SOLUTION GUIDE

UC Software 4.1.3G | December 2013 | 3725-40520-001 Rev A

Deploying Polycom® SoundStructure® VoIP Interface for Use with Microsoft® Lync™ Server

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About This Guide

This guide explains how to deploy the Polycom® SoundStructure® VoIP Interface as a SIP endpoint supporting voice calls in Microsoft Lync Server 2010 and 2013 environments.

Conventions Used in this Guide

This guide contains terms, graphical elements, and a few typographic conventions. Familiarizing yourself with these terms, elements, and conventions will help you successfully perform tasks.

Information Elements

This guide may include any of the following icons to alert you to important information.

Icons Used in this Guide

Name	*Icon*	*Description*
Note		The Note icon highlights information of interest or important information needed to be successful in accomplishing a procedure or to understand a concept.
Administrator Tip		The Administrator Tip icon highlights techniques, shortcuts, or productivity related tips.
Caution		The Caution icon highlights information you need to know to avoid a hazard that could potentially impact device performance, application functionality, or successful feature configuration.
Warning		The Warning icon highlights an action you must perform (or avoid) to prevent issues that may cause you to lose information or your configuration setup, and/or affect phone or network performance.
Web Info		The Web Info icon highlights supplementary information available online such as documents or downloads on support.polycom.com or other locations.
Timesaver		The Timesaver icon highlights a faster or alternative method for accomplishing a method or operation.
Power Tip		The Power Tip icon highlights faster, alternative procedures for advanced administrators already familiar with the techniques being discussed.
Troubleshooting		The Troubleshooting icon highlights information that may help you solve a relevant problem or to refer you to other relevant troubleshooting resources.
Settings		The Settings icon highlights settings you may need to choose for a specific behavior, to enable a specific feature, or to access customization options.

Typographic Conventions

A few typographic conventions, listed next, are used in this guide to distinguish types of in-text information.

Typographic Conventions

Convention	*Description*
Bold	Highlights interface items such as menus, soft keys, file names, and directories. Also used to represent menu selections and text entry to the phone.
Italics	Used to emphasize text, to show example values or inputs, and to show titles of reference documents available from the Polycom Support Web site and other reference sites.
Blue Text	Used for cross references to other sections within this document and for hyperlinks to external sites and documents.
`Courier`	Used for code fragments and parameter names.

What's in This Guide?

This deployment guide is organized into seven chapters. The first chapter, *Getting Started*, introduces Polycom SoundStructure solutions. The chapters following show you how to configure and deploy Polycom SoundStructure VoIP Interface with Microsoft Lync Server. The final chapters show you where to get help and outline known issues and workarounds.

Getting Started provides introductory information on deploying Polycom SoundStructure VoIP Interface with Lync Server.

Update SoundStructure VoIP Interface Software and Firmware provides you with information and resources on how to update the SoundStructure firmware and software on SoundStructure VoIP Interface.

Provision SoundStructure VoIP Interface for use with Lync Server provides you with information on provisioning SoundStructure VoIP Interface using the Web Configuration Utility.

View Lync Configuration Parameters provides you with the Lync configuration parameters and the values and descriptions of each parameter.

Appendix: Generate a Lync Configuration Hash provides you with information on how to install and export a Lync certificate to get a certificate hash.

Getting Help provides links to Polycom, partner, and third-party documents and web sites.

Troubleshooting lists troubleshooting problems and common solutions.

Getting Started

This deployment guide provides system administrators and SoundStructure system installers with information on deploying Polycom® SoundStructure® VoIP Interface running Unified Communication (UC) software 4.1.3G in a Microsoft® Lync™ Server 2010 and 2013 environment. Deploying and registering SoundStructure VoIP Interface with Microsoft Lync Server enables you to use Lync phone features on your SoundStructure system. This guide also provides you with information on deploying, configuring, and updating the SoundStructure VoIP Interface using the Web Configuration Utility.

For more information on provisioning other Polycom phones for Microsoft Lync Server 2010, see Deploying Polycom UC Software for Use with Microsoft Lync Server 2010.

Note: Reading the Deploying Polycom UC Software for Use with Microsoft Lync Server 2010 Guide

The Deploying Polycom UC Software for Use with Microsoft Lync Server 2010 guide does not provide specific configuration details for SoundStructure VoIP Interface. Additionally, many of the features described in the guide are specific to traditional phone endpoints and are not supported on the SoundStructure VoIP Interface because the SoundStructure system does not have a native keypad or user interface/display to support traditional phone features.

Before You Begin

In order to deploy and configure SoundStructure VoIP Interface to work with Microsoft Lync Server, you need to be familiar with using XML configuration files. See the section Use Lync Configuration Files for more information on using XML configuration files. You also need to update SoundStructure System Firmware to 1.7.0 or later and the SoundStructure VoIP Interface to UC software 4.1.3G or later. See Update SoundStructure VoIP Interface Software and Firmware and Getting Help for more information and resources on updating Firmware and UC software.

What's New?

Polycom UC software 4.1.3G supports Microsoft Lync features available on the Polycom SoundStructure VoIP Interface. Note that the SoundStructure VoIP Interface running UC software 4.1.3G maintains a Microsoft Lync Qualification, which enables users to register the VoIP Interface with a single line on Microsoft Lync server 2010 and 2013.

The following new and enhanced features are available on the SoundStructure VoIP Interface running UC software 4.1.3G or later registered with Microsoft Lync Server:

- Conference Call management
- Voicemail Access
- Blind and Consultative Call Transfer
- Message Waiting Indicator*
- Server Redundancy
- Private lines

- Logical Link Discovery Protocol (LLDP)
- Single Identity (Active Directory)
- Branch Resiliency
- Secure Real-Time Transport Protocol (SRTP)
- Automatic Software Updates (Lync 2013 only)

  *Supported when deployed with 3rd party control systems.

Polycom UC Software 4.1.3G includes the following new and enhanced features:

- The dial pan parameter is now imported to the SoundStructure VoIP Interface from the Lync Server using central provisioning.

Getting Help and Support Resources

This guide includes a Getting Help section where you can find links to Polycom product and support sites and partner sites. You can also find information about the Polycom Community, which provides access to discussion forums you can use to discuss hardware, software, and partner solution topics with your colleagues.

Update SoundStructure VoIP Interface Software and Firmware

Before you can configure the SoundStructure VoIP Interface to work with Lync Server, you must update the SoundStructure System Firmware to 1.7.0 or later and the SoundStructure VoIP Interface to UC software 4.1.3G or later. You can find more information and resources on updating the SoundStructure Firmware and UC software in the Getting Help section.

This chapter includes the following sections:

- Update Firmware on the SoundStructure System
- Update UC Software on SoundStructure VoIP Interface

Update Firmware on the SoundStructure System

Before provisioning SoundStructure VoIP Interface to work with Lync Server, you need to ensure that your SoundStructure system is updated with Firmware 1.7.0. You can find the latest SoundStructure Firmware on SoundStructure Support.

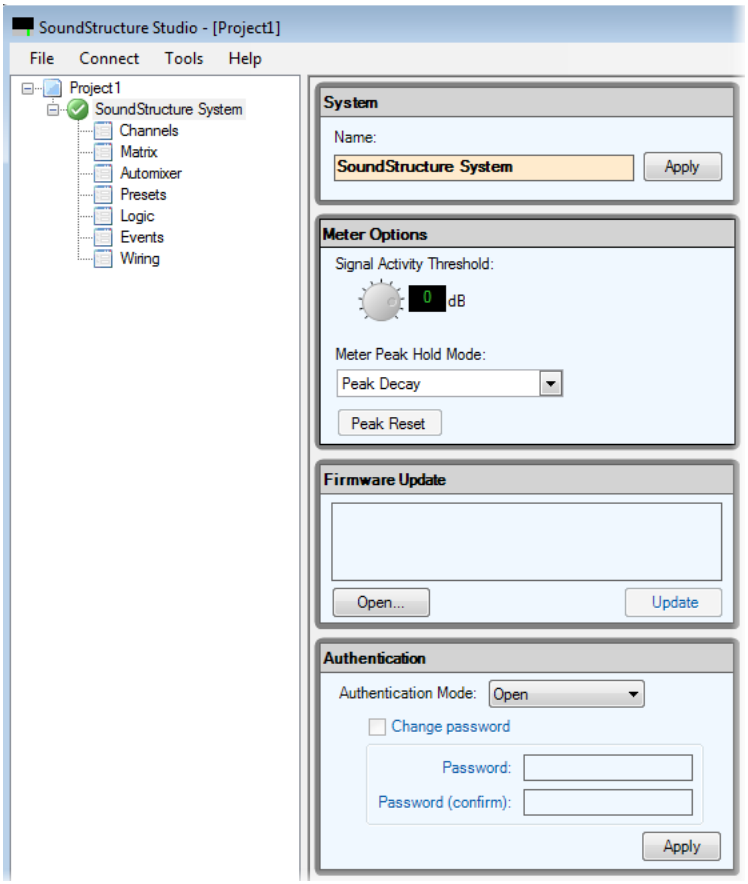
You can use the SoundStructure Studio application to update the Firmware of your SoundStructure system. Download the SoundStructure Studio Software 1.9.0 Setup on SoundStructure Support. For more information on updating SoundStructure Firmware with SoundStructure Studio, see Updating Firmware in the SoundStructure Design Guide.

To update the UC Firmware on your SoundStructure system:

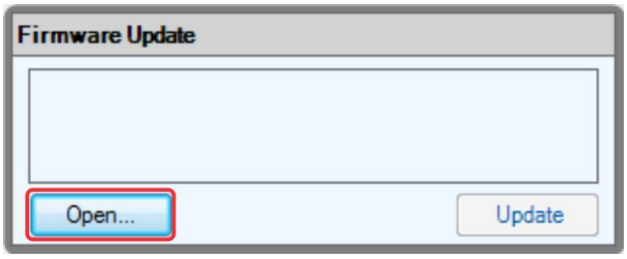
1. Download SoundStructure Firmware 1.7.0 from SoundStructure Support, agree to Polycom's terms and agreements, and save the `firmware-1.7.0.bin` file in an accessible location on your computer.

2 Open SoundStructure Studio and connect to your SoundStructure system.

The SoundStructure dashboard displays, as shown next.

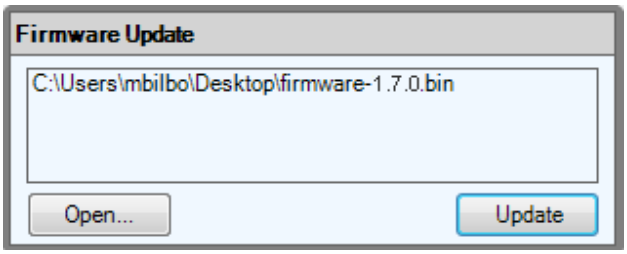


3 In the Firmware Update box, click **Open**, as shown next.



4 Find the `firmware-1.7.0.bin` file you downloaded and saved, and click **Open.**

The firmware file displays in the Firmware Update box, as shown next.



5 Click **Update** > **Yes**.

A dialog displaying the firmware update progress displays. When the firmware finishes updating, the SoundStructure system reboots and the Connect to Devices window displays.

6 Reconnect to your SoundStructure system.

Your SoundStructure system updated with the latest firmware and you can update your SoundStructure VoIP Interface with the UC software 4.1.3G.

Update UC Software on SoundStructure VoIP Interface

Polycom recommends you use the Web Configuration Utility when provisioning and updating UC software on the SoundStructure VoIP Interface. For more information on using the Web Configuration Utility, see the Polycom Web Configuration Utility User Guide on Polycom Support.

Note: Central Provisioning versus Lync Provisioning

The instructions for using the Web Configuration Utility to provision UC software on SoundStructure VoIP Interface do not apply to provisioning for Lync. Provisioning for Lync requires a list of parameters and the Certificate Authority for Microsoft Lync Server registration that you cannot enter into the Web Configuration Utility. See Provision SoundStructure VoIP Interface for use with Lync Server for configuring SoundStructure VoIP Interface to work with Lync Server.

