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Introduction

This document provides examples of configuring the port-based VLAN, super VLAN, private VLAN, and voice VLAN.

Prerequisites

The configuration examples in this document were created and verified in a lab environment, and all the devices were started with the factory default configuration. When you are working on a live network, make sure you understand the potential impact of every command on your network.

This document assumes that you have basic knowledge of VLANs.

Example: Configuring port-based VLANs

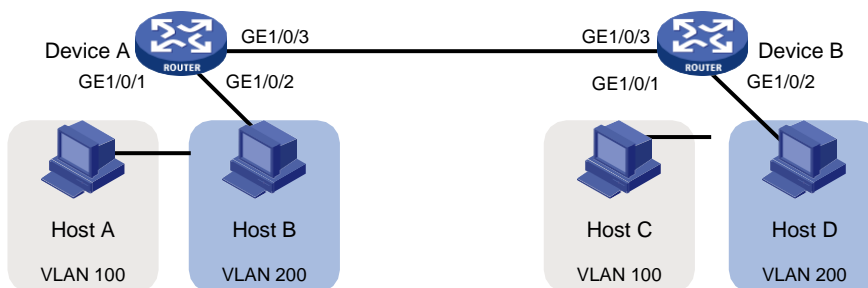
Network configuration

As shown in [Figure 1](#):

- Host A and Host C belong to Department A. VLAN 100 is assigned to Department A.
- Host B and Host D belong to Department B. VLAN 200 is assigned to Department B.

Configure port-based VLANs so that hosts only in the same department can communicate with each other.

Figure 1 Network diagram



Applicable hardware and software versions

The following matrix shows the hardware and software versions to which this configuration example is applicable:

Hardware	Software version
SC 3570 switch series	Release 11xx
SC 5525 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 5520 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 3170 switch series	Release 11xx
SC 3130 switch series	Release 63xx

Procedures

1. Configure Device A:

Configure the ports GigabitEthernet 1/0/1 through GigabitEthernet 1/0/3 to operate in bridge mode.

```
<DeviceA> system-view
[DeviceA] interface range gigabitethernet 1/0/1 to gigabitethernet 1/0/3
[DeviceA-if-range] port link-mode bridge
[DeviceA-if-range] quit
```

Create VLAN 100, and assign GigabitEthernet 1/0/1 to VLAN 100.

```
[DeviceA] vlan 100
[DeviceA-vlan100] port gigabitethernet 1/0/1
[DeviceA-vlan100] quit
```

Create VLAN 200, and assign GigabitEthernet 1/0/2 to VLAN 200.

```
[DeviceA] vlan 200
[DeviceA-vlan200] port gigabitethernet 1/0/2
[DeviceA-vlan200] quit
```

Configure GigabitEthernet 1/0/3 as a trunk port, and assign it to VLANs 100 and 200.

```
[DeviceA] interface gigabitethernet 1/0/3
[DeviceA-GigabitEthernet1/0/3] port link-type trunk
[DeviceA-GigabitEthernet1/0/3] port trunk permit vlan 100 200
```

2. Configure Device B in the same way Device A is configured. (Details not shown.)
3. Configure hosts:
 - a. Configure Host A and Host C to be on the same IP subnet. For example, 192.168.100.0/24.
 - b. Configure Host B and Host D to be on the same IP subnet. For example, 192.168.200.0/24.

Verifying the configuration

Verify that Host A and Host C can ping each other, but they both fail to ping Host B or Host D. (Details not shown.)

Verify that Host B and Host D can ping each other, but they both fail to ping Host A or Host C. (Details not shown.)

Display information about VLANs 100 and 200 on Device A.

```
[DeviceA-GigabitEthernet1/0/3] display vlan 100
```

```
VLAN ID: 100
VLAN type: Static
Route interface: Not configured
Description: VLAN 0100
Name: VLAN 0100
```

Tagged ports:

```
GigabitEthernet1/0/3
```

Untagged ports:

```
GigabitEthernet1/0/1
```

```
[DeviceA-GigabitEthernet1/0/3] display vlan 200
```

```
VLAN ID: 200
VLAN type: Static
Route interface: Not configured
Description: VLAN 0200
Name: VLAN 0200
```

Tagged ports:

```
GigabitEthernet1/0/3
```

Untagged ports:

```
GigabitEthernet1/0/2
```

The output shows that:

- GigabitEthernet 1/0/3 and GigabitEthernet 1/0/1 permit packets from 100 to pass through.
- GigabitEthernet 1/0/3 and GigabitEthernet 1/0/2 permit packets from 200 to pass through.

