

ciptv1 implementing cisco ip telephony video part 1

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Introduction

In today's fast moving business environment, video communication has become an essential element of collaboration. Cisco's IP Telephony platform, known for its reliability and rich feature set, offers a powerful foundation for integrating video into the workplace. However, bringing video to a Cisco IP Telephony deployment involves more than simply adding cameras or webcams. It requires careful planning, configuration, and testing to ensure seamless, high quality video sessions that meet organizational standards.

This article focuses on the first part of a two part series that explores the practical steps for implementing video on a Cisco IP Telephony system. We'll dive into the core concepts of the **ciptv1** implementation, outline the prerequisites, and walk through the initial setup and configuration. By the end of this guide, you'll have a solid foundation to extend your Cisco IP Telephony environment into the video domain.

What is ciptv1?

The term *ciptv1* refers to the first iteration of Cisco's Video Integration Toolkit for IP Telephony. It's a lightweight, modular solution that bridges the gap between traditional voice-only telephony and modern video conferencing. The toolkit leverages standard SIP (Session Initiation Protocol) signaling, H.264/H.265 video codecs, and the Cisco Unified Communications Manager (CUCM) to deliver a unified video experience across endpoints.

Key characteristics of *ciptv1* include:

- Compatibility – Works with a wide range of Cisco IP phones, video endpoints, and third party devices that support SIP.
- Scalability – Designed to support small office setups up to enterprise grade deployments.
- Modularity – Allows incremental rollout of video features without disrupting existing voice services.
- Security – Integrates with Cisco's existing authentication and encryption mechanisms.

Prerequisites for Video Implementation

Before you start the *ciptv1* implementation, ensure that your infrastructure is ready. Below is a checklist of essential prerequisites.

Hardware Requirements

1. IP phones with video capabilities (e.g., Cisco 8841, 8851).
2. Dedicated video endpoints (e.g., Cisco Webex Room Kit, Cisco Telepresence).
3. High bandwidth network switches that support 10 /GbE or higher for video traffic.
4. Video routers or gateways if you need to bridge to external video platforms.

Software Requirements

1. Latest stable release of Cisco Unified Communications Manager (CUCM).
2. Cisco Unified Communications Manager Express (for small deployments).
3. Cisco Unified Communications Manager Video Services (if available).
4. Cisco Unified Communications Manager Video Services License.

5. Firmware updates for all video endpoints.

Network Requirements

1. Dedicated VLANs for video traffic to isolate it from voice and data.
2. Quality of Service (QoS) policies to prioritize video packets.
3. Sufficient bandwidth: Minimum 1 /Mbps per video stream for standard definition, 4–6 /Mbps for HD, and 8–10 /Mbps for 4K.
4. Low latency ("d150 /ms) and minimal packet loss (

Security Requirements

1. SSL/TLS enabled for SIP signaling.
2. SRTP (Secure Real Time Transport Protocol) for media encryption.
3. Strong authentication (e.g., RADIUS or LDAP) for endpoint registration.
4. Regular firmware and software patching.

Step 1: Installing the ciptv1 Toolkit

The *ciptv1* toolkit is distributed as a set of configuration files and optional binaries that integrate directly into CUCM. Follow these steps to install it.

1.1 Download the Toolkit

Navigate to the Cisco Secure Download Center and locate the **ciptv1** release. Download the ZIP archive that contains:

- XML configuration files for CUCM.
- Device templates for video endpoints.
- Documentation and release notes.

1.2 Import Configuration into CUCM

1. Log into the CUCM administration portal.
2. Navigate to System /! /Service Parameters and create a new service parameter set for video.
3. Upload the XML files under System /! /Service Parameters /! /Upload.
4. Validate the configuration. CUCM will highlight any conflicts or missing dependencies.

1.3 Verify Service Parameters

After importing, go to **System /! /Service Parameters** and confirm that the new video service parameters are listed. These parameters control SIP signaling, codec preferences, and media handling for video calls.

Step 2: Configuring Video Endpoints

Once the toolkit is installed, you need to register your video endpoints with CUCM. The process involves creating device pools, assigning IP addresses, and configuring codec preferences.

