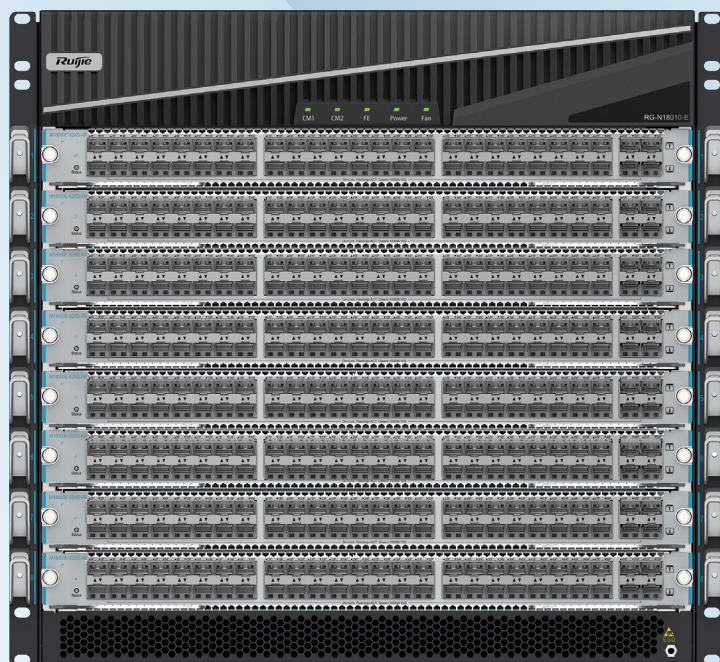




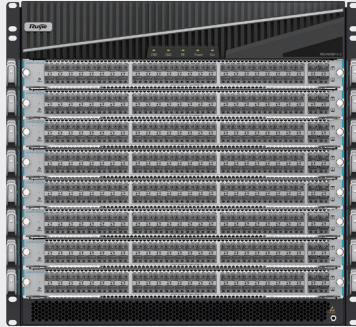
# RG-N18000-E Series (Newton) Next-Generation Converged Core Switches



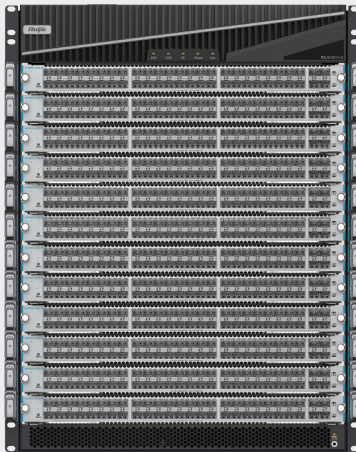
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## Product Pictures



Front View of the RG-N18010-E



Front View of the RG-N18014-E

## Product Overview

Ruijie Networks' Newton 18000-E series (RG-N18000-E for short) switches are core switches designed by Ruijie Networks for next-generation cloud architecture networks. Characterized by features of cloud data centers and cloud campus networks, the RG-N18000-E achieves cloud architecture network integration, virtualization, and flexible deployment.

The RG-N18000-E employs the advanced software and hardware architecture design and is one of the core switches with high configurations in the industry. It uses the advanced CLOS multi-level multi-plane switching architecture to deliver continuous bandwidth upgrade and service support capabilities. Using the modular operating system (OS), the RG-N18000-E supports IPv4, IPv6, and other network services, meeting application requirements of the Ethernet in the future. In addition, the RG-N18000-E supports virtualization features such as Virtual Switching Unit (VSU). VSU simplifies network architectures of customers to improve O&M efficiency.

The RG-N18000-E comes into two models: RG-N18014-E and RG-N18010-E. They can adapt to different requirements on the port density and performance of different network scales, providing a strong device support for cloud architecture network construction. The two models can be deployed in data centers, MANs, campus networks, or data center and campus network convergence scenarios as needed.

## | Product Highlights

- Employs the advanced CLOS multi-level multi-plane architecture to separate the control plane from the forwarding plane. This ensures non-blocking switching at line rate among all interfaces, and delivers continuous bandwidth upgrade and service support capabilities.
- Adopts the orthogonal design for line cards and switch fabric modules, and transmits traffic across line cards to the switch fabric modules through the orthogonal connector for switching. This achieves zero cabling on the backplane and low transmission loss, which greatly reduces the signal attenuation and improves the service traffic transmission efficiency in the switch.
- Provides high-density 40GE and 100GE Ethernet ports to cope with sustainable development needs of cloud computing data centers and requirements for core switches in the next decade of network development.
- Uses the fully-decoupled and modular operating system RGOS. Each component is independent, ensuring nonstop services. The service components are completely decoupled and provide self-repair in case of failures, ensuring high system reliability.
- Supports hot upgrade for functions of each service component and expands functions online to ensure service continuity.
- Supports SDN with integration into Ruijie solution to achieve rapid deployment and automated operation of campus networks; provides lightweight access control and one-click approval, ensuring fast and secure terminal access; offers network-wide traffic visualization, rapid fault location measures, and automated O&M for rapidly restoring production network.
- Customizes a dedicated virtual network for flexible and efficient resource allocation.
- Supports Simplified Optical Ethernet Solution and CWDM hyper-converged line cards. Each line card supports eight SFX aggregate ports that can connect to 64 terminals.

## | Product Features

### Core of the Cloud Architecture Network with Advanced Configurations in the Industry

#### **CLOS Architecture for Non-Blocking Switching**

The RG-N18000-E uses the advanced CLOS multi-level multi-plane architecture to separate the control plane from the forwarding plane. That is, switch fabric units (SFUs) and supervisor modules can be configured independently to ensure non-blocking switching at line rate among all interfaces, delivering continuous bandwidth upgrade and service support capabilities.

The RG-N18000-E adopts the orthogonal design for line cards and SFUs. With such a design, traffic is transmitted to SFUs through the orthogonal connector for switching, with zero cabling on the backplane and low transmission loss. This greatly reduces the signal attenuation and improves the service traffic transmission efficiency in the switch.

#### **High Performance Sustaining Future Network Development**

The RG-N18000-E supports 100GE Ethernet interfaces and can evolve to future 400GE Ethernet interfaces, which copes with sustainable development needs of campus computing data centers and meets requirements for core switches in the next decade of network development.

The RG-N18000-E supports Ruijie Networks simplified network solution and serves as the central authentication gateway to implement the unified authentication, gateway and security policy delivery features, providing simplified O&M experience through the large Layer 2 network. The RG-N18000-E supports dual-stack authentication of 100,000 terminals. The high capacity meets the access requirement of a large number of terminals on campuses. The RG-N18000-E supports high-density CWDM line cards (M18000E-8SFX and M18000E-8SFG). One line card provides eight hyper-converged ports, which can be split

into 64GE or 10GE logical interfaces. The wavelength range of optical modules in the hyper-converged port is from 1271 nm to 1571 nm and the wavelengths are separated from each other. So the connection between the access switch and hyper-converged port can enjoy an exclusive 1GE or 10GE bandwidth, ensuring the operation of services which require high bandwidth.

