Üreticinin Vergi Kimlik No: 7700445332 TC Kimlik No: MERSİS No : 0770044533200001

Telefon:	555-6004506	E-posta:	ozgur.yazar@simgenet.net
Faks:		Web Adresi:	www.simgenet.com
Ticaret Sicil No:	95696-5	Üye Sicil No:	956965

Ürün Adı: Haberleşme sistemleri (enerji hatları, metro-tren-tramvay ulaşım hatları, üniversite kampüsleri, GSM operatörlerinin iller arası haberleşmeleri vb. için)

Ürün Kodu (PRODCOM/GTİP): 26.30.23.70.00 /

Teknik Özellikleri(Marka Adı, Modeli, Seri Numarası, Cinsi): Marka : SimgeNet Seri Numarası : SMG 1000 Series Cinsi : Bu belge "IP/MPLS TE Routing Platform" adlı ürün için düzenlenmiştir.

Kapasite Raporunun Tarih :20.06.2023 No : 24798 Geçerlilik Süresi :19.06.2025

Sanayi Sicil Belgesinin Tarih : 24.06.2021 No : 777327

Yerli Katkı Oranı : % 95,13

Ürünün Teknolojik Düzeyi (düşük/orta-düşük/orta-yüksek/yüksek)(Eurostat) : yüksek

Diğer bilgi ve belgeler :

İşbu belge Bilim, Sanayi ve Teknoloji Bakanlığı'nın 13/09/2014 tarih ve 29118 sayılı Resmi Gazetede yayımlanan " Yerli Malı Tebliği (SGM 2014/35) "ne istinaden ve TOBB tarafından hazırlanan " Yerli Malı Belgesinin Düzenlenmesi Uygulama Esaslarına " göre 19.09.2023 tarihinde düzenlenmiştir. Belgenin geçerlilik süresi veriliş tarihinden itibaren bir yıl geçerlidir.

Düzenleyen Oda/Borsa
İSTANBUL TİCARET ODASI

Onaylayan
İLHAN TÜRKOĞLU
Üye Hizmetleri Yöneticisi

Simgenet Endustriel IP MPLS Router SMG1000 Series Model A /B
CE Certificate:

ATTESTATION OF CONFORMITY

Name and Address of Attestation Holder:
SİMGENET MÜHENDİSLİK ENERJİ SAN. TİC. LTD. ŞTİ.
Orhantepe Mah. Bankalar Cad. Tomurcuk Sok No:12A,
Kartal - İstanbul

Name and Address of Manufacturer:
SİMGENET MÜHENDİSLİK ENERJİ SAN. TİC. LTD. ŞTİ.
Orhantepe Mah. Bankalar Cad. Tomurcuk Sok No:12A,
Kartal - İstanbul

Brand:

Product Name:
Universal IP MPLS TE Routing Platform

Product Model:
SMG1000 Series

Document Number
SE-1194-01-110923

Date of Issue:
11.09.2023

Expiration Date:
11.09.2024

Test Report Number:
LVD23-064
EMC23-207
EMC23-208

Test Required:
EN 55032:2015/A11/A1:2020
EN 55035:2017/A11:2020
EN 61000-6-2:2019
EN 61000-6-4:2019
IEC 62368-1:2018

The product meets the technical requirement of the above standards as mentioned in the reference test reports and hence fulfils the technical requirements of the following directives

2014/35/EU Low Voltage Directive
2014/30/EU Electromagnetic Compatibility Directive

This document is only valid for the equipment and configuration described, in conjunction with the test data detailed above reference test reports. Document was issued on voluntary basis and does not imply meeting Notified Body conformity assessment procedure for the product.
The CE Mark, under the responsibility of the manufacturer or the importer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

SIGNATURE

CGS TEST HİZMETLERİ TEKNİK KONTROL VE BELGELENDİRME ANONİM ŞİRKETİ
Ferhatpaşa Mahallesi 23. Sk. No:17/1 Ataşehir İstanbul/TÜRKİYE
www.cgstestmerkezi.com
Page: 1/1

Simgenet Endustriel IP MPLS Router SMG1000 Series Model A /B

LVD Certificate TS EN LVD23-064

ELDAS TEST VE KALİBRASYON MERKEZİ

DENEY RAPORU
TEST REPORT

AB-1532-T
LVD23 - 064
08-23

ilac-MRA

TÜRKAK
Test
TS EN ISO/IEC 17025
AB-1532-T

Müşteri Adı / Adresi: *Client name / address:*	SİMGENET MÜHENDİSLİK ENERJİ SAN.TİC.LTD.ŞTİ. Orhantepe Mah. Bankalar Cad. Tomurcuk Sok No:12A Kartal / İstanbul
İş Emri No: *Work Order No:*	230621-01
Test Edilen Ürün: *Items tested:*	Evresel IP MPLS TE Yönlendirme Platformu Universal IP MPLS TE Routing Platform
Açıklamalar: *Remarks:*	DGC'ye TS EN 62368-1 standardı uyarınca sayfa 7'deki testler uygulanmıştır. Detaylı Bilgi için 7. sayfaya bakınız. The tests on page 7 were applied to EUT according to TS EN 62368-1 standart. Check Page 7 for further information.
Numune Kabul Tarihi: *The date of receipt of test item:*	26.06.2023
Deney Tarihi: *Date of test:*	31.07.2023 - 07.08.2023
Yayımlandığı Tarih: *Date of Publication:*	08.08.2023