To update the UC software on your SoundStructure system:

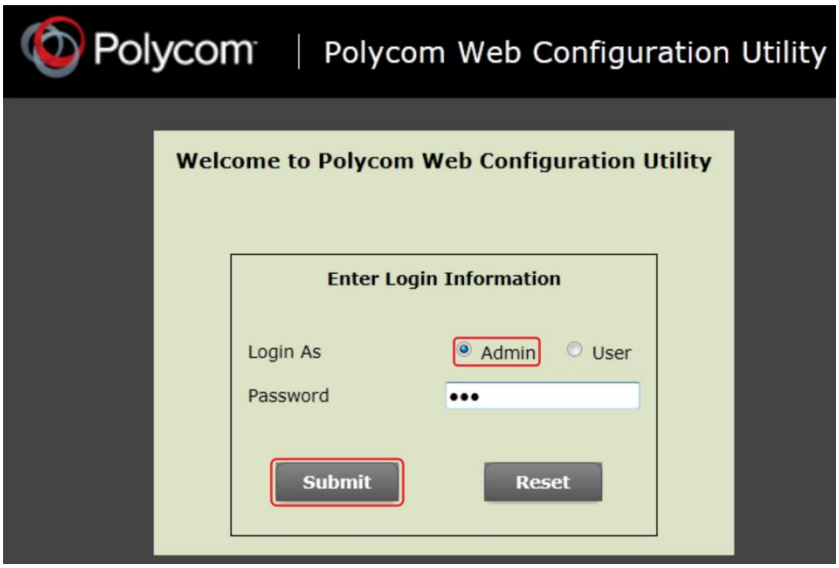
1 In your Internet browser, type the SoundStructure VoIP Interface IP address into your browser's address bar.

You can find your SoundStructure system's IP address on the Wiring page in SoundStructure Studio.

User Tip: Accessing the Web Configuration Utility

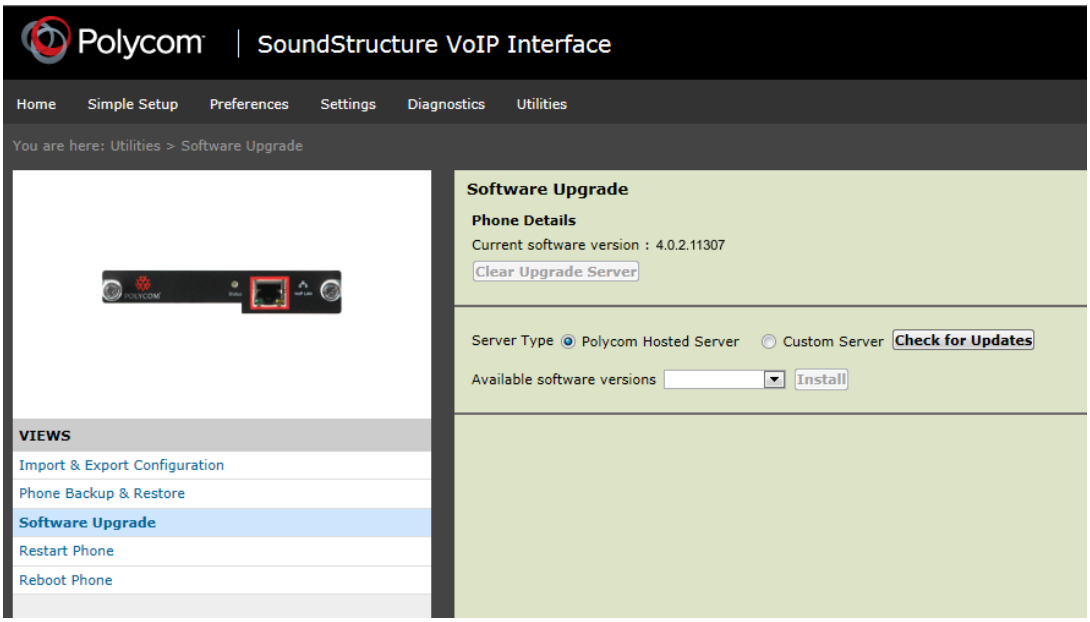
You can also access the Web Configuration Utility in SoundStructure Studio. On the Wiring page in VoIP Settings, click **Web Configuration** to open the Web Configuration Utility in your Internet browser.

2 Log in as **Admin** with the default administrator password **456** and select **Submit**, as shown next.



3 In the Web Configuration Utility, select **Utilities** > **Software Upgrade.**

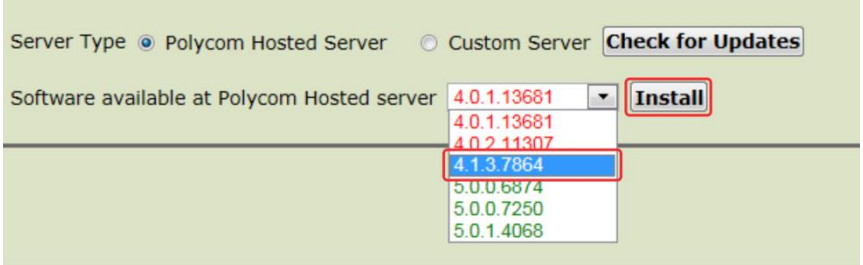
The Software Upgrade screen displays, as shown next.



4 Select **Check for Upgrades**.

The Web Configuration Utility finds available updates stored on the Polycom Hosted Server. A dialog with the message *Successfully fetched available software from Polycom Hosted server* displays.

5 Choose 4.1.3.7864 from the drop down menu and select **Install**, as shown next.



A dialog showing the current and selected software versions displays.

6 Select **Yes** and accept the terms and agreements to load the software onto the SoundStructure VoIP Interface.

An Information dialog displays with information about rebooting the phone.

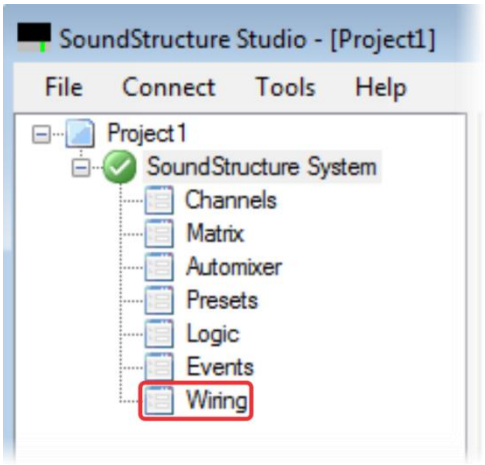
7 Read the information in the dialog and select **OK**.

The SoundStructure VoIP Interface reboots.

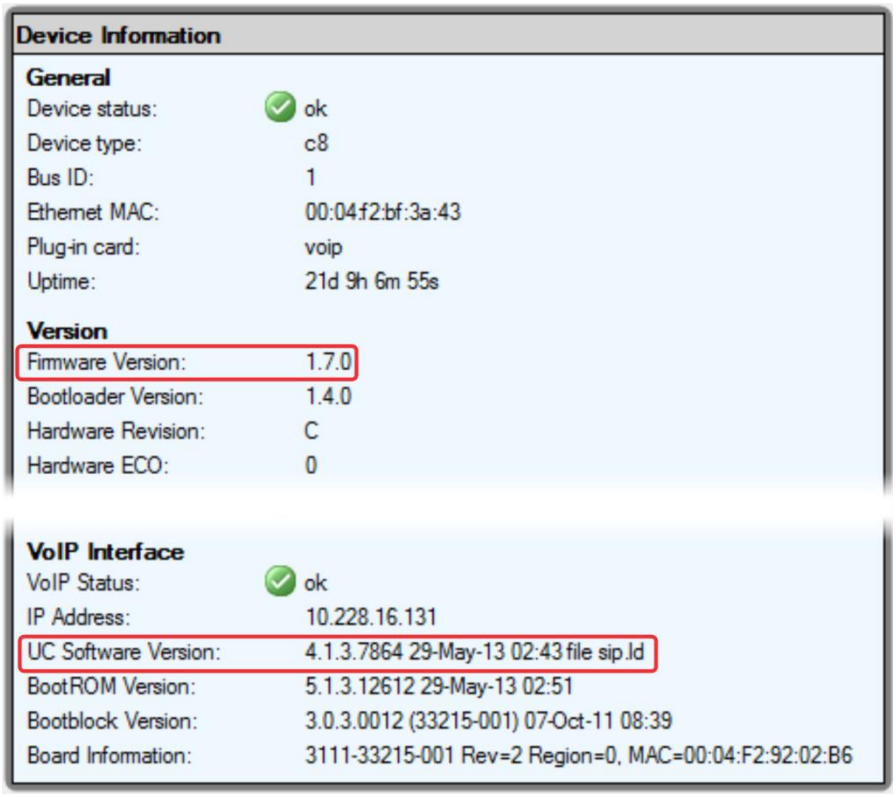
You can confirm that your SoundStructure system and SoundStructure VoIP Interface are updated with the latest firmware and software on the Wiring page in SoundStructure Studio.

To confirm you have updated the firmware and software on your SoundStructure system:

» In SoundStructure Studio, select the **Wiring** page, as shown next.



The Wiring dashboard displays, as shown below. You can verify the correct software versions are available on your SoundStructure system in the Device Information box, as shown next.



After you have updated the firmware and UC software on the SoundStructure VoIP Interface, you can begin provisioning your SoundStructure system to work with Microsoft Lync Server.

Provision SoundStructure VoIP Interface for use with Lync Server

This chapter provides you with information on preparing the configuration file needed to enable Lync and register with the Lync Server on SoundStructure VoIP Interface. This chapter also provides you with information on importing the Lync configuration file in to the Web Configuration Utility to provision SoundStructure VoIP Interface for use with Lync Server.

This chapter includes the following sections:

- Use Lync Configuration Files
- Prepare Lync Configuration Files
- Set Up the Network
- Import Configuration Files

Use Lync Configuration Files

In order to provision SoundStructure VoIP Interface to work with Microsoft Lync Server 2010 and 2013, you need to import a configuration file into the SoundStructure VoIP Interface using the Web Configuration Utility. Using the Web Configuration Utility, you can import a configuration file with all the parameters required for Lync, register SoundStructure VoIP Interface with Lync Server, and configure the SIP settings necessary to make and receive phone calls on SoundStructure VoIP Interface.

Polycom recommends system administrators use an XML editor, such as Microsoft XML Notepad 2007, to edit configuration files. Note that some text editors like Microsoft Notepad or Microsoft WordPad can introduce characters at line breaks that can make the configuration files invalid.

Attached to this guide is a configuration file template with all of the configuration parameters required for provisioning SoundStructure VoIP Interface for use with Lync Server. The attached configuration file is organized into three folders and is specific for SoundStructure VoIP Interface running UC software 4.1.3G. Note that you cannot use the configuration file with previous versions of UC software or other Polycom devices.

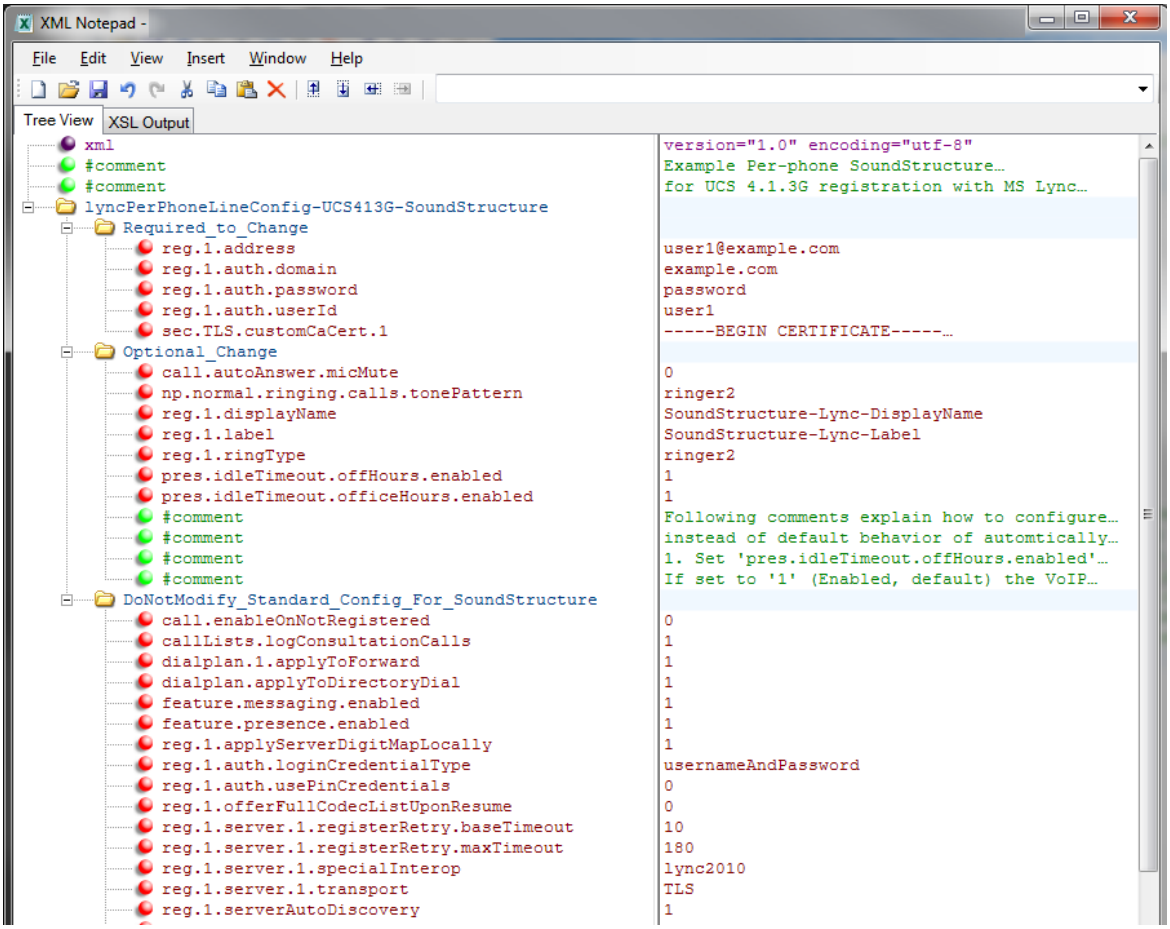
See View Lync Configuration Parameters for a list of the Lync configuration parameters and the folders for each set of parameters included in the attached configuration file.

