NADDOD N6400H/N6300/N6100 Series Ethernet Switches Installation Instruction Manual

NADDOD Pte. Ltd. provides customers with all-around technical support and services. Where users, who purchase products directly from NADDOD, face any problem during the usage, they may contact the local offices or user service centers of NADDOD, and may also contact the headquarters of the Company directly.

Where readers face any problem about the products of NADDOD , or intend to learn more about other relevant products of the Company, they may contact us by the following ways:

Website of the Company: http://www.NADDOD.com/

Technical support hotline: 400-0698-860

Technical support e-mail: tech@NADDOD.com

Technical file e-mail: tech@NADDOD.com

Customer complaint hotline: 400-0698-860

Address of headquarters of the Company: 302, Building F1, Optics Valley Software Park, Guanshan 1st Road East Lake High-tech Zone, Wuhan ,P.R.China

Postcode: 430000

Declaration

Preface

Introduction

This file introduces NADDOD N6400H/N6300/N6100 series Ethernet switches from such perspectives as product introduction, installation instruction, start after being powered on, fault maintenance.

Product version

The product version corresponding to this file is shown as follows.

Product name	Hardware version
N6400H	
N6300-32C	
N6300-48Y8C	
N6100-48X8C	

Stipulations

Symbol stipulations

The following symbols that may appear herein represent the following meanings.

Symbol	Instruction
 Warning	Texts started with this symbol indicate that there exists potential risk, which may cause person injured unless being avoided.
 Note	Texts started with this symbol indicate that there exists potential risk, and ignoring such texts may cause device damage, data loss, and worse performance of devices or unforeseeable results.
 Instruction	Texts started with this symbol are additional information of the text, emphasizing and complementing the text.
 Tricks	Texts started with this symbol can help you solve certain problem or save your time.

General format stipulations

Format	Instruction
Song typeface	The text adopts song typeface.
Boldface	The title, subtitle, the third level title and Block adopt boldface.
Regular script	Content such as warning and prompt adopts regular script.
Lucida Console	The output information on the screen adopts Lucida Console form. In addition, the information input by users from the terminals among the output information on the screen adopts bold font.

Contents

1 Product Introduction

NADDOD N6400 series Ethernet switches are new generation high-performance core/aggregation switches launched by NADDOD for cloud data center adhering to the open principle. Adopting modular design and with 4 interface card slots, N6400H switches support 128 100GE ports to the greatest extent and device management based on OpenBMC. Compatible with the open-source network operating system, this series switches may be deployed in the Spine/Leaf architecture network, and build flexible, congestion-free CLOS architecture data center network by cooperating with NADDOD data center, so as to meet the high-performance, high-usability open network demands of users.

NADDOD N6400 series Ethernet switches support the fault detection and intelligent diagnosis of components of the switch platform. The power supplies support 2+2 redundancy and are hot-pluggable; fans support 5+1 redundancy and are hot-pluggable; dual BIOS design, effectively improves the fault tolerance performance of the system by combining with the fault self-recovery mechanism; key progress monitoring of software, over-temperature, overvoltage, overcurrent protection of system and other reliable designs guarantee a stable and safe system; intelligent fan speed regulation design, improves the heat dissipation efficiency and reduces the energy consumption of the system.

NADDOD N6300 series Ethernet switches are new generation data center ToR switch products launched by NADDOD for cloud data center scenario adapting to the OCP open architecture. Adopting X86 architecture high-performance processor, and supporting (1) 32 40/100G ports and (2) 48 1/10/25G ports and 8 40/100G uplink ports, N6300 series switches can be deployed as top-of-rack switches, and can also be deployed in the 25G or 100G Spine/Leaf architecture to constitute congestion-free CLOS architecture data center network, so as to meet the high-performance, high-usability and flexible network demands of users.

NADDOD N6300 series Ethernet switches support ultra-low latency forwarding; ports are flexible and configurable, and support various port rates of 10G/25G/40G/100G. High-performance X86 processor. As switch products on open hardware platform, NADDOD N6300 switches cover fault detection and intelligent diagnosis of components of switch platform based on the uniform management scheme of data center devices of OpenBMC. The power supplies support 1+1 redundancy, fans support 3+1 redundancy, dual BIOS and dual BMC designs, effectively improve the fault tolerance performance of system by combining with the fault self-recovery mechanism; key progress monitoring of software, system over-temperature, overvoltage, overcurrent protection and other reliable designs guarantee a stable and safe system; flexible front-rear/rear-front air ducts and intelligent fan speed regulation design, improve the heat dissipation efficiency and reduces the energy consumption of the data center.

N6100 series Ethernet switches are a new generation of high-performance and high-density 10G switches

independently developed by ICN, which aim to meet multiple application requirements of the next generation enterprise network, data center and Metropolitan Area Network (MAN). The products are configured with a complete system software, including comprehensive protocols and applications, to facilitate the rapid deployment and management of the network of traditional L2 / L3 networks and data centers.

1.1 Instruction on product models

Form 1-1 N6400/N6300/N6100 series switches

Product models	Description
N6400H	Standard 4RU 19-inch rack 28 10GE SFP+ ports, 8 100GE QSFP28 ports line card 32 100GE QSFP28 ports line card Up to 4 line cards mix Pluggable 1+1 redundant power supplies
N6300-32C	Standard 1RU 19-inch rack 32 100G QSFP28 ports (every port supports 2*50GE or 4*25GE AOC cable) Pluggable 1+1 redundant power supplies Pluggable 3+1 redundant fans
N6300-48Y8C	Standard 1RU 19-inch rack 48 25GE SFP28 ports 8 100GE QSFP28 ports Pluggable 1+1 redundant power supplies
N6100-48X8C	Standard 1RU 19-inch rack 48 25G SFP28 ports 8 100GE QSFP28 ports Pluggable 1+1 redundant power supplies

1.2 Instruction on front panels

1.2.1 N6400H

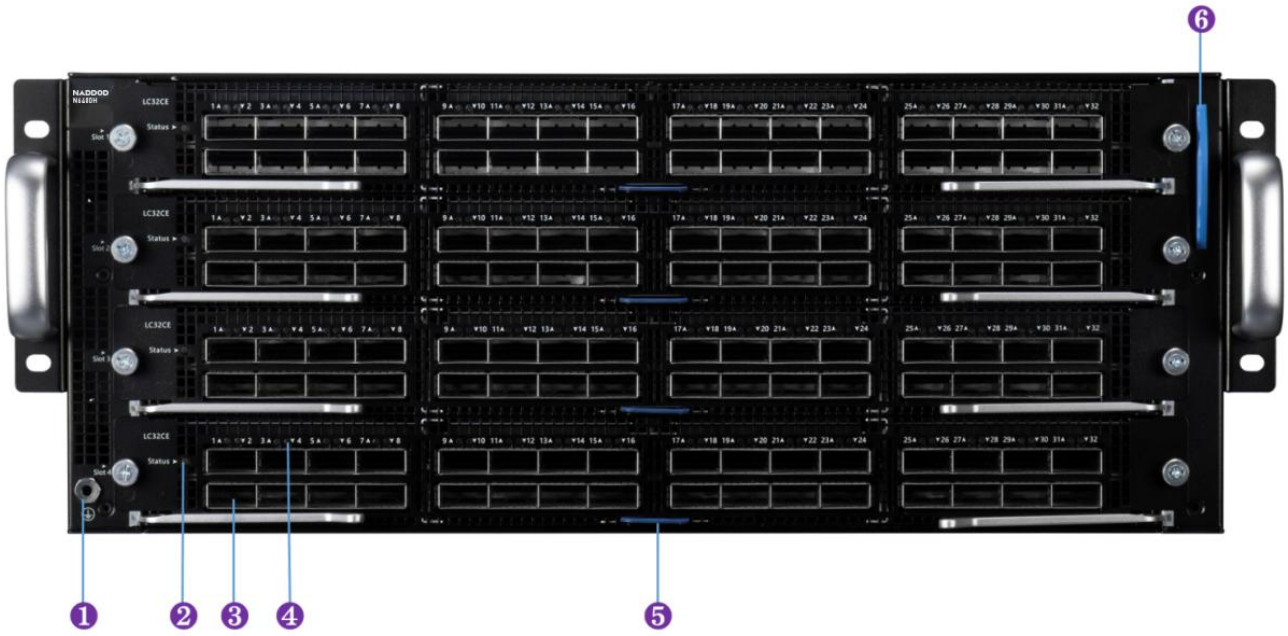


Figure 1-2 Diagram of front panels of N6400H

(1): Electro-static dissipative (ESD) belt jack socket
(2): Indicator light of linecard
(3): SFP+/QSFP28 ports
(4): Indicator light of SFP+/QSFP28 ports
(5): Extractable linecard information label
(6): Extractable asset label

1.2.2 N6300-32C

Figure 1-3 Diagram of front panels of N6300-32C

(1): Indicator light of QSFP+ ports
(2): SYS Indicator light
(3): PSU Indicator light
(4): QSFP+ ports
(5): Extractable asset label
(6): FAN Indicator light

1.2.3 N6300-48Y8C

Figure 1-4 Diagram of front panels of N6300-48Y8C

(1): SYS indicator light
(2): LOC indicator light
(3): FAN indicator light
(4): PSU indicator light
(5): BMC indicator light
(6): SFP28 ports
(7): Indicator light of SFP28 ports
(8): QSFP28 ports
(9): Indicator light of QSFP28 ports
(10): Extractable information label

1.2.4 N6100-48X8C

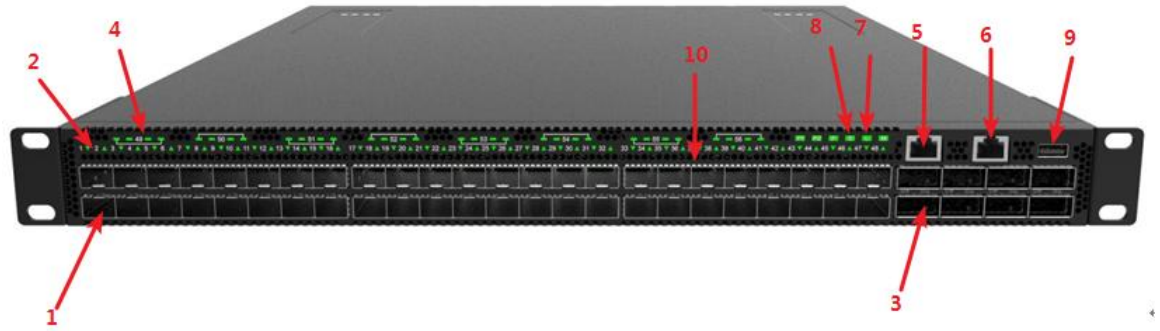


Figure 1-5 Diagram of front panels of N6100-48X8C

(1): SFP28 ports
(2): Indicator light of SFP28 ports
(3): QSFP28 ports
(4): Indicator light of QSFP28 ports
(5): Management Ethernet port (MGMT)
(6): RJ45 Console port (CON)
(7): Indicator light of ID (for locating switch)
(8): SYS Indicator light of system
(9): USB port
(10): Front-rear air intake ports

1.3 Instruction on rear panels

1.3.1 N6400H

Figure 1-6 Diagram of rear panels of N6400H

(1): Reset key
(2): BMC indicator light
(3): SYS indicator light
(4): PSU indicator light
(5): FAN indicator light
(6): UID indicator light
(7): USB port
(8): MGMT port
(9): Console port
(10): Ground screws
(11): indicator light of FAN status
(12): Fan modules
(13): PSU
(14): Electro-static dissipative (ESD) belt jack socket
(15): Extractable information label