## On-demand Resource Allocation Based on Virtualization

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### VSU

The RG-N18000-E uses industry-leading VSU to virtualize multiple physical devices into one logical device for unified operation and management, substantially reducing network nodes and lowering network O&M management personnel's workload. The RG-N18000-E implements fast switchover within milliseconds upon a link failure and ensures nonstop transmission of mission-critical services, thereby enhancing network reliability. The RG-N18000-E supports inter-device link aggregation. This feature allows the RG-N18000-E to connect to servers or access switches through dual active uplinks, doubling the bandwidth of connections.

## Carrier-Class High Reliability

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The RG-N18000-E uses the redundancy design for all key components, including 1+1 redundancy for supervisor modules and N+M redundancy for power modules. All redundant components are hot-swappable, which maximizes the reliability and availability of the switch.

The RG-N18000-E supports GR for OSPF/IS-IS/BGP and BFD for VRRP/OSPF/BGP4/IS-IS/IS-ISv6/static routing, which implements fast fault detection within milliseconds.

The RG-N18000-E can display the hardware health status so that a network administrator can monitor the fan module status, power, temperature, and onboard voltage. In particular, the network administrator can identify voltage exceptions during routine inspection and handle the exceptions in a timely manner, thereby preventing system breakdown caused by voltage exceptions.

The RG-N18000-E employs the fault isolation technology to monitor the optical module status. If an optical module is faulty, the optical module is isolated and has no impact on the running of other interfaces or the switch. After the faulty optical module is replaced, the corresponding interface is restored immediately.

The RG-N18000-E supports dual-boot at the hardware level. It uses two flash chips to store the boot software (system boot program) to achieve hardware-level boot redundancy and to avoid a startup failure due to the flash chip fault.

The traditional main board on each power module obtains power from the trunk line. Power grid fluctuations will lead to single-way power-off. When the power grid recovers, the switch does not meet sequential power-on requirements. This causes services to be unavailable. The RG-N18000-E supports trunk line monitoring circuit design. When the power grid recovers after grid fluctuations, the device can meet sequential power-on requirements. In this case, services are automatically restored and power-off exceptions are recorded.

## Multi-process Modular Operating System

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Since 1998, Ruijie Networks has invested in the research and development of the modular operating system. The software platform of the RG-N18000-E is based on the next-generation multi-process modular operating system. The system has the following characteristics:

**High availability:** stable and reliable system and service restoration within seconds

**Easy diagnosis:** one-click generation of system snapshots for quick offline reproduction

**Scalability:** service componentization, without affecting service on the live network

**Maintainability:** unified version, with future support for customized functional apps

## Highly-Efficient Energy Saving

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The low-voltage power supply design of the internal system and highly-efficient modular power supply units guarantee highly efficient power supply.

Intelligent fan modules support speed regulating and precise temperature control, saving energy and reducing noise. This allows the switch to run at a high temperature for a long time and adapt to severe environments, substantially lowering power consumption.

The RG-N18000-E adopts 28-nm chip process, which is more energy-efficient than traditional chip processes. The multi-core CPU supports dynamic power consumption management. All optical interfaces use the PHY-free design to reduce power consumption. All Ethernet electrical interfaces support the Energy Efficient Ethernet (EEE) standard, reducing power consumption at low loads.

## Ease of Network Maintenance

The RG-N18000-E supports the Simple Network Management Protocol (SNMP), Remote Network Monitoring (RMON), Syslog, and other features for routine network diagnosis and maintenance. In addition, a network administrator can

use diversified management and maintenance methods including the CLI, web-based NMS, and Telnet to easily manage devices.

Based on Google Remote Procedure Call (gRPC), Telemetry technology enables the switch to periodically collect information about the CPU, memory, and other components.

# Product Specifications

## Hardware Specifications

### Port Specifications

| Port Specifications    | RG-N18010-E                                                                                                                                                                                                                                                              | RG-N18014-E                                                                                                                             |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Module slot            | 2 x supervisor module slots<br>8 x line card slots<br>4 x switch fabric module slots<br>4 x power module slots<br>2 x fan module slots                                                                                                                                   | 2 x supervisor module slots<br>12 x line card slots<br>4 x switch fabric module slots<br>4 x power module slots<br>2 x fan module slots |
| Supervisor module      | M18000E-CM<br>M18000E-CM II<br>Note: The supervisor modules of the M18000E-CM and M18000E-CM II are incompatible with each other. Do not insert them into the same chassis. The main program versions of the two supervisor modules are independent.                     |                                                                                                                                         |
| Switch fabric module   | M18010E-FE-X I<br>M18000E-FE-X II                                                                                                                                                                                                                                        | M18000E-FE-X II                                                                                                                         |
| Line card              | M18000E-48GT4XS-XA<br>M18000E-48SFP4XS-XA<br>M18000E-24GT8SFP8XS-XA<br>M18000E-32XS-XB<br>M18000E-52XS-XB<br>M18000E-12CQ-XB<br>M18000E-8SFG<br>M18000E-8SFX<br>M18000E-HCA (modular line card)<br>• HCA-4CQ (modular port adapter)<br>• HCA-20XS (modular port adapter) |                                                                                                                                         |
| Power module           | RG-PA600I<br>RG-PA1600I                                                                                                                                                                                                                                                  |                                                                                                                                         |
| Fan module             | M10C-FAN (pre-installed 2)                                                                                                                                                                                                                                               | M14FAN-F (pre-installed 2)                                                                                                              |
| Module management port | Supervisor module:<br>• 1 x RJ45 console port<br>• 1 x RJ45 MGMT port<br>Switch fabric module:<br>• 1 x RJ45 console port                                                                                                                                                |                                                                                                                                         |
| USB                    | Supervisor module: 1 x USB 2.0 port (no capacity limit, 2G/4G/8G/16G/32G capacity tested)                                                                                                                                                                                |                                                                                                                                         |

