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## CONTENTS

### Preface
- Audience vii
- Organization vii
- Obtaining Documentation, Obtaining Support, and Security Guidelines viii

### Chapter 1: Overview
- IP Camera Apps 1-1
- Supported Apps for Cisco IP Camera Models 1-2
- App Licenses 1-3
- Obtaining an App 1-4

### Chapter 2: Audio Analytics Apps
- About the Audio Analytics Apps 2-1
- Audio Analytics Apps Guidelines and Operational Specifications 2-1
  - General Guidelines 2-2
  - Aggression App 2-2
  - Car Alarm App 2-3
  - Glass Break App 2-3
  - Gunshot App 2-3
  - Demo App 2-3
- Configuring an Audio Analytics App on an IP Camera 2-4
- Testing an Audio Analytics App 2-6
- Running an Audio Analytics App 2-7
- Stopping an Audio Analytics App 2-7

### Chapter 3: Audio Detection App
- About the Audio Detection App 3-1
- Configuring the Audio Detection App on an IP Camera 3-1
- Running the Audio Detection App 3-2
- Stopping the Audio Detection App 3-3
- Exporting an Audio File for Debugging the Audio Detection App 3-3
### Contents

#### Chapter 4 Cisco Video Analytics Apps 4-1
- About the Cisco Video Analytics Apps 4-1
- Configuring and Operating a Cisco Video Analytics App on an IP Camera 4-2
- Running a Cisco Video Analytics App 4-3
- Stopping a Cisco Video Analytics App 4-3

#### Chapter 5 Digi ZigBee Sensor App 5-1
- About the Digi ZigBee Sensor App 5-1
- Configuring the Digi ZigBee Sensor App on an IP Camera 5-2
- Running the Digi ZigBee Sensor App 5-4
- Stopping the Digi ZigBee Sensor App 5-4

#### Chapter 6 intuVision Video Analytics Apps 6-1
- About the intuVision Video Analytics Apps 6-1
- Configuring an intuVision Video Analytics App on an IP Camera 6-1
- Running an intuVision Video Analytics App 6-2
- Stopping an intuVision Video Analytics App 6-2

#### Chapter 7 Local Video Player App 7-1
- About the Local Video Player App 7-1
- Configuring the Local Video Player App on an IP Camera 7-1
- Running the Local Video Player App 7-1
- Stopping the Local Video Player App 7-2
- Using the Local Video Player App 7-2

#### Chapter 8 Lua App 8-1
- About the Lua App 8-1
- Configuring the Lua App on an IP Camera 8-1
- Running the Lua App 8-2
- Stopping the Lua App 8-2
- Lua App Sample Scripts 8-3
  - Hello World Script 8-3
  - Test Event Script 8-3
  - Send Event on Input Trigger Script 8-4
  - Send Event on Motion Trigger Script 8-4
CHAPTER 9 SIP Client App  9-1
   About the SIP Client App  9-1
   Configuring the SIP Client App on an IP Camera  9-2
   Configuring Cisco IPICS for use with the SIP Client App  9-4
   Configuring Cisco Unified Communications Manager for use with the SIP Client App  9-5
      Adding a Camera to Cisco Unified Communications Manager  9-5
      Adding and Associating an End User  9-6
   Running the SIP Client App  9-7
   Stopping the SIP Client App  9-7

CHAPTER 10 SIP Video App  10-1
   About the SIP Video App  10-1
   Configuring the SIP Video App on an IP Camera  10-1
   Configuring Cisco Unified Communications Manager for use with the SIP Video App  10-4
      Adding a Camera to Cisco Unified Communications Manager  10-4
      Adding and Associating an End User  10-5
   Running the SIP Video App  10-6
   Stopping the SIP Video App  10-7

CHAPTER 11 Video Summarizer App  11-1
   About the Video Summarizer App  11-1
   Configuring the Video Summarizer App on an IP Camera  11-1
   Running the Video Summarizer App  11-4
   Stopping the Video Summarizer App  11-4

CHAPTER 12 Video Tag App  12-1
   About the Video Tag App  12-1
   Configuring the Video Tag App on an IP Camera  12-2
   Configuring the IP Camera for a GPIO Tag Trigger  12-3
   Sending an HTTP POST Request Tag Trigger  12-4
   Configuring the IP Camera to Take an Action  12-5
   Running the Video Tag App  12-6
   Stopping the Video Tag App  12-6

INDEX
Preface

This document provides detailed information about the IP camera apps that are available from Cisco, including how to install, configure, and operate the apps. These apps extend the functionality of Cisco IP cameras.

Audience

This document is intended for administrators and others who are responsible for managing and configuring Cisco IP cameras.

Organization

This document is organized as follows:

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1, “Overview”</td>
<td>Provides an overview of the IP camera apps, lists app support by camera model, lists part numbers for app licenses, and explains how to obtain an app.</td>
</tr>
<tr>
<td>Chapter 2, “Audio Analytics Apps”</td>
<td>Describes the Audio apps, which enable an IP camera to trigger events when it detects certain sound patterns</td>
</tr>
<tr>
<td>Chapter 3, “Audio Detection App”</td>
<td>Describes the Audio Detection app, which triggers an event when it detects noise that exceeds a certain volume threshold</td>
</tr>
<tr>
<td>Chapter 4, “Cisco Video Analytics Apps”</td>
<td>Describes the Cisco Video Analytics apps, which enable an IP camera to perform various analytic and counting functions</td>
</tr>
<tr>
<td>Chapter 5, “Digi ZigBee Sensor App”</td>
<td>Describes the Digi ZigBee Sensor app, which enables an IP camera to post to a Xively website information that the camera collects from a Digi XBee sensor, and information about input 1 state changes, motion detection, and day/night mode change</td>
</tr>
<tr>
<td>Chapter 6, “intuVision Video Analytics Apps”</td>
<td>Describes the intuVision Video Analytics apps, which enable an IP camera to trigger events when it detects activities or behaviors that match predefined rules</td>
</tr>
<tr>
<td>Chapter 7, “Local Video Player App”</td>
<td>Describes the Local Video Player app, which lets you view video recordings from the IP camera web-based user interface</td>
</tr>
</tbody>
</table>
Chapter 8, “Lua App” Describes the Lua app, which lets an IP camera run a script that is created in the Lua programming language.

Chapter 9, “SIP Client App” Describes the SIP Client app, which lets an IP camera send and receive audio to and from an external SIP client device, the Cisco Interoperability and Collaboration System, or Cisco Unified Communications Manager.

Chapter 10, “SIP Video App” Describes the SIP Video app, which lets an IP camera send and receive audio to and from, and send video to, an external SIP client device or Cisco Unified Communications Manager.

Chapter 11, “Video Summarizer App” Describes the Video Summarizer app, which generates snapshots from video recordings and uploads the snapshots to an FTP server.

Chapter 12, “Video Tag App” Describes the Video Tag app, which applies a tag that appears as on-screen text to a live video image based on an external trigger.

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information about obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and recommended aliases and general Cisco documents, see the monthly What’s New in Cisco Product Documentation. This publication also lists new and revised Cisco technical documentation. It is available at:

Overview

A Cisco IP Camera app lets you extend the functionality of a supported Cisco IP Camera by installing and running the app on the camera.

This chapter includes these topics:
- IP Camera Apps, page 1-1
- Supported Apps for Cisco IP Camera Models, page 1-2
- App Licenses, page 1-3
- Obtaining an App, page 1-4

Related Documentation
For additional information about IP camera apps, see the “Application Manager” chapter in Cisco Video Surveillance IP Camera Configuration Guide for your camera.

IP Camera Apps

Cisco offers the following apps for supported IP cameras. To obtain an app, contact your Cisco representative.

- Audio Analytics app—Enable an IP camera to trigger events when it detects certain sound patterns
- Audio Detection app—Enables the IP camera to trigger events when it detects noise that exceeds a set volume threshold
- Cisco Video Analytics apps—Enable an IP camera to perform various analytic and counting functions
- Digi ZigBee Sensor app—Enables an IP camera to post to a Xively website information that the camera collects from a Digi XBee sensor, and information about input 1 state changes, motion detection, and day/night mode change
- intuVision Video Analytics apps—Enable an IP camera to trigger events when it detects activities or behaviors that match predefined rules
- Local Video Player app—Lets you view video from continuous recordings from the IP camera web-based user interface
- Lua app—Enables an IP camera to run scripts that are created in the Lua programming language
- SIP Client app—Lets an IP camera send and receive audio to and from an external SIP client device, the Cisco Interoperability and Collaboration System (Cisco IPICS), or Cisco Unified Communications Manager (CUCM)
- SIP Video app—Lets an IP camera send and receive audio to and from, and send video to, an external SIP client device or Cisco Unified Communications Manager (CUCM)
- Video Summarizer app—Generates snapshots from video recordings and uploads the snapshots to an FTP server
- Video Tag app—Applies a tag (which appears as on-screen text) to a live video image based on an external trigger

## Supported Apps for Cisco IP Camera Models

Table 1-1 lists the apps that Cisco IP camera models support.

<table>
<thead>
<tr>
<th>Camera Model</th>
<th>Audio Analytics</th>
<th>Audio Detection</th>
<th>Cisco Video Analytics</th>
<th>Digi ZigBee Sensor</th>
<th>intuVisio n Video Analytics</th>
<th>Local Video Player</th>
<th>Lua</th>
<th>SIP Client</th>
<th>SIP Video</th>
<th>Video Summarizer</th>
<th>Video Tag</th>
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Table 1-1  Supported Cisco IP Cameras (continued)

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<th>Camera Model</th>
<th>App Support</th>
<th>Audio Analytics</th>
<th>Audio Detection</th>
<th>Cisco Video Analytics</th>
<th>Digi Zigbee Sensor</th>
<th>intuVisio Video Analytics</th>
<th>Local Video Player</th>
<th>Lua</th>
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<th>Video Tag</th>
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Table 1-2 Part Numbers for IP Camera App Licenses

<table>
<thead>
<tr>
<th>App</th>
<th>Part Number for IP Camera Installation</th>
<th>Part Number for VSOM Installation</th>
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<tr>
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<td>L-FL-AA-AG-VSM=</td>
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<tr>
<td>Audio Analytics—Car Alarm</td>
<td>L-FL-AA-CA=</td>
<td>L-FL-AA-CA-VSM =</td>
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</table>
Obtaining an App

Before you can install an app on an IP camera, you must obtain the file for the app and place the file on your local system or on a system that can be accessed from the IP camera web-based user interface. You must have a valid service contract and Cisco.com account to obtain an app file. For more information, contact your Cisco representative.

Procedure

Step 1 Open a web browser and go to http://software.cisco.com/download/navigator.html?mode=home#.
Step 2 In the list in the left box near the center of the page, click Products.
Step 3 In the list in the center box near the center of the page, click Connected Safety and Security.
Step 4 In the list in the right box near the center of the page, click Video Surveillance IP Cameras.
Step 5 In the list in the right box near the center of the page, click the link for an IP camera series that supports apps (see Table 1-1 on page 1-2).
Step 6 In the list in the right box near the center of the page, click your IP camera model.
Step 7 Click the IP Camera Applications and Utilities link near the top of the page.
Step 8  Click the **Download** button next to the app file that you want to obtain.

If you are obtaining an app for a CIVS-IPC-6500PD/7530PD IP camera model, the app file name must include PD. For example, SIPClient_PD_V.x.x.cpk.

If you are obtaining an app for a CIVS-IPC-3620/3630/6620/6630 IP camera model, the app file name must include SX. For example, SIPClient_SX_V.x.x.cpk.

If you are obtaining an app for other IP camera models, make sure that the app file name does not include PD or SX.

