Yealink VCS Network Deployment Solution

Feb. 2017

V22.15

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Network Requirements Overview

Bandwidth Requirements

Because the video conferencing system (VCS) is a real-time network application, it has high bandwidth requirements. Recommended bandwidths to ensure the best VCS performance results are shown below.

Bandwidth requirements of the Yealink video conferencing system:

Video Resolution	Recommended Bandwidth
Full HD 1080P (1920x1080)	1.3Mb
Full HD + content: (people+ content)	2.6Mb
HD 720P (1280x720)	665Kb
HD + content: (people + content)	1.4Mb
SD 448P (768x448)	333Kb
SD + content (people + content)	666Kb

Other network requirements of the Yealink video conferencing system:

Delay	General VCS delay is less than 200ms
Jitter	Jitter is less than 50ms
Packet lost	Packet loss is less than1%

Bandwidth Requirement for the Head Office

The total head office bandwidth requirement is related to the number of connected branch offices.

The calculation formula is as follows:

The total head office bandwidth requirement = N x bandwidth requirement for one single branch office

Take 3 branch offices as an example:

To achieve the full HD effect, the total head office bandwidth requirement = 1.3Mbps x 3= 3.9 Mbps.

Presentations are often needed during a video conference. This means that every office needs double bandwidth.

If a presentation is needed, the total bandwidth requirement for the head office = 1.3Mbps x 2 x 3 =7.8Mbps.

Bandwidth Requirement for the Branch Office

Bandwidth requirement for the branch office = bandwidth requirement for a single branch office.

For example:

To achieve the full HD effect, the total bandwidth requirement is1.3Mbps. If presentation is needed, 2.6 Mb is needed.

Note An independent fiber optic line is recommended for the video conferencing system instead of sharing bandwidth with other office systems. If network sharing cannot be avoided, you are advised to take QoS measures to control the network traffic.

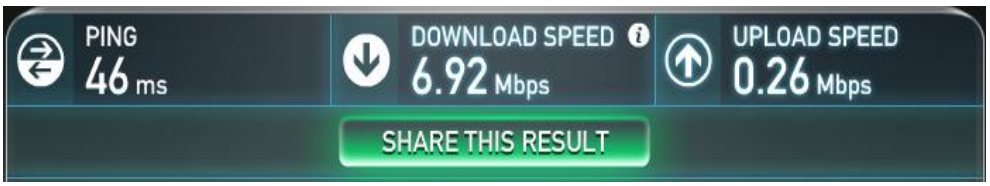
Bandwidth Testing

Once you understand your VCS bandwidth requirements, carry out the following steps to test whether your current bandwidth meets needs.

Enter http://www.speedtest.net/ in the address bar of a web browser on your PC, and then press the **Enter** key.

Start test when "**Begin Test**" displays on the webpage.

Test result:



a) **PING**: the ideal PING value is less than 100ms, so the test above shows that the network delay is low.

b) **DOWNLOAD SPEED**: Downlink bandwidth.

c) **UPLOAD SPEED**: Uplink bandwidth.

d) Recommended bandwidth is 1080P and recommended uplink/downlink bandwidth is 1.3Mb.

The ideal uplink and downlink bandwidths are 1.5Mb. Downlink and uplink bandwidths may be asymmetric, so ensure the uplink bandwidth meets the requirements.

According to the result above, if the current network cannot meet the minimum VCS bandwidth requirements, please deploy the video conferencing system after upgrading your network. Otherwise, your video conference system will not achieve the desired effects.

Static Public IP Address Requirement for the Head Office

At least one static public IP address is required in the head office to allow branch offices to connect.

VCS Deployment Methods

VCS supports two network deployment methods: Cloud deployment and traditional deployment. Choose the desired deployment method according to your needs.

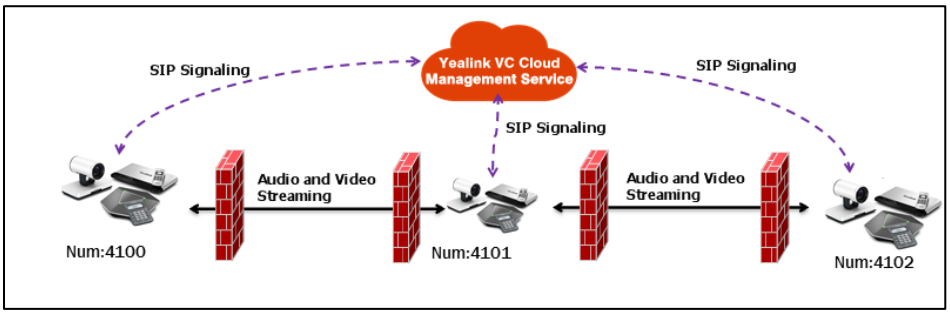
Cloud Deployment Method

Cloud-based technology drives positive change in the way organizations communicate, especially when it comes to video. With video conferencing service, organizations can communicate just using the Cloud platform. Public IP address and complex network settings are unnecessary.

Challenges such as infrastructure costs and interoperability are eliminated. Both the head office and the branch offices can use the Cloud deployment method. Both inbound and outbound calls are available.

You can log into the Yealink Cloud/StarLeaf/BlueJeans/Pexip/Mind/Custom platform using video conferencing system.