Configuration files



IMPORTANT:

Support for the `port link-mode bridge` command depends on the device model.

Configuration files on both Device B and Device A are the same. The following configuration files use Device A as an example.

```
#
vlan 100
#
vlan 200
#
interface GigabitEthernet1/0/1
    port link-mode bridge
    port access vlan 100
#
interface GigabitEthernet1/0/2
    port link-mode bridge
    port access vlan 200
#
interface GigabitEthernet1/0/3
    port link-mode bridge
    port link-type trunk
    port trunk permit vlan 1 100 200
#
```

Example: Configuring the super VLAN

Network configuration

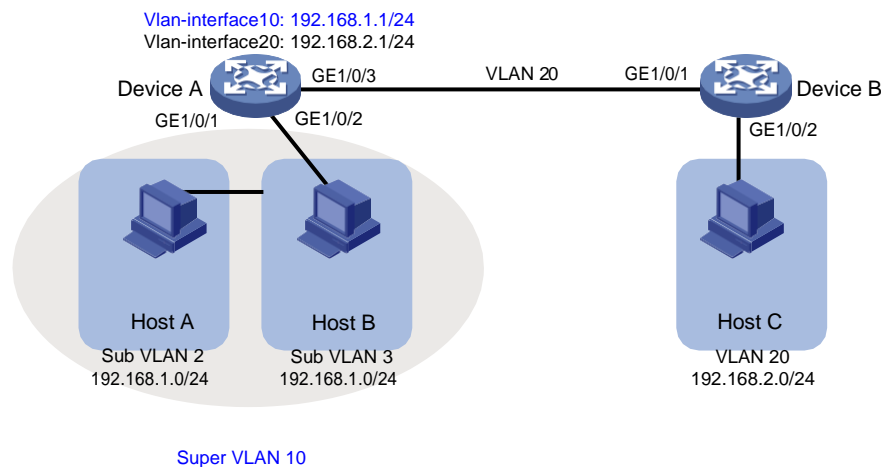
As shown in [Figure 2](#):

- Users in VLAN 2 access the network through GigabitEthernet 1/0/1 of Device A.
- Users in VLAN 3 access the network through GigabitEthernet 1/0/2 of Device A.
- GigabitEthernet 1/0/3 of Device A and GigabitEthernet 1/0/1 of Device B are in VLAN 20.
- Users in VLAN 20 use the gateway address 192.168.2.1 and IP addresses on the IP network segment 192.168.2.0/24.

Configure a super VLAN to meet the following requirements:

- Users in VLAN 2 and VLAN 3 use the gateway address 192.168.1.1 and IP addresses on the IP network segment 192.168.1.0/24.
- Users in VLAN 2, VLAN 3, and VLAN 20 are isolated at Layer 2 but interoperable at Layer 3.

Figure 2 Network diagram



Applicable hardware and software versions

The following matrix shows the hardware and software versions to which this configuration example is applicable:

Hardware	Software version
SC 3570 switch series	Release 11xx
SC 5525 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 5520 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 3170 switch series	Release 11xx
SC 3130 switch series	Not supported

Restrictions and guidelines

A super VLAN does not have physical ports. A VLAN that has physical ports cannot be configured as a super VLAN.