---

Step 9  In the Log In and Service Contract Required dialog box, click the **Login** button.

Step 10  In the Log In page, enter your Cisco.com user name and password, then click the **Log In** button.

Step 11  In the End User License Agreement dialog box, click the **Cisco End User License Agreement** link to review the agreement, then click the **Accept License Agreement** button to continue.

Step 12  Follow the on-screen prompts to save the license file to your local system or to a system that can be accessed from the IP camera web-based user interface.
Audio Analytics Apps

This chapter provides information about the audio analytics apps for Cisco IP cameras. These apps enable an IP camera to trigger events when it detects certain sound patterns.

This chapter includes these topics:

- About the Audio Analytics Apps, page 2-1
- Audio Analytics Apps Guidelines and Operational Specifications, page 2-1
- Configuring an Audio Analytics App on an IP Camera, page 2-4
- Testing an Audio Analytics App, page 2-6
- Running an Audio Analytics App, page 2-7
- Stopping an Audio Analytics App, page 2-7

About the Audio Analytics Apps

The Audio Analytics apps include the following:

- Aggression—Detects aggressive speech or shouting
- Car Alarm—Detects standard car alarms
- Glass Break—Detects standard window glass breaking
- Gunshot—Detects a variety of firearms being discharged.
- Demo—Lets you test the response of the Audio Analytics apps to an aggression, car alarm, glass breaking, or gunshot sound.

Audio Analytics Apps Guidelines and Operational Specifications

The following sections provide guidelines and operational specifications for the Audio Analytics apps:

- General Guidelines, page 2-2
- Aggression App, page 2-2
- Car Alarm App, page 2-3
- Glass Break App, page 2-3
- Gunshot App, page 2-3
General Guidelines

The following general guidelines apply to the Audio Analytics apps:

- Microphone quality—The microphone that is used to capture audio for an Audio Analytics app should have frequency response of +/-3db for frequencies in the bandwidths 0.1 kHz through 8.0 kHz.
- Microphone mounting—The microphone should be mounted in a fixed and stable position. Excessive vibration or movement should be avoided. Physical contact with the microphone by hand or object should be avoided. The microphone should be protected from environmental states such as wind and rain.
- Microphone placement—For use indoors where the expected sound source is within 33 feet (10 meters) of the microphone, the microphone should be placed in the same room as the expected sound source. For use indoors where the expected sound source is more 33 feet (10 meters) from the microphone, or for use outdoors, the microphone should have as clear a line of sight as possible to the expected sound source.
- Type of audio input—The system is designed to analyze sounds that come from a single, fixed point microphone that delivers a monophonic digital audio signal. The digital audio signal must be encoded in the PCM 16-bit format.
- Sound integrity—The digital audio signal that is delivered to the system should be a faithful sampling of the original acoustic waveform. In particular, the signal must not introduce discontinuities or changes in the sequential order in any part of the captured audio.
- Distortion—The digital audio signal that is delivered to the system should not clip or distort the original sound.
- Dynamic range—The dynamic range of the original audio should be greater than –92 dB to full scale over 1 second.
- Background noise—A SNR of 30 to 50 dB provides optimal results.

Aggression App

The Audio Analytics Aggression app detects the acoustic changes in the voice of someone who is becoming aggressive. Specific factors that the app considers include pitch, tone, and intonation changes that can occur in voice patterns when someone becomes aggressive.

This app is designed to detect actively aggressive speech, not impolite speech, passive aggression, or sarcasm. Therefore, it does not consider semantic information, such as spoken profanity.

Factors such as the accent or language of the voice can affect the performance of this app.

With this app, an IP camera can detect aggression from a sound source that is up to 33 feet (10 meters) away from the microphone and that has been sounding for at least 1 second.
Car Alarm App

The Audio Analytics Car Alarm app detects the seven standard car alarm types that are used by major car manufacturers in North America and Europe. These alarms are characterized by looping progressions of specific tonal patterns. With this app, an IP camera can detect an alarm from a sound source that is up to 164 feet (50 meters) away from the microphone and that has been sounding for at least 2 seconds.

Glass Break App

The Audio Analytics Glass Break app detects breaking of four types of glass in their standard thicknesses when used in building applications such as windows and doors. Glass breaking is characterized by the initial sound break, the impact, followed by the glass actually shattering. The system is designed to detect breakage by an intentional hit from a hand-held implement as opposed to breakage by explosion, accident, or natural event.

With the Glass Break app, an IP camera can detect glass breaking from a sound source that is up to 33 feet (10 meters) away from the microphone.

Table 2-1 describes the glass types and characteristics that are required for optimum detection by this app.

<table>
<thead>
<tr>
<th>Glass Type</th>
<th>Minimum Plate Size</th>
<th>Minimum Thickness</th>
<th>Maximum Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laminated</td>
<td>12 x 24 inches (305 x 610 mm)</td>
<td>0.252 inch (6.4 mm)</td>
<td>0.252 inch (6.4 mm)</td>
</tr>
<tr>
<td>Plate</td>
<td></td>
<td>0.094 inch (2.4 mm)</td>
<td></td>
</tr>
<tr>
<td>Tempered</td>
<td></td>
<td>0.126 inch (3.2 mm)</td>
<td></td>
</tr>
<tr>
<td>Wired</td>
<td></td>
<td>0.252 inch (6.4 mm)</td>
<td></td>
</tr>
</tbody>
</table>

Gunshot App

The Audio Analytics Gunshot app detects a variety of firearms being discharged.

Gunshots are characterized by unique muzzle blasts that are associated with a range of unsilenced weapons that are typically used in civilian gun crimes in the Americas, Europe, Middle East, and Australasia. Types of weapons that this app can detect being discharged are handguns (including 9 mm automatics and revolvers with or without muzzle diffusers), shotguns (including 20 gauge, .410 and 12 bore), bolt-action rifles (.22 mm and 7.62 mm), and automatic rifles (including AK-47, AR-15 and Uzi submachine gun).

With this app, an IP camera can detect a gunshot from a sound source that is up to 656 feet (200 meters) away from the microphone.

Demo App

The Audio Analytics Demo app lets you test the response of the other Audio Analytics apps to a prerecorded aggression, car alarm, glass break, or gunshot sound.

To use the Audio Analytics Demo app, perform the following steps.
Configuring an Audio Analytics App on an IP Camera

Before You Begin
Download the DemoAppSoundFiles.zip file that is provided with the Demo application package. Unzip and play the included audio files to test the connected speakers.

Procedure

Step 1  From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.
Step 2  Click audioAnalyticsDemo radio button.
Step 3  Click Run.
   The IP camera becomes ready to detect an aggression, car alarm, glass break, or gunshot sound, based on the configuration settings that you made as described in the “Configuring an Audio Analytics App on an IP Camera” section on page 2-4.
Step 4  Use an external speaker to play the audio file for an aggression, car alarm, glass break, or gunshot sound.
Step 5  Verify whether an event was triggered.

Configuring an Audio Analytics App on an IP Camera

Before you can use an Audio Analytics app, you must configure the app on each IP camera on which it will run. To configure an Audio Analytics app, perform the following steps.

Before You Begin
Install the Audio Analytics app on the IP camera on which it will run. See the “Related Documentation” section on page 1-1 for more information.

Procedure

Step 1  From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.
Step 2  Click one of the following radio buttons to choose the app that you want to configure.
The buttons that appear on your system depend on which apps you installed.
   • audioAnalyticsAggression—Aggression app
   • audioAnalyticsCarAlarm—Car Alarm app
   • audioAnalyticsGlassBreak—Glass Break app
   • audioAnalyticsGunshot—Gunshot app
   • audioAnalyticsDemo—Demo app
Step 3  Click Configure.
The Cisco Audio Analytics configuration page for the app that you selected appears.
Step 4 Enter appropriate values in the Cisco Audio Analytics configuration page fields as described in the following table:

<table>
<thead>
<tr>
<th>Field</th>
<th>Setting for Listen Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Configuration Area</strong></td>
<td></td>
</tr>
<tr>
<td>Audio Trigger Level</td>
<td>Drag the slider to select the minimum audio level, in decibels, that a sound that the IP camera microphone captures must register for the camera to trigger an event based on the sound. Valid values are –90 through 0 (decibels). The default value is –90.</td>
</tr>
<tr>
<td>Detection Sensitivity</td>
<td>Drag the slider to select the relative sensitivity at which the IP camera triggers an event based on a sound. A higher value causes the IP camera to be more sensitive and trigger more events, but can cause false triggers. Lower this value if the camera generates too many false triggers. Valid values are 0 through 100. The default value is 50 for all apps, except for the Glass Break app, for which the default value is 60.</td>
</tr>
<tr>
<td>Enable AGC</td>
<td>Check this check box to enable automatic gain control. AGC causes the IP camera to automatically adjust its microphone audio gain to avoid saturated audio from loud sounds and boost low-level audio. In most cases, this option should not be enabled because it can cause audio distortion.</td>
</tr>
<tr>
<td>Volume Gain slider</td>
<td>Available only when the Enable AGC check box is not checked. Drag the slider to select the volume gain for the IP camera microphone. Gain can help avoid saturated audio and boost low-level audio. Valid values are 0 through 100. Default value for all apps is 50 expect for the Gunshot app, for which the default value is 90.</td>
</tr>
<tr>
<td>Enable Test Mode</td>
<td>Check this check box put the camera in test mode, which allows you to test the response of the camera to recorded sounds. For more information, see the “Testing an Audio Analytics App” section on page 2-6. Note: When a camera is in test mode, it can detect only sounds that are provided in a file that you can obtain from Cisco. Uncheck this check box when you are not testing the camera so that other features operate normally.</td>
</tr>
<tr>
<td>Start Audio Recording</td>
<td>Check this check box to cause the app to run in debug mode, which creates a 2 MB audio recording (approximately 1 minute of audio) when the app starts. The recording file is saved on the IP camera. You can export the file as described in the “Export Recording button” section on page 2-6 and provide it to a Cisco support representative if requested for troubleshooting. When this check box is checked, the IP camera creates a new recording file each time that you start the app. If there is an existing recording file on the camera, it is overwritten. If you want to save an existing recording file, export it before you start the app.</td>
</tr>
</tbody>
</table>
Testing an Audio Analytics App

You can test whether an IP camera that is running an Audio Analytics app triggers an event as expected. To do so, you run the app and play a test aggression, car alarm, glass break, or gunshot sound.

To test an audio analytics app, perform the following steps.

**Before You Begin**
Download the DemoAppSoundFiles.zip file that is provided with the Demo application package. Unzip and play the included audio files to test the connected speakers.

**Procedure**

**Step 1**  Put the camera in test mode by checking the Enable Test Mode check box as described in the “Configuring an Audio Analytics App on an IP Camera” section on page 2-4.

**Step 2**  Run the app that you want to test.

The IP camera becomes ready to detect an aggression, car alarm, glass break, or gunshot sound, based on the configuration settings that you made as described in the “Configuring an Audio Analytics App on an IP Camera” section on page 2-4.

**Step 3**  Use an external speaker to play the audio file for an aggression, car alarm, glass break, or gunshot sound.
Running an Audio Analytics App

To run an Audio Analytics app on an IP camera, perform the following steps. The IP camera can run one Audio Analytics app at a time.

Procedure

Step 1 From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.

Step 2 Click the radio button for the app that you want to run:

- audioAnalyticsAggression—Aggression app
- audioAnalyticsCarAlarm—Car Alarm app
- audioAnalyticsGlassBreak—Glass Break app
- audioAnalyticsGunshot—Gunshot app
- audioAnalyticsDemo—Demo app

Step 3 (Optional) If you want the app to run automatically each time the IP camera reboots, in the Installed Application List area, check the Start on Boot check box that corresponds to this app.

