

VoIP Integration

Tool for Automated Provisioning System (TAPS)

Version 1.2 (1027)



Installation and Administration Guide



VoIP Integration
201K Sand Creek Road
Brentwood, California, USA.

Phone : +1-925-513-4400
Fax : +1-925-513-4401
www.VoIPintegration.com

Table of Contents

- Product Overview 3
 - Application Requirements 3
 - Cisco Unified Communications Manager (CUCM) 3
 - IP Phone 3
 - Supported IP Phone Models 3
 - Network Connectivity 3
- TAPS Process 4
 - Process Steps 4
 - Required Communication 4
- Installation Process 5
- Application Use 7
 - Launching TAPS 7
 - Connecting to a Cluster 7
 - HTTP Server 7
 - Licensing 8
 - Obtaining a License Key 8
 - Loading your License Key 9
- Settings 9
 - Partition 9
 - Search Criteria 9
 - Handling of requests to TAPS SEP phones 10
 - Phone Model Search 11
 - Collect Serial Numbers upon Completion 11
 - Prompt for Additional Data Collection 11
 - Create Enterprise IP Phone Service to Convert SEP to BAT (CUCM 7.X and above) 11
 - Check for Upgrades on Start 11
- User Interaction 12
 - Success Log 14
 - Remove Config 14
 - Open CUCM Device Page 15
 - Failure Log 15
 - Status Log 16
 - Session Log 16
 - Session Counts 16
- Appendix A: CUCM Pre Requisite Configuration 17
 - AXL Service 17
 - AXL User 18
 - Device Web Access 19
 - Auto Registration 20

Product Overview

VoIP Integration TAPS allows you to assign preconfigured device configurations to IP Phones. This allows you to deploy phones without having to scan and input MAC addresses into BAT files for specific users.

Auto Registered phones can be deployed to desks and then provisioned after placement by entering an extension on the TAPS phone screen.

TAPS simplifies phone deployments by not having to scan, label, and track phones between from configuration all the way through to placement. All you need to do is get the correct model phone to the correct location and then just enter an extension.

Application Requirements

- Windows PC with Microsoft Dot Net 3.5 or greater
Note: Windows VM Ware on Apple platforms is not supported

Cisco Unified Communications Manager (CUCM)

- CUCM 5+ (Tested on CUCM 5.0+)
- CUCM user with AXL, and User Admin permissions
- AXL Service activated and running on the CUCM Server
- See Appendix A for configuration of requirements

IP Phone

- To collect serial numbers, Web Access must be enabled

Supported IP Phone Models

6921, 6941, 6945, 6961, 7821, 7841, 7861, 7905, 7906, 7911, 7912, 7920, 7921, 7925, 7925-EX, 7931, 7936, 7937, 7940, 7941, 7941-GE, 7942, 7945, 7960, 7961, 7961-GE, 7962, 7965, 7970, 7971-GE, 7975, 8831, 8841, 8845, 8851, 8861, 8865, 8941, 8945, 8961, 9951, 9971, IP Communicator.

Network Connectivity

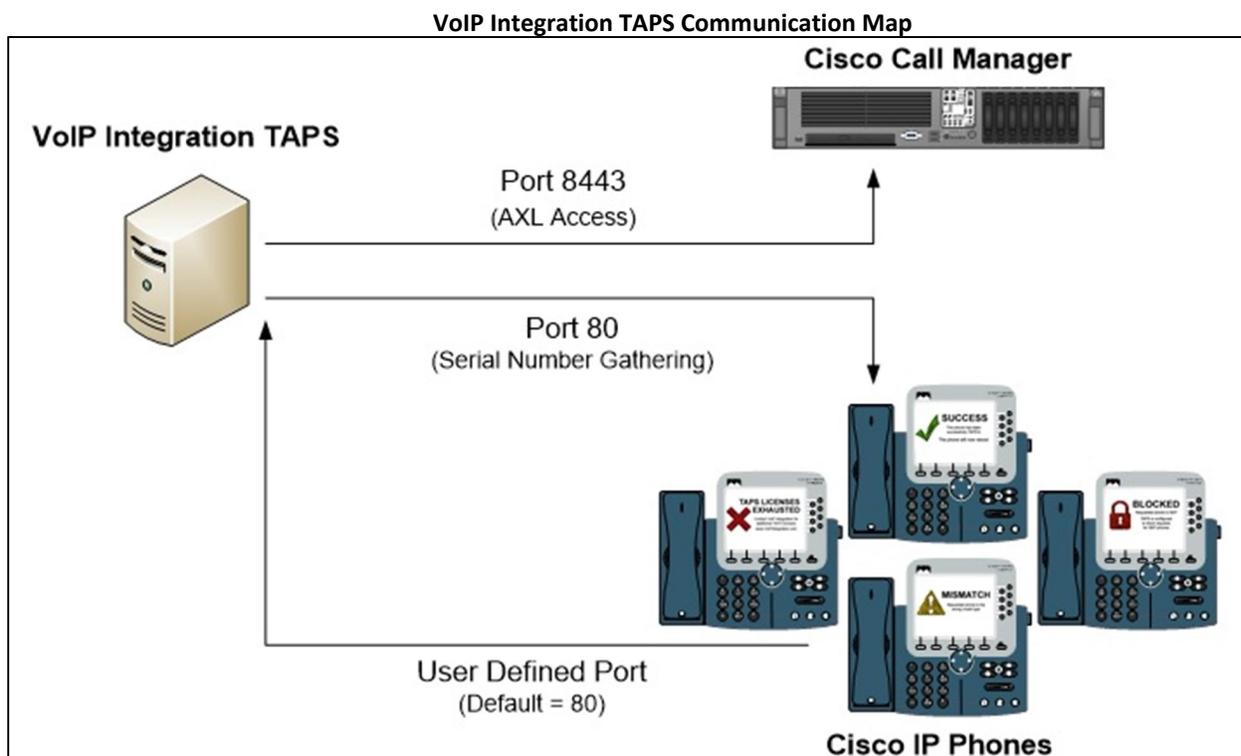
- Phones must be able to reach the PC running TAPS on a user defined port (default 80).
- The PC running TAPS must be able to connect to the phone on TCP port 80 to collect serial numbers.
- The PC running TAPS must be able to connect to CUCM on TCP port 8443.
(For control with CM Admin user)
- TAPS should work through NAT and over VPN.