Edit Lync Configuration Files

The attached configuration file contains the parameters you need to edit and save in order to provision the SoundStructure VoIP Interface for use with Microsoft Lync Server. See View Lync Configuration Parameters for more information on which parameters you are required to change.

The following figure displays the attached XML configuration file in Microsoft XML Notepad 2007. In the configuration file, the parameter names are listed on the left and the corresponding configuration values are on the right, as shown next.

Viewing XML Configuration Files in Microsoft XML Notepad



To edit the XML configuration file:

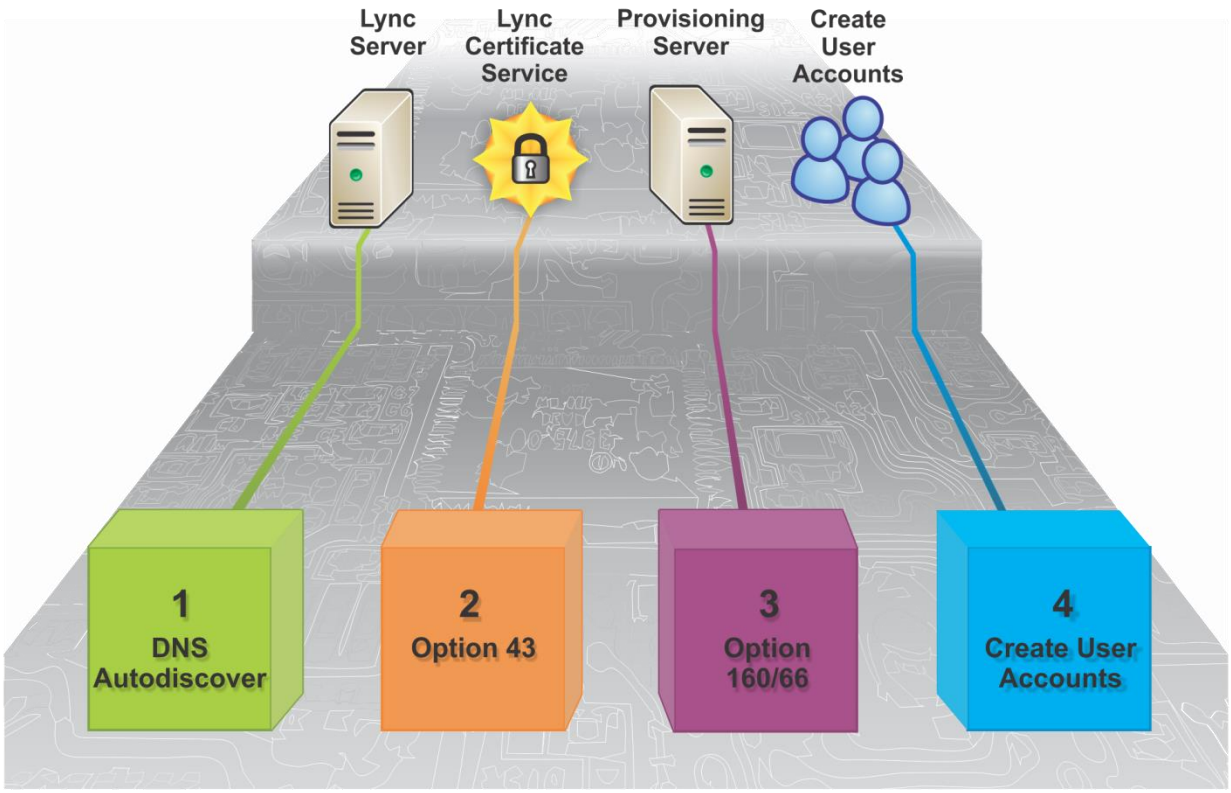
1. Open the attached configuration file in your XML editor.
2. Enter the parameter values in the tables Required Lync Configuration Parameters and Optional Lync Configuration Parameters listed in View Lync Configuration Parameters.
3. Save and name the configuration file. Make sure you save the file in an accessible location.

Set Up the Network

This section shows you how to set up a network that connects your Polycom SoundStructure VoIP Interface to Lync Server. This section is for customers who intend to use more advanced methods of provisioning that require setting up the network for auto-discovery of the Lync Server and directly import configuration and certificate from Lync server. Consult with your Lync server administrator regarding how the network is set up and the appropriate method of importing configuration. For customers who have not set up the network as defined below, see Import Configuration Files into the Web Configuration Utility to configure the SoundStructure VoIP Interface without making changes to the network.

This task has four steps to complete, and the following figure illustrates the four steps required to set up your network.

Setting Up your Network



To set up your network:

1. Setup or verify the domain name system (DNS) service (SRV) records to allow the SoundStructure VoIP Interface to automatically discover Lync Server. For information on creating and verifying DNS SRV records, see Required DNS Records for Automatic Client Sign-In.
2. Obtain a security certificate. Choose from the following two ways to obtain a security certificate.

- When provisioning SoundStructure VoIP Interface from within an enterprise, you can use Dynamic Host Configuration Protocol (DHCP) Option 43 to download a private certificate authority (CA) root security certificate used by Lync Server. The security certificate is required to support secure HTTPS and TLS. In conjunction with DHCP Option 43, you need to ensure that your devices can access Lync Server Certificate Provisioning web service over HTTP (TCP 80) and HTTPS (TCP 443).

  For information on configuring DHCP Option 43, see Microsoft Setting Up DHCP for Devices.

  For quick background information on how Option 43 works with Lync Server, see Understanding DHCP Option 43.

- If you need to manually install a security certificate on your Microsoft Edge Server, the signing CA that issued this certificate must be listed on the Polycom Trusted Certificate Authority List in Chapter 12 of the Polycom UC Software 4.1.0 Administrators' Guide. You must use Base64 format. For instructions on manually installing a certificate, see Generating a Lync Certificate Hash in the appendix section of this provisioning guide.

3. (Optional) If you are using centralized provisioning requiring a provisioning or boot server, configure DHCP Option 66 or, if unavailable, Option 160 with the address (URL or IP address) of the provisioning server. You can set the provisioning server address or URL through the device menu or by Setting the Base Profile Using the Web Configuration Utility in Deploying Polycom® UC Software for use with Microsoft® Lync Server 2010.
4. Ensure that you set up each user with a Lync account and credentials that each can use to sign in on the SoundStructure VoIP Interface.

Web Info: Setting Up the Network

If you need more detailed information on setting up a network for Polycom devices, see Chapter 3: Setting Up Your Device Network in the Polycom UC Software 4.1.0 Administrators' Guide.

Import Configuration Files into the Web Configuration Utility

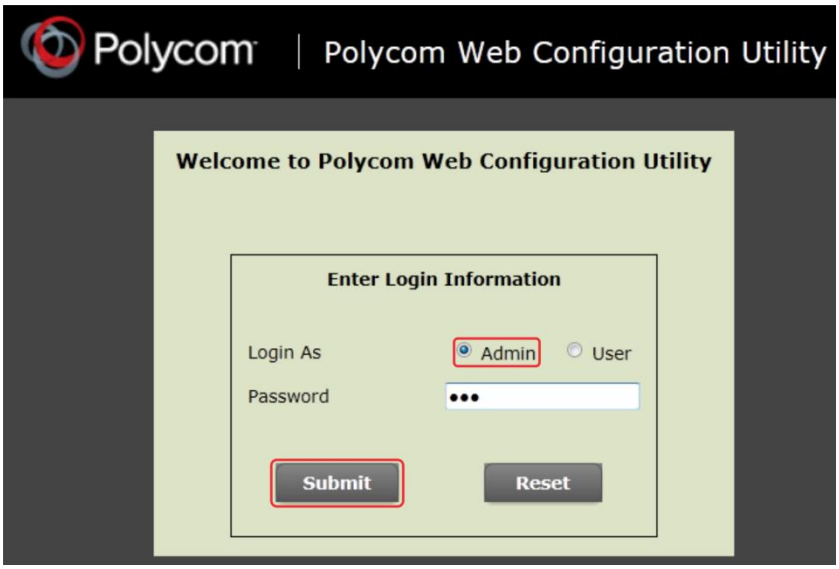
This section provides you with information on using the Web Configuration Utility to register the SoundStructure VoIP Interface with Lync Server. To provision SoundStructure VoIP Interface to work with Lync, you need to import the configuration file with the Lync credentials and Certificate Authority, which are provided by the Lync system administrator, using the Web Configuration Utility. See the chapter View Lync Configuration Parameters for detailed information about the parameters available in the attached configuration file. See Getting Help for more resources on provisioning and configuring SoundStructure VoIP Interface.

To provision the SoundStructure VoIP Interface for Lync Server:

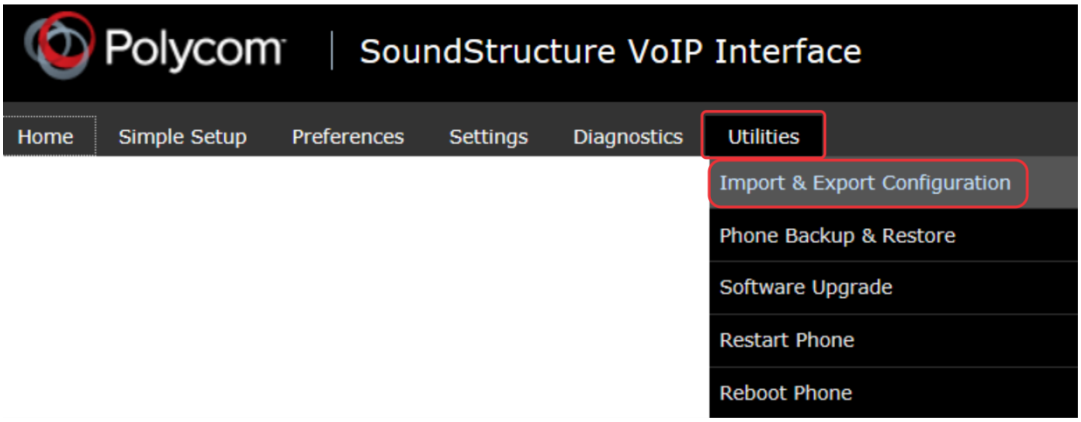
1. Enter your SoundStructure system's IP address into your browser's web address bar.

   You can find your SoundStructure system's IP address on the Wiring page in SoundStructure Studio.

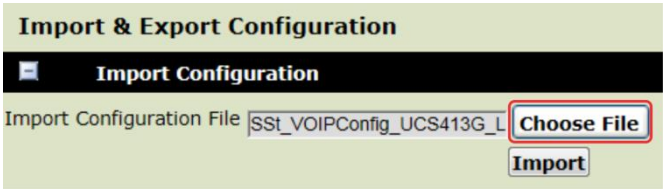
2 Log into the Web Configuration Utility by selecting **Admin,** entering the default password of **456**, and clicking **Submit**.



