



Cisco StadiumVision IP Phone Services Integration

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Cisco StadiumVision and Unified Communications Integration

The purpose of this document is to give an overview of StadiumVision CUCM IP Phone Services integration

The information provided is specific to the CUCM configuration only, StadiumVision Director configurations can be found on Cisco.com

This document pertains to Cisco IP Phone 7975 integration only, it does not cover the CIUS or the 9971

Compatible versions are:

- CUCM 6.1 and up
- StadiumVision 2.4 and up

Cisco StadiumVision and Unified Communications Integration

- **IP Phone Services Operation Overview**
- IP Phone Services StadiumVision Integration
- StadiumVision Phone Service Options
- StadiumVision Phone Service Process Flow
- Required CUCM Configurations Steps
- StadiumVision Configuration Highlights
- Optional CUCM Localizations
- Optional Customized Suite Directory
- Modifying StadiumVision IP Phone Services
- Troubleshooting StadiumVision IP Phone Services

IP Phone Services Operation

- IP Phone Services are applications that utilize the web client and/or server and XML capabilities of the IP Phone, they are applications which transmit and receive content to and from the Phone
- Cisco IP Phones can process a limited set of Cisco-defined XML objects for enabling the user interface (UI) between the phone and the web server that contains the running phone service
- The phone's XML capabilities are dependent on the IP Phone model and firmware version running on the IP Phone; the firmware contains a micro-browser that enables limited web browsing capability via the phone
- An IP Phone service can be initiated in several ways:
 - User-initiated (pull): An IP Phone user presses the Services button, which sends an HTTP GET message to Unified CM for displaying a list of user-subscribed phone services, the User then selects the service (Also User Initated is the Services URL button - SURL)
 - Phone-initiated (pull): An idle time value can be set within the IP Phone firmware, as indicated by the Idle Timer parameter. When this timeout value is exceeded, the IP Phone firmware itself initiates an HTTP GET to the Idle URL location specified by the Idle parameter
 - Phone service-initiated (push): a phone service application can push content to the IP Phone by sending an HTTP POST message to the phone, the phone's web server is used in this situation
- The IP Phone must first be 'subscribed' to the Service URL via CUCM before it can access it

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IP Phone Services StadiumVision Integration

- The StadiumVision environment provides Video Control (TV Channel Changes, TV On/Off, Volume, etc) and Concessions (Food and Merchandise Ordering) IP Phone Services to the Cisco 7975 IP Phone
- StadiumVision Director (SVD) is responsible for providing the xml content for the IP Phone (graphics and pointers) and corresponds to the “web server” component of the process flow (refer to StadiumVision Process Flow section)
- The IP Phone sends an HTTP request for SV services to StadiumVision Director
- StadiumVision Director then creates the XML content and graphics for the request; if using speeddials, SVD will simultaneously query the CUCM for the 1st three speeddial tags that appear on the phone and include them in the SV Services Home Page content
- The StadiumVision Director then sends this XML content to the IP phone via HTTP
- The XML content includes url pointers to the graphics that the phone must render.
- These graphics are built by SVD on the fly as the user navigates thru the menus

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StadiumVision IP Phone Service Options

There are three types of **access** that can be configured for the StadiumVision Phone Services (how the service is initiated via the IP Phone):

1. Via the IP Phone Services button
2. Via the Idle URL (screensaver)
3. Via SURL Buttons

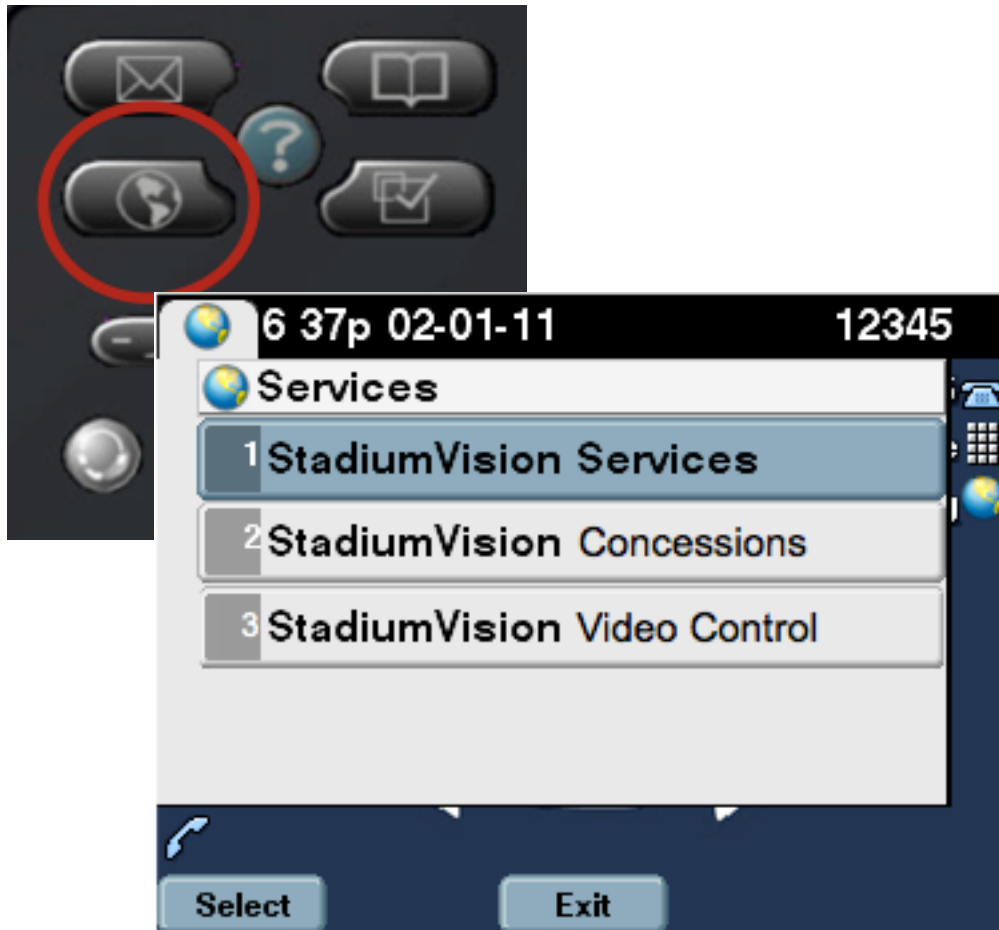
There are also three different **service** options that can be configured for StadiumVision Services.

1. StadiumVision Home Page
2. StadiumVision Video Services
3. StadiumVision Concessions Services

All are explained in the following slides

StadiumVision IP Phone Service Options

Services Button Access



- The Services button is a hard button located on the IP Phone
- When the Services button is depressed the Phone will display a list of Services the phone is subscribed to
- The user selects the service and is then redirected
- Typically the phone is subscribed to either the StadiumVision Services alone (SV Home Page), Video Control alone or, Video Control and Concessions together
- The SV Home page is not displayed all the time in this scenario
- Not quite intuitive, users do not know to hit this button for SV Services
- The Services button can also be configured to launch a service direct (no menu)

StadiumVision IP Phone Service Options

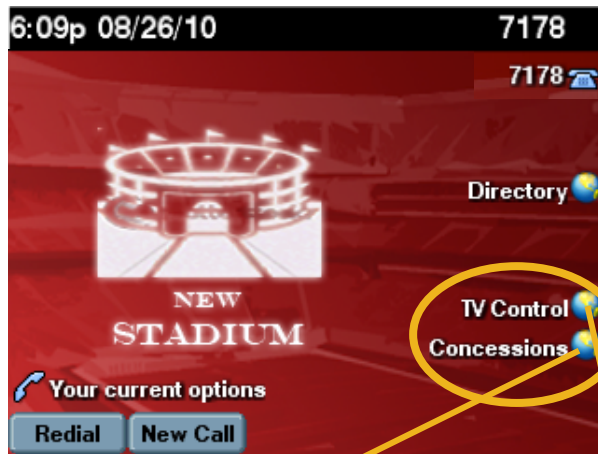
Idle URL Access



- Idle URL functionality is similar to a screensaver
- A timer is configured and on expiration the idle url is displayed (typically 3-5s)
- The idle url is always displayed on the phone (no need to push a button to invoke)
- The phone must be 'subscribed' to the SV Service meant to be displayed
- The touchscreen functionality of the phone is used to select items
- TV/Volume goes to the Video Control page
- Order goes to the Concessions page
- Phone provides dial tone to the user to place calls
- Speeddials configured on the phone are displayed (up to 3) and when selected the phone will go off-hook and dial (these vary depending on venue)

StadiumVision IP Phone Service Options

SURL Button Access

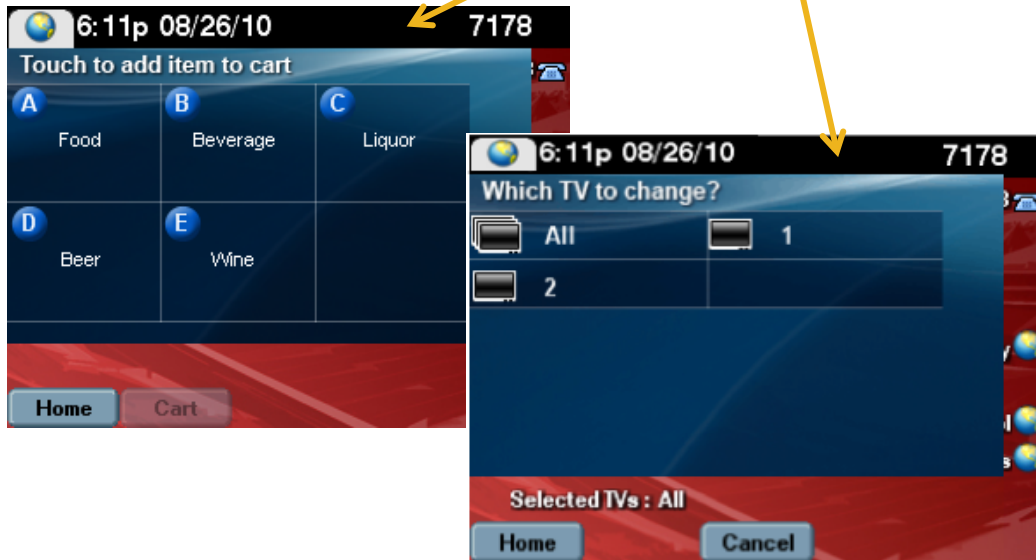


- SURL Buttons allow for access to the SV Services via a hard button configured on the phone as shown

- This allows the venue to display custom backgrounds on the phone as well as easy access to the services

- The SV Services (SV Home Page shown on previous slide) can be configured on an SURL button or, direct access to the Concessions and/or Video Services (as shown)

- The directory button displayed here is also an IP Phone Service and is discussed later



StadiumVision IP Phone Service Options

There are three types of **StadiumVision IP Phone Services** that can be configured, which to configure depends on customer requirements, how the services will be presented on the phone and the location of the phone:

SV Services Home Page – The main StadiumVision Services **Home** page provides Video and Concession access, Speeddials, and Phone access (shown below)

- Can be accessed via Idle URL, Services button menu, SURL Button
- This is the default SV service configuration
- Configured primarily in Suite areas
- Concessions access is optional
- Required URL: <http://<SVD-IP>:8080/StadiumVision/jsp/Sports?vc=no>



StadiumVision IP Phone Service Options

SV Video Control – Provides direct access to TV control services (shown below), bypassing the Home page

- Can be accessed via Idle URL, Service button, SURL Button
- Can be configured in Suite areas or any area where Video services are required
- If multiple TVs are configured in the Luxury Suite location then the TV select page is launched, for single TVs the channel guide is launched
- Required URL: <http://<SVD-IP>:8080/StadiumVision/jsp/VideoControl?vc=no>

TV Select



Multiple TV Locations only

Channel Guide



Channel logos must be supplied by the customer

StadiumVision IP Phone Service Options

SV Concessions – Provides direct access to Concession services (shown below), bypassing the Home page

- Can be accessed via Service button or SURL Button, not typically presented via Idle URL
- Graphics for categories and items are displayed on a single TV (1st TV/DMP in SVD Luxury Suite list)
- May not be available depending on venue
- Typically configured in conjunction with Video Control services and primarily in Suites
- Required URL: <http://<SVD-IP>:8080/StadiumVision/jsp/Concessions?vc=no>

