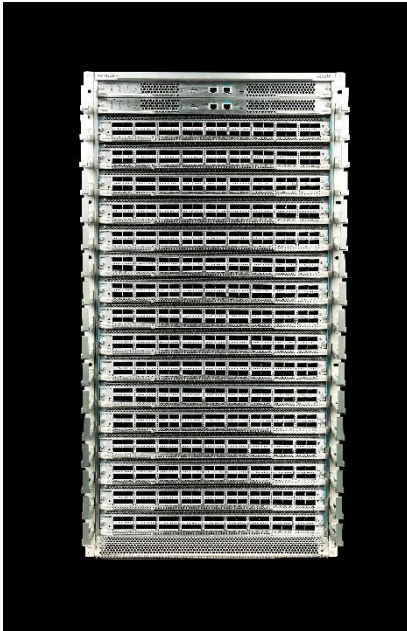


Introduction to RGOS 11.X High-end Data Center Switches (N18000-X)

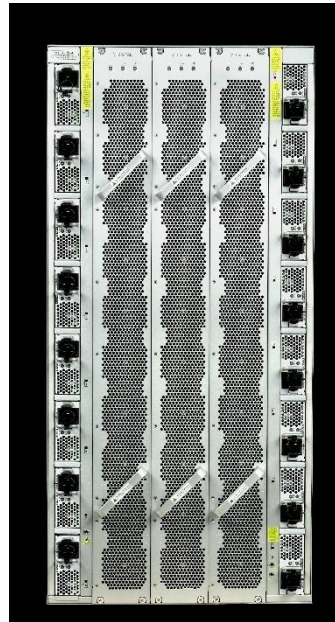
Contents

- **Product Overview**
- Product Forms
- Product Software and Hardware Features
- Typical Networking Applications

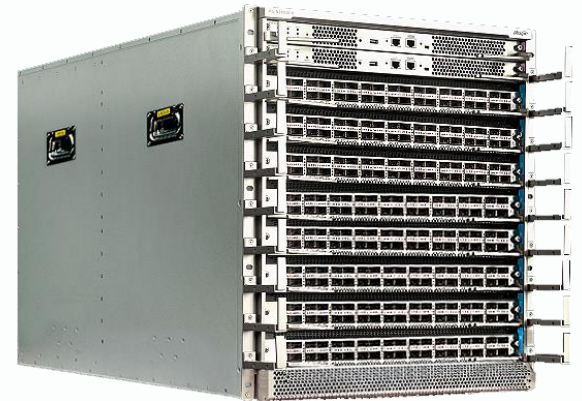
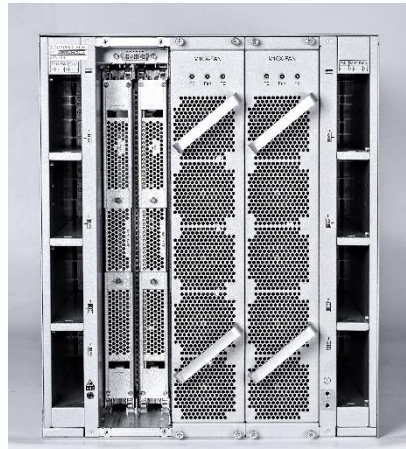
Product Overview



