

# Mediant™ 800B

## Survivable Branch Appliance (SBA) for Skype for Business

Version 7.2



**Microsoft Partner**

Gold Communications





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## Notice

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Date Published: June-06-2019

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## Stay in the Loop with AudioCodes



## Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used.

Throughout this manual and unless otherwise specified, the term *device* refers to the Mediant 800B SBA.

## Notes and Warnings



**Warning:** The device is an INDOOR unit and thus, must be installed ONLY indoors. In addition, Ethernet port interface cabling must be routed only indoors and must not exit the building.

**Avertissement:** L'appareil est une unité d'INTERIEUR et doit donc obligatoirement être installé en intérieur. En outre, le câblage de l'interface du port Ethernet doit être acheminé uniquement en intérieur et ne doit pas sortir du bâtiment.



**Warning:** Installation of this device must be in a weather protected location of maximum ambient temperature of 40°C.

**Avertissement:** L'installation de cet appareil doit avoir lieu dans un local protégé des intempéries de température ambiante maximale de 40°C.



**Warning:** This device must be installed only in a restricted access location.  
**Avertissement:** L'entretien de maintenance de cet appareil doit être effectué uniquement par un personnel de service qualifié dans des locaux à accès limité et l'appareil étant branché à une prise mise à la masse.



**Warning:** Service of the device must be made only by qualified service personnel.



**Warning:** The device must be connected only to a grounded AC mains power socket.

## Document Revision Record

LTRT	Description
39166	Physical description added; SBA Wizard pages updated; supported browsers updated.
39167	Updated for Ver. 7.2.24.
39168	Cabling and procedure for changing default IP address.
39169	Note on BIOS ver. updated and note for CU updates.
40920	Note on BIOS ver. updated.
40921	URL link to Microsoft CU was updated.
40922	New corporate logos, URLs and screenshots updated; NIC Teaming added; New sections (SBC/Gateway Certificate; Access List); configuring HTTPS for SBA Web interface added
40923	Screenshots and text for changing default IP.
40924	SNMP alarms added (acSBACpuStatusAlarm, acSbaPerfCounterAlarm, acSbaCertificateExpiredAlarm, and acSBAMemorytatusAlarm)
40925	Updated with Skype for Business Server 2019; Section added for restoring SBA remotely to factory defaults

## Documentation Feedback

AudioCodes continually strives to produce high quality documentation. If you have any comments (suggestions or errors) regarding this document, please fill out the Documentation Feedback form on our website at <https://online.audiocodes.com/documentation-feedback>.



# 1 Introduction

This document provides step-by-step instructions on installing and configuring the Survivable Branch Appliance (SBA) application running on AudioCodes Mediant 800B SBA.

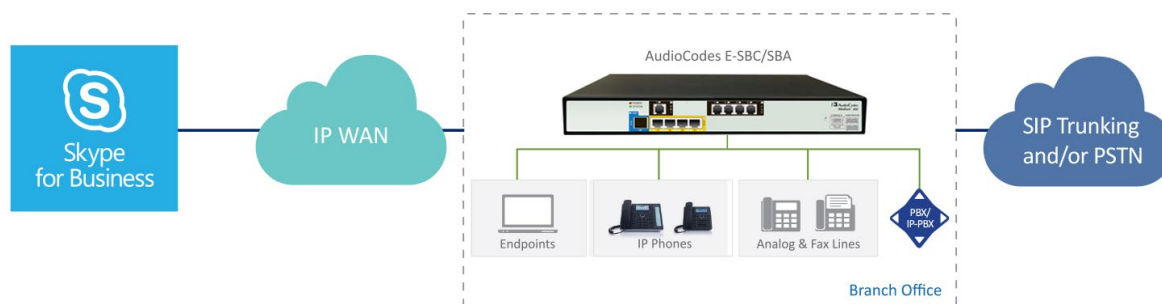


**Note:** This document is applicable to Skype for Business Server 2015 and Skype for Business Server 2019.

## 1.1 Overview

Mediant 800B SBA (referred to as the *device* in this document) is an essential element for multi-site deployments of Skype for Business and is fully **certified by Microsoft**. The device provides branch office voice resiliency, by ensuring continued access to Skype for Business services including voice and data communications, during Wide Area Network (WAN) failure scenarios where loss of connectivity occurs with the datacenter (typically at the Enterprise's headquarters). During survivability, the device maintains local call connectivity among Microsoft users located at the branch site (Skype for Business clients and devices such as IP phones). It can also provide call connectivity between the branch-site users and the PSTN (E1/T1 Trunk) during a WAN failure, if PSTN interfaces are ordered with the device.

**Figure 1-1: Mediant 800B SBA at Branch Office in Skype for Business Environment**



The device is a 1U chassis, providing Microsoft Skype for Business Server capabilities as well as optional, PSTN Gateway and Session Border Controller (SBC) capabilities. It also provides optional, direct connectivity to Analog Devices through customer-ordered Foreign eXchange Station (FXS) port interfaces.

The device provides an embedded, Web-based management tool called *SBA Management Interface*, for installing and configuring the SBA functionality. The tool also provides a setup wizard, which allows quick-and-easy initial SBA installation.

The SBA application is installed on a generic cPCI single-board computer module housed in the device chassis. The module name is Open Solution Network (OSN) and enables hosting of multiple third-party applications. The SBA application runs on Windows Server 2012 R2 operating system.

The OSN module provides three network interface cards (NIC):

- Two "external" NICs (RJ-45 connectors) on the OSN module's front panel. Ethernet port #1 is enabled by default (192.168.0.20) and Ethernet port #2 is disabled. The external NIC is used to connect to the SBA application from your network. This connection also allows you to connect to the SBC/Gateway application's Web interface (through the internal NIC, as explained in the next bullet) for SBC/Gateway configuration.