## System Specifications

| System Specifications                       | RG-N18010-E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | RG-N18014-E |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| System packet forwarding rate <sup>*1</sup> | 14,200 Mpps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 21,000 Mpps |
| System switching capacity <sup>*2</sup>     | 19.2 Tbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 28.8 Tbps   |
| CPU                                         | Supervisor module: <ul style="list-style-type: none"> <li>• M18000E-CM: quad-core CPU, each core with the clock speed of 2.2 GHz</li> <li>• M18000E-CM II: octa-core CPU, each core with the clock speed of 2.2 GHz</li> </ul> Switch fabric module: <ul style="list-style-type: none"> <li>• Quad-core CPU, each core with the clock speed of 2.2 GHz</li> </ul> Line card: <ul style="list-style-type: none"> <li>• M18000E-XA/XB/CWDM card: quad-core CPU, each core with the clock speed of 2.2 GHz</li> <li>• M18000E-HCA: octa-core CPU, each core with the clock speed of 2.2 GHz</li> </ul> |             |
| Real-time clock (RTC)                       | M18000E-CM/CM II: supported                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |
| BootROM                                     | M18000E-CM/CM II: 16 MB<br>XA/XB/CWDM/FE card: 16 MB<br>M18000E-HCA: 16 MB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |
| Flash memory                                | M18000E-CM: 8 GB<br>M18000E-CM II: 16 GB<br>XA/XB/CWDM/FE card: 8 GB<br>M18000E-HCA: 16 GB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |
| Memory                                      | M18000E-CM: 4 GB DDR4<br>M18000E-CM II: 16 GB DDR4<br>XA/XB/CWDM/FE card: 4 GB DDR4<br>M18000E-HCA: 16 GB DDR4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
| Switch buffer                               | XA card: 4 MB<br>XB/CWDM/HCA card: 35 MB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |
| Number of MAC address                       | Number of static MAC addresses <ul style="list-style-type: none"> <li>• XA card: 4,000</li> <li>• XB card: 10,000</li> <li>• HCA card: 10,000</li> </ul> Number of global MAC addresses <ul style="list-style-type: none"> <li>• XA card: 96,000 (installed without the HCA card); 150,000 (installed with the HCA card)</li> <li>• XB card: 256,000 (installed without the HCA card); 512,000 (installed with the HCA card)</li> <li>• HCA card: 512,000</li> </ul>                                                                                                                                |             |
| ARP table size                              | XA card: 40,000 (installed without the HCA card); 64,000 (installed with the HCA card)<br>XB card: 96,000<br>HCA card: 96,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |
| Number of IPv4 unicast routes               | XA card: 64,000 (shared with IPv6 routes, installed without the HCA card); 1,500,000 (installed with the HCA card)<br>XB card: 350,000 (shared with IPv6 routes, installed without the HCA card); 1,500,000 (installed with the HCA card)<br>HCA card: 1,500,000 (shared with IPv6 routes)                                                                                                                                                                                                                                                                                                          |             |
| Number of IPv4 multicast routes             | XA card: 4,000<br>XB card: 4,000<br>HCA card: 4,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |

| System Specifications           | RG-N18010-E                                                                                                                                                                                                                                                                                                                                                                           | RG-N18014-E |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Number of IPv6 unicast routes   | XA card: 15,000 ( $\leq 64$ bytes, shared with IPv4 routes, installed without the HCA card); 1,000,000 (installed with the HCA card)<br>XB card: 65,000 (installed without the HCA card); 1,000,000 (installed with the HCA card)<br>HCA card: 1,000,000                                                                                                                              |             |
| Number of IPv6 multicast routes | XA card: 2,000<br>XB card: 2,000<br>HCA card: 2,000                                                                                                                                                                                                                                                                                                                                   |             |
| Number of ACEs                  | XA card:<br><ul style="list-style-type: none"> <li>Ingress: 7,000</li> <li>Egress: 1,500</li> </ul> XB card:<br><ul style="list-style-type: none"> <li>Ingress: 28,000 (installed without the HCA card); 24,000 (installed with the HCA card)</li> <li>Egress: 4,000</li> </ul> HCA card:<br><ul style="list-style-type: none"> <li>Ingress: 24,000</li> <li>Egress: 4,000</li> </ul> |             |
| Number of VSU members           | 2                                                                                                                                                                                                                                                                                                                                                                                     |             |

\*<sup>1</sup> means the system's packet forwarding rate.

\*<sup>2</sup> means the system's switching capacity.

## Power Supply and Consumption

| Power Supply and Consumption | RG-N18010-E                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | RG-N18014-E |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Power supply                 | 4 x pluggable power modules                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
| Power input                  | RG-PA600I (AC input):<br><ul style="list-style-type: none"> <li>Rated input voltage: 100 V AC to 240 V AC, 50/60 Hz</li> <li>Maximum input voltage: 90 V AC to 264 V AC, 47 Hz to 63 Hz</li> <li>Maximum input current: 10 A</li> </ul> RG-PA1600I (AC input):<br><ul style="list-style-type: none"> <li>Rated input voltage: 100 V AC to 240 V AC; 50/60 Hz</li> <li>Maximum input voltage: 90 V AC to 264 V AC; 47 Hz to 63 Hz</li> <li>Maximum input current: 16 A</li> </ul> |             |
| Maximum output power         | RG-PA600I: 600 W<br>RG-PA1600I:<br><ul style="list-style-type: none"> <li>100 V AC to 176 V AC: 1200 W</li> <li>176 V AC to 240 V AC: 1600 W</li> </ul>                                                                                                                                                                                                                                                                                                                          |             |
| Module power consumption     | Supervisor module:<br><ul style="list-style-type: none"> <li>M18000E-CM: &lt; 60 W</li> <li>M18000E-CM II: &lt; 70 W</li> </ul> Switch fabric module:<br><ul style="list-style-type: none"> <li>M18000E-FE-X II: &lt; 160 W</li> </ul> Line card:<br><ul style="list-style-type: none"> <li>M18000E-48GT4XS-XA: &lt; 85 W</li> <li>M18000E-48SFP4XS-XA: &lt; 117 W</li> <li>M18000E-24GT8SFP8XS-XA: &lt; 95 W</li> <li>M18000E-32XS-XB: &lt; 149 W</li> </ul>                    |             |

| Power Supply and Consumption | RG-N18010-E                                                                                                                                                                                                                                                                                    | RG-N18014-E                                                                             |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Module power consumption     | <ul style="list-style-type: none"> <li>• M18000E-52XS-XB: &lt; 250 W</li> <li>• M18000E-12CQ-XB: &lt; 240 W</li> <li>• M18000E-8SFG: &lt; 250 W</li> <li>• M18000E-8SFX: &lt; 250 W</li> <li>• M18000E-HCA: &lt; 280 W</li> <li>• HCA-20XS: &lt; 30 W</li> <li>• HCA-4CQ: &lt; 20 W</li> </ul> |                                                                                         |
|                              | Switch fabric module:<br><ul style="list-style-type: none"> <li>• M18000E-FE-X I: &lt; 50 W</li> </ul> Fan module:<br><ul style="list-style-type: none"> <li>• M10C-FAN: &lt; 216 W</li> </ul>                                                                                                 | Fan module:<br><ul style="list-style-type: none"> <li>• M14FAN-F: &lt; 360 W</li> </ul> |

