Ruijie Reyee CCTV 1.0

Cookbook

Document Version: V1.0
Date: 2023-03-27

Copyright

Disclaimer

The products, services, or features you purchase are subject to commercial contracts and terms, and some or all of the products, services, or features described in this document may not be available for you to purchase or use. Except for the agreement in the contract, Ruijie Networks makes no explicit or implicit statements or warranties with respect to the content of this document.

The content of this document will be updated from time to time due to product version upgrades or other reasons, Ruijie Networks reserves the right to modify the content of the document without any notice or prompt.

This manual is designed merely as a user guide. Ruijie Networks has tried its best to ensure the accuracy and reliability of the content when compiling this manual, but it does not guarantee that the content of the manual is completely free of errors or omissions, and all the information in this manual does not constitute any explicit or implicit warranties.

Preface

Intended Audience

This document is intended for:

- Network engineers
- Technical support and servicing engineers
- Network administrators

Technical Support

- The official website of Ruijie Reyee: https://www.ruijienetworks.com/products/reyee
- Technical Support Website: https://www.ruijienetworks.com/support
- Case Portal: https://caseportal.ruijienetworks.com
- Community: https://community.ruijienetworks.com
- Technical Support Email: service_rj@ruijienetworks.com

Conventions

1. GUI Symbols

Interface Symbol	Description	Example
Boldface	1. Button names 2. Window names, tab name, field name, and menu items 3. Link	1. Click **OK**. 2. Select **Config Wizard**. 3. Click the **Download File** link.
>	Multi-level menus items	Select **System** > **Time**.

2. Signs

This document also uses signs to indicate some important points during the operation. The meanings of these signs are as follows:

Warning

An alert that calls attention to important rules and information that if not understood or followed can result in data loss or equipment damage.

Caution

An alert that calls attention to essential information that if not understood or followed can result in function failure or performance degradation.

Note

An alert that contains additional or supplementary information that if not understood or followed will not lead to serious consequences.

Specification

An alert that contains a description of product or version support.

3. Instruction

This manual is used to guide users to understand the product, install the product, and complete the configuration.

- The example of the port type may be different from the actual situation. Please proceed with configuration according to the port type supported by the product.
- The example of display information may contain the content of other product series (such as model and description). Please refer to the actual display information.
- The routers and router product icons involved in this manual represent common routers and layer-3 switches running routing protocols.

Contents

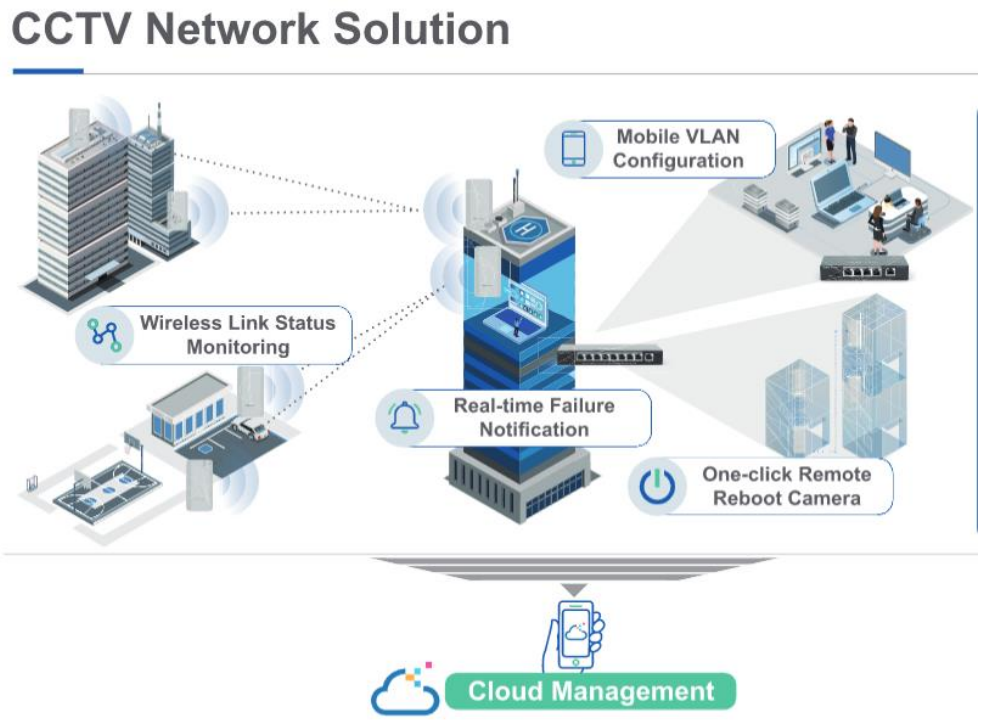
1 Overview

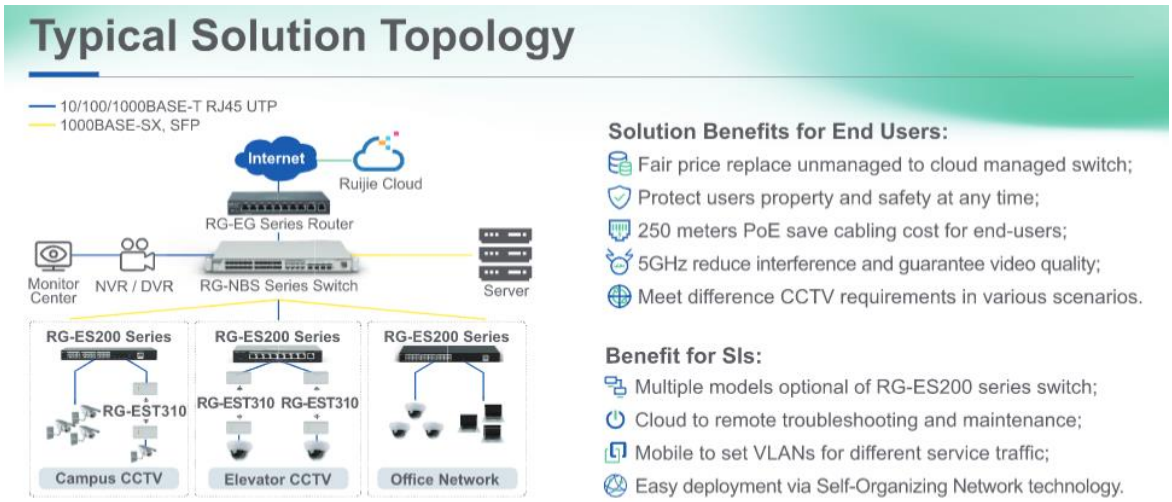
1.1 Introduction

In a CCTV scenario, protecting the safety of personnel and property is the core requirement of users. Therefore, smoothly surveillance video transmission, real-time alarm notification and fast recover from camera failure are expected.

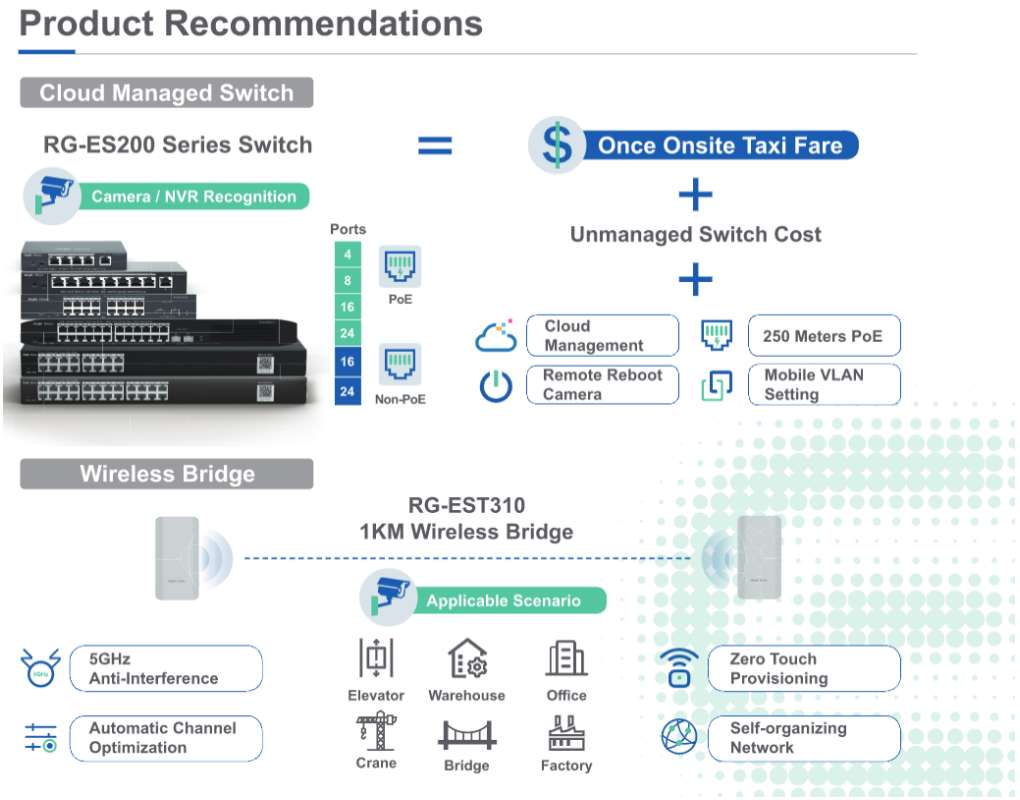
There is a story. One day, confidential documents have been stolen, but the elevator and corridor camera signal lost and couldn't track the thief. Boss was so angry and asked SI to onsite right away to solve his monitoring problem. Two hours later, SI finally arrived the company, when SI tried every means to check the system. They only found that unmanaged switch use in the network cannot figure out failure switch ports location. Second, the elevator was unable to transmit video due to damaged cables. During testing, SI found while the employee downloading the camera video would jam. In the end, he had to restart the switch, all the network interrupted.

Reyee Cloud Managed CCTV Network Solution, your CCTV network expert won't disappoint you. Reyee RG-ES200 series cloud managed switch and RG-EST310 wireless bridge are designed for CCTV business. Mobile VLAN configuration, one-step to separate your CCTV and production network, the video won't jam anymore; Real-time Failure Notification, would notice users that camera failure in the first place; Remote Reboot Camera, helps you one-click to restart the camera at home, no need onsite anymore.





1.2 Specifications



2 Getting Started

2.1 Preparing for Installation

2.1.1 Project Requirement

Company Y wants to monitor the whole park and the monitoring data from the cameras should be aggregated to the NVR.

The headquarters and its branch of Company Y are all in city A, but no wires are connected between them. The staffs from the branch need to get the data by accessing the documents server and data server at the headquarters, and the camera data from the branch needs to be aggregated to the headquarters' NVR.

(1) The CCTV network is isolated from the other network.

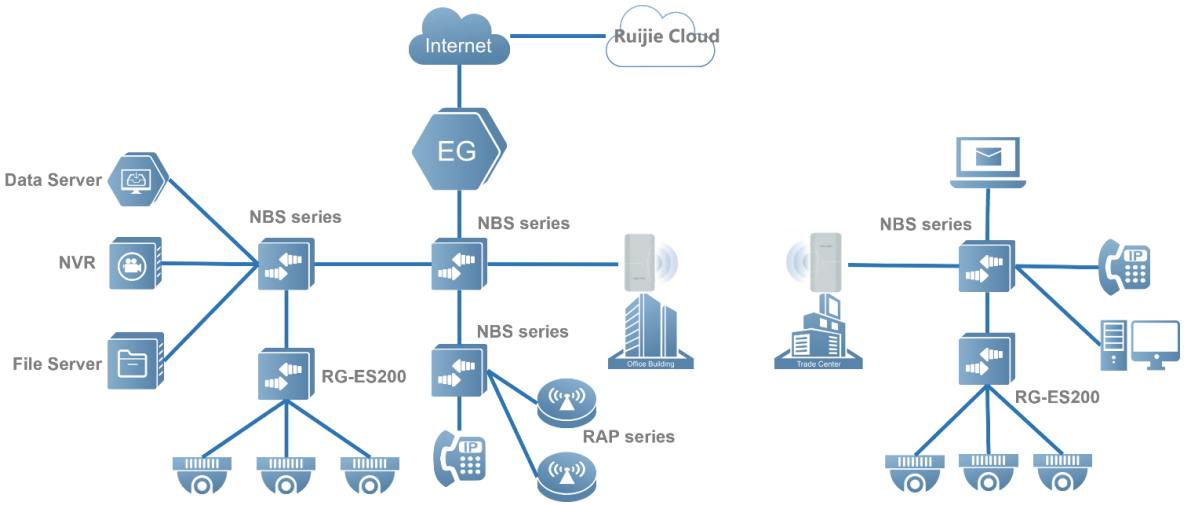
(2) Support logging into NVR for video surveillance anytime and anywhere.

(3) Real-time alarms are required, such as CCTV is offline, then the CCTV problems can be solved remotely.

(4) IP phone access switches need to plan a separate voice VLAN.

2.1.2 Network Planning

Topology:



3 Configuration

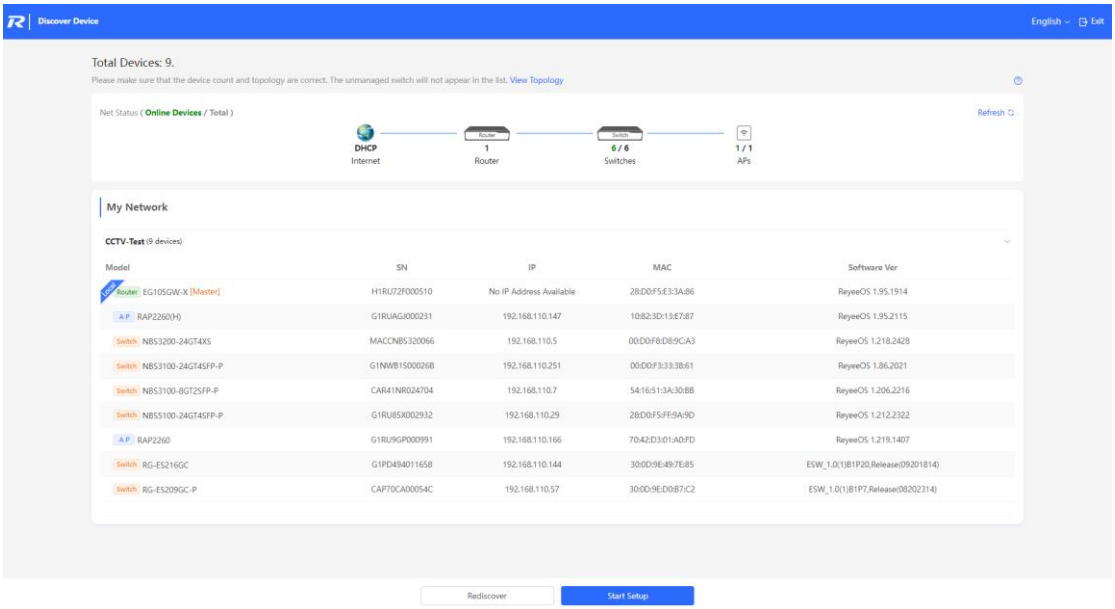
3.1 SON and Cloud Deployment

3.1.1 Application Scenario

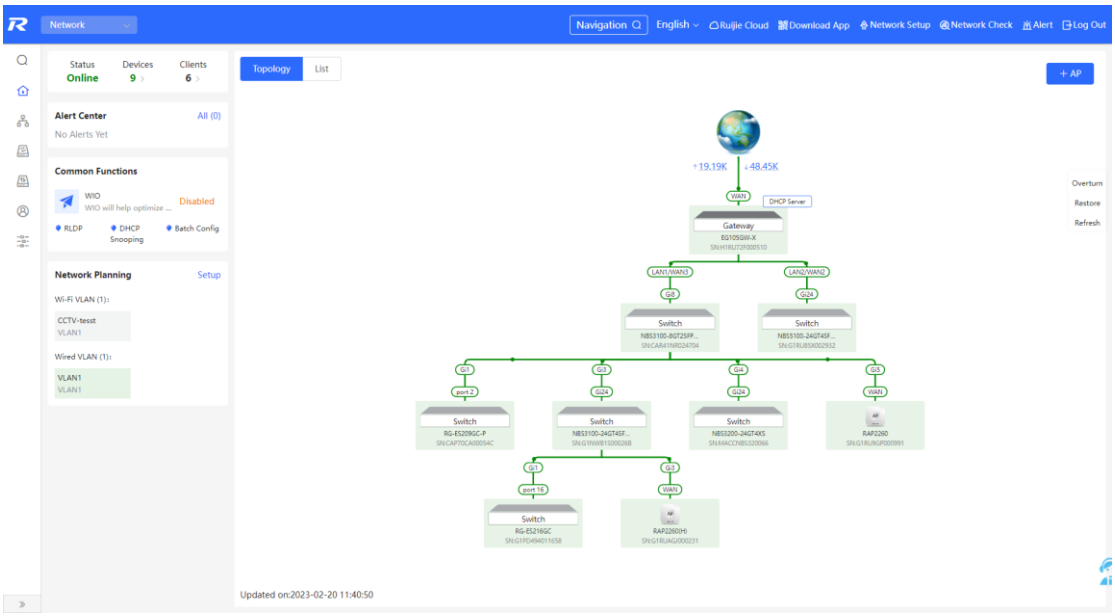
After physical connections of devices are connected based on the topology, all Reyee devices on the same network automatically complete self-organizing network (SON). After SON is complete, devices can be managed and configured in a unified manner through the main device. In addition, the entire network can be deployed on the cloud by deploying one device on the cloud, which simplifies the deployment.