Yealink Cloud Deployment Method



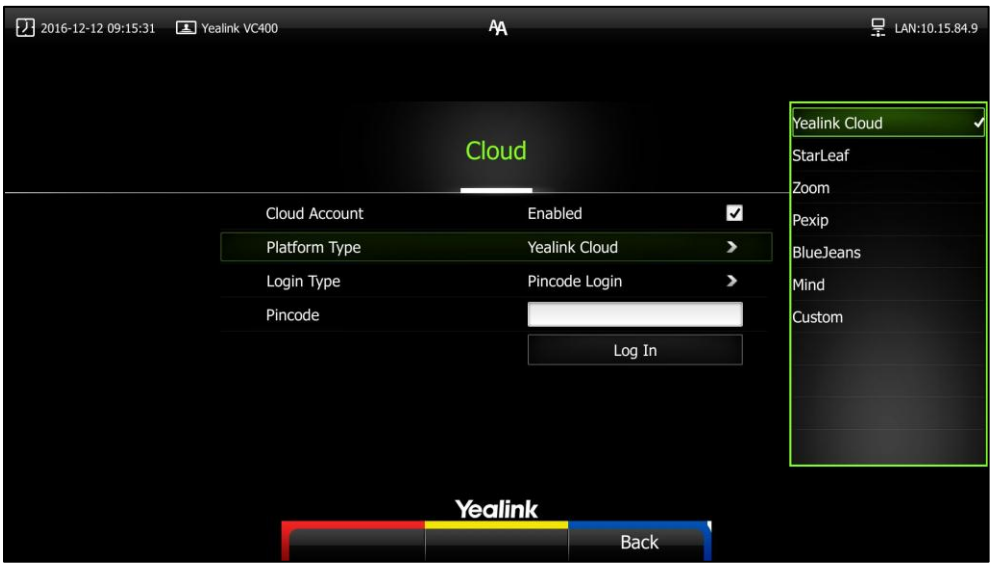
Take above image as an example: three video conferencing systems are deployed in different networks, and they all register Yealink Cloud accounts.

Yealink VC Cloud management service deployed in public network can help traverse SIP signaling and media streaming, so that the video conferencing systems can call each other without public IP addresses and complex network settings.

To log into the Yealink Cloud platform via the remote control:

1. Select **Menu**->**Advanced** (default password: 0000)->**Cloud.**
2. In the **Cloud Account** filed, check the **Enabled** checkbox.

3. Select **Yealink Cloud** from the pull-down list of **Platform Type**.



4. Select desired sign-in method from the pull-down list of **Login Type:**

   - If you select **Build-in Cloud Number**:
     Press ▲ or ▼ to scroll to **Onekey Login**, and then press OK.
   - If you select **Pincode Login**:
     Enter your PIN code in the **Pincode** field, press ▲ or ▼ to scroll to **Log In**, and then press OK.
   - If you select **Username**/**Password**:
     Enter your Cloud number and password in the corresponding fields, you can also check the **Remember me** checkbox to remember your username and password.
     Press ▲ or ▼ to scroll to **Log In**, and then press OK.

After successful registration, the display device displays VC, and the LCD screen of the video conferencing phone displays VC.

Third-party Platform Deployment Method

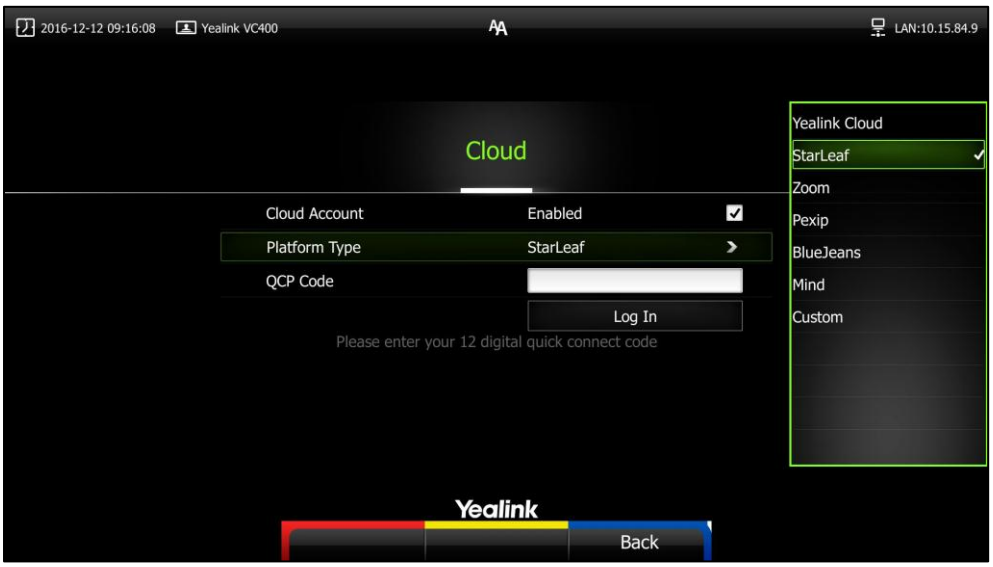
Yealink video conferencing systems are compatible with StarLeaf/Zoom/BlueJeans/Pexip/Mind/ Custom platform.

Video conferencing systems can connect each other by entering Virtual Meeting Rooms (VMRs).

To log into the StarLeaf Cloud platform via the remote control:

1. Select **Menu**->**Advanced** (default password: 0000)->**Cloud.**
2. In the **Cloud Account** filed, check the **Enabled** checkbox.