### Dimensions and Weight

| Dimensions and Weight           | RG-N18010-E                                                                                                                                                                                                          | RG-N18014-E                                                                                                                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Unit dimensions (W x D x H)     | 442.0 mm x 561.0 mm x 442.5 mm<br>(17.40 in. x 22.09 in. x 17.42 in., cable management bracket excluded)<br>442.0 mm x 670.1 mm x 442.5 mm<br>(17.40 in. x 26.38 in. x 17.42 in., cable management bracket included) | 442.0 mm x 561.0 mm x 605.1 mm<br>(17.40 in. x 22.09 in. x 23.82 in., cable management bracket excluded)<br>442.0 mm x 670.1 mm x 605.1 mm<br>(17.40 in. x 26.38 in. x 23.82 in., cable management bracket included) |
| Shipping dimensions (W x D x H) | 845.0 mm x 685.0 mm x 770.0 mm (33.27 in. x 26.97 in. x 30.31 in.)                                                                                                                                                   | 860.0 mm x 670.0 mm x 887.0 mm (33.86 in. x 26.38 in. x 34.92 in.)                                                                                                                                                   |
| Rack height                     | 10 RU                                                                                                                                                                                                                | 14 RU                                                                                                                                                                                                                |
| Unit weight                     | 43.6 kg (96.12 lbs, empty chassis with 2 fan modules)                                                                                                                                                                | 68.3 kg (150.58 lbs, empty chassis with 2 fan modules)                                                                                                                                                               |
| Shipping weight                 | 68.3 kg (150.58 lbs)                                                                                                                                                                                                 | 82.5 kg (181.88 lbs)                                                                                                                                                                                                 |

### Environment and Reliability

| Environment and Reliability | RG-N18010-E                                                                                                                                                                                                                                                                                                | RG-N18014-E |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Temperature                 | Operating temperature: 0°C to 50°C (32°F to 122°F)<br>Storage temperature: -40°C to +70°C (-40°F to +158°F)<br>Note: At an altitude between 3,000 m (9,842.52 ft.) and 5,000 m (16,404.20 ft.), every time the altitude increases by 220 m (721.78 ft.), the maximum temperature decreases by 1°C (1.8°F). |             |
| Humidity                    | Operating humidity: 10% to 90% RH (non-condensing)<br>Storage humidity: 5% to 95% RH (non-condensing)                                                                                                                                                                                                      |             |
| Altitude                    | Operating altitude: -500 m to +5,000 m (-1,640.42 ft. to +16,404.20 ft.)<br>Storage altitude: -500 m to +5,000 m (-1,640.42 ft. to +16,404.20 ft.)                                                                                                                                                         |             |

| Environment and Reliability      | RG-N18010-E                                                                                                                                                                     | RG-N18014-E |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Mean time between failure (MTBF) | 342,000 hours (about 39 years)                                                                                                                                                  |             |
| Fan                              | 2 x pluggable fan modules (pre-installed)                                                                                                                                       |             |
| Heat dissipation                 | Supervisor module and switch fabric module: front-to-rear airflow<br>Line card: right-to-rear airflow                                                                           |             |
| Acoustic noise                   | 35°C (95°F): 55.9 dB<br>50°C (122°F): 73.4 dB                                                                                                                                   |             |
| Supervisor module redundancy     | 1+1 redundancy (same model)                                                                                                                                                     |             |
| Switch fabric module redundancy  | 1+N redundancy (same model)                                                                                                                                                     |             |
| Power module redundancy          | N+M redundancy (same model)                                                                                                                                                     |             |
| Fan redundancy                   | 1+1 redundancy                                                                                                                                                                  |             |
| Module hot swapping              | Supported                                                                                                                                                                       |             |
| Power module hot swapping        | Supported                                                                                                                                                                       |             |
| Fan module hot swapping          | Supported                                                                                                                                                                       |             |
| Cable hot swapping               | All ports on line cards support hot swapping of cables.<br>The switch-mode power supply supports hot swapping of power cords.                                                   |             |
| Power supply monitoring          | Monitoring of the model, temperature, power, and voltage of the power module<br>Power supply failure alarming<br>Control of line card power-on based on the power supply status |             |
| Fan monitoring                   | Fan speed adjustment: 256 levels<br>Fan failure alarming                                                                                                                        |             |
| Temperature monitoring           | Over-temperature alarming                                                                                                                                                       |             |
| ESD                              | ESD contact/air discharge: 6 kV/8 kV<br>ESD susceptibility contact/air discharge: 8 kV/15 kV                                                                                    |             |
| Surge protection                 | MGMT port: 4 kV<br>Service port: 4 kV<br>Power port: common mode 6 kV, differential mode 6 kV                                                                                   |             |

### Certifications and regulatory compliance

| Certifications and regulatory compliance | RG-N18010-E                                                                                                                                                      | RG-N18014-E |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Safety regulation                        | IEC 62368-1                                                                                                                                                      |             |
| EMC regulation                           | EN 300386, EN 55032 Class A, EN 55035,<br>EN IEC 61000-3-2, EN 61000-3-3, EN 61000-4-2, EN 61000-4-3,<br>EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11 |             |
| RoHS                                     | European RoHS Directive 2011/65/EU & Amendment(EU) 2015/863                                                                                                      |             |

## Software Specifications

| Feature            | RG-N18000-E Series                                                                 |
|--------------------|------------------------------------------------------------------------------------|
| Ethernet Switching | Jumbo frame (maximum length: 9,216 bytes)                                          |
|                    | IEEE 802.3az EEE                                                                   |
|                    | IEEE 802.1Q (supporting 4K VLANs)                                                  |
|                    | Voice VLAN                                                                         |
|                    | Super-VLAN and private VLAN                                                        |
|                    | MAC address-based, port-based, protocol-based, and IP subnet-based VLAN assignment |
|                    | GVRP                                                                               |
|                    | Basic QinQ and selective QinQ                                                      |
|                    | STP (IEEE 802.1.d), RSTP (IEEE 802.1w), and MSTP (IEEE 802.1s)                     |
|                    | ERPS (G.8032)                                                                      |
|                    | LLDP/LLDP-MED                                                                      |
| IP Service         | Static and dynamic ARP                                                             |
|                    | DHCP client                                                                        |
|                    | DHCP relay                                                                         |
|                    | DHCP server                                                                        |
|                    | DHCP snooping                                                                      |
|                    | DNS                                                                                |
|                    | DHCPv6 client, DHCPv6 relay, and DHCPv6 snooping                                   |