N18018-X

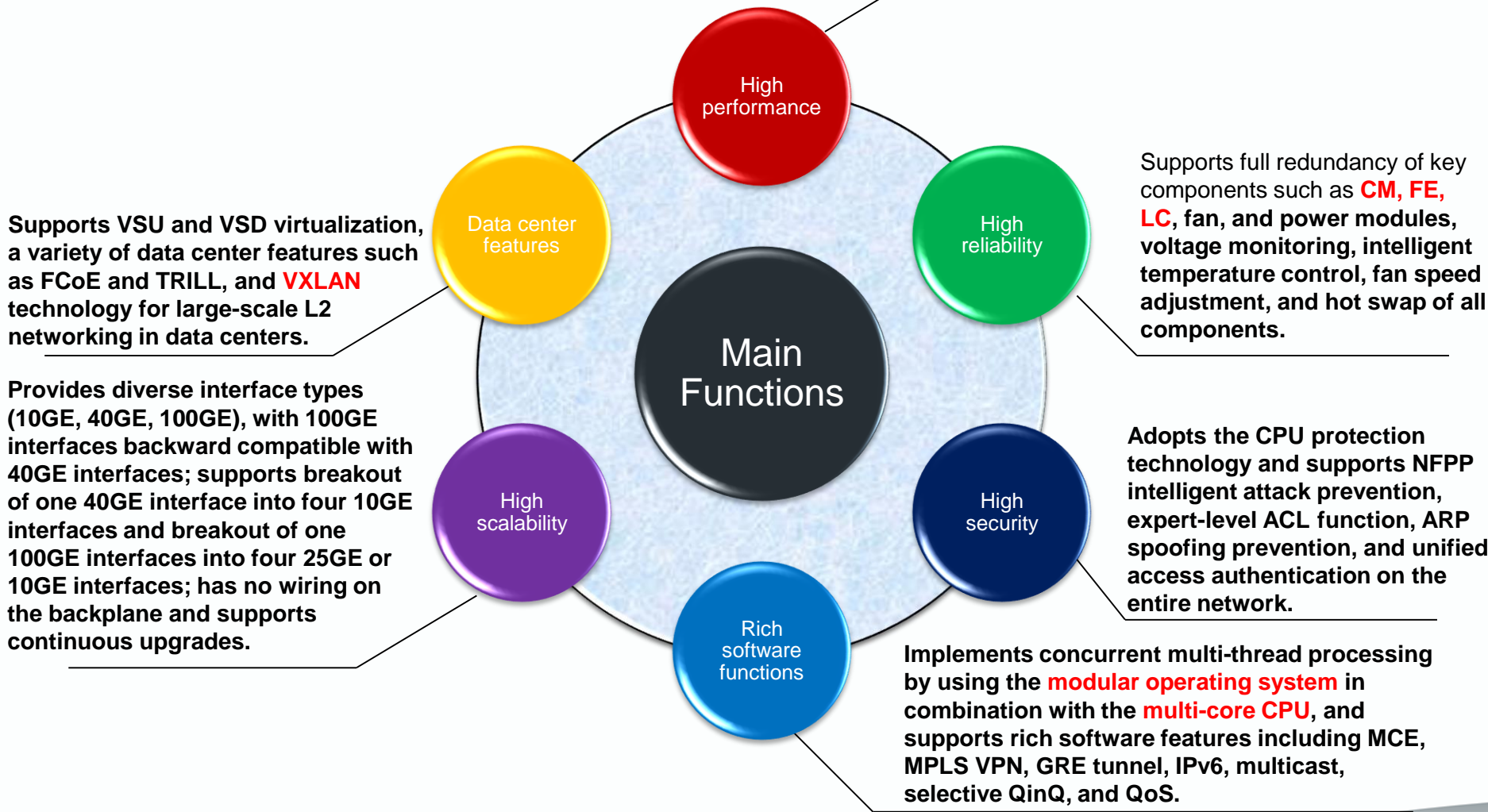


N18010-X



Product Overview

Adopts a Clos orthogonal architecture and supports up to **36*100GbE** line-rate interfaces on a line card, 200 ms buffer capacity, and an **ultra-large ARP table size**.



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RG-N18018-X

■ Interfaces and extension slots:

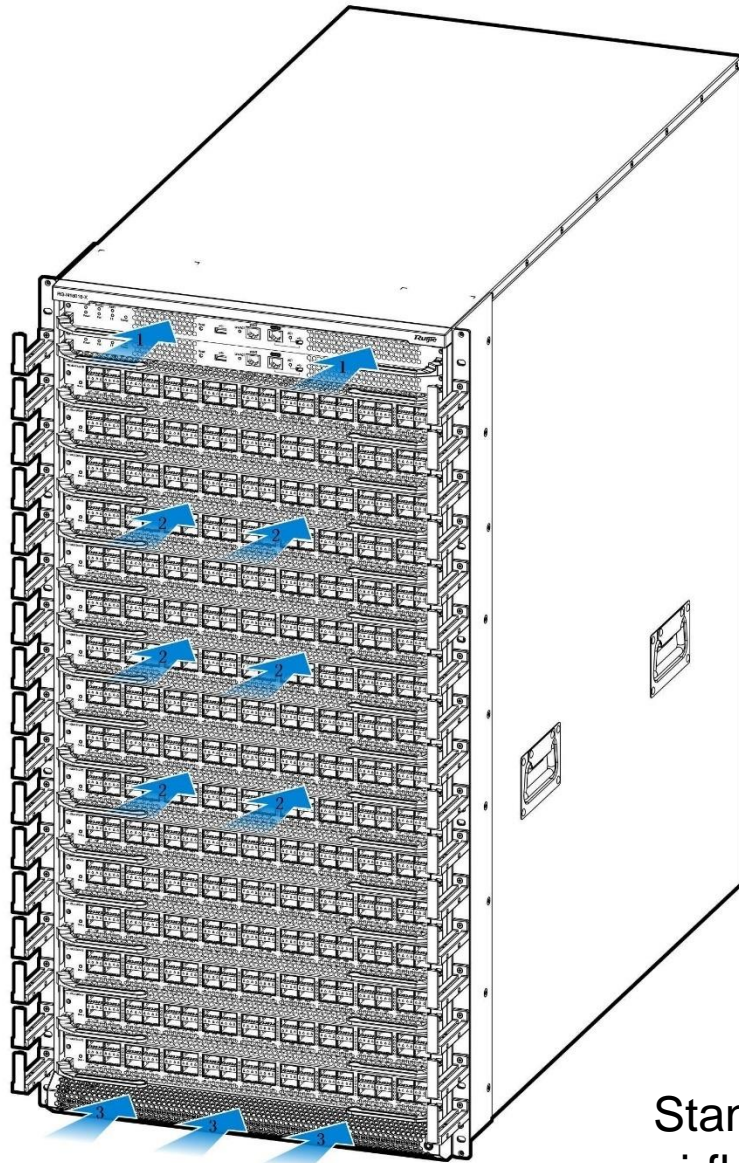
- Supports 10GbE, 40GbE, and 100GbE interfaces.
- Provides 2 supervisor slots, 6 switch fabric slots, and 16 line card slots.
- Supports console interfaces (RJ45).
- Supports 10/100/1000M management interfaces (RJ45).
- Supports USB 2.0 and SD interfaces.