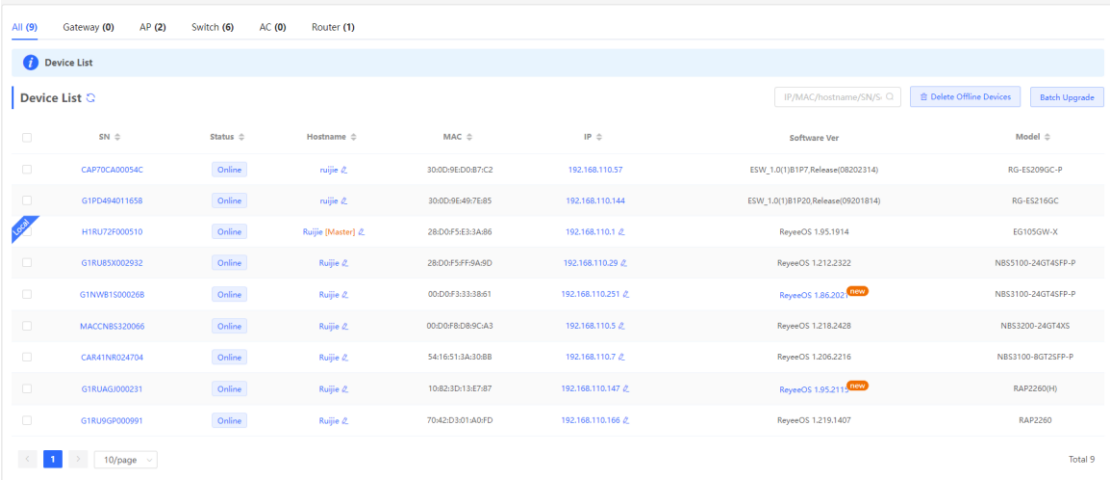
3.1.2 Procedure

(1) Complete physical connections between devices based on the actual topology. The devices complete SON connections locally.

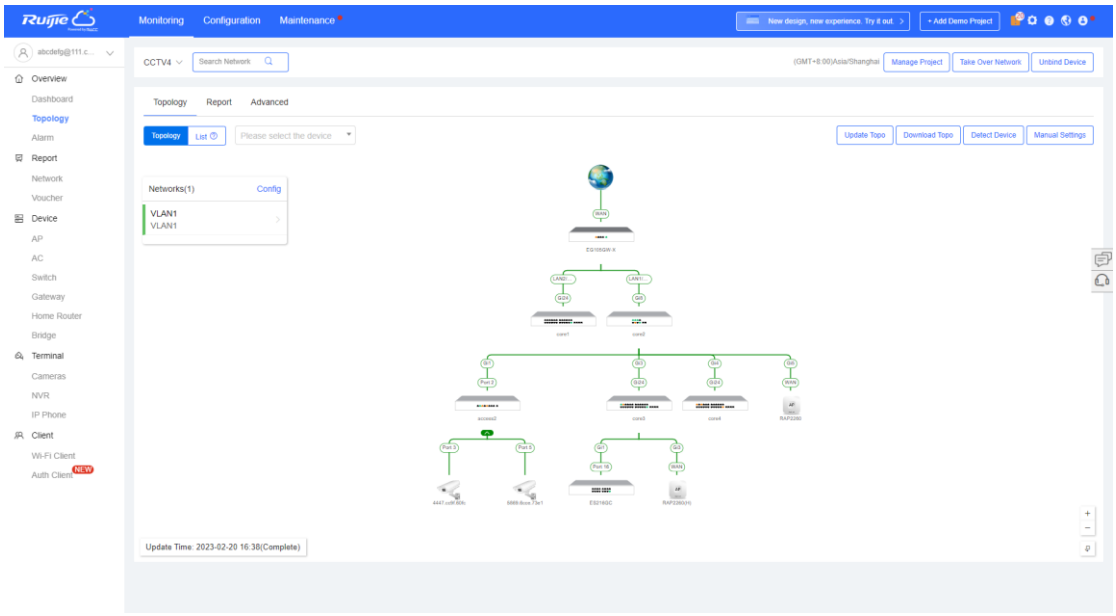


(2) View the actual network topology and device list on the local eWeb management system.





(3) Add devices to Ruijie Cloud. The devices go online, and the topology is displayed under **Topology**.



3.2 Connection and Configuration of Wireless bridge

Application Scenario

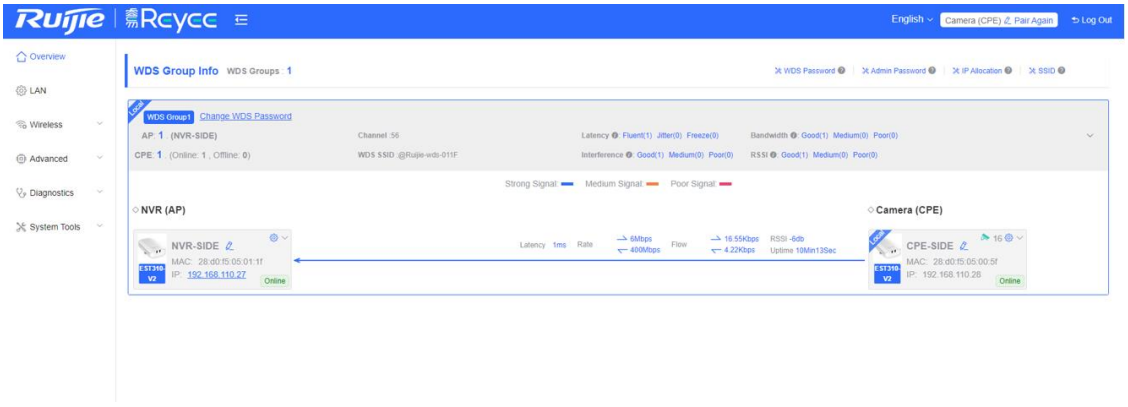
RG-EST series wireless bridge can build up tunnel to transmit video for elevator and long range. It can not only monitor the wireless status in real time, but also save cost for end-users.

Procedure

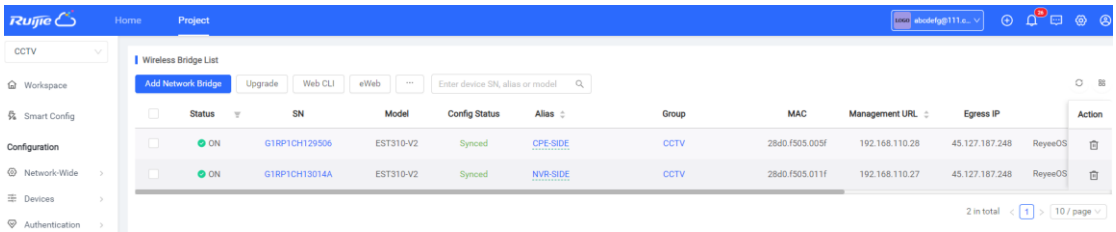
(1) Power on the paired wireless bridges and install them in the right place.

(2) Ensure that is no shelter between the wireless bridges.

(3) Check the LED status of the wireless bridges to ensure that the device is bridging successfully. You also can check the bridging status on the device's eWeb.



(4) Add the SN of wireless bridge to Ruijie Cloud. After wireless bridge is online on Ruijie Cloud, the connection status of wireless bridge could be monitored via Ruiie Cloud.



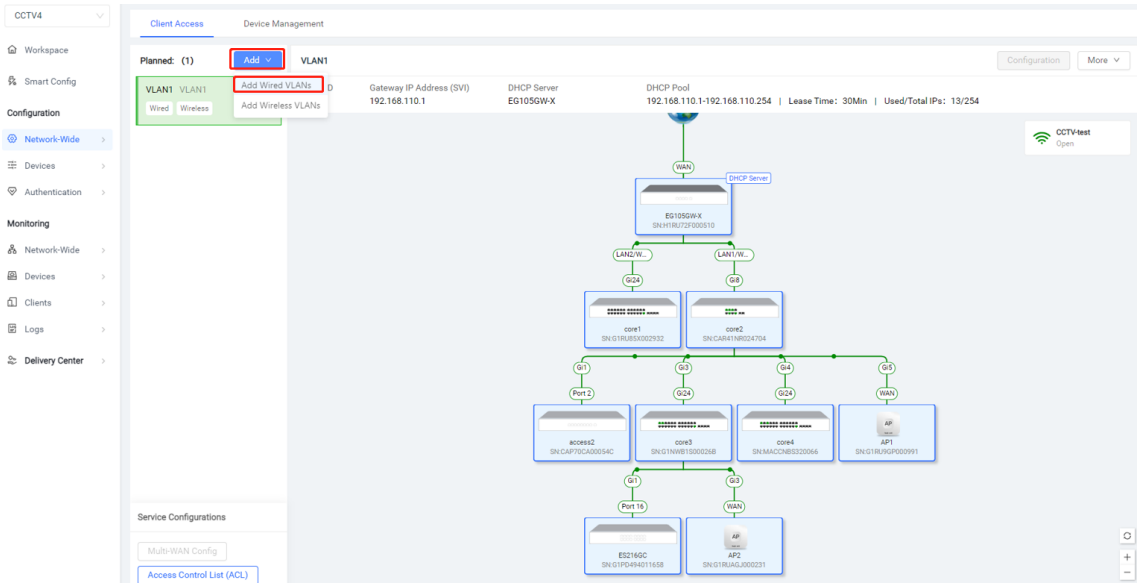
3.3 Creating a VLAN/DHCP

Application Scenario

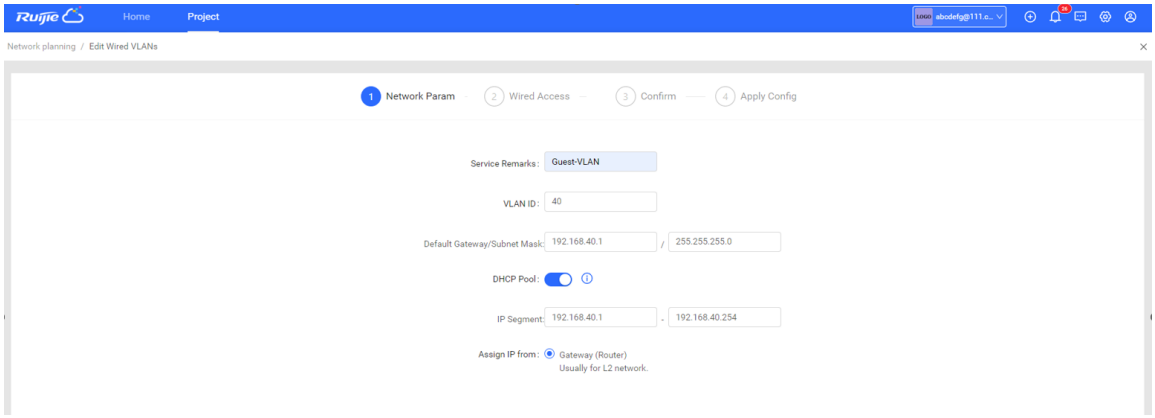
Different clients exist on a network, such as PCs and cameras. When a camera is running, broadcast or abnormal traffic often occurs, imposing negative effects on the service network. The administrator wants to isolate the broadcast and abnormal traffic of the camera from the running service network.

Procedure

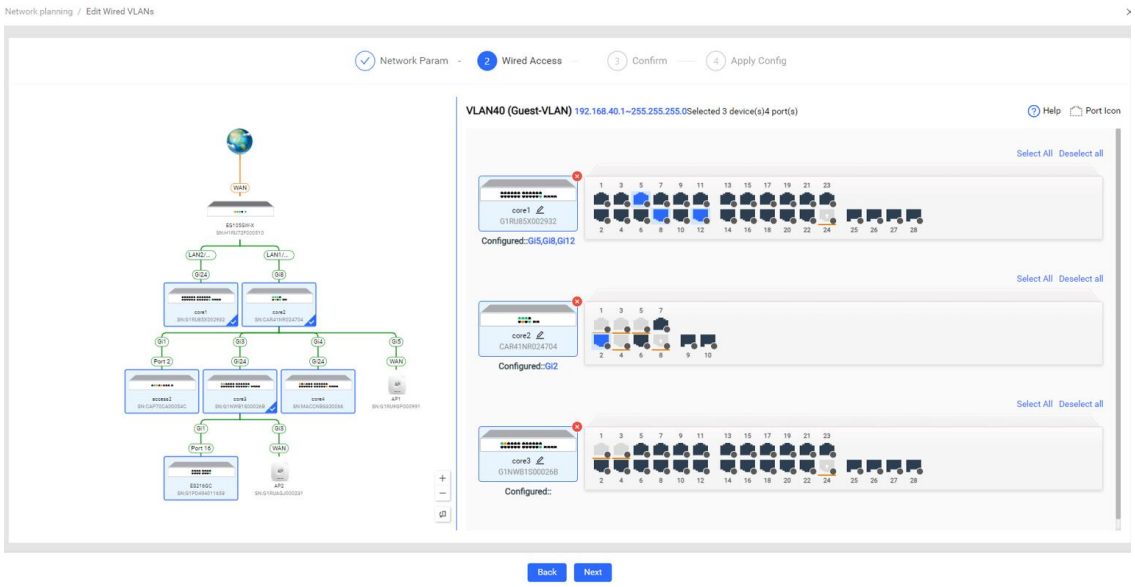
(1) Adding a wired VLAN: Click **Add** and select **Add wired VLANs** to add wired VLAN configuration for the current network or select an existing wired VLAN and click **Configuration**.



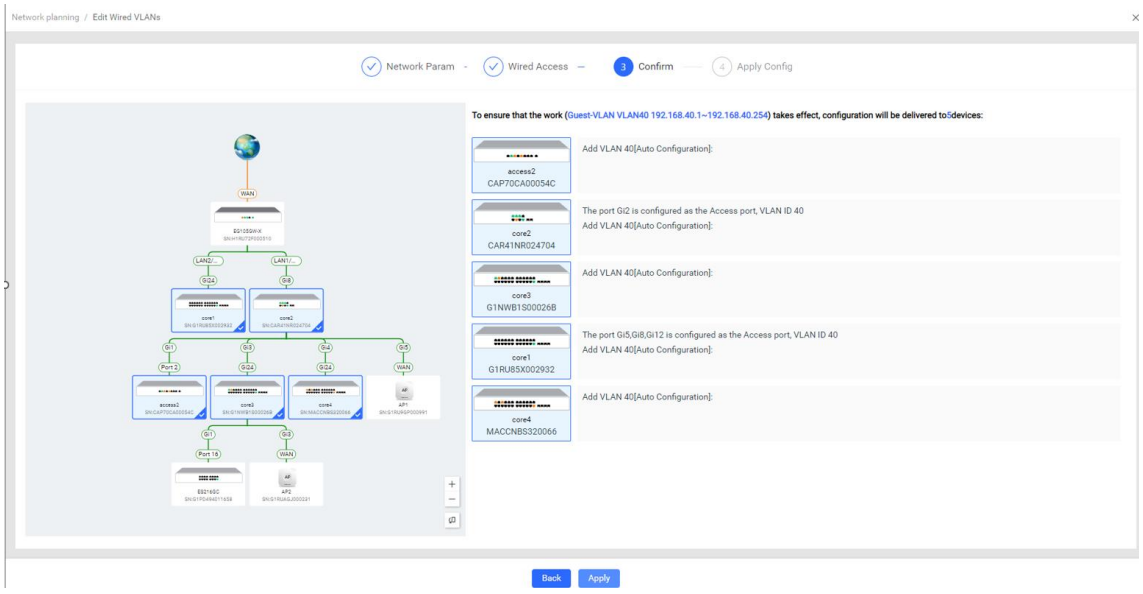
(2) Setting service parameters: Set the VLAN for wired access and create a Dynamic Host Configuration Protocol (DHCP) address pool for devices in the VLAN to automatically obtain IP addresses. The gateway can serve as the address pool server to assign addresses to access clients. If a core switch supporting the address pool function is deployed on a network, you can configure the switch as the address pool server. After configuring service parameters, click **Next**.



(3) Select the interface for connecting the camera in the topology on the left, and select the port to connect the camera from port icons on the right. The port icon will change from gray-black to blue. Click Next.



(4) Click **Apply.** The configuration will be delivered to the gateway and the switch and takes effect.