Concessions Menu



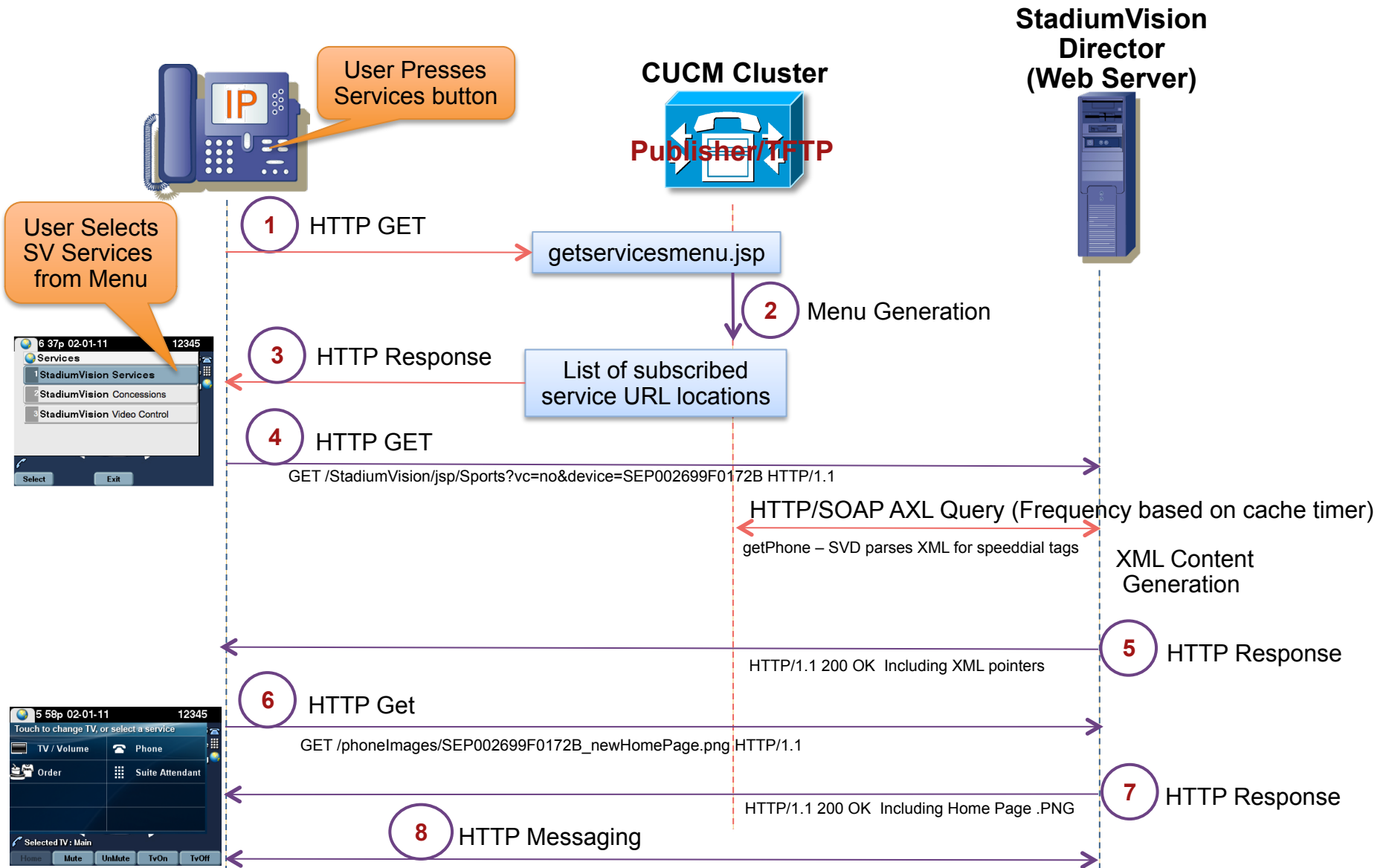
Note: Each of the required URLs may vary depending on how and where the service is configured in CUCM, also may vary depending on SVD version, refer to SVD Documentation

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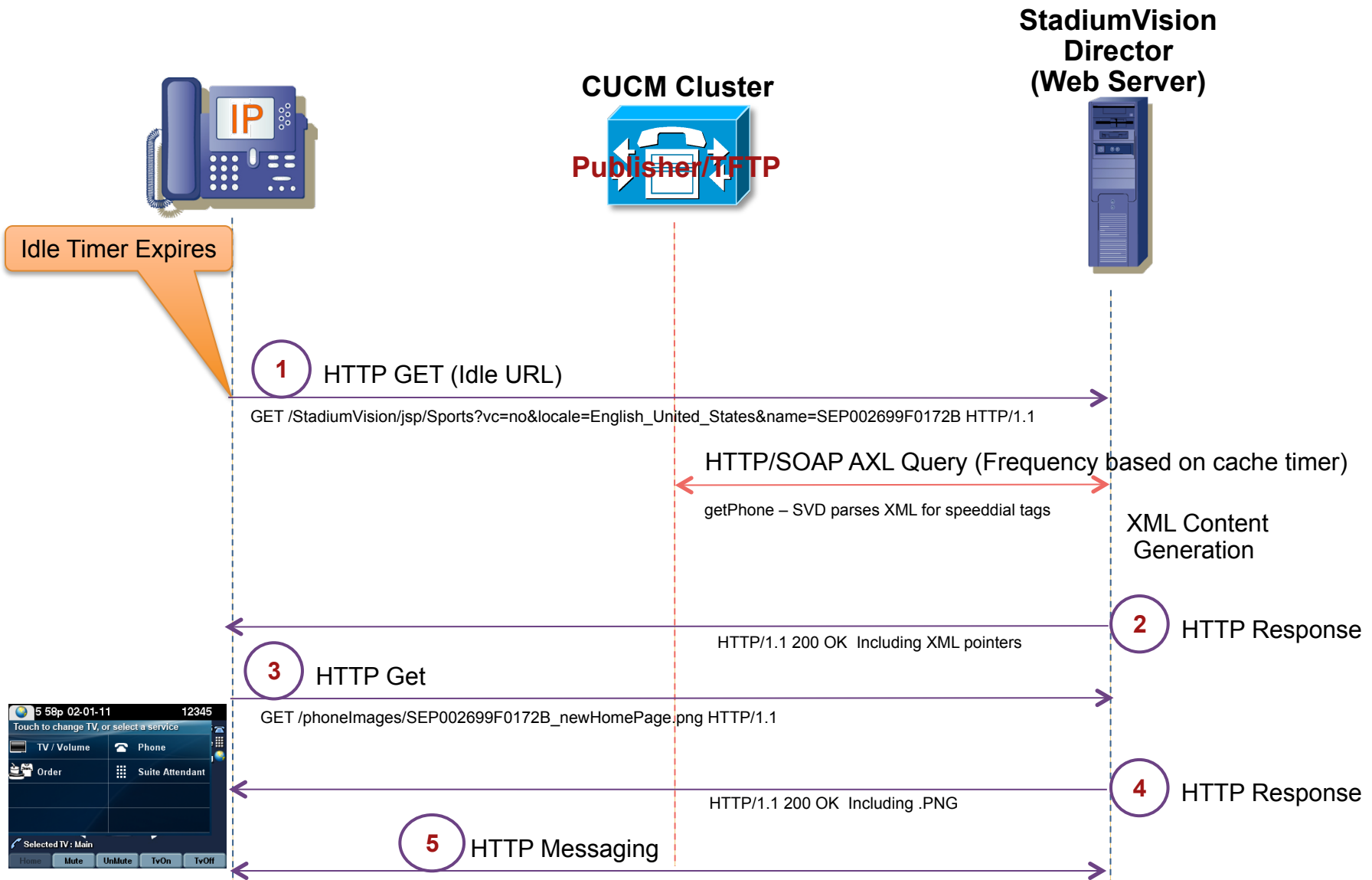
Process Flow – IP Phone Service Button

The below figure depicts StadiumVision Services invoked via the Services button



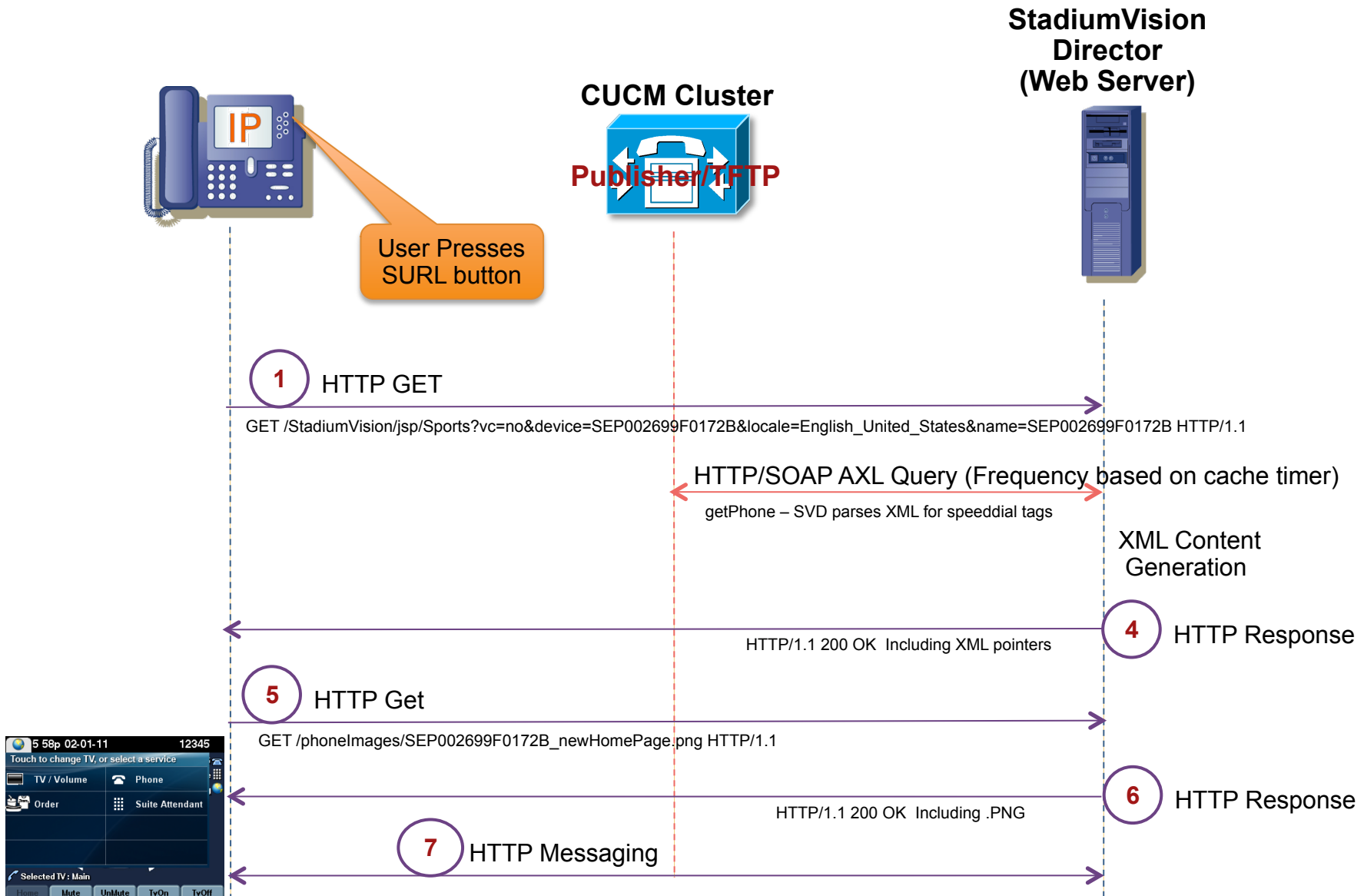
Process Flow – Idle URL

The below figure depicts StadiumVision Services invoked via the Idle URL



Process Flow – Service URL Button

The below figure depicts StadiumVision Services invoked via the SURL Button



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Required Configuration Steps

CUCM Configurations – 7975 IP Phone Overview

- The phone is configured in CUCM
 - ✓ A phone line is required for the Phone to place calls / use speeddials
 - ✓ Be sure to confirm the phone is configured to allow access to external services (Phone Configuration page | Services Provisioning)
 - ✓ Phone must be subscribed to each service it will require access to; if only the Home page is being used than only the SV Services URL is required
- If using IDLE URL (Device | Phone | Phone Configuration | External Data Locations | Idle and Idle Timer)
 - ✓ For SV Home Page Idle is <http://<svd-ip-addr>:8080/StadiumVision/jsp/Sports?vc=no> or,
 - ✓ For SV Video Control Idle is <http://<svd-ip-addr>:8080/StadiumVision/jsp/VideoControl?vc=no>
 - ✓ The Phone must be subscribed to the service(s)
- If using SURL Buttons
 - ✓ The Phone must be subscribed to the service(s) FIRST
 - ✓ The Phone must have the appropriate Phone Button Template assigned in order to configure SURLs
- Once the phone configuration is complete and the phone is registered the **IP Address** should be noted as it is required for the SVD configuration
- A TABSYNC Application User must be created for speeddial access to work (User Management | Application User | new user added to TABSYNC group), note **credentials** for SVD config
- Detailed Configurations are shown in the following slides...