Procedures

Configuring Device A

Create VLAN 10 and configure it as a super VLAN.

```
<DeviceA> system-view
[DeviceA] vlan 10
[DeviceA-vlan10] supervlan
[DeviceA-vlan10] quit
```

Create VLAN 2, and assign GigabitEthernet 1/0/1 to VLAN 2.

```
[DeviceA] vlan 2
[DeviceA-vlan2] port gigabitethernet 1/0/1
[DeviceA-vlan2] quit
```

Create VLAN 3, and assign GigabitEthernet 1/0/2 to VLAN 3.

```
[DeviceA] vlan 3
[DeviceA-vlan3] port gigabitethernet 1/0/2
[DeviceA-vlan3] quit
```

Associate super VLAN 10 with VLANs 2 and 3.

```
[DeviceA] vlan 10
[DeviceA-vlan10] subvlan 2 3
[DeviceA-vlan10] quit
```

Create VLAN-interface 10, and assign IP address 192.168.1.1 to it.

```
[DeviceA] interface vlan-interface 10
[DeviceA-Vlan-interface10] ip address 192.168.1.1 24
```

Enable local proxy ARP on VLAN-interface 10.

```
[DeviceA-Vlan-interface10] local-proxy-arp enable
[DeviceA-Vlan-interface10] quit
```

Create VLAN 20.

```
[DeviceA] vlan 20
[DeviceA-vlan20] quit
```

Configure GigabitEthernet 1/0/3 as a trunk port, and remove the port from VLAN 1.

```
[DeviceA] interface gigabitethernet 1/0/3
[DeviceA-GigabitEthernet1/0/3] port link-type trunk
[DeviceA-GigabitEthernet1/0/3] undo port trunk permit vlan 1
```

Assign GigabitEthernet 1/0/3 to VLAN 20.

```
[DeviceA-GigabitEthernet1/0/3] port trunk permit vlan 20
```

Create VLAN-interface 20, and assign IP address 192.168.2.1 to it.

```
[DeviceA] interface Vlan-interface 20
[DeviceA-Vlan-interface20] ip address 192.168.2.1 24
[DeviceA-Vlan-interface20] quit
```

Configuring Device B

Create VLAN 20.

```
[DeviceB] vlan 20
```

```
[DeviceB-vlan20] quit
# Configure GigabitEthernet 1/0/1 as a trunk port, and remove the port from VLAN 1.
[DeviceB] interface gigabitethernet 1/0/1
[DeviceB-GigabitEthernet1/0/1] port link-type trunk
[DeviceB-GigabitEthernet1/0/1] undo port trunk permit vlan 1
# Assign GigabitEthernet 1/0/1 to VLAN 20.
[DeviceB-GigabitEthernet1/0/1] port trunk permit vlan 20
# Assign GigabitEthernet 1/0/2 to VLAN 20.
[DeviceB] vlan 20
[DeviceB-vlan20] port gigabitethernet 1/0/2
[DeviceB-vlan20] quit
```

Verifying the configuration

Verify the super VLAN configuration.

```
[DeviceA] display supervlan
Super VLAN ID: 10
Sub-VLAN ID: 2-3

VLAN ID: 10
VLAN type: Static
It is a super VLAN.
Route interface: Configured
IPv4 address: 192.168.1.1
IPv4 subnet mask: 255.255.255.0
Description: VLAN 0010
Name: VLAN 0010
Tagged ports: none
Untagged ports: none

VLAN ID: 2
VLAN type: Static
It is a sub-VLAN.
Route interface: Configured
IPv4 address: 192.168.1.1
IPv4 subnet mask: 255.255.255.0
Description: VLAN 0002
Name: VLAN 0002
Tagged ports: none
Untagged ports:
    GigabitEthernet1/0/1

VLAN ID: 3
VLAN type: Static
It is a sub-VLAN.
Route interface: Configured
IPv4 address: 192.168.1.1
```



```
IPv4 subnet mask: 255.255.255.0
Description: VLAN 0003
Name: VLAN 0003
Tagged ports: none
Untagged ports:
    GigabitEthernet1/0/2
```

Verify that Host A and Host B can ping each other. In the ARP table of Host A, the IP address of Host B corresponds to the MAC address of VLAN-interface 10. In the ARP table of Host B, the IP address of Host A corresponds to the MAC address of VLAN-interface 10. (Details not shown.)

Verify that Host A and Host C can ping each other. In the ARP table of Host A, no entry about Host C exists. In the ARP table of Host C, no entry about Host A exists. (Details not shown.)

Verify that Host B and Host C can ping each other. In the ARP table of Host B, no entry about Host C exists. In the ARP table of Host C, no entry about Host B exists. (Details not shown.)

Configuration files

❗ IMPORTANT:

Support for the `port link-mode bridge` command depends on the device model.