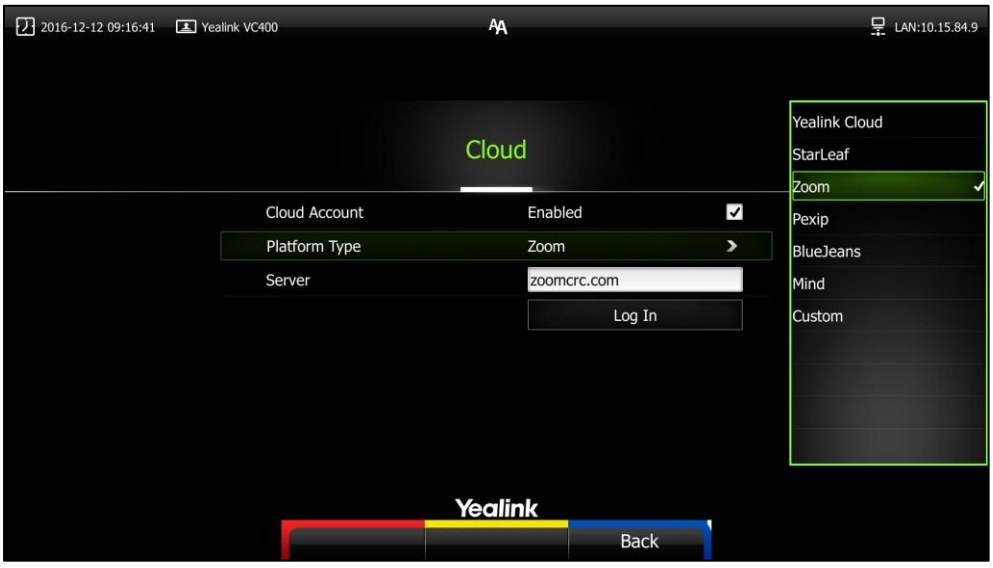
3. Select **StarLeaf** from the pull-down list of **Platform Type**.



4. Enter the quick access code in the **QCP Code** field.
   Press ▲ or ▼ to scroll to **Log In**, and then press OK.
   After successful registration, the display device displays , and the LCD screen of the video conferencing phone displays .

To log into the Zoom Cloud platform via the remote control:

1. Select **Menu**->**Advanced** (default password: 0000)->**Cloud.**
2. In the **Cloud Account** filed, check the **Enabled** checkbox.
3. Select **Zoom** from the pull-down list of **Platform Type**.

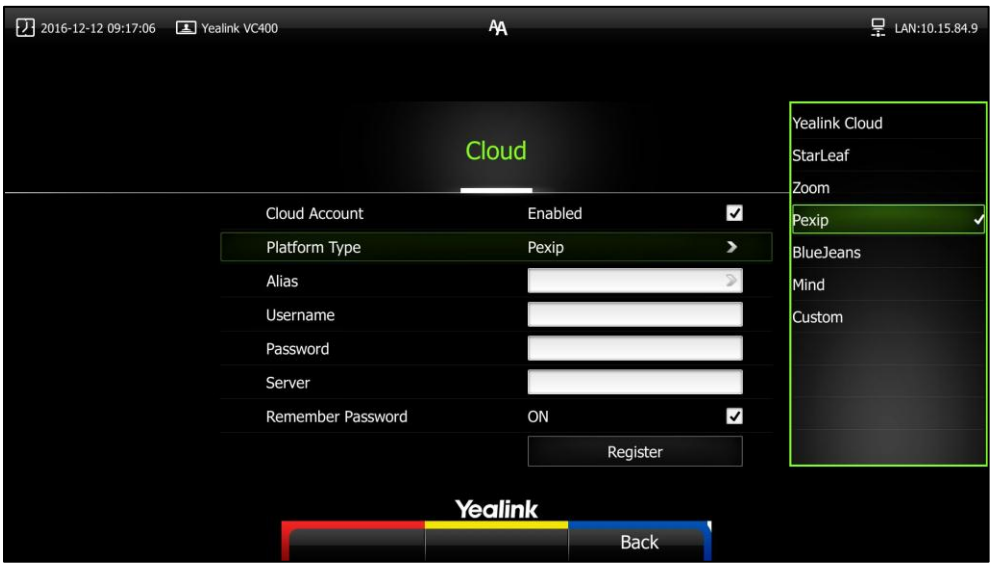


4. Enter the domain names or IP addresses of Zoom server in the **Server** field.
   The default Zoom server address is "zoomcrc.com".
5. Press ▲ or ▼ to scroll to **Log In**, and then press OK.
   After successful registration, the display device displays , and the LCD screen of the video conferencing phone displays .

To log into the Pexip platform via the remote control:

1. Select **Menu**->**Advanced** (default password: 0000)->**Cloud.**
2. In the **Cloud Account** filed, check the **Enabled** checkbox.

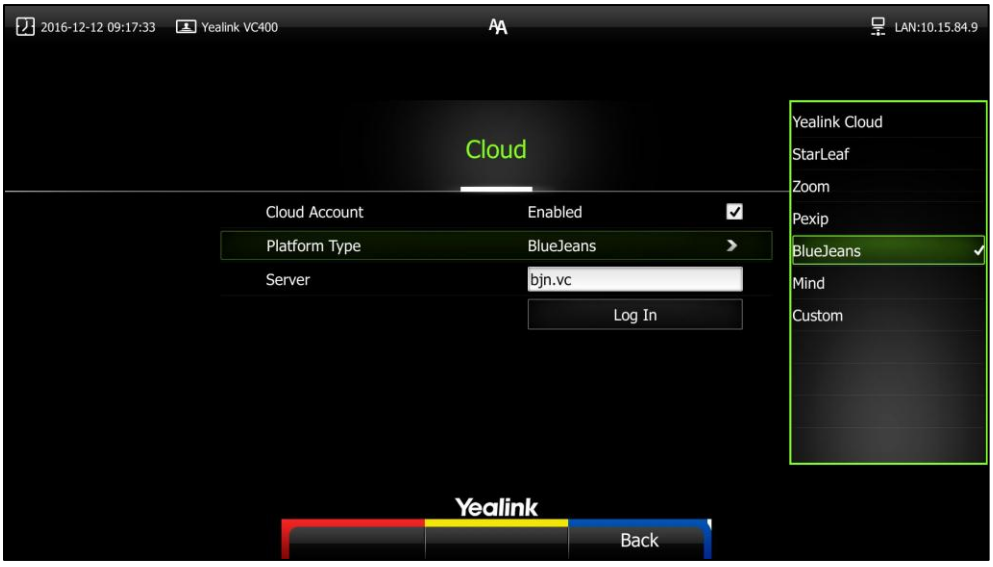
3. Select **Pexip** from the pull-down list of **Platform Type**.



