New Rock Technologies, Inc.

SX3000 Enterprise Session Border Controller (SBC)

Installation Guide

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1 Installation Preparation

For avoidance of personal injury and device damage, please read this chapter carefully before installation.

1.1 Installation Precautions

For your safety, please follow the precautions when SX3000 is installed and used.

- Keep the site far from the heat and humidity
- Take precautions with use of high-voltage electricity
- Please let the experienced or trained operator to install and maintain SX3000
- Wear static discharge wrist strap
- Ensure the proper electric ground of installed equipment
- Properly connect the power cable to SX3000
- Do not plug the power cable when in use
- UPS is advised

Note   Please read carefully the **Note** labeled content when installing SX3000, and strictly follow the operation procedures.

1.2 Site Requirements

1.2.1 Temperature and Humidity

Check the temperature and humidity of equipment room. To ensure the normal operation and long service life of the device, the temperature and humidity in the room should be kept at the proper range.

The humidity in the equipment room should be kept between 10% and 90% (non-condensing). Abnormal humidity condition may cause problems to the device:

- Long term high humidity may lead to bad insulation and even cause electricity leakage, mechanical property change and corrosion.
- Low humidity is likely to leave captive screws to loose due to static electricity built up and the insulation washer shrunk.

The temperature in the equipment room should be kept between 0℃ and 40℃. Abnormal temperature condition may cause problems to the device:

- High temperature acceralets aging of electrical parts and insulation materials.
- Low temperature, however, may destablize the operation of the device.

1.2.2 Ventilation and Cleanliness

Dust is very harmful to the safe operation of the device. Dust that is absorbed by static electricity acts as insulator, which not only affects the service life of the device but also leads to communication failure. Therefore, the room for the device must be kept clean. Ensure adequate ventilation to keep the device from overheating. There should be at least 5 cm of clearance for the air intake and the air exhaust vents.

The rack for SX3000 should have a good ventilation system.

1.2.3 Grounding

To maintain good voice quality, proper grounding of the AC supply is critical to minimize the noise from the AC interference. Therefore, the following conditions must be ensured:

- The AC power outlet has a protection ground contact.
- The ground contact of AC supplier must be grounded properly.
- Avoid sharing the multi-outlet power strip with other devices that may generate electrical interference.

SX3000 is chassis based with ground tab. In a site that can provide ground for the chassis, the ground tab at the rear panel of chassis for SX3000 must be properly grounded.

1.2.4 Electromagnetic Environment

Any possible interference source, wherever it is from, impacts the device negatively. To resist the interference and lightning, make sure that:

- Keep the device far from radio transimitting station, radar station, and high-frequency devices. Use electromagnetic shielding when necessary.
- The device is capable for secondary lightning protection on wires and cables that connected to outside buildings.The site must provide the primary lightning protection.
- The power supply system should be used independently as much as possible and effective measures of preventing electric grid from interference should be adopted.
- Ensure a good power grounding effect of equipment or add a lightning protector.

1.2.5 Other Facilities

Rack/Workbench

SX3000 is designed to be installed in a standard 19-inch rack, which should provide adequate air-flow to cool down the device, and should be firm enough to support the weight of the device. It is also recommended that the rack is grounded properly.

IP Network

SX3000 is connected to IP network through its 10/100/1000 base-T Ethernet port and can communicate with other equipment through the network. Inspect IP network on the site, including router, switch, cable wiring and etc., and make sure they are ready for the device.

AC Power Outlets

SX3000 needs AC power supply, and sometimes the power is provided through a power strip with extension cord. Verify that each socket outlet on the power strip is equipped with protective earth contact and the protective action is not negated by using extension power cord.

1.3 Opening Inspection

After the completion of installation preparation, you should open the box for inspection. Make sure the device and all in-box accessories match the description below.