■ Physical interfaces:

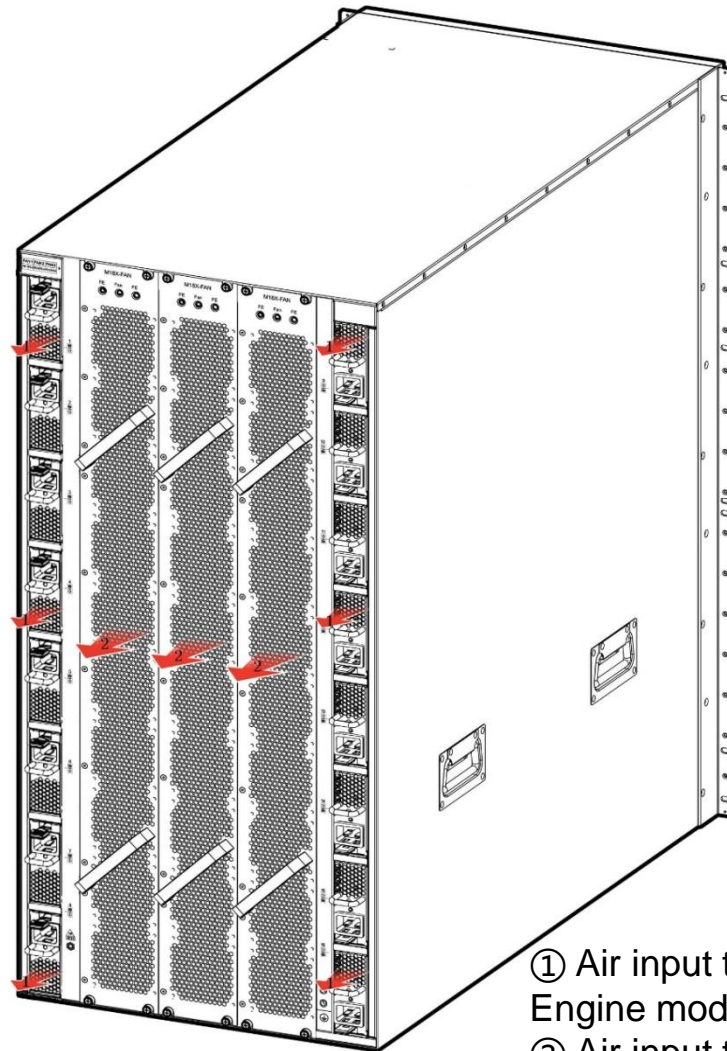
- Dimensions: 442 mm x 1017 mm x 21 U
- Power supply: 8+8 wide-voltage power modules, supporting **high-voltage DC (HVDC) power supply** and 802.3at capability (30 W power per port), and providing up to 95% of power efficiency
- Fans: three hot swappable fan trays, front-to-back airflow in the chassis



N18000-X Chassis Heat Dissipation



Standard front-to-back
airflow design



- ① Air input to Supervisor Engine modules
- ② Air input to service modules
- ③ Air input to power modules

Power Module

Three-dimensional view of an RG-PA2700I power module



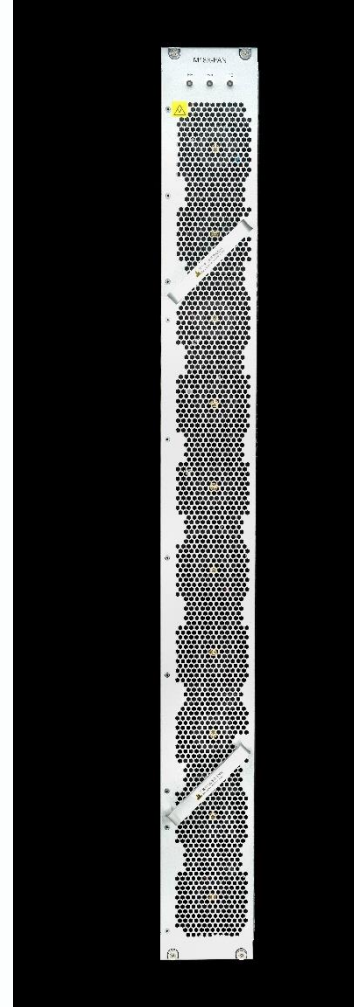
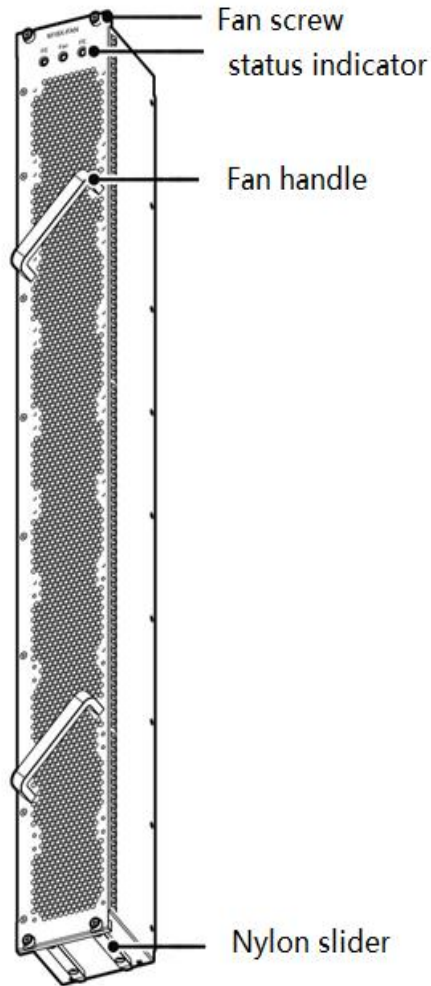
Power Module