3 In the Web Configuration Utility, click **Utilities** > **Import & Export Configuration**.



4 On the Import & Export Configuration page, select **Choose File**, as shown next**.**



5 Find your .cfg file, select the file, click **Open** > **Import**.

6 Reboot your SoundStructure system.

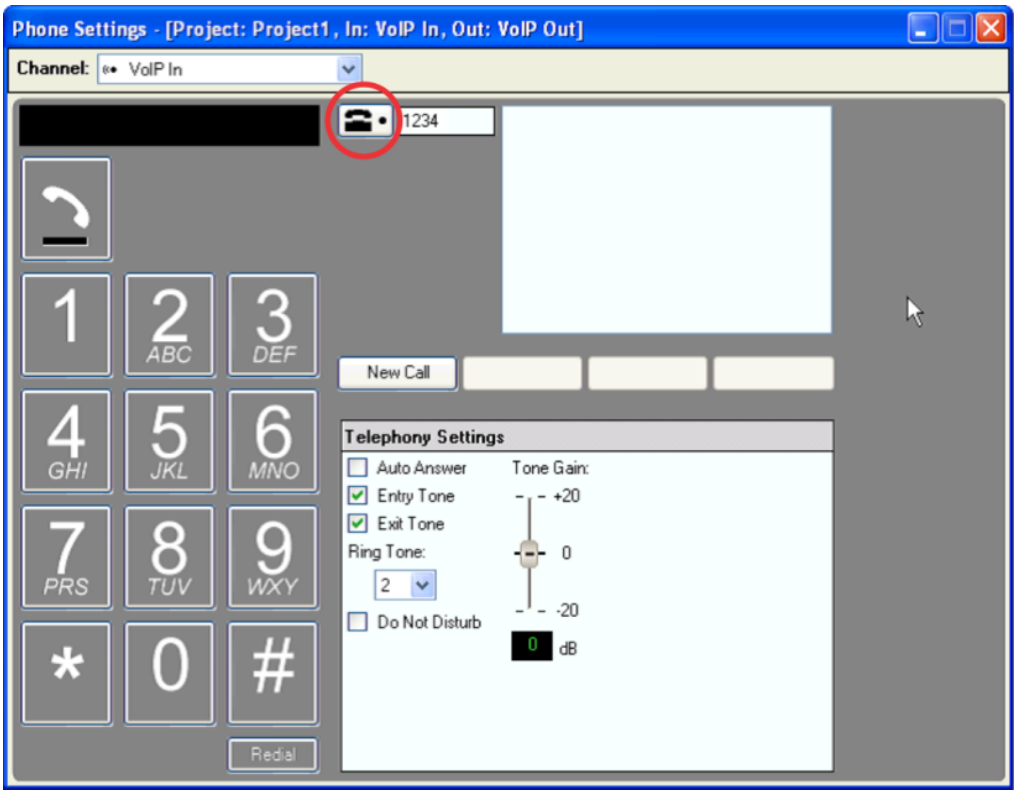
A dialog in the SoundStructure Studio displays showing the progress of the reboot.

You can check that your SoundStructure VoIP Interface is registered with Lync Server on the Channels page in SoundStructure Studio.

To check that your SoundStructure VoIP Interface is registered with Lync Server:

» In SoundStructure Studio, select **Channels** and click the keypad icon, as shown next.

The Phone Settings dialog displays. When your SoundStructure VoIP Interface is successfully registered to the Lync Server, the phone icon displays solid black, as shown next.

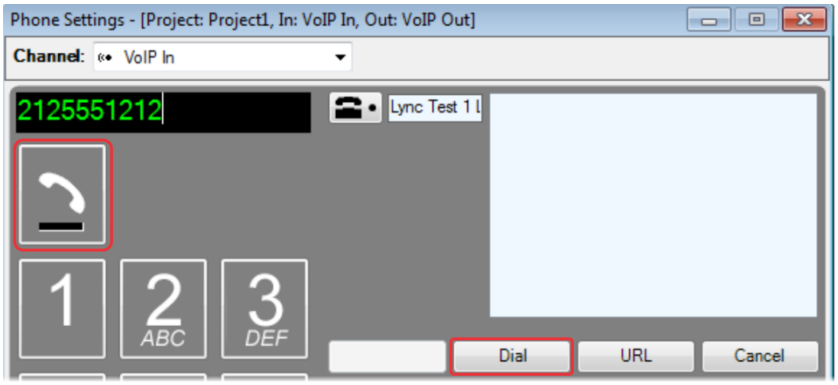


If the icon displayed in the Phone Settings interface is white, , the phone is not registered with the Lync Server.

You can also test that your SoundStructure VoIP Interface is registered with Lync Server by making a test call. You can make calls in the SoundStructure by dialing a phone number using the keypad or using your contact's Lync User ID.

To make a call using the keypad:

» In Phone Settings, dial a number using the keypad, and select or **Dial**, as shown next.

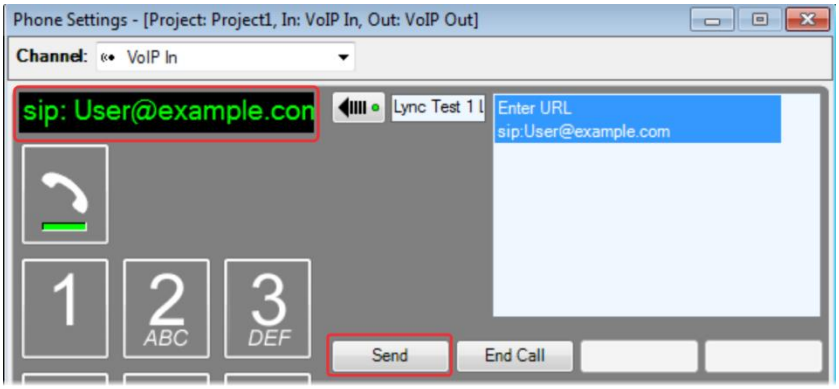


The SoundStructure VoIP Interface calls your contact.

To make a call using a contact's Lync User ID:

1 In Phone Settings, select **New Call** > **URL**

2 Enter your contact's Lync User ID and select **Send**, as shown next.



The SoundStructure VoIP Interface calls your contact.

View Lync Configuration Parameters

This chapter provides you with the required, optional, and standard configuration parameters, descriptions, and values for provisioning SoundStructure VoIP Interface to work with Microsoft Lync Server.

There are additional configuration parameters that are not listed in this chapter and you need to use the Lync features available on SoundStructure VoIP Interface. These additional parameters are automatically retrieved by the Lync Server when you sign in to Lync on your SoundStructure system. For details on in-band provisioning parameters, see Understanding In-Band Provisioning in Deploying Polycom® UC Software for use with Microsoft® Lync™ Server 2010. The deployment guide also provides information on generating a backup file for the complete configuration of the SoundStructure VoIP Interface.

Note: Automatic In-Band Provisioning Parameters

The dialpan parameter is automatically configured in SoundStructure VoIP Interface using in-band provisioning. You are not required to import a dialpan in the configuration file because the dialpan is managed by your system administrator on the Lync Server.

Required Parameters

The following table includes the parameters that system administrators need to register SoundStructure VoIP Interface with Lync Server. The table also includes the parameters needed to enable users to sign in to Lync on SoundStructure VoIP Interface. These parameter values are provided by the Lync system administrator and are listed in the `Required to Change` folder in the attached XML configuration file.

Required Lync Configuration Parameters

Parameter	*Permitted Values*	*Default Value*
reg.1.auth.userId Lync User ID		**user1**
reg.1.auth.domain The network domain address for the Lync server		**example.com**
reg.1.address Lync sign-in address		**user1@example.com**
reg.1.auth.password Login password		**password**

Parameter	*Permitted Values*	*Default Value*
sec.TLS.customCaCert.1		**[enter valid certificate in text format of file type: Base-64 encoded X.509 (.cer)]**

Optional Parameters

The following table includes the optional parameters system administrators can use to customize the SoundStructure VoIP Interface's end point, including ringtone and display name, for use with Lync. These parameters are listed in the `Optional_Change` folder in the attached XML configuration file.

Optional Lync Configuration Parameters

Parameter	*Permitted Values*	*Default Value*
call.autoAnswer.micMute	**0 or 1**	**0**
If 0, the microphone is active immediately after a call is auto-answered. If 1, the microphone is initially muted after a call is auto-answered. You can also configure the Auto-answer feature on the SoundStructure system on the Dialing Page in SoundStructure Studio.		
np.normal.ringing.calls.tonePattern	**ringer1 to ringer 14**	**Ringer2**
The ringtone that plays on SoundStructure VoIP Interface when a call is received.		
reg.1.displayName		**Text Display Name**
Polycom recommends entering the phone number or extension for the system, or a text name.		
reg.1.label		**Text Label Name for local user**
The display name that displays on the dialing page of SoundStructure Studio. Polycom recommends entering the phone number or extension for the system, or a text name.		
reg.1.ringType	**ringer1 to ringer 14**	**Ringer2**
The ringtone that plays on SoundStructure VoIP Interface when a call is received.		
pres.idleTimeout.offHours.enabled	**0 or 1**	**1**
If 0, the off hours idle timeout feature is disabled. If 1, the feature is enabled. To set your presence as always Available, set `pres.idleTimeout.offHours.enabled` to '0'. If set to 1, the VoIP Interface presence status in Lync changes to Away when the device is inactive after 5 minutes.		

Parameter	*Permitted Values*	*Default Value*
pres.idleTimeout.officeHours.enabled	**0 or 1**	**1**
If 0, the office hours idle timeout feature is disabled. If 1, the feature is enabled. To set your presence as always Available, set `pres.idleTimeout.officeHours.enabled` to '0'. If set to 1, the VoIP Interface presence status in Lync changes to Away when the device is inactive after 5 minutes.		

Standard Lync Configuration Parameters

The following table includes the standard configuration parameters for Lync. These parameters must be included as defined in the template to enable proper registration and operation with Lync Server. These parameters are listed in the `DoNotModify_Standard_Config_for_SoundStructure` folder in the attached XML configuration file.

Standard Lync Configuration Parameters

Parameter	*Permitted Values*	*Default Value*
call.enableOnNotRegistered	**0 or 1**	**0**
If 1, calls are permitted when the phone is not registered. If 0, calls are not permitted without registration. Setting this parameter to 1 enables you to use VVX 1500 phones to make calls using the H.323 protocol even though a H.323 gatekeeper is not configured.		
callLists.logConsultationCalls	**0 or 1**	**1**
If ‘1’, all consultation calls are logged, which are calls made to a third party—while the original party is on hold—when setting up a conference call or consultation calls. If ‘0’, consultation calls are not logged.		
dialplan.1.applyToForward	**0 or 1**	**1**
If 0, the dial plan does not apply to forwarded calls. If 1, the dial plan applies to forwarded calls.		
dialplan.applyToDirectoryDial	**0 or 1**	**1**
If 0, the dial plan is not applied to numbers dialed from the directory or speed dial list. If 1, the dial plan is applied to numbers dialed from the directory or speed dial.		
feature.messaging.enabled	**0 or 1**	**1**
If 0, the instant messaging feature is disabled. If 1, the feature is enabled. Enables instant messaging on the SpectraLink 8400 Series wireless handsets. When used with Lync, this parameter will be ignored by other phones.		