If you do not check this check box, you must run the app manually each time the IP camera reboots.

Step 4 Click the Run button.

Stopping an Audio Analytics App

To stop an Audio Analytics app on an IP camera, follow these steps:

Procedure

Step 1 From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.

Step 2 Click the radio button for the app that you want to stop:

- audioAnalyticsAggression—Aggression app
- audioAnalyticsCarAlarm—Car Alarm app
- audioAnalyticsGlassBreak—Glass Break app
- audioAnalyticsGunshot—Gunshot app
- audioAnalyticsDemo—Demo app

Step 4 Verify whether an event was triggered.

Step 5 Take the camera out of test mode by unchecking the Enable Test Mode check box.
Step 3  Click the Stop button.
Audio Detection App

This chapter provides information about the Audio Detection app for Cisco IP cameras. This app triggers an event based on noise that exceeds a set volume threshold.

This chapter includes these topics:

- About the Audio Detection App, page 3-1
- Configuring the Audio Detection App on an IP Camera, page 3-1
- Running the Audio Detection App, page 3-2
- Stopping the Audio Detection App, page 3-3
- Exporting an Audio File for Debugging the Audio Detection App, page 3-3

About the Audio Detection App

The Audio Detection app triggers an event when it detects noise that exceeds a set volume threshold. The IP camera sets this threshold automatically by analyzing audio that it detects from its microphone during the first few seconds after you start this app. The average audio level that the camera detects during this time becomes the volume threshold.

Configuring the Audio Detection App on an IP Camera

Before you can use the Audio Detection app, you must configure it on each IP camera on which it will run. To configure this app, perform the following steps.

Before You Begin
Install the Audio Detection app on the IP camera on which it will run. See the “Related Documentation” section on page 1-1 for more information.

Procedure

Step 1 From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.

Step 2 Click the AudioDetection radio button, then click Configure.

The Cisco Audio Detection Application configuration page appears.
Running the Audio Detection App

**Procedure**

**Step 1** From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2** Click the **AudioDetection** radio button.

**Step 3** (Optional) If you want the Audio Detection app to run automatically each time the IP camera reboots, in the Installed Application List area, check the **Start on Boot** check box that corresponds to this app.

If you do not check this check box, you must run the app manually each time the IP camera reboots.

**Step 4** Click the **Run** button.

---

**Chapter 3      Audio Detection App**

**Step 3** Enter appropriate values in the Cisco Audio Detection Application page fields as described in the following table:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Threshold Level</td>
<td>Choose the relative audio threshold level that, when exceeded, causes the app to trigger an event.</td>
</tr>
<tr>
<td>Enable Debug</td>
<td>Check to create an audio file for debugging purposes. For more information, see the “Exporting an Audio File for Debugging the Audio Detection App” section on page 3-3.</td>
</tr>
<tr>
<td>Audio Frames to Record</td>
<td>Available only if you check the Enable Debug check box. Enter the number of audio frames to be recorded in an audio file for debugging. The default value is 512.</td>
</tr>
</tbody>
</table>

**Step 4** Click the **Save** button in the Cisco Audio Detection Application configuration page, and then click **OK** in the confirmation dialog box.

If you want to reset the options in the Cisco Audio Detection Application configuration page to their default values, click the **Reset** button, click **OK** in the two dialog boxes that appear, click the **Save** button, and then click **OK** in the confirmation dialog box.

If you change configuration values while the Audio Detection app is running, you must stop and then restart the app before the changes take effect.

---

**Running the Audio Detection App**

To run the Audio Detection app on an IP camera, perform the following steps:

**Procedure**

**Step 1** From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2** Click the **AudioDetection** radio button.

**Step 3** (Optional) If you want the Audio Detection app to run automatically each time the IP camera reboots, in the Installed Application List area, check the **Start on Boot** check box that corresponds to this app.

If you do not check this check box, you must run the app manually each time the IP camera reboots.

**Step 4** Click the **Run** button.
Stopping the Audio Detection App

To stop the Audio Detection app on an IP camera, follow these steps:

Procedure

<table>
<thead>
<tr>
<th>Step 1</th>
<th>From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Click the AudioDetection radio button.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Click the Stop button.</td>
</tr>
</tbody>
</table>

Exporting an Audio File for Debugging the Audio Detection App

The export audio feature lets you create an audio file that you can export and provide to a Cisco support representative if requested for troubleshooting the Audio Detection app.

To export an audio file for debugging the Audio Detection app, follow these steps:

Procedure

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Run the Audio Detection app as described in the “Running the Audio Detection App” section on page 3-2.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Click the AudioDetection radio button, then click Configure.</td>
</tr>
<tr>
<td></td>
<td>The Cisco Audio Detection Application configuration page appears.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Check the Enable Debug check box.</td>
</tr>
<tr>
<td>Step 4</td>
<td>In the Audio Frames to Record field, enter the number of audio frames to be recorded in an audio file.</td>
</tr>
<tr>
<td></td>
<td>Cisco recommends that you use the default value of 512.</td>
</tr>
<tr>
<td>Step 5</td>
<td>Click Export Recording and follow the on-screen prompts to save the file.</td>
</tr>
<tr>
<td></td>
<td>If you export a recording without checking the Enable Debug check box, the system exports the recording file that is stored on the IP camera, or exports an empty file if no recording file is stored.</td>
</tr>
</tbody>
</table>
Cisco Video Analytics Apps

This chapter provides information about the Cisco Video Analytics apps for Cisco IP cameras. These apps enable an IP camera to perform various analytic and counting functions. Analytic functions trigger events when a camera detects activities or behaviors that match predefined rules. Counting functions count people.

This chapter includes these topics:
- About the Cisco Video Analytics Apps, page 4-1
- Configuring and Operating a Cisco Video Analytics App on an IP Camera, page 4-2
- Running a Cisco Video Analytics App, page 4-3
- Stopping a Cisco Video Analytics App, page 4-3

About the Cisco Video Analytics Apps

The Cisco Video Analytics apps include the following:
- CiscoBaseAnalytics—Includes Base Security and Base Counting packages. You can run one of these packages at a time.
- CiscoAdvancedAnalytics—Includes Advanced Security and Advanced Counting packages. You can run one of these packages at a time.
- CiscoCrowdMonitoring—Provides features for estimating the size and the relative density of a crowd of people.
- CiscoFlowViolation—Provides information if an object violates the flow that is set in the field of view of the camera.

Table 4-1 shows the features that each Cisco Video Analytics app provides. You can enable up to five features at a time for the app that you are running.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Base Analytics</th>
<th>Cisco Advanced Analytics</th>
<th>Cisco Crowd Monitoring</th>
<th>Cisco Flow Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object classification</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tripwire event</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Enters event</td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Table 4-1  Cisco Video Analytics Apps Features (continued)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cisco Base Analytics</th>
<th>Cisco Advanced Analytics</th>
<th>Cisco Crowd Monitoring</th>
<th>Cisco Flow Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Security</td>
<td>Counting</td>
<td>Security</td>
<td>Counting</td>
</tr>
<tr>
<td>Exits Event</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Appears event (full view)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Appears event (area of interest)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Disappears event (full view)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Disappears event (area of interest)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Inside-of event</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Loitering event</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Leave behind event (full view)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Leave behind event (area of interest)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Configurable leave behind time</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Take away event (full view)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Take away event (area of interest)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Camera tamper detection</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Object size filters</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Object size change filters</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Salience filters</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Image stabilization</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Multi-view</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Forensics support</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Object tracking and markup data</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>People and object counting</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Occupancy monitoring</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Dwell time</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Flow isolation</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Object density level (area of interest)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>(heavy traffic)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Crowd estimation (area of interest)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>(medium traffic)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Configuring and Operating a Cisco Video Analytics App on an IP Camera

Running a Cisco Video Analytics App

To run a Cisco Video Analytics app on an IP camera, perform the following steps. The IP camera can run one Cisco Video Analytics app at a time.

Procedure

Step 1 From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.

Step 2 Click one of the following radio buttons to choose the app that you want to run. The buttons that appear on your system depend on which apps you installed.
   - CiscoBaseAnalytics
   - CiscoAdvancedAnalytics
   - CiscoCrowdMonitoring
   - CiscoFlowViolation

Step 3 (Optional) If you want the Video Analytics app to run automatically each time the IP camera reboots, in the Installed Application List area, check the Start on Boot check box that corresponds to this app. If you do not check this check box, you must run the app manually each time the IP camera reboots.

Step 4 Click the Run button.

Stopping a Cisco Video Analytics App

To stop a Cisco Video Analytics app on an IP camera, follow these steps:

Procedure

Step 1 From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.

Step 2 Click the radio button for the app that you want to stop:
   - CiscoBaseAnalytics
   - CiscoAdvancedAnalytics
   - CiscoCrowdMonitoring
   - CiscoFlowViolation

Step 3 Click the Stop button.
Digi ZigBee Sensor App

This chapter provides information about the Digi ZigBee Sensor app for Cisco IP cameras. This app enables an IP camera to post to a Xively website information that the camera collects from a Digi XBee sensor, and information about input 1 state changes, motion detection, and day/night mode changes.

This chapter includes these topics:
- About the Digi ZigBee Sensor App, page 5-1
- Configuring the Digi ZigBee Sensor App on an IP Camera, page 5-2
- Running the Digi ZigBee Sensor App, page 5-4
- Stopping the Digi ZigBee Sensor App, page 5-4

About the Digi ZigBee Sensor App

The Digi ZigBee Sensor app enables an IP camera to collect information from a Digi XBee sensor that is connected to the camera and post this information to a configured Xively website. Sensor information that the camera collects includes data about temperature, humidity, and lumens. This app also enables a camera to post to the Xively website information about an input 1 state change, a motion detection, and a change in day/night mode state.

The IP camera to send information from the sensor and about an event as an HTTP notification message to a remote Xively server. This notification includes the following information:
- Xively Channel ID—Configured description of the information type
- Event value—Value of the information, such as a number, or “on” or “off.”

You can view this information from Xively website by setting up a Xively account and adding a device on the Xively website, and then accessing the URL for that device.

The IP camera receives information from a sensor on its RS-485 port. Using a sensor requires the following configuration:
- A Digi XBee RS-485 Adapter ZB Pro must connected to the RS-485 port on the IP camera
- A Digi XBee Sensor ZB Bat /L/T/H must be paired with the XBee RS-485 Adapter ZB Pro
- A Digi XBee Gateway must be used to pair the adapter and sensor

For information about setting up and configuring an XBee sensor and XBee Gateway, see the documentation that is available the Digi website.
Configuring the Digi ZigBee Sensor App on an IP Camera

Before you can use the Digi ZigBee Sensor app, you must configure it on each IP camera on which it will run. To configure this app, perform the following steps.

**Before You Begin**
Install the Digi ZigBee Sensor app on the IP camera on which it will run. See the “Related Documentation” section on page 1-1 for more information.

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.</td>
</tr>
<tr>
<td>Step 2</td>
<td>Click the DigiZBSensorApp radio button, then click Configure. The Digi ZigBee Sensor Application page appears.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Check the check box that corresponds to each trigger that you want to enable, then configure triggers as described in the following table. When a trigger is enabled, information that relates to that trigger is posted to the Xively website.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable check box</td>
<td>Causes the IP camera to post information about the corresponding trigger to the Xively website.</td>
<td>Check the check box for each trigger for which you want information to be posted to the Xively website.</td>
</tr>
</tbody>
</table>
### Configuring the Digi ZigBee Sensor App on an IP Camera

**Step 4**

Click the **Save** button in the Digi ZigBee Sensor Application configuration page, and then click **OK** in the confirmation dialog box.