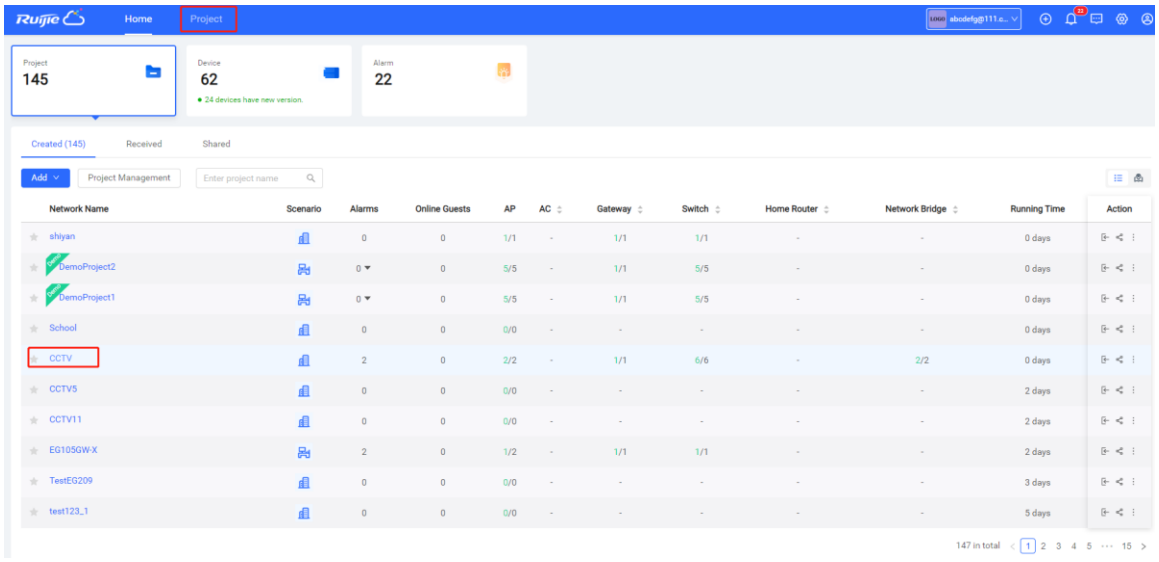
3.4 Real Topology

3.4.1 Application Scenario

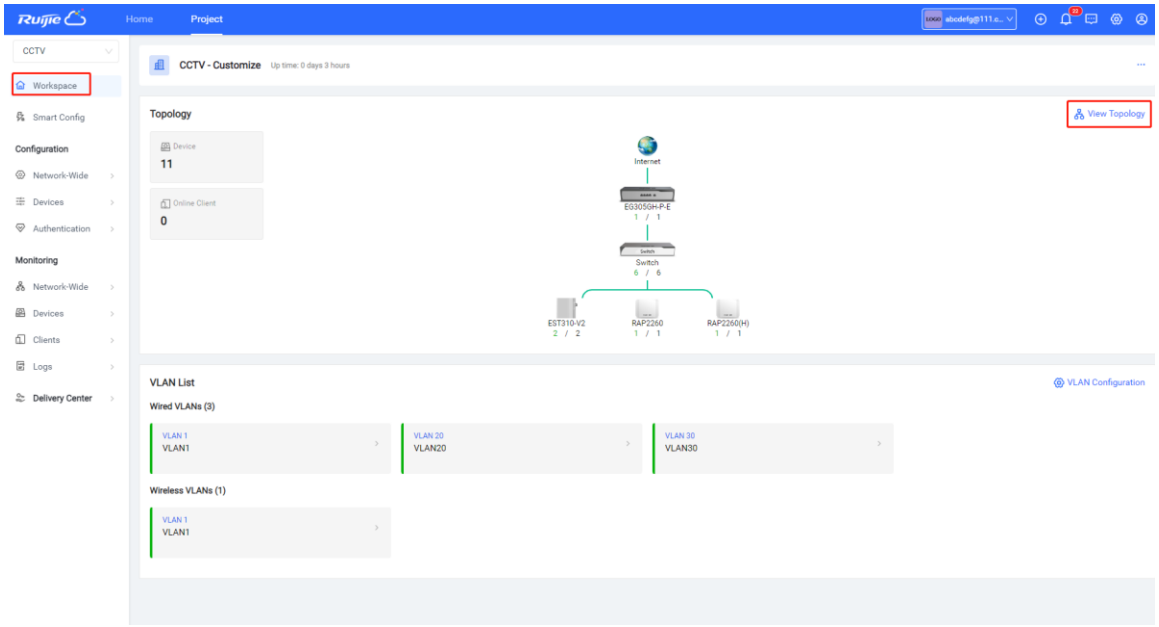
The real topology displays the actual network topology, which helps understand the device status, physical link connection between devices, and information about connected ports. When a fault occurs in the customer's network environment, the real topology helps quickly locate the fault, improving the troubleshooting efficiency.

3.4.2 Procedure

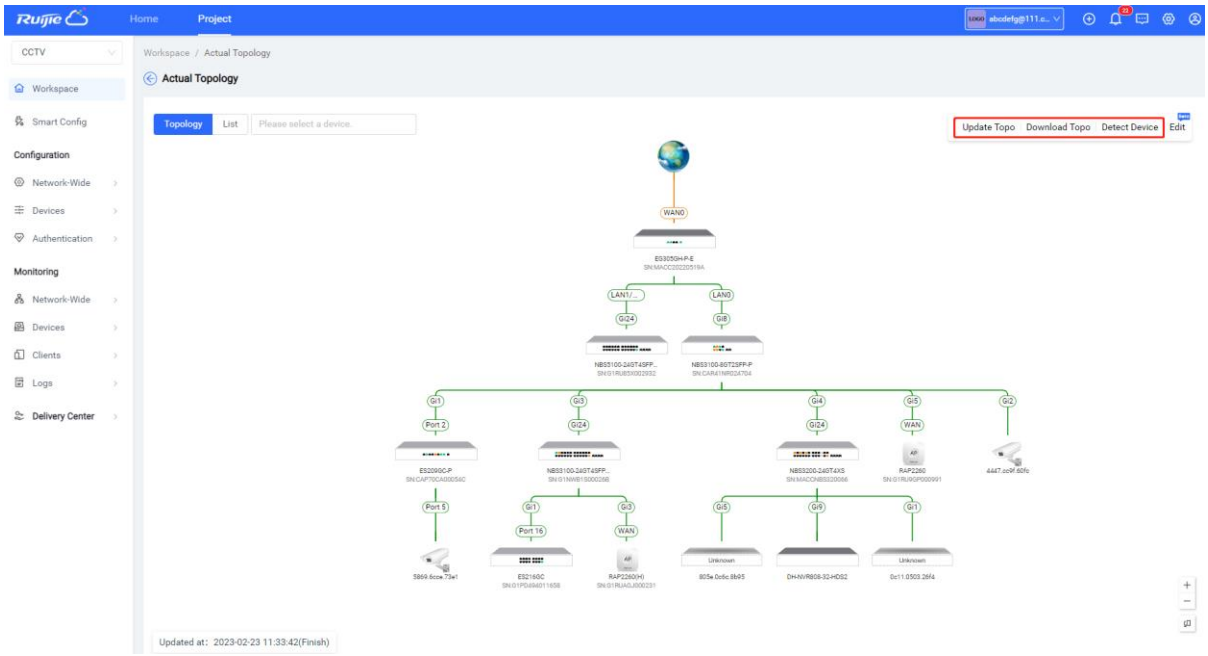
(1) Click a project name to open the project page.



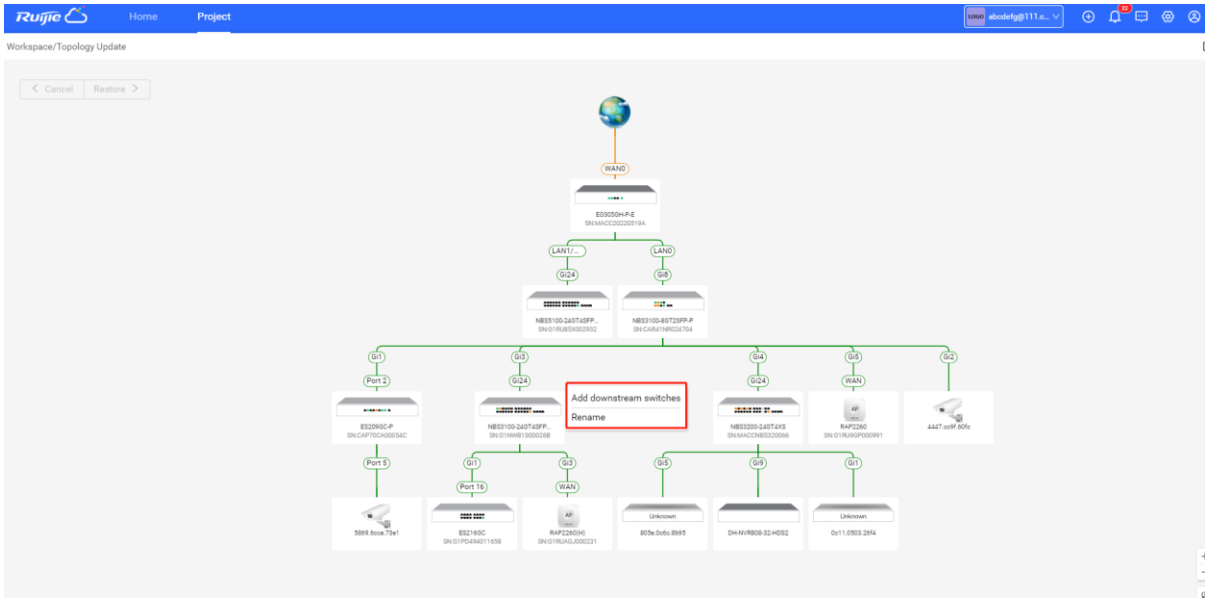
(2) Click **Workspace** and click **View Topology** to view the real topology of the project.



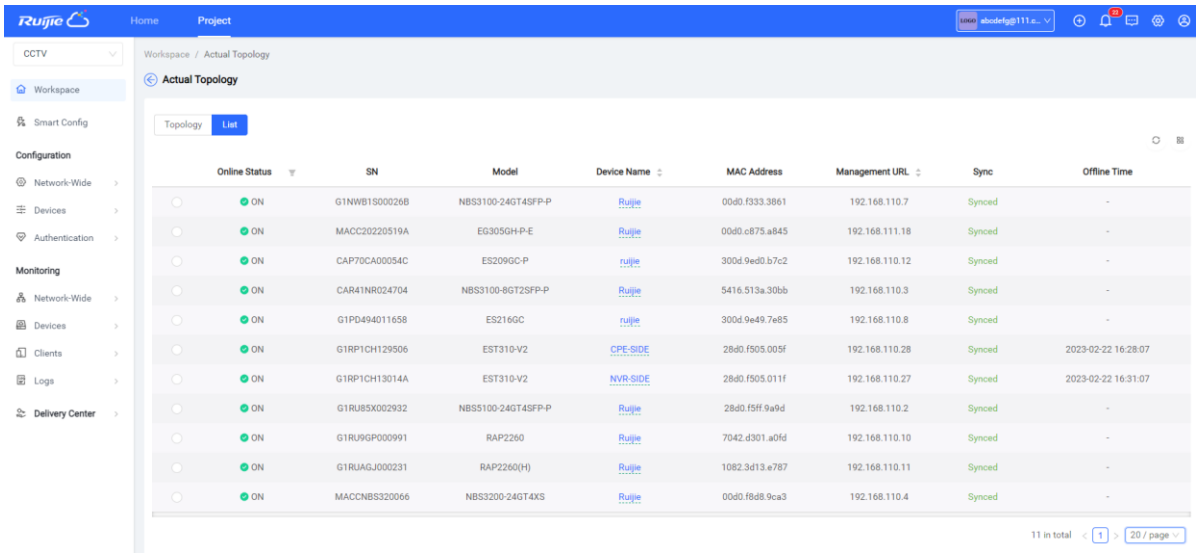
(3) Check whether the topology is consistent with the real topology. You can update and download the topology and detect devices.



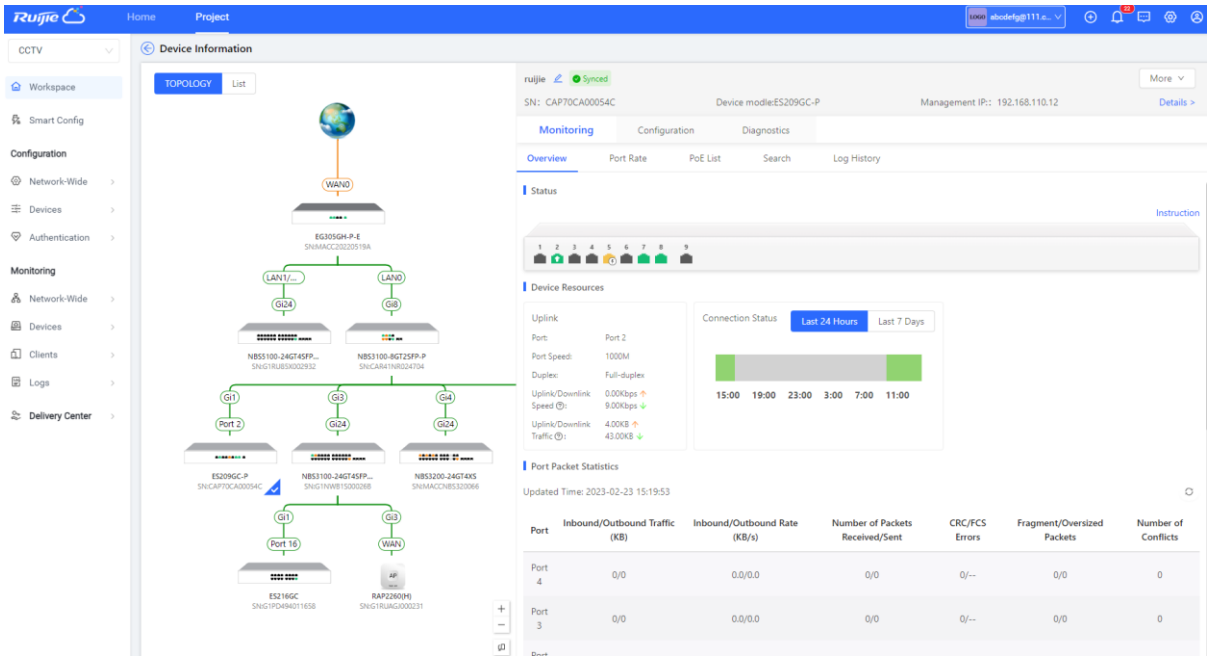
(4) Click **Edit** to edit the topology. You can rename devices and add unmanaged devices.



(5) Click **List** to view the device list and confirm the device status.



(6) Click a device to view the device details.



3.4.3 Principle of the Network Topology

(1) Make sure that the devices are online on Ruijie Cloud, and the Web CLI is available.

(2) You require a root node device, which can be the EG or core switch.

(3) Calculate all connected devices through the root node and update the topology; the data required are MAC, ARP and Routing, etc.

3.5 Automatic IPC Identification

3.5.1 Application Scenario

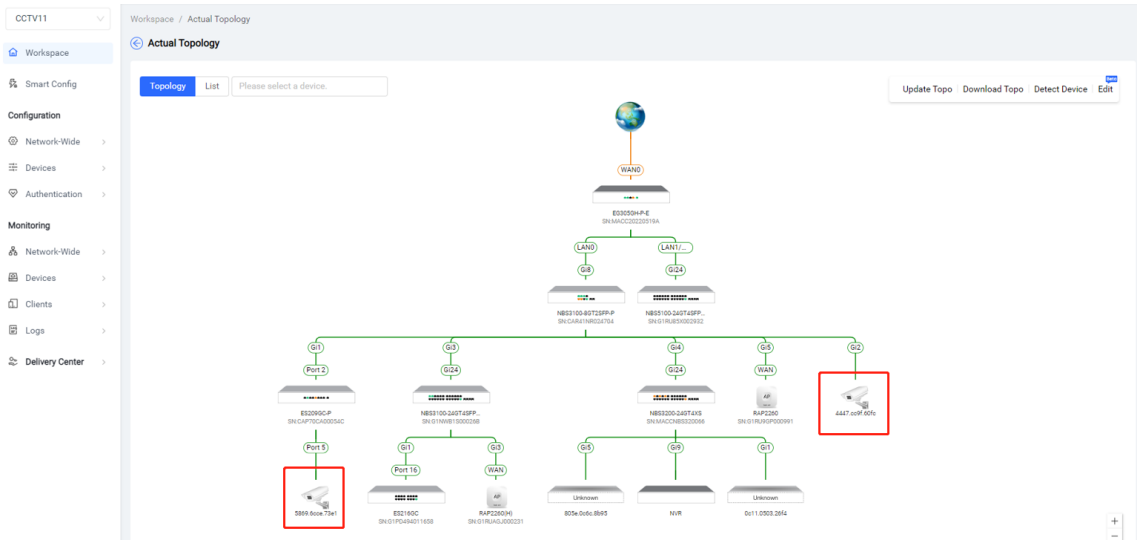
Ruijie Cloud can automatically identify IP cameras (IPCs) connected to switches in two ways:

(1) Ruijie Cloud detects IPC traffic to identify IPCs.