- Device A:

```
#
vlan 2
#
vlan 3
#
vlan 10
    supervlan
    subvlan 2 3
#
vlan 20
#
interface Vlan-interface10
    ip address 192.168.1.1 255.255.255.0
    local-proxy-arp enable
#
interface Vlan-interface20
    ip address 192.168.2.1 255.255.255.0
#
interface GigabitEthernet1/0/1
    port link-mode bridge
    port access vlan 2
#
interface GigabitEthernet1/0/2
    port link-mode bridge
    port access vlan 3
#
interface GigabitEthernet1/0/3
    port link-mode bridge
```

- ```

port link-type trunk
undo port trunk permit vlan 1
port trunk permit vlan 20
#

```
- **Device B:**

```

#
vlan 20
#
interface GigabitEthernet1/0/1
port link-mode bridge
port link-type trunk
undo port trunk permit vlan 1
port trunk permit vlan 20
#
interface GigabitEthernet1/0/2
port link-mode bridge
port access vlan 20
#

```

## Example: Configuring the private VLAN

### Network configuration

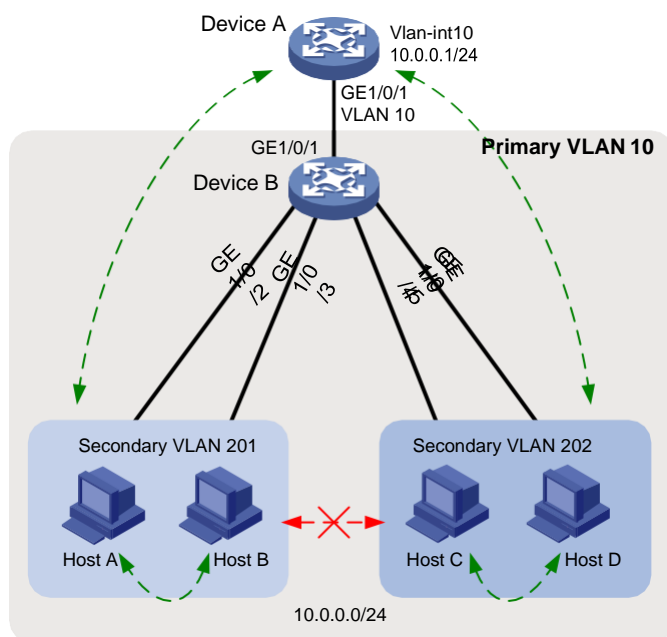
As shown in [Figure 3](#):

- The aggregation-layer device Device A assigns VLAN 10 to Device B. Hosts access the network through VLAN-interface 10.
- Users connected to Device B are on the same subnet 10.0.0.0/24.
- Host A and Host B are in the Marketing department. Host C and Host D are in the Finance department.

Configure the private VLAN feature to meet the following requirements:

- Device A is only aware of the primary VLAN 10.
- Hosts in the same secondary VLAN are interoperable at Layer 2.
- Hosts in different secondary VLANs are isolated at Layer 2.

**Figure 3 Network diagram**



## Analysis

The private VLAN configuration is required only on Device B.

## Applicable hardware and software versions

The following matrix shows the hardware and software versions to which this configuration example is applicable:

| Hardware              | Software version                                             |
|-----------------------|--------------------------------------------------------------|
| SC 3570 switch series | Release 11xx                                                 |
| SC 5525 switch series | Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx |
| SC 5520 switch series | Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx |
| SC 3170 switch series | Release 11xx                                                 |
| SC 3130 switch series | Release 63xx                                                 |

## Restrictions and guidelines

The system default VLAN (VLAN 1) does not support the private VLAN configuration.