1.3.2 N6300-32C

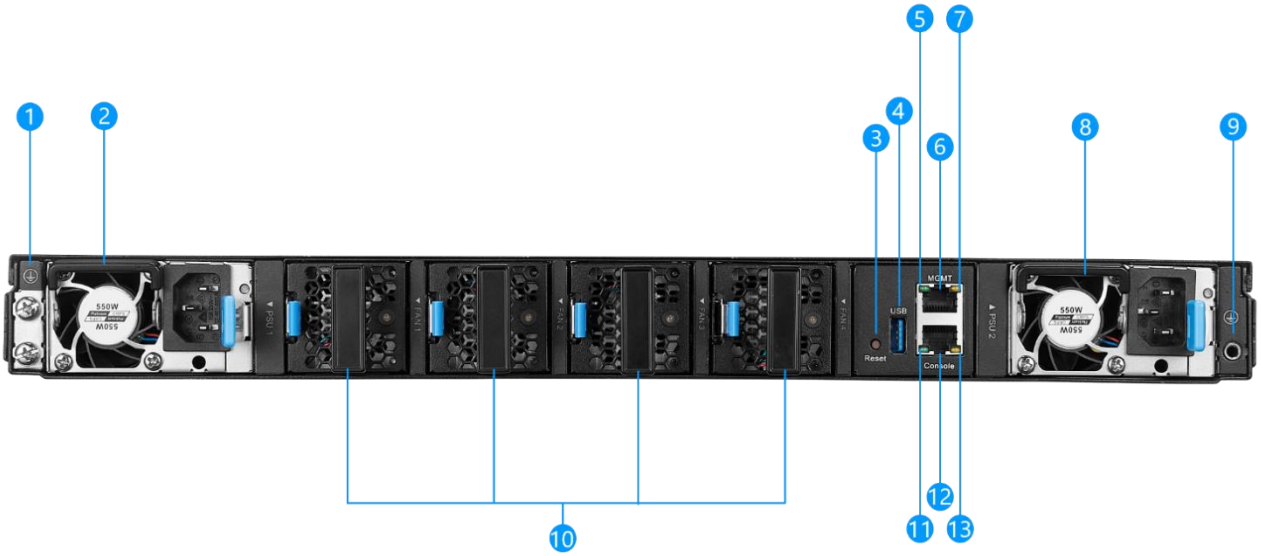


Figure 1-7 Diagram of rear panels of N6300-32C

(1): Ground screws
(2): PSU 2
(3): RST reset key
(4): USB port
(5): indicator light for MGMT port
(6): MGMT port
(7): indicator light for MGMT port
(8): PSU1
(9): Electro-static dissipative (ESD) belt jack socket
(10): Fan modules
(11): indicator light for Console port
(12): Console port
(13): indicator light for Console port

1.3.3 N6300-48Y8C

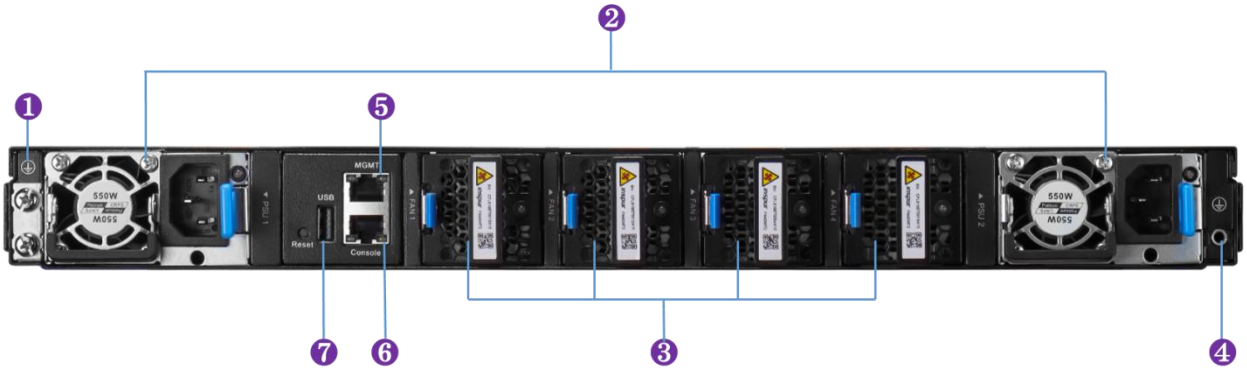


Figure 1-8 Diagram of rear panels of N6300-48Y8C

(1): Ground screws
(2): PSU Power supplies
(3): Fan modules
(4): Electro-static dissipative (ESD) belt jack socket
(5): MGMT management port
(6): Console port
(7): USB port

1.3.4 N6100-48X8C

Figure 1-9 Diagram of rear panels of N6100-48X8C

(1): Ground screws
(2): AC Power supply (PSU1)
(3): AC Power supply (PSU2)
(4): Fan modules

1.4 Instruction on ports

1.4.1 Business ports

The business ports of N6400/N6300/N6100 series switches are shown in Form 1-2.

Product models	Interface type	Quantity	Description
N6400H-M32C line card	QSFP28	32	Use the category of QSFP28 optical modules Use the category of QSFP+ optical modules
N6400H-M8C28X line card	QSFP28	8	Use the category of QSFP28 optical modules Use the category of QSFP+ optical modules
	SFP+	28	Use the category of SFP+ optical modules
N6300-32C	QSFP28	32	Use the category of QSFP28 optical modules
N6300-48Y8C	QSFP28	8	Use the category of QSFP+ optical modules
	SFP28	48	Use the category of SFP28 optical modules
N6100-48X8C	QSFP28	8	Use the category of QSFP28 optical modules Use the category of QSFP+ optical modules
	SFP+	48	Use the category of SFP+ optical modules

Form 1-2 Business ports of N6400H/N6300/N6100 series switches

1.4.2 Management ports

Console port

The console interface uses a RJ-45 8-pin connector. To connect the console interface of switch to a computer, we need adaptive cables of RJ-45-to-DB-9. It's recommended to use the additionally donated random network cables.

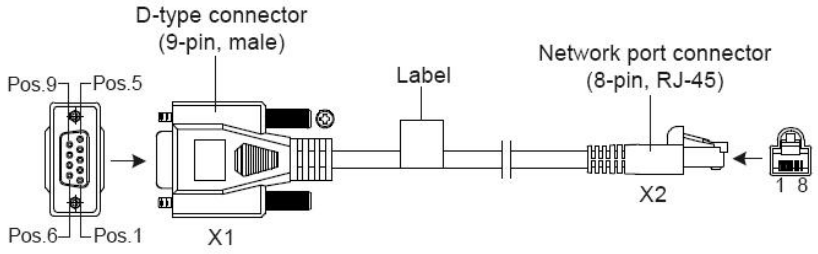


Figure 1-10 DB9 to RJ45 console interface connection cables

Refer to the following form for specific pins:

RJ45	Signal	Direction	DB-9

1	CTS (Clear To Send)	→	8
2	DSR (Data Set Ready)	→	6
3	RXD (Receive Data)	→	2
4	GND	---	5
5	GND	---	5
6	TXD (Transmit Data)	←	3
7	DTR (Data Terminal Ready)	←	4
8	RTS (Request To Send)	←	7

Form 1-3 RJ-45-to-DB-9 cable order

The properties of CONSOLE interface are shown in the following form:

Properties	Description
Connector type	RJ45
Standards met	EIA/TIA-232
Rate	115200bit/s
Services supported	• Connect to the character terminal • Connect to the serial port of local terminal (which may be a PC), and run terminal simulation programs on the terminal

Ethernet ports used for management

N6400/N6300/N6100 series switches integrate out-of-band management Ethernet ports featured by 1000Base-TX or 100Base-T. It's recommended to use the additionally donated random cables.

Properties	Description
Connector type	RJ45
Port transmission rate	• Support 10/100M rate self-adaption • Support full-duplex/half-duplex working mode auto-negotiation • MDI/MDI-X self-adaption
Specification of cables used	Twisted-pair of class 5 and above
Maximum transmission distance	100m
Standards met	IEEE 802.3

Properties	Description
Role and service	Used for applications and BIOS, ONIE upgrade and network management

Form 1-4 Properties of Ethernet ports used for management

USB port

The front/rear panels of N6400/N6300/N6100 series switches provide a USB2.0 interface meeting OHC standards, which may support the uploading and downloading rates of 480Mbps. Through this interface, users may carry out file interchange with Flash file system on the switches, e.g., uploading or downloading application files, etc.


Note

Because there exist differences among USB devices from different manufactures in compatibility and driving, NADDOD doesn't ensure that the USB devices from all manufactures can be used normally on the switches. If a USB device fails to be used normally, it doesn't belong to switch fault. Please try to use USB devices from other manufactures then.

1.5 Instruction on indicator lights

1.5.1 Indicator light of system

Name of indicator light	State	Instruction
SYS	Green solid	The system has been started and works normally
	Green blinking	The system is starting
	Yellow solid	The system exists minor failure
	Red solid	The system exists major failure
	Dark	The device isn't powered on

Name of indicator light	State	Instruction
FAN (Chassis panel)	Green solid	All fans are present and work normally
	Yellow solid	Minor fault: There is a fan which is absent, or among all present fans, there exists one fan working abnormally
	Red solid	Major fault: Two and more fans are absent or among all present fans, there exist two fan modules working abnormally
	Dark	The device isn't powered on

FAN (Fan modules)	Green solid	All fans are present and work normally
	Dark	The fans are absent or the device isn't powered on

1.5.2 Indicator light of fans

1.5.3 Indicator light of power supply

Name of indicator light	State	Instruction
PSU (Chassis panel)	Green solid	Two PSU are present and work normally
	1Hz Blinking Green	(**N6100 only**) only 12VSB or PSU in cold redundant state
	Yellow solid	Minor fault: One PSU is present and work normally or two PSUs are present, one of which is in an abnormal working condition
	Red solid	Major fault: One PSU power supply is present and works abnormally or two PSU power supplies are present and work abnormally
	Dark	The device isn't powered on
PSU (power module)	Green solid	The power supply is present and work normally
	Dark	The power supply is absent or the device isn't powered on

1.5.4 Indicator light of BMC(only N6400H and N6300-48Y8C)

Name of indicator light	State	Instruction
BMC	Green blinking	BMC is starting
	Green solid	BMC has been started and works normally
	Yellow solid	BMC exists minor failure
	Red solid	BMC exists major failure
	Dark	The device isn't powered on

1.5.5 Indicator light of Ethernet management port

Name of indicator light	State	Instruction
MGMT	Green solid	Port links up, working in 100/1000M mode
	Green blinking	Port works in 100/1000M mode, and has data receipt and sending
	Dark	Port isn't connected to the network cables or the port doesn't link up

1.5.6 Indicator light of SFP+ port

Name of indicator light	State	Instruction
N6400H -M28X8C line card: 1-28 N6100 -48X8C: 1-48	Green solid	Port works in 25G mode and links up
	Green blinking	Port works in 25G mode and has data receipt and sending
	Yellow solid	Port works in 10G mode and links up
	Yellow blinking	Port works in 10G mode and has data receipt and sending
	Start phase	Yellow solid, the operating system is powered on by power supply to finish initialization
	Dark	Not connected to the network cables or the port doesn't link up

1.5.7 Indicator light of SFP28 port

Name of indicator light	State	Instruction
N6300 -48Y8C: 1-48	Green solid	Port works in 25G mode and links up
	Green blinking	Port works in 25G mode and has data receipt and sending
	Yellow solid	Port works in 10G mode and links up
	Yellow blinking	Port works in 10G mode and has data receipt and sending
	Start phase	Yellow solid, the operating system is powered on by power supply to finish initialization
	Dark	Not connected to the network cables or the port doesn't link up

1.5.8 Indicator light of QSFP28

Name of indicator light	State	Instruction
N6400H -M32C line card: 1-32 N6400H -M28X8C line card: 29-36	Green solid	Port works in 100G mode and links up
	Green blinking	Port works in 100G mode and has data receipt and sending
	Yellow solid	Port works in 40G mode and links up
	Yellow blinking	Port works in 40G mode and has data receipt and sending
	Start phase	Yellow solid, the operating system is powered on by power supply to finish initialization

Name of indicator light	State	Instruction
N6300-32C: 1-32 N6300 -48Y8C: 49-56 N6100 -48X8C: 49-56	Dark	Not connected to the network cables or the port doesn't link up

2 Installation Instruction

2.1 Preparation before installation

2.1.1 Safety warning

To avoid device damage and personal injuries caused by improper usage, please conform to the following precautions:

- The power supply should be unplugged before cleaning switch. Don't use wet duster cloth to wipe the switch, or use liquid to wash the switch.
- Don't place the switch beside water or in a moist place, and prevent water or moisture from entering the enclosure of the switch.
- Don't place the switch on unstable boxes or tables, to avoid major damage to the switch in case of falling down.
- Keep good ventilation indoor and keep the venthole of the switch unblocked.
- The switch can work normally only under correct voltage, please confirm that the working voltage conforms to the voltage indicated by the switch.
- To reduce the risk of electronic shock, don't open the enclosure when the switch is working, and don't open the enclosure of the switch randomly even though it isn't powered on.
- The electro-static dissipative (ESD) gloves must be used when replacing the interface board, to prevent the static electricity from damaging the single board.