| Feature    | RG-N18000-E Series                                                |
|------------|-------------------------------------------------------------------|
| IP Service | Neighbor Discovery (ND) and ND snooping                           |
|            | IPv4 and IPv6 GRE tunnel                                          |
|            | IPv6 manual tunnel, IPv6 automatic tunnel, and IPv6 ISATAP tunnel |
| IP Routing | Static routing                                                    |
|            | RIP and RIPng                                                     |
|            | OSPFv2 and OSPFv3                                                 |
|            | GR                                                                |
|            | IS-ISv4 and IS-ISv6                                               |
|            | BGP4 and BGP4+                                                    |
|            | IPv4/IPv6 VRF                                                     |
|            | IPv4/IPv6 PBR                                                     |
| Multicast  | IGMPv1/v2/v3                                                      |
|            | IGMPv1/v2 snooping                                                |
|            | IGMP proxy                                                        |
|            | IGMP fast leave                                                   |
|            | PIM-DM, PIM-SM, PIM-SSM, and other multicast routing protocols    |
|            | Multicast static routing                                          |
|            | PIM-SM, PIM-SSM, PIM-SMv6, and PIM-SSMv6                          |
|            | MSDP for inter-domain multicast                                   |
|            | MLDv1/v2                                                          |
|            | MLDv1 snooping                                                    |

| Feature     | RG-N18000-E Series                                                                                                                                                               |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Multicast   | Multicast source IP address check<br>Multicast source port check<br>Validity check of IGMP packets                                                                               |
|             | Multicast querier                                                                                                                                                                |
| MPLS        | MPLS L3VPN                                                                                                                                                                       |
|             | MPLS 6VPE and MPLS 6PE                                                                                                                                                           |
|             | MPLS IPv6                                                                                                                                                                        |
|             | MPLS MIB (RFC 1273, 4265, 4382)                                                                                                                                                  |
| ACL and QoS | Standard IP ACLs (hardware ACLs based on IP addresses)                                                                                                                           |
|             | Extended IP ACLs (hardware ACLs based on IP addresses or TCP/UDP port numbers)                                                                                                   |
|             | Extended MAC ACLs (hardware ACLs based on source MAC addresses, destination MAC addresses, and optional Ethernet type)                                                           |
|             | Expert-level ACLs (hardware ACLs based on flexible combinations of the VLAN ID, Ethernet type, MAC address, IP address, TCP/UDP port number, protocol type, and time range)      |
|             | ACL80 and IPv6 ACL                                                                                                                                                               |
|             | Applying ACLs globally (hardware ACLs based on flexible combinations of the VLAN ID, Ethernet type, MAC address, IP address, TCP/UDP port number, protocol type, and time range) |
|             | ACL redirection                                                                                                                                                                  |
|             | Port traffic identification                                                                                                                                                      |
|             | Port traffic rate limiting                                                                                                                                                       |
|             | IEEE 802.1p                                                                                                                                                                      |
|             | Traffic classification based on 802.1p priorities, DSCP priorities, and IP precedences                                                                                           |
|             | Congestion management: SP, WRR, DRR, WFQ, SP+WRR, SP+DRR, SP+WFR, and SP+WFQ                                                                                                     |
|             | Congestion avoidance: tail drop, RED, and WRED                                                                                                                                   |

| Feature     | RG-N18000-E Series                                                                                                                                                                                              |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACL and QoS | Rate limiting based on the inbound or outbound interface                                                                                                                                                        |
|             | Eight queues on each port                                                                                                                                                                                       |
| Security    | Multi-AAA                                                                                                                                                                                                       |
|             | RADIUS authentication, authorization, and accounting                                                                                                                                                            |
|             | TACACS+                                                                                                                                                                                                         |
|             | IEEE 802.1X                                                                                                                                                                                                     |
|             | IEEE802.1X authentication, MAC address bypass (MAB) authentication, and interface-based and MAC address-based 802.1X authentication                                                                             |
|             | Web authentication                                                                                                                                                                                              |
|             | Hypertext Transfer Protocol Secure (HTTPS)                                                                                                                                                                      |
|             | SSHv1 and SSHv2                                                                                                                                                                                                 |
|             | Global IP-MAC binding                                                                                                                                                                                           |
|             | ICMP (discarding ICMP packets of which the rate exceeds the threshold on an interface)                                                                                                                          |
|             | Port security                                                                                                                                                                                                   |
|             | IP source guard                                                                                                                                                                                                 |
|             | SAVI                                                                                                                                                                                                            |
|             | ARP spoofing prevention                                                                                                                                                                                         |
|             | CPP and NFPP                                                                                                                                                                                                    |
|             | Various attack defense functions including NFPP, ARP anti-spoofing, DHCP/DHCPv6 attack defense, ICMP attack defense, ND attack defense, IP scanning attack defense, and customizing attack defense packet types |
|             | Loose and strict RPF<br>uRPF ignoring default routes                                                                                                                                                            |

| Feature               | RG-N18000-E Series                                                                                                                                 |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Reliability           | REUP                                                                                                                                               |
|                       | Rapid Link Detection Protocol (RLDP), Layer 2 link connectivity detection, unidirectional link detection, and VLAN-based loop control              |
|                       | Data Link Detection Protocol (DLDP)                                                                                                                |
|                       | IPv4/IPv6 ECMP                                                                                                                                     |
|                       | IPv4 VRRP v2/v3 and IPv6 VRRP v3                                                                                                                   |
|                       | BFD                                                                                                                                                |
|                       | Link monitoring, fault notification, and remote loopback based on 802.3ah (EFM)                                                                    |
|                       | 1+1 redundancy for supervisor modules                                                                                                              |
|                       | 1+N redundancy for switch fabric modules                                                                                                           |
|                       | N+M redundancy for power modules                                                                                                                   |
|                       | 1+1 redundancy for fan modules                                                                                                                     |
|                       | Hot patching for online patch upgrade                                                                                                              |
|                       | GR for OSPF/IS-IS/BGP                                                                                                                              |
|                       | BFD for VRRP/OSPF/BGP4/IS-IS/IS-ISv6/static routing                                                                                                |
|                       | Hot swapping of supervisor modules, switch fabric modules, power modules, and fan modules                                                          |
| Device Virtualization | VSU                                                                                                                                                |
| NMS and Maintenance   | SPAN, RSPAN, and ERSPAN                                                                                                                            |
|                       | sFlow (network detection technology based on packet sampling, which is mainly used for traffic statistics and analysis in heavy-traffic scenarios) |
|                       | N:1 mirroring, 1:N mirroring, and flow-based mirroring<br>VLAN mirroring                                                                           |
|                       | NTP and SNTP                                                                                                                                       |

| Feature             | RG-N18000-E Series                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NMS and Maintenance | FTP, SFTP, TFTP, and Xmodem                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                     | SNMP v1/v2/c3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                     | RMON (1, 2, 3, 9)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                     | Various types of RMON groups, including event groups, alarm groups, history groups, and statistics groups, as well as private alarm extension groups<br>RMON used to implement Ethernet statistics, historical statistics, and alarm functions                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                     | NETCONF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                     | CWMP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                     | gRPC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                     | OpenFlow Special 1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                     | Flow table analysis defined by all protocols<br>Transmission of specified packets to the controller<br>Configuring the controller's IP address and port<br>Notifying port status changes to the controller                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                     | Web-based NMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| VXLAN               | EVPN VXLAN tunnel establishment<br>LAN access to VXLAN<br>IPv4 over IPv4<br>Distributed gateway<br>IPv6 over IPv6<br>Using an SVI to connect to the VXLAN network<br>Using a routed interface to connect to the VXLAN network<br>Proxy ARP (replying with the actual MAC address)<br>ND proxy (replying with the actual MAC address)<br>ND reply (replying with the actual MAC address)<br>VXLAN static route<br>Anycast gateway<br>VXLAN bridging mode<br>VXLAN routing mode<br>Proxy ARP (replying with the gateway MAC address)<br>Configuring the UDP port number in VXLAN packets<br>Static VXLAN tunnel creation<br>Layer 2 VXLAN bridge<br>Layer 3 VXLAN gateway<br>EVPN VXLAN |