TAPS Process

Process Steps

- Step 1** Phones are built/imported into CUCM with generic MAC addresses. BAT would be the preferred method for this.
- Step 2** A phone is placed on the destination desk, plugged in and allowed to auto register.
- Step 3** TAPS sees the auto registered phone and updates Idle URL to pull up the TAPS screen.
- Step 4** Support staff keys in the extension on the TAPS screen and presses the *Submit* softkey.
 - a. If more than 1 device is found to have the extension, the user will need to select the desired phone from the list.
 - b. If no phones are found the user will be notified and a TAPS logs the failed attempt. The user will be able to retry with a new extension.
- Step 5** If the additional data option is enabled, the user will be prompted to enter some requested additional data. (i.e. an asset tag number or location)
- Step 6** The TAPS program updates CUCM to change the generic MAC address on the configured device to be the MAC address of the phone that was TAPS'd.
- Step 7** The phone reboots and changes to the correct phone.
- Step 8** TAPS logs the successful attempt along with the phone's information.

Required Communication

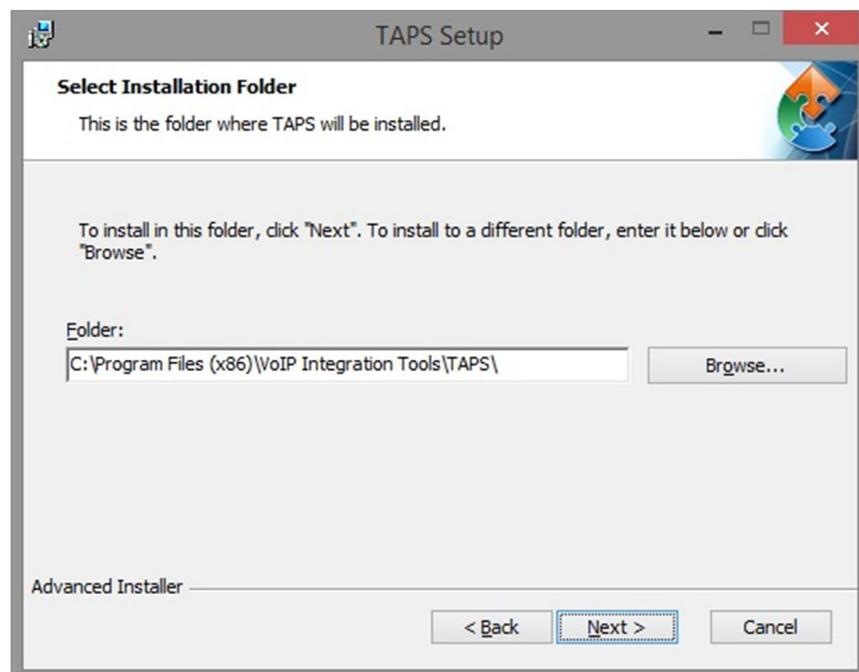


Installation Process

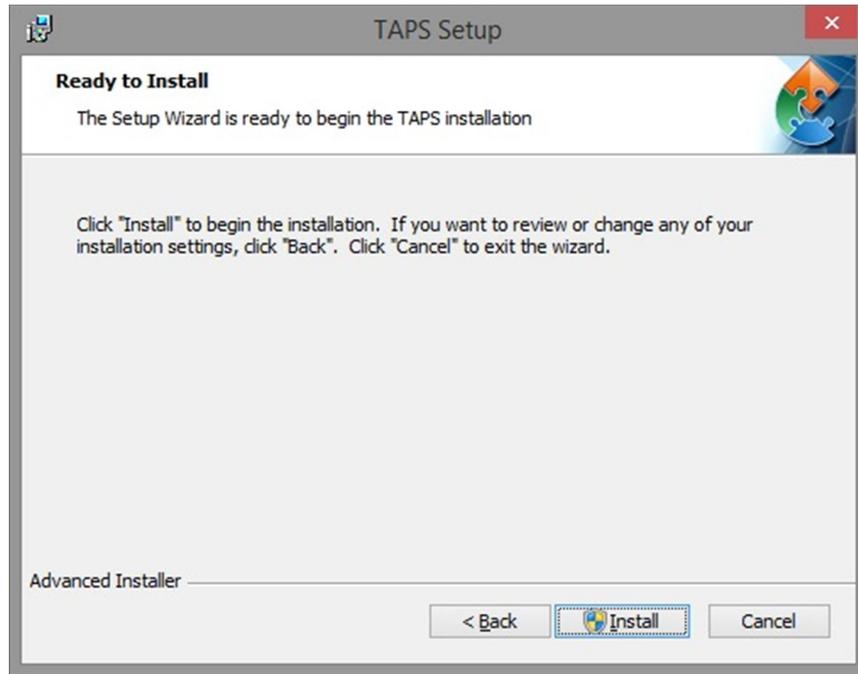
- Step 1** To begin the installation, download the installer from our website at <http://www.voipintegration.com>.
- Step 2** Double-click the saved file.
- Step 3** When the installer starts click **“Next>”** to begin the installation.