Required Configuration Steps

CUCM Configurations – IP Phone Service

- The Stadium Vision IP Phone Services are configured globally via Device | Device Settings | Phone Services
 - ✓ This is where the specific SV Service URLs are configured globally so that they are available for phone subscription
 - ✓ Be sure to leave the **Enterprise Subscription** option **UNCHECKED** when creating a new service
 - ✓ SV Home Page – Service URL
<http://<svd-ip-addr>:8080/StadiumVision/jsp/Sports?vc=no&device=#DEVICENAME#>
 - ✓ SV Video Control – Service URL
<http://<svd-ip-addr>:8080/StadiumVision/jsp/VideoControl?vc=no&device=#DEVICENAME#>
 - ✓ SV Concessions – Service URL
<http://<svd-ip-addr>:8080/StadiumVision/jsp/Concessions?vc=no&device=#DEVICENAME#>

IP Phone Services Configuration

Save

Status
Status: Ready

Service Information

Service Name* StadiumVision Services

ASCII Service Name* StadiumVision Services

Service Description SV Home Page

Service URL* http://<svd-ip-addr>:8080>/StadiumVision/jsp/Sports?vc=no

Service Category* XML Service

Service Type* Standard IP Phone Service

Service Vendor

Service Version

Enable
 Enterprise Subscription

Save

System Call Routing Media Resources Advanced Features Device Application User Management Bulk Administration Help

Find and List IP Phone Services

Add New Select All Clear All Delete Selected

Status
3 records found

IP Phone Service (1 - 3 of 3) Rows per Page 50

Find IP Phone Service where IP Phone Service begins with StadiumVision Find Clear Filter

IP Phone Service	Description	Enterprise Subscription
<input type="checkbox"/> StadiumVision Concessions	SV Concessions	false
<input type="checkbox"/> StadiumVision Services	SV Home Page	false
<input type="checkbox"/> StadiumVision Video Control	SV Video Control	false

Add New Select All Clear All Delete Selected

Note: the [&device=#DEVICENAME#](#) syntax is only used during this configuration

Required Configuration Steps

CUCM Configurations – 7975 IP Phone

Device | Device Settings | Phone Button Template

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management ▾ Bulk Administration ▾ Help ▾

Phone Button Template Configuration Related Links: [Back To Find/L](#)

Save Delete Copy Reset Apply Config Add New

Status

Status: Ready

Phone Button Template Information

Button Template Name *

Button Information

Button	Feature	Label
1	Line **	Line 1
2	Speed Dial	Speed Dial
3	Speed Dial	Speed Dial 1
4	Speed Dial	Speed Dial 2
5	Speed Dial	Speed Dial 3
6	Speed Dial	Speed Dial 4
7	Service URL	Service URL
8	Service URL	Service URL

- Must be based on 7975 SCCP
- Service URL optional
- Must use “**Speeddial**” and not “BLF Speeddial”

Required Configuration Steps

CUCM Configurations – 7975 IP Phone

Device | Phone | Phone Configuration

The screenshot displays the 'Phone Configuration' page for a Cisco 7975 IP Phone. The interface is divided into several sections:

- Related Links:** A dropdown menu at the top right is set to 'Subscribe/Unsubscribe Services'.
- Status:** Shows 'Status: Ready'.
- Association Information:** A table with 32 rows. Row 1 is 'Line [1] - 12345 in Line-PT', which is circled. Other rows are 'None'.
- Phone Type:** Product Type: Cisco 7975, Device Protocol: SCCP.
- Device Information:**
 - Registration: Unknown
 - IP Address: Unknown
 - Device is Active:
 - Device is trusted:
 - MAC Address*: 002414B21EC6
 - Description: Kelly ECT Test
 - Device Pool*: Default
 - Common Device Configuration: < None >
 - Phone Button Template*: 7975 SCCP - 1L + 2SURL + 5S
 - Softkey Template: < None >
 - Common Phone Profile*: Standard Common Phone Profile
 - Calling Search Space: < None >
 - AAR Calling Search Space: < None >
 - Media Resource Group List: < None >
 - User Hold MOH Audio Source: < None >
 - Network Hold MOH Audio Source: < None >
 - Location*: Hub_None
 - AAR Group: < None >
 - User Locale: < None >
 - Network Locale: < None >
 - Built In Bridge*: Default
 - Privacy*: Default
 - Device Mobility Mode*: Default
 - Owner User ID: < None >
 - Phone Personalization*: Default
 - Services Provisioning*: External URL
 - Phone Load Name: (empty)

Subscribe to SV Services here

Line is required for dial tone

Speeddials are optional
BLF Speeddials will not work with SV Services

SURLs are optional

When Registered IP Address will display

Phone's MAC Address

Phone Button Template

Services Provisioning:
External – SV Services only
Internal – CUCM Services only
Both – External and Internal
Default – Uses global settings

Required Configuration Steps

A note on the **Service Provisioning Parameter** - The Service Provisioning parameter on the Phone Configuration page provides the following options:

Internal— Choose this option for Cisco-provided default services; that is, the service URL indicates Application:Cisco/<name of service>. Or, if the Service URL is internal to the CUCM cluster. Examples of internal services are:

- Missed/Placed/Received Calls Directories
- Corporate Directory
- Extension Mobility (on same cluster)
- Voicemail

External URL—Choosing External URL indicates that the phone ignores the Cisco-provided default services and retrieves the services from an external Service URL. If you configured a custom Service URL for a service and do not want to provide access to the Cisco Default Services or Directories you would choose External. Examples are:

- StadiumVision Services
- Custom XML Directories

Both—Choosing Both indicates that the phone support both the default services and external applications that are retrieved from service URLs.

Required Configuration Steps

CUCM Configurations – 7975 IP Phone



Device | Phone | Phone Configuration | Subscribe/Unsubscribe Services

Select Service from list

Subscribe to Service

Required Configuration Steps

CUCM Configurations – 7975 IP Phone

Device | Phone | Phone Configuration | Idle URL

SV Home Page URL: <http://<svd-ip-addr>:8080/StadiumVision/jsp/Sports?vc=no>

Phone Configuration

Related Links: Back To Find/List

Save Delete Copy Reset Apply Config Add New

80 Redial
81 Remove Last Participant
82 Transfer
83 Video Mode
84 Privacy
85 None

External Data Locations Information (Leave blank to use default)

Information	
Directory	
Messages	
Services	
Authentication Server	
Proxy Server	
Idle	<a href="http://<svd-ip-addr>:8080/StadiumVision/jsp/Sports?vc=no">http://<svd-ip-addr>:8080/StadiumVision/jsp/Sports?vc=no
Idle Timer (seconds)	3
Secure Authentication URL	
Secure Directory URL	
Secure Idle URL	
Secure Information URL	
Secure Messages URL	
Secure Services URL	

Configure Idle URL and Timer

Idle URL – Home Page Example



It is recommended that the Idle Timer not be less than 3s, preferably 5s.

Required Configuration Steps

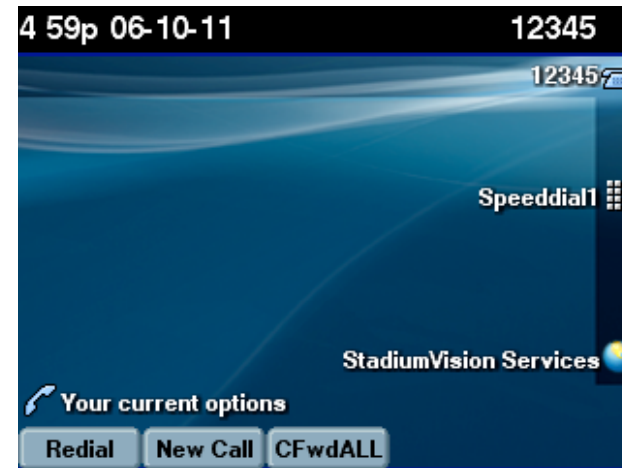
CUCM Configurations – 7975 IP Phone

Device | Phone | Phone Configuration | Add a new SURL

The image shows three screenshots illustrating the configuration process:

- Phone Configuration:** Shows the 'Association Information' list with items 1 through 8. Item 8 is 'Add a new SURL'. A red arrow points from this item to the 'Configure Service URL Buttons' dialog.
- Configure Service URL Buttons for SEP002414B21EC6:** Shows the 'Service URL Settings on base Phone' table. The table has columns for 'Button', 'Service', 'Label', and 'ASCII Label'. Row 2 shows 'StadiumVision Services' for both Service and Label. A red arrow points from the 'Save' button in this dialog to the 'Add a new SURL' item in the Phone Configuration list.
- Association Information (Detailed):** Shows the 'Association Information' list with items 1 through 8. Item 8 is 'StadiumVision Services'. A red arrow points from the 'Add a new SURL' item in the Phone Configuration list to this item.

SURL Button – Home Page Example



Required Configuration Steps

CUCM Configurations – 7975 IP Phone

Device | Phone | Phone Configuration | Add a new SURL

Subscribed Cisco IP Phone Services for SEP002414B21EC6

Next ? Help

Status
Status: Ready

Service Information
Service Subscription: New
Select a Service* -- Not Selected --
Service Description

Subscribed Services
StadiumVision Concessions
StadiumVision Video Control

Next Close

Configure Service URL Buttons for SEP002414B21EC6

Save Close ? Help

Status
Status: Ready

Service URL Settings on base Phone

Button	Service	Label	ASCII Label
1	StadiumVision Video Control	StadiumVision TV Control	StadiumVisionTV Control
2	StadiumVision Concessions	StadiumVision Concessions	StadiumVision Concessions

Save Close

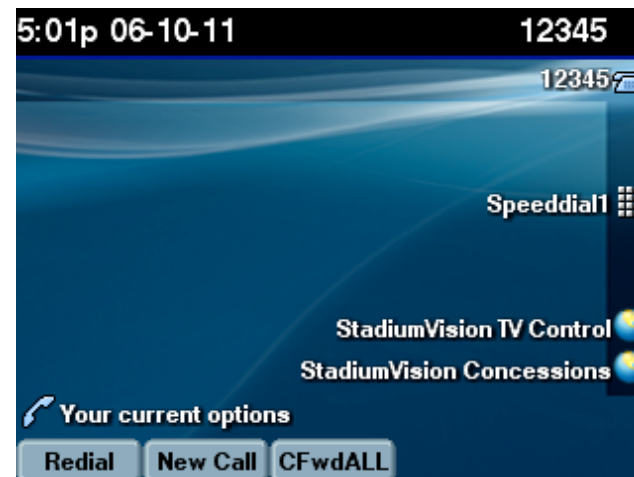
SURL Button – TV & Concessions Example

Association Information

Modify Button Items

1	7975 Line [1] - 12345 in Line-PT
2	Add a new SD
3	Add a new SD
4	Add a new SD
5	Add a new SD
6	Add a new SD
7	StadiumVision TV Control
8	StadiumVision Concessions

----- Add On Module(s) -----



Required Configuration Steps

CUCM Configurations – 7975 IP Phone

Device | Phone | Phone Configuration | Add a new SURL

Subscribed Cisco IP Phone Services for SEP002414B21EC6

Next Help

Status
Status: Ready

Service Information
Service Subscription: New
Select a Service* -- Not Selected --
Service Description

Subscribed Services
StadiumVision Video Control

Next Close

Configure Service URL Buttons for SEP002414B21EC6

Save Close Help

Status
Update successful

Service URL Settings on base Phone

Button	Service	Label	ASCII Label
1	StadiumVision Video Control	StadiumVision TV Control	StadiumVisionTV Control
2	< None >		

Save Close

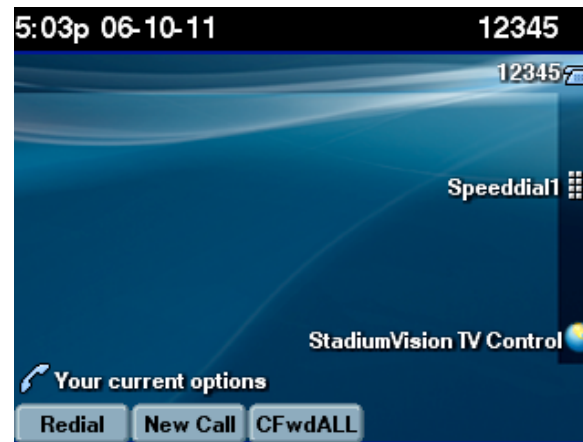
SURL Button – TV Control Example

Association Information

Modify Button Items

- 775 Line [1] - 12345 in Line-PT
- Add a new SD
- Add a new SD
- Add a new SD
- Add a new SD
- Add a new SD
- StadiumVision TV Control
- Add a new SURL

----- Add On Module(s) -----



Required Configuration Steps

CUCM Configurations – Speeddial and Phone Background Credentials

User Management | Application User

Application User Configuration

Save Delete Copy Add New

Application User Information

User ID * svduser [Edit Credential](#)

Password

Confirm Password

Digest Credentials

Confirm Digest Credentials

Presence Group * Standard Presence group

Accept Presence Subscription

Accept Out-of-dialog REFER

Accept Unsolicited Notification

Accept Replaces Header

Device Information

Available Devices SEP000000000001 SEP000000000002 SEP0017314A268D SEP001FE212AF6A SEP00230433AD3C [Find more Phones](#) [Find more Route Points](#)

Controlled Devices SEP002414B21E2E SEP002414B21EC6

Available Profiles

CTI Controlled Device Profiles

CAPF Information

Associated CAPF Profiles [View Details](#)

Permissions Information

Groups Standard CCM End Users Standard TabSync User [View Details](#) [Add to User Group](#) [Remove from User Group](#)

Roles Standard AXL API Access Standard CCM End Users Standard CCMUSER Administration [View Details](#)

Save Delete Copy Add New

SVD Requires two sets of credentials

- To query the Phone's speedial configurations for display on the SV Home Page
- To apply a graphical background to the IP Phone

A **single** CUCM Application User can be created to accomplish both

The User must be a member of the following access groups:

- “**Standard TABSYNC User**” group to allow for AXL API query access (to obtain speeddial info)
- “**Standard CCM End Users**” group to allow for Phone background access

The Phones that require background deployments must also be associated/controlled by the user (**Find More Phones**)

IF you are **not** using the speeddials then the TABSYNC User access is not required

IF you are **not** using SVD to deploy phone backgrounds then the CCM End User access and phone associations are not required

Required Configuration Steps

- For speeddial functionality via the SV Home page the SVD must be at version 2.4 or higher to work with CUCM 8.5
- The CUCM Schema version must be configured in the SVD 2.4 registry (next slide)



- For more information on deploying IP Phone Backgrounds refer to the “Cisco IP Phone Background Deployment for StadiumVision” document located at http://www.cisco.com/en/US/products/ps11274/products_feature_guides_list.html

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StadiumVision Configuration Highlights

StadiumVision Configuration Overview

- Refer to the [StadiumVision](#) documentation on CCO for detailed steps
- Both the DMP(s) and IP Phone devices must be added in SVD
- When adding the IP Phone, you must select the Service Type:
 - **LuxurySuite** – selecting this provides both TV Control and Concession Services
 - **AdminOffice** – selecting this provides TV Control Services only
- The Luxury Suite must then be created in SVD and the DMP(s) and Phones associated to it
- For **Speeddial Access** the TABSYNC user created on CUCM (slide 30) must be configured in SVD Management Dashboard | Tools | Advanced | Registry – the following parameters apply:
 - CUCMHost – this is the IP Address of the CUCM Publisher
 - CUCMPass – this is the password for the Application user
 - CUCMUser – this is the username for the Application user
 - CUCMDBVer – this is the CUCM db schema version (refer next slide)
- If the Phone is currently using Idle URL (previously configured and displaying) and the Speeddial parameters are modified, the phone must be reset to refresh the Idle URL (can also exit service manually from phone to refresh, or use phone reset for bulk refresh)
- Additionally, the speeddials are cached in SV, if they are modified via CUCM the change will not take effect automatically (refer to Troubleshooting section for more detail)
- The speeddial caching can be adjusted to cache more frequently by updating the SVD Registry parameter: speeddialCacheTimeMillis (recommended for temporary use only)