Specifications

Module Model	RG-PA2700I
Rated Voltage Range	100-240V~ ; 50/60Hz
Max Voltage Range	90-290V~ ; 47-63Hz
Max Power Output	100-105V~Power : 1200W 105-176V~Power : 1450W 175-200V~Power : 2400W 200-240V~Power : 2700W
Input Leakage Current	192VDC~400VDC Power : 2700W ;
Weight	Net Weight: 2.05KG
Power Cord Requirement	16A power cord

ID	Meaning	LED	
		IN	OUT
1	The module is operational	Solid green	Solid green
2	There is external power supply. The power module is not in use.	Off	Solid red
3	Overcurrent	Solid green	Solid red
4	Output overcurrent protection	Solid green	Solid red
5	Temperature alarm	Solid green	Solid orange
6	Over-temperature protection	Solid green	Solid red
7	PSR on/off	Solid green	Solid red

Fan Module



Fan Module

Indicator description

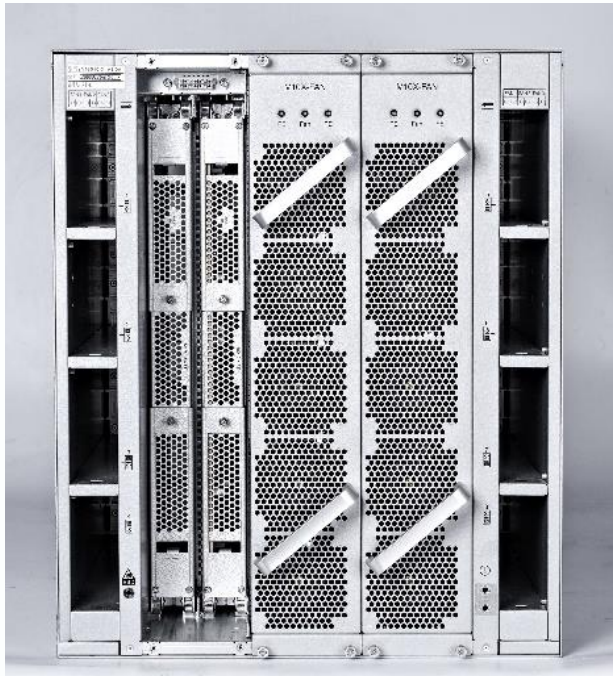
Indicator	Status	Description
Status indicator	Off	The fan module receives no power input.
	Steady green	The fan module is working normally.
	Steady red	The fan module is faulty.
FE indicators (two, arranged horizontally)	Off	The corresponding FE module is not powered on.
	Steady red	The corresponding FE module does not work normally.
	Blinking green	The corresponding FE module is initializing. If the indicator keeps blinking, the FE module is faulty.
	Steady green	The corresponding FE module has completed initialization and is ready for data switching.

Characteristics

Function	Description
Status monitoring	Monitors rotation speed of fans and reports alarms on faults.
Automatic speed adjustment	Automatically adjusts the rotation speed of fans based on equipment temperature.
Hot swap	Allows hot swap of the fan tray.

The N18018-X and N18010-X switches use fan trays matching their models:
An M18018X-FAN module contains nine fans, and an M18010X-FAN contains five fans.

FE Model



Note: when the FE module is installed, the fan module should be pulled out first.

	M18018X-FE-C II	M18018X-FE-C V	M18010X-FE-C II	M18010X-FE-C I
CPU	Four-core CPU , each core with the clock speed of 1.0G	Four-core CPU , each core with the clock speed of 1.0G	Four-core CPU , each core with the clock speed of 1.0G	Four-core CPU , each core with the clock speed of 1.0G
Nor flash	8MB	8MB	8MB	8MB
NAND Flash	512MB	512MB	512MB	512MB
SDRAM	DDR3 1GB	DDR3 4GB	DDR3 1GB	DDR3 1GB
Forwarding capacity	5.6T	11.25T	5.6T	2.8T

Line Card

N18000-X switches support three types of line cards:

M18000X-48XS2CQ-CB, M18000X-36QXS-CB, M18000X-18CQ-CB

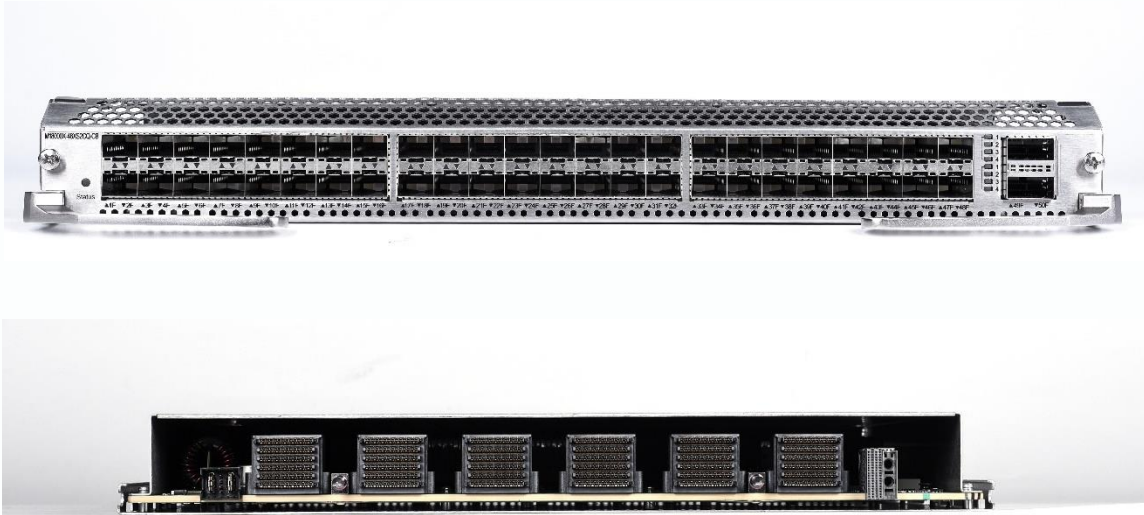


These line cards have a protection cover to prevent damage to components inside.

Caution:

1. Line cards of N18000-X and N18000 switches are not interchangeable. That is, N18000-X line cards cannot be used in an N18000 chassis, and N18000 line cards cannot be used in an N18000-X chassis.
2. Considering thickness of the PCB, N18000-X line cards do not provide RJ45 interfaces.

M18000X-48XS2CQ-CB



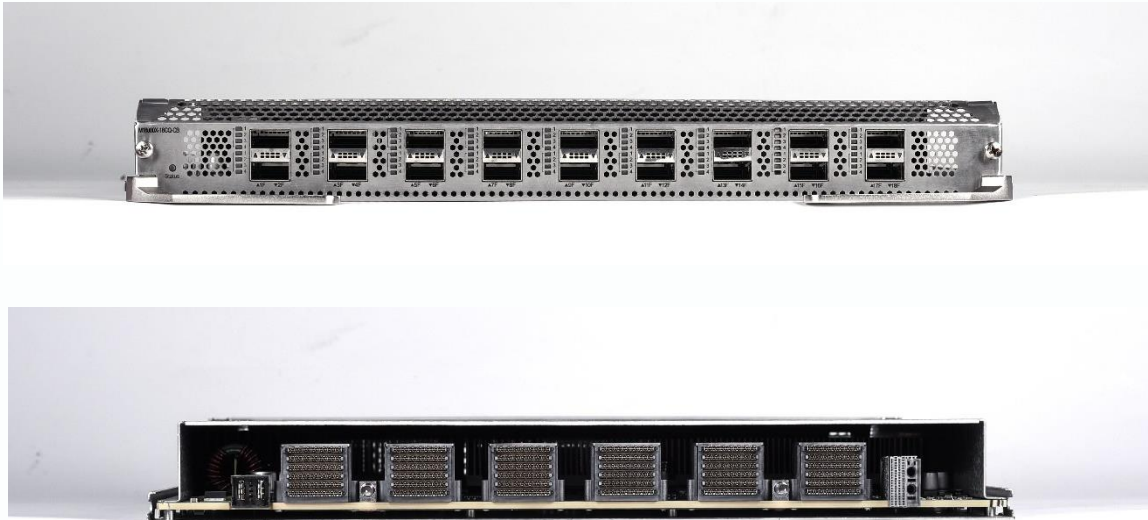
1. The line card provides 48 10G optical interfaces (using 48 SFP+ or SFP transceiver modules) and two 100G optical interfaces (using two QSFP28 or QSFP+ transceiver modules).
2. The line card and transceiver modules are all hot swappable.
3. One M18000-48XS2CQ-CB line card supports one VSD.
4. The 100G interfaces are backward compatible with 40G interfaces, and each 100G interface can be divided into four 25G or 10G interfaces.

M18000X-36QXS-CB



1. The line card provides 36 40G optical interfaces (using 36 QSFP+ transceiver modules).
2. The line card and transceiver modules are all hot swappable.
3. One M18000-36QXS-CB line card supports three VSDs.
4. A 40G interface can be divided into four 10G interfaces. 40G interfaces are numbered from 1 (different from the M18000-24QXS-CB line card).

M18000X-18CQ-CB



1. The line card provides 18 100G optical interfaces (using 18 QSFP28 or QSFP+ transceiver modules).
2. The line card and transceiver modules are all hot swappable.
3. One M18000-18CQ-CB line card supports three VSDs.
4. The 100G interfaces are backward compatible with 40G interfaces, and each 100G interface can be divided into four 25G or 10G interfaces.