2.1.2 Pre-installation check

To ensure normal working environment of switch, N6300 switches have the following requirements for workplaces:

- Confirm that there is space left at the air intake vent and ventilation opening of switch, so as to facilitate the heat dissipation of the crate of switch.
- Confirm that the cabinet and workbench have good ventilation and heat dissipation system themselves.
- Confirm that the cabinet and workbench are solid enough, and can bear the weight of switch and its installation accessories.
- Confirm that the cabinet and workbench are grounded properly.

To ensure long-term stable work of switch, the installation place should also meet the following several

requirements:

Requirements for temperature and humidity

To ensure normal operation and service life of switches, it's necessary to keep certain temperature and humidity in the machine room. Where the humidity in the machine room is too high for a long term, it's easy to cause poor insulation performance of insulating materials and even electric leakage, and it's also easy to cause change in mechanical performance of materials, corrosion of metal components and other phenomenon sometimes; where the relative humidity is too low, the fastening screw may be loosened by the air shrinkage of insulating spacer, and meanwhile it's easy to generate static electricity in dry climate environment and damage the circuit of switch; too high temperature is more hazardous, long-term high temperature will accelerate the aging of insulating materials, reduce greatly the reliability of switch, and affect significantly its service life.

Form 2-1 Requirements for temperature and humidity

Items	N6400/N6300/N6100 series switches
Temperature in working environment	0～45℃
Relative humidity in working environment (incondensable)	10%～95%

Cleanliness requirement

Dust is a main hazard for the operation safety of switch. The dust accumulated on the machine indoor may cause electrostatic adsorption, which may cause poor contact of metal connectors or metal contact points. In particular, when the relative humidity indoor is too low, it's easier to cause electrostatic adsorption, which may not only affect the service life of device, but also improve the risk of communication fault.

Form 2-2 Dust content requirements in the machine room

Mechanical active substance	Unit	Content
Dust particles	Particle/m3	≤3×104 (No visible dust on the table within 3 days)
Note: The diameters of dust particles are ≥5um		

In addition to dust, the machine rooms of switches also have strict requirements for the content of salt, acid and sulfide in the air. Such harmful gases will accelerate the corrosion of metal and aging of certain components. Harmful gases, such as SO2, H2S, NH3 and Cl2 shall be kept away from the machine rooms.

Form 2-3 Limit values of harmful gases in the machine room

Gases	Maximum values (mg/m3)
Sulfur dioxide SO_2	0.2
Sulfuretted hydrogen H_2S	0.006

Gases	Maximum values (mg/m3)
Ammonia NH_3	0.05
Chlorine Cl_2	0.01

Anti-interference requirements

The switches may be affected by external interference of the system during usage through such conduction methods as capacity coupling, inductive coupling, electromagnetic radiation, common impedance (including grounding system) coupling and wires (power line, signal line, output line, etc.).
For this purpose, it should be noted that:

- The alternating current power supply system is TN system, the alternating current power socket should adopt single-phase three-wire power socket with protective earth wire (PE), to allow the filter circuit on the device to filter the interference of power grid effectively.
- Keep the workplace of switches far away from high power radio launcher, radar launcher, high frequency high current equipment.
- Adopt electromagnetic shielding method if necessary, for example, the interface cables adopt shield cables.
- The interface cables are required to cable indoor, and cabling outdoor is prohibited, so as to prevent overvoltage and overcurrent caused by thunder from damaging the signal port of devices.

Laser usage safety

- This series switches belong to Class 1 laser devices.


Instruction

If the optional fiber interface boards of this series switches are in working state, don't look straight at these fiber interfaces, because the light beams of the optical fiber have energy at a very high level, which may harm the retina.

2.2 Installation

Before installation, please prepare the following tools:

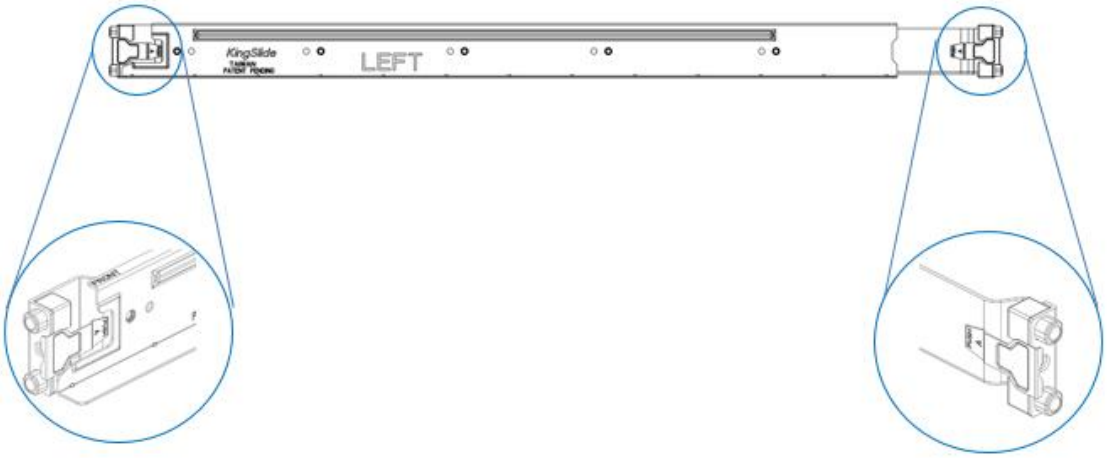
- Electro-static dissipative (ESD) wrist strap
- Phillips screwdriver or One-word screwdriver
- Left and right guide rails (optional)
- Floating nuts
- Racking screws

Instruction

No installation tool is attached to the switches, the users should prepare installation tools by themselves.

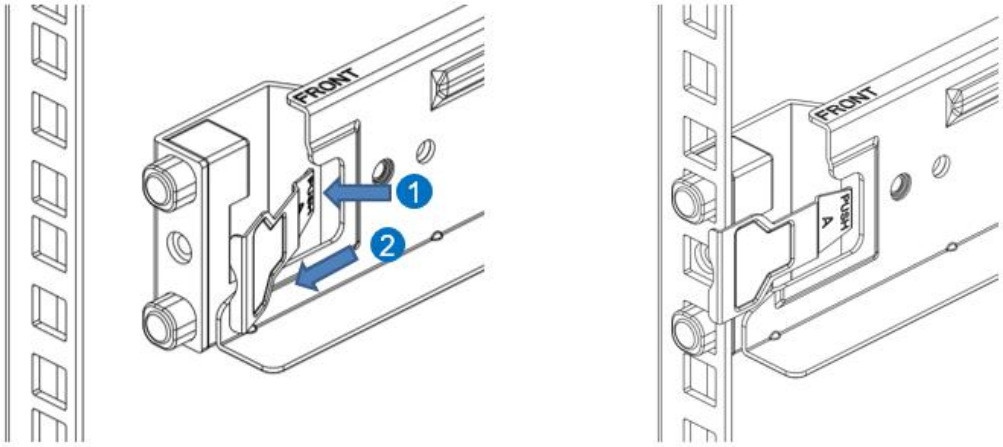
2.2.1 Installing N6400 series switches

The front and rear view of guide rails



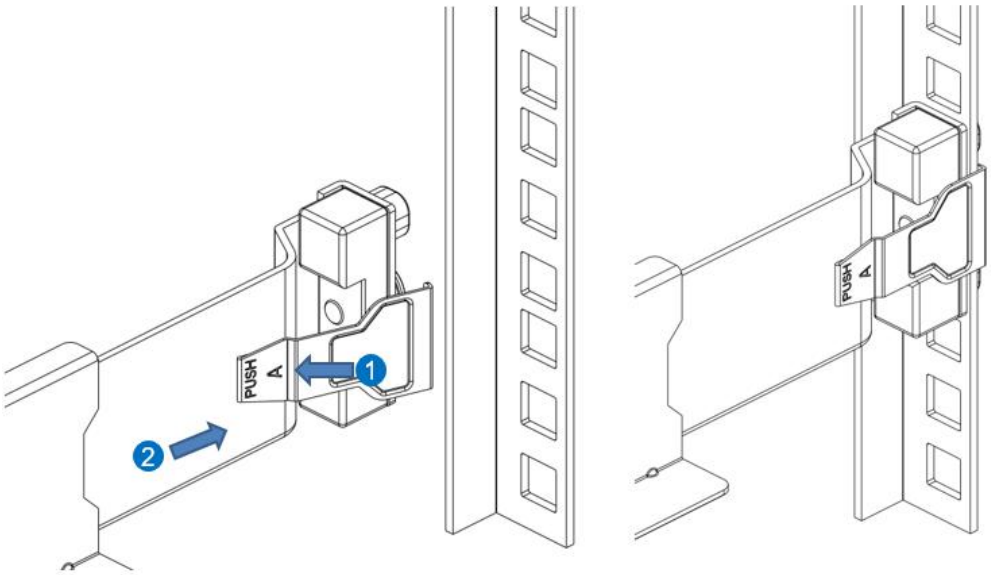
Installing the guide rails

Step 1: install the front part of guide rails to the chassis
After determining the installation position of the guide rail on the rack, press the tail of the lock to open the lock as (1) shows. Aign with the guide column and the column hole of the rack guide rail, push into the guide rail in the direction of arrow as (2) shows, release the buckle, and make the buckle tight on the cabinet.

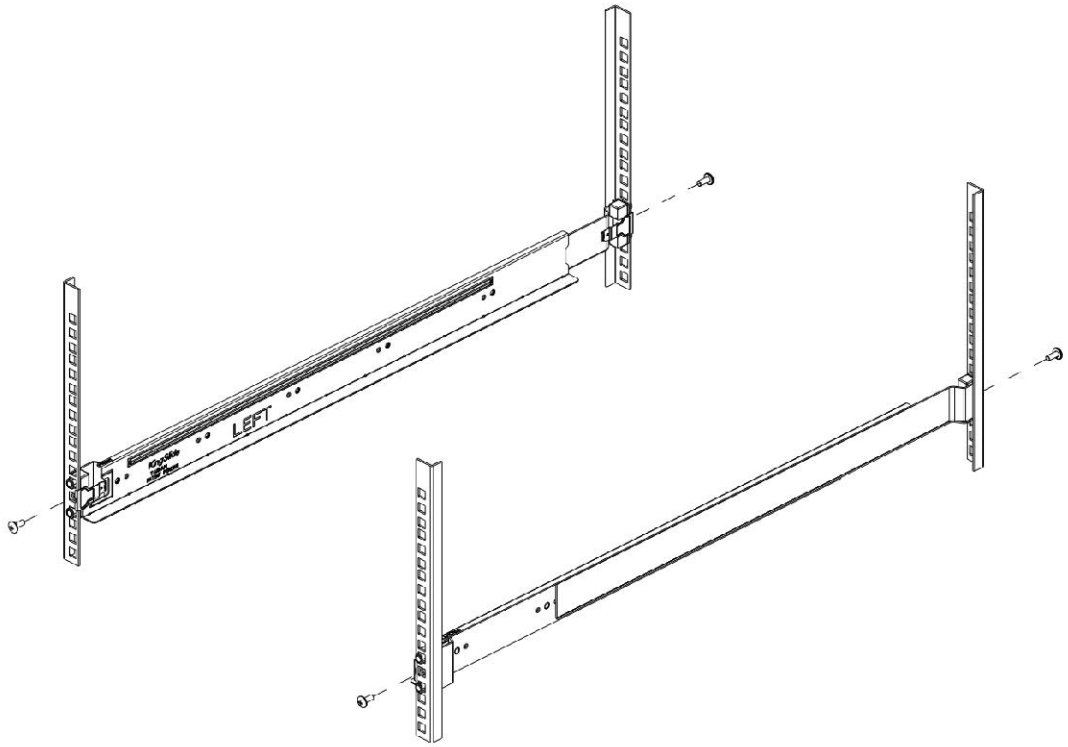


Step 2: install the rear part of guide rails to the chassis
Stretch the extension frame, keep in the same horizontal direction as the guide rail front end. Press the tail of the lock to open the lock as (1) shows. Aign with the guide post at the rear end of the guide rail and the hole of the cabinet column, push into the guide rail in the direction of arrow as (2) shows, release the lock, and make the

buckle tight on the rack.