If you change configuration values while the Digi ZigBee Sensor app is running, you must stop and then restart the app before the changes take effect. The camera receives this input at the interval that the Xively Update Interval option in the Digi ZigBee Sensor Application page defines.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input 1</td>
<td>Information is posted to the Xively website when input port 1 on the IP camera changes state from high to low or from low to high.</td>
<td>In the Xively Channel Id field, enter an ID that appears in the Xively website for the corresponding information type. This ID can be a descriptive name. For the ID that corresponds to the Sensor Temp trigger, choose the units for the temperature display (C for Celsius or F for Fahrenheit).</td>
</tr>
<tr>
<td>Motion</td>
<td>Information is posted to the Xively website when the camera detects motion, if motion detection is configured for the camera.</td>
<td></td>
</tr>
<tr>
<td>Day/Night</td>
<td>Information is posted to the Xively website when the camera switches from day mode to night mode or from night mode to day mode.</td>
<td></td>
</tr>
<tr>
<td>Sensor Temp</td>
<td>Information is posted to the Xively website each time the IP camera receives temperature input from the sensor. The camera receives this input at the interval that the Xively Update Interval option (described in this table) defines.</td>
<td></td>
</tr>
<tr>
<td>Sensor Humidity</td>
<td>Information is posted to the Xively website each time the IP camera receives humidity input from the sensor. The camera receives this input at the interval that the Xively Update Interval option (described in this table) defines.</td>
<td></td>
</tr>
<tr>
<td>Sensor Lux</td>
<td>Information is posted to the Xively website each time the IP camera receives lumens input from the sensor. The camera receives this input at the interval that the Xively Update Interval option (described in this table) defines.</td>
<td></td>
</tr>
<tr>
<td>Xively API Key</td>
<td>Xively API key for your Xively account. Enter the Xively API key provided by Xively for your account.</td>
<td></td>
</tr>
<tr>
<td>Xively Feed ID</td>
<td>Xively feed ID for your Xively account. Enter the Xively feed ID provided by Xively for your account.</td>
<td></td>
</tr>
<tr>
<td>Xively Update Interval</td>
<td>Interval, in minutes, at which the app sends data from the sensor to the Xively website</td>
<td>Enter the desired interval, in minutes. The default value is 5.</td>
</tr>
</tbody>
</table>
Running the Digi ZigBee Sensor App

To run the Digi ZigBee Sensor app on an IP camera, perform the following steps:

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.</td>
</tr>
<tr>
<td>Step 2</td>
<td>Click the DigiZBSensorApp radio button.</td>
</tr>
<tr>
<td>Step 3</td>
<td>(Optional) If you want the Digi ZigBee Sensor app to run automatically each time the IP camera reboots, in the Installed Application List area, check the Start on Boot check box that corresponds to this app. If you do not check this check box, you must run the app manually each time the IP camera reboots.</td>
</tr>
<tr>
<td>Step 4</td>
<td>Click the Run button.</td>
</tr>
</tbody>
</table>

Stopping the Digi ZigBee Sensor App

To stop the Digi ZigBee Sensor app on an IP camera, follow these steps:

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.</td>
</tr>
<tr>
<td>Step 2</td>
<td>Click the DigiZBSensorApp radio button.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Click the Stop button.</td>
</tr>
</tbody>
</table>
intuVision Video Analytics Apps

This chapter provides information about the intuVision Video Analytics apps for Cisco IP cameras. These apps enable an IP camera to trigger events when it detects activities or behaviors that match predefined rules.

This chapter includes these topics:
- About the intuVision Video Analytics Apps, page 6-1
- Configuring an intuVision Video Analytics App on an IP Camera, page 6-1
- Running an intuVision Video Analytics App, page 6-2
- Stopping an intuVision Video Analytics App, page 6-2

About the intuVision Video Analytics Apps

The intuVision Video Analytics apps include the following:
- Activity—Detects moving objects within an area that is configured in the camera view
- LineCrossing—Detects moving objects that cross a line that is configured in the camera view
- ObjectTaken—Detects a marked object in the camera view being removed from its location
- WrongWay—Detects objects that are moving in the direction of an arrow that is configured in the camera view
- ZoneIntrusion—Detects objects that enter an area that is configured in the camera view
- Speed—Detects objects that pass too quickly over two user defined lines
- EnterExit—Detects objects that enter and exit or that exit an area that is configured in the camera view

Configuring an intuVision Video Analytics App on an IP Camera

For information about configuring the intuVision Video Analytics apps on an IP camera, see the instructions that are provided on the “Edge Analytics for Cisco Cameras” page on the intuVision website.
Running an intuVision Video Analytics App

To run an intuVision Video Analytics app on an IP camera, perform the following steps. The IP camera can run one intuVision Video Analytics app at a time.

Procedure

Step 1  From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.

Step 2  Click one of the following radio buttons to choose the app that you want to run.

   • Activity
   • LineCrossing
   • ObjectTaken
   • WrongWay
   • ZoneIntrusion
   • Speed
   • Enter/Exit

Step 3  (Optional) If you want the Video Analytics app to run automatically each time the IP camera reboots, in the Installed Application List area, check the Start on Boot check box that corresponds to this app.

If you do not check this check box, you must run the app manually each time the IP camera reboots.

Step 4  Click the Run button.

Stopping an intuVision Video Analytics App

To stop an intuVision Video Analytics app on an IP camera, follow these steps:

Procedure

Step 1  From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.

Step 2  Click the radio button for the app that you want to stop:

   • Activity
   • LineCrossing
   • ObjectTaken
   • WrongWay
   • ZoneIntrusion
   • Speed
   • Enter/Exit

Step 3  Click the Stop button.
Local Video Player App

This chapter provides information about the Local Video Player app for Cisco IP cameras. This app lets you view video recordings from the IP camera web-based user interface.

This chapter includes these topics:

• About the Local Video Player App, page 7-1
• Configuring the Local Video Player App on an IP Camera, page 7-1
• Running the Local Video Player App, page 7-1
• Stopping the Local Video Player App, page 7-2
• Using the Local Video Player App, page 7-2

About the Local Video Player App

The Local Video Player app lets you use the IP camera web-based user interface to view continuous recordings that are stored on an SD or MicroSD card that is installed in the IP camera.

Configuring the Local Video Player App on an IP Camera

Install the Local Video Player app on the IP camera on which it will run. See the “Related Documentation” section on page 1-1 for more information.

In addition, using this app to view videos requires continuous recording to be enabled in the Local Storage window in the IP camera web-based user interface. For information about configuring continuous recording, see the Configuration Guide for your IP camera model.

Running the Local Video Player App

To run the Local Video Player app on an IP camera, perform the following steps:

Procedure

Step 1 From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.
Stopping the Local Video Player App

To stop the Local Video Player app on an IP camera, follow these steps:

Procedure

Step 1 From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.
Step 2 Click the localVideoPlayer radio button.
Step 3 Click the Stop button.

Using the Local Video Player App

To use the Local Video Player app to view a recording, follow these steps:

Procedure

Step 1 From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.
Step 2 Click the localVideoPlayer radio button.
Step 3 Click the Configure button.

The Local Video Player page appears.

Step 4 Click Local Storage Recordings near the top of the page to expand the list of recording, if this list is not expanded.

This list shows the following information for each recording that is stored on the SD or MicroSD card that is installed in the IP camera:

- Name—File name of the recording
- Start Time—Date and time that the recording started, in UTC format
- End Time—Date and time that the recording ended, in UTC format
- Media Type—Indicates that the recording is stored as a video file

Step 5 Click the radio button that corresponds to the recording that you want to view.

The system displays additional information about the recording.
Step 6  (Optional) To change the default start time or end time of the playback, take these actions:

- To change the start time, drag the square icon at the left of the bar that indicates the playback duration. Refer to the Start Time field above this bar for updated start time information.
- To change the end time, drag the square icon at the right of the bar that indicates the playback duration. Refer to the Start Time field above this bar for updated start time information.

The value in the Duration field updates as you adjust the playback time.

Step 7  Click Play to start viewing the recording.

You can control the playback by moving your mouse cursor over the playback image and using the following controls:

- Pause/Play toggle button—Click the Pause button  to pause the video playback. Click the Play button  to resume playback.
- Playback location—Click a location in the progress bar under the video playback image to go to play video from that relative location in the video file.
- Full-Screen button—Click the Full-Screen button  to display the video playback in full-screen mode. Press the Esc key to exit full-screen mode.

Click Stop at any time to stop viewing the recording.

If you play the current recording, it plays until you stop it. Other recordings stop when they end.
Lua App

This chapter provides information about the Lua app for Cisco IP cameras. This app lets an IP camera run a script that is created in the Lua programming language.

This chapter includes these topics:
- About the Lua App, page 8-1
- Configuring the Lua App on an IP Camera, page 8-1
- Running the Lua App, page 8-2
- Stopping the Lua App, page 8-2
- Lua App Sample Scripts, page 8-3

About the Lua App

The Lua app enables the IP camera to run a script that is created in the Lua programming language. A Lua script provides instructions for the camera about how to behave or operate in certain situations.

Cisco provides sample scripts for the Lua app. You can run a sample script as provided, edit and then run a sample script, create and run your own script, or run a script that is provided by a third-party.

Configuring the Lua App on an IP Camera

Before you can use the Lua app, you must configure it on each IP camera on which it will run. To configure this app, perform the following steps.

**Before You Begin**
Install the Lua app on the IP camera on which it will run. See the “Related Documentation” section on page 1-1 for more information.

**Procedure**

**Step 1** From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2** Click the **luaApp** radio button, then click **Configure**. The Cisco luaApp configuration page appears.
Step 3  (Optional) Click the **Download** button in the Cisco luaApp configuration page, then use the dialog box that appears to save a copy of the existing script. This step is useful if you want to save a backup copy of a script before you edit it, or save a copy of a completed script for future reference. You can save existing script where you want.

Step 4  In the script area in the Cisco luaApp configuration page, write a script in the Lua programming language, or paste an existing Lua script and edit it as needed.

Step 5  Click **Save** in the Cisco luaApp configuration page, then click **OK** in the Overwrite dialog box. The script is saved with the name script.lua. The existing script with that name is overwritten.

---

### Running the Lua App

When you run the Lua app on an IP camera, the camera executes the functionality that the current script.lua Lua script defines.

To run the Lua app on an IP camera, follow these steps:

**Procedure**

---

**Step 1**  From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2**  Click the **luaApp** radio button.

**Step 3**  (Optional) If you want the Lua app to run automatically each time the IP camera reboots, in the Installed Application List area, check the **Start on Boot** check box that corresponds to this app.

   If you do not check this check box, you must run the app manually each time the IP camera reboots.

**Step 4**  Click the **Run** button.

---

### Stopping the Lua App

When you stop the Lua app on an IP camera, the camera stops executing the functionality that the current script.lua Lua script defines.

To stop the Lua app on an IP camera, follow these steps:

**Procedure**

---

**Step 1**  From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2**  Click the **luaApp** radio button.

**Step 3**  Click the **Stop** button.
Lua App Sample Scripts

When you install the Lua app on an IP camera, sample scripts for use with the app are placed in the /usr/apps/luaApp/html folder on the camera. Each of these scripts is written in the Lua programming language.

Table 8-1 describes each script and provide references to sections in this document that show the contents of the scripts.