StadiumVision Configuration Highlights

- The below table reflects valid CUCMDBVer settings, for more information refer to [AXL Versioning Support](#) link
- Release 8.6(x) does not include a new schema. Developers should use the 8.5 schema with Release 8.6(x). All new 8.6 database objects will be added to the 9.0 schema in Release 9.0(1)
- AXL requests with version information will have the corresponding schema applied for up to three subsequent releases; after that, the specified version may not be available

		AXL Request no version specified	AXL Request with Version Specified								Plus 1 release	Plus 2 releases	
			CUCM:DB ver=6.0{	CUCM:DB ver=6.1	CUCM:DB ver=7.0	CUCM:DB ver=7.1	CUCM:DB ver=8.0	CUCM:DB ver=8.5	CUCM:DB ver=9.0				
Cisco Unified CM Release	Release 6.0(1)	6.0 schema applied	6.0 schema applied										
	Release 6.1(0)	6.0 schema applied	6.0 schema applied	6.1 schema applied	Not Applicable								
	Release 7.0(1)	6.0 schema applied	6.0 schema applied	6.1 schema applied	7.0 schema applied								
	Release 7.1(2)	6.0 schema applied	6.0 schema applied	6.1 schema applied	7.0 schema applied	7.1 schema applied							
	Release 8.0(1)	6.1 schema applied		6.1 schema applied	7.0 schema applied	7.1 schema applied	8.0 schema applied						
	Release 8.5(1)	7.0 schema applied			7.0 schema applied	7.1 schema applied	8.0 schema applied	8.5 schema applied					
	Release 9.0(1)	7.1 schema applied	Schema no longer available			7.1 schema applied	8.0 schema applied	8.5 schema applied	9.0 schema applied				
	Plus 1 release	8.0 schema applied					8.0 schema applied	8.5 schema applied	9.0 schema applied	Plus 1 release schema applied			
	Plus 2 releases	8.5 schema applied						8.5 schema applied	9.0 schema applied	Plus 1 release schema applied	Plus 2 releases schema applied		

StadiumVision Configuration Highlights

Notes on SVD Phone credentials

There are three locations within SVD to configure Phone credentials for SVD authentication:

SVD | Management Dashboard | Tools | Advanced | **Registry** | CCM User and Pass (slide 32)

- For speedial configuration

SVD | Management Dashboard | Tools | Advanced | **Registry** | phoneDefaultPassword and phoneDefaultUser

- For IP Phone Background deployment via SVD

SVD | Control Panel | Setup | Devices | IP Phones | Admin ID and Password (unique passwords)

- For IP Phone Background deployment via SVD

It is strongly recommended that *ONLY* the Management Dashboard **Registry** parameters be configured:

- Using unique Admin credentials via the SVD Phone setup page requires that there is a specific End User per phone created in CUCM (typically not a practice for public phones), the credentials entered here are the same as the phoneDefault credentials in the registry, thus only one set is required
- The unique configuration is further complicated if the customer is integrated with AD, these unique IDs would then require configuration on the AD side and if password aging is set they would need to be updated on SVD every time they change
- Global configuration via the SVD registry requires a single CUCM application user be created and the credentials configured in SVD
- Application users created in CUCM are not affected by AD integration as they are local accounts

StadiumVision Configuration Highlights

Reconfiguring the Home Softkey

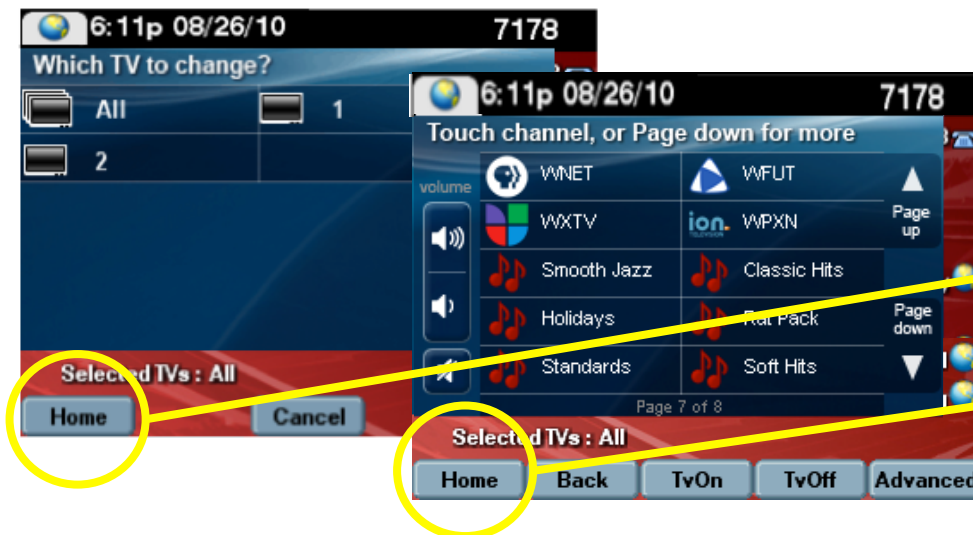
When configuring direct access to Video Control or Concessions or, when the SV Home page is not used, the **Home Softkey** should be changed such that the Home page is not called from any of the service menus, it should instead exit the service.

For instance, if the customer is not using the Home page and is using direct Video control access, we would not want the “Home” softkey to send the user to the Home page since it is never used, instead it should exit to the phone, shown below.

To adjust this, modify the SVD **homeURL** registry parameter:

Default Setting: /StadiumVision/jsp/Sports?vc=no

NO Home Page: /StadiumVision/jsp/PhoneExit?vc=no



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Optional CUCM Localizations

SVD and CUCM Phone Localizations

Both SVD and CUCM offer Localizations for the IP Phones (Internationalizations).

There are two types of CUCM Phone Localizations:

- User: Phone Displays, Menus, and User web pages, etc
- Network: Tones and Rings specific to country (this is not required for the phone to display locale)

There are two types of SVD Localizations:

- Luxury Suite: SV IP Phone Services and DMP
- System: Web GUI

In order for the IP Phone to display the correct languages in the SV IP Phone Service pages the following must be in place:

- User Locale files installed on CUCM—Contain language information for a specific language and country and use the following convention: cm-locale-language-country-version.cop
- The correct locale applied to the phone(s)
- Language packs installed on SVD and applied to the Luxury Suite

Optional CUCM Localizations

Installing CUCM Phone Localizations

1. Download country specific User Locale from Cisco.com:
 - Go to: <http://www.cisco.com/cisco/software/navigator.html>
 - Select: Products > Voice and Unified Communications > IP Telephony > Call Control > Cisco Unified Communications Manager (CallManager)
 - Select the correct CUCM version from the list
 - Select Unified Communications Manager/CallManager Locale Installers
 - Select the Locale Installer version closest to the CUCM version you are running
 - For example, if you are running
 - 8.6.2a then select the 8.6(2.1000-1)
 - 8.6.1 then select the 8.6(1.1000-1)
 - Download the User Locale specific to the language you are deploying:
 - `cm-locale-language-country-version.cop`

Optional CUCM Localizations

Installing CUCM Phone Localizations

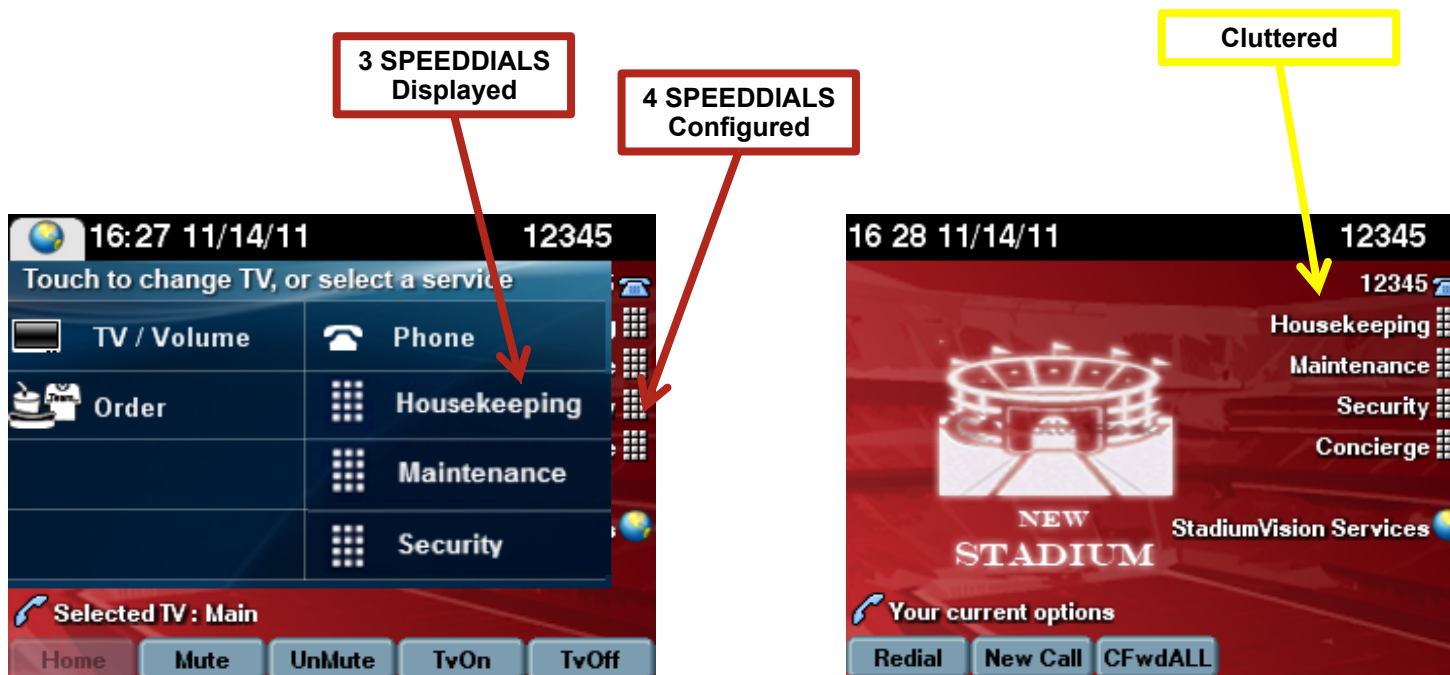
2. Install the User Locale on CUCM:
 - Follow instructions in the [Cisco Unified Communications Operating System Administration Guide](#) under Installing COP Files, Dial Plans, and Locales
3. Install the COP file on **every** server in a cluster
4. After you install a COP file, you **MUST** restart each of the CUCM servers
5. Once the servers are restarted the new user locale can be configured on the phone(s)
6. Phone must be reset after the locale is applied
7. For instructions on configuring SVD Localizations refer to the StadiumVision Documentation

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Optional Custom Suite Directory

- Suites may require multiple speeddials to be configured for guests
- Only the first three speeddials can be displayed on the SV Home Page
- Multiple speeddials may cause the Phone background to appear too cluttered if not using the SV Home Page



- In venues where the speeddial number may differ depending on location of the suite, the configuration and administration of the phones becomes un-scalable
- For example, there may be multiple housekeeping, pantry, or concierge stations located in close proximity to the suite locations thus the number would be different depending on suite location

Optional Custom Suite Directory

- Custom XML directories may be used to scale down the number of speeddials that appear on the phone shown below as well as ease/centralize management
- When using this method, if the speeddial numbers/labels change, the directory can be easily updated without the need to 'touch' every phone, which increases the margin of error
- Can be accessed via a SURL button as shown below or via the Directory button on the IP Phone 7975 in addition to or in place of all other IP phone directories (depends on Service Provisioning configuration on phone, slide 24)
- The XML directories require a web server to store the files and service the associated URL
- The Directory **cannot** be accessed via the SV Home Page



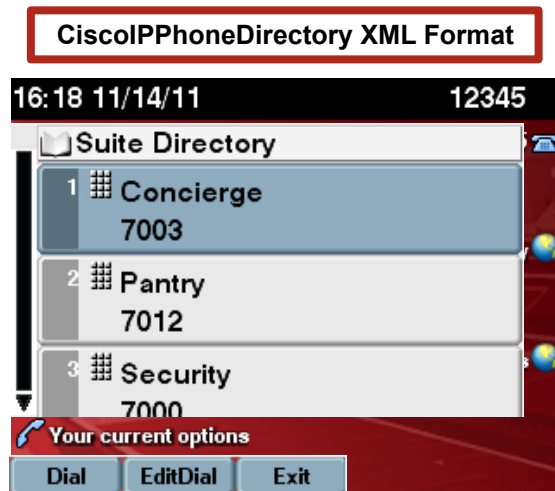
Optional Custom Suite Directory

Custom XML Directory Format

There are two different Custom XML Directory formats that can be created:

- CiscoIPPhoneDirectory XML Object Format
- CiscoIPPhoneMenu XML Object Format

The difference in formats are style-based and displayed below.



Optional Custom Suite Directory

Custom XML Directory Format – Building the XML File

The ***CiscoIPPhoneDirectory*** contains a Title Object and Directory Entries. Directory Entries contain the Name and Telephone objects.