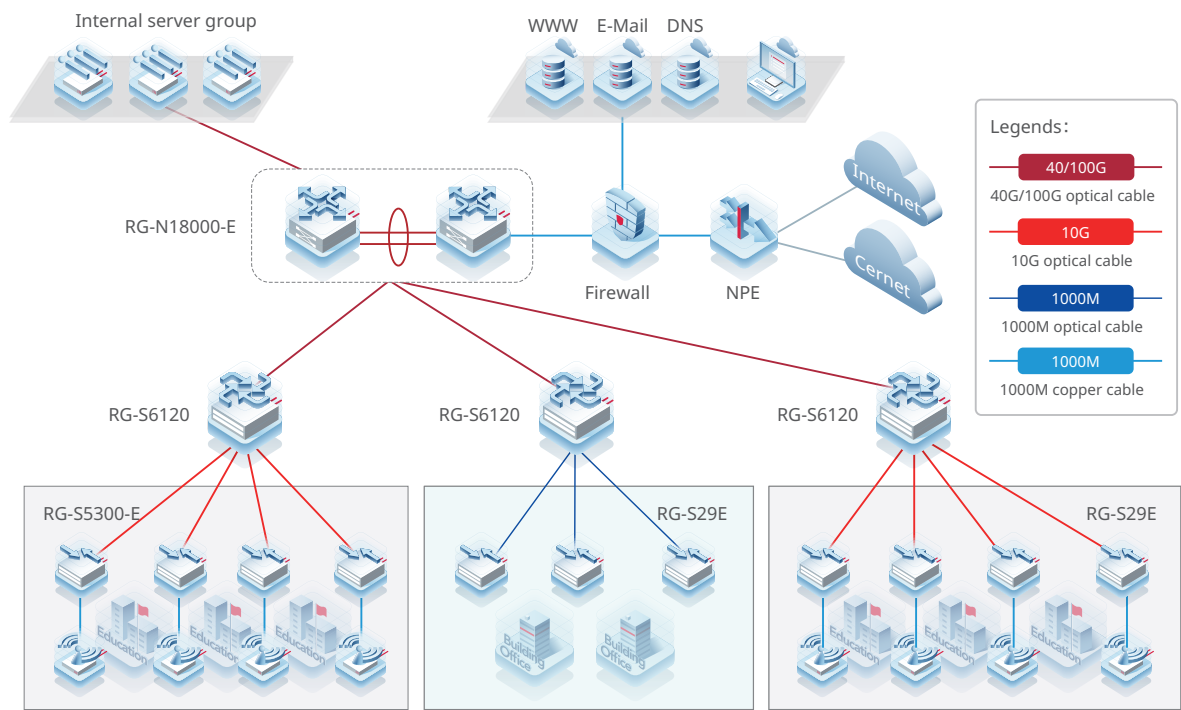
# Protocol Compliance

| Organization | Standards and Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IETF         | <p> RFC 1157 A Simple Network Management Protocol (SNMP)<br/> RFC 1305 Network Time Protocol Version 3 (NTP)<br/> RFC 1349 Internet Protocol (IP)<br/> RFC 1350 TFTP Protocol (revision 2)<br/> RFC 1519 CIDR<br/> RFC 1591 Domain Name System Structure and Delegation<br/> RFC 1643 Ethernet Interface MIB<br/> RFC 1757 Remote Network Monitoring (RMON)<br/> RFC 1812 Requirements for IP Version 4 Router<br/> RFC 1901 Introduction to Community-based SNMPv2<br/> RFC 1902-1907 SNMP v2<br/> RFC 1918 Address Allocation for Private Internet<br/> RFC 2131 Dynamic Host Configuration Protocol (DHCP)<br/> RFC 2132 DHCP Options and BOOTP Vendor Extensions<br/> RFC 2571 SNMP Management Frameworks<br/> RFC 2863 The Interfaces Group MIB<br/> RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations (Ping only)<br/> RFC 3046 DHCP Option82<br/> RFC 3417 (SNMP Transport Mappings)<br/> RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)<br/> RFC 4022 MIB for TCP<br/> RFC 768 User Datagram Protocol (UDP)<br/> RFC 783 TFTP Protocol (revision 2)<br/> RFC 792 Internet Control Message Protocol (ICMP)<br/> RFC 793 Transmission Control Protocol (TCP)<br/> RFC 813 Window and Acknowledgement Strategy in TCP<br/> RFC 815 IP datagram reassembly algorithms<br/> RFC 826 Ethernet Address Resolution Protocol (ARP)<br/> RFC 854 Telnet Protocol<br/> RFC 959 File Transfer Protocol (FTP)<br/> RFC 1058 Routing Information Protocol (RIP)<br/> RFC 1583 OSPF Version 2<br/> RFC 1981 Path MTU Discovery for IP version 6<br/> RFC 1997 BGP Communities Attribute<br/> RFC 2236 IGMP<br/> RFC 2328 OSPF Version 2<br/> RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option<br/> RFC 2439 BGP Route Flap Damping<br/> RFC 2460 Internet Protocol, Version 6 (IPv6)<br/> RFC 2461 Neighbor Discovery for IP Version 6 (IPv6)<br/> RFC 2462 IPv6 Stateless Address Auto configuration<br/> RFC 2463 Internet Control Message Protocol for IPv6 (ICMPv6)<br/> RFC 2545 Use of BGP 4 Multiprotocol Extensions for IPv6 Inter Domain Routing<br/> RFC 2711 IPv6 Router Alert Option<br/> RFC 2787 Definitions of Managed Objects for the Virtual Router Redundancy Protocol </p> |