4. Configure the Pexip platform.
5. Press ▲ or ▼ to scroll to **Register**, and then press OK.
   After successful registration, the display device displays , and the LCD screen of the video conferencing phone displays .

To log into the BlueJeans Cloud platform via the remote control:

1. Select **Menu**->**Advanced** (default password: 0000) ->**Cloud.**
2. In the **Cloud Account** filed, check the **Enabled** checkbox.
3. Select **BlueJeans** from the pull-down list of **Platform Type**.

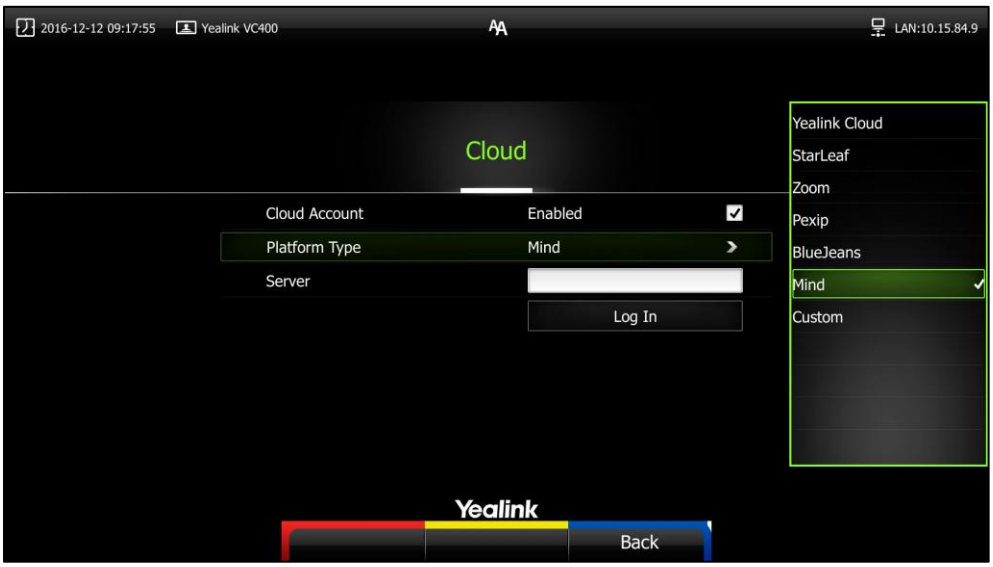


4. Enter the domain names or IP addresses of BlueJeans server in the **Server** field.
   The default BlueJeans server address is "bjn.vc".
5. Press ▲ or ▼ to scroll to **Log In**, and then press OK.
   After successful registration, the display device displays , and the LCD screen of the video conferencing phone displays .

To log into the Mind platform via the remote control:

1. Select **Menu**->**Advanced** (default password: 0000) ->**Cloud.**
2. In the **Cloud Account** filed, check the **Enabled** checkbox.

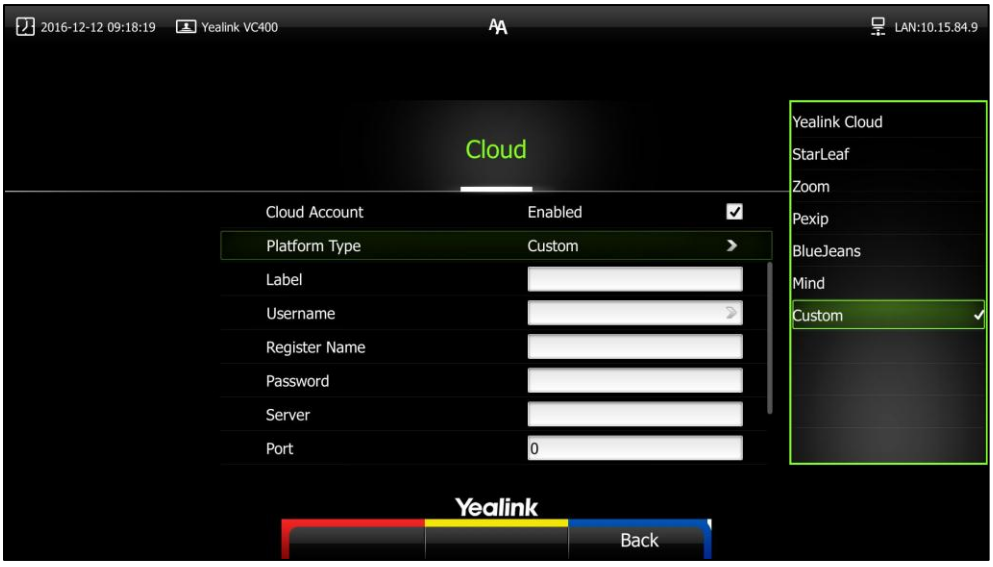
3. Select **Mind** from the pull-down list of **Platform Type**.