Parameter	*Permitted Values*	*Default Value*
feature.presence.enabled	**0 or 1**	**1**
Enables the presence feature to manage buddy lists and display the status of contacts. Note: buddy lists are not supported on SoundStructure VoIP Interface		
reg.1.applyServerDigitMapLocally	**0 or 1**	**1**
When set to 1, dial plan normalization rules are downloaded from the Lync Server and processed on the phone. If 0, dial plan rules are processed by Lync Server.		
reg.1.auth.loginCredentialType	**1 or loginCredentialNone** **2 or usernameAndPassword** **3 or extensionAndPIN**	**usernameAndPassword**
Sets the Base Profile. When the Base Profile is set to Generic, the default is 1 or loginCredentialNone. When the Base Profile is set to Lync, the default is 2 or usernameAndPassword.		
reg.1.auth.usePinCredentials	**0 or 1**	**0**
Enables the Sign In screen on the phone. For SoundStructure VoIP Interface, the default value is 0 because the VoIP Interface Card does not have a keypad and display. For desktop phones, this value is set to 1.		
reg.1.offerFullCodecListUponResume	**0 or 1**	**0**
Enables the VoIP Interface to determine the most appropriate audio codec to use when resuming a held call. Note that this parameter is used in UCS 5.0.x and is not necessary for UCS 4.1.3G.		
reg.1.server.1.registerRetry.baseTimeout	**10 to 120**	**10**
Sets the base time period to wait before a registration retry. Used in conjunction with `reg.x.server.y.registerRetry.maxTimeOut` to determine how long the system waits. This algorithm is defined in RFC 5626.		
reg.1.server.1.registerRetry.maxTimeout	**60 to 1800**	**180**
Sets the maximum period of time in seconds that the phone tries to register.		
reg.1.server.1.specialInterop	**standard, ocs2007r2, lcs2005, lync2010**	**lync2010**
Identifies the SIP signaling as Microsoft Lync Server 2010 and enables Lync Server features.		
reg.1.server.1.transport	**TLS**	**TLS**
The transport method the phone uses to communicate with the SIP server.		

Parameter	*Permitted Values*	*Default Value*
reg.1.serverAutoDiscovery	**0 or 1**	**1**
Enables Microsoft Auto Discover service. If you want to disable the Microsoft Auto-discover service, use the following parameters to disable the feature and manually set the Lync server address and SIP signaling `port.Disable autodiscover`: - `reg.1.serverAutoDiscovery`=0 - `Server: reg.1.server.1.address=<server_address>` - Port: `reg.1.server.1.port=<port_number>`		
reg.1.serverFeatureControl.cf	**0 or 1**	**1**
Enables server based call forwarding. If '0', server-based call forwarding is not enabled for this line. If '1', server based call forwarding is enabled for this line.		
reg.1.serverFeatureControl.dnd	**0 or 1**	**1**
If 0, server-based do-not-disturb (DND) is not enabled. If 1, server-based DND is enabled and the call server has control of DND. This parameter overrides `voIpProt.SIP.serverFeatureControl.dnd`.		
reg.1.serverFeatureControl.localProcessing.cf	**0 or 1**	**0**
Enables local Call Forward behavior. If set to '0' and `reg.1.serverFeatureControl.cf` is set to 1, local Call Forward behavior is disabled. If set to 1, local Call Forward behavior is enabled on all calls received.		
reg.1.serverFeatureControl.localProcessing.dnd	**0 or 1**	**0**
If set to '0' and reg.1.serverFeatureControl.cf is set to 1, the phone will not perform local Call Forward behavior. If set to 1, the phone will perform local Call Forward behavior on all calls received.		
reg.1.serverFeatureControl.signalingMethod	**String**	**serviceMsForwardContact**
Controls the method used to perform call forwarding requests to the server.		
roaming_buddies.reg	**0 or 1**	**1**
Sets the line index number for the registered line you want to enable Presence and Instant Messaging.		
sec.srtp.holdWithNewKey	**0 or 1**	**0**
Enables the appearance of a hold key. If 0, a key does not display when holding a call. If 1, a key displays when holding a call.		
sec.srtp.key.lifetime	**0, positive integer minimum 1024 or power of 2 notation**	**2^31**
Enables the lifetime of the master key used for the cryptographic parameter in SDP. The value specified is the number of SRTP packets. If 0, the master key lifetime is not set. If set to a valid value (at least 1024, or a power such as 2^10), the master key lifetime is set. When the lifetime is set, a re-invite with a new key will be sent when the number or SRTP packets sent for an outgoing call exceeds half the value of the master key lifetime. Setting this parameter to a non-zero value may affect the performance of the phone.		

Parameter	*Permitted Values*	*Default Value*
sec.srtp.mki.enabled	**0 or 1**	**1**
Enables the master key identifier (MKI), which is an optional parameter, for the cryptographic parameter in the SDP that uniquely identifies the SRTP stream within an SRTP session. MKI is expressed as a pair of decimal numbers in the form: `|mki:mki_length|` where `mki` is the MKI value and `mki_length` its length in bytes. If 1, a four-byte MKI parameter is sent within the SDP message of the `SIP INVITE / 200 OK`. If 0, the MKI parameter is not sent.		
sec.srtp.mki.length	**1 to 4**	**1**
Sets the length of the master key identifier (MKI), in bytes. Microsoft Lync offers 1-byte MKIs.		
sec.srtp.mki.startSessionAtOne	**0 or 1**	**1**
If set to 1, use a master key identifier (MKI) value of 1 at the start of an SDP session. If set to 0, the MKI value increments for each new crypto key.		
sec.srtp.resumeWithNewKey	**0 or 1**	**0**
Enables the appearance of a hold key. If 0, a key does not display when resuming a call. If 1, a key displays when resuming a call.		
sec.TLS.profileSelection.SIP	**a TLS profile**	**ApplicationProfile1**
Sets the TLS application profile used to store the CA certificate.		
softkey.feature.simplifiedSignIn	**0 or 1**	**1**
If 0, the **SignIn** soft key is not displayed. If 1 and `voIpProt.server.x.specialInterop` is lync2010, the **SignIn** soft key is displayed.		
tcpIpApp.ice.mode	**Disabled, Standard, MSOCS**	**MSOCS**
Specifies ICE and TURN work with Microsoft Lync Server.		
tcpIpApp.keepalive.tcp.sip.tls.enable	**0 or 1**	**1**
Set to ‘1’ to enable keep-alive packets and keep the TLS profile from timing out.		
video.iFrame.delay	**0 to 10, seconds**	**2**
Sets time delay during video calls. When non-zero, an extra I-frame is transmitted after video starts. The amount of delay from the start of video until the I-frame is sent is configurable up to 10 seconds. The default value is 2 seconds when are using this parameter in a Microsoft Lync environment.		
video.iFrame.onPacketLoss	**0 to 10, seconds**	**1**
If 1, an I-frame is transmitted to the far end when a received RTCP report indicates that video RTP packet loss has occurred.		

Parameter	*Permitted Values*	*Default Value*
voice.audioProfile.G7221.24kbps.payloadType		**112**
The payload type for the G.722.1 24kbps codec.		
voice.codecPref.G7221.24kbps	**0 to 27**	**5**
The priority of the G.722.1 24kbps codec. If 0 or Null, the codec is disabled. A value of 1 is the highest priority.		
voice.codecPref.G7221.32kbps	**0 to 27**	**0**
The priority of the G.722.1 32kbps codec. If 0 or Null, the codec is disabled. A value of 1 is the highest priority.		
voIpProt.offerFullCodecListUponResume	**0 or 1**	**0**
Enables the VoIP Interface to determine the most appropriate audio codec to use when resuming a call after it has been put in hold state. (This parameter is used in UCS 4.1.3G, not necessary for UCS 5.x)		
voIpProt.SIP.allowTransferOnProceeding	**0 to 2 seconds**	**0**
If set to ‘1’, a transfer can be completed during the preceding state of a consultation call. If set to ‘0’, a transfer is not allowed during the preceding state of a consultation call.		
voIpProt.SIP.header.diversion.enable	**0 or 1**	**1**
If set to 1, the diversion header is displayed if received. If set to 0, the diversion header is not displayed.		
voIpProt.sip.IM.autoAnswerDelay	**0 to 40**	**40**
The time interval from receipt of the instant message invitation to automatically accepting the invitation.		
voIpProt.SIP.mtls.enable	**0 or 1**	**0**
If 0, Mutual TLS is disabled. If 1, Mutual TLS is enabled. Used in conjunction with Microsoft Lync 2010 and 2013.		
reg.1.auth.useLoginCredentials	**0 or 1**	**0**
Enables the Sign In screen on VoIP phones. For SoundStructure, this value must be 0 because the SoundStructure VoIP Interface does not have a keypad and display.		

Appendix: Generate a Lync Certificate Hash

In order to register SoundStructure VoIP Interface with the Lync Server, you need a Base-64 encoded X.509 format, or certificate hash, of the standard Lync certificate. You need to request a Lync certificate from a Lync Administrator. Standard Lync certificates are generated as a Root CA certificate. If you do not have DHCP Option 43, you need to convert the standard Lync certificate to a Base-64 encoded X.509 format certificate to include in the configuration file to register SoundStructure VoIP Interface with Lync Server. This section provides you with information on installing the Lync certificate on your computer, exporting the standard Lync certificate to Base-64 encoded X.509 format, and getting the certificate hash to include in the configuration file.

Admin Tip: Be aware of Additional .cer Files

Some certificate formats, such as DER Encoded Binary X.509, also contain .cer file extensions but cannot be used to successfully register SoundStructure VoIP Interface with Lync Server. Make sure you only use the Base-64 encoded X.509 files to register with Lync Server.

This section includes the following topics:

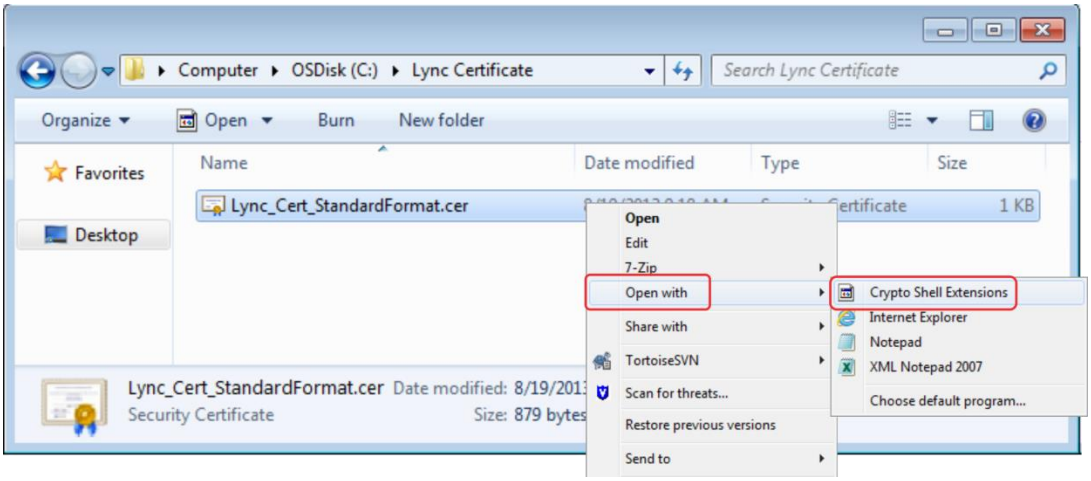
- Install the Standard Lync Certificate
- Export Lync Certificate to Base-64 Encoded X.509 Format
- Get the Certificate Hash
- Insert the Certificate Hash to the Configuration File

Install the Standard Lync Certificate

Before you can export the certificate into Base-64 encoded X. 509 format, the certificate must be installed on your computer in your root certificate files.

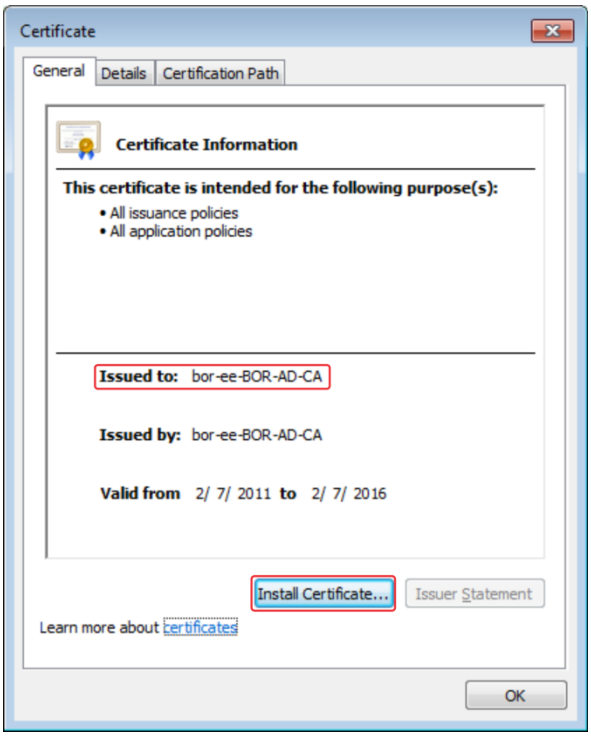
To install the standard Lync certificate on your computer:

1. Right-click on the .cer file, click **Open with** > **Crypto Shell Extention**



   The Certificate window displays with the certificate information.