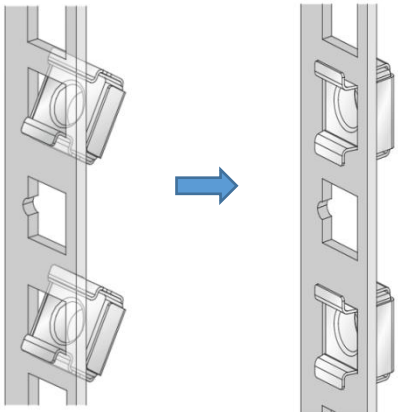


Repeat step 1 and 2 to complete the installation of another guide rail. The rails must be locked by the attached screws, shown as below:



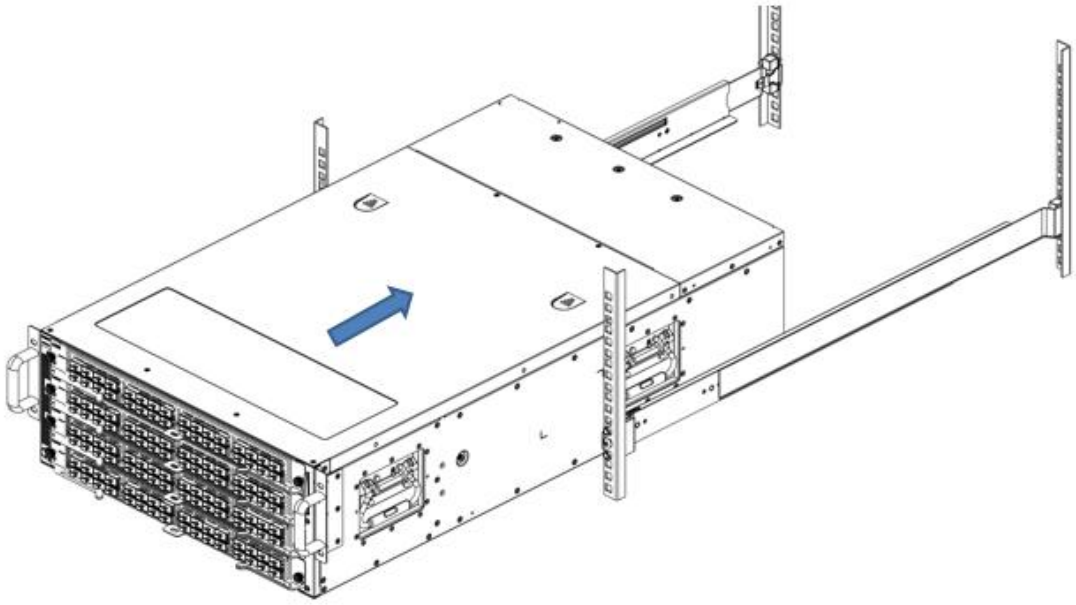
Installing Floating nuts

Install the front post at the left and right ear screw holes in the rack.

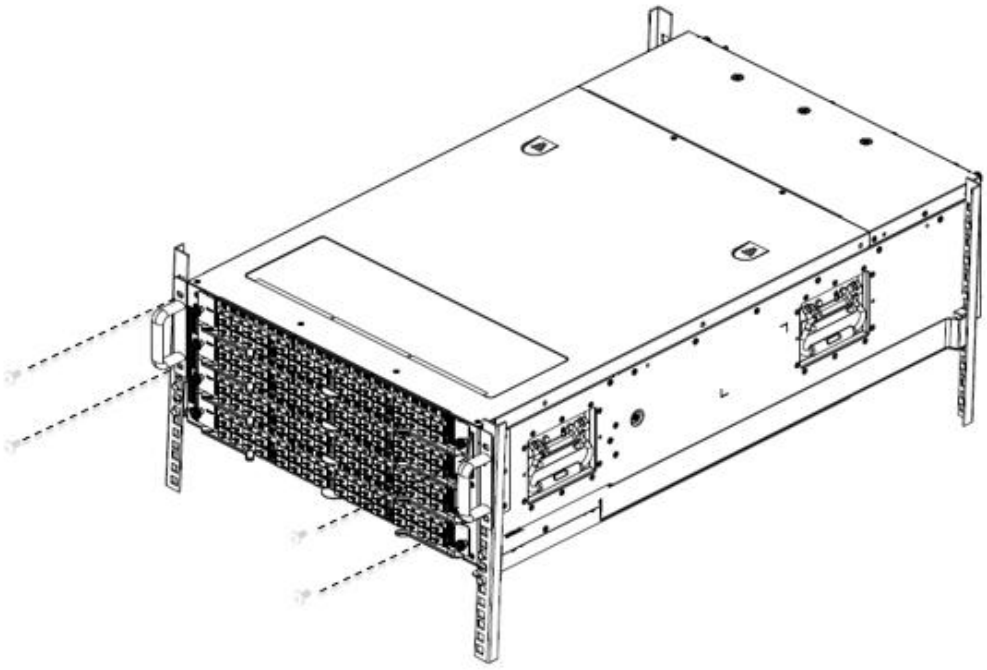


Installing the switch chassis

Step 1: Lift the switch to place the back end on the rail, and then push the switch horizontally into the rail from the front end, as shown below.



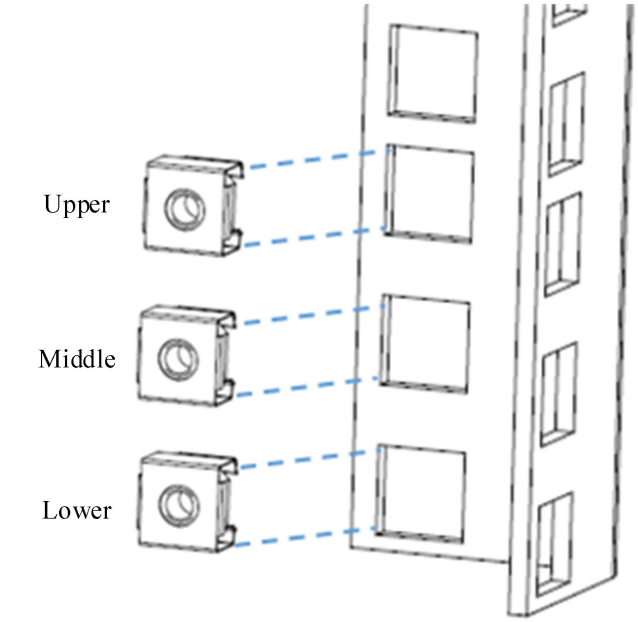
Step 2: After the switch is fully pushed into the cabinet, secure the screws of the left and right ears of the switch, As shown in the following figure。After the switch is fully pushed into the rack, fix the screws of the left and right ears of the switch, as shown below.



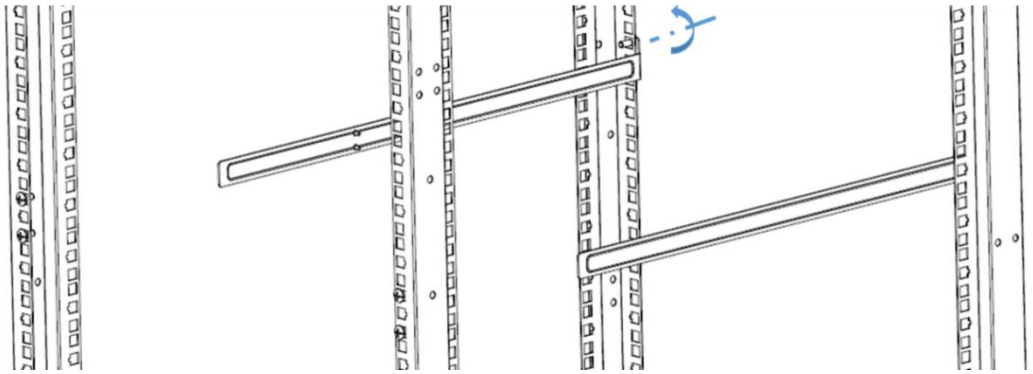
2.2.2 Installing N6300/N6100 series switches

Determine the installation position of the switch on the cabinet, and install the floating nuts to the corresponding hole sites of the column before and behind the cabinet, so as to facilitate the locking of screw.

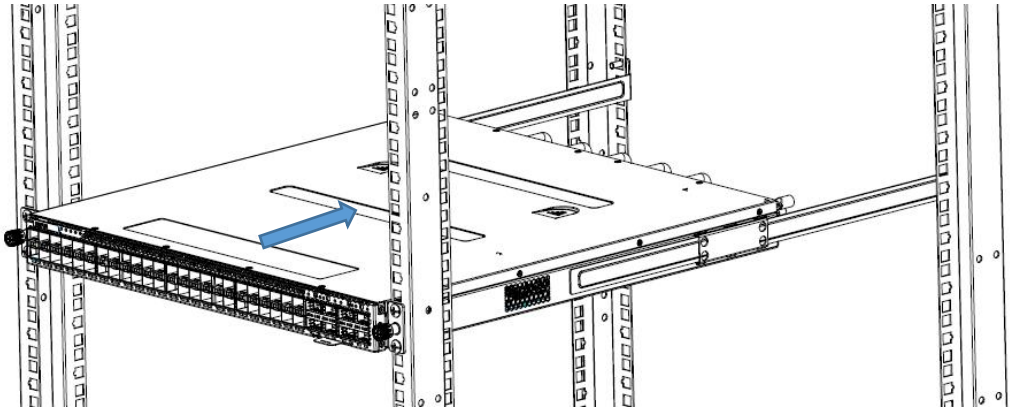
Instruction: (1) The height of switch is corresponding to three hole sites, as shown in the following diagram. (2) Install the floating nuts of front column to the hole sites in the middle; where the switch may be moved with the whole switch cabinet after being mounted to the cabinet, install the nuts to hole sites at the top and bottom. (3) Install the floating nuts of rear column to the hole sites at the top and in the middle; if L-shape bracket has been installed in the cabinet, there's no need to install it.



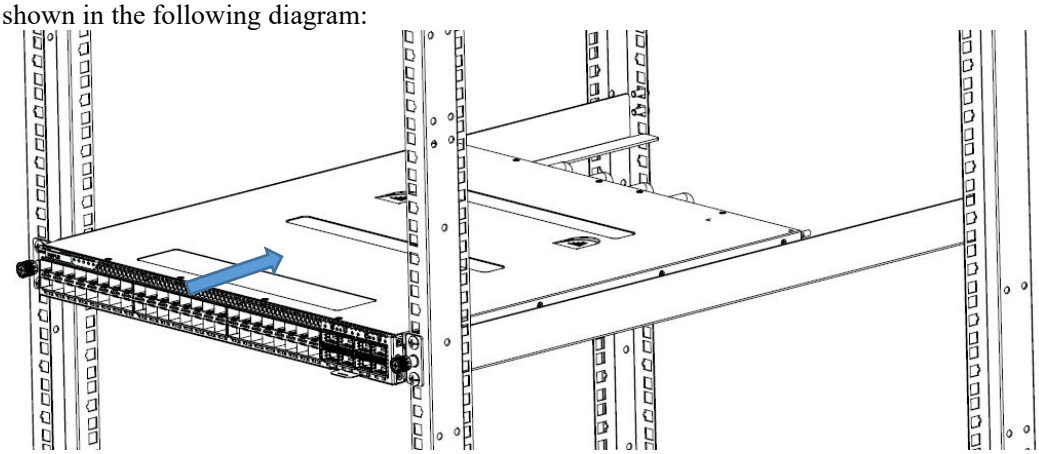
Take out the left and right guide rails from the packing box of guide rails, and install them to the column behind the cabinet with racking screws.
Instruction: If L-shape brackets have been installed in the cabinet, skip this step.



Lift the switch horizontally and put it into the cabinet, align the mounting brackets on both sides with the floating nuts on the front column of cabinet. Gently adjust the switch, interpose the left and right guide rails to the guide rail slots on both sides at the rear part of the switch, and continue to push the switch backwards slowly until the mounting brackets on both sides reach the front column of cabinet, as shown in the following figure:



Instruction: If L-shape brackets have been installed in the cabinet, place the switch horizontally on the L-shape brackets, push the switch backwards slowly until the mounting brackets on both sides touch the front column of cabinet, as shown in the following diagram:



Fasten the thumb screws attached to the mounting brackets on both sides of switch; where the switch needs to be moved along with switch cabinet after being mounted on the cabinet, fasten the racking screws corresponding to the hole sites at the top and bottom.

2.2.3 Connecting ground wires to the cabinet

Use Phillips screwdriver to connect O-shape terminal of ground cables to the ground point of the cabinet.

2.3 Change of power module

2.3.1 Installation procedures

The power module of N6400/N6300/N6100 series switches is hot-pluggable, with the installation procedure as follows:

1. Wear an ESD wrist strap, and confirm that it is well grounded.
2. Ensure that the upward or downward directions of power supply are correct (otherwise, the power supply will fail to be installed to the bottom completely).
3. Hold the handle of power supply module with one hand, and hold the bottom of power supply module with the other hand. Push in the power supply module smoothly and steadily along the power supply slot until the power supply module is completely connected to the chassis.
4. Fix the power supply to the switch with the fixing device of power supply.