- One "internal" NIC that connects to the internal chassis switch. This NIC is enabled and DHCP-client enabled. It allows communication between the SBA application and the SBC/Gateway application:
  - The Web interface of the SBC/Gateway can be accessed from the SBA Management Interface.
  - The SBA Management Interface can obtain and display status information from the SBC/Gateway.



**Note:** The SBA Skype for Business image also includes AudioCodes Auto-Attendant Interactive Voice Response (IVR) and Fax Server applications, offering a 90-day trial license period for each application. For more information, go to <https://www.audiocodes.com/solutions-products/products/products-for-microsoft-365/voice-applications>.

## 1.2 Main Benefits

The device offers the following main benefits:

- Secured SIP trunk connectivity with an embedded qualified E-SBC
- Hosting communications-enabled business processes (CEBP) applications such as call recording, Auto-Attendant, Fax Server, third-party SIP phone Skype for Business integration
- PSTN connectivity in parallel and as fallback to SIP Trunk connectivity
- Full modularity and interface flexibility, including digital spans, analog ports and BRI interfaces
- Skype for Business migration support for branch offices with advanced call routing capabilities such as call forking and Active Directory look-up
- Support for emergency calling standards, including E911 and Emergency Location Identification Number (ELIN)

## 1.3 Specifications

Table 1-1: Mediant 800B SBA Specifications

Item	Description
<b>Maximum Skype for Business Users (SBA)</b>	250
<b>Maximum PSTN Capacity (Channels)</b>	60
<b>Maximum Number of SBC Sessions</b>	250
<b>Ability to Host Additional Business Applications (SBA v2)</b>	Yes
<b>Modularity</b>	Fixed with software scalability options
<b>Digital Interfaces</b>	Up to 2 E1/T1 spans
<b>Analog FXO and FXS Interfaces</b>	Up to 4 FXS/FXO ports
<b>BRI Interfaces</b>	4 BRI lines
<b>LAN</b>	4 GE interfaces configured in 1+1 redundancy or as 8 individual ports
<b>IPv6 Support</b>	Yes
<b>Physical Dimensions</b>	1RU
<b>Power Supply</b>	Single AC power supply
<b>Storage options</b>	HDD/SSD
<b>Special Features for Microsoft Skype for Business</b>	Call Forking, Active Directory look-up, Emergency Location Identification Number (ELIN)

## 1.4 Available Mediant 800B SBA Models

The following table lists the orderable Mediant 800B SBA models for Skype for Business.

**Table 1-2: Mediant 800B SBA Models**

Model	Description
M800B-1ET4S-SBA-SFB	Mediant 800B SBA for Microsoft Skype for Business, with a single E1/T1 span, 4 FXS voice interfaces, and an OSN platform providing the following interfaces: <ul style="list-style-type: none"> <li>▪ 3 x USB 2.0 ports (Standard-A type) for connecting peripheral devices such as SBA Dongle, keyboard, and mouse</li> <li>▪ 2 x Gigabit Ethernet interface ports (RJ-45) for connecting to the network</li> <li>▪ 15-Pin DB-type female VGA port for connecting to a monitor</li> <li>▪ Reset pinhole button for resetting the SBA</li> </ul>
M800B-4S4O4B-SBA-SFB	Mediant 800B SBA for Microsoft Skype for Business, with 4 FXS, 4 FXO, 4 BRI voice interfaces, and an OSN platform (see above for supported interfaces)



**Note:** If you have a Mediant 800B SBA model with Lync Server, see Section 18 for upgrading to Skype for Business.

# Part I

## Hardware Description



## 2 Verifying Package Contents

Ensure that your device package is shipped with the following items:

- Four anti-slide bumpers for desktop installation
- 19-inch rack mounting kit (two flanges and six screws)
- One AC power cable
- (Optional) E1/T1 splitter cable adapter for T1 WAN interface (customer-ordered item)
- USB dongle for SBA software upgrade and recovery procedure (Skype for Business Server)
- Microsoft Windows 2012 R2 license
- Skype for Business Server license

Check, retain and process any documents. If any items are missing or damaged, please contact your AudioCodes sales representative.

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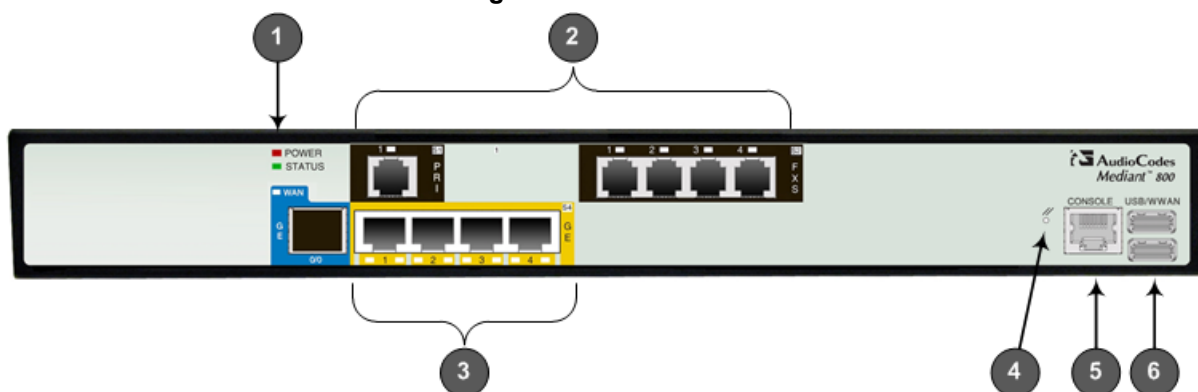
## 3 Physical Description

This section provides a brief description of the front and rear panels of the device. For a detailed description, refer to the document *Mediant 800B Gateway and E-SBC Hardware Installation Manual*.

### 3.1 Front-Panel Description

The front panel of the device provides various port interfaces for the **optional** SBC-Gateway functionality.