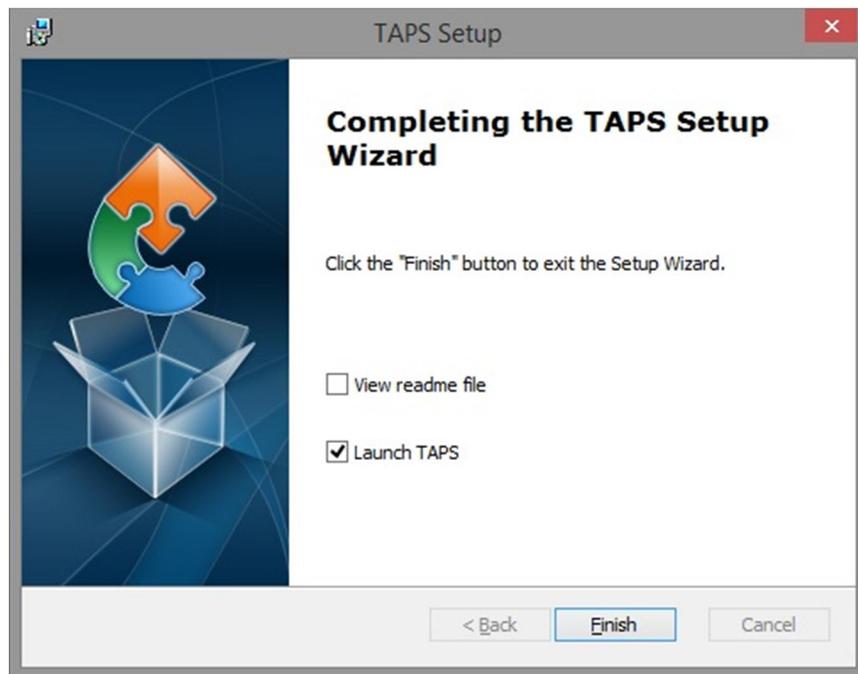
- Step 4** Enter the installation path where you would like TAPS to be installed or click **“Next>”** to use the default location.



Step 5 If you are satisfied with your selections and want to complete the installation click **“Install”**.



Step 6 Once the installation has completed, click **“Finish”** to exit the Setup Wizard.



Application Use

Launching TAPS

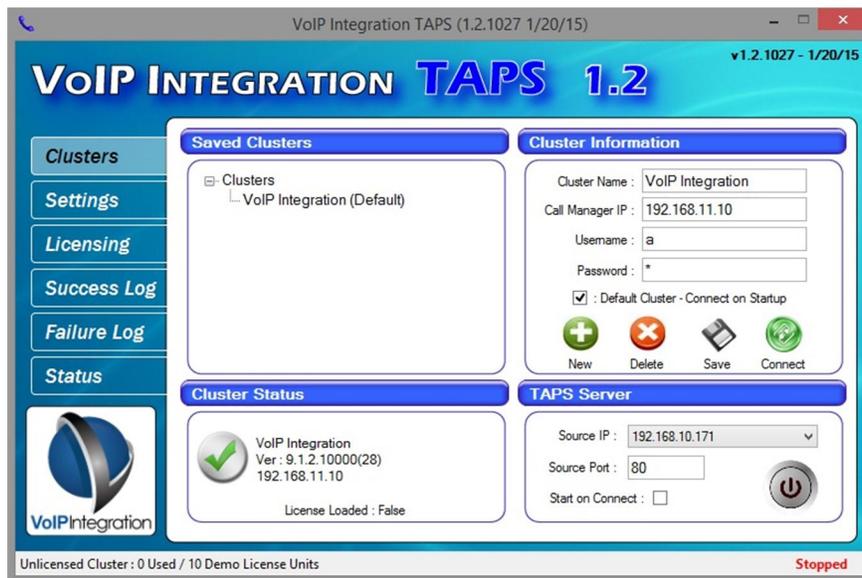
Navigate through Windows Start -> Programs -> VoIP Integration Tools -> TAPS and select TAPS.

TAPS will start up and check for an upgrade. It is strongly recommended that you click “Yes” to download the upgrade if any are found.

Connecting to a Cluster

To connect to a cluster, fill out the information in the **Cluster Information** box and select **Save** and then **Connect**. This will save the cluster ion the **Saved Clusters** section and attempt to connect to the server.