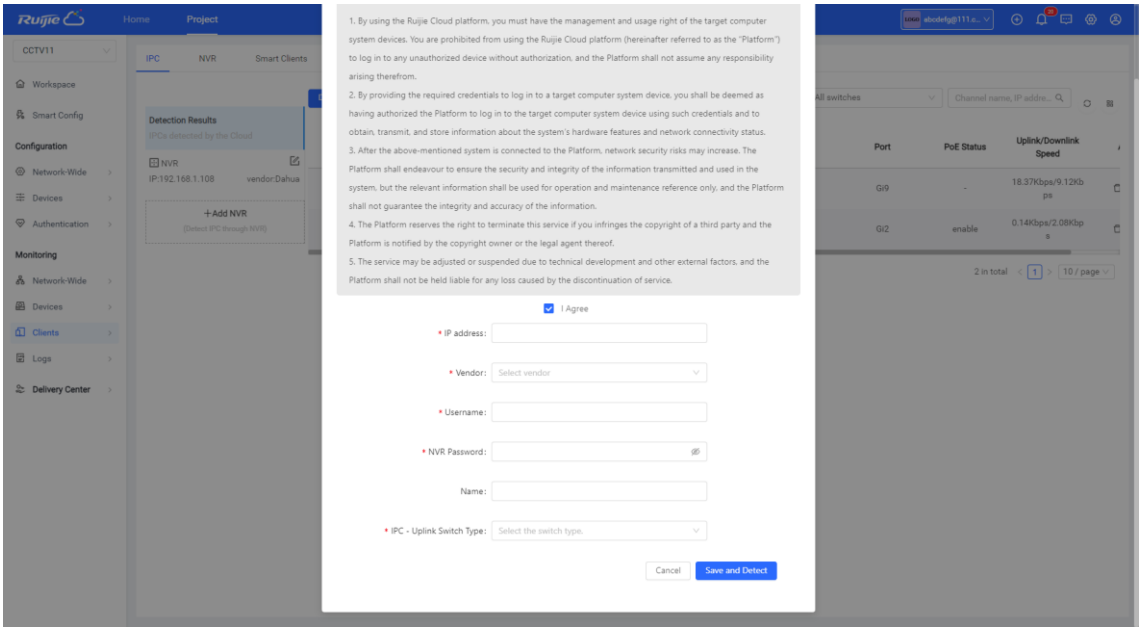
(2) Ruijie Cloud identifies IPCs based on NVRs connected to IPCs and added on Ruijie Cloud.

3.5.2 Procedure

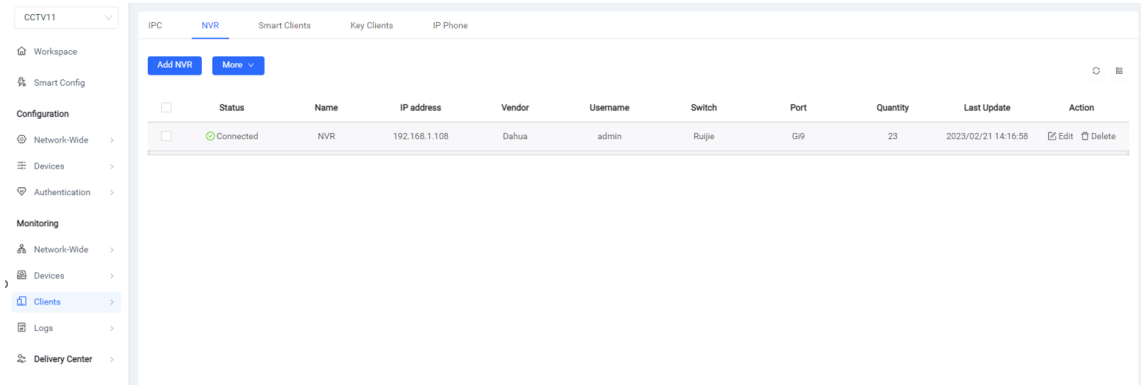
(1) Connect an IPC to an NBS or ES switch. Wait for 20 minutes and log in to Ruijie Cloud to view the topology status.

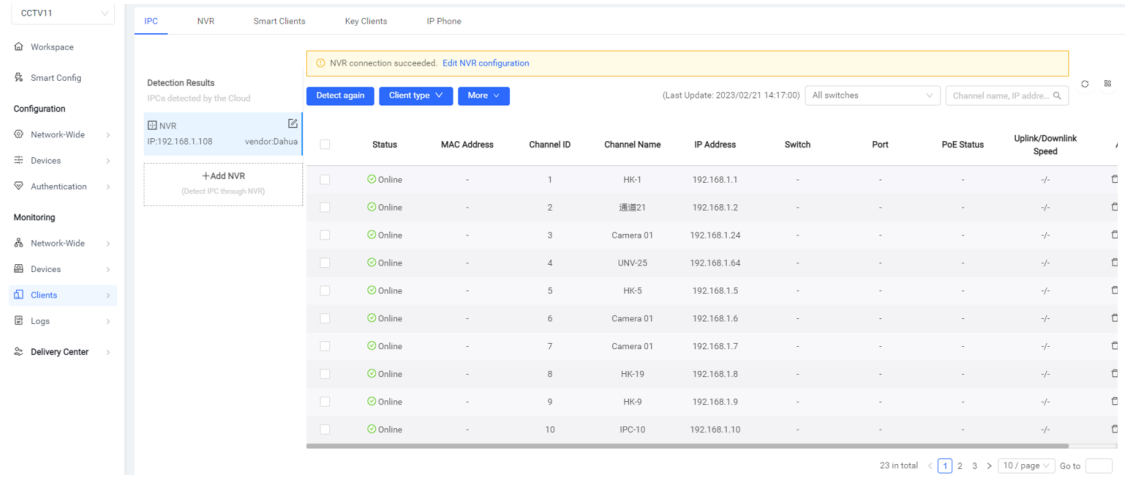


(2) Add an NVR. Enter the IP address, vendor, username, and password of the NVR as prompted, and click **Save and Detect**.



(3) After the NVR goes online, the IPC information is displayed in the NVR list.





Principle:

Scenarios without NVRs

1. To identify traffic of an IPC, the identification algorithm depends on the following information:

(1) 30-minute switch traffic data

(2) MAC address of the switch port connected to the IPC.

(3) ESW or managed NBS switch directly connected to the IPC.

2. IPC triggering method.

(1) Proactive triggering: manually click the Ruijie Cloud app.

(2) Passive triggering: Ruijie Cloud traverses' devices in the early morning every day to identify the IPC.

3. Available information (can be displayed)

(1) MAC address of the IPC

(2) Switch port connected to the IPC

(3) Switch port traffic (presented as IPC traffic externally)

(4) Switch port status (presented as IPC connection status externally)

(5) PoE power supply status of the switch port (presented as IPC power supply status externally)

Scenarios with NVRs

1. **With the built-in HTTP client, Ruijie Cloud connects to an NVR through a remote tunnel to obtain related information.**
2. **The NVR identification algorithm depends on the following information:**

(1) A device that supports tunnels exists on the network, and the device can ping the NVR at layer 3.

(2) NVR information entered by the user: IP address, vendor and model (optional), username, and password of the NVR

3. Triggering method

(1) When the depending information is available, Ruijie Cloud proactively obtains the IPC information.

(2) The frontend determines whether to display the latest time for obtaining information and whether to provide an API for users to manually trigger updates.

4. Available information (can be displayed)

(1) IP address of the IPC

(2) IPC status

(3) MAC address of the IPC

3.6 ACL Configuration

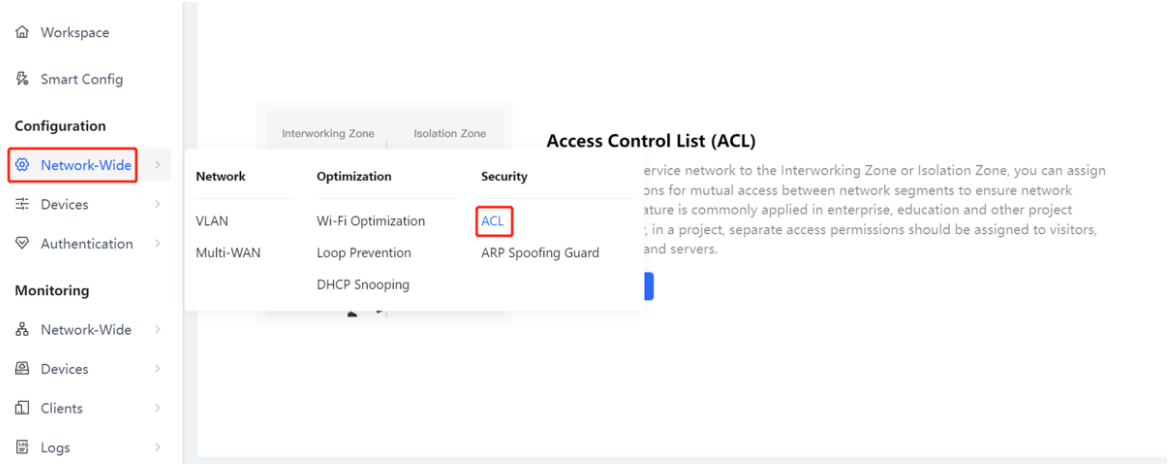
3.6.1 Application Scenario

There are various types of users on the network. To ensure security, some users are banned from accessing each other, such as visitors, finance department, servers, and monitoring devices. Service access control can prohibit mutual access between different network segments.

3.6.2 Procedure

Configuring Service Access Control

Choose **Configuration** > **Network-Wide** > **Security** > **ACL**.



(1) Click **To configure** to go to the **Access Control List (ACL)** page.

On this page, service networks are divided into two zones based on the access permission of the service networks.

- Interworking Zone

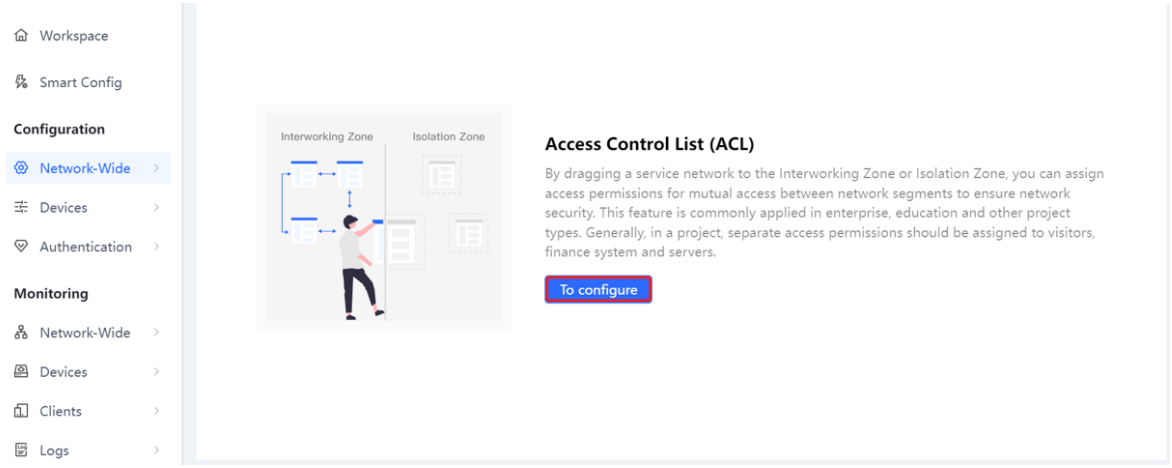
Service networks in the interworking zone can access each other.

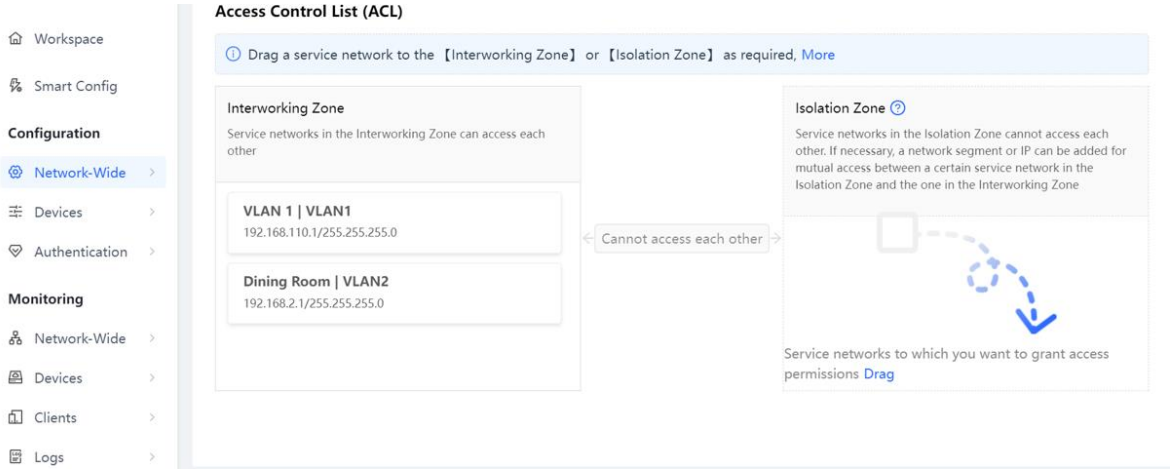
- Isolation Zone

  Service network segments in the isolation zone cannot access those in the interworking zone and vice versa.

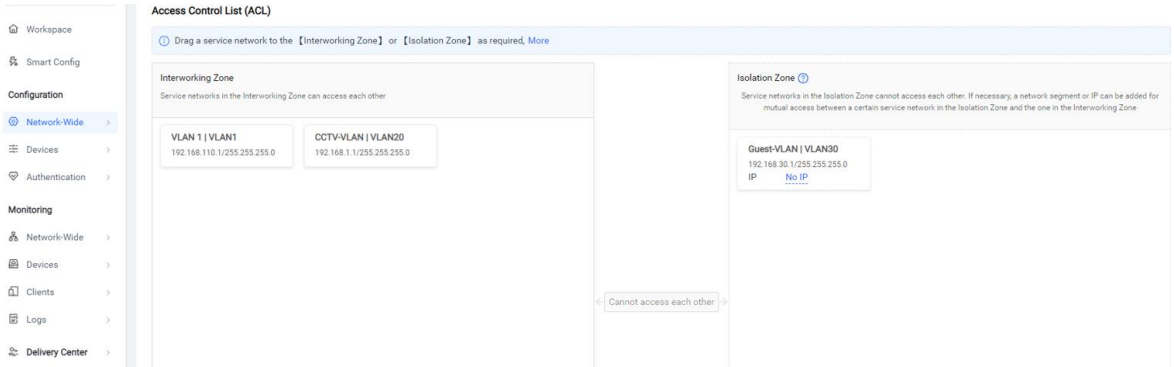
  Service network segments in the isolation zone are isolated from each other.

  The ban is bidirectional. For example, if both network segments A and B are banned, A cannot access B, and B cannot access A, either.





(2) Drag a service network whose access permission needs to be restricted from the interworking zone to the isolation zone and click **Save**.

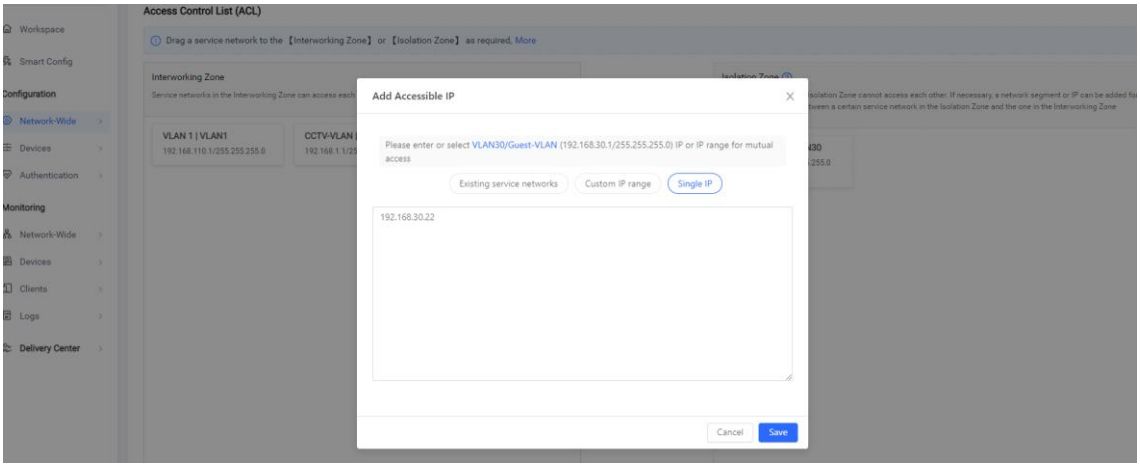


(3) (Optional) In **Isolation Zone**, click **No IP**.

No IP:

- Exceptional exemption rules have a higher priority than banning rules.
- It is used to exempt a specific IP or network segment, for example, after adding a monitoring network to the isolation zone, you can exempt the administrator IP address and allow it to access other service networks.
- Banning exemption is also bidirectional. For example, if network segment A allows access from IP X, the access from network segment A to IP X and the access from IP X to network segment A are both reachable.

In **Isolation Zone**, select a service network and click **No IP** to go to the **Add Accessible IP** page. Configure the accessible IP address or IP address range and click **Save**.