2. Take note of the certificate name by **Issued to** and click **Install Certificate**, as shown next. You need to know the name of the certificate so you can find it when you export the certificate to the Base-64 encoded X.509 format.



The Certificate Import Wizard displays, as shown next.

3 Follow the import wizard instructions, and click **Finish**.

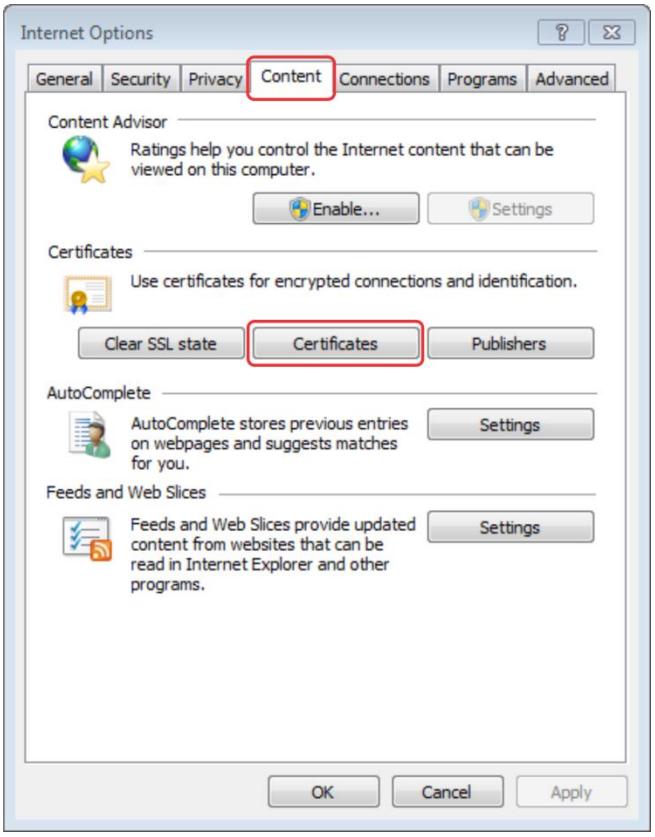
A confirmation dialog displays. Select **OK**.

Export Lync Certificate to Base-64 Encoded X.509 Format

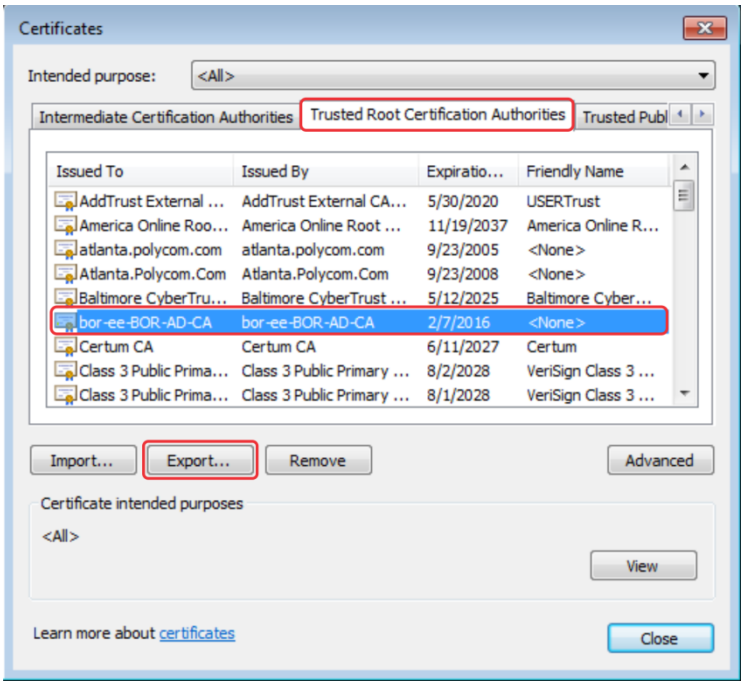
After you install the Lync certificate on your computer, you can export the certificate to Base-64 encoded X. 509 format.

To export the Lync certificate to Base-64 encoded X.509 format:

1. Open Internet Explorer and select **Tools** > **Internet Options**.
2. In Internet Options, select the **Content** tab and click **Certificates**, as shown next.

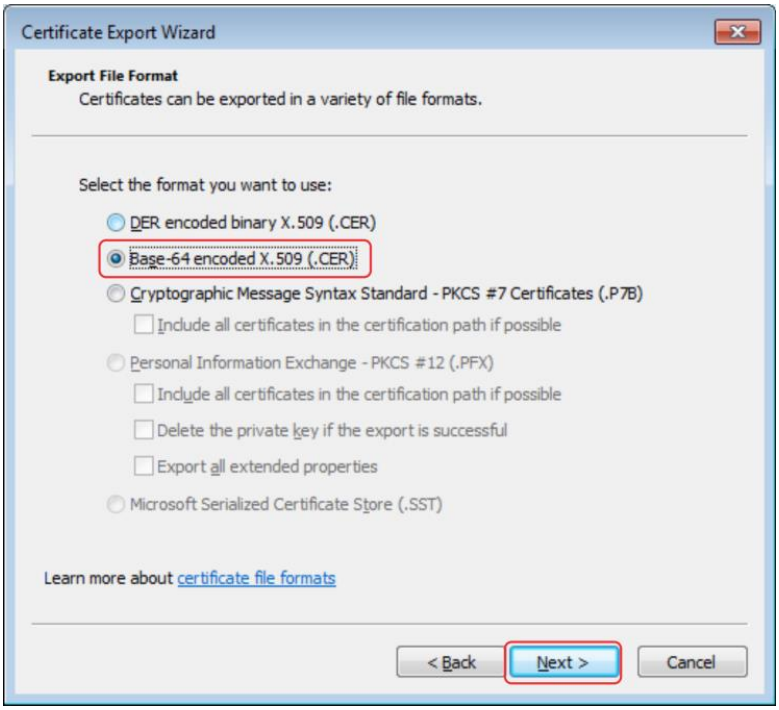


3 In Certificates, select the **Trusted Root Certification Authorities** tab, find the certificate you installed, and click **Export**, as shown next.

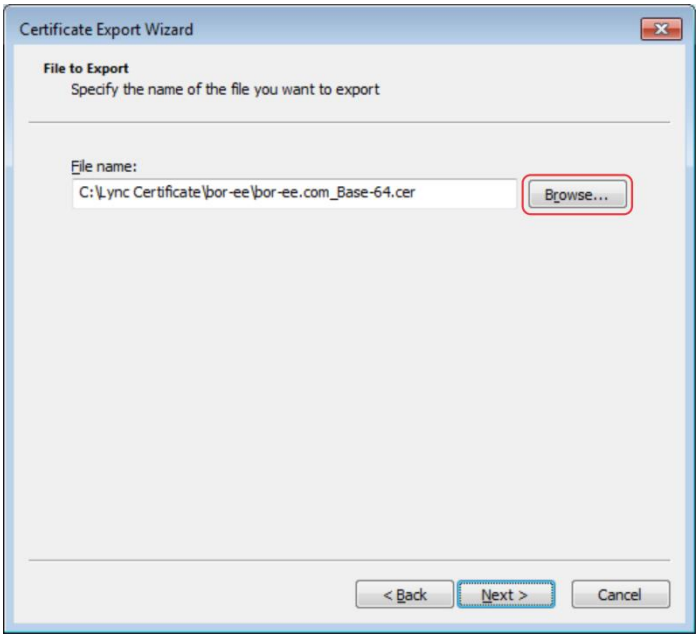


The Certificate Export Wizard displays, as shown next. Click **Next** > **Next**.

4 Select **Base-64 encoded X.509 (.CER)** as your export file format and click **Next**, as shown next.



5 Click **Browse** to search for the Lync certificate, as shown below, rename the .cer file, and click **Save** > **Next**.



6 Select **Finish** and close the Certificate Export Wizard and Certificate dialogs.

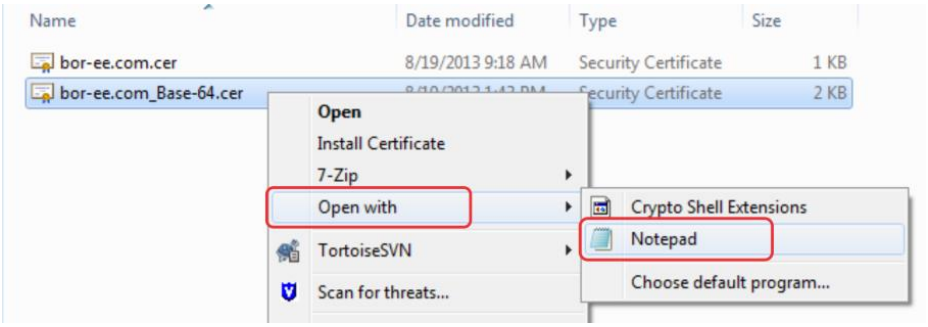
A dialog displays when the certificate is successfully exported.

Get the Certificate Hash

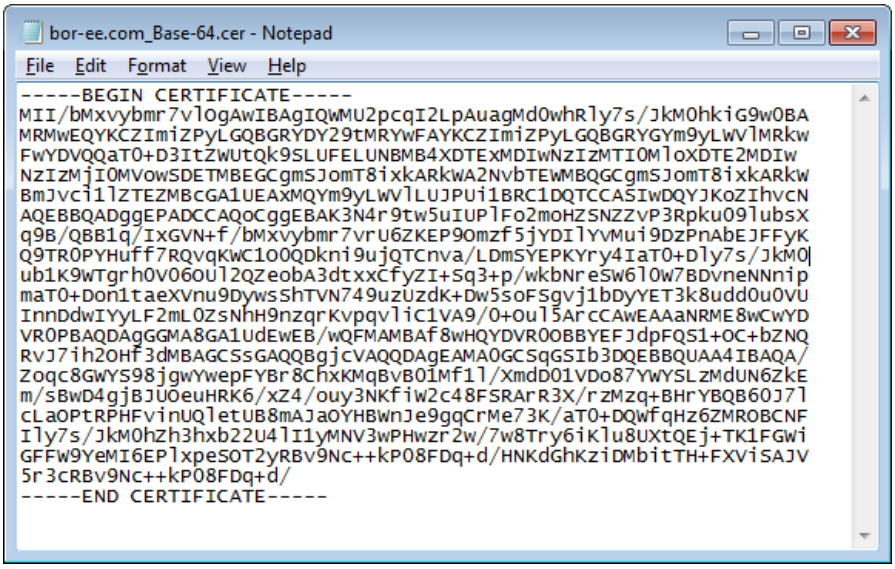
Now that you have exported the standard Lync certificate to a Base-64 encoded X.509 format certificate, you can get the certificate hash by opening the Base-64 encoded X.509 format certificate in Notepad.

To get the certificate hash:

1. Open the folder where you saved the Base-64 encoded X.509 format certificate.
2. Right click on the .cer file and click **Open with** > **Notepad**, as shown next.



The .cer file opens in Notepad, as shown next.



3. Select the entire text, or press **Ctrl**+**A** on your keyboard, and copy the certificate hash.

Now that you have copied the certificate hash, you can insert the certificate hash into your configuration file.