As TAPS attempts to connect to the server you will see the status update in the **Cluster Status** window in the lower left corner. The Status window will also show if a license has been loaded for this cluster.



HTTP Server

TAPS creates an HTTP server to serve the TAPS program to Cisco IP Phones. The source IP and port number can be configured on the main page to maximize system compatibility.

The Start on Connect option will start the web server as soon as TAPS successfully connects to a cluster.

Licensing

TAPS requires a license for each Cluster that you want to connect to and device licenses for the phones that you want to use the TAPS service on. When a phone is TAPS'd a license is used from any remaining device licenses in the pool.

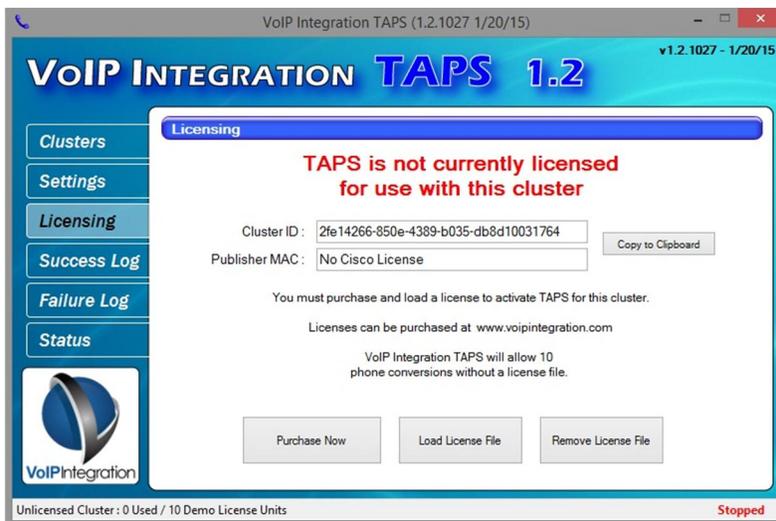
TAPS has an undo feature that will set a phone back to the auto registered state. If the phone has been successfully TAPS'd in the last seven (7) days, the device license will return to the pool. If the phone was TAPS'd longer than seven (7) days, the license will not return to the pool.

Obtaining a License Key

TAPS comes with a demo license that will allow you to TAPS 10 phones on a cluster. To TAPS more than 10 phones you will need to purchase a license file for each cluster you plan on using TAPS on.

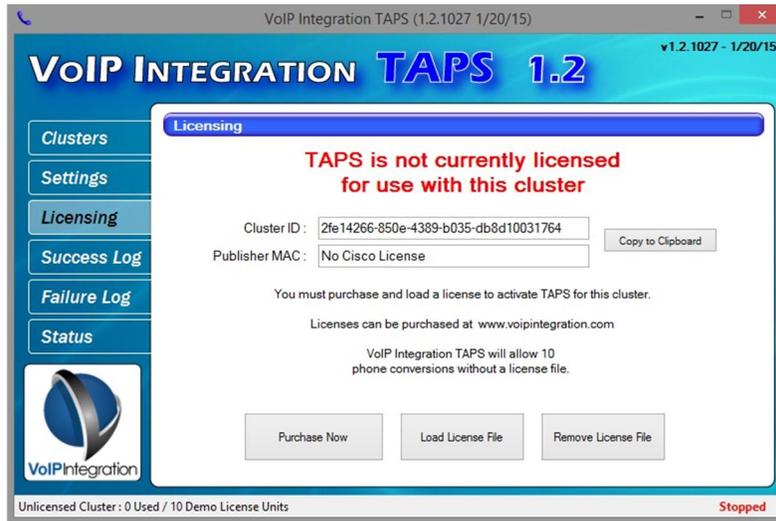
In order to purchase a license key for a cluster some information will need to be provided. The MAC Address of the publisher server and the Cluster ID are associated to the license file when it is created.

TAPS will gather the necessary information for you when you connect to a cluster. This minimizes any error in data collection or entry. The Licensing page in TAPS has a link that will assist in purchasing licenses. The link will take you to a webpage where you can upload your information for processing. Once you have uploaded your cluster information, please contact a sales representative at VoIP Integration by emailing sales@voipintegration.com or calling +1(925) 513-4400.



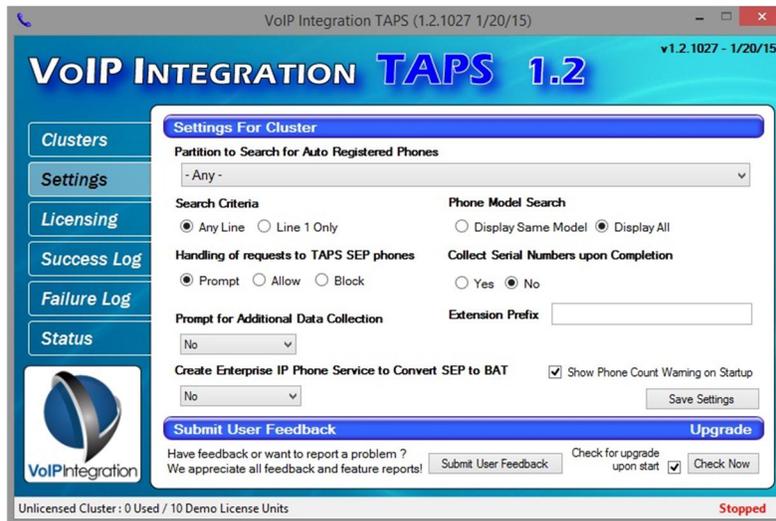
Loading your License Key

To load a license file, click on the “**Licensing**” link and then click on the “**Load License File**” button. A file browser window will open for you to select the license file.