Table 8-1 Sample Lua Scripts

<table>
<thead>
<tr>
<th>Script File Name</th>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>hello.lua</td>
<td>Prints “Hello World!” to the app log file</td>
<td>Hello World Script, page 8-3</td>
</tr>
<tr>
<td>event.lua</td>
<td>Sends a test event to the event manager</td>
<td>Test Event Script, page 8-3</td>
</tr>
<tr>
<td>input_event.lua</td>
<td>Subscribes to the camera input triggers and generates an app trigger when the IP camera receives an input trigger</td>
<td>Send Event on Input Trigger Script, page 8-4</td>
</tr>
<tr>
<td>motion_event.lua</td>
<td>Subscribes to the motion trigger and generates an app trigger when the IP camera receives a motion trigger</td>
<td>Send Event on Motion Trigger Script, page 8-4</td>
</tr>
</tbody>
</table>

To access a sample Lua script on an IP camera, use an SSH client to access the camera, log in with the password that is configured on the camera for SSH access, then open the desired log file with a text editor. For more information about accessing a camera via an SSH client, see the Configuration Guide for your IP camera model.

Hello World Script

The sample script named hello.lua sends the text “Hello World!” to the app log file. This script contains the following code:

```lua
log.info("Hello World!")
```

Test Event Script

The sample named script event.lua sends a test event to the event manager. This script contains the following code:

```lua
app_event_data = [[
  <EventPayload>
    <App>EventTest</App>
    <test>1</test>
  </EventPayload>
]]

event.send(app_event_data, 0)
```
**Send Event on Input Trigger Script**

The sample script named input_event.lua subscribes to the camera input triggers and generates an app trigger when the IP camera receives an input trigger. This script contains the following code:

```lua
input_trigger = "cisco.input1"
max_events = 10

input_event_template = 
[
  <CameraAppEventPayload>
  <vendorName>Cisco Systems, Inc</vendorName>
  <eventName>%s</eventName>
  <eventState>%s</eventState>
  <severity>info</severity>
  <description>Cisco luaApp</description>
  </CameraAppEventPayload> ]

status = trigger.subscribe(input_trigger)
log.info("Subscribed to "..input_trigger.." with status = "..status)

for i = 1, max_events do
  t = trigger.get()
  input_event = string.format(input_event_template, t:name(), t:state())
  event.send(input_event, 0)
  -- log.info(input_event)
end
```

**Send Event on Motion Trigger Script**

The sample script named motion_event.lua subscribes to the motion trigger and generates an app trigger when the IP camera receives a motion trigger. This script is the default script.lua script and contains the following code:

```lua
motion_trigger = "cisco.motion"
max_events = 10

motion_event_template = 
[
  <CameraAppEventPayload>
  <vendorName>Cisco Systems, Inc</vendorName>
  <eventName>%s</eventName>
  <eventState>%s</eventState>
  <severity>info</severity>
  <description>Cisco luaApp</description>
  </CameraAppEventPayload> ]

status = trigger.subscribe(motion_trigger)
print("Subscribed to "..motion_trigger.." with status = "..status)

for i = 1, max_events do
  t = trigger.get()
  if t:state() == "start" then
    motion_event = string.format(motion_event_template, t:name(), 1)
  else
    motion_event = string.format(motion_event_template, t:name(), 2)
  end
  print(motion_event)
  event.send(motion_event, 0)
end
```
SIP Client App

This chapter provides information about the SIP Client app for Cisco IP cameras. This app lets an IP camera send audio to and receive audio from an external SIP client device, the Cisco Interoperability and Collaboration System (Cisco IPICS), or Cisco Unified Communications Manager (CUCM).

This chapter includes these topics:
- About the SIP Client App, page 9-1
- Configuring the SIP Client App on an IP Camera, page 9-2
- Configuring Cisco IPICS for use with the SIP Client App, page 9-4
- Configuring Cisco Unified Communications Manager for use with the SIP Client App, page 9-5
- Running the SIP Client App, page 9-7
- Stopping the SIP Client App, page 9-7

About the SIP Client App

The SIP Client app enables an IP camera to transmit and receive audio to and from an external SIP client device, Cisco IPICS, or Cisco Unified Communications Manager. The IP camera plays audio that it receives on external speakers that are connected to it. The IP camera transmits audio through its internal or external microphone.

The SIP Client app provides these operating modes:
- Standalone mode—In this mode, the IP camera waits for contact from a device on which a SIP client is operating and establishes a connection with that device when it receives contact. After the connection is established, the IP camera and this SIP client device can engage in full-duplex audio communication.

  This mode supports one connection from a SIP device to the IP camera at a time. When a SIP client device disconnects from the IP camera, the camera is ready to establish another connection.

  UMS mode—In this mode, the IP camera connects to a designated channel in an active Cisco IPICS VTG. When you connect to that channel through a Cisco IPICS 4.7(1) or later remote client, the IP camera can engage in half-duplex audio communication over the channel. In this way, communication with the IP camera can be included in a VTG.

    This mode supports simultaneous connections from multiple Cisco IPICS remote clients.

- CUCM mode—In this mode, the IP camera connects to an active Cisco Unified Communications Manager and can engage in full-duplex audio communication.
Configuring the SIP Client App on an IP Camera

Before you can use the SIP Client app, you must configure it on each IP camera on which it will run. To configure this app, perform the following steps.

Before You Begin
Install the SIP Client app on the IP camera on which it will run. See the “Related Documentation” section on page 1-1 for more information.

Procedure

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.</td>
</tr>
<tr>
<td>Step 2</td>
<td>Click the SIPClient radio button, then click Configure. The Cisco SIP Client App configuration page appears.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Enter appropriate values in the Cisco SIP Client App configuration page fields as described in the following table:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Settings for Standalone Mode</th>
<th>Settings for UMS Mode (IPICS)</th>
<th>Settings for CUCM Mode (Cisco Unified Communications Manager)</th>
<th>Default Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debug Level</td>
<td>Lets you enable logging, which causes the system to write app-related information to a log file. The log file is named SIPClient verbose.log and is stored in the /var/log folder on the IP camera. When this file reaches 256 KB in size, it is archived to a file named SIPClient verbose.log.1.gz in the /var/log folder and a new SIPClient verbose.log file is created. When this new log file reaches 256 KB in size, it is archived to a file named SIPClient verbose.log.2.gz and a new SIPClient verbose.log file is created again. After that, each time the new SIPClient verbose.log file reaches 256 KB in size, an archive file is created that overwrites the oldest existing archive file. In addition, the SIPClient verbose.log is overwritten if the IP camera reboots and you restart the app. Options are:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• None—Disables generation of logging so that no information is written to the log file</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Debug—Generates detailed logging information that can assist with debugging</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Message—Generates announcements about normal operations of the app, including announcements about SIP exchange, multimedia, and event operations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Warning—Generates information about conditions that are not necessarily errors but that may indicate that the system is not running optimally.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Error—Generates information about conditions that indicate that the app is not operating correctly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fatal—Generates information about conditions that indicate that the app cannot recover from a failure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Trace—Generates trace-level information messages</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

App Mode | Standalone | UMS | CUCM |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Chapter 9  SIP Client App

#### Configuring the SIP Client App on an IP Camera

<table>
<thead>
<tr>
<th>Field</th>
<th>Settings for Standalone Mode</th>
<th>Settings for UMS Mode (IPICS)</th>
<th>Settings for CUCM Mode (Cisco Unified Communications Manager)</th>
<th>Default Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Check Time</td>
<td>Enter a time interval in seconds at which the IP camera periodically contacts the SIP client to ensure that a live connection is in place. If the IP camera detects that the connection to the SIP client is lost, the camera tries three times to reestablish a connection. If the connection cannot be reestablished, the SIP Client app stops automatically. Valid values are 10 through 600 (10 seconds through 10 minutes).</td>
<td>Enter a time interval in seconds at which the IP camera periodically contacts the UMS to ensure that a live connection is in place. If the IP camera detects that the connection to the UMS is lost, the camera tries three times to reestablish a connection. If the connection cannot be reestablished, the SIP Client app stops automatically. Valid values are 10 through 600 (10 seconds through 10 minutes).</td>
<td>Enter a time interval in seconds at which the IP camera periodically contacts Cisco Unified Communications Manager to ensure that a live connection is in place. If the IP camera detects that the connection to Cisco Unified Communications Manager is lost, the camera tries three times to reestablish a connection. If the connection cannot be reestablished, the SIP Client app stops automatically. Valid values are 10 through 600 (10 seconds through 10 minutes).</td>
<td>10</td>
</tr>
<tr>
<td>SIP Server</td>
<td>—</td>
<td>Enter the IP address of the UMS on which the channel to connect to is configured.</td>
<td>Enter the IP address of the Cisco Unified Communications Manager server.</td>
<td>0</td>
</tr>
<tr>
<td>Audio Gain</td>
<td>Enter the volume in decibels (dB) at which the IP camera plays on its external speakers audio that it receives from a remote SIP device, Cisco Unified Communications Manager, or Cisco IPICS. Valid values are 0 through 20.</td>
<td>—</td>
<td>—</td>
<td>15</td>
</tr>
<tr>
<td>Channel #</td>
<td>—</td>
<td>Enter the number of the active channel to which to connect, preceded by 1. For example, if the channel number is 469, enter 1469. To determine the channel number, go to <a href="http://ip_address:8080/ums-sipua/live">http://ip_address:8080/ums-sipua/live</a>, where ip_address is the IP address of the UMS on which the channel is configured. Channels are listed by Channel ID in the VTG Listing area.</td>
<td>—</td>
<td>1</td>
</tr>
</tbody>
</table>
Configuring Cisco IPICS for use with the SIP Client App

This section provides general steps for configuring Cisco IPICS for use with the SIP Client app. Ensure that Cisco IPICS is properly configured if you use the SIP Client app in UMS mode.

Cisco IPICS is configured through the Cisco IPICS Administration Console. For detailed information about configuring Cisco IPICS, see Cisco IPICS Server Administration Guide.

1. Make sure that a location is configured for the UMS that you are using.
2. Make sure that the UMS that you are using is properly configured to operate with Cisco IPCIS.
3. Add a tone controlled radio, which represents an IP camera, and configure this radio.
4. Associate users to the radio that you added.
5. Enable the radio that you added.
6. Add a channel for the radio that you added.
7. Add associations for Cisco IPICS users whom you want to allow to communicate on the channel that you added.
8. Enable the channel that you added.
9. Create a virtual talk group (VTG), and add the radio, channel, and users that you added.
10. Save and activate the VTG.

## Configuring Cisco Unified Communications Manager for use with the SIP Client App

You configure Cisco Unified Communications Manager for use with the SIP Client app by using the Cisco Unified Communications Manager Administration Console. For more detailed configuration information, see your Cisco Unified Communications Manager documentation.

This configuration involves the procedures that the following sections describe:

- Adding a Camera to Cisco Unified Communications Manager, page 9-5
- Adding and Associating an End User, page 9-6

## Adding a Camera to Cisco Unified Communications Manager

Adding a camera to Cisco Unified Communications Manager enables that application to support the camera. When you add a camera, you add the device as a phone. You must add each camera that will run the SIP Client app.

To add a camera to Cisco Unified Communications Manager, follow these steps from the Cisco Unified Communications Manager Administration Console:

### Procedure

**Step 1** Log in to the Cisco Unified Communications Manager Administration Console.

**Step 2** Choose Device > Phone.

The Add a New Phone page appears

**Step 3** Click Add New near the top left side of the page.

The Add a New Phone page appears.

**Step 4** From the Phone Type drop-down list, choose Third-party SIP device (Advanced).

**Step 5** Click Next.

The Phone Configuration page appears.