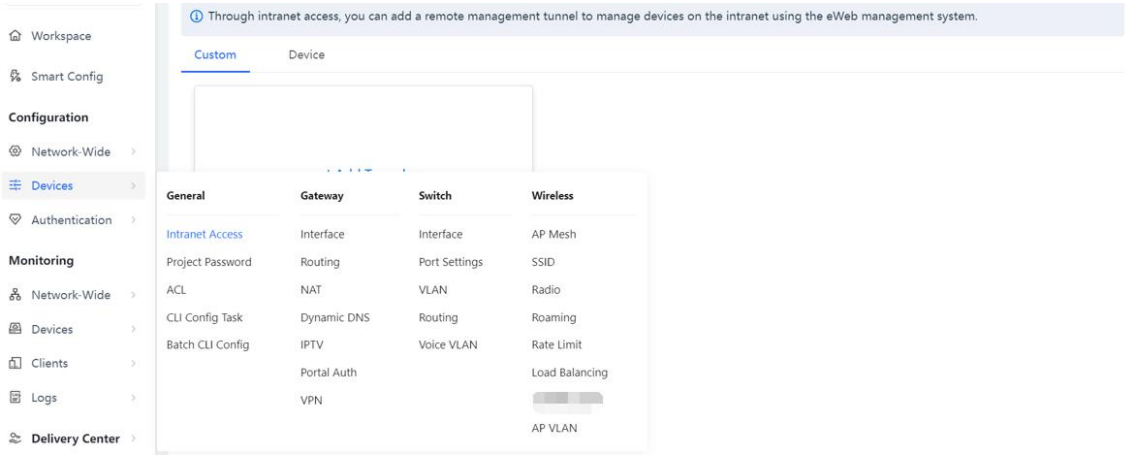
3.7 IPC Access through an Extranet and Server Penetration through an Intranet

3.7.1 Application Scenario

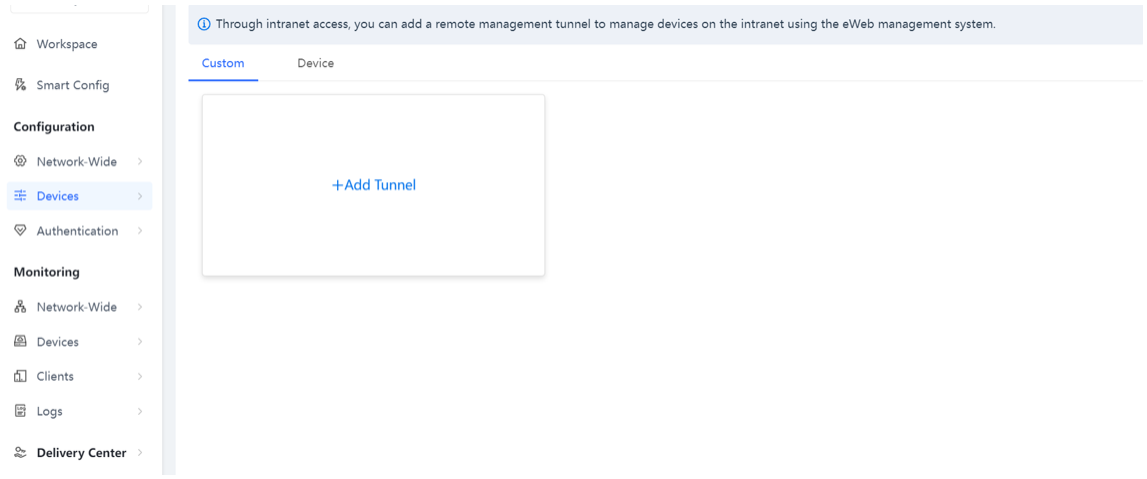
Through intranet access, you can add a remote management tunnel to manage devices on the intranet using the eWeb management system. In addition, you can add a tunnel to access intranet monitoring devices, such as NVRs and IPCs.

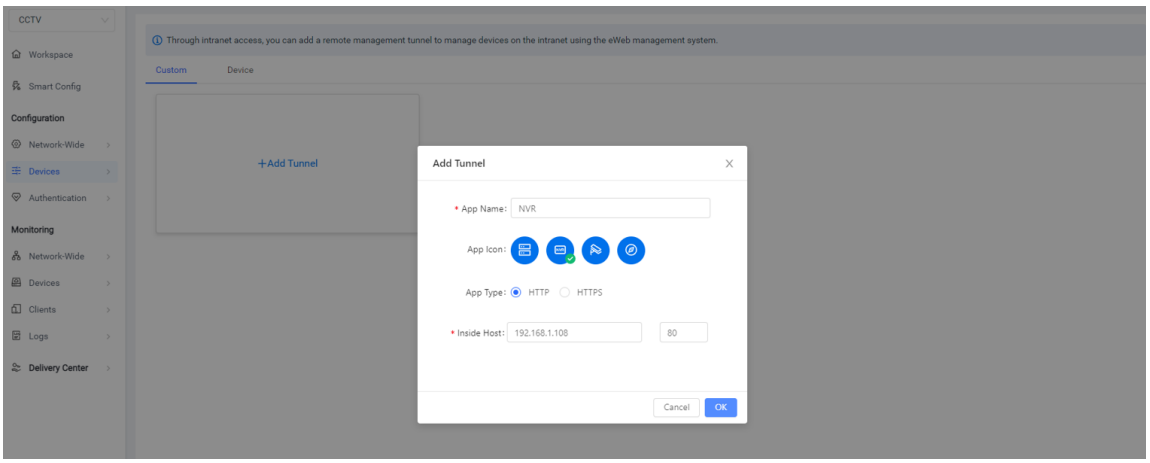
3.7.2 Procedure

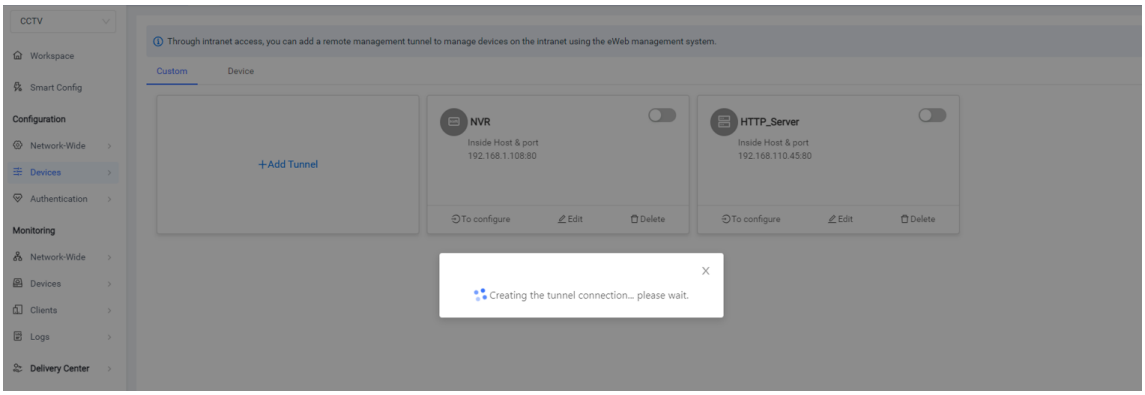
Choose **Configuration** > **Devices** > **General** > **Intranet Access**.

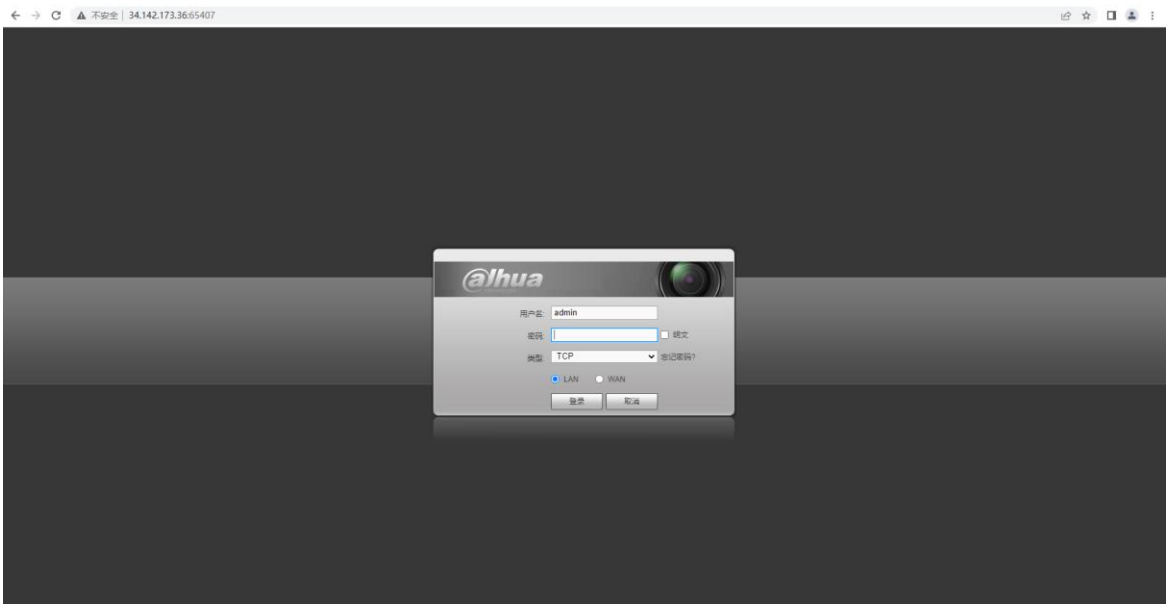


Click **Add Tunnel** on the **Intranet Access** page. You can create a remote tunnel to access the intranet devices.









3.8 Voice VLAN

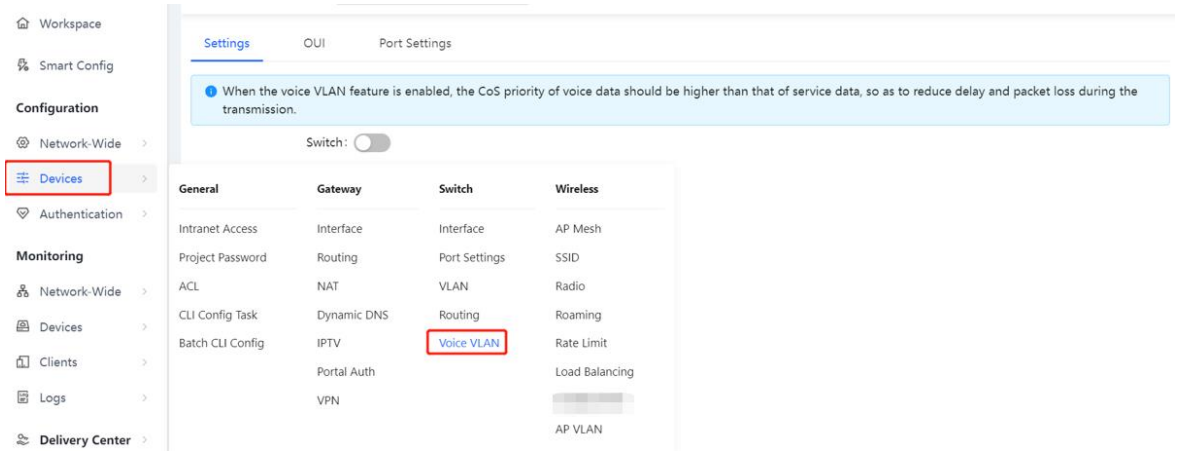
Application Scenario

Voice VLAN is a VLAN specially classified for users' voice data streams. Voice VLAN limits data streams and voice streams to the data VLAN and voice VLAN respectively. When the voice VLAN feature is enabled, the CoS

priority of voice data should be higher than that of service data, so as to reduce delay and packet loss during the transmission, thereby improving the voice quality.

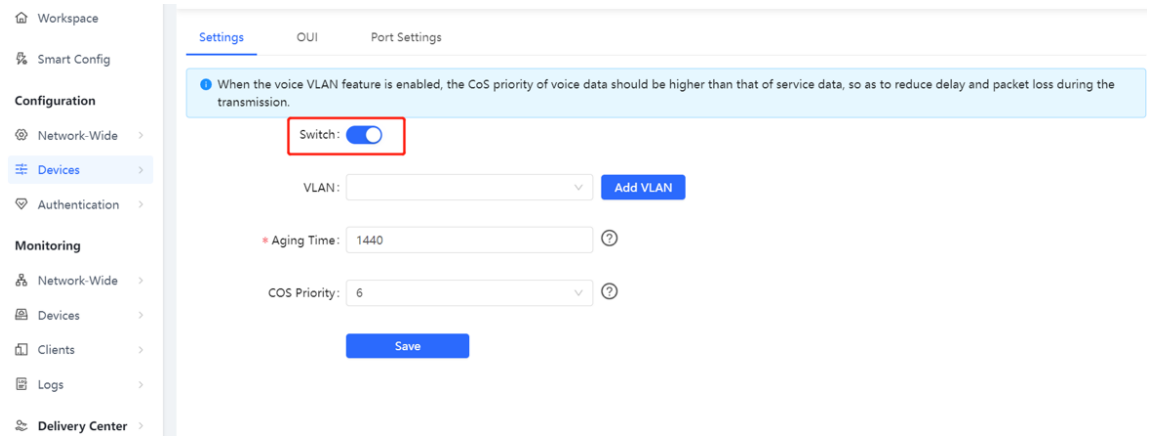
Procedure

Choose **Configuration** > **Devices** > **Switch** > **Voice VLAN**.



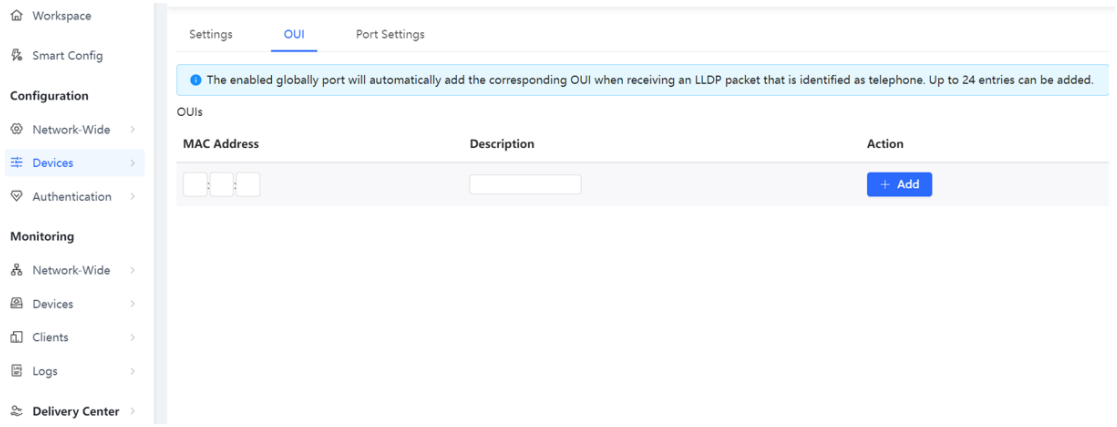
3.8.1 Voice VLAN Settings

Enable voice VLAN, set **VLAN**, **Aging Time**, and **COS Priority**, and click **Save**.



3.8.2 OUI Settings

The enabled globally port will automatically add the corresponding OUI when receiving an LLDP packet that is identified as telephone.



3.8.3 Port Settings

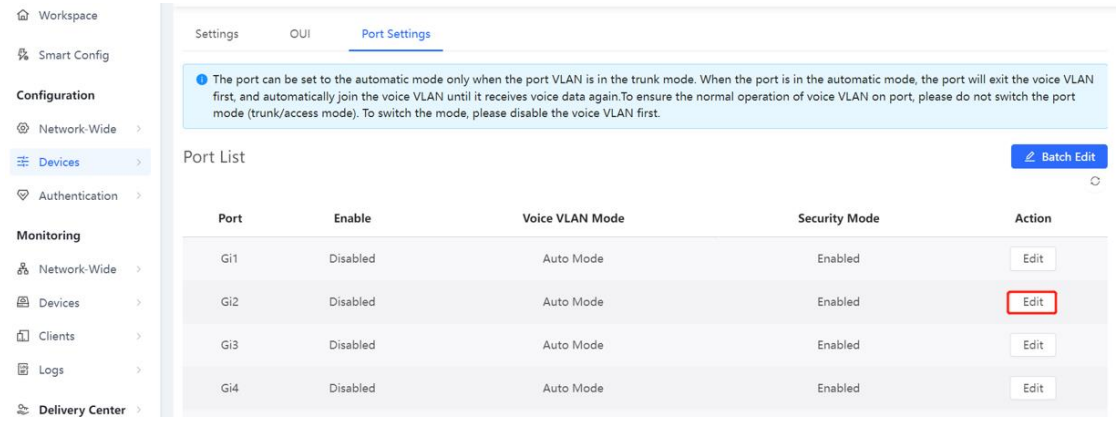
The port can be set to the automatic mode only when the port VLAN is in the trunk mode.