4. Enter the domain names or IP addresses of Mind server in the **Server** field.
5. Press ▲ or ▼ to scroll to **Log In**, and then press OK.
   After successful registration, the display device displays , and the LCD screen of the video conferencing phone displays .

To log into the Custom platform via the remote control:

1. Select **Menu**->**Advanced** (default password: 0000) ->**Cloud.**
2. In the **Cloud Account** filed, check the **Enabled** checkbox.
3. Select **Custom** from the pull-down list of **Platform Type**.



4. Configure the custom platform.
5. Press ▲ or ▼ to scroll to **Log In**, and then press OK.
   After successful registration, the display device displays , and the LCD screen of the video conferencing phone displays .

Traditional Deployment Methods

If you do not log into the Cloud platform, you can choose traditional deployment method to deploy your VCS, and dial IP addresses of other devices to make a call.

There are three common deployment scenarios. For the head office, you can deploy the VCS

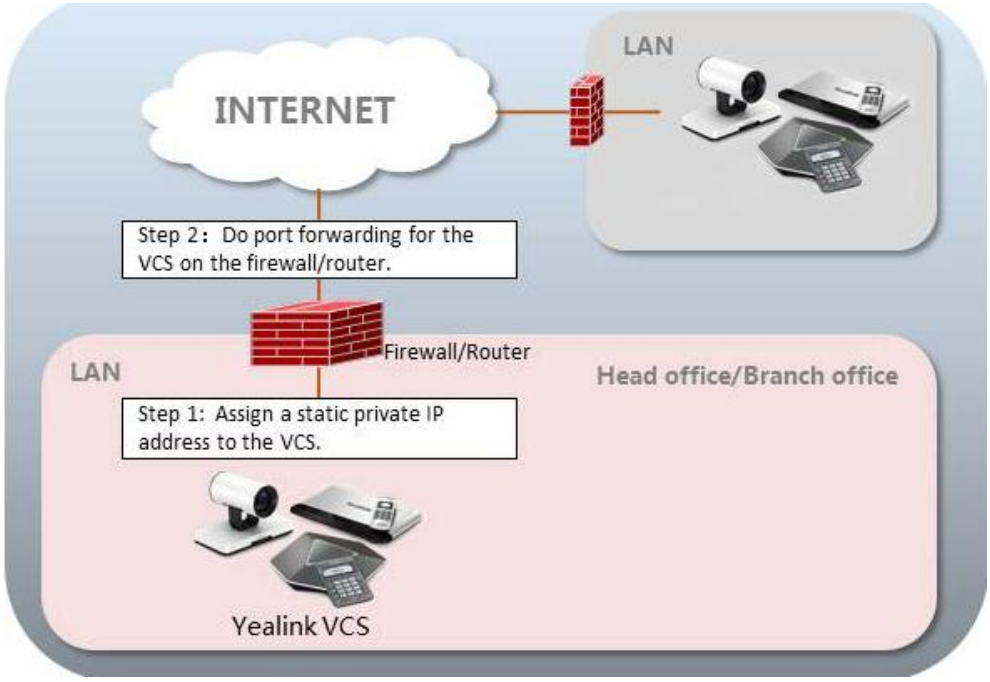
using the first two methods. For the branch office, you can follow the same deployment steps as for the head office, or use an intelligent firewall to deploy the VCS.

Scenario	Description	Other
Private IP Deployment	To deploy the VCS over an intranet (behind a firewall), you must assign a static private IP address to the VCS. In the meantime, carry out port forwarding on the VCS firewall.	This is often used in the head office. Both inbound and outbound calls are available.
Public IP Deployment	To deploy the VCS over a public network, you need to assign a public IP address to the VCS.	This is often used in the head office. Both inbound and outbound calls are available.
Intelligent Firewall Deployment	Connect the VCS to the network. It is a plug-and-play solution, which means that you can deploy the VCS without any firewall configuration.	This is often used in branch offices. Only outbound calls are available.

Scenario 1: Private IP Deployment

The most common deployment scenario is deploying the VCS over an intranet (behind a firewall). The private IP address should be forwarded to the public network by port forwarding.

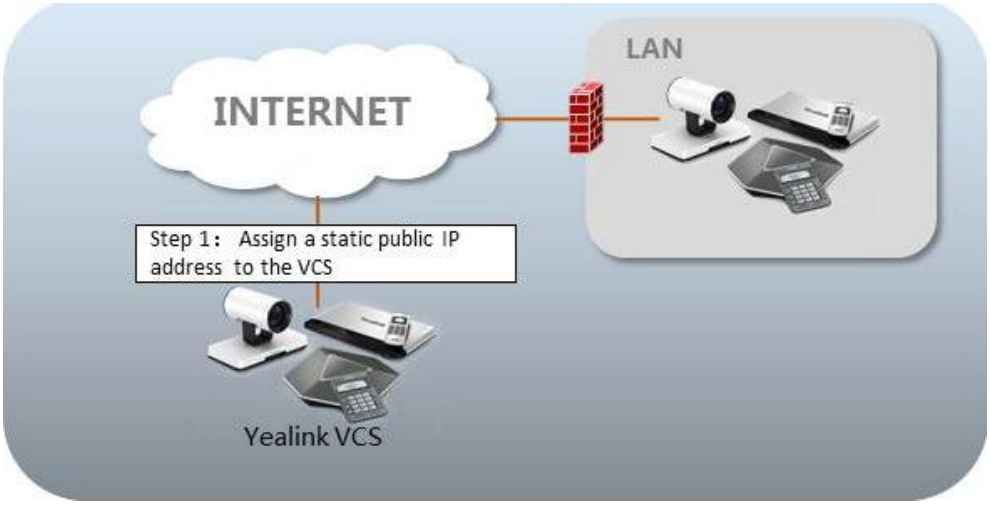
This deployment method involves a simple setup process and high security. In addition, it is a low cost solution. Both the head office and branch offices can deploy the VCS in this way.