The following accessories are shipped with SX3000:

1. 1 power cord
2. 19-inch Rack mounting kit including:
    - 2 L-shape brackets
    - 4 M6 ×16 screw and nut sets
    - 6 M3 ×6 screws
3. 1 pre-installed 32-GB SD card

> **Note**
> The package list is only for reference. Changes may be made without notification. The detailed inclusions are on the shipping list enclosed in the device package. Please contact your supplier if you have any question.

2 Installation

2.1 Tools Required for Installation

- Screwdriver
- Static discharge wrist strip
- Ethernet and console port cables
- Power cable
- Terminals (a PC running terminal program can be used)
- Multimeter

2.2 Rack Mounting

The SX3000 chassis is designed to be mounted on a standard 19-inch rack with 1U height.

2.2.1 Attaching the Brackets

Place the SX3000 chassis on the workbench, take two L-shape rack mounting brackets and screws, install the brackets at the left and right sides of the equipment, as shown in the following figure.

The L-shape brackets are used to secure the device to the rack. The brackets cannot support the weight of the equipment alone. Prior to install the SX3000 chassis into rack, a supporting shelf must be installed in the place where the device will sit.

Figure 2-1 Installation of SX3000 L-shaped Brackets
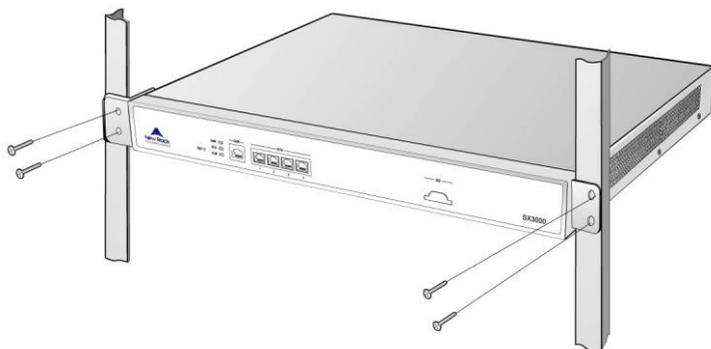

2.2.2 Mounting the Device

Attention should be paid during the installation:

- Ensure that the rack is firmly and stably attached to the ground.
- If the device is installed in a closed cabinet shelf, the cabinet must provide adequate air-flow. So the equipments inside can be well ventilated.
- If multiple devices are installed in a rack, it is recommended to keep at least 1/2U space between devices for heat dissipation.

Follow the steps to install the device:

- Place the device on a shelf in the rack.
- Slide it to a proper position along the guide rails.
- Fix the rack-mount brackets to the rack posts with supplied Phillips screws. Make sure that the device is in level position and securely fixed as shown in the following figure.

Figure 2-1 Mount SX3000 to a Rack

The SX3000 chassis is securely attached to the rack by the rack mounting brackets and the supporting shelf.

2.3 Installing Cables

2.3.1 Connecting Console Port

A CON should be provided by SX3000 to check errors of the device. Connect the CON with computer's RS232 serial ports, then local computers can interwork with the device through simulating terminal program.

As to SX3000, RJ45 plug is used. One port is applied for connecting CON, while the other is applied for DB9 adapter to insert serial ports of configuration terminal. CON rate: 115,200.

Console Port cable installation procedure is as followed:

Step1   Choose a terminal (PC)

Step2   Power off the terminal and connect RS232 port with the Console port.

Figure 2-1 Cable for Connecting SX3000 CON
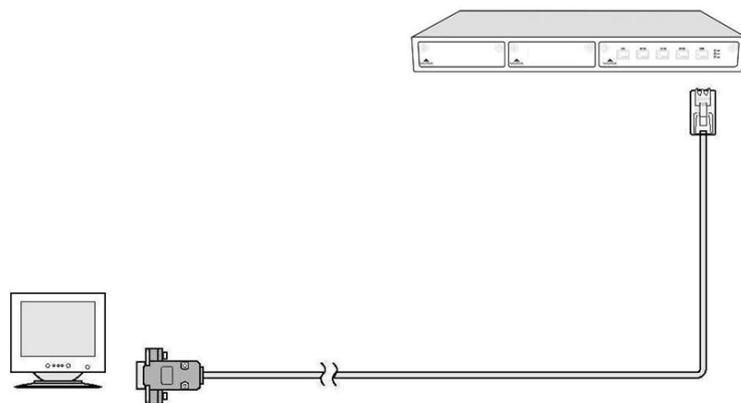
2.3.2 Connecting the Ethernet Cable