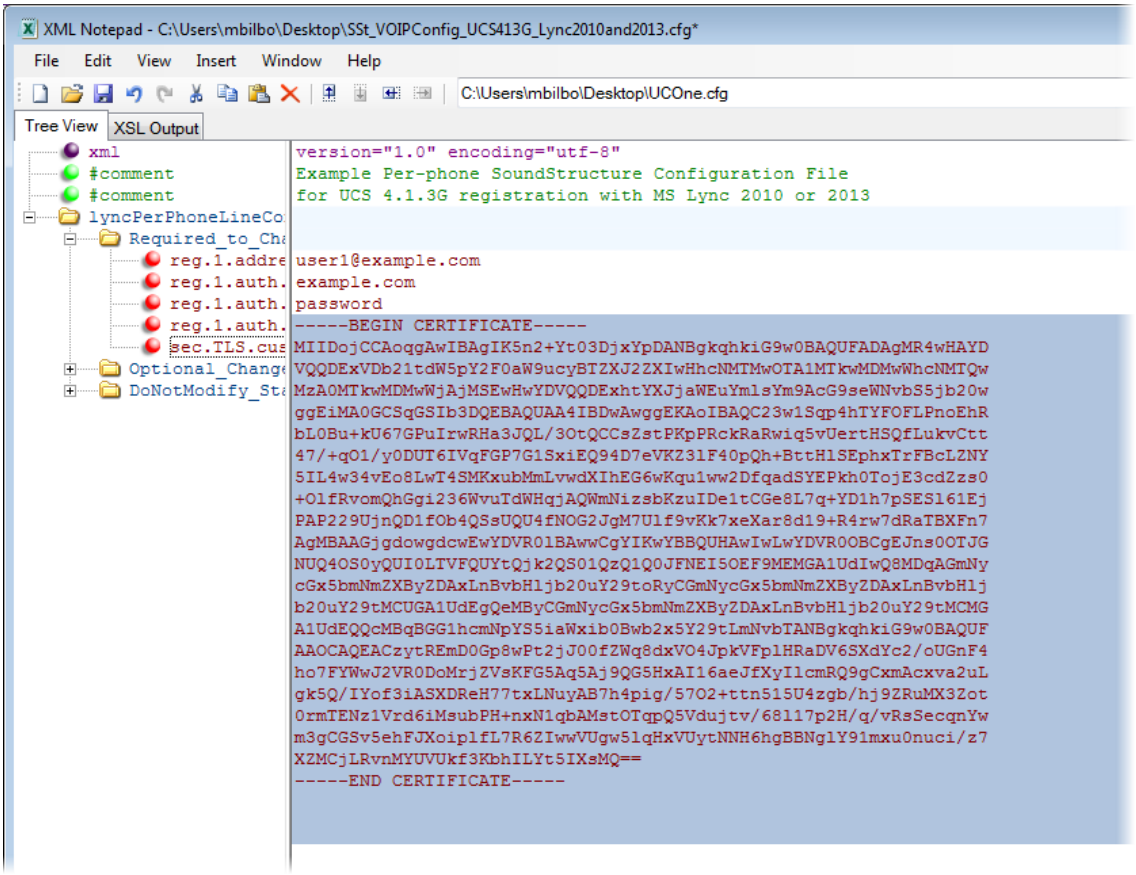
Insert the Certificate Hash in the Configuration File

After you get the certificate hash, you need to insert the certificate hash into your configuration file.

To insert the certificate hash into your configuration file:

1. Open your configuration file in your XML editor. Polycom recommends you use Microsoft XML Notepad when editing configuration files.
2. Expand the folder **Required_to_Change**, and double click the line `[enter valid certificate in text format of file type: Base-64 encoded X.509 (.cer)]`, as shown next.

3 Delete `[enter valid certificate in text format of file type: Base-64 encoded X.509 (.cer)]` and paste the copied certificate hash into the line, as shown next.



4 Save the configuration file.

After you add the certificate hash to your configuration file with the login credentials provided by the Microsoft Lync administrator, you can use the Web Configuration Utility to import the configuration file to the SoundStructure VoIP Interface to work with the Lync Server.

Getting Help

This chapter provides you with a list of references and guides for help with SoundStructure Systems and the SoundStructure VoIP Interface.

Polycom Resources

The following guides are available on the SoundStructure Support page.

- SoundStructure Design Guide, which describes how to create SoundStructure projects with the SoundStructure VoIP Interface. This guide is also available in the Help menu in the SoundStructure Studio application.
- SoundStructure VoIP Interface Quick Upgrade Guide, which describes how to upgrade an existing SoundStructure-based TEL1 or TEL2 system to the SoundStructure VoIP Interface system.

The following guides provide information on provisioning Polycom phones.

- How to Provision a Polycom Phone, which provides information on provisioning a single phone for use with the central provisioning server.
- Deploying Polycom UC Software for Use with Microsoft Lync Server 2010, which provides information on provisioning Polycom phones to work with Microsoft Lync Server. Note that the configuration file details in the provisioning guide do not apply to SoundStructure.

The following guides provide information on updating SoundStructure VoIP Interface Firmware and UC software:

- SoundStructure VoIP Interface Quick Upgrade Guide, which provides a quick reference on upgrading SoundStructure Firmware.
- SoundStructure Design Guide, which provides information on provisioning and updating SoundStructure firmware.
- Polycom UC Software 4.1.0 Administrator's Guide, which provides information on updating the UC software on Polycom phones.

The following are additional documents and guides available on Polycom® UC Software Support Center on Polycom Voice Support.

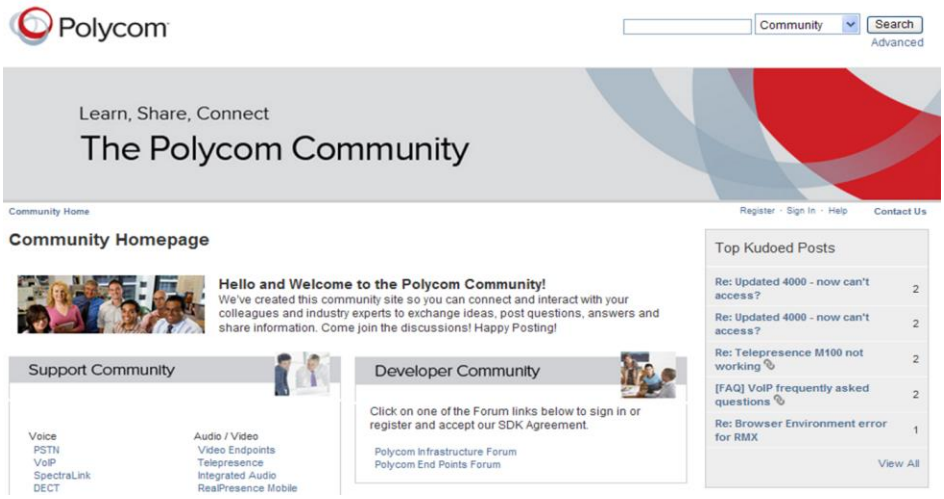
- Polycom UC Software 4.1.0 Administrators' Guide which describes how to configure, customize, manage, and troubleshoot Polycom phones.
- Engineering Advisories and Technical Bulletins, which describe existing issues with workarounds and provide expanded descriptions and examples.
- Feature Profiles, which describe new features available on Polycom phones.
- Release Notes, which describe the new and changed features and fixed problems in the latest version of the software.
- For support or service, please contact your Polycom reseller or call Polycom Technical Support.

Polycom and Partner Resources

For more information about installing, configuring, and administering Polycom products, refer to Documents and Downloads on Polycom Support.

The Polycom Community

The Polycom Community gives you access to the latest developer and support information. Participate in discussion forums to share ideas and solve problems with your colleagues. To register with the Polycom Community, create a Polycom online account. When logged in, you can access Polycom support personnel and participate in developer and support forums to find the latest information on hardware, software, and partner solutions topics.



Troubleshooting

This chapter provides you with solutions for resolving common issues, problems, or difficulties provisioning or using the SoundStructure VoIP Interface with Lync 2010 or 2013 server.

Find Available UC Software Updates

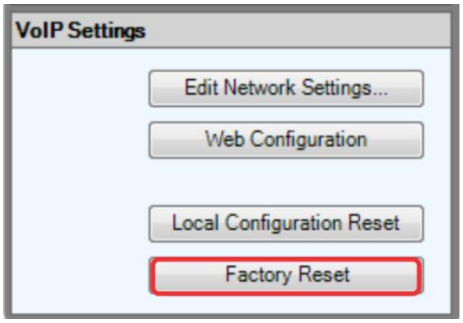
If the Web Configuration Utility is unable to find available software versions on the Polycom Hosted Server, check to see if your network has a firewall that is blocking access to the external Internet. If a firewall is blocking the Web Configuration Utility from finding available software, move the SoundStructure VoIP Interface to a different network. You can also use a custom server to update the UC software on SoundStructure. You need to download the latest UC software from Polycom Support and save the software in a network location that the system can access. You can also use a FTP boot server to upgrade the software.

Reset SoundStructure VoIP Interface Card to Factory Default

If your SoundStructure VoIP Interface is refurbished or a previous configuration prevents the system from registering with the Lync 2010 or 2013 server, reset the system to factory default settings.

To reset SoundStructure to factory default:

1. In SoundStructure Studio, select **Wiring**.
2. In the VoIP Settings box, select **Factory Reset**, as shown next**.**



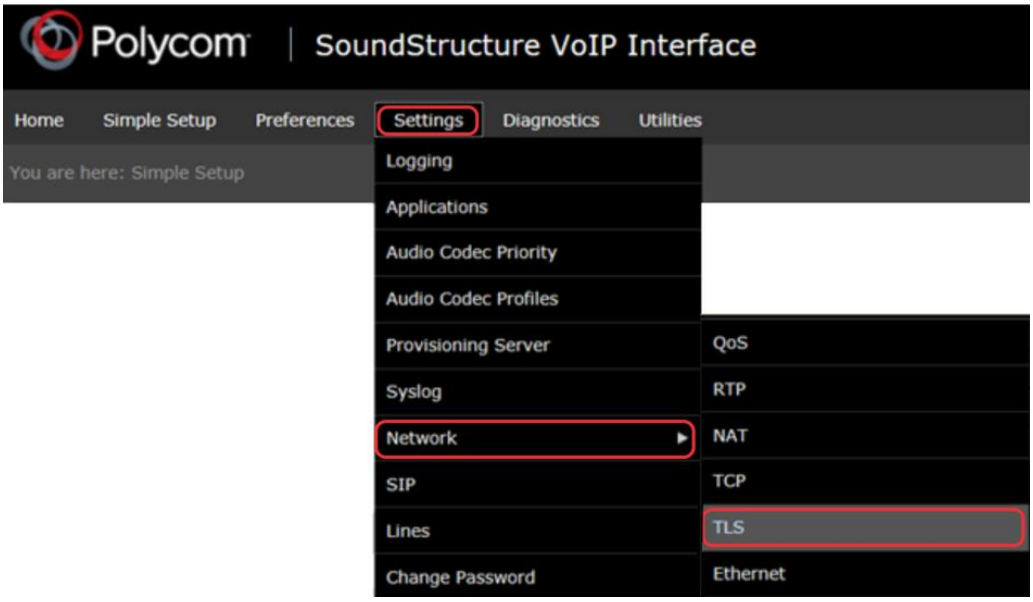
The system resets to factory default. See Provision SoundStructure VoIP Interface for use with Lync Server to continue provisioning your SoundStructure VoIP Interface to work with Lync.

Verify Certificate Installation

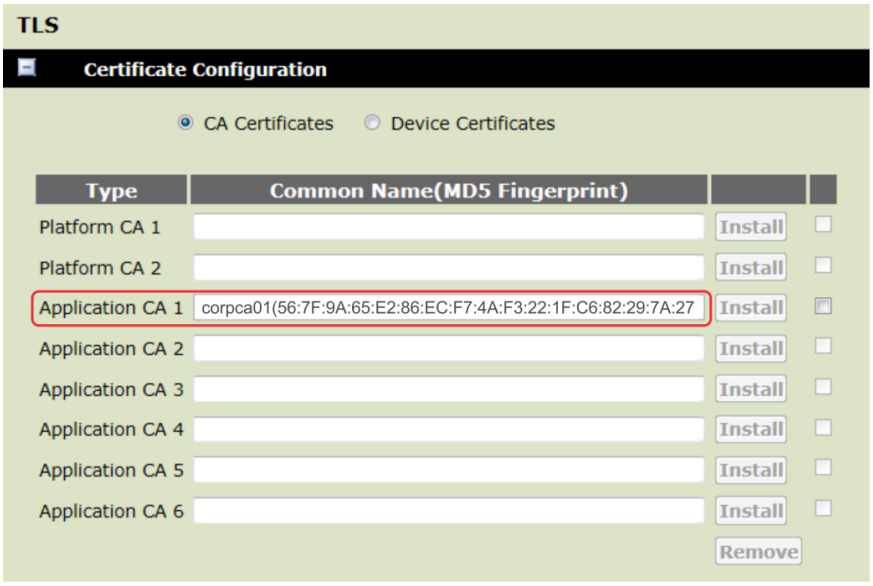
If you imported a configuration file and the SoundStructure VoIP Interface is not registered with the call server, check that the Certificate Authority was successfully imported into the system.

To verify that the Certificate Authority is installed:

» In the Web Configuration Utility, click **Settings > Network > TLS**, as shown next.



The TLS Certificate Configuration screen displays, as shown below. If you imported a CA Certificate configuration file, the file name displays in one of the Application CA fields, as shown next.