Title Object

The Title object is the Text displayed as the Title in the Directory.

```
<Title>Suite Directory</Title>
```

Directory Entries

The Name object specifies the Directory Entry that is displayed on the phone.

```
<Name>Security</Name>
```

The **Telephone object** contains the number to be dialed and initiates a new call to a specified number when the Directory Entry is highlighted and the Dial softkey is pressed.

```
<Telephone>7000</Telephone>
```

Optional Custom Suite Directory

Custom XML Directory Format – Building the XML File

CiscoIPPhoneDirectory Example - Suite Directory

```
<?xml version="1.0" encoding="UTF-8"?>
<CiscoIPPhoneDirectory>
  <Title>Suite Directory</Title>
  <DirectoryEntry>
    <Name>Concierge</Name>
    <Telephone>7003</Telephone>
  </DirectoryEntry>
  <DirectoryEntry>
    <Name>Pantry</Name>
    <Telephone>7012</Telephone>
  </DirectoryEntry>
  <DirectoryEntry>
    <Name>Security</Name>
    <Telephone>7000</Telephone>
  </DirectoryEntry>
</CiscoIPPhoneDirectory>
```



Optional Custom Suite Directory

Custom XML Directory Format – Building the XML File

The **CiscoIPPhoneMenu** contains a Title Object and Menu Items. Menu items contain the Name and URL objects.

Title Object

The Title object is the Text displayed as the Title in the Directory.

```
<Title>Suite Directory</Title>
```

Menu Items

The Name object specifies the Directory Entry that is displayed on the phone.

```
<Name>Concierge - 7003</Name>
```

The **URL object** contains the Dial URI which points to the number to be dialed and initiates a new call to a specified number

```
<URL>Dial:7003</URL>
```

The **Dial URI** invokes when it is contained in a menu item, the menu item is highlighted (select softkey), and the device is taken off hook.

Optional Custom Suite Directory

Custom XML Directory Format – Building the XML File

CiscoIPPhoneMenu Example - Suite Directory

```
<?xml version="1.0" encoding="UTF-8"?>
<CiscoIPPhoneMenu>
  <Title>Suite Directory</Title>
  <MenuItem>
    <Name>Concierge - 7003</Name>
    <URL>Dial:7003</URL>
  </MenuItem>
  <MenuItem>
    <Name>Pantry - 7012</Name>
    <URL>Dial:7012</URL>
  </MenuItem>
  <MenuItem>
    <Name>Security - 7000</Name>
    <URL>Dial:7000</URL>
  </MenuItem>
</CiscoIPPhoneMenu>
```



Optional Custom Suite Directory

- Once the Custom XML files are created they are then stored on a customer provided web server, the URL should be noted (below is example of multiple suite directories specific to location, each file is stored on the web server)

- <http://<ipaddressofwebsrvr>/SuiteDirectory/Suite1A.xml>
- <http://<ipaddressofwebsrvr>/SuiteDirectory/Suite2D.xml>
- <http://<ipaddressofwebsrvr>/SuiteDirectory/Suite5C.xml>

- The above URLs must then be configured in CUCM as an IP Phone Service, type = Directories

- The Phone must be subscribed to the service(s)

- The Directory can be accessed via the Directory button or via SURL button

- If using the Directory button for access, the Custom Suite Directory will be listed at the bottom of the Directory menu (if Service Provisioning is set to 'Both', slide 24).

- To restrict access to the internal Directories (missed/placed/received/corporate) on public phones, refer to slides 23 and 24.

Optional Custom Suite Directory

- Configure the Custom Suite Directory as an IP Phone Service
- If configuring multiple directories based on suite location, each Suite Directory URL will require a separate service

Device | Device Settings | Phone Services

The screenshot displays the 'IP Phone Services Configuration' interface. At the top, there is a 'Save' button. Below it, the 'Status' section shows 'Status: Ready'. The 'Service Information' section contains the following fields:

- Service Name*: Suite Directory 1A
- ASCII Service Name*: Suite Directory 1A
- Service Description: Suite Directory for level 1A phones
- Service URL: http://1.1.1.1/SuiteDirectory/Suite1A.xml
- Secure-Service URL: (empty)
- Service Category*: XML Service
- Service Type*: Directories
- Service Vendor: (empty)
- Service Version: (empty)

At the bottom of the form, there are two checkboxes: 'Enable' (checked) and 'Enterprise Subscription' (unchecked). A 'Save' button is located at the very bottom of the configuration area.

- The Phone must then be subscribed to the Directory service (refer to slide 25)
- The Directory can then be accessed via the Directory button or via an SURL button
- For Directory Button access the phone need only be subscribed to the service, for SURL configuration refer to slides 22 and 27

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Modifying StadiumVision IP Phone Services

Modifying the StadiumVision Services

■ In the event the StadiumVision IP Phone Service changes (server IP address change, service name, etc), the service must be updated in CUCM via Device | Device Settings | Phone Services (slide 20)

- Select the Service to be modified
- Update the appropriate field
- Click Save
- Click **Update Subscriptions**

■ If you **change the service URL, remove an IP phone service parameter, or change the name of a phone service parameter** for an IP phone service to which users are subscribed, be sure to click Update Subscriptions to update all currently subscribed users with the changes. If you do not do so, users must re-subscribe to the service to rebuild the URL correctly

■ If the SV Service URL is changed and you are using an IDLE URL it must also be updated, see next slide for details

The screenshot displays the 'IP Phone Services Configuration' interface. At the top, there are navigation buttons: Save, Delete, Update Subscriptions, and Add New. Below this is a 'Status' section showing 'Status: Ready'. The main configuration area is divided into two sections: 'Service Information' and 'Service Parameter Information'. The 'Service Information' section contains the following fields: Service Name* (StadiumVision Services), ASCII Service Name* (StadiumVision Services), Service Description (SV Home Page), Service URL (http://1.1.1.5:8080/StadiumVision/jsp/Sports?vc=n), Secure-Service URL, Service Category* (XML Service), Service Type* (Standard IP Phone Service), Service Vendor, and Service Version. There is also an 'Enable' checkbox which is checked. The 'Service Parameter Information' section features a 'Parameters' table and three buttons: 'New Parameter', 'Edit Parameter', and 'Delete Parameter'. At the bottom of the page, there are buttons for 'Save', 'Delete', 'Update Subscriptions', and 'Add New'. The 'Update Subscriptions' button is highlighted with a red circle.

Modifying StadiumVision IP Phone Services

Updating the IDLE URL

- If the StadiumVision IP Phone Service URL changes, the IDLE URL must be updated via CUCM via Device | Phone | Phone Configuration | External Data Locations | Idle (slide 26)
 - Update the Idle field with the correct URL
 - Click Save
 - Click **RESET** to reset the phones so that the changes take affect immediately
- To update multiple phones simultaneously use the CUCM Bulk Administration Tool (BAT)
 - CUCM via Bulk Administration | Phones | Update Phones | Query or Custom file
 - Use query if the phones are configured with a common search parameter (description, device pool, etc)
 - Use custom file if there is no common search parameter, must obtain a list of mac addresses for all of the phones to be updated then upload the custom file
 - Select the Idle field, enter the correct Idle URL, select reset phones, select run immediately
- The following slides go into detail on how to update the Idle URL using BAT

Modifying StadiumVision IP Phone Services


Updating the IDLE URL

- CUCM via Bulk Administration | Phones | Update Phones | Query
 - Query based on search parameters
 - Phone must be configured with common searchable parameters to use query
 - For example, Description or Device Pool, below only Device Pool was a common parameter
 - Click next once search is complete


Find and List Phones To Update

Find Find and List Phones To Update where contains Using

Find and List Phones To Update




 Next

Status

 3 records found

Find and List Phones To Update (1 - 3 of 3) Rows per Page

Find Find and List Phones To Update where begins with Using

	Device Name(Line) ^	Description	Device Pool	Device Protocol	Status	IP Address
 7965	SEP000000000002	kelly Test	SUITE-Phones-DP	SCCP	Unknown	Unknown
 7965	SEP123456789012	John Smith	SUITE-Phones-DP	SCCP	Unknown	Unknown
 7965	SEP098765432109	John Smith	SUITE-Phones-DP	SCCP	Unknown	Unknown

Modifying StadiumVision IP Phone Services

Updating the IDLE URL - Query

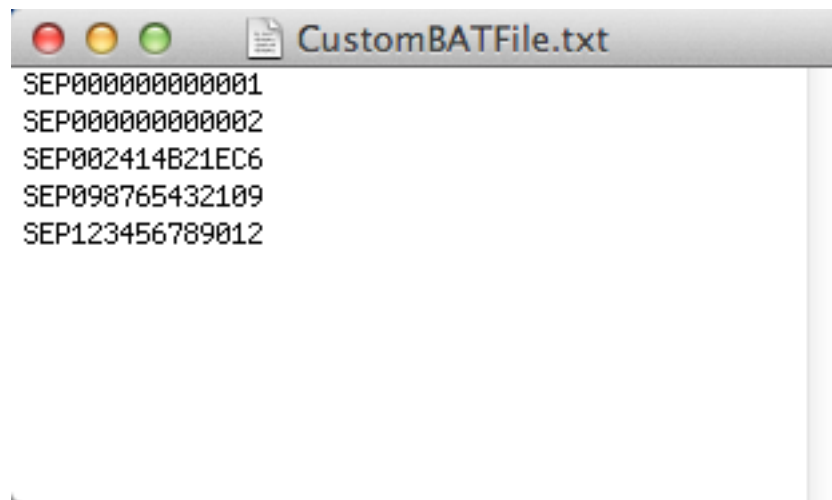
- CUCM via Bulk Administration | Phones | Update Phones | Query
 - Select Reset Phones at top of page
 - Select Idle parameter and enter new URL
 - Select Run Immediately and then Submit at bottom of page

The screenshot displays the 'Update Phones' configuration page. At the top, there are 'Back' and 'Submit' buttons. The 'Status' section shows 'Status: Ready'. The 'Logout/Reset/Restart' section contains four radio buttons: 'Logout Users before update', 'Don't Reset/Restart phones/Apply Config', 'Reset phones' (which is selected), 'Restart phones', and 'Apply Config'. The 'Device Information' section has a 'Description' field. The 'External Data Locations Information (Leave blank to use default)' section lists several parameters with checkboxes and input fields: 'Information', 'Directory', 'Messages', 'Services', 'Authentication Server', 'Proxy Server', 'Idle' (checked), and 'Idle Timer (seconds)'. The 'Idle' field contains the text 'http://.....'. The 'Job Information' section includes a 'Job Description' field with the text 'Update Phones - Query' and two radio buttons: 'Run Immediately' (selected) and 'Run Later (To schedule and activate this job, use Job Scheduler page.)'. At the bottom, there are 'Back' and 'Submit' buttons.

Modifying StadiumVision IP Phone Services

Updating the IDLE URL – Custom File

- CUCM via Bulk Administration
 - Use this when there are no common search parameters
 - Gather the Device Name for all phones that must be updated
 - The Device Name is in the format SEPXXXXXXXXXXXXX where the X's represent the MAC Address
 - Create a text file, enter each Device Name on a separate line (shown below)



```
SEP000000000001  
SEP000000000002  
SEP002414B21EC6  
SEP098765432109  
SEP123456789012
```


Modifying StadiumVision IP Phone Services

Updating the IDLE URL – Custom File

- CUCM via Bulk Administration | Upload/Download Files
 - Upload the file to CUCM
 - Click Add New
 - In the File upload window, browse to where the file is stored
 - Select Target: Phones
 - Select Transaction Type: Update Phones – Custom File
 - Click Save
 - The file should now appear on the Find and List Files page

The screenshot displays two overlapping windows from the CUCM Bulk Administration interface. The background window is titled "Find and List Files" and shows a toolbar with icons for "Add New", "Select All", "Clear All", "Delete Selected", and "Download Selected". Below the toolbar, it indicates "Status: 1 records found" and shows a table with one file entry: "bat.xlt". The foreground window is titled "File Upload Configuration" and contains the following fields:

- Save** button
- Status:** Status: Ready
- Upload the CSV file:**
 - File: *** /Users/cornish/Desktop/CustomBATFile.txt (with a "Browse..." button)
 - Select The Target *** Phones (dropdown menu)
 - Select Transaction Type *** Update Phones - Custom File (dropdown menu)
 - Overwrite File if it exists.**
- Save** button

Modifying StadiumVision IP Phone Services

Updating the IDLE URL – Custom File

- CUCM via Bulk Administration | Phones | Update Phones | Custom File
 - Select the custom file you previously uploaded from the dropdown
 - Click find
 - Click next once search is complete

The screenshot displays the 'Find and List Phones' interface in the CUCM Bulk Administration tool. It shows the 'Bulk Phone Template' section with a search bar and a table of phone records.

Find and List Phones

Bulk Phone Template

Update Bulk Phone Template where in custom file [\(View File\)](#)

No active query. Please enter your search criteria using the options above.