Connect one end of the Ethernet cable to the Ethernet port of the device and connect the other end to the peer Ethernet switch or router. Check that the ETH LED on the left of front panel is lit, which indicates that the network cable is correctly connected.

2.4 Connecting the Grounding Cable

When installing in equipment room which provides independent grounding facility, it is required to connect the chassis ground tab on SX3000 with the protective grounding system in this environment. Proper grounding not only provides a guarantee for safe operation of the equipment but also enhances the capacity of the equipment to resist disturbance and ensures the quality of voice communication.

The SX3000 main chassis and expansion chassis are equipped with a M4 grounding screw with a mark in their backs. Please use the M4 screw to connect the grounding wire.

2.5 Connecting the Power Cord

Before connecting the power cord, make sure the AC power outlet is provided with a protective earth contact which is properly grounded.

> **Note**   Please contact the device supplier if the power LED does not light up after the power is turned on. Never install / uninstall the device or plug / unplug any cable on the device when the power is turned on.

Follow the steps to connect power cord:

Step1   Turn the switch of AC power outlet to "OFF" position.

Step2   SX3000 uses the shipped power cord to connect between the AC input at rear of the chassis and the AC power outlet.

2.6 Verifying Installation

Installation verification is extremely important, because operations of the device depend on its stability, grounding, and power supply.

Each time you turn on the power during the installation, verify that:

- Enough clearance has been reserved around the ventilation, openings of the device and the workbench/rack is stable enough.
- The protection ground is connected properly.
- Proper power is used as specified.
- The device is correctly connected to console terminal and other devices.

3 Powering up the SX3000

3.1 Verification before Power-up

3.1.1 Checking Appearance

This is a review process of the installation work, including the chassis, wiring, connectors, ports, labels and site as described in the subsections.

SX3000

- Check whether there is adequate clearance around the device for heat dissipation, and whether the workbench or rack for the moounting of the device is firm enough.
- Check whether the device is correctly connected to the configuration terminal and other devices.

Cable

- Check whether the Ethernet cable is connected properly.
- Check whether the grouding cable is connected properly.
- Check whether the power cord is connected to the proper power supply as required.

Port and Connector

Check whether the ports and connectors are secured.

Equipment Room

Check whether the temperature and humidity in the equipment room are within the proper range. The humidity should be kept at 10% to 90% non-condensing and the temperature should be kept at 0-40℃.

3.1.2 Checking Power Supply

Check whether the power supply is in normal operation with a multimeter.

3.2 Powering up the SX3000

Turn the power switch to **ON** position. Check the status of PWR LED, and if it is lit, the device is powered properly.

4 **Making an RJ45 Connector**

To make an RJ45 connector, follow these steps:

Step1   Strip the wire.

Use a wire stripper (or a similar tool) to strip off the insulation and expose 3 cm of wire, as shown in the figure below.

Figure 4-1 Twisted Pairs with Insulation Stripped

Step2   Pair the wires.

The common pairing standard is EIA/TIA T568B. Wires 1 and 2 are paired wires; 3 and 6 are paired; wires 4 and 5 are paired; and wires 7 and 8 are paired. The wire pairs are arranged by color: 1 for white/orange, 2 for orange, 3 for white/green, 4 for blue, 5 for white/blue, 6 for green, 7 for white/brown, and 8 for brown, as shown in the figure below. Note that the green wire must cross the blue pair. Do not pair the white green wire with the green wire. This will lead to cross talk and lower the transmission efficiency.