## Procedures

## Configuring Device B

**# Create VLAN 10 and configure it as a primary VLAN.**

```
<DeviceB> system-view
[DeviceB] vlan 10
[DeviceB-vlan10] private-vlan primary
[DeviceB-vlan10] quit
```

**# Create VLANs 201 and 202.**

```
[DeviceB] vlan 201 to 202
```

**# Associate primary VLAN 10 with secondary VLANs 201 and 202.**

```
[DeviceB] vlan 10
[DeviceB-vlan10] private-vlan secondary 201 to 202
[DeviceB-vlan10] quit
```

**# Configure the uplink port GigabitEthernet 1/0/1 as a promiscuous port of VLAN 10.**

```
[DeviceB] interface gigabitethernet 1/0/1
[DeviceB-GigabitEthernet1/0/1] port private-vlan 10 promiscuous
[DeviceB-GigabitEthernet1/0/1] quit
```

**# Assign the downlink ports GigabitEthernet 1/0/2 and GigabitEthernet 1/0/3 to VLAN 201 as host ports.**

```
[DeviceB] interface range gigabitethernet 1/0/2 to gigabitethernet 1/0/3
[DeviceB-if-range] port link-mode bridge
```

```
[DeviceB-if-range] port access vlan 201
[DeviceB-if-range] port private-vlan host
[DeviceB-if-range] quit
```

**# Assign the downlink ports GigabitEthernet 1/0/4 and GigabitEthernet 1/0/5 to VLAN 202 as host ports.**

```
[DeviceB] interface range gigabitethernet 1/0/4 to gigabitethernet 1/0/5
[DeviceB-if-range] port link-mode bridge
[DeviceB-if-range] port access vlan 202
[DeviceB-if-range] port private-vlan host
[DeviceB-if-range] quit
```

## Configuring Device A

**# Create VLAN 10.**

```
<DeviceA> system-view
[DeviceA] vlan 10
[DeviceA] quit
```

**# Assign GigabitEthernet 1/0/1 to VLAN 10.**

```
[DeviceA] interface gigabitethernet 1/0/1
[DeviceA-GigabitEthernet1/0/1] port link-mode bridge
[DeviceA-GigabitEthernet1/0/1] port access vlan 10
[DeviceA-GigabitEthernet1/0/1] quit
```

**# Create VLAN-interface 10, and assign IP address 10.0.0.1 to it.**

```
[DeviceA] interface vlan-interface 10
[DeviceA-Vlan-interface10] ip address 10.0.0.1 24
[DeviceA-Vlan-interface10] quit
```

## Verifying the configuration

**# Verify that Device A can ping Host A, Host B, Host C, and Host D successfully. (Details not shown.)**

**# Display the ARP table of Device A.**

```
[DeviceA] display arp
```

| Type: S-Static | D-Dynamic      | O-Openflow | R-Rule            | M-Multipoint | I-Invalid |
|----------------|----------------|------------|-------------------|--------------|-----------|
| IP address     | MAC address    | VLAN/VSI   | Interface/Link ID | Aging        | Type      |
| 10.0.0.2       | d485-64a1-7e4a | 10         | GE1/0/1           | 19           | D         |
| 10.0.0.3       | 7446-a0aa-7774 | 10         | GE1/0/1           | 19           | D         |
| 10.0.0.4       | 6805-ca05-39ae | 10         | GE1/0/1           | 20           | D         |
| 10.0.0.5       | 6805-ca05-414e | 10         | GE1/0/1           | 20           | D         |

**# Display the private VLAN configuration on Device B.**

```
[DeviceB] display private-vlan
Primary VLAN ID: 10
Secondary VLAN ID: 201-202
VLAN ID: 10
VLAN type: Static
Private VLAN type: Primary
Route interface: Not configured
Description: VLAN 0010
```

```

Name: VLAN 0010
Tagged ports: None
Untagged ports:
 GigabitEthernet1/0/1 GigabitEthernet1/0/2
 GigabitEthernet1/0/3 GigabitEthernet1/0/4
 GigabitEthernet1/0/5

VLAN ID: 201
VLAN type: Static
Private VLAN type: Secondary
Route interface: Not configured
Description: VLAN 0201
Name: VLAN 0201
Tagged ports: None
Untagged ports:
 GigabitEthernet1/0/1 GigabitEthernet1/0/2
 GigabitEthernet1/0/3

VLAN ID: 202
VLAN type: Static
Private VLAN type: Secondary
Route interface: Not configured
Description: VLAN 0202
Name: VLAN 0202
Tagged ports: None
Untagged ports:
 GigabitEthernet1/0/1 GigabitEthernet1/0/4
 GigabitEthernet1/0/5

```

The output shows that:

- The promiscuous port GigabitEthernet1/0/1 is an untagged member of primary VLAN 10 and secondary VLANs 201 and 202.
- The host ports GigabitEthernet 1/0/2 and GigabitEthernet 1/0/3 are untagged members of secondary VLANs 201.
- The host ports GigabitEthernet 1/0/4 and GigabitEthernet 1/0/5 are untagged members of secondary VLANs 202.