2.1 Create a Video Device Pool

1. Navigate to Device /! /Device Pool and create a new pool named VideoPool.
2. Assign the Video Service Parameters you created earlier to this pool.
3. Enable Video SIP Profile and configure the SIP port (default 5060).

2.2 Configure Device Templates

Use the pre built templates from the toolkit to simplify configuration.

1. Navigate to Device /!' /Device Template and import the ciptv1 template.
2. Adjust settings such as Video Codec (H.264 default) and Video Resolution (720p or 1080p).
3. Save the template and apply it to all video endpoints.

2.3 Assign Endpoints to the Device Pool

1. Navigate to Device /!' /Phone and add each video endpoint.
2. For each device, select the VideoPool you created.
3. Enter the device's IP address and MAC address.
4. Save and reload the device configuration.

Step 3: Integrating with Cisco Unified Communications Manager

With endpoints registered, you can now integrate them into the broader CUCM ecosystem. This involves setting up call routing, enabling video on existing call flows, and ensuring that video traffic is properly handled.

3.1 Enable Video in Call Routing

1. Navigate to Call Routing /!' /Route Pattern and create a new pattern that matches video calls.
2. Set the Route Pattern to 9XX (or any pattern that distinguishes video calls).
3. Assign the Video Service Parameters to this route.

3.2 Configure Video Call Policies

Under **Call Routing /!' /Call Handling**, create a policy that prioritizes video calls. For example:

- Set Media Timeout to 30 seconds.
- Enable Video Prioritization to ensure video packets receive higher priority in the network.

3.3 Test Video Call Flow

1. From a video endpoint, dial the newly created route pattern.
2. Verify that the call establishes and video is transmitted.
3. Check the CUCM logs for any errors or warnings.

Step 4: Configuring Quality of Service (QoS)

Video traffic is sensitive to latency, jitter, and packet loss. Implementing QoS is critical to maintaining high quality video sessions.

4.1 Define Traffic Class

1. In CUCM, navigate to System /!' /Service Parameters /!' /Video Service Parameters.
2. Set the Traffic Class to Video (e.g., Class 2).
3. Map this class to a specific DSCP value (e.g., EF – Expedited Forwarding).

4.2 Configure Network Switches

1. On each switch, create a VLAN dedicated to video traffic.
2. Apply the same DSCP value to the VLAN.
3. Enable 802.1p priority tagging for the VLAN.
4. Set up QoS policing to cap bandwidth at a defined limit (e.g., 10 /Mbps).

4.3 Verify QoS Settings

Use tools like **cisco-ping** or **iperf** to confirm that video traffic is being prioritized. Additionally, monitor CUCM's **QoS Statistics** for packet loss and latency metrics.

Step 5: Security Considerations

Securing video traffic is as important as ensuring its quality. The following practices help protect against eavesdropping and unauthorized access.

5.1 Enable SRTP

1. In CUCM, navigate to System /!' /Service Parameters /!' /Video Service Parameters.
2. Enable Secure Real Time Transport Protocol (SRTP) for media encryption.
3. Set the SRTP Key Length to 128 bits.

5.2 Use TLS for SIP Signaling

1. Configure TLS (Transport Layer Security) for SIP in CUCM.
2. Generate or import a valid SSL certificate.
3. Assign TLS to the video device pool.

5.3 Authentication and Authorization

Integrate with your existing LDAP or RADIUS server to authenticate endpoints. This ensures only authorized devices can register and join video calls.

Step 6: Testing and Troubleshooting

After configuration, perform comprehensive testing to validate functionality and identify any issues early.

6.1 Functional Testing

1. Place a video call between two endpoints.
2. Check for video quality, latency, and synchronization.
3. Record the call for later analysis if necessary.

6.2 Performance Testing

Simulate multiple concurrent video streams to evaluate network capacity. Use tools such as **Webex Live Events** or **Zoom Test Rooms** for realistic traffic.

6.3 Common Troubleshooting Scenarios

- Video not appearing – Verify codec compatibility and that SRTP is enabled.

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