Settings

TAPS has several options that can customize the experience of the user.



Partition

The *Partition* setting allows you to limit what phones receive the TAPS Idle URL. By selecting a partition, only phones that have an extension in that partition that also have a description beginning with, “Auto XXXX” where the X’s are the device’s primary phone number will be included in the TAPS program. **(Default = Any)**

Search Criteria

The *Search Criteria* setting allows you to limit TAPS to look at the primary extension on the phone when searching for matching devices or search for any matching line. **(Default = Any Line)**

Handling of requests to TAPS SEP phones

The *Handling of Requests* setting determines what TAPS does when a user tries to select a phone configuration that begins with SEP. When importing phones using BAT, this means the phone has been registered previously or edited.

One of the following screens will be shown to the user when the Prompt and Block settings are chosen:



If **“Allow”** is selected then the phone will take over the configuration in question even if it is on another phone without prompting. **(Default = Allow)**

Phone Model Search

The *Display* mode setting determines where TAPS will search for phones matching the extension that has been entered on the phone screen. **(Default = All Matching Phones)**

Same Model: The same model setting will only search for like-model phones to the device that is being TAPS'd. This means that if you are entering an extension into a 7945 model, but the extension is found on a 7965 model, an error screen will appear telling you that there are no phones found with that extension.

All Matching Phones: The all matching phones setting will search every phone in the cluster for a match to the entered extension. If a phone is selected that is not the same model of the phone being configured, you will receive an error informing you of the mismatch in model type.

Collect Serial Numbers upon Completion

The *Collect Serial Number* setting will allow TAPS to gather the serial number from each device that is successfully configured and will record it in the Success Log. **(Default = No)**

In order for TAPS to gather the serial numbers, the PC that is running TAPS needs to be able to reach all of the IP Phones on port 80. This also means that the Web Access setting on the device must be enabled on the CUCM Cluster.

Prompt for Additional Data Collection

The *Additional Data Collection* option is available to gather extra information during the placement of phones. If you want to collect more information other than just the MAC address and serial number, you can enable the additional data collection in either numeric or alphanumeric mode.

The user will be shown the custom prompt after going through the TAPS selection process.

For example: An asset tag number, cubicle, or office number are common values that are requested during phone deployments. **(Default = No)**

Create Enterprise IP Phone Service to Convert SEP to BAT (CUCM 7.X and above)

The Create Enterprise IP Phone Service to Convert SEP to BAT setting enables TAPS to create an IP phone service that will appear on every phone in the cluster.

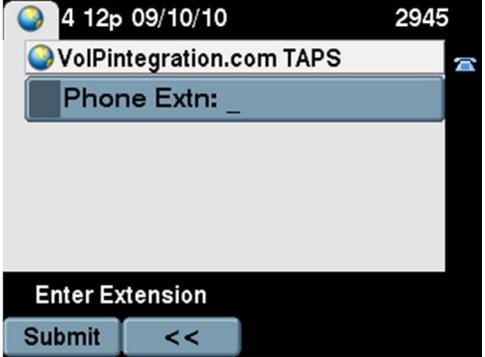
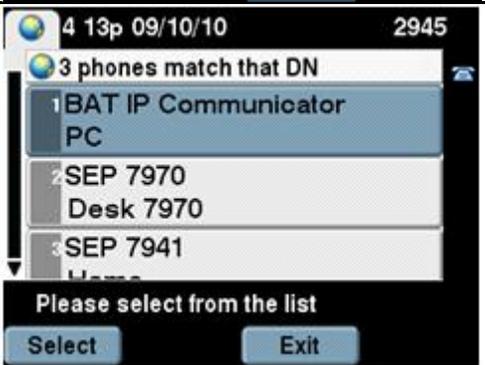
The service will convert any phone from a configured SEP phone and change the name in CUCM to BAT. This will save the existing phone configuration but will allow the phone to return to the auto registered state.

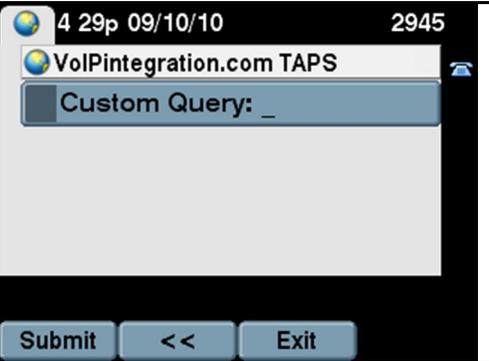
Check for Upgrades on Start

The check for upgrade setting indicates whether or not TAPS will check for available upgrades at start up. **(Default = On)**

User Interaction

Below is a list of all possible screens that TAPS will display to a user.