Scenario 2: Public IP Deployment (leased lines)

Some enterprises have high video conference performance requirements. To avoid bandwidth congestion, you can configure a leased line to connect the VCS to the public network directly.

This deployment method involves a simple setup process and creates a stable network environment. However, it is more expensive due to leased line costs. This method is often used in the head office.

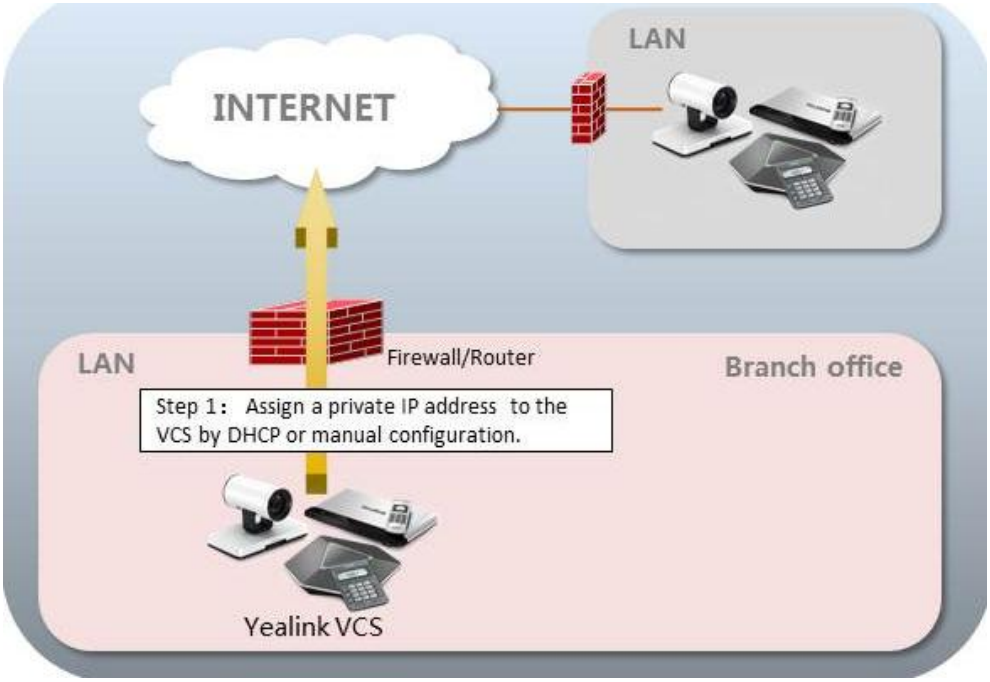


Scenario 3: Intelligent Firewall Deployment

Some branch offices lack IT professionals, which means that professional network configuration (e.g., port forwarding) is not possible.

Yealink VCS supports intelligent firewall configuration. You can deploy the VCS over an intranet, and make the VCS contact a DHCP server to obtain a private IP address which can access the public network. You can also configure a private IP address for the VCS manually.

This deployment method involves a simple setup process. It is a plug-and-play solution which means that you can deploy the VCS without any firewall configuration. Using this method, inbound calls are unavailable, only outbound calls are available.



VCS Network Deployment

VCS Network Settings

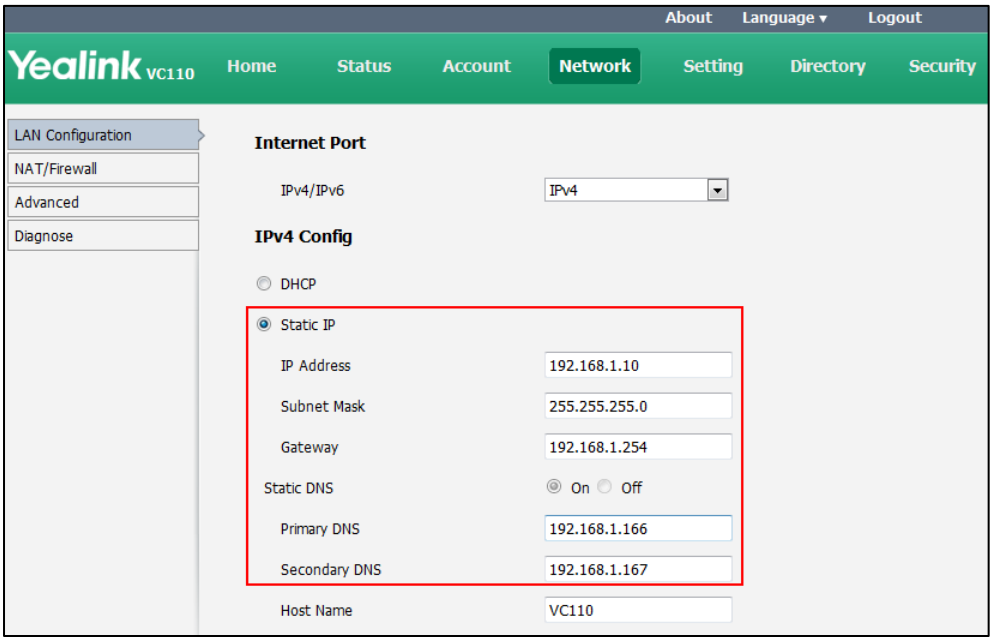
Your video conferencing system can work normally only when the network settings are correct.