| Organization | Standards and Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IETF         | <p> RFC 2865 Remote Authentication Dial In User Service (RADIUS)<br/> RFC 2918 Route Refresh Capability for BGP 4<br/> RFC 2934 Protocol Independent Multicast MIB for IPv4<br/> RFC 3065 Autonomous System Confederation for BGP<br/> RFC 3101 OSPF Not so stubby area option<br/> RFC 3137 OSPF Stub Router Advertisement sFlow<br/> RFC 3509 Alternative Implementations of OSPF Area Border Routers<br/> RFC 3513 IP Version 6 Addressing Architecture<br/> RFC 3575 IANA Considerations for RADIUS<br/> RFC 3579 RADIUS Support For EAP<br/> RFC 3623 Graceful OSPF Restart<br/> RFC 3768 VRRP<br/> RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6<br/> RFC 3973 PIM Dense Mode<br/> RFC 4271 A Border Gateway Protocol 4 (BGP 4)<br/> RFC 4273 Definitions of Managed Objects for BGP 4<br/> RFC 4360 BGP Extended Communities Attribute<br/> RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)<br/> RFC 4486 Subcodes for BGP Cease Notification Message<br/> RFC 4552 Authentication/Confidentiality for OSPFv3<br/> RFC 4724 Graceful Restart Mechanism for BGP<br/> RFC 4750 OSPFv2 MIB partial support no SetMIB<br/> RFC 4760 Multiprotocol Extensions for BGP 4<br/> RFC 4940 IANA Considerations for OSPF<br/> RFC 5065 Autonomous System Confederation for BGP<br/> RFC 5187 OSPFv3 Graceful Restart<br/> RFC 5340 OSPFv3 for IPv6<br/> RFC 5492 Capabilities Advertisement with BGP 4<br/> RFC 6620 FCFS SAVI </p> |
| IEEE         | <p> IEEE 802.1D Spanning Tree Protocol<br/> IEEE 802.1s Multiple Spanning Tree Protocol<br/> IEEE 802.1w Rapid Spanning Tree Protocol<br/> IEEE 802.2 Logical Link Control<br/> IEEE 802.1ab Link Layer Discovery Protocol<br/> IEEE 802.1ad Provider Bridges<br/> IEEE 802.1ax/IEEE802.3ad Link Aggregation<br/> IEEE 802.1D Media Access Control (MAC) Bridges<br/> IEEE 802.1Q Virtual Bridged Local Area Networks (VLAN)<br/> IEEE 802.3ad Link Aggregation Control Protocol (LACP)<br/> IEEE Std 802.3x Full Duplex and flow control </p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

# Typical Applications

## Serving as the Core Switch on a Large- or Medium-sized Network



# Ordering Guide

Configure an RG-N18000-E as follows:

- Select the chassis and supervisor modules based on the device model.
- Select power modules based on power supply requirements. At least one power module must be selected.
- Select switch fabric modules.
- Select line cards based on service requirements.

# Ordering Information

## Switches and Supervisor Modules

| Model       | Description                                                                  |
|-------------|------------------------------------------------------------------------------|
| RG-N18010-E | RG-N18010-E chassis, eight line cards, two supervisor modules, and four SFUs |
| RG-N18014-E | RG-N18014-E chassis, 12 line cards, two supervisor modules, and four SFUs    |
| M18000E-CM  | RG-N18000-E high-performance supervisor module                               |

| Model         | Description                                        |
|---------------|----------------------------------------------------|
| M18000E-CM II | RG-N18000-E 2nd high-performance supervisor module |

## Power Modules and Fan Modules

| Model      | Description                                   |
|------------|-----------------------------------------------|
| RG-PA600I  | 600W AC power module, supporting redundancy   |
| RG-PA1600I | 1600 W AC power module, supporting redundancy |

## SFUs

| Model           | Description                       |
|-----------------|-----------------------------------|
| M18010E-FE-X I  | RG-N18010-E first-generation SFU  |
| M18000E-FE-X II | RG-N18000-E second-generation SFU |

## Line Cards

| Model                  | Description                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M18000E-32XS-XB        | 32 x 1GE/10GE SFP+ ports (LC)                                                                                                                                                  |
| M18000E-52XS-XB        | 52 x 1GE/10GE SFP+ ports (LC)                                                                                                                                                  |
| M18000E-12CQ-XB        | 12 x 40GE/100GE QSFP28 ports (LC/MPO)                                                                                                                                          |
| M18000E-24GT8SFP8XS-XA | 24 x 10/100/1000BASE-T ports, 8 x 1GE SFP ports (LC), 8 x 1GE/10GE SFP+ ports (LC)                                                                                             |
| M18000E-48GT4XS-XA     | 48 x 10/100/1000BASE-T ports, 4 x 1GE/10GE SFP+ ports (LC)                                                                                                                     |
| M18000E-48SFP4XS-XA    | 48 x 1GE SFP ports (LC), 4 x 1GE/10GE SFP+ ports (LC)                                                                                                                          |
| M18000E-8SFX           | CWDM line card for RG-N18000-E series core switches, providing 8 x SFX ports (64 x 10GE logical channels).<br>The ports are backward compatible with a data rate of 1000 Mbps. |
| M18000E-8SFG           | CWDM line card for RG-N18000-E series core switches, providing 8 x SFG ports (64 x 1GE logical channels)                                                                       |
| M18000E-HCA            | High-capacity line card for centralized authentication of the RG-N18000-E, supporting two HCA cards                                                                            |
| HCA-20XS               | 20 x 1GE/10GE SFP ports (LC)<br>The line card must be used with the M18000E-HCA card.                                                                                          |

| Model   | Description                                                                                   |
|---------|-----------------------------------------------------------------------------------------------|
| HCA-4CQ | 4 x 40GE/100GE QSFP28 ports (LC/MPO)<br>The line card must be used with the M18000E-HCA card. |

Note:

- 1GE/10GE SFP+ ports support 1GE SFP transceivers and 10GE SFP+ transceivers.
- 40GE/100GE QSFP28 ports support 40GE QSFP+ transceivers and 100GE QSFP28 transceivers.

## Optical Transceivers and Cables

### 1GE

| Model                     | Description                                                                                                                             |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Mini-GBIC-GT              | 1000BASE-X to 1000BASE-T, copper SFP transceiver, RJ45, 100 m over Cat 5e/6/6a<br>The port needs to be configured with auto-negotiation |
| MINI-GBIC-SX-MM850        | 1000BASE-SX, SFP transceiver, 850 nm, Duplex LC, 500 m over MMF                                                                         |
| MINI-GBIC-LX-SM1310       | 1000BASE-LX, SFP transceiver, 1310 nm, Duplex LC, 10 km over SMF                                                                        |
| MINI-GBIC-LH40-SM1310     | 1000BASE-LH, SFP transceiver, 1310 nm, Duplex LC, 40 km over SMF                                                                        |
| MINI-GBIC-ZX80-SM1550     | 1000BASE-ZX, SFP transceiver, 1550 nm, Duplex LC, 80 km over SMF                                                                        |
| GE-SFP-LX20-SM1310-BIDI   | 1000BASE-LX, SFP transceiver, TX1310/RX1550, BiDi LC, 20 km over SMF                                                                    |
| GE-SFP-LX20-SM1550-BIDI   | 1000BASE-LX, SFP transceiver, TX1550/RX1310, BiDi LC, 20 km over SMF                                                                    |
| GE-SFP-LH40-SM1310-BIDI   | 1000BASE-LH, SFP transceiver, TX1310/RX1550, BiDi LC, 40 km over SMF                                                                    |
| GE-SFP-LH40-SM1550-BIDI   | 1000BASE-LH, SFP transceiver, TX1550/RX1310, BiDi LC, 40 km over SMF                                                                    |
| GE-SFP-LX03-SM1310-BIDI-I | 1000BASE-LX, SFP transceiver, TX1310/RX1550, BiDi LC, 3 km over SMF                                                                     |
| GE-SFP-LX03-SM1550-BIDI-I | 1000BASE-LX, SFP transceiver, TX1550/RX1310, BiDi LC, 3 km over SMF                                                                     |

Note: BiDi transceivers must be used in pairs. If one end uses GE-SFP-LX20-SM1310-BIDI, the other end must use GE-SFP-LX20-SM1550-BIDI.