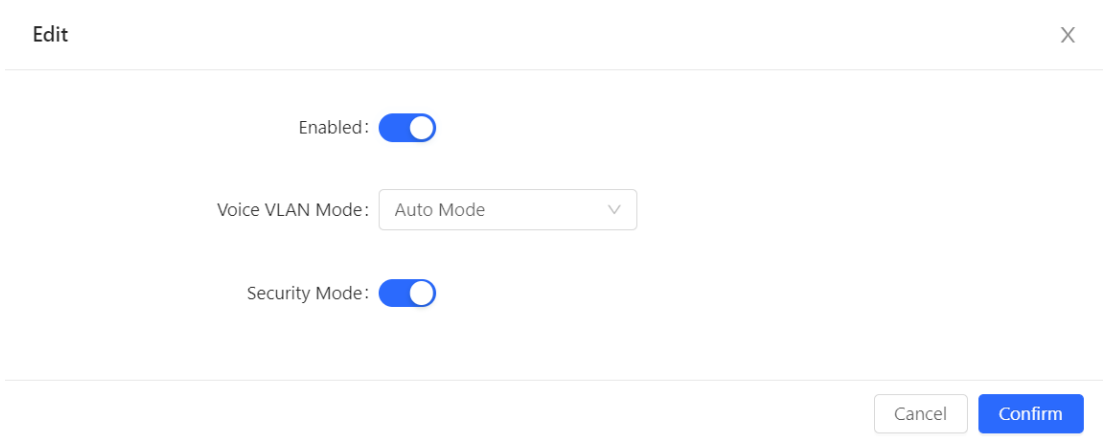
When the port is in the automatic mode, the port will exit the voice VLAN first, and automatically join the voice VLAN until it receives voice data again.

Caution

To ensure the normal operation of voice VLAN on port, please do not switch the port mode (trunk/access mode). To switch the mode, please disable the voice VLAN first.

Select a port and click **Edit**. Configure **Voice VLAN Mode** and **Security Mode** and click **Confirm**.





3.9 Delivery Report

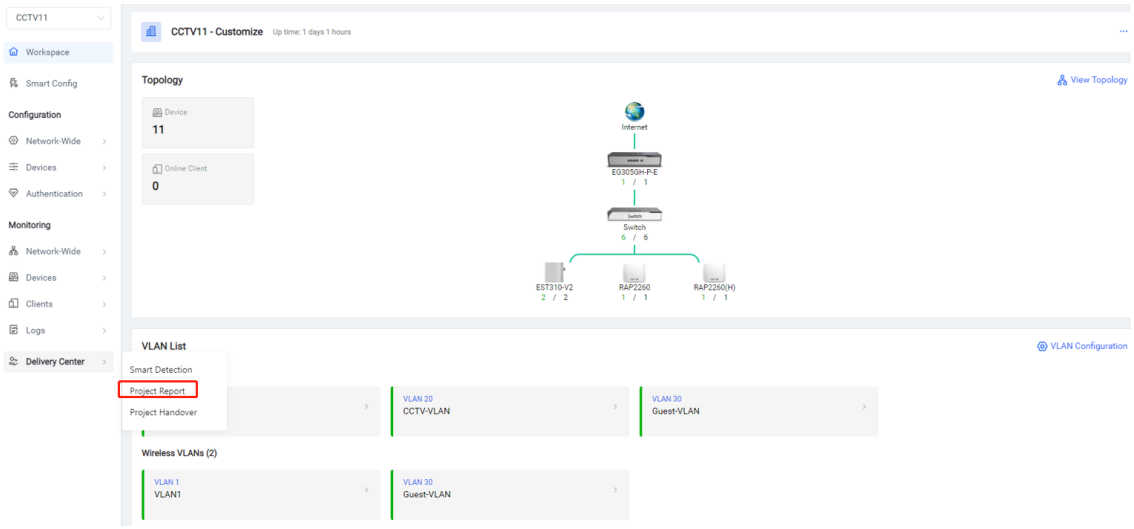
Application Scenario

After project deployment is completed, a delivery report needs to be submitted to the owner, which often requires considerable testing and writing time. This function can conduct intelligent check, summarize all types of information and check results, and automatically generate a project delivery report in both PDF and Word formats. The report covers basic information, general solution, intelligent configuration check results, device list, and topology.

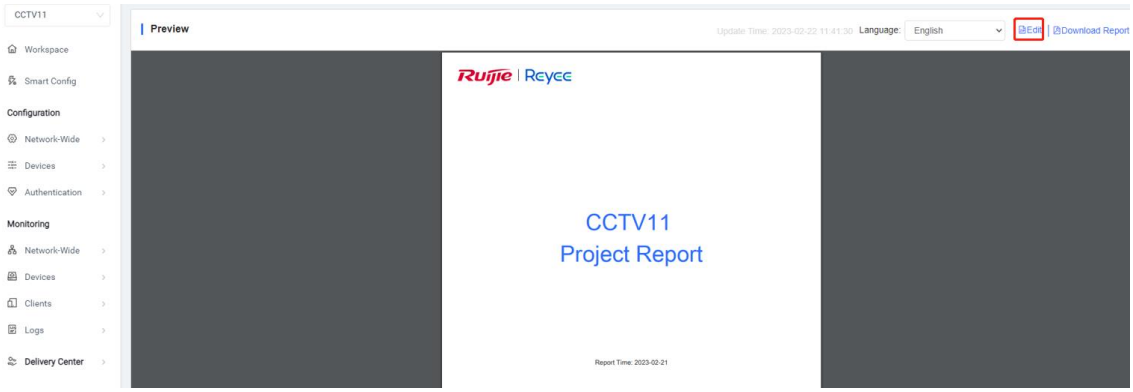
After the project deployment is completed, a report can be offered to the owner. The report can provide the revised project network device overview and delivery time, customized company logo, company name, and project introduction, show the topology of the whole project, and supplement other vendors' devices to the device list. The report can be in PDF and Word formats.

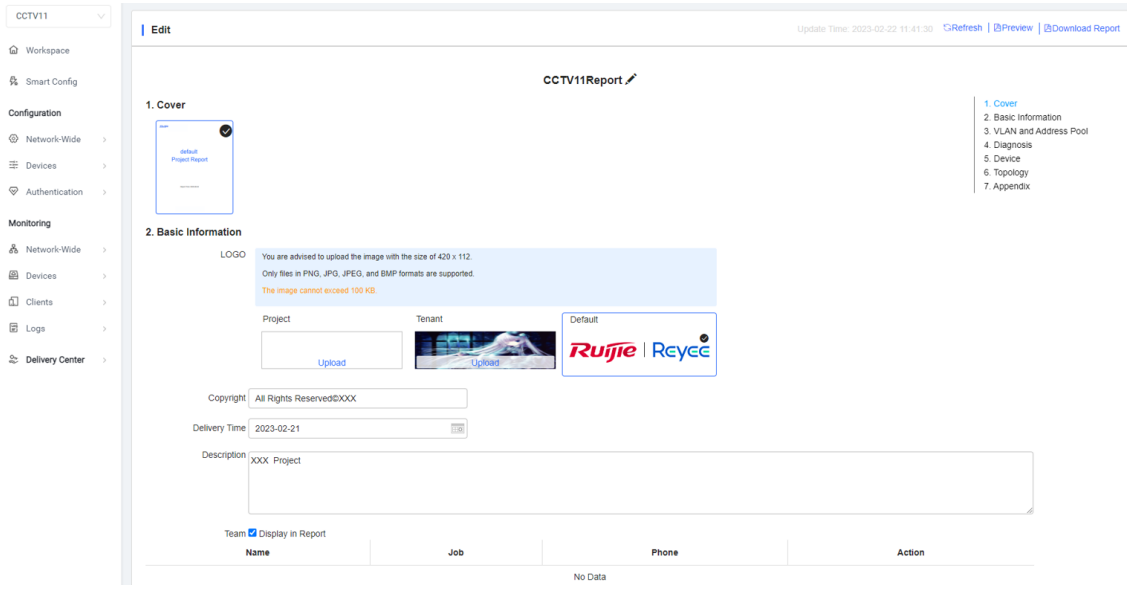
Procedure

(1) Choose **Project** > **Delivery Center** > **Project Report** to view the latest delivery report of the current project.

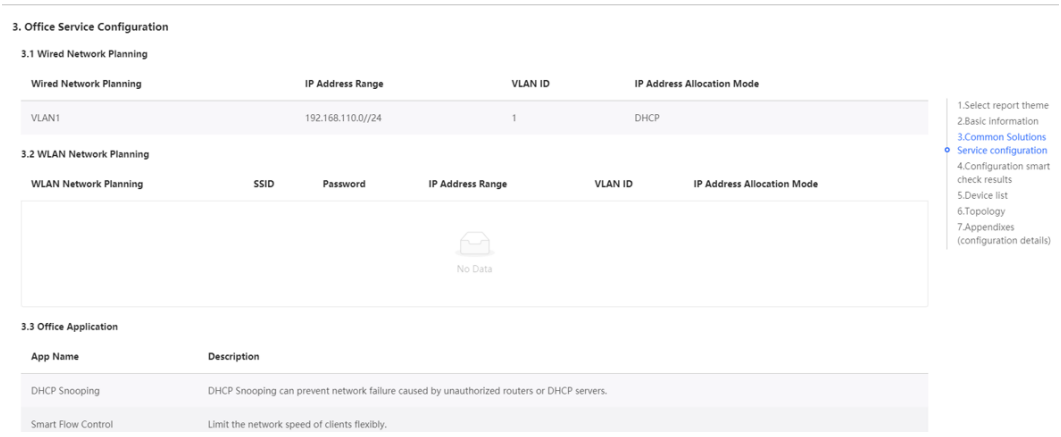


(2) Click **Edit** at the upper right corner to edit basic information in the project report.

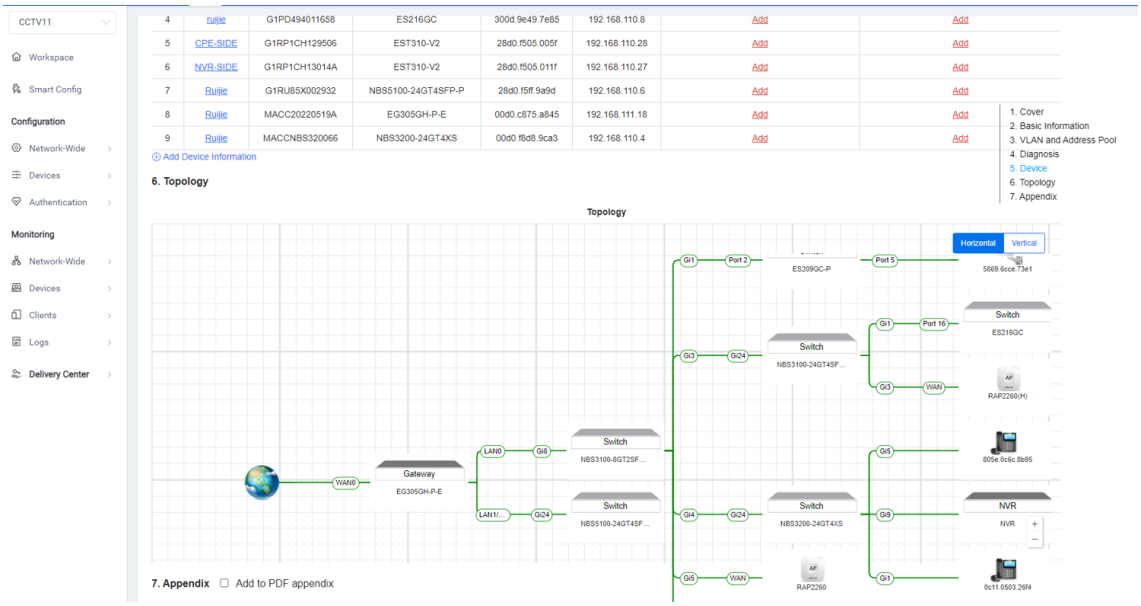




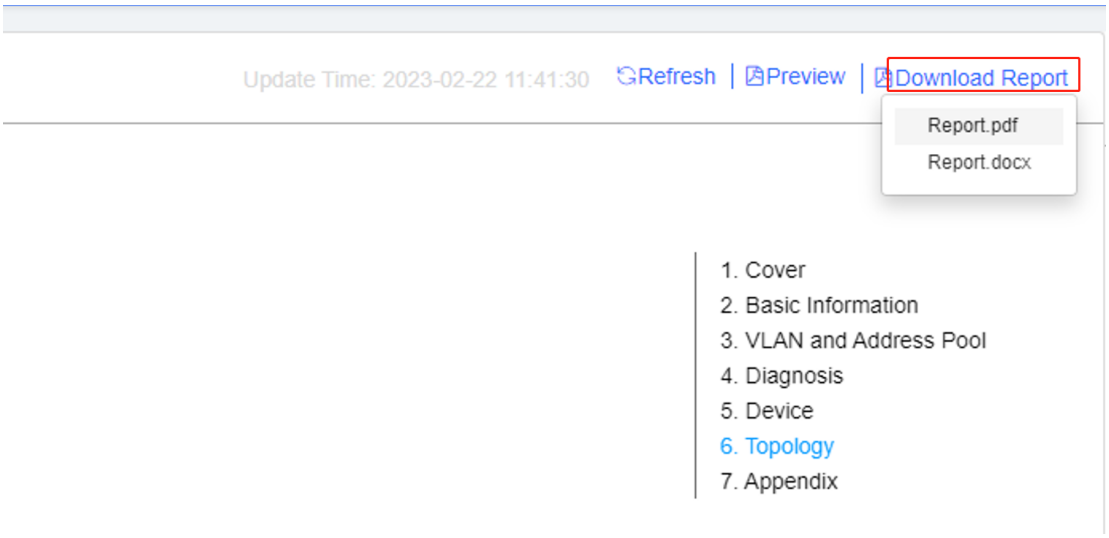
(3) You can view service configuration of the general solution in the delivery report.



(4) Check the network topology.



(5) Click **Download** at the upper right corner to download the delivery report in PDF and Word formats.


Update Time: 2023-02-22 11:41:30
Refresh
Preview
Download Report
Report.pdf
Report.docx
1. Cover
2. Basic Information
3. VLAN and Address Pool
4. Diagnosis
5. Device
6. Topology
7. Appendix

4 Maintenance

4.1 Remote IPC Operations — IPC Restart and Long-Distance Power Supply

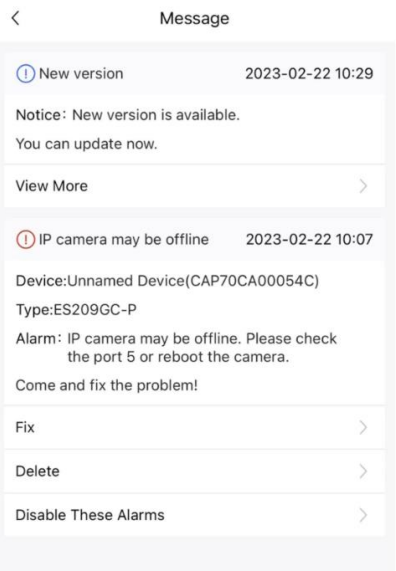
4.1.1 Application Scenario

Real-time Failure Notification would notice users that camera failure in the first place; Remote Reboot Camera helps you one-click to restart the camera at home, no need onsite any more.

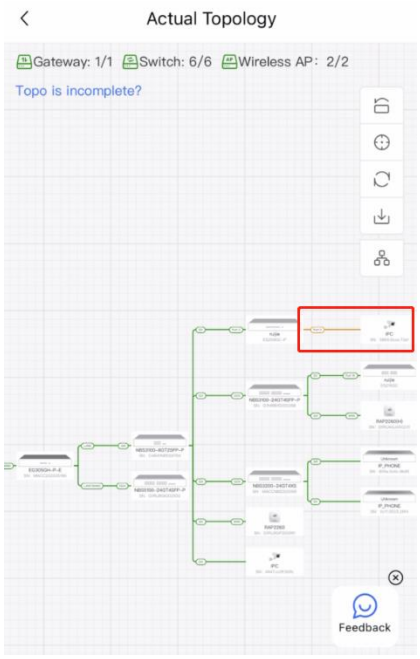
4.1.2 Procedure

(1) Real-time Failure Notification: When an IPC is offline, Ruijie Cloud provides real-time alarm information, helping master the real-time IPC status.

The app receives an IPC offline alarm.

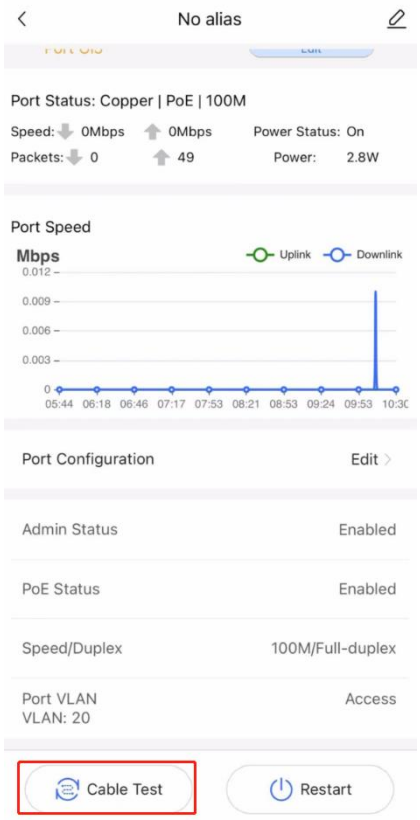


You can view offline IPCs through the topology.