Comparison of Line Card Specifications

Product model	M18000X-36QXS-CB	M18000X-18CQ-CB	M18000X-48XS2CQ-CB
CPU	10-core processor, 1.1 GHz clock speed per core	10-core processor, 1.1 GHz clock speed per core	4-core processor, 1.0 GHz clock speed per core
BootROM	8 MB	8 MB	8 MB
Flash memory	1 GB	1 GB	1 GB
SDRAM	DDRIII 4 GB, scalable to 8 GB	DDRIII 4 GB, scalable to 8 GB	DDRIII 4 GB, scalable to 8 GB
Interface type	36 QSFP+ interfaces, supporting 40G QSFP+ and 40G 1-to-4 transceiver modules	18 QSFP28 interfaces, supporting 100G QSFP28 transceiver modules	48 SFP+ interfaces, supporting 10G SFP+ and 1G SFP transceiver modules 2 QSFP28 interfaces, supporting 100G QSFP28, 40G QSFP+, and 40G 1-to-4 transceiver modules
Transmission medium	40GBASE-SR4 multimode fiber and 40GBASE-LR4 single-mode fiber	100GBASE-SR4 100G transceiver module, short reach, QSFP28 100GBASE-LR4 100G transceiver module, long reach, QSFP28	10G fiber, copper cable, 100G transceiver module
Indicator	Status and Link/ACT indicators	Status and Link/ACT indicators	Status and Link/ACT indicators
Hot swap	Supported	Supported	Supported
Power consumption	482 W	475 W	275 W

Supervisor Engine

N18000-X switches support two types of Supervisor Engine modules:



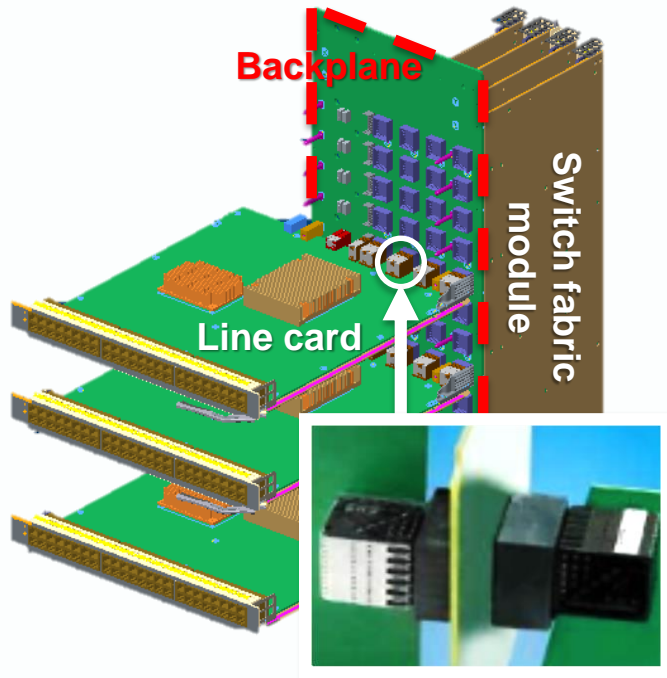
Product model	M18000X-CM	M18000X-CM II
CPU	4-core processor, 1.0 GHz clock speed per core	32-core processor, 1.0 GHz clock speed per core
BootROM	8 MB	8 MB
Flash memory	16 GB	16GB
SDRAM	DDRIII 16 GB DIMM	DDRIII 32 GB DIMM
External interfaces	One management console interface, one 10/100/1000M MGMT interface, one USB interface, and one Mini USB interface	One management console interface, one 10/100/1000M MGMT interface, one USB interface, and one Mini USB interface
Button	One Reset button	One Reset button
Power consumption		96 W
Hot swap	Supported	Supported
Management redundancy	Supported	Supported

Caution: Instantly pressing the button triggers information collection, and holding down the button triggers information collection and resets the Supervisor Engine.

Contents

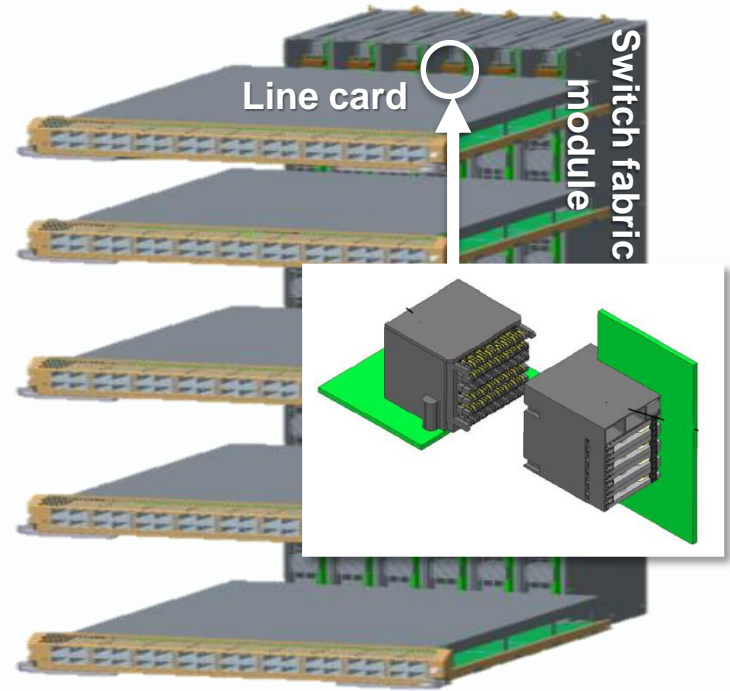
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| Zero Backplane Architecture Design