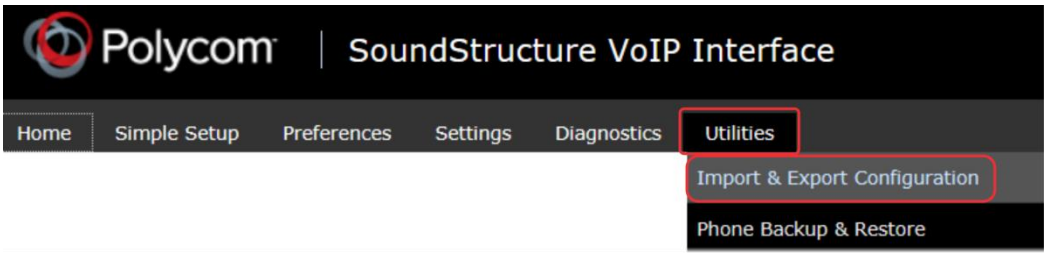
If you do not see the configured CA Certificate in any of the Application CA fields, there was a problem with the certificate. Ensure the certificate is the appropriate type, Base-64 encoded X.509， and that the certificate was entered in the configuration file properly, beginning with '`-----BEGIN CERTIFICATE-----`' and ending with '`-----END CERTIFICATE-----`'.

View Logs and Configuration Details

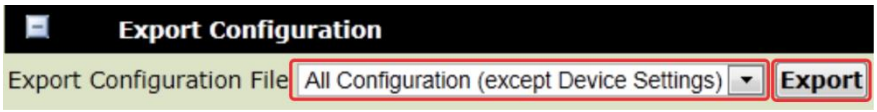
If you are having trouble registering or using your SoundStructure VoIP Interface, you need to export a configuration file and generate and export a log file—operating and registration information for your system—for your SoundStructure VoIP Interface using the Web Configuration Utility. The exported configuration and log files can help Polycom's technical support representatives help you solve any troubleshooting issues. Before you contact your reseller's technical support or Polycom Technical Support, you need to export the configuration and log files for the SoundStructure VoIP Interface to provide to the technical support representative for analysis.

To export configuration files in the Web Configuration Utility:

1. Select **Utilities** > **Import & Export Configuration**, as shown next.



2. In the **Export Configuration** section, select **All Configuration (except Device Settings)** from the drop down menu.



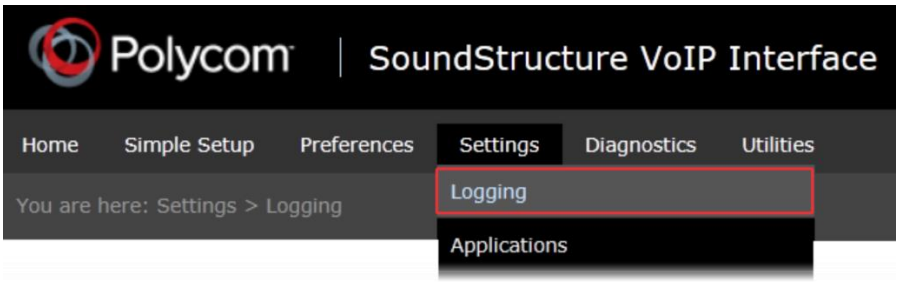
3. Select **Export** > **Save** > **Open**.

   The configuration file containing all of the configuration parameters for you system displays.

After you export and save the exported configuration file, you need to set the necessary logging settings before generating and exporting a log file.

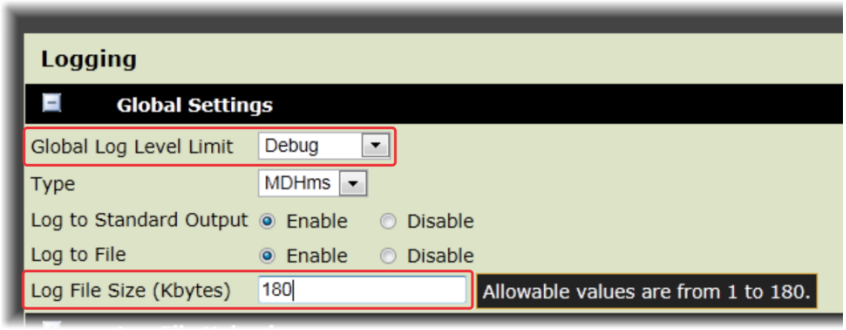
To set logging settings:

1. In the Web Configuration Utility, select **Settings** > **Logging**.



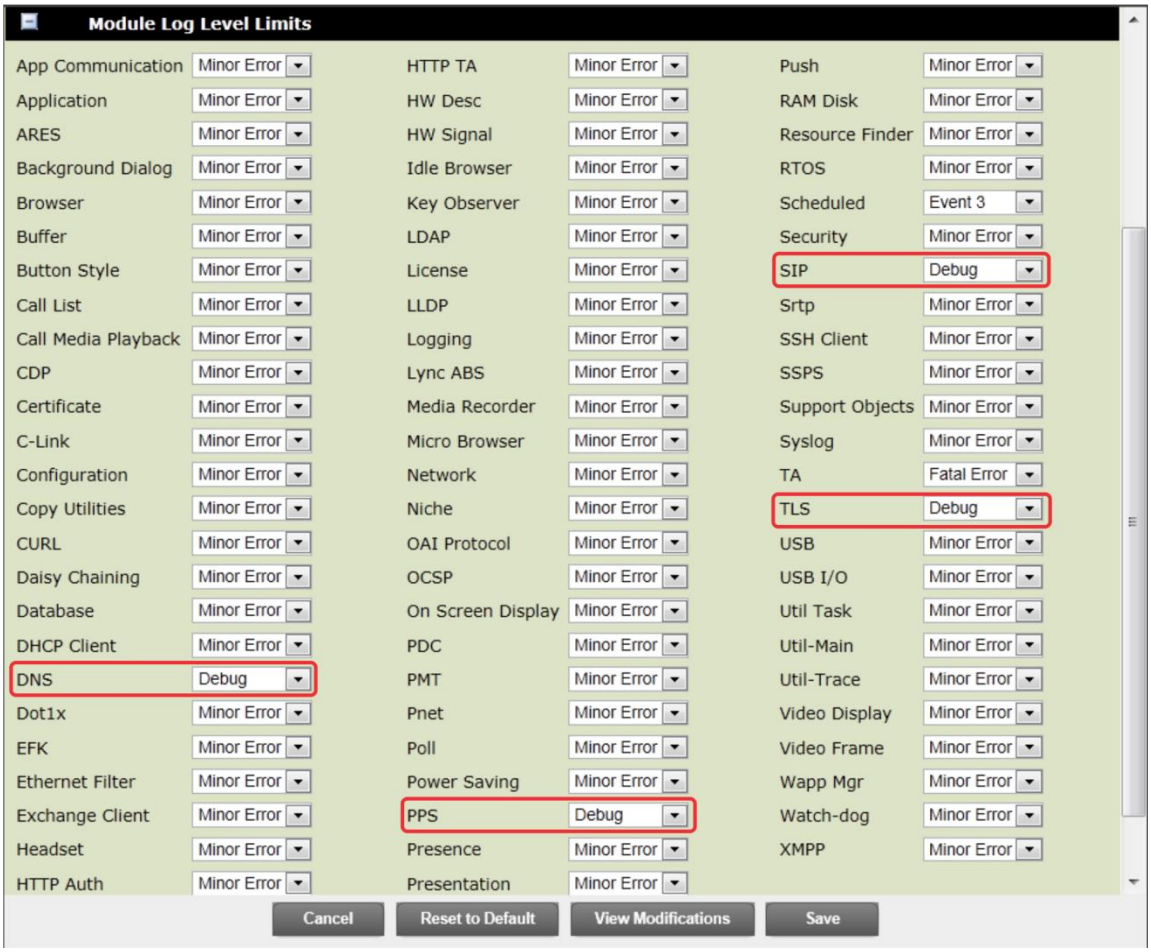
2. In **Global Settings**, change the following two settings, as shown below:
   - Set **Global Log Level Limit** to **Debug**.

- Set **Log File Size** to **180**



3 In **Module Log Level Limits**, change the following four settings, as shown below.

- Change **DNS** to **Debug**
- Change **PPS** to **Debug**
- Change **SIP** to **Debug**
- Change **TLS** to **Debug**.

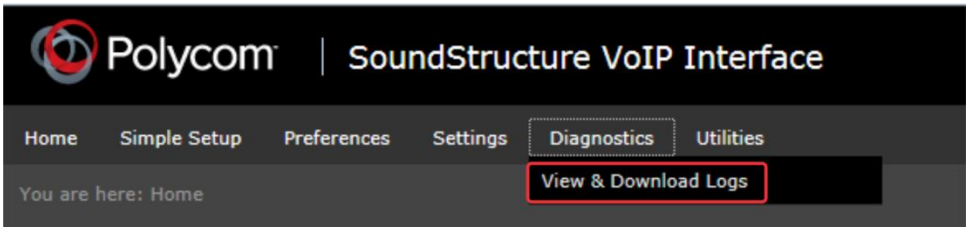


4 Select **Save** > **Yes**.

After you save the logging settings, you need to clear the previous log file and reboot your phone before viewing and exporting the log file for your SoundStructure VoIP Interface.

To view and export your SoundStructure VoIP Interface log files:

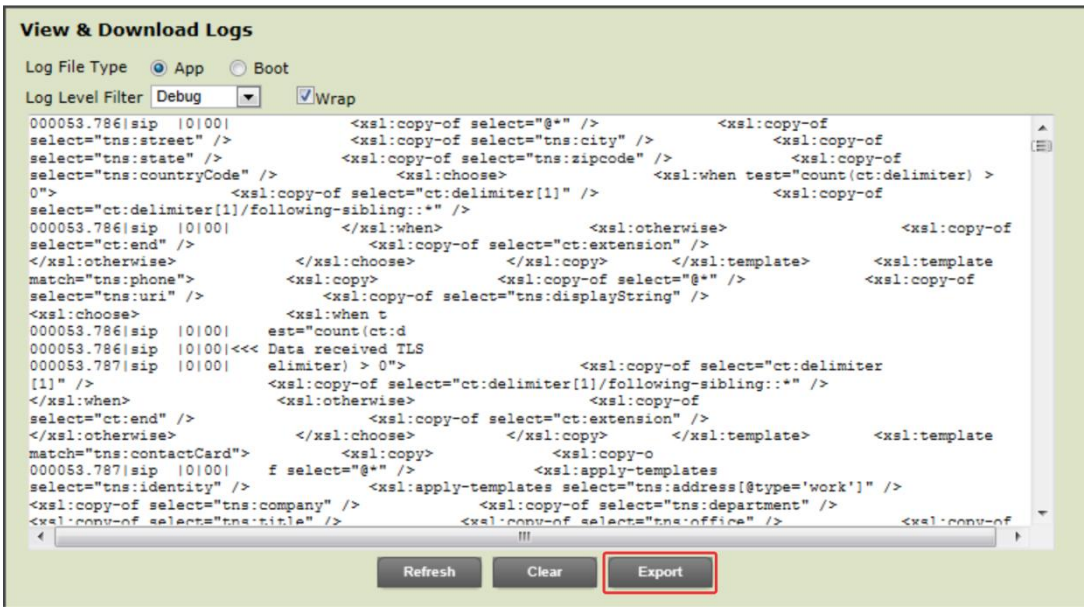
1. Select **Diagnostics** > **View & Download Logs**, as shown next.



2. In View & Download Logs, select **Clear** to clear the previous log changes.
3. Select **Utilities** > **Reboot Phone** to reboot the SoundStructure VoIP Interface and apply the updated logging settings.

   Your SoundStructure system reboots. After your SoundStructure VoIP Interface reboots, you can view and export the log file for your SoundStructure VoIP Interface.
4. Select **Diagnostics** > **View & Download Logs**.

   The log file with all of the log information for your SoundStructure VoIP Interface displays.
5. Select **Export** to download a copy of the log file, as shown next.



6. Select **Save** > **Open**.

   The log file opens in Notepad.

After you export and save the configuration and log files, contact your reseller's technical support for additional troubleshooting help.

Note: Resetting Module Log Level Limits to Default.

After you save the changes to the module log level limits and reboot your SoundStructure System, you need to reset the log level limits to default. Changing the log levels to debug can affect performance on the SoundStructure VoIP Interface.