**Step 6** In the Device Information area, take these actions:

- a. In the MAC Address field, enter the MAC address of the IP camera.
- b. From the Device Pool drop-down list, choose Default.
- c. From the Phone Button Template drop-down list, choose Third-party SIP Device (Advanced).
Step 7 In the Protocol Specific Information area, take these actions:
   a. From the Device Security Profile drop-down list, choose Third-party SIP Device Advanced.
   b. From the SIP Profile drop-down list, choose Standard SIP Profile.
   c. Check the Media Transmission Point Required check box.

Step 8 Click Save near the bottom of the Phone Configuration page to save and load the new phone configuration, and then click OK in the dialog box that appears.

Step 9 Click Line[1]-Add a new DN in the Association Information area on left side of the window. The Directory Number Configuration page appears.

Step 10 In the Directory Number field near the top of the page, enter a valid four-digit directory number that is within your dial plan.

Step 11 (Optional) In the Description field, enter a description of the camera. For example, Hallway Camera.

Step 12 (Optional) In the Alerting Name field, enter the name of the camera that appears on telephones when the camera is called.

Step 13 Click Save near the bottom of the Directory Number Configuration page to associate the directory number with the device that you added.

Step 14 Click Apply Config near the top of the screen.

Adding and Associating an End User

Adding end user to Cisco Unified Communications Manager and associating and end user with a camera allows cameras that run the SIP Client app to register with Cisco Unified Communications Manager. Cisco recommends that you create one end user and associate that end user with each camera.

To add an end user in Cisco Unified Communications Manager, follow these steps from the Cisco Unified Communications Manager Administration Console:

**Procedure**

Step 1 Choose User Management > End User. The Find and List Users page appears.

Step 2 Click Add New near the top left side of the page. The End User Configuration page appears.

Step 3 In the User ID field, enter an identifier for the user. For example, enter camera.

Step 4 In the Password field, enter a password that the IP camera uses to register with Cisco Unified Communications Manager.

Step 5 In the Confirm Password field, reenter the password that you entered in the Password field.

Step 6 In the Last name field, enter a name to identify the user. For example, enter IP camera.

Step 7 Click Save near the bottom of the End User Configuration page.
Step 8 Associate the device added with the end user by selecting a device from the Device association tab in the Device Information block.

Step 9 In the Device Information area in the End User Configuration page, click Device Association.

Step 10 Locate one or more devices that you added as described in the “Adding a Camera to Cisco Unified Communications Manager” section on page 9-5, click the check box that corresponds to that device, and then click Save Selected Changes at the bottom of the page.

You can repeat this step as needed.

---

**Running the SIP Client App**

When you run the SIP Client app, the IP camera does the following:

- If the SIP Client app is configured for Standalone mode, begins to wait for contact from a SIP client device
- If the SIP Client app is configured for UMS mode, an incoming call to the camera is established through the UMS
- If the SIP Client app is configured for CUCM mode, an incoming call to the camera is established through Cisco Unified Communication Manager

To run the SIP Client on an IP camera, follow these steps:

**Procedure**

**Step 1** Take these actions to enable audio on the IP camera, if it is not enabled already:

a. From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click Configuration.

b. Check the Enable Audio check box in the Audio area.

c. Click Save.

**Step 2** From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.

**Step 3** Click the SIPClient radio button.

**Step 4** (Optional) If you want the SIP Client app to run automatically each time the IP camera reboots, in the Installed Application List area, check the Start on Boot check box that corresponds to this app.

If you do not check this check box, you must run the app manually each time the IP camera reboots.

**Step 5** Click the Run button.

---

**Stopping the SIP Client App**

When you stop the SIP Client app, the IP camera does the following:

- Gracefully terminates any existing connection to a SIP client device or to Cisco IPICS
• If the SIP Client app is configured for standalone mode, stops waiting for contact from a SIP client device

To stop the SIP Client app on an IP camera, follow these steps:

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>From the IP camera web-based user interface, click the <strong>Setup</strong> link, click <strong>Application Manager</strong> to expand the menu, then click <strong>App Setup</strong>.</td>
</tr>
<tr>
<td>Step 2</td>
<td>Click the <strong>SIPClient</strong> radio button.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Click the <strong>Stop</strong> button.</td>
</tr>
</tbody>
</table>
SIP Video App

This chapter provides information about the SIP Video app for Cisco IP cameras. This app lets an IP camera send audio to and receive audio from, and send video to an external SIP client device or Cisco Unified Communications Manager (CUCM).

This chapter includes these topics:
- About the SIP Video App, page 10-1
- Configuring the SIP Video App on an IP Camera, page 10-1
- Configuring Cisco Unified Communications Manager for use with the SIP Video App, page 10-4
- Running the SIP Video App, page 10-6
- Stopping the SIP Video App, page 10-7

About the SIP Video App

The SIP Video app enables an IP camera to transmit and receive audio to and from an external SIP client device or Cisco Unified Communications Manager. It also lets you send video to a device. The IP camera plays audio that it receives on external speakers that are connected to it. The IP camera transmits audio through its internal or external microphone.

The SIP Video app provides these operating modes:
- Standalone mode—In this mode, the IP camera waits for contact from a device on which a SIP client is operating and establishes a connection with that device when it receives contact. After the connection is established, the IP camera and this SIP client device can engage in full-duplex audio communication, and half-duplex video communication.
  
  This mode supports one connection from a SIP device to the IP camera at a time. When a SIP client device disconnects from the IP camera, the camera is ready to establish another connection.

- CUCM mode—In this mode, the IP camera connects to an active Cisco Unified Communications Manager and can engage in full-duplex audio communication, and half-duplex video communication.

Configuring the SIP Video App on an IP Camera

Before you can use the SIP Video app, you must configure it on each IP camera on which it will run. To configure this app, perform the following steps.
Before You Begin
Install the SIP Video app on the IP camera on which it will run. See the “Related Documentation” section on page 1-1 for more information.

Procedure

Step 1 From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click App Setup.

Step 2 Click the SIPVideo radio button, then click Configure.

The Cisco SIP Video App configuration page appears.

Step 3 Enter appropriate values in the Cisco SIP Video App configuration page fields as described in the following table:

<table>
<thead>
<tr>
<th>Field</th>
<th>Settings for Standalone Mode</th>
<th>Settings for CUCM Mode (Cisco Unified Communications Manager)</th>
<th>Default Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debug Level</td>
<td>Lets you enable logging, which causes the system to write app-related information to a log file. The log file is named SIPVideo_verbose.log and is stored in the /var/log folder on the IP camera. When this file reaches 256 KB in size, it is archived to a file named SIPVideo_verbose.log.1.gz in the /var/log folder and a new SIPVideo_verbose.log file is created. When this new log file reaches 256 KB in size, it is archived to a file named SIPVideo_verbose.log.2.gz and a new SIPVideo_verbose.log file is created again. After that, each time the new SIPVideo_verbose.log file reaches 256 KB in size, an archive file is created that overwrites the oldest existing archive file. In addition, the SIPVideo_verbose.log is overwritten if the IP camera reboots and you restart the app. Options are:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• None—Disables generation of logging so that no information is written to the log file</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>• Debug—Generates detailed logging information that can assist with debugging</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Message—Generates announcements about normal operations of the app, including announcements about SIP exchange, multimedia, and event operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Warning—Generates information about conditions that are not necessarily errors but that may indicate that the system is not running optimally.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Error—Generates information about conditions that indicate that the app is not operating correctly</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fatal—Generates information about conditions that indicate that the app cannot recover from a failure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Trace—Generates trace-level information messages</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

App Mode  Standalone  CUCM
### Configuring the SIP Video App on an IP Camera

**Connection Check Time**

Enter a time interval in seconds at which the IP camera periodically contacts the SIP client to ensure that a live connection is in place. If the IP camera detects that the connection to the SIP client is lost, the camera tries three times to reestablish a connection. If the connection cannot be reestablished, the SIP Video app stops automatically.

Valid values are 10 through 600 (10 seconds through 10 minutes).

**SIP Server**

Enter the IP address of the Cisco Unified Communications Manager server.

**Video Calling**

Choose **Enabled** to enable the app to send video in addition to sending and receiving audio. If you choose **Disabled**, the app sends and receives audio only.

**Video Resolution**

Available only if the Video Calling field is set to **Enabled**. Choose the resolution at which the video is sent to a device. The options that appear depend on the model of IP camera that you are using.

**Audio Gain**

Enter the volume in decibels (dB) at which the IP camera plays on its external speakers audio that it receives from a remote SIP device or Cisco Unified Communications Manager.

Valid values are 0 through 20.

**Username**

Enter the camera username that the camera uses to register with Cisco Unified Communications Manager. This value is the User ID that you configure in Cisco Unified Communications Manager as described in the “Adding and Associating an End User” section on page 10-5.

<table>
<thead>
<tr>
<th>Field</th>
<th>Settings for Standalone Mode</th>
<th>Settings for CUCM Mode (Cisco Unified Communications Manager)</th>
<th>Default Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection Check Time</td>
<td>Enter a time interval in seconds at which the IP camera periodically contacts the SIP client to ensure that a live connection is in place. If the IP camera detects that the connection to the SIP client is lost, the camera tries three times to reestablish a connection. If the connection cannot be reestablished, the SIP Video app stops automatically. Valid values are 10 through 600 (10 seconds through 10 minutes).</td>
<td>Enter a time interval in seconds at which the IP camera periodically contacts Cisco Unified Communications Manager to ensure that a live connection is in place. If the IP camera detects that the connection to Cisco Unified Communications Manager is lost, the camera tries three times to reestablish a connection. If the connection cannot be reestablished, the SIP Video app stops automatically. Valid values are 10 through 600 (10 seconds through 10 minutes).</td>
<td>10</td>
</tr>
<tr>
<td>SIP Server</td>
<td>—</td>
<td>Enter the IP address of the Cisco Unified Communications Manager server.</td>
<td>0</td>
</tr>
<tr>
<td>Video Calling</td>
<td>Choose <strong>Enabled</strong> to enable the app to send video in addition to sending and receiving audio. If you choose <strong>Disabled</strong>, the app sends and receives audio only.</td>
<td></td>
<td><strong>Enabled</strong></td>
</tr>
<tr>
<td>Video Resolution</td>
<td>Available only if the Video Calling field is set to <strong>Enabled</strong>. Choose the resolution at which the video is sent to a device. The options that appear depend on the model of IP camera that you are using.</td>
<td></td>
<td>Depends on the IP camera model</td>
</tr>
<tr>
<td>Audio Gain</td>
<td>Enter the volume in decibels (dB) at which the IP camera plays on its external speakers audio that it receives from a remote SIP device or Cisco Unified Communications Manager. Valid values are 0 through 20.</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Username</td>
<td>—</td>
<td>Enter the camera username that the camera uses to register with Cisco Unified Communications Manager. This value is the User ID that you configure in Cisco Unified Communications Manager as described in the “Adding and Associating an End User” section on page 10-5.</td>
<td>—</td>
</tr>
</tbody>
</table>
Configuring Cisco Unified Communications Manager for use with the SIP Video App

You configure Cisco Unified Communications Manager for use with the SIP Video app by using the Cisco Unified Communications Manager Administration Console. For more detailed configuration information, see your Cisco Unified Communications Manager documentation.

This configuration involves the procedures that the following sections describe:

- Adding a Camera to Cisco Unified Communications Manager, page 10-4
- Adding and Associating an End User, page 10-5

Adding a Camera to Cisco Unified Communications Manager

Adding a camera to Cisco Unified Communications Manager enables that application to support the camera. When you add a camera, you add the device as a phone. You must add each camera that will run the SIP Video app.