Find and List Phones






Next

Status

5 records found

Bulk Phone Template (1 - 5 of 5)

Update Bulk Phone Template where in custom file [\(View File\)](#)

	Device Name(Line)	Description	Device Pool
 7975	SEP000000000001	Wei -Placeholder- enter new mac	Default
 7965	SEP000000000002	kelly Test	SUITE-Phones-DP
 7975	SEP002414B21EC6	Kelly ECT Test	Default
 7965	SEP098765432109	John Smith	SUITE-Phones-DP
 7965	SEP123456789012	John Smith	SUITE-Phones-DP

Next

Modifying StadiumVision IP Phone Services

Updating the IDLE URL – Custom File

- CUCM via Bulk Administration | Phones | Update Phones | Query
 - Select Reset Phones at top of page
 - Select Idle parameter and enter new URL
 - Select Run Immediately and then Submit at bottom of page

The screenshot displays the 'Update Phones' configuration page. At the top, there are 'Back' and 'Submit' buttons. The 'Status' section shows 'Status: Ready'. The 'Logout/Reset/Restart' section contains four radio buttons: 'Logout Users before update', 'Don't Reset/Restart phones/Apply Config', 'Reset phones' (which is selected), 'Restart phones', and 'Apply Config'. The 'Device Information' section has a checkbox for 'Description' and an empty text field. The 'External Data Locations Information (Leave blank to use default)' section lists several parameters with checkboxes and text fields: 'Information', 'Directory', 'Messages', 'Services', 'Authentication Server', 'Proxy Server', 'Idle' (checked), and 'Idle Timer (seconds)'. The 'Idle' field contains the text 'http://.....'. The 'Job Information' section includes a 'Job Description' field with the value 'Update Phones - Query' and two radio buttons: 'Run Immediately' (selected) and 'Run Later (To schedule and activate this job, use Job Scheduler page.)'. At the bottom, there are 'Back' and 'Submit' buttons.

Modifying StadiumVision IP Phone Services

Updating the IDLE URL – Query or Custom File

- To confirm the Bulk update is complete
 - Go to Bulk Administration | Job Scheduler
 - Click find
 - Locate your job and note status
 - Click the link on your job to view details

The screenshot displays the 'Find and List Jobs' interface. At the top, there are action buttons: Select All, Clear All, Delete Selected, Activate Selected, and Stop Processing. Below this is a 'Status' section indicating 2 records found and the server date and time as December 01, 2011 15:21:27 EST. The 'Jobs (1 - 2 of 2)' section shows a search filter for 'User' and a table of jobs. The job with ID 1322770881 is selected, and its details are shown in a modal window. The job details include Job id*, Job Status*, Scheduled Date Time, Submit Date Time, Sequence*, Job Description, Frequency*, Job End Time, and Last Modified By. Below the details is a 'Job Results' table showing the job was launched on 12/01/2011 15:21:22, with a success status, 2 records processed, 0 records failed, and a total of 2 records. The log file name is 1322770881#12012011152121.txt.

Job Id	Scheduled Date Time	Submit Date Time	Sequence	Description	Status	Last User
1322769732	December 01, 2011 15:02:12 EST	December 01, 2011 15:02:12 EST	1	Export Phones - Specific Details	Completed	ccmadmin
1322770881	December 01, 2011 15:21:21 EST	December 01, 2011 15:21:21 EST	1	Update Phones - Query	Completed	ccmadmin

Job id*	1322770881
Job Status*	Completed
Scheduled Date Time	12/01/2011 15:21:21
Submit Date Time	12/01/2011 15:21:21
Sequence*	1
Job Description	Update Phones - Query
Frequency*	Once
Job End Time	<input type="text"/>
Last Modified By	ccmadmin

Job Launched Date Time	Job Result Status	Number Of Records Processed	Number Of Records Failed	Total Number Of Records	Log File Name.
12/01/2011 15:21:22	Success	2	0	2	1322770881#12012011152121.txt

Modifying StadiumVision IP Phone Services

Bulk Subscribing Phones to SV Services

- Phones can be subscribed to services in Bulk using the same methods as Idle URL
 - The service must already be configured in the system
 - A **BAT Phone Template** subscribed to the service must be configured (can use any existing template to subscribe the service)
 - In the below example a phone template named Suite-Phone already exists and is subscribed to the StadiumVision Services service
 - Select Reset Phones at top of page
 - Check/Select the Service (shown below)
 - Select Run Immediately and then Submit at bottom of page

The screenshot shows the 'Assign IP Phone Services' interface. On the left, there is a section titled 'Assign IP Phone Services' with a checked checkbox 'Add all services from this template' and a dropdown menu set to 'Suite-Phone'. Below this is an unchecked checkbox 'Remove Duplicate'. A link '(Edit IP Phone Services)' is visible. On the right, a dialog box titled 'Subscribed Cisco IP Phone Services for Suite-Phone' is open. It has 'Next' and 'Help' buttons at the top. The 'Status' section shows 'Status: Ready'. The 'Service Information' section shows 'Service Subscription: New', 'Select a Service*' with a dropdown menu set to '-- Not Selected --', and a 'Service Description' text area. The 'Subscribed Services' section shows a link for 'StadiumVision Services'. At the bottom of the dialog are 'Next' and 'Close' buttons.

- If the phone template is not subscribed to the service it can be added by clicking Edit IP Phone Services
- Proceed with Subscribing to the Service
- To ensure the phone is not subscribed TWICE to the same service, select BOTH **Remove Duplicate** checkboxes shown above

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Troubleshooting StadiumVision IP Phone Services

IP Phone Service Problems

- Any time you press the services buttons on the IP phone, an HTTP request is sent to a web server
- If this request fails, no services can be displayed. Think about this in terms of your web browser. If you click a link in your web browser that leads to a server that is down or inaccessible, your browser gives you an error. The same thing happens on an IP phone.
- Several activities can cause an HTTP request to originate from the IP phone. You can see the following URL fields in CUCM Administration > Device > Phone > Phone Configuration > External Data Locations – ([shown on slide 26](#)):
 - URL Authentication
 - URL Directories
 - URL Help
 - **URL Idle**
 - **URL Idle Time**
 - URL Information
 - URL Messages
 - URL Proxy
 - **URL Services**
- If these fields are blank on the phone configuration page, the global defaults (which should never be changed) can be viewed via CUCM Administration > System > Enterprise Parameters
- The Services URL which is typically NOT configured on the Phone Configuration page is a menu that provides a list of the services the phone is subscribed to, looks like this:

http://callmanager_name_or_IP_address/CCMCIP/getservicesmenu.asp

Troubleshooting StadiumVision IP Phone Services

IP Phone Cannot Reach Services

- One common problem is with DNS resolution
 - This could occur because the IP phone doesn't have a DNS server to resolve the name for it
 - Or it could occur because the DNS server doesn't have the right CNAME (canonical name) or a record entry that resolves the name to the correct IP address
 - Or perhaps the phone does not know the DNS domain name that is necessary to ask for the web server's correct fully-qualified domain name - the IP phone displays a "Host Not Found" error on the screen in this case
 - If DNS is an issue, a workaround is to change the hostname in the configured URL to an IP Address (recommended)
- Another problem could simply be one of network connectivity
 - If there is no network connectivity to the DNS server or the web server, the request fails
 - Verify bidirectional connectivity if you suspect this is the cause
- Finally, the web server itself could be the problem
 - Make sure that the web server is running and that the specified web pages exist
 - You should be able to access the services URL from a standard web browser that supports displaying XML content
 - If the Services URL is blank on the Phone Configuration page chances are they are using the default global configuration (URL on page 39)

Troubleshooting StadiumVision IP Phone Services

IP Phone Cannot Reach Services

- Now you have to consider one more critical piece of information –
 - If you press the services button, you download an XML page listing the subscribed services for that IP phone
 - Each service is a URL of its own that can query any web server it is configured to point to
 - If you successfully download the initial services page and then have a problem reaching one of the subscribed services, use the tips just discussed to try to determine where the problem lies
 - The problem could come down to poor XML development by a web developer or a broken server outside your control

Services Button



http://callmanager_name_or_IP_address/CCMCIP/getservicesmenu.asp



<http://<svd-ip-addr:8080>/StadiumVision/jsp/Sports?vc=no>



At which point does it break?

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Collect Sniffer Trace

- For problems with XML services, the most useful troubleshooting tool is a sniffer. Capture a sniffer trace of the communication between the IP phone and the web server to determine where the problem lies
- A sniffer trace can be captured directly from the IP Phone by plugging a network cable (cat5 patch cable) into the port labeled PC on the back of the IP Phone
 - ✓ Sniffer Client Software is required (Ethereal/Wireshark/TCPDump)
 - ✓ The PC Port must be enabled on the IP Phone
 - ✓ The IP Phone must be configured to allow spanning on the PC Port

The screenshot shows the 'Product Specific Configuration Layout' for an IP phone. The 'PC Port' and 'Span to PC Port' settings are circled in red. The 'PC Port' dropdown is set to 'Enabled', and the 'Span to PC Port' dropdown is also set to 'Enabled'. Other settings include 'Disable Speakerphone', 'Forwarding Delay', 'Settings Access', 'Gratuitous ARP', 'PC Voice VLAN Access', 'Video Capabilities', 'Auto Line Select', 'Web Access', 'Days Display Not Active', 'Display On Time', 'Display On Duration', 'Display Idle Timeout', 'Logging Display', and 'Load Server'.

Param	Value	Override Common Settings
Disable Speakerphone	<input type="checkbox"/>	
Disable Speakerphone and Headset	<input type="checkbox"/>	
Forwarding Delay*	Disabled	
PC Port *	Enabled	
Settings Access*	Disabled	<input checked="" type="checkbox"/>
Gratuitous ARP*	Disabled	
PC Voice VLAN Access*	Enabled	
Video Capabilities*	Disabled	<input type="checkbox"/>
Auto Line Select*	Disabled	
Web Access*	Enabled	<input checked="" type="checkbox"/>
Days Display Not Active	Tuesday Wednesday Thursday	<input checked="" type="checkbox"/>
Display On Time	07:30	<input type="checkbox"/>
Display On Duration	00:00	<input checked="" type="checkbox"/>
Display Idle Timeout	00:00	<input checked="" type="checkbox"/>
Span to PC Port*	Enabled	
Logging Display*	PC Controlled	
Load Server		<input type="checkbox"/>

PC Port
Enabled

IP Phone Configuration for Sniffer Capture

CUCM Administration | Device | Phone | Phone Configuration

Phone must be reset for changes to take affect

Span to PC Port
Enabled

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Gathering IP Phone Traces/Logs/Configs

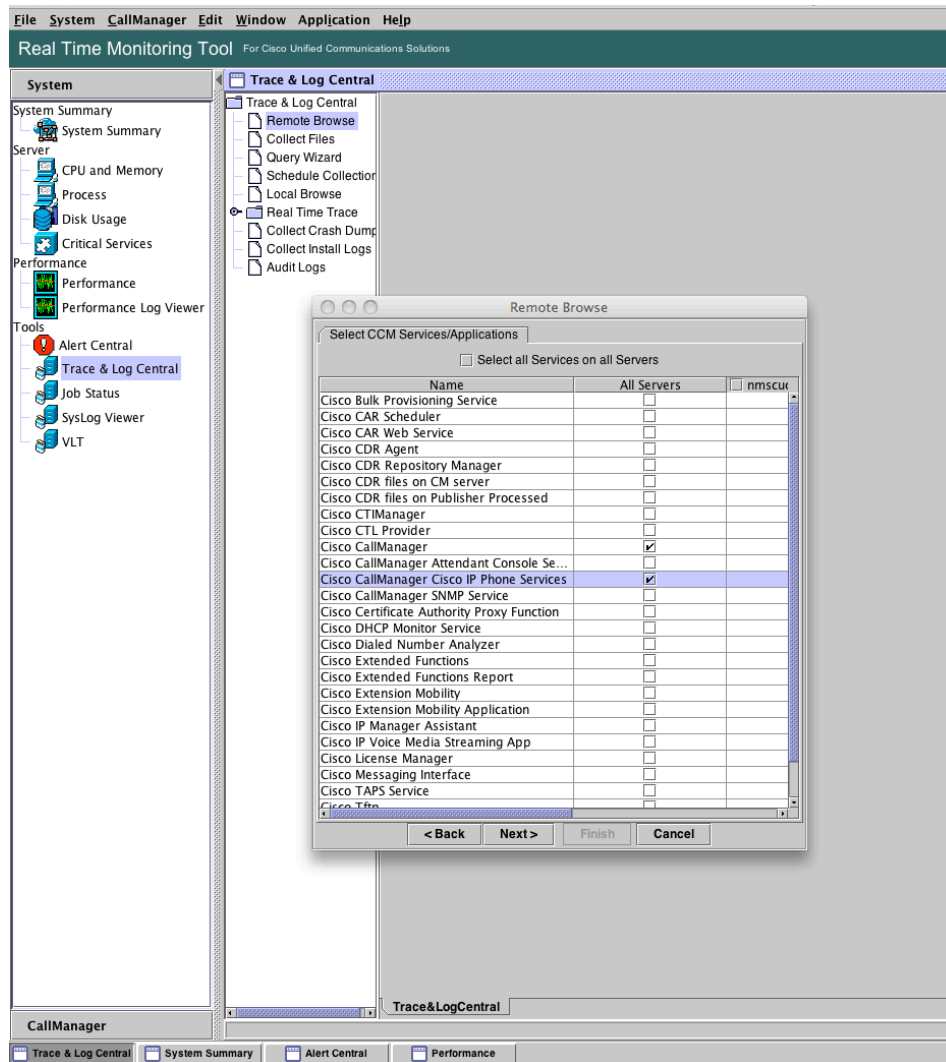
In addition to gathering the sniffer trace, the following information can also assist with Troubleshooting IP Phone Services issues:

- ✓ CUCM IP Phone Service Trace Files
- ✓ Local IP Phone Administrative pages
- ✓ Capturing a snapshot of the Phone's current display
- ✓ Viewing the locally stored IP Phone XML config file

All of the above require different levels of access to CUCM which must be provided by the administrator of the system

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – CUCM IP Phone Service Trace Files