Zero wiring on the backplane

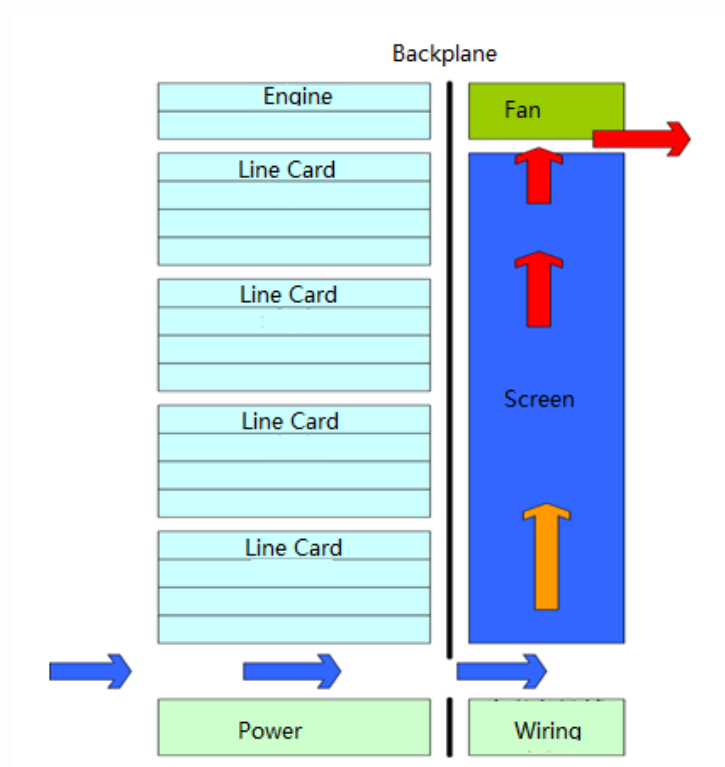
Irreplaceable fixed backplane
Switching capacity restricted by the backplane/connector speed



Zero backplane

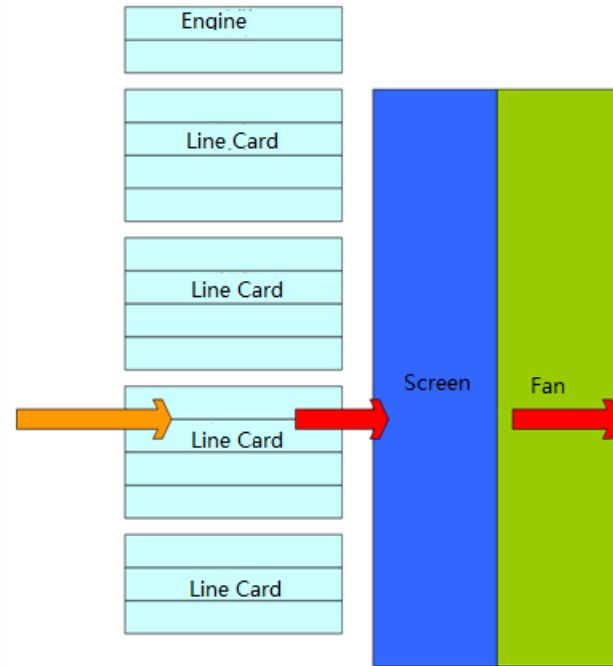
Direct connection
Large-span upgrade through card replacement

Cooling Airflow for FE Switch Fabric Modules



Zero wiring on the backplane

Zigzag airflow



Zero backplane

Straight-through airflow

Contents

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Government/Enterprise Data Center