# Verify that Hosts in the same secondary VLAN can ping each other, but they fail to ping hosts in the other secondary VLAN. (Details not shown.)

## Configuration files



### IMPORTANT:

Support for the `port link-mode bridge` command depends on the device model.

- Device B:
 

```

#
vlan 1
#
vlan 10

```

```

private-vlan primary
private-vlan secondary 201 to 202
#
vlan 201 to 202
#
interface GigabitEthernet1/0/1
port link-mode bridge
port link-type hybrid
undo port hybrid vlan 1
port hybrid vlan 10 201 to 202 untagged
port hybrid pvid vlan 10
port private-vlan 10 promiscuous
#
interface GigabitEthernet1/0/2
port link-mode bridge
port link-type hybrid
undo port hybrid vlan 1
port hybrid vlan 10 201 untagged
port hybrid pvid vlan 201
port private-vlan host
#
interface GigabitEthernet1/0/3
port link-mode bridge
port link-type hybrid
undo port hybrid vlan 1
port hybrid vlan 10 201 untagged
port hybrid pvid vlan 201
port private-vlan host
#
interface GigabitEthernet1/0/4
port link-mode bridge
port link-type hybrid
undo port hybrid vlan 1
port hybrid vlan 10 202 untagged
port hybrid pvid vlan 202
port private-vlan host
#
interface GigabitEthernet1/0/5
port link-mode bridge
port link-type hybrid
undo port hybrid vlan 1
port hybrid vlan 10 202 untagged
port hybrid pvid vlan 202
port private-vlan host
#

```

- **Device A:**

```

#
vlan 1

```

```
#
vlan 10
#
interface Vlan-interface10
ip address 10.0.0.1 255.255.255.0
#
interface GigabitEthernet1/0/1
port link-mode bridge
port access vlan 10
#
```

## Example: Configuring the voice VLAN

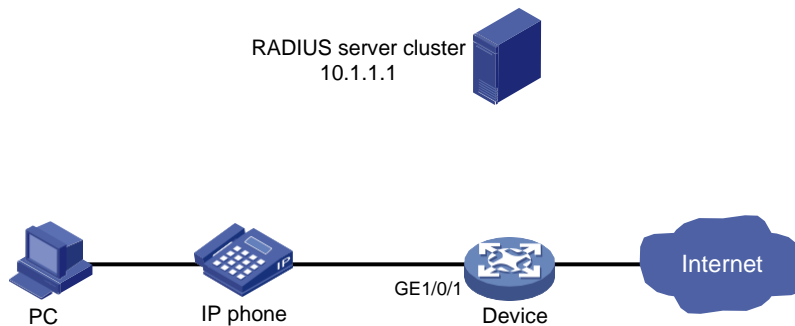
### Network configuration

As shown in [Figure 4](#), the device connects to an IP phone through GigabitEthernet1/0/1, and the IP phone sends tagged voice traffic. The device authenticates the IP phone through the RADIUS server. If the IP phone passes authentication, the IP phone is allowed to access the device. Configure voice VLAN 2 on the device. Configure LLDP to enable the IP phone to automatically come online after passing 802.1X authentication.

Configure voice VLAN to meet the following requirements:

- The IP phone automatically comes online after passing 802.1X authentication on GigabitEthernet 1/0/1.
- The IP phone can automatically come online and send voice traffic without manually configured voice VLAN MAC addresses on the device.

**Figure 4 Network diagram**



### Analysis

- By default, an IP phone supports LLDP.
- When enabling LLDP for autodiscovering IP phones, you must configure the network-policy TLV to advertise voice VLAN information on GigabitEthernet 1/0/1.
- Enable the automatic voice VLAN assignment mode.
- Configure IP addresses for interfaces.