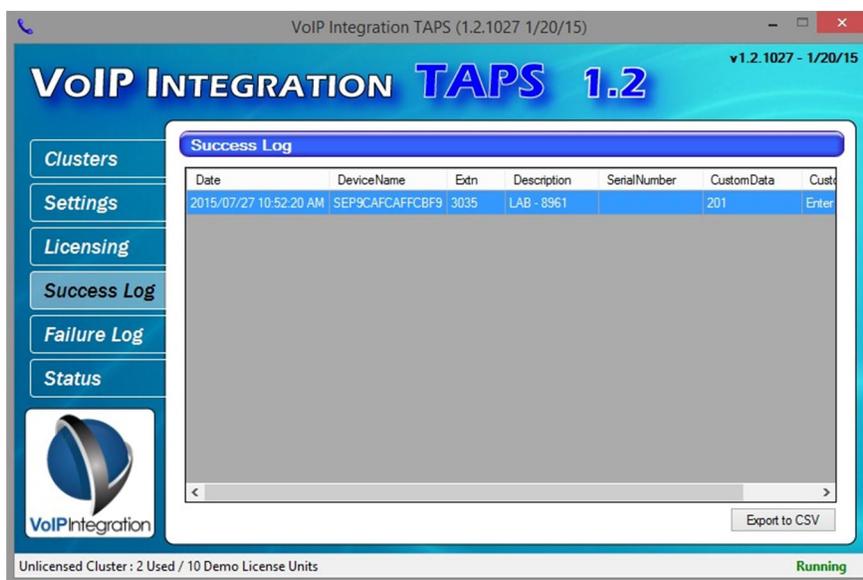
Screen Name	Description	Image
Input	User inputs the extension of the device they want to be at this location.	
Not Found	This screen will appear when no devices are found to contain the requested extension. Depending on the Search Criteria option, TAPS will search either all lines or only the primary line for the requested extension.	
Mismatch	This screen indicates that the selected phone model does not match the phone being TAPS'd.	
Multiple Match	This screen will display all matching devices that have the requested extension configured. Depending on the Phone Model Search option, this screen may display phones that do not match the local phone's model.	

<p>Confirm</p>	<p>This screen is shown when the Handling of Requests to TAPS SEP Phones option is set to Prompt and the phone that has been requested is already configured as SEP.</p>	
<p>Block</p>	<p>This screen is shown when the Handling of Requests to TAPS SEP Phones option is set to Block and the phone that has been requested is already configured as SEP.</p>	
<p>Custom Query</p>	<p>If the Prompt for Additional Data Collection option is enabled, this screen will display after selecting a phone of appropriate model and extension but before the Success screen. The query statement is configurable and the response can be either numeric or alphanumeric.</p>	
<p>Success</p>	<p>This is the last screen that is seen before a phone reboots and indicates that a phone has been successfully TAPS'd</p>	

Success Log

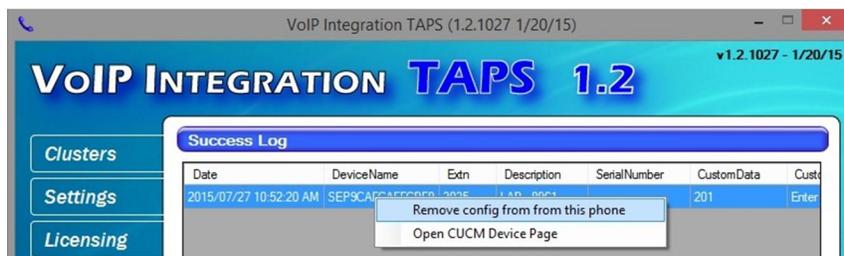
The success log contains all of the successful TAPS attempts. The log will track every phone that has been successfully TAPS'd on this cluster by this PC. If you restart the program, the log file will remain. By default the log will obtain the following information...

- Date and Time of attempt
- Device Name
- Extension used to TAPS the phone
- Device Description
- Serial Number (if enabled)
- Custom Data Query (if enabled)
- Custom Data Response (if enabled)



Remove Config

On the *Success Log* you have the option to undo a TAPS'd phone by right clicking a line in the log and selecting **Remove config from this phone**. This will change the name of the phone to BAT and if the phone was TAPS'd in the last **seven (7)** days, a license unit will be returned to the pool.



Open CUCM Device Page

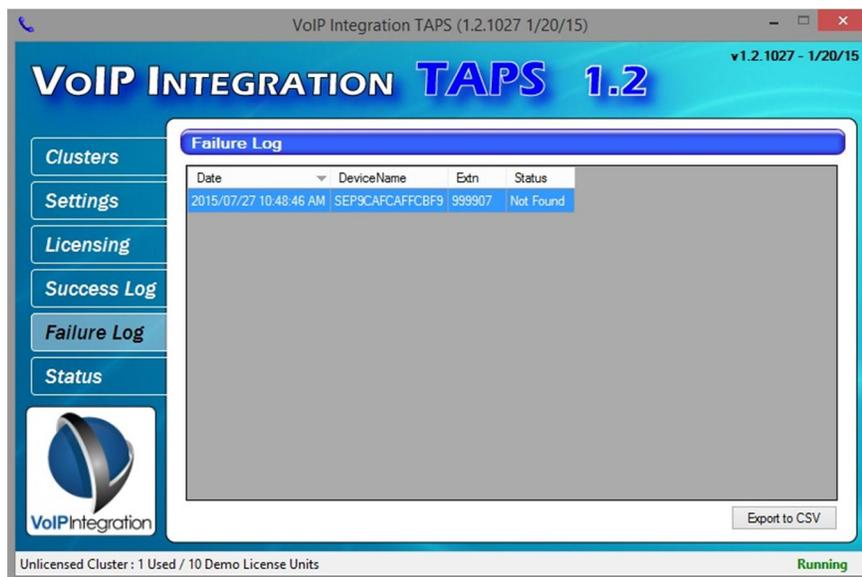
On the Success Log you also have the option to open the Device Page from the CUCM server directly from TAPS. Simply right click on the device you want to access and then click on the “Open CUCM Device Page” option. A browser window will then open to the device page.