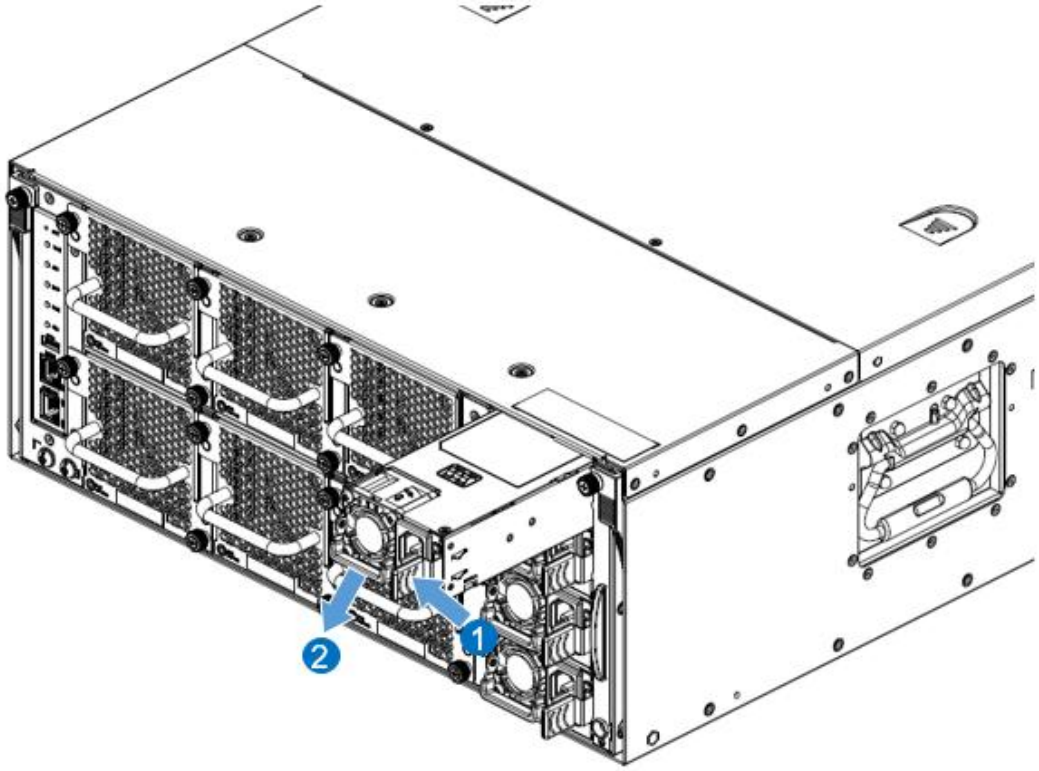


Figure 2-2 Installation diagram of e power supply module

Instruction:

(1) Handle of power module
(2) Fixed devices of power module

2.3.2 Disassembly procedures

The power module of N6400/N6300/N6100 series switches is hot-pluggable, with the disassembly progress as follows:

(3) Wear an ESD wrist strap, and confirm that it is well grounded.
(4) Disconnect the power connection of switch.
(5) Hold the handle of power supply module with one hand while pressing the fixing device, and press the top of the switch with the other hand.
(6) Pull out the power supply module smoothly along the power supply slot.

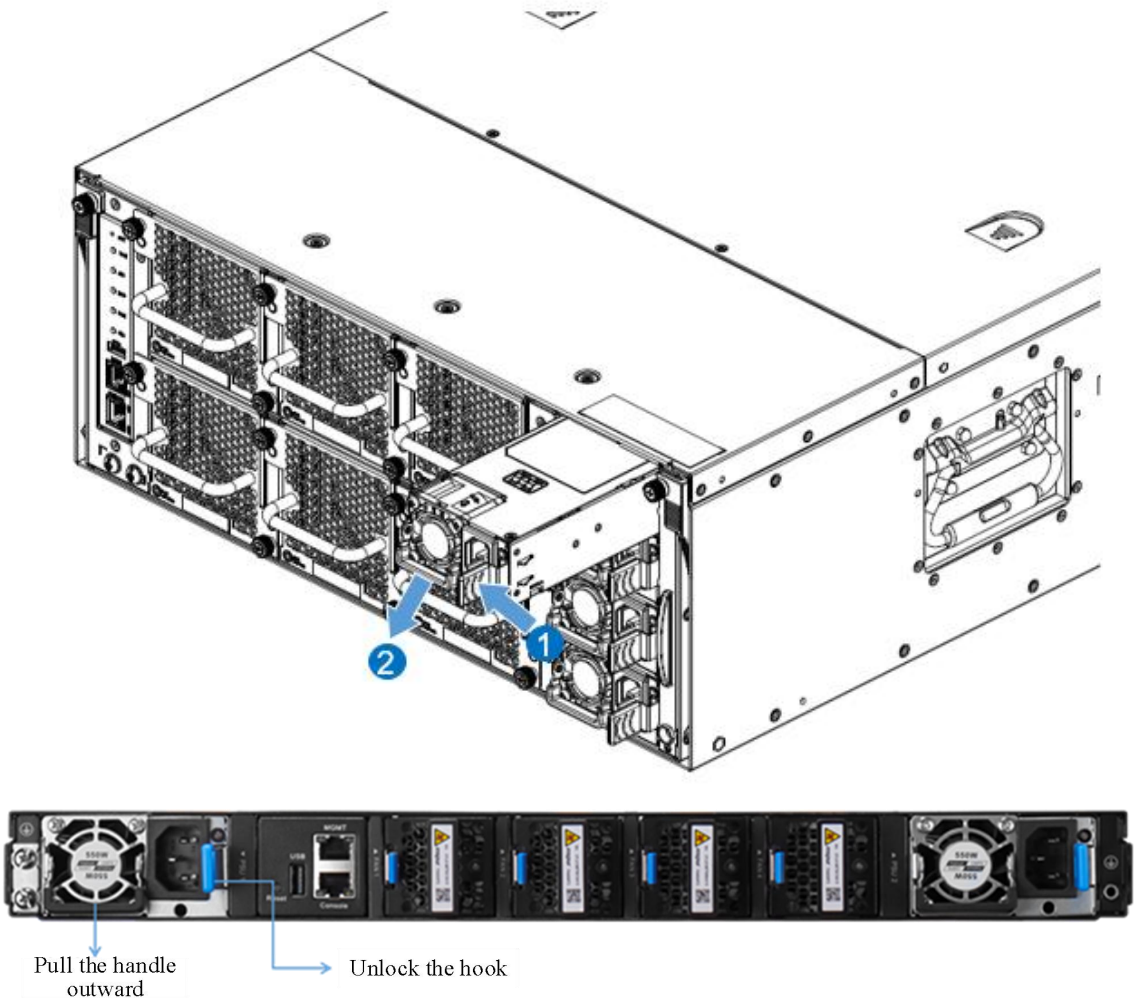


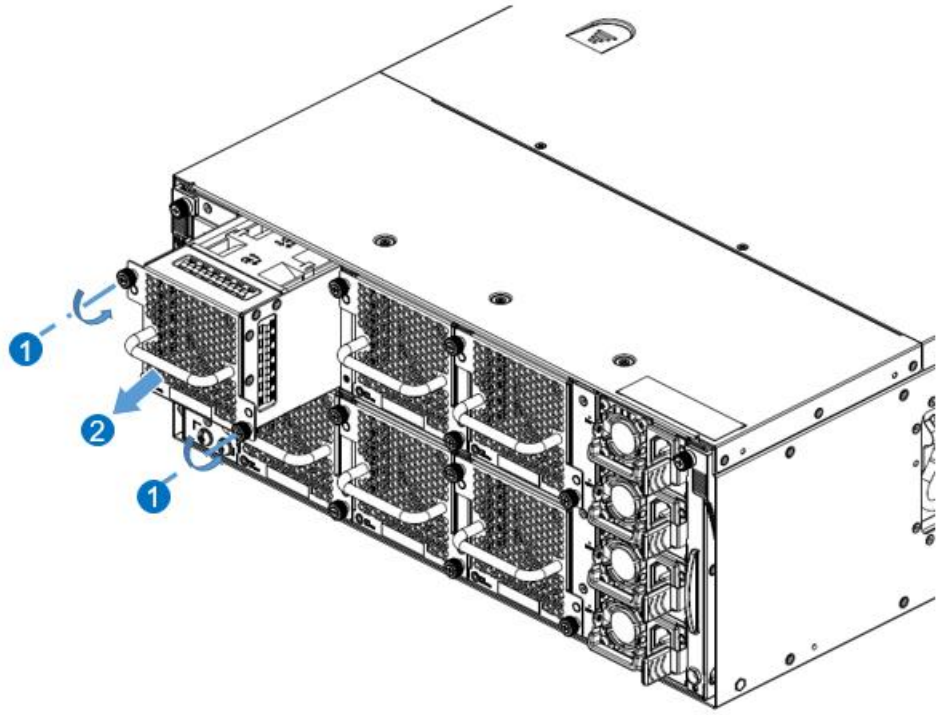
Figure 2-3 Disassembly diagram of power supply module

Note

N6400/N6300/N6100 series switches install two power supply modules to be used for hot standby, and power supply can be switched directly to the other power supply when one power supply fails (without power interruption).

2.4 Change of fan module

Step 1: Unlock the two hand turning screws of the fan module and pull the pull out. The indicator light goes off after the fan module is disconnected.
Step 2: remove the fan module



2.5 Ground wire connection

The power supply input terminals of switch are connected to a noise filter, whose central place is directly connected to the crate, which is referred to as enclosure place (i.e., protected area) and must be grounded properly, so as to make induction electricity and leakage electricity be able to flow to the earth safely, and improve the capacity of anti-electromagnetic interference of switch.
Correct grounding method:
Connect one end of yellow and green protective ground cable of switch to the ground terminal of switch, and the other end to the wiring terminal along the grounding strip in the machine room.

Instruction

The ground wires of Ethernet switches should be connected to the machine room of switch and grounded, and grounding connections through firefighting artery and lightning rod are incorrect.

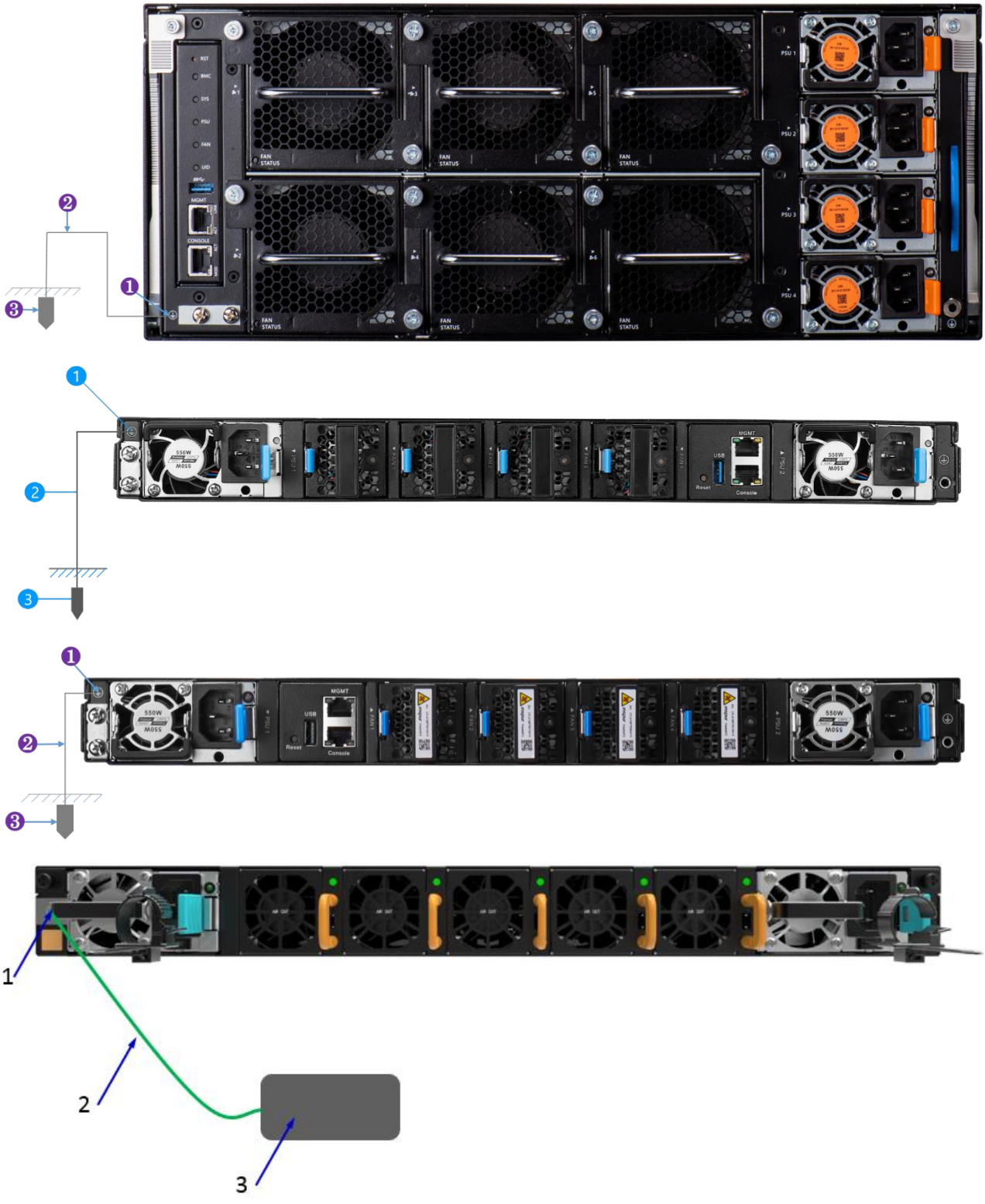


Figure 2-4 Installation diagram of ground wires of switches, N6400H, N6300-32C, N6300-48Y8C, N6100-48X8C by sequence.