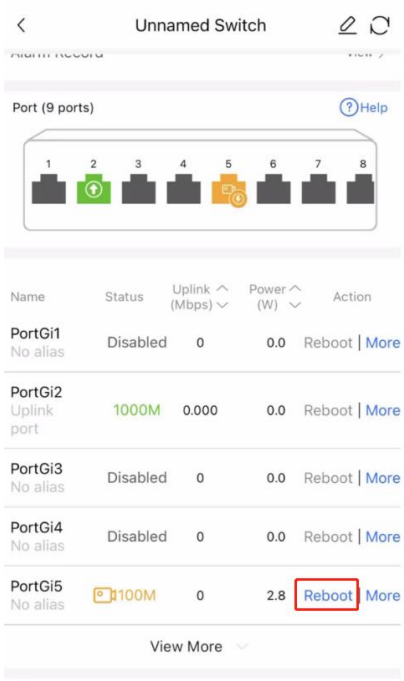


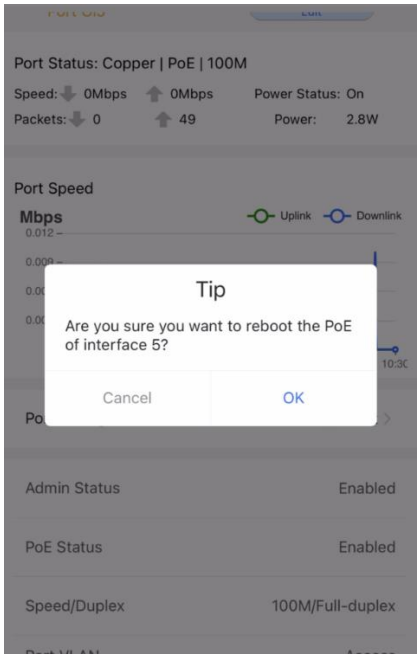
(2) Remote Reboot Camera: Remotely operate an IPC through the Ruijie Cloud app, for example, restart the IPC and set long-distance power supply.

When an IPC is abnormal, check the network cable status.

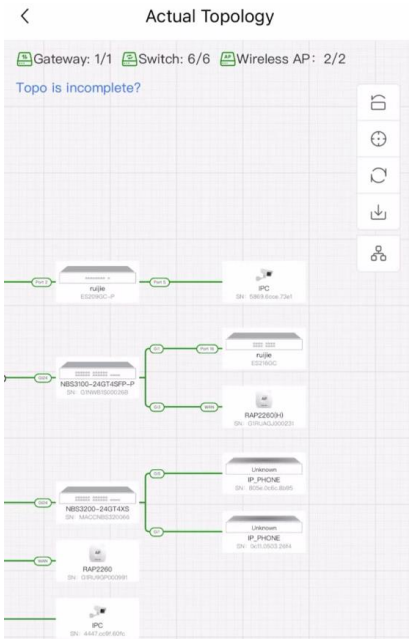


Restart the IPC.

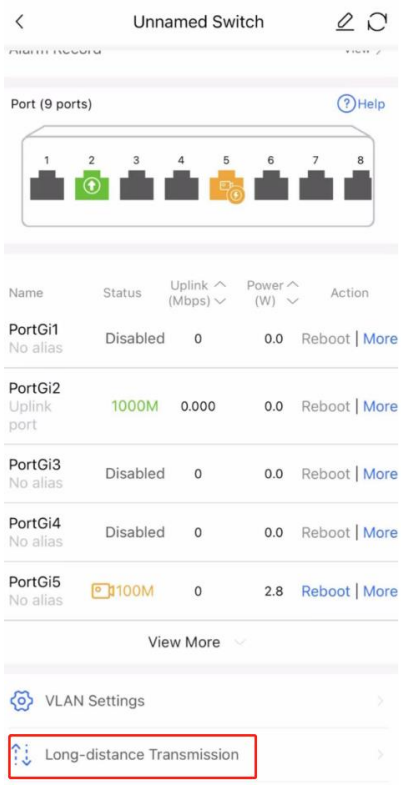


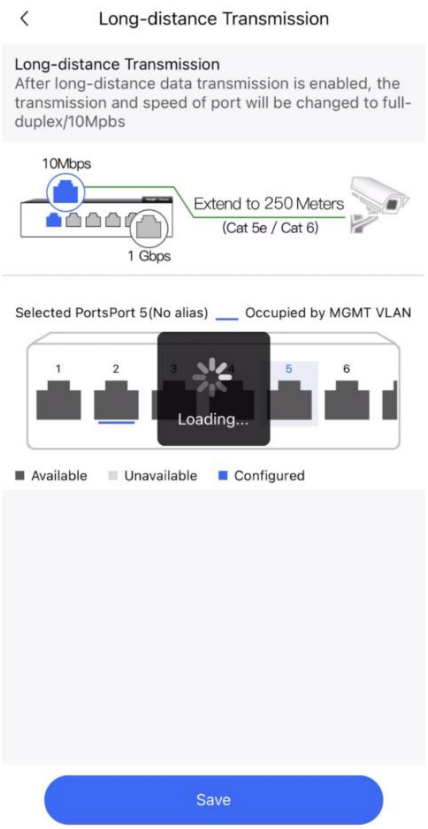


The IPC goes online again.

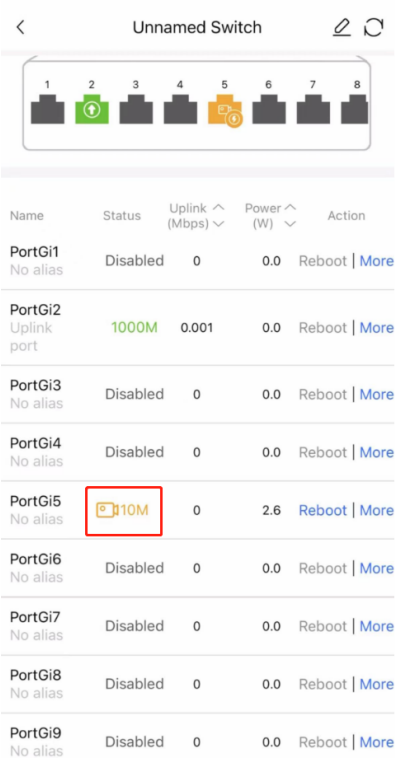


If an IPC needs long-distance power supply, configure it in the Ruijie Cloud app.





The negotiated rate of the corresponding switch port is changed to 10 Mbps.



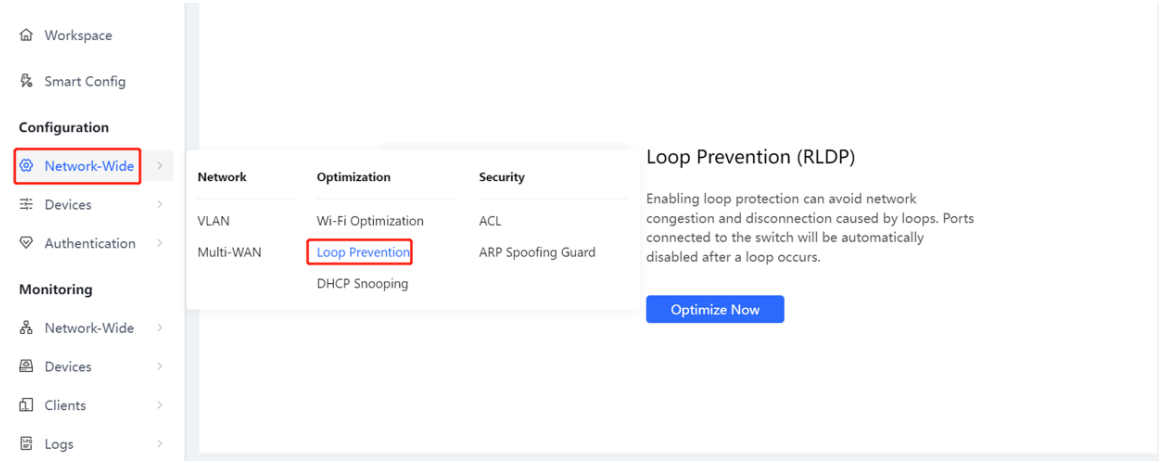
4.2 Loop Prevention Configuration

4.2.1 Application Scenario

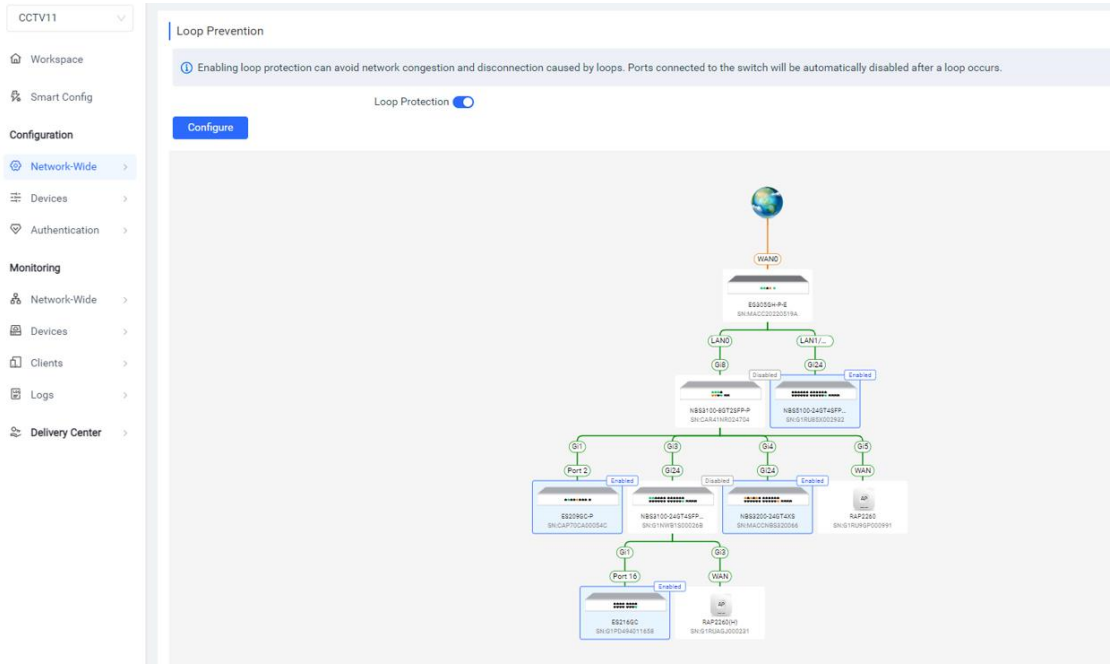
Enabling loop prevention can avoid network congestion and disconnection caused by loops. Ports connected to the switch will be automatically disabled after a loop occurs.

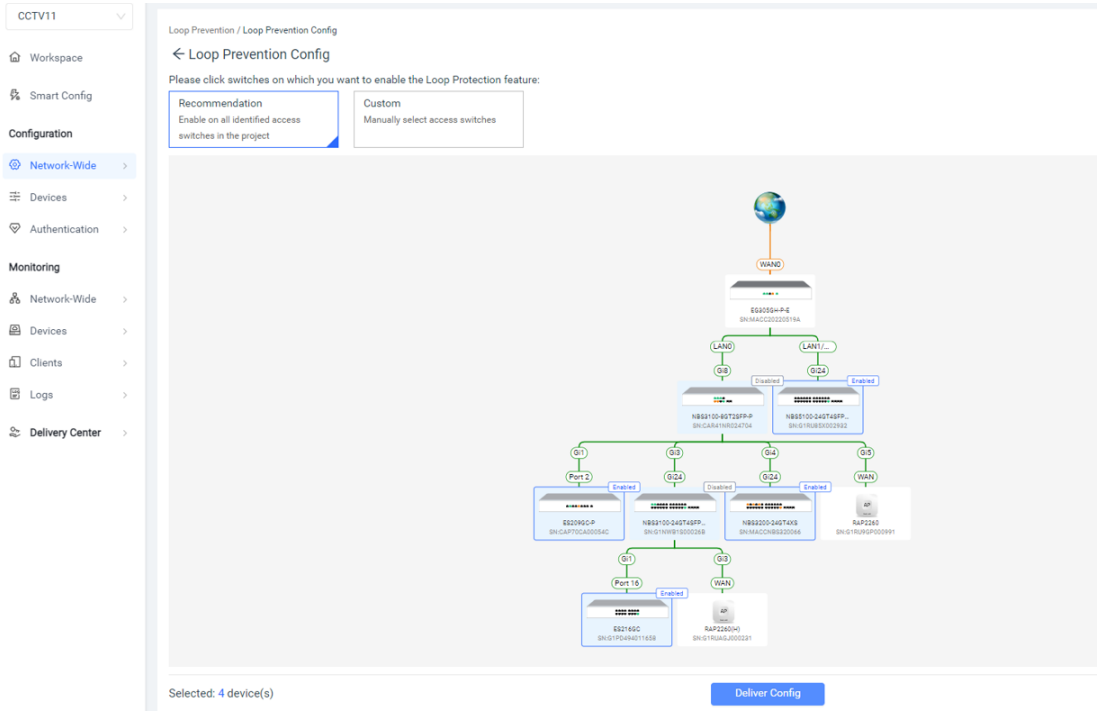
4.2.2 Procedure

Choose **Configuration** > **Network-Wide** > **Optimization** > **Loop Prevention**.

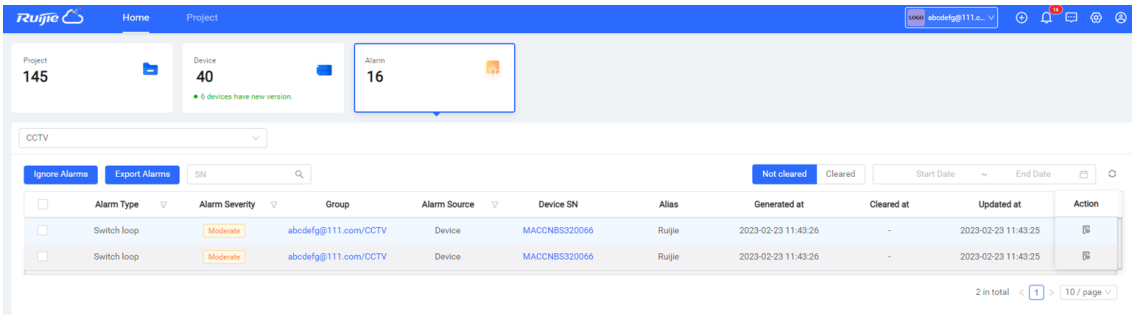


Click **Optimize Now**. You are advised to use the default value. Click **Deliver Config**.

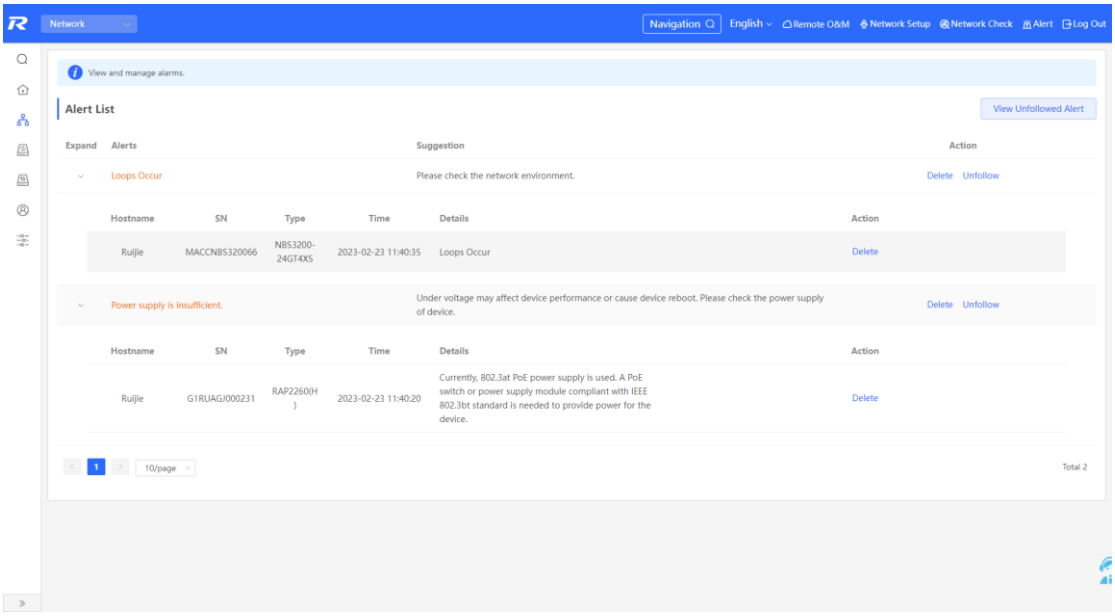


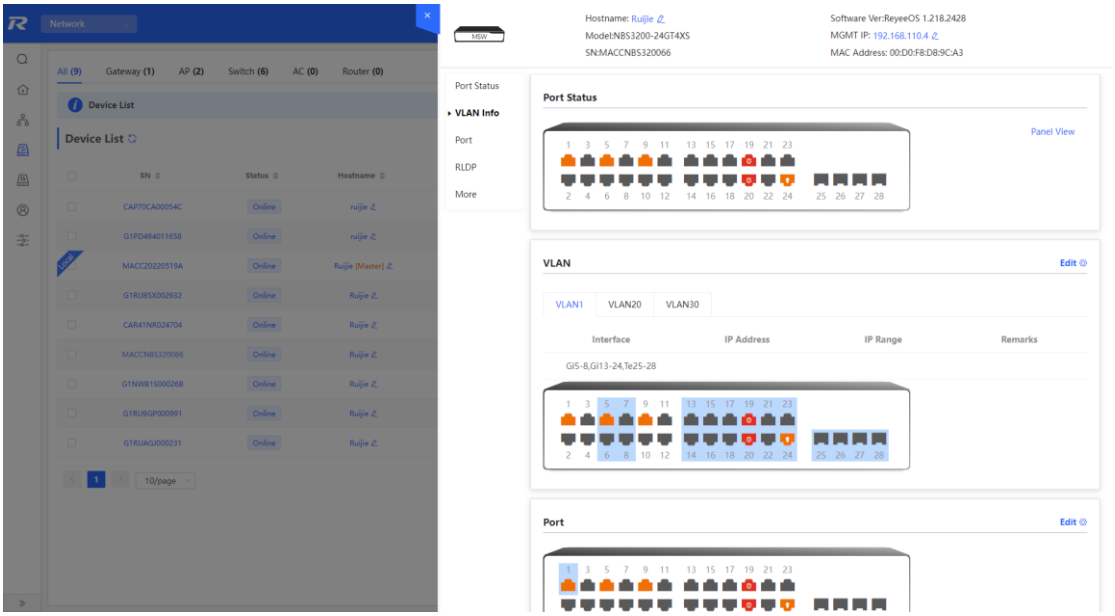


When a loop occurs, an alarm is reported.