To add a camera to Cisco Unified Communications Manager, follow these steps from the Cisco Unified Communications Manager Administration Console:

Procedure

Step 1 Log in to the Cisco Unified Communications Manager Administration Console.

---

### Configuring Cisco Unified Communications Manager for use with the SIP Video App

**Step 4** Click the **Save** button in the Cisco SIP Video App configuration page, and then click **OK** in the confirmation dialog box.

If you want to reset the options in the Cisco SIP Video App configuration page to their default values, click the **Reset** button, click **OK** in the two dialog boxes that appear, click the **Save** button, and then click **OK** in the confirmation dialog box.

If you change configuration values while the SIP Video app is running, you must stop and then restart the app before the changes take effect.
Step 2  Choose Device > Phone.
  The Add a New Phone page appears

Step 3  Click Add New near the top left side of the page.
  The Add a New Phone page appears.

Step 4  From the Phone Type drop-down list, choose Third-party SIP device (Advanced).

Step 5  Click Next.
  The Phone Configuration page appears.

Step 6  In the Device Information area, take these actions:
  a. In the MAC Address field, enter the MAC address of the IP camera.
  b. From the Device Pool drop-down list, choose Default.
  c. From the Phone Button Template drop-down list, choose Third-party SIP Device (Advanced).

Step 7  In the Protocol Specific Information area, take these actions:
  a. From the Device Security Profile drop-down list, choose Third-party SIP Device Advanced.
  b. From the SIP Profile drop-down list, choose Standard SIP Profile.
  c. Check the Media Transmission Point Required check box.

Step 8  Click Save near the bottom of the Phone Configuration page to save and load the new phone configuration, and then click OK in the dialog box that appears.

Step 9  Click Line[1]-Add a new DN in the Association Information area on left side of the window.
  The Directory Number Configuration page appears.

Step 10  In the Directory Number field near the top of the page, enter a valid four-digit directory number that is within your dial plan.

Step 11  (Optional) In the Description field, enter a description of the camera.
  For example, Hallway Camera.

Step 12  (Optional) In the Alerting Name field, enter the name of the camera that appears on telephones when the camera is called.

Step 13  Click Save near the bottom of the Directory Number Configuration page to associate the directory number with the device that you added.

Step 14  Click Apply Config near the top of the screen.

Adding and Associating an End User

Adding end user to Cisco Unified Communications Manager and associating and end user with a camera allows cameras that run the SIP Video app to register with Cisco Unified Communications Manager. Cisco recommends that you create one end user and associate that end user with each camera.

To add an end user in Cisco Unified Communications Manager, follow these steps from the Cisco Unified Communications Manager Administration Console:
Running the SIP Video App

When you run the SIP Video app, the IP camera does the following:

- If the SIP Video app is configured for Standalone mode, begins to wait for contact from a SIP Video device
- If the SIP Video app is configured for CUCM mode, an incoming call to the camera is established through Cisco Unified Communication Manager

To run the SIP Video on an IP camera, follow these steps:

Procedure

Step 1  Take these actions to enable audio on the IP camera, if it is not enabled already:
   a. From the IP camera web-based user interface, click the Setup link, click Application Manager to expand the menu, then click Configuration.
b. Check the **Enable Audio** check box in the Audio area.

c. Click **Save**.

**Step 2**  
From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 3**  
Click the **SIPClient** radio button.

**Step 4**  
(Optional) If you want the SIP Video app to run automatically each time the IP camera reboots, in the Installed Application List area, check the **Start on Boot** check box that corresponds to this app.  
If you do not check this check box, you must run the app manually each time the IP camera reboots.

**Step 5**  
Click the **Run** button.

---

**Stopping the SIP Video App**

When you stop the SIP Video app, the IP camera does the following:

- Gracefully terminates any existing connection to a SIP video device
- If the SIP Video app is configured for standalone mode, stops waiting for contact from a SIP client device

To stop the SIP Video app on an IP camera, follow these steps:

**Procedure**

**Step 1**  
From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2**  
Click the **SIPClient** radio button.

**Step 3**  
Click the **Stop** button.
Video Summarizer App

This chapter provides information about the Video Summarizer app for Cisco IP cameras. This app generates snapshots from video recordings and uploads the snapshots to an FTP server.

This chapter includes these topics:

- About the Video Summarizer App, page 11-1
- Configuring the Video Summarizer App on an IP Camera, page 11-1
- Running the Video Summarizer App, page 11-4
- Stopping the Video Summarizer App, page 11-4

About the Video Summarizer App

The Video Summarizer app generates snapshots from video recordings at configured intervals and uploads the snapshots to the designated FTP server.

Configuring the Video Summarizer App on an IP Camera

Before you can use the Video Summarizer app, you must configure it on each IP camera on which it will run. To configure this app, perform the following steps.

Before You Begin

Install the Video Summarizer app on the IP camera on which it will run. See the “Related Documentation” section on page 1-1 for more information.

Using this app requires continuous recording to be enabled in the Local Storage window in the IP camera web-based user interface. For information about configuring continuous recording, see the Configuration Guide for your IP camera model.

In addition, the IP camera CIVS-IPC-7030, CIVS-IPC-7030E, and CIVS-IPC-7070 models support this app only if the Video Resolution option in the Setup > Streaming window in the IP camera web-based user interface is configured as shown:

- For 1:1 aspect ratio, up to 1280 x 1280
- For 16:9 aspect ratio, up to 1920 x 1080
Configuring the Video Summarizer App on an IP Camera

Procedure

Step 1  From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

Step 2  Click the **VideoSummarizer** radio button, then click **Configure**.

The Cisco Video Summarizer configuration page appears.

Step 3  Enter appropriate values in the Cisco Video Summarizer page fields as described in the following table:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upload Interval</td>
<td>Interval, in seconds, at which snapshots are generated from the video file and uploaded to the FTP server. Valid values are 120 to 2592000 (2 minutes to 90 days).</td>
</tr>
<tr>
<td>IP Address</td>
<td>IP address of the FTP server to which snapshots are uploaded.</td>
</tr>
<tr>
<td>Username</td>
<td>User name for logging in to the FTP server to which snapshots are uploaded.</td>
</tr>
</tbody>
</table>
| Organize Upload        | If you choose **Enable**, the system uploads snapshots to the following location on the FTP server. In this way, snapshots are organized into subfolders that correspond to the upload date: `folder/camera_serial_number/mm-dd-yyyy` where:  
  - `folder`—Path to a folder under the FTP root folder as defined by the Upload Location option that this table describes  
  - `camera_serial_number`—Serial number of the IP camera from which the snapshot is uploaded  
  - `mm-dd-yyyy`—Month, day, and year on which the file is uploaded  
  If you choose **Disable**, the system uploads snapshots to the following location on the FTP server. In this case, the `mm-dd-yyyy` subfolder is not included. `folder/camera_serial_number` |
| Upload Format          | Choose the image file format for snapshots (**JPG** or **BMP**). |
| Snapshot Timestamp     | Choose whether the timestamp that is included as part of a snapshot filename shows the local time that the file was created (**Local-Time**) or the UTC time that it was created (**UTC-Time**). |
| Upload Location        | Path to the folder under the FTP root folder on the FTP server where snapshots are stored.  
  This path must exist on the server or the server must have permission to create directories.  
  If you do not specify an upload location, the system uses the FTP root folder. |
| Server Type            | Indicates that snapshots are uploaded to and FTP server. |
| Port                   | Port on which the FTP server is running. |
Step 4  Click the Save button in the Cisco Video Summarizer configuration page, and then click OK in the confirmation dialog box.

If you want to reset the options in the Cisco Video Summarizer configuration page to their default values, click the Reset button, click OK in the two dialog boxes that appear, click the Save button, and then click OK in the confirmation dialog box.

If you change configuration values while the Video Summarizer app is running, you must stop and then restart the app before the changes take effect.
Running the Video Summarizer App

To run the Video Summarizer app on an IP camera, perform the following steps:

**Procedure**

**Step 1** From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2** Click the **VideoSummarizer** radio button.

**Step 3** (Optional) If you want the Video Summarizer app to run automatically each time the IP camera reboots, in the Installed Application List area, check the **Start on Boot** check box that corresponds to this app. If you do not check this check box, you must run the app manually each time the IP camera reboots.

**Step 4** Click the **Run** button.

Stopping the Video Summarizer App

To stop the Video Summarizer app on an IP camera, follow these steps:

**Procedure**

**Step 1** From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2** Click the **VideoSummarizer** radio button.

**Step 3** Click the **Stop** button.
Video Tag App

This chapter provides information about the Video Tag app for Cisco IP cameras. This app applies a tag to a live video image based on an external trigger. The tag appears as text on the video image from the IP camera. The app also can cause the IP camera to take a designated action.

This chapter includes these topics:
- About the Video Tag App, page 12-1
- Configuring the Video Tag App on an IP Camera, page 12-2
- Configuring the IP Camera for a GPIO Tag Trigger, page 12-3
- Sending an HTTP POST Request Tag Trigger, page 12-4
- Configuring the IP Camera to Take an Action, page 12-5
- Running the Video Tag App, page 12-6
- Stopping the Video Tag App, page 12-6

About the Video Tag App

The Video Tag app causes a tag to appear on the live video image from the IP camera when the app detects a designated external trigger. The app also can cause the IP camera to take a designated action, which can include sending information in an email message or HTTP stream, sending information to a Syslog server, uploading a snapshot or video clip, and changing the state of the output 1 port on the IP camera.

A tag is preconfigured text, for example “Door open” or “Entry alarm activated.” You can configure the Video Tag app to respond to either or both of the following external trigger types:
- State change of an input port on the IP camera—The app displays a tag and optionally causes the camera to take an action when the state of an input port on the IP camera changes.
- An HTTP POST request in the appropriate format—The app listens for a request on a designated port. The app displays a tag and optionally causes the camera to take an action when it receives an appropriate request.

If you used the Video Overlay window in the IP Camera web-based user interface to configure overlay text, statistics, or an image, the tag from the Video Tag app replaces the configured overlay item or items. The configured overlay item or items redisplay when the tag is cleared.
Configuring the Video Tag App on an IP Camera

Before you can use the Video Tag app, you must configure it on each IP camera on which it will run. To configure this app, perform the following steps.

**Before You Begin**
- Install the Video Tag app on the IP camera on which it will run. See the “Related Documentation” section on page 1-1 for more information.
- If you want the app to display a tag when it detects a state change of an input port on the IP camera, configure the IP camera as described in the “Configuring the IP Camera for a GPIO Tag Trigger” section on page 12-3.
- If you want the app to display a tag when it detects an HTTP POST request, review the information in the “Sending an HTTP POST Request Tag Trigger” section on page 12-4.
- If you want the app to cause the IP camera to take an action when it detects a state change of an input port or an appropriate HTTP POST request, configure the IP camera as described in the “Configuring the IP Camera to Take an Action” section on page 12-5.

**Procedure**

**Step 1** From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2** Click the **VideoTag** radio button, then click **Configure**.

The Cisco Video Tag Application page appears.

**Step 3** Enter appropriate values in the Cisco Video Tag Application page fields as described in the following table:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GPIO Trigger Area</strong></td>
<td></td>
</tr>
<tr>
<td>Enable GPIO</td>
<td>Check this check box to cause the app to listen for a state change of an input port on the IP camera, and to display the configured tag when it detects a state change.</td>
</tr>
<tr>
<td>Trigger Description</td>
<td>Enter the text of the tag to be displayed when the app detects a state change of an input port on the IP camera. The text can contain up to 26 characters and can include letters, numbers, spaces, and these characters: ! $ % ( ) + , - . / : = @ ^ _ ` { } ~.</td>
</tr>
<tr>
<td>Enable Auto Clear</td>
<td>Check this check box cause the app to clear the text of the tag from the video display after the tag appears for a specified amount of time. If you do not enable auto clear, the text of the tag remains on the video display indefinitely.</td>
</tr>
</tbody>
</table>
Configuring the IP Camera for a GPIO Tag Trigger

If you want the Video Tag app to display a tag when it detects a state change of an input port on the IP camera, you must enable the Input 1 setting on the IP camera in addition to configuring the GPIO trigger options as described in the “Configuring the Video Tag App on an IP Camera” section on page 12-2.