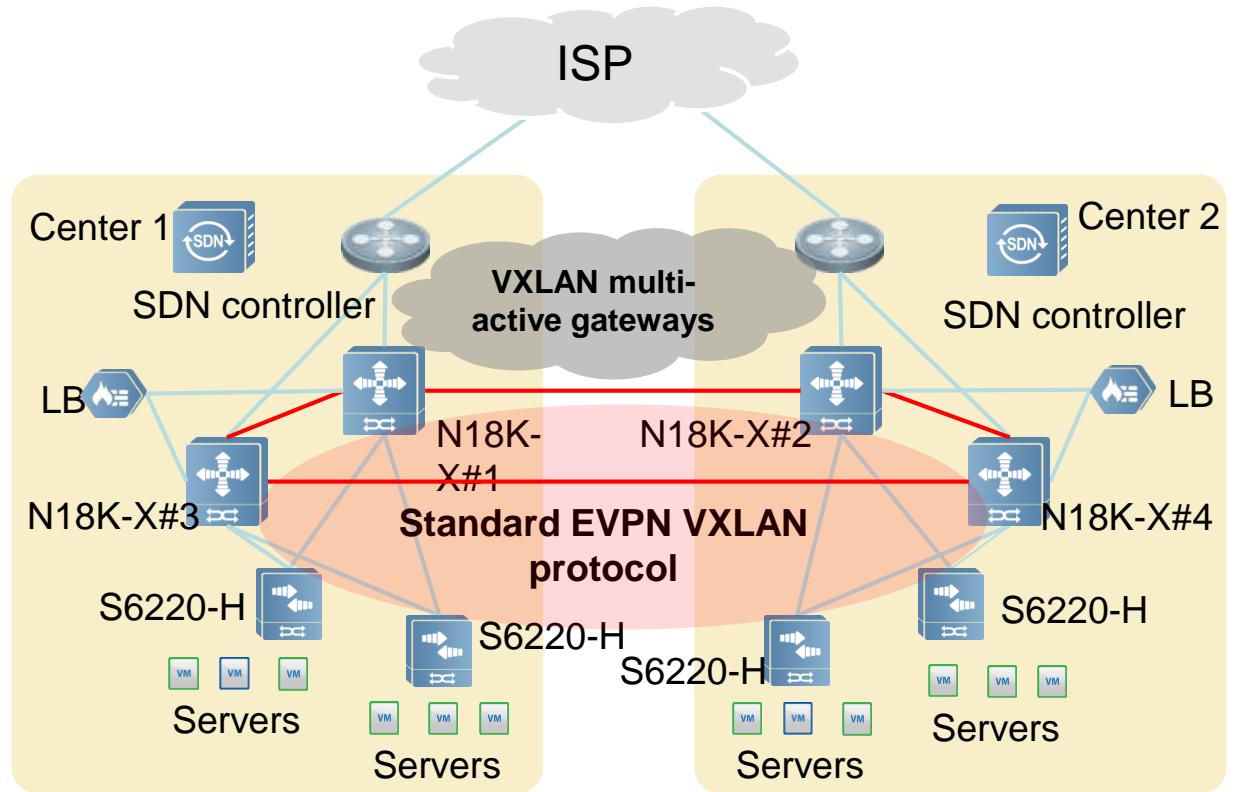
Solution Value

VXLAN multi-active gateways with simple configuration and high reliability

Standard EVPN VXLAN protocol with high compatibility

No flooding network between data centers

Automated management through cooperation of SDN controllers and cloud platform



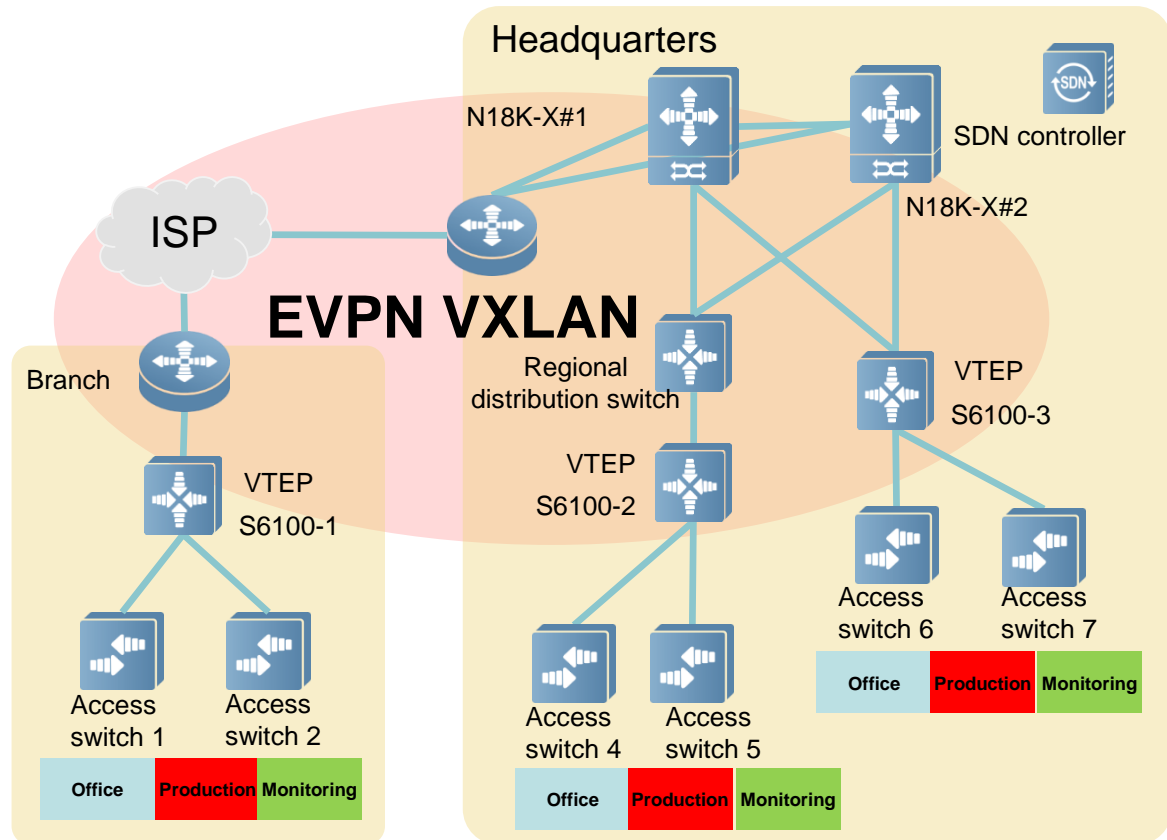
Virtualized Campus Network

Solution Value

No need to replace intermediate devices

Full isolation between headquarters and branch networks

Quick service failure diagnosis and fine-grained control via SDN



Ultra-large Internet Data Center

Solution Value

Up to 500,000 VMs supported

Static VXLAN tunnel delivery by an SDN controller

SDN service visualization
Location of VM communication failures in 1 minute