# Applicable hardware and software versions

The following matrix shows the hardware and software versions to which this configuration example is applicable:

| Hardware              | Software version                                             |
|-----------------------|--------------------------------------------------------------|
| SC 3570 switch series | Release 11xx                                                 |
| SC 5525 switch series | Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx |
| SC 5520 switch series | Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx |
| SC 3170 switch series | Release 11xx                                                 |
| SC 3130 switch series | Release 63xx                                                 |

## Restrictions and guidelines

Whether the username sent to the RADIUS server includes the domain name depends on the RADIUS server configuration and whether the RADIUS server accepts usernames including domain names.

- If the server does not accept usernames including domain names or the service configured for user authentication on the server does not include a domain name, specify the username not to include the domain name (**without-domain**) on the device.
- If the server can accept usernames including domain names and the service configured for user authentication on the server includes a domain name, specify the username to include the domain name (**with-domain**) on the device.

## Procedures

### Configuring the voice VLAN

# Create VLAN 2.

```
<Device> system-view
[Device] vlan 2
[Device-vlan2] quit
```

# Enable LLDP globally.

```
[Device] lldp global enable
```

# Enable LLDP on GigabitEthernet 1/0/1, configure LLDP to operate in TxRx mode, and configure LLDP to advertise the voice VLAN ID.

```
[Device] interface gigabitethernet 1/0/1
[Device-GigabitEthernet1/0/1] lldp enable
[Device-GigabitEthernet1/0/1] lldp admin-status txrx
[Device-GigabitEthernet1/0/1] lldp tlv-enable med-tlv network-policy 2
[Device-GigabitEthernet1/0/1] quit
```

# Enable the voice VLAN security mode, and set the voice VLAN aging timer to 30 minutes.

```
[Device] voice-vlan security enable
[Device] voice-vlan aging 30
```

# Enable LLDP for automatic IP phone discovery.

```
[Device] voice-vlan track lldp
```

# Configure GigabitEthernet 1/0/1 as a hybrid port, and configure the voice VLAN feature.

```
[Device] interface gigabitethernet 1/0/1
[Device-GigabitEthernet1/0/1] port link-type hybrid
[Device-GigabitEthernet1/0/1] voice-vlan mode auto
[Device-GigabitEthernet1/0/1] voice-vlan 2 enable
```

### Configuring 802.1X authentication

# Configure the RADIUS server, add user accounts, and make sure accounting, authorization, and accounting run properly for users. (Details not shown.)

# Create a RADIUS scheme. Configure the primary authentication and accounting servers and the keys for secure RADIUS authentication and accounting communication. Specify the device to remove the ISP domain name in the username sent to the RADIUS server.

```
[Device] radius scheme radius1
[Device-radius-radius1] primary authentication 10.1.1.1
[Device-radius-radius1] primary accounting 10.1.1.1
[Device-radius-radius1] key authentication simple name
[Device-radius-radius1] key accounting simple money
```

```
[Device-radius-radius1] user-name-format without-domain
[Device-radius-radius1] quit
```

**# Create ISP domain **bbb**, and configure 802.1X users to use RADIUS scheme **radius1** for authentication, authorization, and accounting.**

```
[Device] domain bbb
[Device-isp-bbb] authentication lan-access radius-scheme radius1
[Device-isp-bbb] authorization lan-access radius-scheme radius1
[Device-isp-bbb] accounting lan-access radius-scheme radius1
[Device-isp-bbb] quit
```

**# Configure 802.1X on GigabitEthernet 1/0/1, and specify mandatory 802.1X authentication domain **bbb** on the interface.**

```
[Device] interface gigabitethernet 1/0/1
[Device-GigabitEthernet1/0/1] dot1x
[Device-GigabitEthernet1/0/1] dot1x mandatory-domain bbb
```

**# Enable the 802.1X multicast trigger feature. (Optional. By default, the 802.1X multicast trigger feature is enabled.)**

```
[Device-GigabitEthernet1/0/1] dot1x multicast-trigger
[Device-GigabitEthernet1/0/1] quit
```

**# Enable the 802.1x feature globally.**

```
[Device] dot1x
```

**# Configure the 802.1X client. (Details not shown.)**

If you use an INTELBRAS iNode 802.1X client, for the backup authentication method local authentication to succeed, make sure the **Upload version info** option is not selected in the 802.1X connection properties.