Figure 3-1: Front Panel



**Note:**

- The telephony interfaces are customer-ordered items and not shipped by default.
- The figure above is used only as an example. The number and type of interfaces depend on the ordered configuration.

Table 3-1: Front-Panel Description

Item #	Label	Description
1	<b>POWER / STATUS</b>	LEDs indicating the status of power and reboot/initialization.
2	<b>FXS / FXO / BRI / PRI</b>	Telephony port interfaces that can include one or a combination of the following, depending on the ordered model: <ul style="list-style-type: none"> <li>• FXS port interfaces (RJ-11)</li> <li>• FXO port interfaces (RJ-11)</li> <li>• ISDN BRI port interfaces (RJ-45)</li> <li>• ISDN PRI (E1/T1) port interfaces (RJ-48)</li> </ul>
3	<b>GE</b>	Up to four 10/100/1000Base-T (Gigabit Ethernet) LAN ports for connecting IP phones, computers, or switches.
4	-	Reset pinhole button for resetting the device and optionally, for restoring the device factory defaults.
5	<b>CONSOLE</b>	RS-232 port (RJ-45) for serial communication.
6	<b>USB/WWAN</b>	Two USB ports used for various functionalities such as saving debug captures to a USB storage device.


### 3.2 Rear-Panel Description

The rear panel of the device provides the interface to the OSN server on which the SBA runs.

Figure 3-2: Rear Panel



Table 3-2: Rear-Panel Description

Item #	Label	Description
1	<b>OSN USB</b>	Three USB ports (Standard-A type) for connecting computer peripherals (e.g., mouse and keyboard). These are used for the OSN server.
2	<b>OSN VGA</b>	15-Pin DB-type female VGA port for connecting to a monitor (screen). This port is used for the OSN server.
3	-	Reset button for resetting the OSN server.
4	<b>GE 1 GE 2</b>	10/100/1000Base-T Ethernet ports (RJ-45) for connecting directly to the OSN server. For example, one port can be connected to the LAN (to IP Phones) and the second port to the WAN interface (to an IP PBX). <b>Note:</b> the number of ports depends on ordered OSN server platform.
5		Protective earthing screw.
6	<b>100-240V~4A 50-60Hz</b>	3-Prong AC power supply entry.

# Part II

## Preparing SBA at Datacenter



## 4 Introduction

Before you can install and configure the device at your branch office (*site*), you need to do the following at your datacenter (typically, at headquarters):

- Add the SBA to your Active Directory (see Section 5)
- Define and publish a new topology for the branch site at which your device is located (see Section 6)

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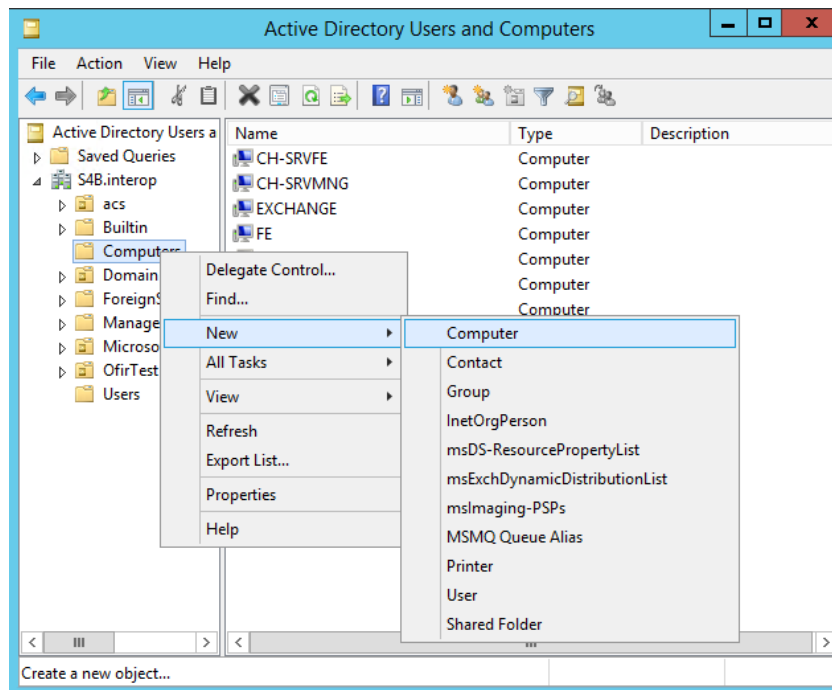
## 5 Adding SBA to Active Directory

At your datacenter, you need to add the SBA to Microsoft Active Directory (AD) Domain Services.

➤ **To add SBA to AD:**

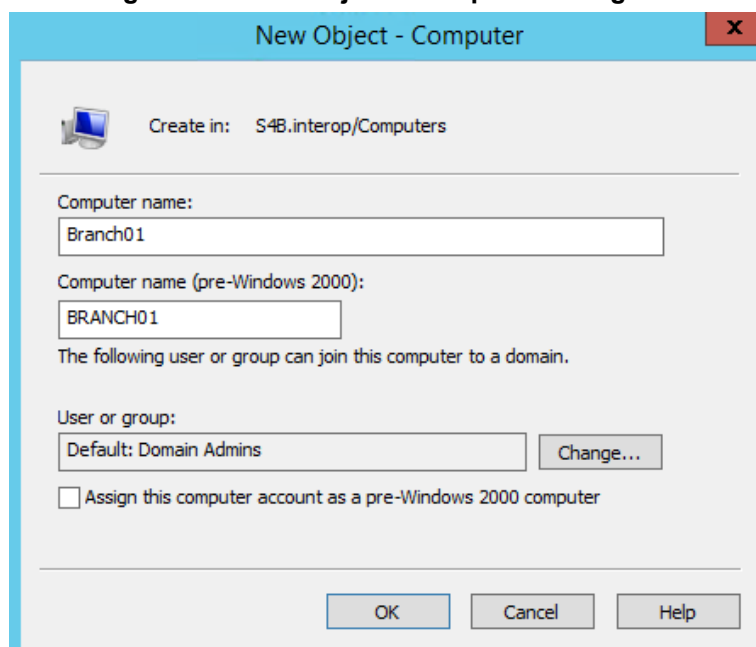
1. Start the Active Directory Users and Computers program (**Start > Active Directory Users and Computers**).
2. Right-click **Computers**, point to **New**, and then choose **Computer**, as shown below:

**Figure 8-1: Active Directory Users and Computers – New Computer**



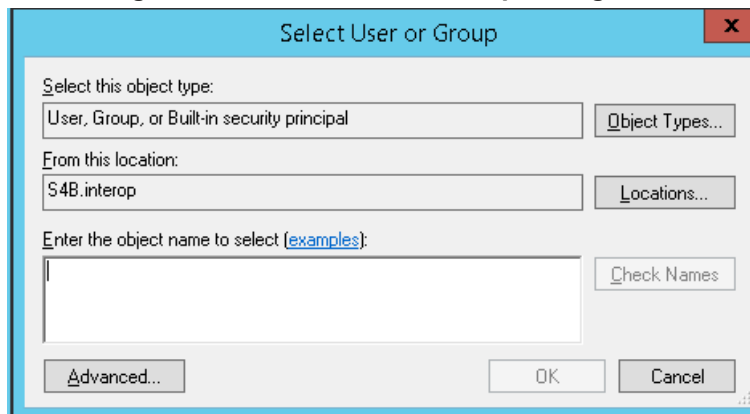
The following appears:

**Figure 8-2: New Object - Computer Dialog Box**



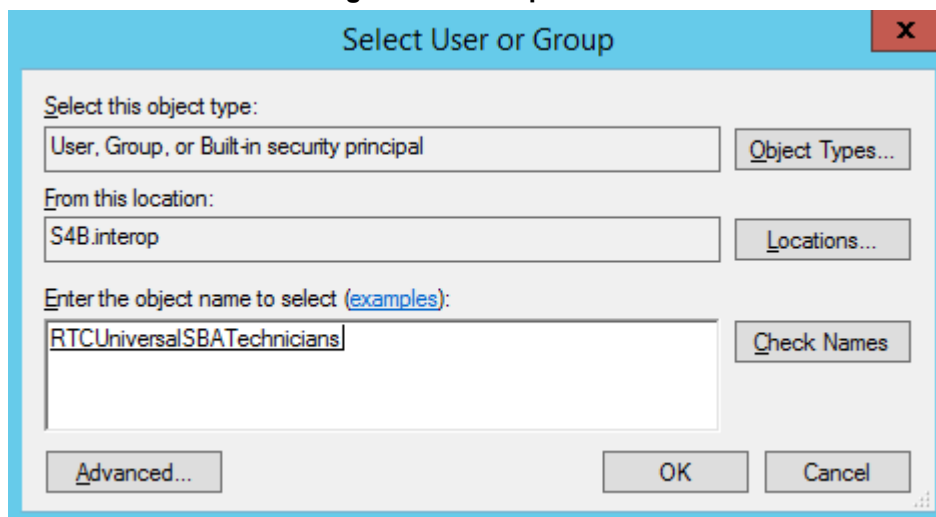
- In the 'Computer name' field, enter the name of the SBA (e.g., Branch01), and then click **Change** to add a user or group that can join the SBA to the domain; the following appears:

**Figure 8-3: Select User or Group Dialog Box**



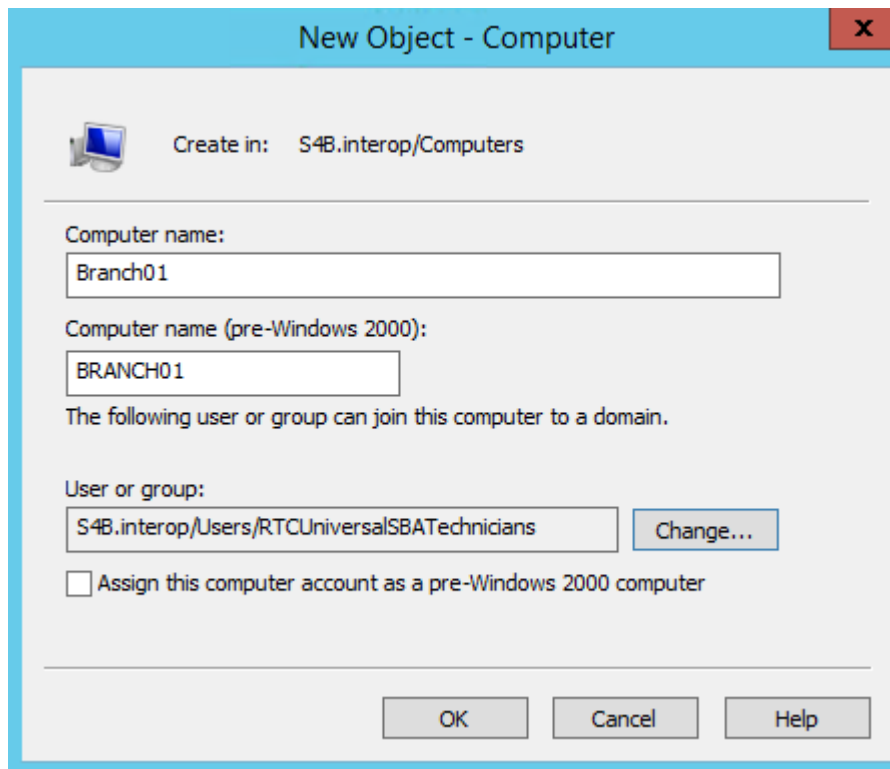
- In the 'Enter the object name' text box, enter the "RTCUniversalSBATEchnicians" group, and then click **Check Names** to make sure that you have entered the name correctly:

**Figure 8-4: Group Added**



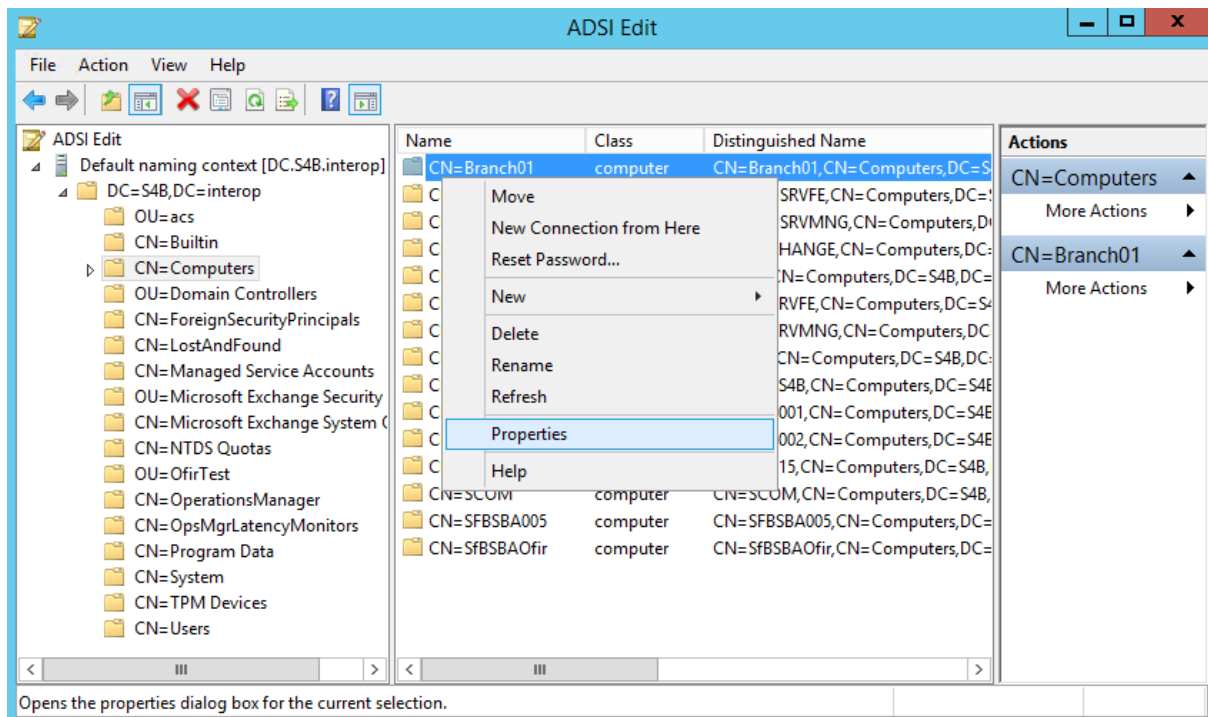
- Click **OK**; the following appears:





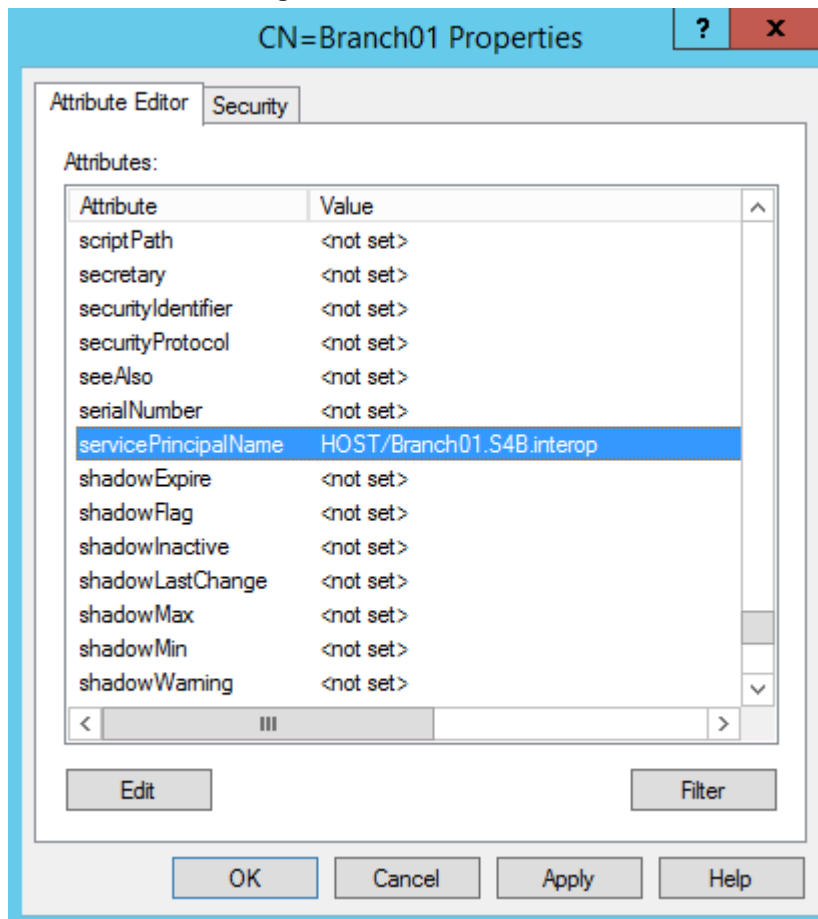
6. Click **OK** to save the SBA computer object.
7. Open the ADSI Edit program (**Start > ADSI Edit**).
8. Right-click the computer object (e.g., Branch01) that you created in the previous steps, and then from the shortcut menu, choose **Properties**, as shown below:

**Figure 8-5: ADSI Edit – Opening Properties Dialog Box**



9. In the Attributes list, select **servicePrincipalName**, and then click **Edit**.
10. In the 'Value to add' field, enter the value "HOST/<SBA's FQDN>" (e.g., HOST/Branch01.SFB.interop), click **Add**, and then click **OK** to save the attribute setting:

**Figure 8-6: Attribute Editor**



11. Click **OK** to save the computer object properties.

## 6 Defining Branch Site Topology

At the datacenter, you need to define and publish a new topology for the branch site at which your device is located. This is done using Microsoft's Skype for Business Server Topology Builder.