Failure Log

The failure log contains all of the failed attempts on this cluster. The log will track every phone that has been successfully TAPS'd on this cluster by this PC. If you restart the program, the log file will remain. The log tracks the following information...

- Date and Time of attempt
- Device Name
- Extension used to TAPS the phone
- Reason the attempt failed.

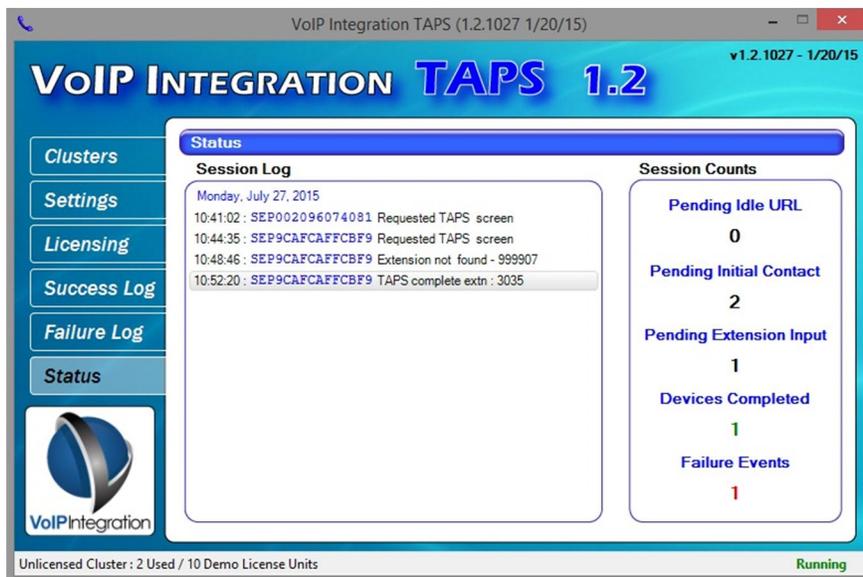


Exporting the Logs

The success and failure logs can both be exported to CSV file at any point by clicking on the “Export to CSV” button on the respective screens.

Status Log

The *Status Log* contains a complete overview of all of the interactions TAPS has had with the phones. It also displays the expected interactions that it expects.



Session Log

The *Session Log* displays every action that TAPS makes. The Session Log allows you to visually track the progress of a deployment. It also allows you to track the state of all of the phones that are interacting with TAPS.

Session Counts

The *Session Counts* section of the log displays the state of all of the phones that TAPS is interacting with. As phones are being configured, the **Completed Devices** count will increase and the **Pending Extension Input** count will decrease. When the **Pending Extension Input** count reaches zero, it means that you have completed configuring all of the phones that TAPS has applied the Idle URL to.

Appendix A: CUCM Pre Requisite Configuration

AXL Service

For TAPS to function with CUCM, you will need to ensure you have the AXL service active and running on your server and will need.

To Validate you have the AXL service running:

- Step 1** Use a web browser to access the CUCM Serviceability web page.
- Step 2** <https://<CUCM IP Address>/ccmservice>
- Step 3** Select the **Tools > Service Activation** menu
- Step 4** Under the Database and Admin Section
- Step 5** Ensure that the Cisco AXL Web Service is activated. If not, click the checkbox and then click the save button at the top of the page.
- Step 6** Select **Tools > Control Center - Feature Services** menu
- Step 7** Ensure that the Cisco AXL Web Service is running. If not, click the radio button and then click the start service button at the top of the page.

Service Activation

Database and Admin Services		
	Service Name	Activation Status
<input checked="" type="checkbox"/>	Cisco AXL Web Service	Activated
<input type="checkbox"/>	Cisco UXL Web Service	Activated
<input type="checkbox"/>	Cisco Bulk Provisioning Service	Activated
<input type="checkbox"/>	Cisco TAPS Service	Deactivated

Control Center – Feature Services

Database and Admin Services					
	Service Name	Status	Activation Status	Start Time	Up Time
<input type="radio"/>	Cisco AXL Web Service	Started	Activated	Mon Feb 15 13:38:55 2010	20 days 20:56:57
<input type="radio"/>	Cisco UXL Web Service	Started	Activated	Mon Feb 15 13:38:55 2010	20 days 20:56:57
<input type="radio"/>	Cisco Bulk Provisioning Service	Started	Activated	Mon Feb 15 13:37:17 2010	20 days 20:58:35
<input type="radio"/>	Cisco TAPS Service	Not Running	Deactivated		

AXL User

You may choose to use a CUCM administrator username and password with TAPS or assign the required permissions to new or existing users.