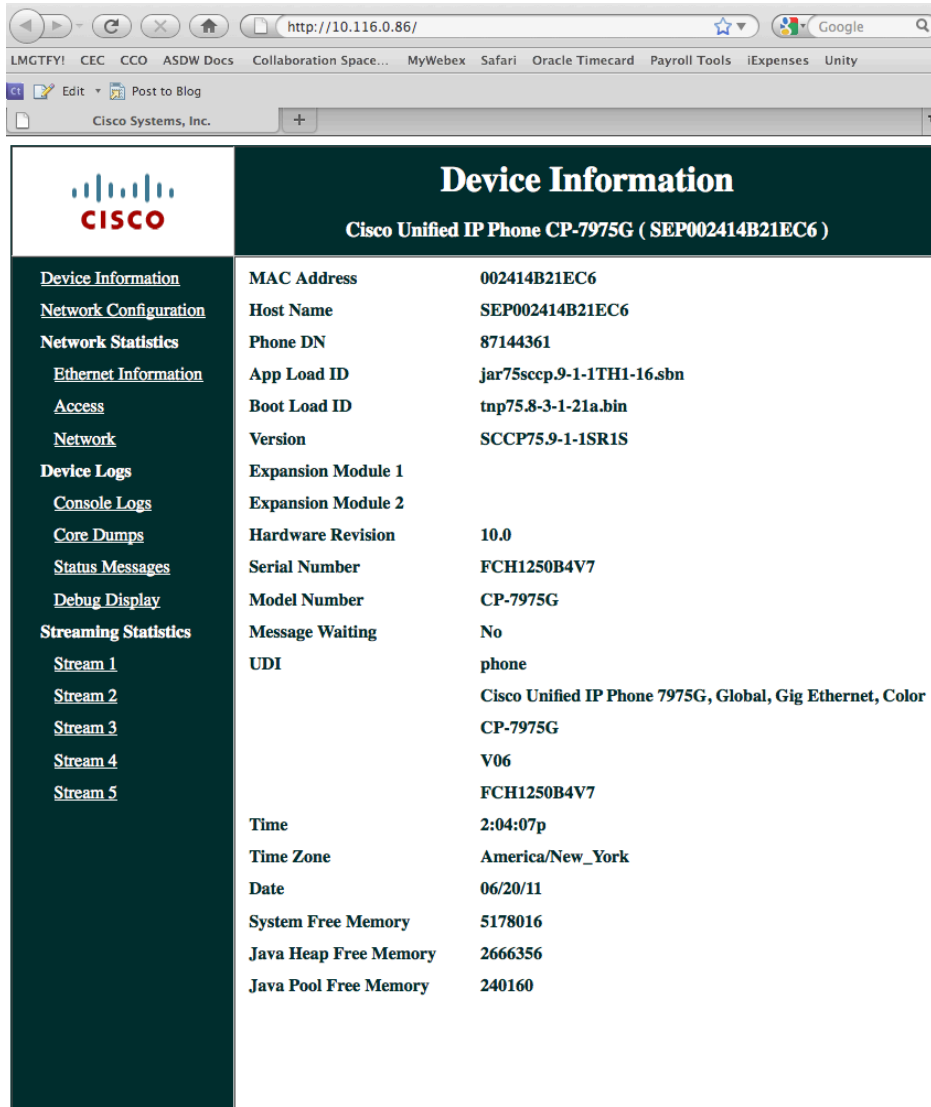


Provides debugging level logs between the IP Phone and the CUCM and/or the CUCM and 3rd party application if applicable

- ✓ Requires RTMT Client Application which can be downloaded via the CUCM Administrative web pages
- ✓ Requires CUCM end user login with access to Standard Realtime and Trace Collection
- ✓ Traces must be configured ahead of time for Debug/Verbose levels (by System Administrator)
- ✓ Relevant Trace files are Cisco CallManager and Cisco CallManager Cisco IP Phone Services, downloaded from the server from which the Phone is actively registered to and from the Publisher if applicable

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Local IP Phone Administrative pages



The screenshot shows a web browser window with the address bar displaying `http://10.116.0.86/`. The browser tabs include "LMGTFFY! CEC CCO ASDW Docs", "Collaboration Space...", "MyWebex", "Safari", "Oracle Timecard", "Payroll Tools", "Expenses", and "Unity". The page content is titled "Device Information" for a "Cisco Unified IP Phone CP-7975G (SEP002414B21EC6)".

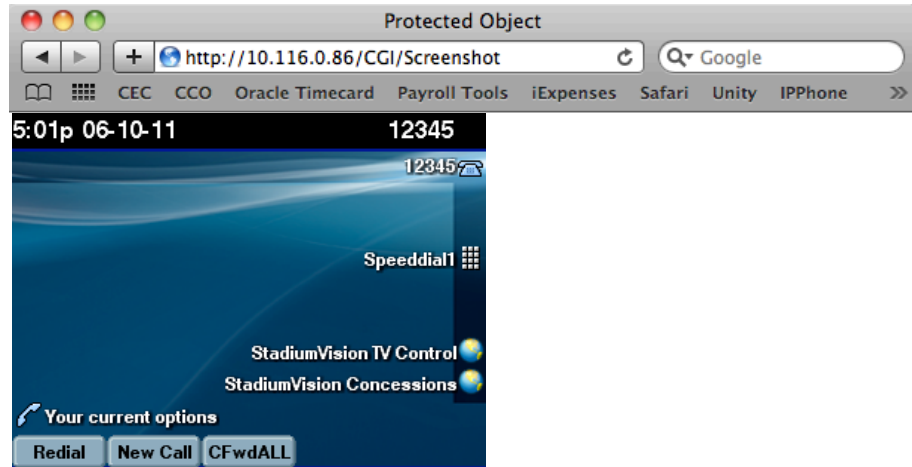
Device Information	
MAC Address	002414B21EC6
Host Name	SEP002414B21EC6
Phone DN	87144361
App Load ID	jar75sccp.9-1-1TH1-16.sbn
Boot Load ID	tnp75.8-3-1-21a.bin
Version	SCCP75.9-1-1SR1S
Expansion Module 1	
Expansion Module 2	
Hardware Revision	10.0
Serial Number	FCH1250B4V7
Model Number	CP-7975G
Message Waiting	No
UDI	phone
	Cisco Unified IP Phone 7975G, Global, Gig Ethernet, Color
	CP-7975G
	V06
	FCH1250B4V7
Time	2:04:07p
Time Zone	America/New_York
Date	06/20/11
System Free Memory	5178016
Java Heap Free Memory	2666356
Java Pool Free Memory	240160

Provides debugging and management interface

- ✓ You can access the administrative pages using a standard web browser and pointing to the IP address of the phone with: `/http://<phoneIP>/`, where `phoneIP` is the IP address of the specific phone
- ✓ Does not require Login credentials; does require that Web Access be allowed/enabled on the IP Phone (Device | Phone | Phone Configuration)
- ✓ Can obtain firmware version information, network configuration information, IP Phone log files (informational), Phone Status messages, Ethernet counters, speed/duplex negotiations for both phone and neighbor switch, etc.

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Capturing a snapshot of the Phone's current display



Provides real-time/current snapshot of Phone's display

- ✓ You can access the snapshot by using a standard web browser and pointing to the IP address of the phone with:
<http://<phoneIP>/CGI/Screenshot>
where phoneIP is the IP address of the specific phone
- ✓ Requires CUCM Application User login with access to Standard CCM End User group
- ✓ The IP Phone must also be associated to the above mentioned end user
- ✓ After login is accepted the snapshot is displayed, to update the screen with the current phone display simply refresh the browser, user must only login once per browser session
- ✓ Great tool for viewing what the 'user' is viewing if remote (xml parse errors, etc)

NOTE: If you receive an error after login and the snapshot does not display it is typically either an access issue (end user misconfigured/username/pwd) or a DNS issue (Enterprise Parameters using FQDN and not IP Address) or HTTPS

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Viewing the locally stored IP Phone XML config file

Excerpts from SEP002699F0172B.CNF.xml

```
SEP002699F0172B.CNF.xml
<?xml version="1.0" encoding="UTF-8"?>
<device xsi:type="axl:XIPPhone" ctiid="908" uuid="{aa1c98b2-454f-2528-606f-ffe0acac75dd}">
<fullConfig>true</fullConfig>
<deviceProtocol>SCCP</deviceProtocol>

<loadInformation>SCCP75.9-0-3E53S</loadInformation>
<vendorConfig>
<disableSpeaker>false</disableSpeaker><disableSpeakerAndHeadset>false</disableSpeakerAndHeadset>
<commonConfig>
<displayOnTime>07:00</displayOnTime><displayOnDuration>16:00</displayOnDuration><displayIdle>
<enterpriseConfig>

<idleTimeout>3</idleTimeout>
<authenticationURL>http://172.29.4.10:8080/ccmcip/authenticate.jsp</authenticationURL>
<directoryURL>http://172.29.4.10:8080/ccmcip/xmldirectory.jsp</directoryURL>
<idleURL>http://172.29.0.130:8080/StadiumVision/jsp/Sports?vc=no</idleURL>
<informationURL>http://172.29.4.10:8080/ccmcip/GetTelecasterHelpText.jsp</informationURL>
<messagesURL></messagesURL>
<proxyServerURL></proxyServerURL>
<servicesURL>http://172.29.4.10:8080/ccmcip/getservicesmenu.jsp</servicesURL>
<dscpForSCCPPhoneConfig>96</dscpForSCCPPhoneConfig>
<dscpForSCCPPhoneServices>96</dscpForSCCPPhoneServices>

</phoneService>
<phoneService type="0" category="0">
<displayName>SV Test</displayName>
<name>SV Test</name>
<url>http://172.29.0.130:8080/StadiumVision/jsp/Sports?vc=no&device=#DEVICENAME#</url>
<vendor></vendor>
<version></version>
</phoneService>
<phoneService type="0" category="0">
<displayName>Stadium Vision Concessions</displayName>
<name>Stadium Vision Concessions</name>
<url>http://172.29.0.130:8080/StadiumVision/jsp/Concessions?vc=no&device=#DEVICENAME#</url>
<vendor></vendor>
<version></version>
</phoneService>
<phoneService type="0" category="0">
<displayName>Stadium Vision Video Control</displayName>
<name>Stadium Vision Video Control</name>
<url>http://172.29.0.130:8080/StadiumVision/jsp/VideoControl?vc=no&device=#DEVICENAME#</url>
<vendor></vendor>
<version></version>
</phoneService>
<phoneService type="1" category="0">
```

Provides IP Phone Configuration Information

- ✓ Requires CUCM TFTP IP Address
- ✓ Requires file name, format as follows:

SEP002699F0172B.CNF.xml

Where '002699F0172B' is the MAC Address of the IP Phone

- ✓ You can obtain the config file by using a TFTP client

```
tftp> get X.X.X.X:SEP002699F0172B.CNF.xml
```

```
Received 7800 bytes in 1.2 seconds
```

```
tftp>
```

Where X.X.X.X is the ip address of the CUCM TFTP

- ✓ Does not require login credentials
- ✓ The config file is downloaded by and *stored locally* on the phone, it contains information such as: firmware load, idle url, subscribed services url's, etc
- ✓ Each time the Phone is reset it will attempt to download its config file from the TFTP server, if the TFTP is unavailable the phone will use its previously stored configuration
- ✓ Can confirm Service URLs without accessing CUCM Administration

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Speeddial does not display on SV Services Home page



Speeddial Fields are BLANK

- ✓ Is the Phone configured for speeddials (slide 22/23)?
- ✓ Was the TABSYNC user created (slide 30)?
- ✓ Were the TABSYNC user credentials configured in the SVD registry (slide 32)?
- ✓ Confirm the phone is NOT configured with BLF Speeddials (presence indicator) as this is a different db entry than a regular speeddial (slide 22/23)
- ✓ Has the Idle URL been refreshed (hit Services button on phone to refresh)? Or, can bulk reset all phones to refresh the service if more than one is affected
- ✓ Is the “Cisco AXL Web Service” Activated and Running on the CUCM?
- ✓ Is the CCMDDBVer configured for the correct version of CUCM?
- ✓ If all of above are confirmed collect sniffer traces and open a TAC case
- ✓ If speeddials display but phone does not go offhook to dial when speeddial is selected confirm that there is a working line configured on the phone
- ✓ If phone goes offhook and user receives fast-busy tone, have CUCM Admin check the class of service configured on the phone

Troubleshooting StadiumVision IP Phone Services

Important CUCM Information

- **TABSYNC User versus CCMAdministrator/Administrator Credentials**

The TABSYNC Application user is configured with the minimum access required for AXL db queries. CCMAdmin/Admin access (super user) is not necessary for the speedial functionality. It is a security risk for SVD to have these configured in clear text and a risk to the SVD administrator (do not want to be held responsible for CUCM outages).

The TABSYNC user group provides AXL db access. When requesting that this user be created in CUCM confirm that a unique user is created, any existing TABSYNC/AXL users should not be used or modified as it may impact other UC applications (TABSYNC user, cucxaxl user, ccxaxl user, etc).

- **Cisco AXL Web Service**

The Cisco AXL Web Service is required for UC application integration in addition to 3rd party Application integration. Care should be taken when working with these services in CUCM as it may impact other UC services such as VoiceMail, Emergency 911 Services, Contact Center, Presence, etc.

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Speeddial does not update on SV Services Home page



Speeddial Fields Do not match Phone



Phone was *previously* configured for speeddials, speeddials were modified on the CUCM side and old speeddials are still being displayed on the SV Home page

- ✓ Has the Idle URL been refreshed (hit Services button on phone to refresh)? Or, can bulk reset all phones to refresh the service if more than one is affected
- ✓ If Idle URL is refreshed and the speeddials still do not display correctly the issue is most likely due to the SVD Caching feature
- ✓ The speed dial cache is regulated by the registry setting called: speeddialCacheTimeMillis, default setting is 2800000 ms
- ✓ This parameter is a TTL for the speeddial information queried from CUCM and displayed on the SV Home page (in ms)

When the Phone requests the SV Home page (via Idle URL refresh or Services button)

- SVD will check the timestamp for when it received the phone's speeddial information
 - SVD will then determine the age of the speeddial information based on current time
 - If the age is greater than that of the speeddial cache time it will query CUCM for new information
 - If the age is less it retains the information
- ✓ Setting this parameter to a lesser value will allow faster updates (the minimum it can be configured for is **500 ms**)

Troubleshooting StadiumVision IP Phone Services

How to verify the CUCM speeddial and background credentials

- If credentials were configured as a CUCM **Application** User, verify authentication by entering the following into a browser:

https://<CUCM_IP_addr>/axl

You will be prompted to enter a username and pwd, enter the credentials that were configured in the Registry for CCMPass and CCMUser

If the credentials are entered correctly, the following will display in the browser window:

Cisco CallManager: AXL Web Service

The AXL Web Service is working and accepting requests. Use HTTP POST to send a request.