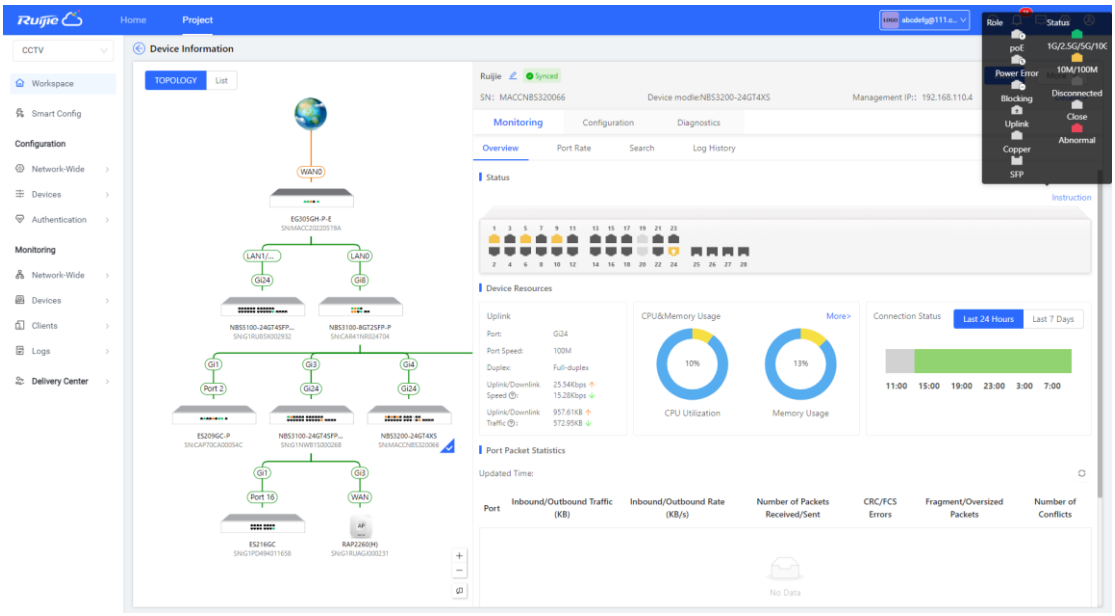


Log in to the eWeb management system of the device to view the device port status and alarm information.





View switch details and confirm the port status on Ruijie Cloud.


Ruijie
Home
Project
CCTV
Workspace
Smart Config
Configuration
Network-Wide
Devices
Authentication
Monitoring
Network-Wide
Devices
Clients
Logs
Delivery Center
Device Information
TOPOLOGY
List
WAN0
EG305GH-P-E
LAN1/...
LAN0
Gi24
Gi8
NBS5100-24GT4SFP...
NBS3100-8GT2SFP-P
Gi1
Gi3
Gi4
Port 2
Gi24
Gi24
ES209GC-P
NBS3100-24GT4SFP...
NBS3200-24GT4XS
Gi1
Gi3
Port 16
WAN
ES216GC
AP
RAP2260(H)
Ruijie
Synced
SN: MACCNBS320066
Device modle:NBS3200-24GT4XS
Management IP:: 192.168.110.4
Monitoring
Configuration
Diagnostics
Overview
Port Rate
Search
Log History
Status
Instruction
Device Resources
Uplink
Port:
Gi24
Port Speed:
100M
Duplex:
Full-duplex
Uplink/Downlink Speed:
25.54Kbps
15.28Kbps
Uplink/Downlink Traffic:
957.61KB
572.95KB
CPU&Memory Usage
More>
10%
13%
CPU Utilization
Memory Usage
Connection Status
Last 24 Hours
Last 7 Days
11:00
15:00
19:00
23:00
3:00
7:00
Port Packet Statistics
Updated Time:
Port
Inbound/Outbound Traffic (KB)
Inbound/Outbound Rate (KB/s)
Number of Packets Received/Sent
CRC/FCS Errors
Fragment/Oversized Packets
Number of Conflicts
No Data
Role
Status
poE
1G/2.5G/5G/10G
Power Error
10M/100M
Blocking
Disconnected
Uplink
Close
Copper
Abnormal
SFP

5 Troubleshooting

5.1.1 Ruijie Cloud Cannot Automatically Identify an IPC

(1) After an IPC is powered on, wait for about 20 minutes and then check whether it can be identified by Ruijie Cloud.

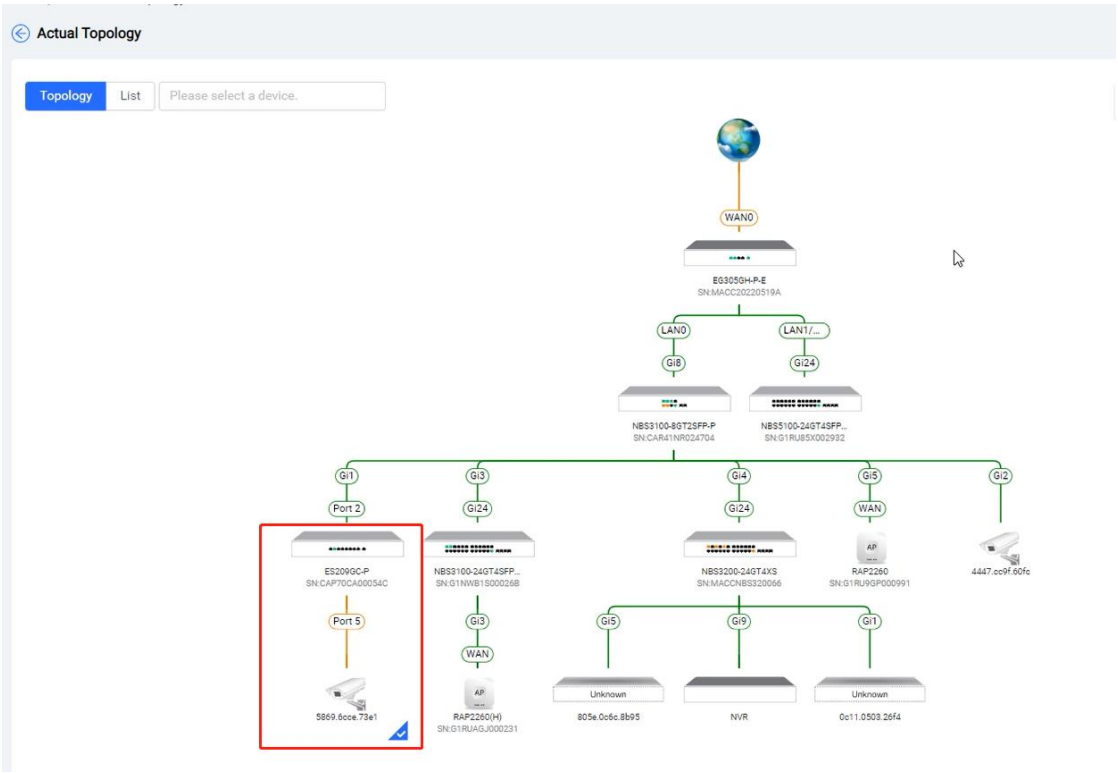
(2) Log in to the switch connected to the IPC and check whether the traffic over the switch port is normal and stably uploaded to Ruijie Cloud.

(3) Check whether the device connected to the IPC is an NBS or ES series switch.

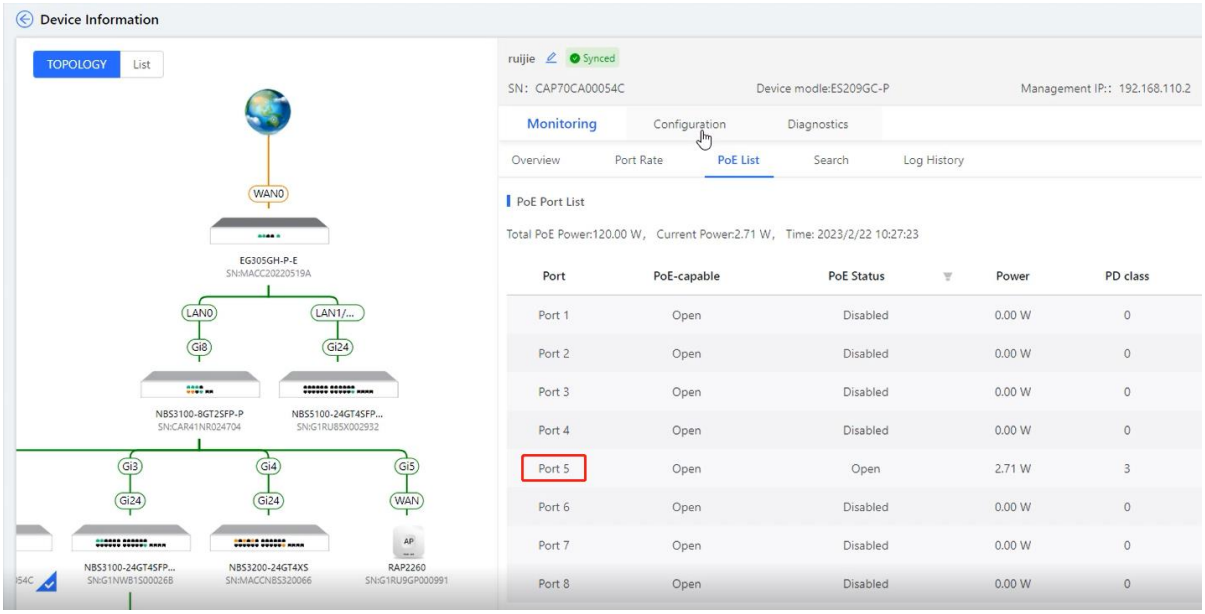
(4) If an NVR is deployed, you are advised to identify the IPC through the NVR. Ensure that the IP address, username, and password of the NVR are correct, a device that supports tunnels exist on the network, and the device can interconnect with the NVR.

5.1.2 IPC Is Offline

(1) Based on the real topology on Ruijie Cloud, locate the switch connected to the offline IPC and the corresponding port number.

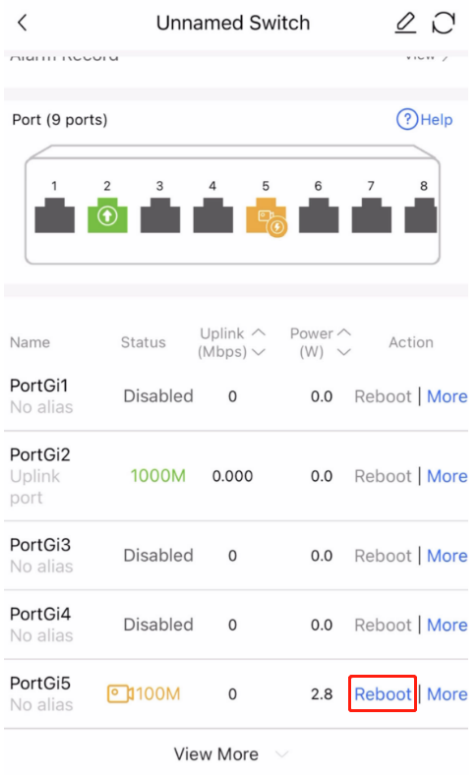


(2) Log in to the switch and view the port details.



(3) If the port status is **down** and the PoE status is **Disabled**, check the physical connection and network cable quality of the device.

(4) If the port status and PoE status are normal but the IPC is offline, try to restart the PoE port.



(5) After the port is restarted, wait for a period of time and check whether the IPC goes online again. If the IPC is still offline, check the IPC status.

5.1.3 Unable to Access the Intranet Server

(1) Check whether the IP address and port of the intranet server are correctly configured.

(2) Check whether the server can access the Internet. If not, configure the server network.

(3) Check whether the server can be accessed directly. Use an intranet device in the same network segment to log in to the server. If the login fails, check the server.

(4) Check whether the number of tunnels created on Ruijie Cloud has reached the limit. Up to 10 tunnels can be created for each project. Check whether the tunnels expire. A tunnel expires after it is created for 3 hours.

5.1.4 EST Bridging Fails

(1) View the LED indicators of the bridged devices to determine the bridging status of the devices.

(2) Confirm the maximum distance supported by the devices (EST310: 1 km; EST350: 5 km). Adjust the distance between the devices to ensure that the front panels of the devices face each other and ensure that the devices can receive Wi-Fi signals.

(3) Check the bridge environment: whether the distance between devices is too far, whether there is any obstruction between them, or whether the wireless radio is disturbed.

(4) Check the working mode of the device. Ensure that one side is AP mode, and the other side is CPE mode.

(5) Restore the devices to factory settings and test them again.

6 FAQ

6.1 What should I do if I want to add the NVR to the topology?

(1) Add IP address to Ruijie Cloud.

(2) Add the username/password of NVR to Ruijie Cloud.

(3) Make sure the NVR is available.

6.2 Which manufacturers of NVRs can be added in Ruijie Cloud?

Hikvision, Dahua, Tiandy, Uniview and Huawei can be added in Ruijie Cloud.

6.3 What information of the NVR can be displayed on the cloud?

The information including Status, IP, Vender, Username, Switch port connect with, Camera Qty and Update time will be displayed on Ruijie Cloud.

6.4 What information of the IPC can be displayed on the cloud?

(1) Speed up the recognition (based on the IPC MAC) of IPC under ESW/NBS managed switches. Supported vendors: Dahua, Hikvision, Honeywell, TE Connectivity, and Tiandy.

(2) Camera is connected with ESW or NBS switch, with 30-mins stable flow to Ruijie Cloud.

(3) Get IPC info by logging in to NVR: Ruijie Cloud can access to NVR to get IPC related info by tunnel.

6.5 Which manufacturers of IP cameras can be recognized by Ruijie Cloud?

Ruijie Cloud will recognize the IP cameras based on port traffic automatically. In theory, all cameras can be recognized.

6.6 What information of the IP camera can be displayed on the Cloud?

The information including Status, MAC, IP, Switch port connected with and Uplink/Downlink Speed will be displayed on Ruijie Cloud.

6.7 Which switch mode will recognize the IP camera automatically?

Reyee ES and NBS series will recognized the IP camera automatically.

6.8 What can I do if the topology shows" No Data"?

(1) If there is only one AP in the network, the topology cannot be displayed.
(2) The egress device is not the Ruijie device and doesn't have a core switch.
(3) Try manually refreshing the topology.

6.9 What can I do if there is only an EG device on the topology?

(1) If the version is not the latest one, you need upgrade it to the latest version.

(2) If the Web CLI is not available, other devices cannot be displayed as well.

6.10 What can I do if some devices are missing on the topology?

(1) Show mac/show arp/show ip route of the device. The results of these 3 commands including "S*" will make the device miss.

(2) Dynamic routing protocols such as OSPF exist in the topology.

(3) The switches in the topology are configured with VSU.

6.11 What can I do if the virtual devices are shown on the topology?

(1) The device is not on the Ruijie Cloud or is offline.

(2) The device is not the Ruijie device.

(3) If the device is an un-managed switch, it is recommended to edit the name and the port manually.