Onay Tarihi : 08.08.2023
Date of Approval
Mühür / Seal

Rapor Sorumlusu
Person in Charge of Test
Eda Nur SOYSAL

Laboratuvar Müdürü
Head of Testing Laboratory
Oktay TOSUN

Türk Akreditasyon Kurumu (TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği (EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanınma antlaşmasını imzalamıştır.
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The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Bu rapor: Firmamıza ulaşan numunelere deney ve/veya deneyler uygulanarak elde edilmiştir. Müşteriye ait diğer numuneleri kapsamaz.
This report was prepared after applying test/tests to the samples that are sent to our company.

Note that this report does not involve other samples of the customer.

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Simgenet Endustriel IP MPLS Router SMG1000 Series Model A /B

EMC Certificate - TS EN 61000-6-2, 61000-6-4

All tests have been conducted at Heavy Industry Level 3 standards.

ELDAS TEST VE KALİBRASYON MERKEZİ

DENEY RAPORU
TEST REPORT

AB-1532-T
EMC23-208
07-23

Müşteri Adı / Adresi: *Client name / address:*	SİMGENET MÜHENDİSLİK ENERJİ SAN.TİC.LTD.ŞTİ. Orhantepe Mah. Bankalar Cad. Tomurcuk Sok No:12A Kartal / İstanbul
İş Emri No: *Work Order No:*	230621-01
Test Edilen Ürün: *Items tested:*	Evrensel IP MPLS TE Routing Platform, SMG1000 Series Universal IP MPLS TE Routing Platform, SMG1000 Series
Açıklamalar: *Remarks:*	DGC'ye EN 61000-6-2:2019, EN 61000-6-4:2019 standardı uyarınca testler uygulanmıştır. Detaylı Bilgi için 6. sayfaya bakınız. Test were applied to EUT according to EN 61000-6-2:2019, EN 61000-6-4:2019 standart. Check Page 6 for further information.
Numune Kabul Tarihi: *The date of receipt of test item:*	05.07.2023
Deney Tarihi: *Date of test:*	05.07.2023 - 06.07.2023
Yayımlandığı Tarih: *Date of Publication:*	08.09.2023

Onay Tarihi : 08.09.2023
Date of Approval
Mühür / Seal

Rapor Sorumlusu
Person in Charge of Test
Eda ŞENER

Laboratuvar Müdürü
Head of Testing Laboratory
Oktay TOSUN

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The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Bu rapor: Firmamıza ulaşan numunelere deney ve/veya deneyler uygulanarak elde edilmiştir. Müşteriye ait diğer numuneleri kapsamaz.
This report was prepared after applying test/tests to the samples that are sent to our company.

Note that this report does not involve other samples of the customer.

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Simgenet Endustriel IP MPLS Router SMG1000 Series Model A /B

EMC Certificate TS EN 55032-35

ELDAS TEST VE KALİBRASYON MERKEZİ

DENEY RAPORU
TEST REPORT

AB-1532-T
EMC23-207
07-23

TÜRKAK Test TS EN ISO/IEC 17025 AB-1532-T

Müşteri Adı / Adresi: *Client name / address:*	SİMGENET MÜHENDİSLİK ENERJİ SAN.TİC.LTD.ŞTİ. Orhantepe Mah. Bankalar Cad. Tomurcuk Sok No:12A Kartal / İstanbul
İş Emri No: *Work Order No:*	230621-01
Test Edilen Ürün: *Items tested:*	Evrensel IP MPLS TE Routing Platform, SMG1000 Series Universal IP MPLS TE Routing Platform, SMG1000 Series
Açıklamalar: *Remarks:*	DGC'ye EN 55032:2015/A11/A1:2020, EN 55035:2017/A11:2020 standardı uyarınca testler uygulanmıştır. Detaylı Bilgi için 6. sayfaya bakınız. Test were applied to EUT according to EN 55032:2015/A11/A1:2020, EN 55035:2017/A11:2020 standart. Check Page 6 for further information.
Numune Kabul Tarihi: *The date of receipt of test item:*	05.07.2023
Deney Tarihi: *Date of test:*	05.07.2023 - 06.07.2023
Yayımlandığı Tarih: *Date of Publication:*	08.09.2023

Onay Tarihi : 08.09.2023
Date of Approval
Mühür / Seal

Rapor Sorumlusu
Person in Charge of Test
Eda ŞENER

Laboratuvar Müdürü
Head of Testing Laboratory
Oktay TOSUN

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This report was prepared after applying test/tests to the samples that are sent to our company.

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