Instruction:
(1): The ground terminal of switches
(2): Protective ground cables

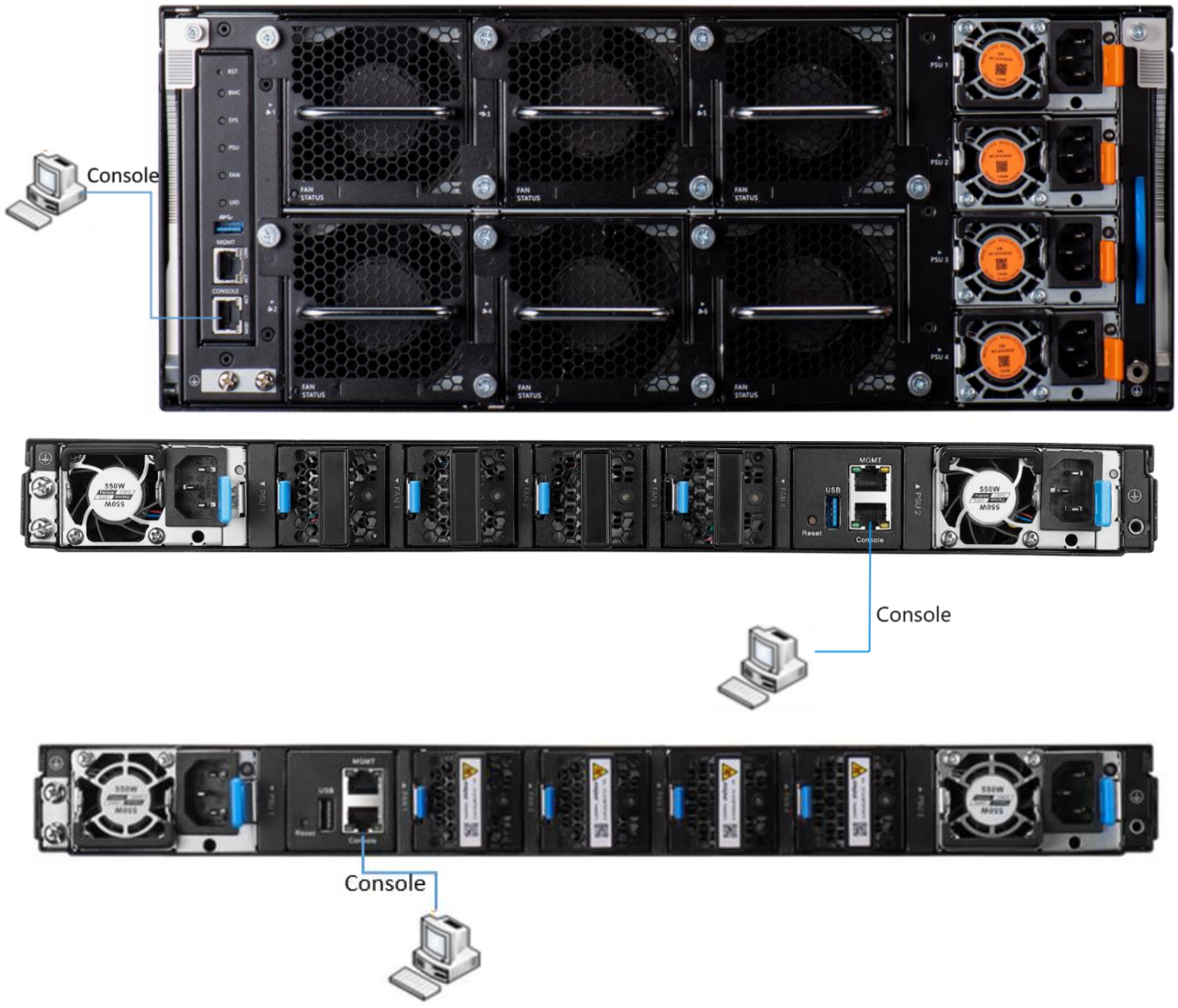
(3): The ground terminal in the machine rooms

Note

The normal connection of ground wires of switches is an important anti-thunder and anti-interference guarantee of switches, therefore, users must connect the ground wires correctly. The ground wire connection position and grounding in the machine room shown in the diagram are only for reference, please connect based on the actual situation of devices.

3 First power-on and start the switch

3.1 Build configuration environment and connect cables



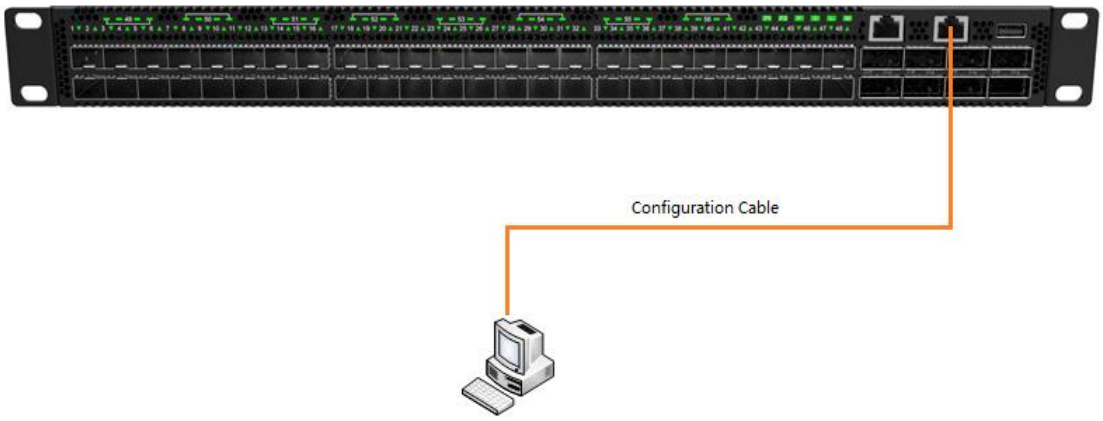


Figure 3-1 Build local configuration environment through Console interface

Step 1. Connect the DB-9 cellular type plug of configuration cables to the serial ports of PC to configure the switch.

Step 2. Connect the RJ-45 end of configuration cables to the configuration interface (Console) of switch.

Note

Please use DB-9 to RJ-45 cables provided in the box, otherwise it may be incompatible.

3.2 Setting the terminal parameters (Windows hyperterminal)

Step 1. Open PC, and run terminal simulation program (e.g., hyperterminal attached to Window system) on the PC;

Step 2. Setting the terminal parameters (taking the setting of hyperterminal of Windows XP as an example). The specific methods are as follows:

1. Click the “Start Menu → Programs→ Accessories→ Communications→ Hyperterminal”, enter the window of hyperterminal, and creat a new connection. The system will pop up the connection instruction interface as shown in the figure.

Figure 3-2 Create a new connection

2. Enter the new connection name (e.g., Network) in the connection instruction interface, click the button of “OK”, the system will pop up the interface as shown in the following figure, and select the serial port to be used by the connection in the column of [Connect using].

Figure 3-3 Set port connection

3. After selecting the serial port, click the button of <OK>, the system will pop up the parameter setting interface of connection serial port, set the bits per second as 115200, the data bits as 8, the odd-even check as none, the stop bits as 1, and the data flow control as none. (In other Windows operating systems, the “bits per second” may be described as the “Baud rate”; and the “data flow control” may be described as “traffic control”.)
4. After setting the parameters of serial port, click the button of “OK”, the system will enter the hyperterminal interface shown in the following figure.

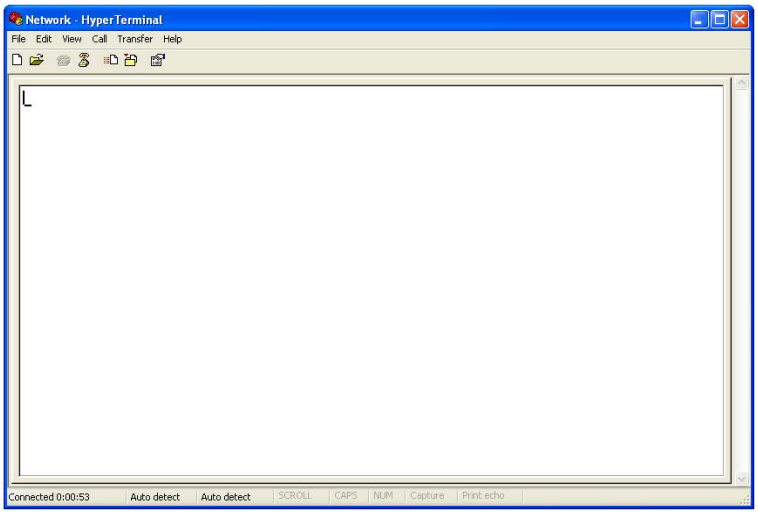


Figure 3-4 Hyperterminal interface

5. Select the [Files/Properties] menu item in the dialog box of hyperterminal properties, and enter the window of properties. Click the tab of "Settings" in the window of properties, enter the window of property settings (as shown in the following figure), select the terminal simulation as VT100 there, and click the button of <OK> after finishing the selection.

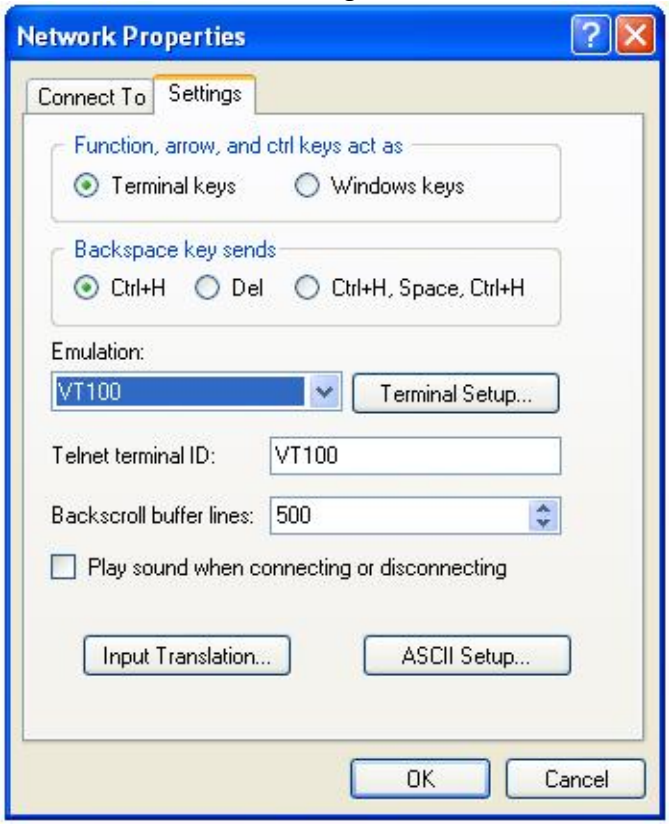


Figure 3-5 Setting of terminal simulation in the window of property settings

Note

Please use DB-9 to RJ-45 cables provided by us with the box, otherwise it may be incompatible.