To enable the Input 1 setting, follow these steps:

**Procedure**

**Step 1** From the IP camera web-based user interface, click the **Setup** link, click **Events** to expand the menu, then click **Notification Settings**.
Sending an HTTP POST Request Tag Trigger

If you want the Video Tag app to display a tag when it detects an HTTP POST request, you must configure the HTTP trigger options as described in the “Configuring the Video Tag App on an IP Camera” section on page 12-2. In addition, you must ensure that the request is sent in the format that this section describes.

An HTTP POST request can be generated from a third-party application or add-on, such as the Advanced REST Client Application for Google Chrome, the RESTClient add-on for Mozilla Firefox, or the Linux wget command. The app can receive the request from any external source that can send HTTP requests and that is on the same network as the IP camera on which the app is running.

The HTTP POST request should include the elements that Table 12-1 describes.

<table>
<thead>
<tr>
<th>Request Element</th>
<th>Format</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>URL</td>
<td>http://ip_address:&lt;port&gt;</td>
<td><em>ip_address</em> is the IP address of the IP camera to which to send the request.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>port</em> is the port on which the IP camera listens for an HTTP POST request.</td>
</tr>
<tr>
<td>Header</td>
<td>Content-Type: text/xml</td>
<td>—</td>
</tr>
<tr>
<td>Request payload</td>
<td>&lt;HttpTrigger&gt;&lt;EnableTrigger&gt;1&lt;/EnableTrigger&gt;&lt;TriggerDescription&gt;\text_{\text{tag_text}}&lt;/TriggerDescription&gt;&lt;/HttpTrigger&gt;</td>
<td>\text_{\text{tag_text}} is the text of the tag to display. \text{The text can contain up to 26 characters and can include letters, numbers, spaces, and these characters: ! $ % ( ) + , - ; : = @ ^ _ ` { } ~ .}</td>
</tr>
</tbody>
</table>

The following examples show two ways in which you can generate an HTTP POST trigger for the video tag app. In each example:

- The IP address of the IP camera is 10.110.0.00
- The View Video app is configured to listen for an appropriate HTTP request on port 48999
- The tag that this request generates appears as “Door Open” on the video image from the IP camera

**Example 12-1  Sending an HTTP POST Request by Using the REST Client Application for Google Chrome**

Figure 12-1 shows an example of using the REST Client Application for Google Chrome to generate an HTTP POST trigger for the Video Tag app. The REST Client Application application receives the status message “200:OK” when the request is successfully sent.
Configuring the IP Camera to Take an Action

You can configure the IP camera to take any or all of the following actions when it detects a state change or an HTTP trigger:

- Send information in an email message to the designated recipient.
- Change the state of the output 1 port on the IP camera as defined in the IO Ports page in the IP Camera web-based user interface
- Send information to a designated Syslog server
- Send information as an HTTP stream to a remote system
- Upload a snapshot or video clip of the event to an FTP server

To configure actions, follow these steps:

**Procedure**

**Step 1** From the IP camera web-based user interface, click the Setup link, click Events to expand the menu, then click Notification Settings.

**Step 2** In the Event Triggering area on the Notification Settings page, check the App check box.

**Step 3** Check the desired check boxes to designate the actions that the Video Tag app causes the IP camera to take when a trigger occurs:

- **Email**—Sends information about the event that caused the trigger in an email message to the designated recipient. You designate the recipient and configure other email options in other fields on the Notification Settings page.
- **Output 1**—Changes the state of the output 1 port on the IP camera as defined in the IO Ports page in the IP Camera web-based user interface.
• **Syslog**—Sends information about the event that caused the trigger to a designated Syslog server.
• **HTTP**—Sends information about the event as an HTTP stream to a remote system.
• **FTP**—Uploads a snapshot or video clip of the event to an FTP server.

**Step 4**
In the Notifications page, configure related options for the actions that you chose, if needed.

For detailed instructions, see *Cisco Video Surveillance IP Camera Configuration Guide* for your IP camera mode, or click the **Help** link for the Notifications page in the IP camera web-based user interface.

**Step 5**
Click **Save** at the bottom of the Notification Settings page.

---

### Running the Video Tag App

To run the Video Tag app on an IP camera, perform the following steps:

**Procedure**

**Step 1**
From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2**
Click the **VideoTag** radio button.

**Step 3**
(Optional) If you want the Video Tag app to run automatically each time the IP camera reboots, in the Installed Application List area, check the **Start on Boot** check box that corresponds to this app.

If you do not check this check box, you must run the app manually each time the IP camera reboots.

**Step 4**
Click the **Run** button.

---

### Stopping the Video Tag App

To stop the Video Tag app on an IP camera, follow these steps:

**Procedure**

**Step 1**
From the IP camera web-based user interface, click the **Setup** link, click **Application Manager** to expand the menu, then click **App Setup**.

**Step 2**
Click the **VideoTag** radio button.

**Step 3**
Click the **Stop** button.
INDEX

A

action, configuring for Video Tag app 12-5
Aggression, Audio Analytics app
  description 2-1, 2-2
  sound source specifications 2-2
app
  Audio Analytics
    configuring 2-4
    description 2-1
    guidelines 2-2
    overview 1-1
    starting 2-7
    stopping 2-7
  Audio Detection
    configuring 3-1
    debugging 3-3
    description 3-1
    overview 1-1
    starting 3-2
    stopping 3-3
  Cisco Video Analytics
    description 4-1
    overview 1-1
    starting 4-3
    stopping 4-3
  description 1-1
  Digi ZigBee Sensor
    overview 1-1
  Digi ZigBee Sensor app
    configuring 5-2
    description 5-1
    starting 5-4
  file, obtaining 1-4
intuVision Video Analytics
  description 6-1
  overview 1-1
  starting 6-2
  stopping 6-2
Local Video Player
  description 7-1
  overview 1-1
  playing recording 7-2
  starting 7-1
  stopping 7-2
Lua
  configuring 8-1
  description 8-1
  overview 1-1
  starting 8-2
  stopping 8-2
SIP Client
  configuring 9-2
  description 9-1
  modes 9-1
  overview 1-1
  running 9-7
  stopping 9-7
SIP Video
  configuring 10-1
  description 10-1
  modes 10-1
  overview 1-2
  running 10-6
  stopping 10-7
supported IP camera models 1-2

Video Summarizer
configuring 11-1
description 11-1
overview 1-2
starting 11-4
stopping 11-4

Video Tag
configuring
app 12-2
GPIO trigger 12-3, 12-4
IP camera action 12-5
description 12-1
overview 1-2
starting 12-6
stopping 12-6

Audio Analytics app
Aggression
description 2-1, 2-2
sound source specifications 2-2
Car Alarm
description 2-1, 2-3
sound source specifications 2-3
configuring 2-4

Demo, description 2-1, 2-3
description 2-1

Glass Break
description 2-1, 2-3
sound source specifications 2-3
guidelines 2-2
Gun Shot
description 2-1, 2-3
sound source specifications 2-3
overview 1-1
starting 2-7
stopping 2-7
testing 2-6

Audio Detection app
configuring 3-1
description 3-1
overview 1-1
starting 3-2
stopping 3-3

car Alarm, Audio Analytics app
description 2-1, 2-3
sound source specifications 2-3
Cisco IPICS
configuring for SIP Client app 9-4
using with SIP Client app 9-1
Cisco Unified Communications Manager
configuring for SIP Client app 9-5
configuring for SIP Video app 10-4
Cisco Video Analytics app
description 4-1
overview 1-1
playing recording 7-2
starting 4-3
stopping 4-3
configuring
Audio Analytics app 2-4
Audio Detection app 3-1
Cisco IPICS for SIP Client app 9-4
Cisco Unified Communications Manager
for SIP Client app 9-5
for SIP Video app 10-4
Digi ZigBee Sensor app 5-2
Lua app 8-1
SIP Client app 9-2
SIP Video app 10-1
Video Summarizer app 11-1
Video Tag app
app 12-2
GPIO trigger 12-3, 12-5
HTTP POST trigger 12-4
Index

D

Demo, Audio Analytics app 2-1, 2-3
Digi ZigBee Sensor app
  configuring 5-2
  description 5-1
  overview 1-1
  starting 5-4
  stopping 5-4

G

Glass Break, Audio Analytics app
  description 2-1, 2-3
  sound source specifications 2-3
GPIO request trigger, configuring for Video Tag app 12-3
Gun Shot, Audio Analytics app
  description 2-1, 2-3
  sound source specifications 2-3

H

HTTP POST request trigger, configuring for Video Tag app 12-4

I

intuVision Video Analytics app
  description 6-1
  overview 1-1
  starting 6-2
  stopping 6-2
IP camera models that support apps 1-2

L

license, for IP camera app 1-3
Local Video Player app

description 7-1
overview 1-1
starting 7-1
stopping 7-2

Lua app
  configuring 8-1
  description 8-1
  overview 1-1
  sample scripts
    Hello World 8-3
    location 8-3
    overview 8-3
    Send Event on Input Trigger 8-4
    Send Event on Motion Trigger 8-4
    Test Event 8-3
    script.lua 8-2, 8-4
    script name 8-2, 8-4
    starting 8-2
    stopping 8-2

R

recording, playing with Cisco Video Analytics app 7-2
running
  Audio Analytics app 2-7
  Audio Detection app 3-2
  Cisco Video Analytics app 4-3
  Digi ZigBee Sensor app 5-4
  intuVision Video Analytics app 6-2
  Local Video Player app 7-1
  Lua app 8-2
  SIP Client app 9-7
  SIP Video app 10-6
  Video Summarizer app 11-4
  Video Tag app 12-6

Cisco IP Camera Apps Reference Guide
IN-3
Index

S

sample scripts, for Lua app
  Hello World 8-3
  location 8-3
  overview 8-3
Send Event on Input Trigger 8-4
Send Event on Motion Trigger 8-4
Test Event 8-3
script.lua 8-2, 8-4
SIP Client app
  configuring 9-2
  description 9-1
  mode
    listen 9-1
    UMS 9-1
  overview 1-1
  running 9-7
  stopping 9-7
SIP Video app
  configuring 10-1
  description 10-1
  mode
    listen 10-1
    overview 1-2
    running 10-6
    stopping 10-7
stopping
  Audio Analytics app 2-7
  Audio Detection app 3-3
  Cisco Video Analytics app 4-3
  Digi ZigBee Sensor app 5-4
  intuVision Video Analytics app 6-2
  Local Video Player app 7-2
  Lua app 8-2
  SIP Client app 9-7
  SIP Video app 10-7
  Video Summarizer app 11-4
  Video Tag app 12-6

T

testing an Audio Analytics app 2-6

V

Video Summarizer app
  configuring 11-1
  description 11-1
  overview 1-2
  starting 11-4
  stopping 11-4
Video Tag app
  configuring
    app 12-2
    GPIO request trigger 12-3
    HTTP POST request trigger 12-4
    IP camera action 12-5
  description 12-1
  overview 1-2
  starting 12-6
  stopping 12-6

X

Xively website, Digi ZigBee Sensor app information on 5-1