The system attempts to contact a DHCP server in your network to obtain an IP address by default. In most cases, the VCS dials the IPv4 address to connect to the other system. So it is recommended that you configure a static IPv4 address for the VCS.

To configure a static IPv4 address via web user interface:

1. Enter the IP address of the system in the address bar of a web browser on your PC, and then press the **Enter** key.
2. Enter the administrator user name and password.

   The default user name is "admin" (case-sensitive), and the default password is "0000".
3. Click on **Network**->**LAN Configuration**.
4. In the **IPv4 Config** block, mark the **Static IP** radio box**.**
5. Enter the desired values in the **IP Address**, **Subnet Mask**, **Gateway**, **Primary DNS** and **Secondary DNS** fields.



6. Click **Confirm** to save the change.

   The web user interface prompts "Warning: Settings will take effects after reboot. Reboot now?".
7. Click **Confirm** to reboot the system.

To configure a static IPv4 address via phone user interface:

1. Press (**Menu** soft key) to enter main menu.
2. Press ◀ or ▶ to scroll to the **Advanced** menu.
3. Enter admin password (default password: 0000) in the **Admin Password** field.
4. Press OK or press (**Enter** soft key).
5. Press ▲ or ▼ to scroll to **Internet Configuration**, and then press OK.
6. Press ▲ or ▼ to scroll to **IPv4**, and then press OK.
7. Uncheck the **DHCP** checkbox.
8. Enter the desired values in the **IP Address**, **Subnet Mask**, **Gateway**, **DNS Primary Server**

and **DNS Secondary Server** fields respectively.

9. Press the **Save** soft key to accept the change.
   The display device prompts "Reboot now?".
10. Select **OK** to reboot the endpoint immediately.

Note Wrong network settings may result in inaccessibility of your system and may also have an impact on your network performance. For more information on these parameters, contact your system administrator.

Firewall/Router Settings

The following table lists the commonly used ports of the VCS. If the following ports are restricted in your network environment, you need to open these ports.

When the VCS is deployed over an intranet, and you want to solve the interconnection problem by port forwarding, you must forward the following ports to the public network on the firewall/router.

NO.	Function	Port	Type
1	H.323 signal port	1720	TCP
2	Audio & video media stream port	50000-50499	TCP/UDP
3	Web management port (optional)	443	TCP
4	SIP (optional)	5060-5061	TCP/UDP

Note It is recommended that you forward the web management port (443/TCP) of the branch office to the public network, so that the head office can manage the branch office remotely.

When the VCS is deployed over an intranet, you can also use the Cloud deployment method to solve the interconnection problem. Port forwarding is unnecessary. For more information, refer to Cloud Deployment Method on page 5.

QoS Guarantees

To ensure VCS network stability, it is recommended that users enable the Quality of Service (QoS) feature for the VCS.

For more information on VCS bandwidth requirements, refer to Bandwidth Requirements on page 1.

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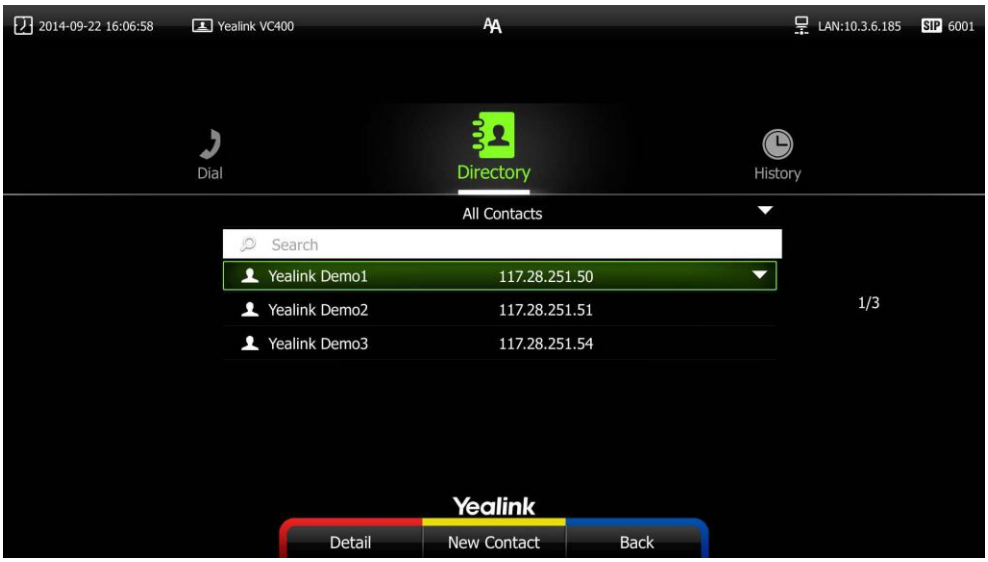
Connectivity Testing and Troubleshooting

Connectivity Testing

Yealink demo contacts can help users to test whether the system is working normally after the system has been installed.

To place a test call via the remote control:

1. Press (**Call** soft key).
2. Press or to select the **Directory** menu.
3. Press or to select Yealink Demo1 and then press .



If the video call is established successfully, the network connectivity is normal. If the call fails, you can contact the system administrator to check the network connectivity and the access rights to the public network.