Figure 4-2 T568B Pairing Standard
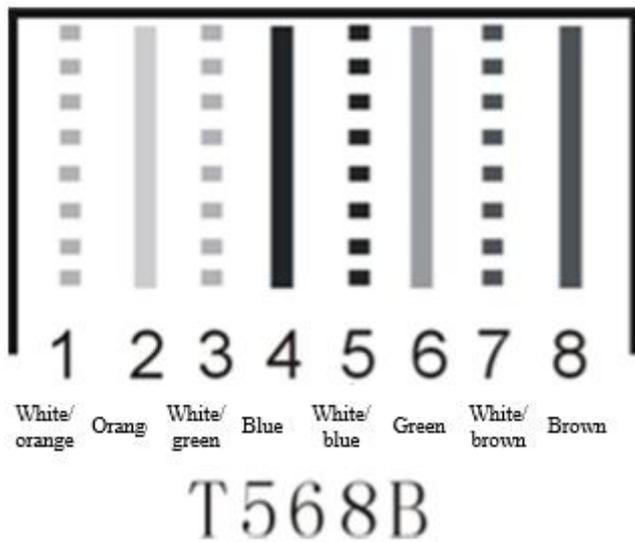

Step3 Insert the wire.

After pairing the wires, use a wire cutter to cut the exposed part of the wires to 15 mm, and then twist the wire ends. Arrange the wires as shown in the figure below. Then insert the wire pairs into the corresponding pins of the RJ45 connector. Note that the white orange wire should be inserted in the first pin.

Figure 4-3 RJ45 Alignment
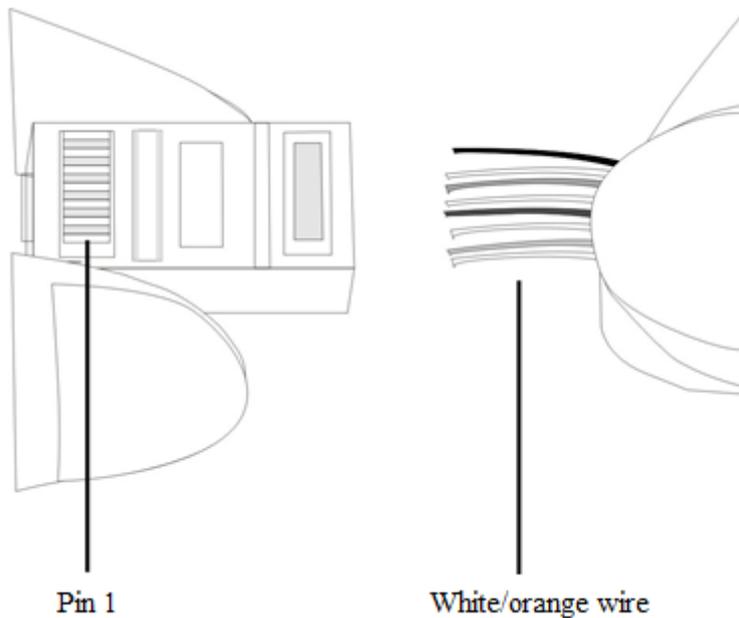
Step4 Crimp the connector.

After inserting each wire pair correctly, use an RJ45 crimper to crimp the RJ45 connector. The crimped connector is shown below.

Figure 4-4 Crimped the RJ45 Connector
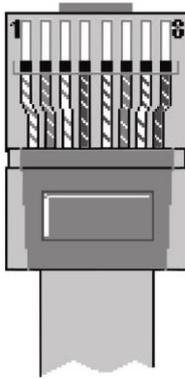
Since the Network Interface Card (NIC) is directly connected to the concentrator, it is recommended to align and connect the RJ45 connector at the other end. The connectors at both ends of the wire should be similar. Now, the RJ45 connectors are ready.