3.3 Set port parameters (SecureCRT)

Step 1. Install the software SecureCRT on the PC;

Step 2. Set the terminal parameters of SecureCRT:

1. Click the button of "Quick Connect" to enter the window of quick link.

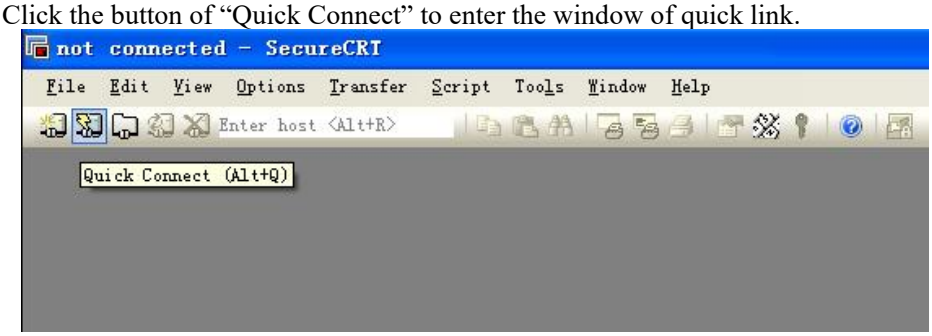


Figure 3-6 Create a quick connection

2. Select the "Serial" protocol.

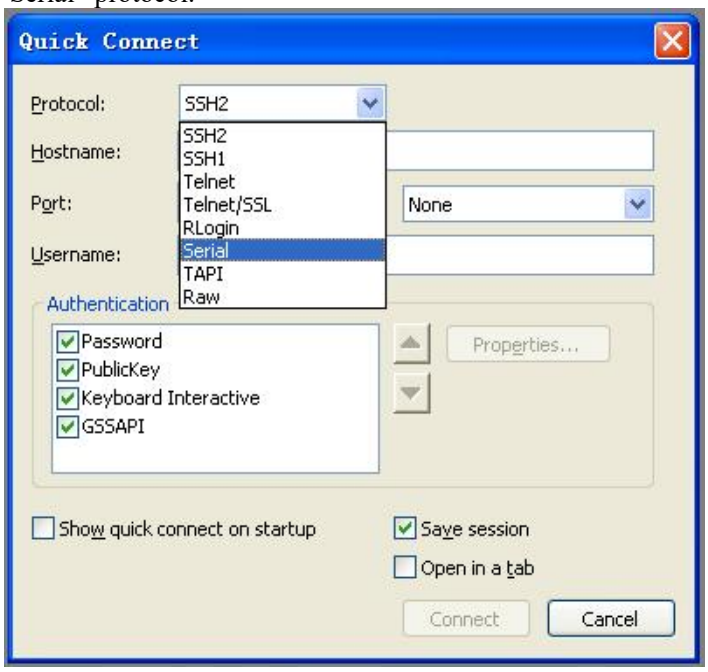


Figure 3-7 Serial port protocol setting

3. Serial port number used by the PC (taking COM4 as an example).

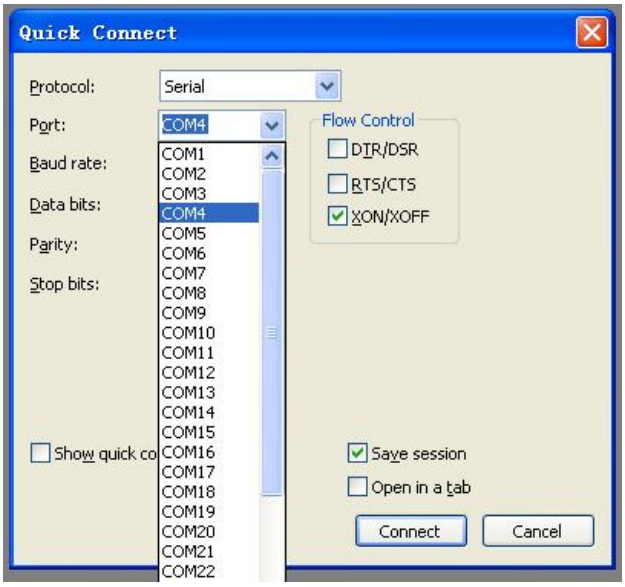


Figure 3-8 Parameter settings of serial port (selection of serial port number)

4. Set the Baud rate as **115200**, the data bits as **8**, the odd-even check as **none**, the stop bits as **1**, the traffic control as **XON/XOFF**, and click the button of **Connect**.
5. Use the serial port to connect to PC, you can see CLI shown in the following figure when you press the Enter key on the PC.

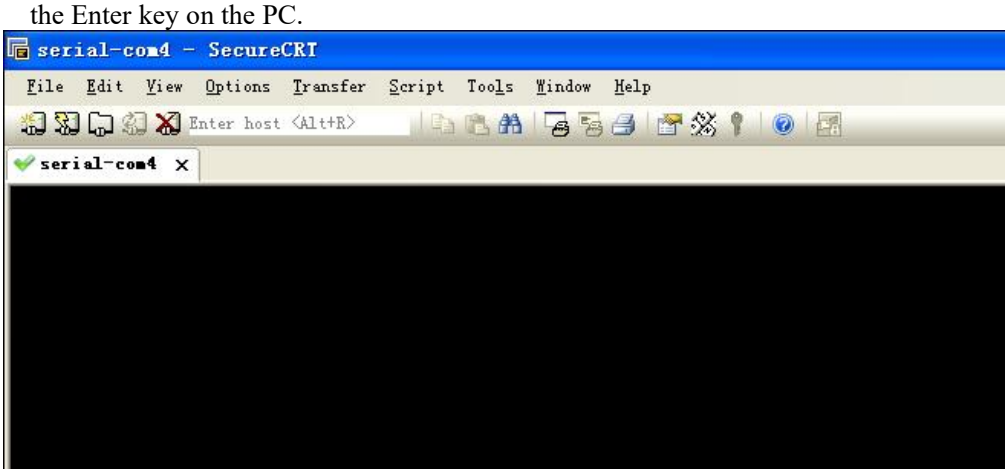


Figure 3-9 Serial port display window

Note

Please use the cables attached in the box, otherwise it may be incompatible.

3.4 Powering-on of the switch

After the switch is powered on and started, the terminal will show the self-inspection information of the device, and after the self-inspection, the system will enter the command line prompt (e.g., switch#), etc.

Enter the command, configure the Ethernet switch or check the operational state of Ethernet switch. May enter "?" at any time for help, and please refer to the command line manual or configuration manual for specific configuration command.

4 Technical parameters

This chapter introduces the switch indicator, system indicator, single board indicator, performance indicator and other technical indicators of N6400/N6300/N6100 series switches, mainly including the following content:

- Switch parameters

4.1 Parameters of N6400H

Items		Parameters
Boundary dimension (mm)		448 (width) × 762 (depth) × 43.5 (height)
The maximum power consumption of switch		Up to 1300W × 2
Weight (kg)		53
Working temperature (℃)		0～40
Working humidity		10%～90% RH, incondensable
Alternating current input voltage (AC)	Nominal voltage (V)	220
	Voltage range (V)	115～240（50Hz/60Hz）

Form 4-1 Parameters of N6400H

4.2 Parameters of N6300-32C

Items		Parameters
Boundary dimension (mm)		470 (width) ×448 (depth) ×43.5 (height)
The maximum power consumption of switch		Up to 550W × 2
Weight (kg)		13
Working temperature (℃)		0～45
Working humidity		10%～90% RH, incondensable
Alternating current	Nominal voltage (V)	220

Items		Parameters
Boundary dimension (mm)		470 (width) ×448 (depth) ×43.5 (height)
The maximum power consumption of switch		Up to 550W × 2
Weight (kg)		13
Working temperature (℃)		0～45
Working humidity		10%～90% RH, incondensable
input voltage (AC)	Voltage range (V)	100～240 (50Hz/60Hz)

Form 4-2 Parameters of N6300-32C

4.3 Parameters of N6300-48Y8C

Items		Parameters
Boundary dimension (mm)		470 (width) ×448 (depth) ×43.5 (height)
The maximum power consumption of switch		Up to 550W × 2
Weight (kg)		13
Working temperature (℃)		0～45
Working humidity		10%～90% RH, incondensable
Alternating current input voltage (AC)	Nominal voltage (V)	220
	Voltage range (V)	115～240 (50Hz/60Hz)

Form 4-3 Parameters of N6300-48Y8C

4.4 Parameters of N6100-48X8C

Items		Parameters
Boundary dimension (mm)		450 (width) ×436 (depth) ×43.5 (height)
The maximum power consumption of switch		Up to 550W × 2
Weight (kg)		10
Working temperature (℃)		0～45
Working humidity		10%～90% RH, incondensable
Alternating current input voltage (AC)	Nominal voltage (V)	220
	Voltage range (V)	115～240 (50Hz/60Hz)

Form 4-4 Parameters of N6100-48X8C

5 Switch system software loading

Without loading operating system software, the switches need to upgrade operating system software by the way of ONIE.

5.1 ONIE system upgrade

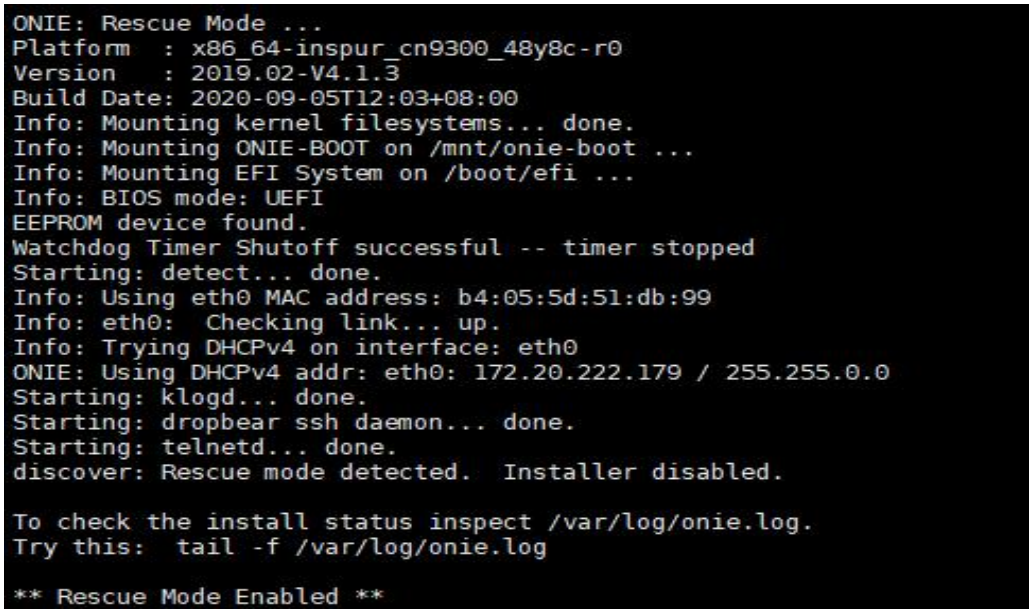
By default, after the system is powered on and initialized, it will enter the OS selection interface of grup, and if users want to carry out version upgrade, they should select to enter ONIE system as shown in the following figure:

Wherein, “Switch-OS” is to enter the OS system of the switch, “ONIE” is to enter ONIE upgrade system, and we are going to carry out OS system upgrade of the switch here, therefore, we should enter by selecting “ONIE” and pressing the Enter key.

After entering ONIE system, there will be operation options of OS system of the switch as shown in the following figure:

Wherein, “Install/uninstall OS” is to load/unload OS system of the switch. To upgrade through these two options, the original OS must be unloaded first, i.e., the “uninstall OS” operation must be selected first, and then the “Install OS” be carried out, which appears to be sort of tedious. Users can select “Rescue” directly here to upgrade, the option doesn’t require unloading and loading, in which case users can use after direct upgrade.