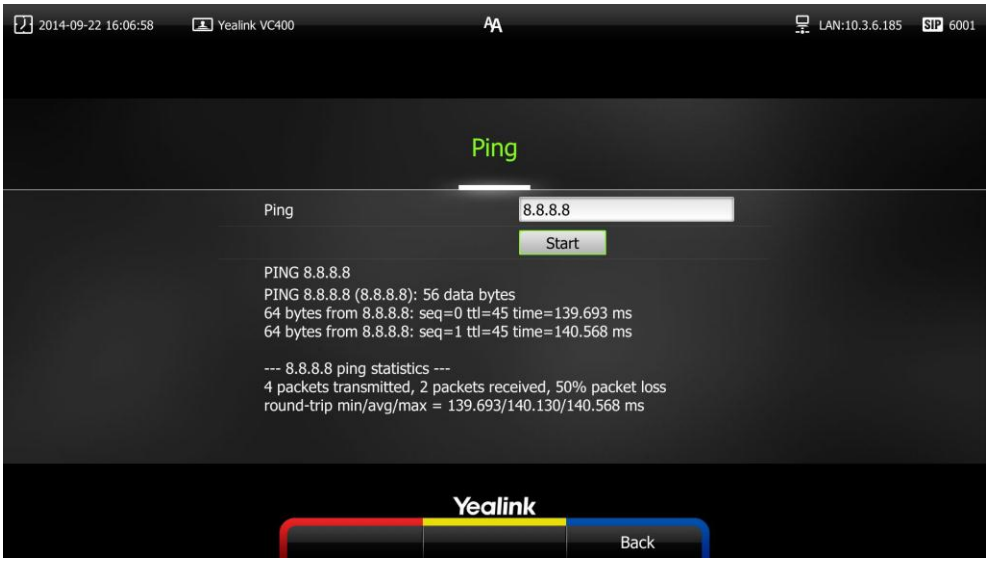
VCS Network Connectivity Testing

To check the network connectivity using the Ping feature:

1. Press (**Menu** soft key) to enter main menu.
2. Press or to select the **Diagnose** menu.
3. Press or to scroll to **Ping**, and then press OK.
4. Do the following:

   1) **Ping 8.8.8.8**: Test the connection between the local system and the public network. If successful, do the next test. If not, contact your administrator.

2) You can also test the network connection between the local system and any remote system.



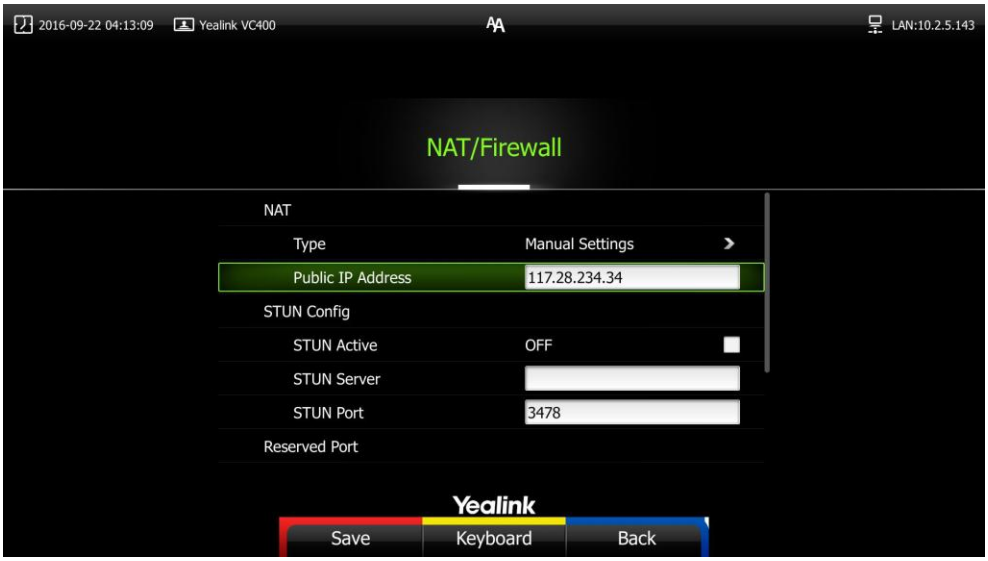
Remote Office Fails to Connect Local Office

Assume that you have configured port forwarding on the firewall or gateway for VCS. You find that local system appears black screen and you cannot hear sound when you call Yealink Demo or systems in other offices. Please check whether the port forwarding configuration is correct. For more information, refer to Firewall/Router Settings on page 14. If it is correct, the most likely reason is that the firewall or gateway in the environment does not support the H.323 ALG feature. In this situation, please take the following actions to activate the NAT feature on the VCS.

To activate the NAT feature via the remote control:

1. Press (**Menu** soft key) to enter main menu.
2. Press ◀ or ▶ to scroll to the **Advanced** menu.
3. Enter admin password (default password: 0000) in the **Admin Password** field.
4. Press OK or press (**Enter** soft key).
5. Press ▲ or ▼ to scroll to **NAT/Firewall**, and then press OK.
6. Select **Auto** from the pull-down list of **Type**, the system will obtain a public IP address automatically.

7. If the system does not obtain a public IP address automatically, select **Manual Settings** from the pull-down list of **Type**, and then enter the public IP address in the **Public IP address** field.



Abnormal Conditions during a Call

If extensive pixel mosaic appears on the screen during the video conference, this may be caused by network instability. You can press **More**->**Call Statistics** during the call to check current network conditions. Focus on the total packet loss and packet loss(%).

If total packet loss or packet loss rate is high, it is recommended that you check the causes of this problem.

They may be due to network stability, or network congestion caused by network sharing. It is recommended that you use traffic control devices to guarantee the network traffic.