### 10GE

| Model            | Description                                                     |
|------------------|-----------------------------------------------------------------|
| XG-SFP-SR-MM850  | 10GBASE-SR, SFP+ transceiver, 850nm, Duplex LC, 300 m over MMF  |
| XG-SFP-LR-SM1310 | 10GBASE-LR, SFP+ transceiver, 1310nm, Duplex LC, 10 km over SMF |
| XG-SFP-ER-SM1550 | 10GBASE-ER, SFP+ transceiver, 1550nm, Duplex LC, 40 km over SMF |
| XG-SFP-ZR-SM1550 | 10GBASE-ZR, SFP+ transceiver, 1550nm, Duplex LC, 80 km over SMF |

| Model                     | Description                                                                                     |
|---------------------------|-------------------------------------------------------------------------------------------------|
| XG-SFP-LR10-SM1270-BIDI-I | 10GBASE-LR, SFP+ transceiver, TX1270/RX1330, BiDi LC, 10 km over SMF                            |
| XG-SFP-LR10-SM1330-BIDI-I | 10GBASE-LR, SFP+ transceiver, TX1330/RX1270, BiDi LC, 10 km over SMF                            |
| XG-SFP-AOC1M              | 10GBASE, SFP+ active optical cable (AOC), 1 m, including one cable and two optical transceivers |
| XG-SFP-AOC3M              | 10GBASE, SFP+ active optical cable (AOC), 3 m, including one cable and two optical transceivers |
| XG-SFP-AOC5M              | 10GBASE, SFP+ active optical cable (AOC), 5 m, including one cable and two optical transceivers |

Note: BiDi transceivers must be used in pairs. If one end uses XG-SFP-LR10-SM1270-BIDI-I, the other end must use XG-SFP-LR10-SM1330-BIDI-I.

#### 40GE

| Model                | Description                                                                                      |
|----------------------|--------------------------------------------------------------------------------------------------|
| 40G-QSFP-LSR-MM850   | 40GBASE-LSR, QSFP+ transceiver, 850 nm, MPO 1 x 12, 400 m over OM4 MMF, 300 m over OM3 MMF       |
| 40G-QSFP-LR4-SM1310  | 40GBASE-LR4, QSFP+ transceiver, 1310 nm, Duplex LC, 10 km over SMF                               |
| 40G-QSFP-iLR4-SM1310 | 40GBASE-iLR4, QSFP+ transceiver, 1310 nm, Duplex LC, 2 km over SMF                               |
| 40G-QSFP-LX4-SM1310  | 40GBASE-LX4, QSFP+ transceiver, 1310 nm, Duplex LC, 150 m over OM3/OM4 MMF, 2 km over SMF        |
| 40G-AOC-5M           | 40GBASE, QSFP+ active optical cable (AOC), 5 m, including one cable and two optical transceivers |

#### 100GE

| Model                | Description                                                                                         |
|----------------------|-----------------------------------------------------------------------------------------------------|
| 100G-QSFP-SR-MM850   | 100GBASE-SR, QSFP28 transceiver, 850 nm, MPO 1 x 12, 100 m over OM4 MMF, 70 m over OM3 MMF          |
| 100G-QSFP-LR4-SM1310 | 100GBASE-LR4, QSFP28 transceiver, 1310 nm, Duplex LC, 10 km over SMF                                |
| 100G-AOC-10M         | 100GBASE, QSFP28 active optical cable (AOC), 10 m, including one cable and two optical transceivers |

#### CWDM Transceiver

| Model     | Description                                                                                                         |
|-----------|---------------------------------------------------------------------------------------------------------------------|
| SFG-LR-SM | 1GBASE-LR, core switch-side SFG CWDM transceiver, integration of 8 different wavelengths, BiDi LC, 10 km over SMF   |
| SFM-LR-SM | 2.5GBASE-LR, core switch-side SFM CWDM transceiver, integration of 8 different wavelengths, BiDi LC, 10 km over SMF |

| Model     | Description                                                                                                        |
|-----------|--------------------------------------------------------------------------------------------------------------------|
| SFX-LR-SM | 10GBASE-LR, core switch-side SFX CWDM transceiver, integration of 8 different wavelengths, BiDi LC, 10 km over SMF |

## Package Contents

| Item                                                                                | RG-N18010-E                 | RG-N18014-E                 |
|-------------------------------------------------------------------------------------|-----------------------------|-----------------------------|
| Chassis                                                                             | 1                           | 1                           |
| Fan module                                                                          | 2 (M10C-FAN, pre-installed) | 2 (M14FAN-F, pre-installed) |
| Kelly earth wire external member                                                    | 1                           | 1                           |
| Chutes                                                                              | 16                          | 24                          |
| M3x10 screw                                                                         | 18 (two redundant spares)   | 26 (two redundant spares)   |
| M6x16 screw                                                                         | 8                           | 8                           |
| M6 cage nut                                                                         | 8                           | 8                           |
| Antistatic wrist strap                                                              | 1                           | 1                           |
| <i>Quick installation Guide</i>                                                     | 1                           | 1                           |
| <i>Network Product Warranty Manual and Hazardous Substance Statement (50 years)</i> | 1                           | 1                           |
| Ruijie Networks Backbone Product Management Software BMS                            | 1 (pre-installed)           | 1 (pre-installed)           |

## Warranty

For more information about warranty terms and period, contact your local sales agency:

- Warranty terms: <https://www.ruijie.com/support/servicepolicy>
- Warranty period: <https://www.ruijie.com/support/servicepolicy/Service-Support-Summary/>

Note: The warranty terms are subject to the terms of different countries and distributors.

# | More Information

For more information about Ruijie Networks, visit the official Ruijie website or contact your local sales agency:

- Ruijie Networks official website: <https://www.ruijie.com/>
- Online support: <https://www.ruijie.com/support>
- Hotline support: <https://www.ruijie.com/support/hotline>
- Email support: [EBGITSC@ruijie.com.cn](mailto:EBGITSC@ruijie.com.cn)



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