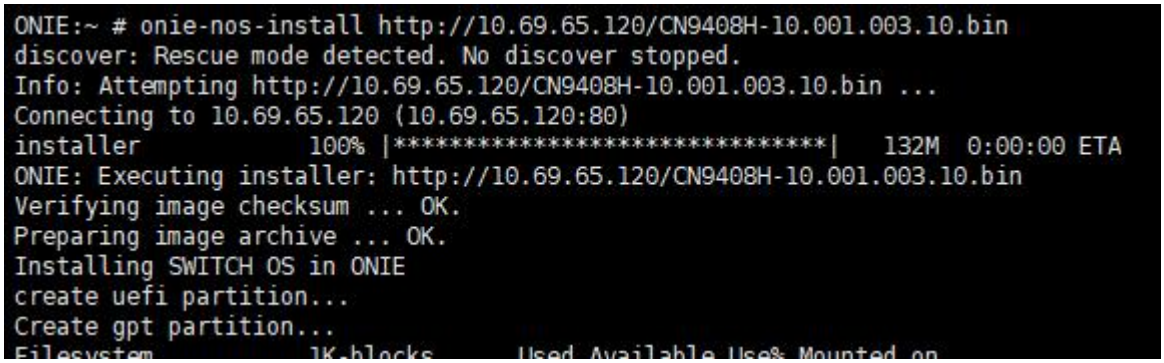
Select the option of “Rescue” and press the Enter key to enter the Rescue Mode. The management port in the Rescue Mode will automatically acquire management IP address through DHCP as shown in the following figure:



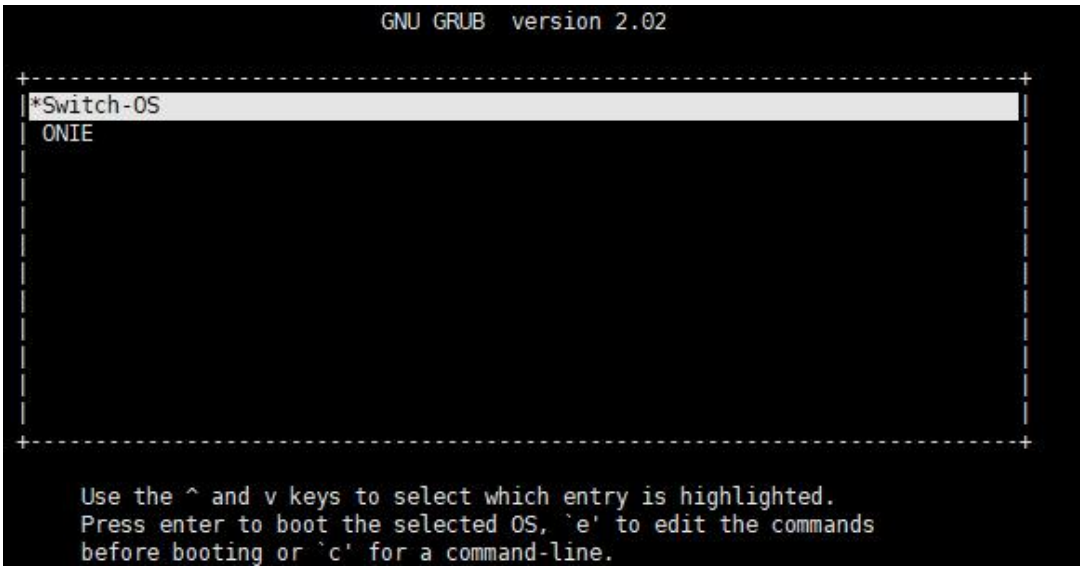
After acquiring the IP address of management port, carry out the upgrade of OS system of switch through the following command.

ONIE:/ # onie-nos-install http:// IP address of server//name of version file	Copy the version file on http server from the management port to the switch
ONIE:/ # onie-nos-install tftp:// IP address of server//name of version file	Copy the version file on tftp server from the management port to the switch

Just select one of the two commands above. Copy the version file on http server to the switch as shown in the following figure:



After upgrade, the switch will restart automatically, and then return to the OS selection interface of grup again, in which case users could select “Switch-OS” to enter the OS system of switch, as shown in the following figure:



And then, the switch will run new OS version of switch.

- After the upgrade of ONIE system, the license stored in flash and the image in boot will be cleared.
- Please contact aftersales personnel to acquire license.

6 Switch OS upgrade

6.1 Operating system upgrade

N6400/N6300/N6100 series switches may carry out operating system software upgrade through operating system, and don't need to replace hardware to add new features or enhance the performance of the system.

Take N6300 as an example

Figure 6-1 Upgrading operating system

Step 1. Copy the system software to be upgraded to the switch

In the privileged mode of switch, use the command copy to copy the mirror image files of software on the TFTP server to the boot folder of Flash of the switch.

```
Switch# copy mgmt-if tftp://10.69.65.120/N6300-10.001.003.10B.bin
flash:/boot/N6300-10.001.003.10B.bin
```

Before copying, please check whether the Flash of switch has enough space. If not, please delete the redundant files.

Step 2. Designate the mirror image files of software to be loaded by the system next time

After copying the new software Image files to the designated folder of switch, you may use the command boot to set the image as the software Image to be used by the switch after the next restart.

```
Switch(config)# boot system flash:/boot/N6300-10.001.003.10B.bin
```

Step 3. Check the software Image loaded after the next restart of switch

After setting the Image used after the next restart of switch, you may use the command show to check whether the settings are correct.

```
Switch# show boot images
System image files list:
Current boot image version: 10.001.003.10A
   Create Time                    Version                          File name
========================================================================
2011-01-01 15:03:30           10.001.003.10A                  N6300-10.001.003.10A.bin
* 2011-05-28 10:08:38           10.001.003.10B                N6300-10.001.003.10B.bin
```

Among these accessed image files of software, those marked with the asterisk * ahead are the software system mirror image of operating system to be loaded after the next restart of switch.

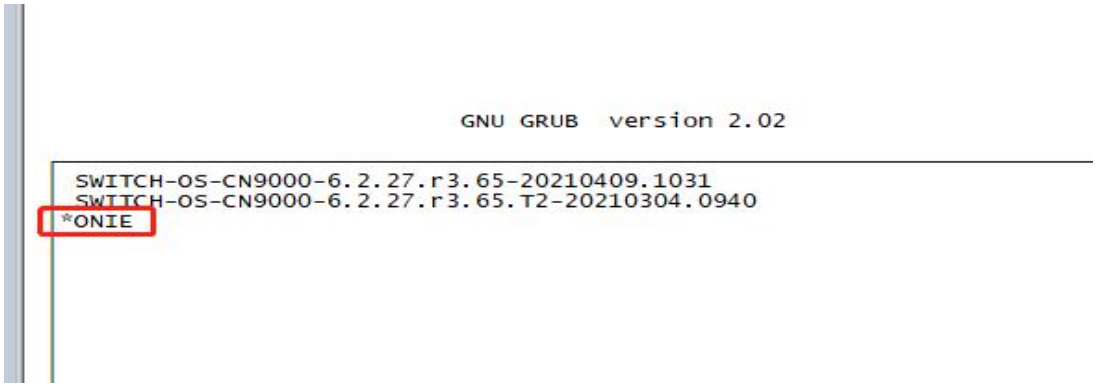
7 Maintenance and troubleshooting

7.1 Loading failure handling

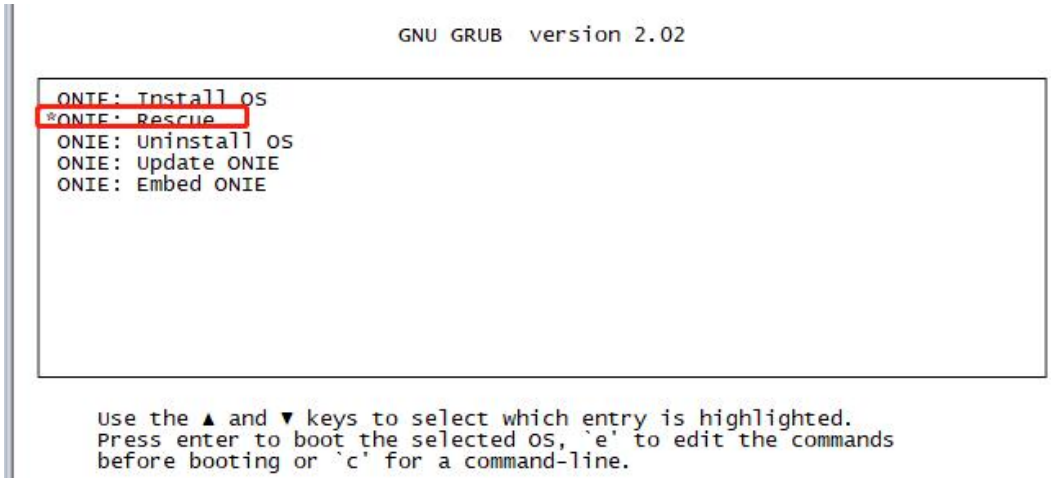
After the loading fails, the system will maintain running on the original version. At this moment, users should recheck whether the physical ports are connected properly first. Where any port hasn't been connected properly, connect the port again, ensure correct physical connection, and restart the loading procedures. Where the physical connection is proper, check the information on the loading procedures shown on the HyperTerminal, and check whether there exist input errors, etc. Where there exist input errors, please correct input errors and reload. For example, having entered wrong IP addresses of Server and Switch when using TFTP protocol, wrong name of loading software, and failing to designate correct working path of correct TFTP server, etc.; where the loading finally fails in case of proper physical connection and no input error during the loading, please contact your technical support/seller/agent for help.

7.2 The user password is lost

Step 1. Restart the system, press the upward or downward key to select "ONIE" when the following interface appears, and press the Enter key to enter



Step 2. Press upward or downward key again to select rescue, and press the Enter key



Step 3. After entering the system, enter the following mode based on the prompt:

ONIE:/ #

Step 4. Input the following commands in order:

ONIE:/ # sgdisk -p /dev/sda
Disk /dev/sda: 468862128 sectors, 223.6 GiB
Logical sector size: 512 bytes
Disk identifier (GUID): EEF80A4F-8B68-4FDE-B01F-C01CA6A51EF7
Partition table holds up to 128 entries
First usable sector is 34, last usable sector is 468862094
Partitions will be aligned on 2048-sector boundaries
Total free space is 417743981 sectors (199.2 GiB)

Number	Start (sector)	End (sector)	Size	Code	Name
1	2048	526335	256.0 MiB	EF00	EFI System
2	526336	788479	128.0 MiB	3000	ONIE-BOOT
3	788480	17565695	8.0 GiB	8300	Switch-OS
4	17565696	34342911	8.0 GiB	8300	Switch-BOOT
5	34342912	51120127	8.0 GiB	8300	Switch-CONFIG

ONIE:/ # mkdir -p /mnt/flash
ONIE:/ # mount -t ext4 /dev/sda5 /mnt/flash
ONIE:/ # cd /mnt/flash/
ONIE:/mnt/flash # vi startup-config.conf
After entering the vi interface, input “i” first, and then press the downward key to pull the interface to the end, modify partial configuration of line con 0 and line vty 0 7 of configuration files as follows (the part marked in red)
line con 0
 exec-timeout 35791 0
 no line-password
 no login
line vty 0 7
 exec-timeout 35791 0
 privilege level 4
 no line-password
 no login
5. Press down the “Esc” key after correction, and then enter “:wq” to store configuration;
6. Return to the ONIE interface again to enter the following commands:
ONIE:/mnt/flash # cd /
ONIE:/ # sync

ONIE:/ # umount /mnt/flash/
7. Input reboot again to restart
ONIE:/ # reboot

7.3 Fault handling of power system

The switch can judge whether there exists any fault in the power supply system of switch according to the PWR indicator light on the front panel; when the power supply system works normally, the PWR indicator light should be solid; when the power indicator light PWR is dark, please check as follows:

- whether the power lines of switch are connected correctly.
- whether power supply of switch and the power supply required by the switch are matched (AC or DC).

7.4 Fault handling of configuration system

After the switch is powered on, if the system runs normally, the start information will be shown on the configuration terminal; if the configuration system fails, the configuration terminal may show nothing or messy code.

7.5 The terminal doesn't show fault handling

After being powered on, where the configuration terminal shows no information, check as follows first:

Step 1. whether the power works normally.

Step 2. whether the cables of configuration interface (Console) are connected correctly.

Step 3. If no problem is found in the inspection above, it is probably caused by improper configuration cables or incorrect settings of terminal parameters of terminal (e.g., hyperterminal), please carry out corresponding inspection.

Step 4. Fault handling of the terminal showing messy code

If the configuration terminal shows messy code, it is probably caused by wrong settings of parameters of terminals (e.g., hyperterminal). Please confirm the settings of parameters of terminal (e.g., hyperterminal): the Baud rate set as 115200, the data bits as 8, the odd-even check as none, the stop bits as 1, the traffic control as none, and the terminal simulation selected to be VT100.