- If credentials were configured as a CUCM **End** User, verify that the credentials are set correctly by entering the following URL in a browser:

http://<CUCM_IP_addr>/ccmcip/authenticate.jsp?UserID=<user_ID>&Password=<password>&devicename=SEP000011112222

The user_ID and Password in the URL correspond to the Phone Admin credentials (CUCM End User), the device name format is SEP*mac-address-of-phone*

If the credentials are entered correctly, the word **AUTHORIZED** will display in the window.

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – SVD Logs

- Log information for Local Control is dispersed across a number of different log files as follows:
 - ✓ Use the SVD Web Menu to gather system logs (SVD | System State Reports)
 - ✓ `/opt/sv/servers/control/logs/sv_debug.log` – Shows the internal processing as a phone request is handled by SVD
 - ✓ `/opt/sv/servers/control/logs/sv_phone_xml.log` – Records raw phone control xml communication/data
 - ✓ `/var/log/httpd/access_log` – Contains the incoming http request from the IP phone
 - ✓ `/opt/sv/servers/control/logs/sv_external.log` – A summary of the communications from SVD to phone

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Using SVD Logs

Step 1: Use the Service button on the phone to bring up the main menu of the SV application. Check the Apache logs to confirm that this results in an http GET message being received by SVD:

```
[root@svd1 httpd]# pwd
/var/log/httpd
```

```
[root@svd1 httpd]# grep 10.10.99.3 access_log
10.10.99.3 - - [31/Oct/2011:17:27:19 -0600] "GET /StadiumVision/
images/phone/phone/phoneImages/saved/SEP0026CBC01B64_homePage.png
HTTP/1.1" 200 15606 "-" "Allegro-Software-WebClient/4.34"
```

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Using SVD Logs

Step 2: Check `sv_external.log` to see the requests that have been received from the phone and processed. Log snippet below reflects the following sequence of buttons being pressed on the phone:

1. Service button pressed. Bring up SV main menu – ListServices
2. TV/Volume key pressed. Bring up display selection screen – DisplaySelect
3. TV/DMP with IP addr 10.10.99.29 selected. Display channel guide – Device
4. Channel 3 selected. Channel
5. Volume down key pressed. VolumeDown
6. Screen returns to main SV menu after timeout – ListServices

```
[root@svd1 logs]# pwd
/opt/sv/servers/control/logs
```

```
[root@svd1 logs]# grep 10.10.99.3 sv_external.log | cut -c25-110
10.10.99.3}d2a4c282}Sports}Boulder1}ListServices}}}}}}}}Duration 134
10.10.99.3}cebe23bd}VideoControl}Boulder1}DisplaySelect}}}}}}OK}}Duration 124
10.10.99.3}be0d5d69}VideoControl}Boulder1}Display}Device[#167:10.10.99.29]||}}}}OK}
10.10.99.3}80ecc133}VideoControl}Boulder1}Channel|null|3|}}}}OK}}Duration 253
10.10.99.3}5f69c8c7}VideoControl}Boulder1}VolumeDown}120|}}}}OK}}Duration 92
10.10.99.3}cb581289}Sports}Boulder1}ListServices}}}}}}}}Duration 146
```

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Using SVD Logs

Step 3: In the previous step notice how each log message in sv_external.log contains an 8 digit log message ID immediately following the phone IP address. This ID can be used to find related messages in the other log files in the same directory. In the following example log messages with ID f2eecb6f can be found in 5 different log files. Notice how the timestamps are within one second of each other, emphasizing that they are all part of the same transaction:

```
[root@svd1 logs]$ grep f2eecb6f * | cut -c1-80
sv_debug.log:2011-10-31 17:17:26,984 [TP-Processor6] f2eecb6f ERROR com.cisco.sv
sv_dev_debug.log:2011-10-31 17:17:26,982 [TP-Processor6] f2eecb6f INFO com.cisc
sv_dev_debug.log:2011-10-31 17:17:26,984 [TP-Processor6] f2eecb6f ERROR com.cisc
sv_dev_debug.log:2011-10-31 17:17:26,990 [TP-Processor6] f2eecb6f INFO com.cisc
sv_external.log:1}2011-10-31 17:17:27,108}10.10.99.3}f2eecb6f}VideoControl}Bould
sv_external.log.2011-09-08:3}2011-10-31 17:17:27,107}10.10.99.3}f2eecb6f}page=VD
sv_msg_trace.log:2011-10-31 17:17:27,269 [I/O dispatcher 13] f2eecb6f DEBUG svlo
sv_phone_xml.log:2011-10-31 17:17:27,107 [TP-Processor6] f2eecb6f DEBUG svlog.ph
```

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Using SVD Logs

Step 4: Check the sv_phone_xml.log to perform a sanity check of the XML returned to the phone. The XML in the example below corresponds to the be0d5d69 entry in sv_external.log in step 2 above. That is display the channel guide. The XML below describes two channels (KGO-HD and LIVEWELL HD) and for each defines the X,Y touch area and the channel change URL that is fired when touched

The format of the XML is documented in the Cisco IP Phone Application Development Notes:

http://www.cisco.com/en/US/partner/products/hw/phones/ps379/products_programming_reference_guides_list.html

```
2011-10-31 17:36:54,803 [TP-Processor7] be0d5d69 DEBUG svlog.phone.xml.log - To Phone: <?xml
version="1.0" encoding="UTF-8"?>
<CiscoIPPhoneGraphicFileMenu>
  <Prompt>Selected TV : TV-B</Prompt>
  <URL>http://10.194.172.82:8080/StadiumVision/images/phone/phone/phoneImages/saved/
SEP0026CBC01B64_ChannelSelect_0.png</URL>
  <LocationX>0</LocationX>
  <LocationY>0</LocationY>
  <MenuItem>
    <Name>KGO-HD</Name>
    <URL>http://10.194.172.82:8080/StadiumVision/jsp/VideoControl?
vc=no&Function=Channel&channel=1&device=SEP0026CBC01B64&suite=&display=2&am
p;chPgIndex=0&prevPage=ChSel</URL>
    <TouchArea X1="35" Y1="21" X2="147" Y2="47"/>
  </MenuItem>
  <MenuItem>
    <Name>LIVEWELL HD</Name>
    <URL>http://10.194.172.82:8080/StadiumVision/jsp/VideoControl?
vc=no&Function=Channel&channel=2&device=SEP0026CBC01B64&suite=&display=2&am
p;chPgIndex=0&prevPage=ChSel</URL>
    <TouchArea X1="148" Y1="21" X2="265" Y2="47"/>
  </MenuItem>
```


Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Using SVD Logs

Step 5: The `sv_msg_trace.log` file contains log messages for all communication between SVD and the DMPs being controlled. The example below corresponds to the channel change in step 2 (log message ID 80ecc133). The channel change button press on the phone results in 3 commands being sent to the DMP with IP address 10.10.99.29 as follows:

1. `setKeyCode`: Sends IR key code 158 to the DMP
2. `setVideoChannel`: Sets the video channel to `udp://239.200.0.103:4000`
3. `setDisplayBanner`: Activates the display banner for 5000 msec.

```
[root@svd1 logs]$ grep 80ecc133 sv_msg_trace.log
```

```
2011-10-31 17:37:04,522 [I/O dispatcher 9] 80ecc133 DEBUG svlog.dmp.msg - OK : https://  
10.10.99.29:443 || <commandMessage><commandList><command><type>setKeyCode</type><version>1</  
version><keyCode>158</keyCode></command></commandList></commandMessage> || result: 200
```

```
2011-10-31 17:37:04,729 [I/O dispatcher 10] 80ecc133 DEBUG svlog.dmp.msg - OK : https://  
10.10.99.29:443 || <commandMessage><commandList><command><type>setVideoChannel</  
type><version>1</version><url>udp://239.200.0.103:4000</url></command></commandList></  
commandMessage> || result: 200
```

```
2011-10-31 17:37:04,954 [I/O dispatcher 11] 80ecc133 DEBUG svlog.dmp.msg - OK : https://  
10.10.99.29:443 || <commandMessage><commandList><command><type>setDisplayBanner</  
type><version>1</version><Mode>Active</Mode><Duration>5000</Duration></command></commandList></  
commandMessage> || result: 200
```

Troubleshooting StadiumVision IP Phone Services

Troubleshooting – Common SV Services Phone Errors

- **XML Parse Error (4)** on a phone when accessing the SV Services/features
 - Most often an SVD configuration issue
 - Verify that the phone is configured in SVD with the correct IP Address
 - Verify that the phone is configured in the SVD Luxury Suite

- Phone displays a status of **Requesting** for long time when accessing SV Services/features
 - Possibly SVD resource issue or Network issue
 - Reproduce the delay and obtain SVD Logs and sniffer traces
 - Open a TAC case

- Phone displays **HTML/XML code** when accessing SV Services
 - Verify the correct IP Phone service URL in CUCM
 - Verify the correct SV Service URL in Idle URL configuration

- Phone displays a message that it is ***not currently configured*** for TV Control
 - Verify that the phone is configured in SVD with the correct IP Address
 - Verify that the phone is configured in the SVD Luxury Suite

Troubleshooting StadiumVision IP Phone Services

Note on CUCM QoS and IP Phone Services

- CUCM by specifies the Differentiated Service Code Point (DSCP) IP classification for IP phone services on phones, including any HTTP traffic
- By default the DSCP is set to 000000 for IP Phone Services
- This marking will cause all IP Phone Service traffic between the IP Phone and SVD to be classified as Best Effort on the network (potential to affect services)
- For StadiumVision IPPS deployments and to ensure quality of service it is recommended that the services be re-marked as CS3
- This is configured via CUCM | System | Enterprise Parameters | DSCP for Phone-based Services

DSCP for Phone-based Services *	CS3(precedence 3) DSCP (011000)	default DSCP (000000)
DSCP for Phone Configuration *	CS3(precedence 3) DSCP (011000)	CS3(precedence 3) DSCP (011000)
DSCP for Cisco CallManager to Device Interface *	CS3(precedence 3) DSCP (011000)	CS3(precedence 3) DSCP (011000)

- This change is global and requires a reset of all phones in the CUCM cluster
- If the switchport is not set to trust the IP phone the services could be remarked to best effort, this should be discussed with the network administrator

Troubleshooting StadiumVision IP Phone Services

Localization Issues

- If the localization is not installed or properly configured on CUCM/IP Phone the SVD Service Softkeys will not display properly
- Below is an example of the Chinese localization applied on SVD but not on the CUCM/IP Phone and a correct example, note the softkeys

Incorrect: Locale not configured on IP Phone



Correct: Locale configured on IP Phone



Troubleshooting StadiumVision IP Phone Services

With respect to CUCM versions 8.5 and 8.6

There are two known defects that have the potential to cause issues with IP Phone Services and troubleshooting:

CSCts42961 Ability to permanently delete setting for "Secure Phone URL Parameters"
CSCtr78976 Secured Directory URL repopulates to default URL upon cucm reboot

In CCMAdmin | Enterprise Parameters | Phone URL Parameters and Secured Phone URL Parameters

When you install CUCM fresh, both the non-secure (http) and secure (https) url's are populated

This configuration will not work. It will cause screen captures and phone authentication to fail, and cause other odd issues when accessing services as the phone will always look to use the https URLs if both are populated. In order for the https to work, not only must the CUCM security services be activated, but security must then be configured properly on CUCM.

To address this in a non-secure environment, remove the secure phone URLs (https) - all of them and save

KEEP in mind that if/when you reboot the server it will repopulate these fields – you must remove them again (defect)

These defects are not fixed in versions 8.5.1SU2 or 8.6.2a

Where to find more information....

Further Reading....

- ✓ CUCM Programming Guides (XML and IP Phone Services)

http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/products_programming_reference_guides_list.html
http://www.cisco.com/en/US/partner/docs/voice_ip_comm/cucm/devguide/8_5_1/axl.html#wp1054597

- ✓ CUCM Maintain and Operate Guides

http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/prod_maintenance_guides_list.html

For Locale installations, refer to the Cisco Unified Communications Operating System Administration Guides specific to your release, chapter Software Upgrades | Installing COP Files, Dial Plans, and Locales

- ✓ Cisco Developer Network – IP Phone Services

<http://developer.cisco.com/web/ipps>

- ✓ Troubleshooting Cisco IP Telephony

By: Paul Giralt; Addis Hallmark; Anne Smith Publisher: Cisco Press

- ✓ Developing Cisco IP Phone Services: A Cisco AVVID Solution

By: Darrick Deel; Mark Nelson; Anne Smith Publisher: Cisco Press

- ✓ StadiumVision Documentation on CCO

http://www.cisco.com/en/US/partner/products/ps11274/tsd_products_support_series_home.html

- ✓ StadiumVision Feature Guides

http://www.cisco.com/en/US/products/ps11274/products_feature_guides_list.html

- ✓ Cisco IP Phone 7975 Administration (Backgrounds, etc)

http://www.cisco.com/en/US/products/hw/phones/ps379/prod_maintenance_guides_list.html#anchor5