## Verifying the configuration

**# Display 802.1X authentication information.**

```
[Device] display dot1x interface gigabitethernet 1/0/1
Global 802.1X parameters:
 802.1X authentication : Enabled
 CHAP authentication : Enabled
 Max-tx period : 30 s
 Handshake period : 15 s
 Offline detect period : 300 s
 Quiet timer : Disabled
 Quiet period : 60 s
 Supp timeout : 30 s
 Server timeout : 100 s
 Reauth period : 3600 s
 Max auth requests : 2
 User aging period for Auth-Fail VLAN : 1000 s
 User aging period for Auth-Fail VSI : 1000 s
 User aging period for critical VLAN : 1000 s
 User aging period for critical VSI : 1000 s
 User aging period for guest VLAN : 1000 s
 User aging period for guest VSI : 1000 s
 EAD assistant function : Disabled
```

```

 EAD timeout : 30 min
 Domain delimiter : @
Online 802.1X wired users : 1
GigabitEthernet1/0/1 is link-up

 802.1X authentication : Enabled
 Handshake : Enabled
 Handshake reply : Disabled
 Handshake security : Disabled
 Offline detection : Disabled
 Unicast trigger : Disabled
 Periodic reauth : Disabled
 Port role : Authenticator
 Authorization mode : Auto
 Port access control : MAC-based
 Multicast trigger : Enabled
 Mandatory auth domain : Not configured
 Guest VLAN : Not configured
 Auth-Fail VLAN : Not configured
 Critical VLAN : Not configured
 Critical voice VLAN : Disabled
 Add Guest VLAN delay : Disabled
 Re-auth server-unreachable : Logoff
 Max online users : 4294967295
 User IP freezing : Disabled
 Reauth period : 0 s
 Send Packets Without Tag : Disabled
 Max Attempts Fail Number : 0
 Guest VSI : Not configured
 Auth-Fail VSI : Not configured
 Critical VSI : Not configured
 Add Guest VSI delay : Disabled
 User aging : Enabled
 Server-recovery online-user-sync : Enabled
 Auth-Fail EAPOL : Disabled
 Critical EAPOL : Disabled
 EAPOL packets: Tx 0, Rx 0
 Sent EAP Request/Identity packets : 0
 EAP Request/Challenge packets: 0
 EAP Success packets: 0
 EAP Failure packets: 0
 Received EAPOL Start packets : 0
 EAPOL LogOff packets: 0
 EAP Response/Identity packets : 0
 EAP Response/Challenge packets: 0
 Error packets: 0
 Online 802.1X users: 1

```

After the IP phone enters the correct username and password and then comes online, use the **display dot1x connection** command to display the connections of online users.

# Display the voice VLAN state.

```
[Device] display voice-vlan state
```

```
Current voice VLANs: 2
```

```
Voice VLAN security mode: Security
```

```
Voice VLAN aging time: 30 minutes
```

```
Voice VLAN enabled ports and their modes:
```

| Port    | VLAN | Mode | CoS | DSCP |
|---------|------|------|-----|------|
| GE1/0/1 | 2    | Auto | 6   | 46   |

## Configuration files



### IMPORTANT:

Support for the **port link-mode bridge** command depends on the device model.

```
#
voice-vlan aging 30
voice-vlan track lldp
sable
#
dot1x
#
lldp global enable
#
vlan 1
#
vlan 2
#
interface GigabitEthernet1/0/1
port link-mode bridge
port link-type hybrid
port hybrid vlan 1 untagged
voice-vlan 2 enable
lldp tlv-enable med-tlv network-policy 2
dot1x
dot1x mandatory-domain bbb
#
radius scheme radius1
primary authentication 10.1.1.1
primary accounting 10.1.1.1
key authentication cipher c3$/gxrbATUfK4BbF+73EQiCzBM7cwP86o=
key accounting cipher c3$mq8b76RILWQr2lH7NTtvE9+7O0v7vd1H
user-name-format without-domain
#
radius scheme system
user-name-format without-domain
#
domain bbb
accounting login radius-scheme radius1
```

```
authentication lan-access radius-scheme radius1
authorization lan-access radius-scheme radius1
```