Any user who has the group membership of **Standard CCM Super Users** will be able to use TAPS to deploy phones without adding the following process.

If you choose to add a user new group for permissions and want to restrict permissions to the minimum required. You will need to work through the following process. This new group can then be added to new or existing end users in CUCM.

From within CUCM Administration

- Step 1** Select User Management
- Step 2** Select User Groups
- Step 3** Click Add New

- Step 4** Enter a Group Name such as (AXL Access)
- Step 5** Click Save
- Step 6** Select the Assign Role to User Group from the related links

- Step 7** Click Assign Role to Group button
- Add the Standard AXL API Access Role

- Click Save

- Step 8** Now find your user in CUCM Administration, User Management, End Users and add the group created above and the Standard CCM Admin Users group. This will allow the user to access the AXL service but no access to any of the CUCM Admin web pages.

- Step 9** Click Save.

Device Web Access

In order to gather the serial numbers from phones while using TAPS the phones must have their Web Access setting enabled. For CUCM versions before 8.0 the Web Access setting was enabled by default and you will not need to make any changes to the CUCM cluster. However, if you are running TAPS on an 8.X or later cluster Cisco has disabled the Web Access setting for all new devices. To enable web access you may choose to update the setting in one of the following locations.

- System > Enterprise Phone Configuration
- Device > Device Settings > Common Phone Profile

If you choose to update a Common Phone Profile instead of the Enterprise Phone Configuration you will need to make sure that the profile is applied to auto registered phones when they are created.

When updating the setting make sure that you select the “Override Common Settings” option otherwise the update will not take effect.

Settings Access*	Enabled	<input type="checkbox"/>
Video Capabilities*	Disabled	<input type="checkbox"/>
Web Access*	Enabled	<input checked="" type="checkbox"/>
Load Server		<input type="checkbox"/>
RTCP*	Disabled	<input type="checkbox"/>
Peer Firmware Sharing*	Enabled	<input type="checkbox"/>

Auto Registration

VoIP Integration TAPS is dependent on Auto Registration being configured. Please refer to the correct documentation from Cisco for the version of CUCM that you are running in your cluster at the following link. An excerpt for CUCM 8.0(2) has been included below.

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

Step 1	In the Enterprise Parameters Configuration window, set the Auto Registration Phone Protocol to SIP or SCCP. SCCP acts as the default, so change this setting when you are auto registering phones that are running SIP.	Enterprise Parameters Configuration , <i>Cisco Unified Communications Manager Administration Guide</i>
Step 2	In the cluster, configure only one Cisco Unified Communications Manager to use for auto registration. Always enable or disable auto registration on this Cisco Unified Communications Manager only. If you want to shift the auto registration function to another Cisco Unified Communications Manager in the cluster, you must reconfigure the appropriate Cisco Unified Communications Managers, the Default Cisco Unified Communications Manager Group, and, possibly, the default device pools.	Cisco Unified Communications Manager Configuration , <i>Cisco Unified Communications Manager Administration Guide</i>
Step 3	Configure the Default Cisco Unified Communications Manager Group, or another Cisco Unified Communications Manager Group, as the auto registration group. Choose the auto registration Cisco Unified Communications Manager from Step 1 as the primary Cisco Unified Communications Manager in this group.	Cisco Unified Communications Manager Groups, page 5-7 Cisco Unified Communications Manager Group Configuration , <i>Cisco Unified Communications Manager Administration Guide</i>
Step 4	Configure a calling search space specifically for auto registration. For example, you can use the auto registration calling search space to limit auto-registered phones to internal calls only.	Partitions and Calling Search Spaces, page 14-1 Calling Search Space Configuration , <i>Cisco Unified Communications Manager Administration Guide</i>
Step 5	Configure the default device pool for auto registration by assigning the Default Cisco Unified Communications Manager Group and auto registration calling search space to it. If you are configuring a separate default device pool for each device type, assign the default device pools to the device by using the Device Defaults Configuration window.	System-Level Configuration Settings, page 5-1 . Device Pool Configuration , <i>Cisco Unified Communications Manager Administration Guide</i> Device Defaults Configuration , <i>Cisco Unified Communications Manager</i>
Step 6	Enable auto registration only during brief periods when you want to install and auto register new devices (preferably when overall system usage is at a minimum). During other periods, turn auto registration off to prevent unauthorized devices from registering with Cisco Unified Communications Manager.	Enabling Auto registration , <i>Cisco Unified Communications Manager Administration Guide</i> Disabling Auto registration , <i>Cisco Unified Communications Manager Administration Guide</i>
Step 7	Install the devices that you want to auto register.	Refer to the installation instructions that come with your IP phones and gateways.
Step 8	Reconfigure the auto registered devices and assign them to their permanent device pools. <i>This is where you would run the TAPS program and update all of the auto registered phones.</i>	Cisco Unified IP Phone Configuration , <i>Cisco Unified Communications Manager Administration Guide</i> Gateway Configuration , <i>Cisco Unified Communications Manager Administration Guide</i>
Step 9	In the Enterprise Parameters Configuration window, set the Auto Registration Phone Protocol setting to SIP or SCCP, whichever is needed. If auto registering more phones with a different protocol is required, repeat the preceding steps.	Enterprise Parameters Configuration , <i>Cisco Unified Communications Manager Administration Guide</i>