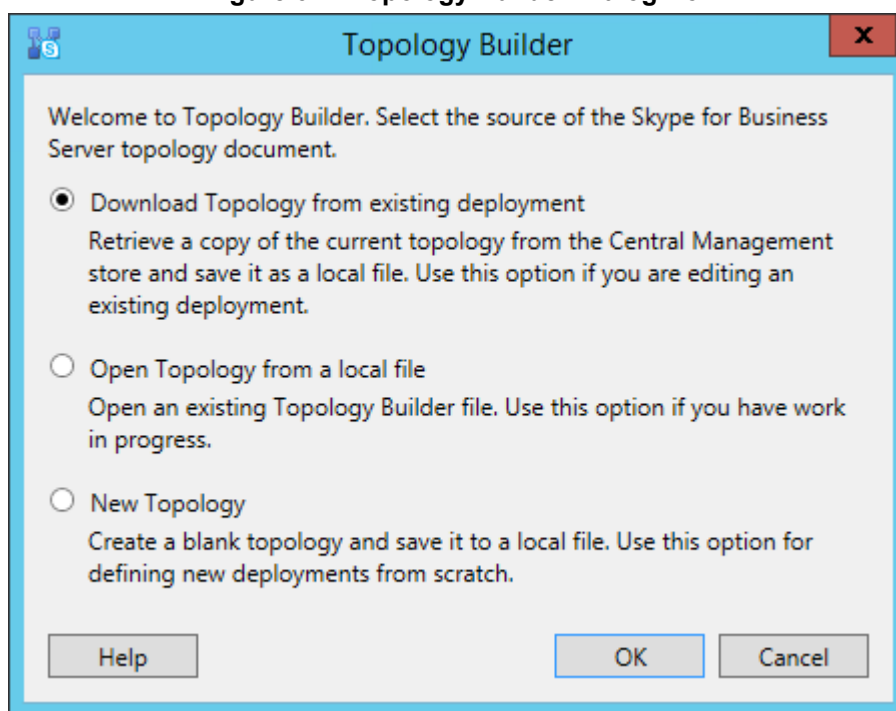


**Note:** Where Skype for Business Topology Builder refers to *PSTN Gateway*, it relates to the media gateway and/or session border controller (SBC) applications that are also supported on the device chassis. Through these applications, different SIP entities can be supported (e.g., a SIP trunk or PSTN trunk), which Topology Builder terms "trunks".

➤ **To define a new branch office topology for Mediant 800B SBA:**

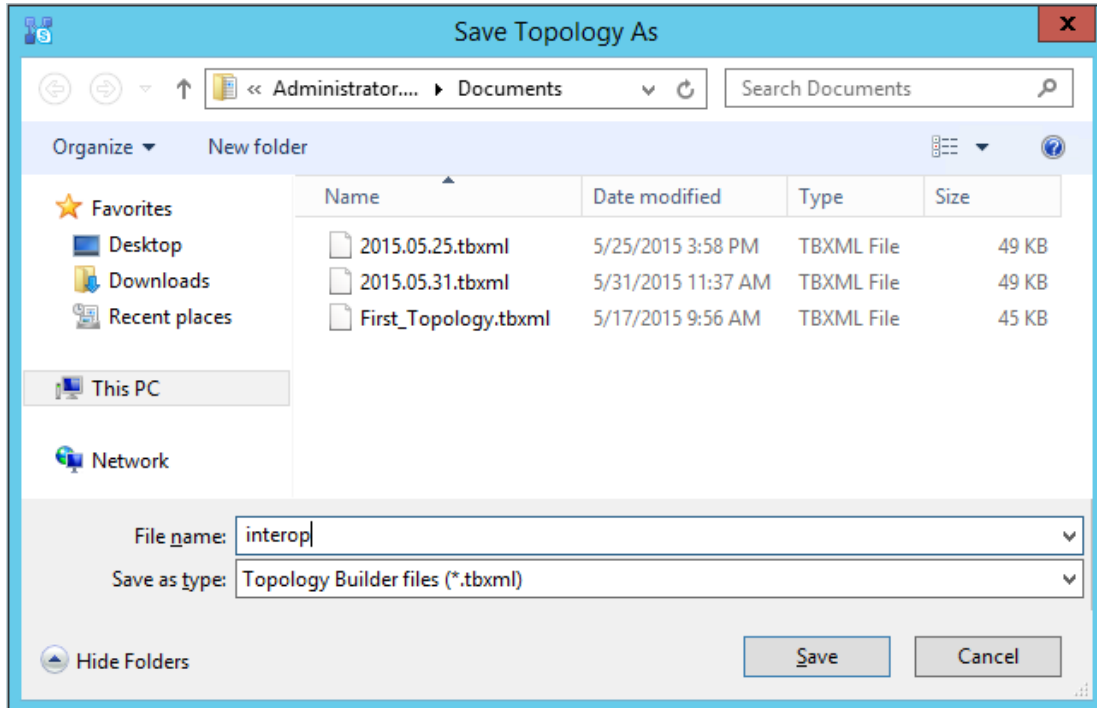
1. On the server where Topology Builder is installed, start the Skype for Business Server 2015 Topology Builder (Windows **Start** menu > **Skype for Business Server Topology Builder**); the following appears:

**Figure 6-1: Topology Builder Dialog Box**



2. Select **Download Topology from existing deployment**, and then click **OK**; you are prompted to save the downloaded topology:

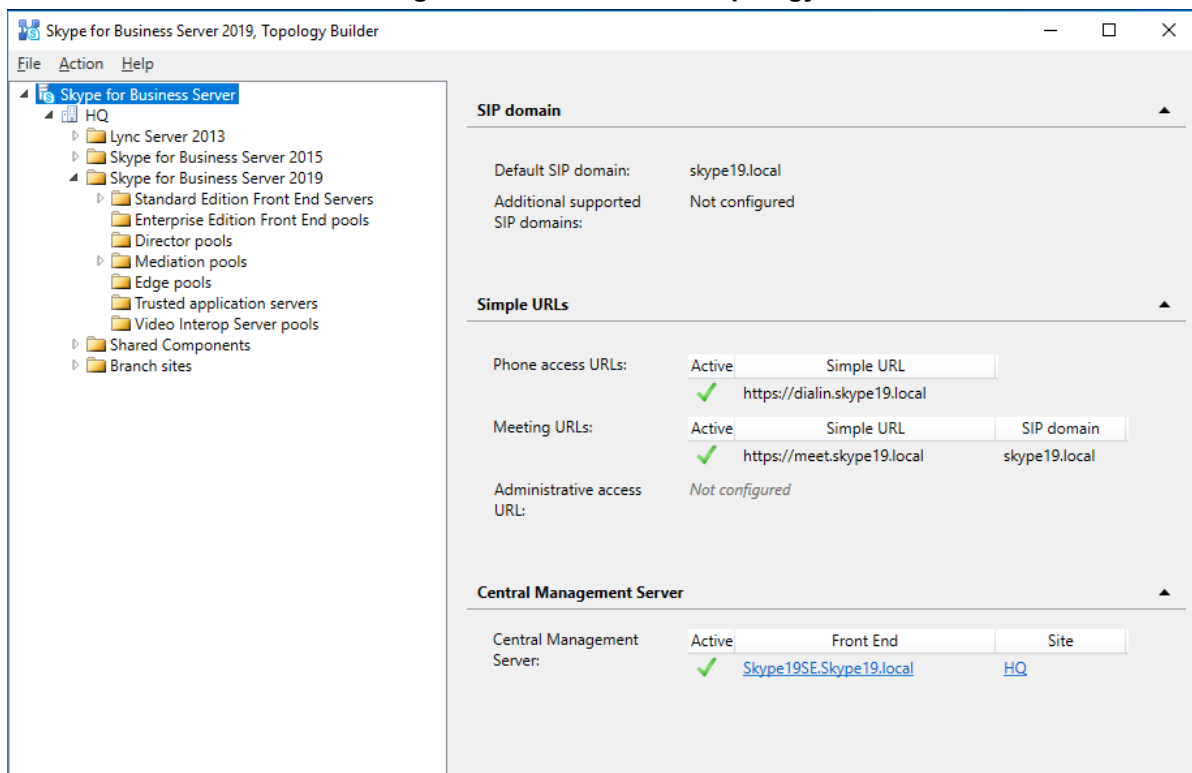
Figure 6-2: Save Topology



3. Enter a name for the topology file, and then click **Save**. This step enables you to roll back from any changes you make during installation.

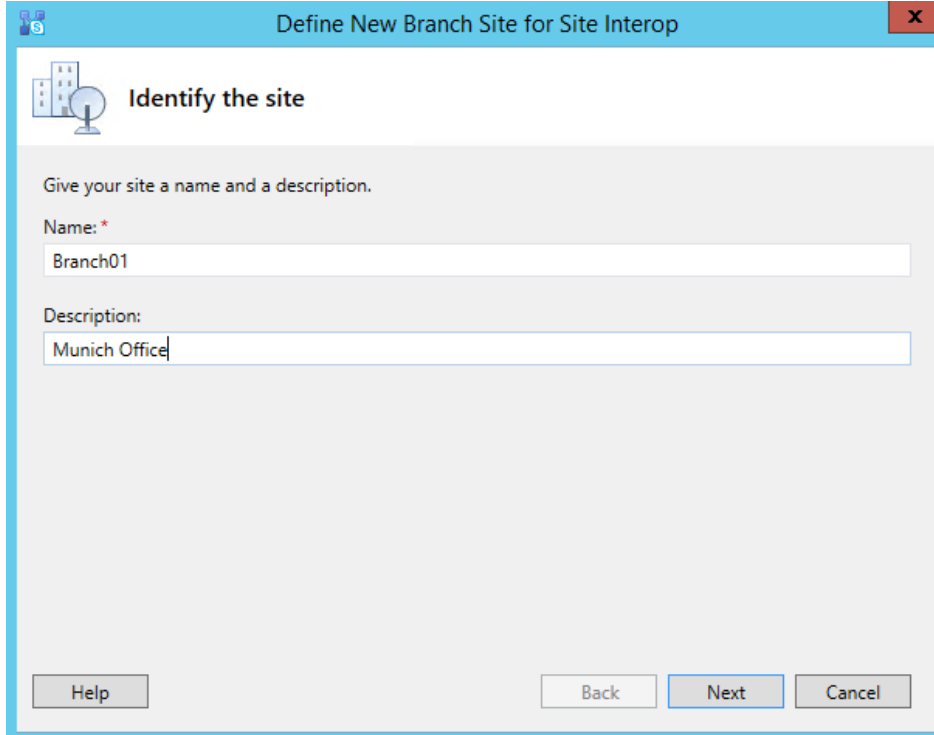
The Topology Builder screen with the downloaded topology appears:

Figure 6-3: Downloaded Topology



4. In the Topology Builder tree, right-click the **Branch sites** node, and then from the shortcut menu, choose **New Branch Site**; the following appears:

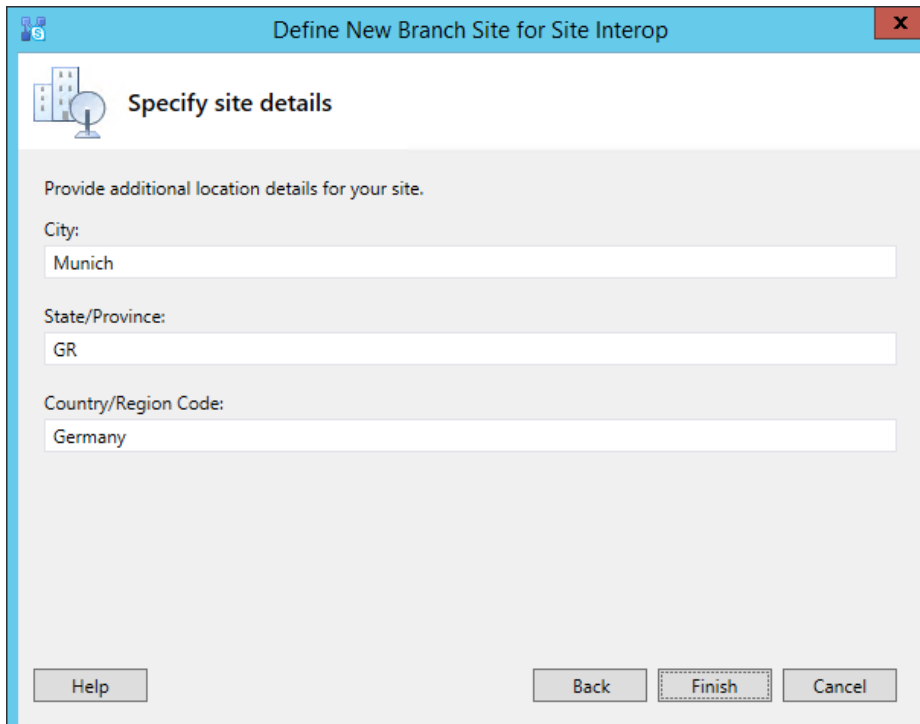
Figure 6-4: Define New Branch Site – Name



The screenshot shows a dialog box titled "Define New Branch Site for Site Interop" with a close button (X) in the top right corner. The main heading is "Identify the site" with an icon of a building and a satellite dish. Below the heading, the text reads "Give your site a name and a description." There are two input fields: "Name: \*" containing "Branch01" and "Description:" containing "Munich Office". At the bottom, there are four buttons: "Help", "Back", "Next" (highlighted in blue), and "Cancel".

5. In the 'Name' field, enter the name of the branch site. You can also enter a description of the branch site in the 'Description' field (optional).
6. Click **Next**; the following appears:

Figure 6-5: Define New Branch Site - Details

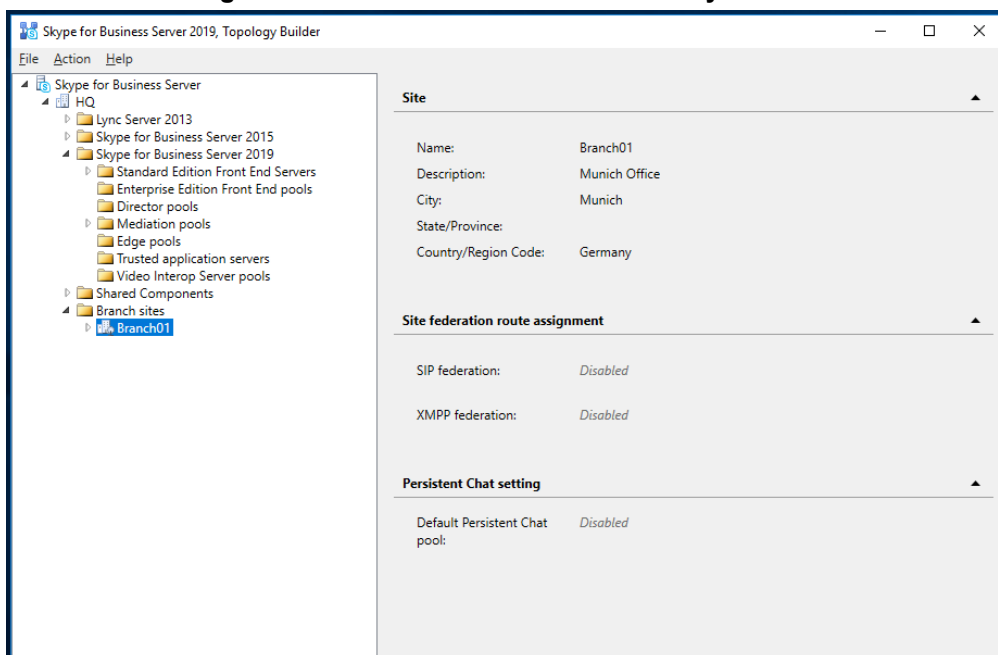


The screenshot shows the same dialog box, now at the "Specify site details" step. The heading is "Specify site details" with the same icon. The text reads "Provide additional location details for your site." There are three input fields: "City:" containing "Munich", "State/Province:" containing "GR", and "Country/Region Code:" containing "Germany". At the bottom, there are four buttons: "Help", "Back", "Finish" (highlighted with a dashed border), and "Cancel".

7. Provide details of the branch site:
  - a. In the 'City' field, enter the name of the city in which the branch site is located.
  - b. In the 'State/Province' field, enter the name of the state or region in which the branch site is located.

- c. In the 'Country/Region Code' field, enter the two-digit calling code for the country in which the branch site is located.
- d. Click **Finish**; the following appears:

**Figure 6-6: New Branch Site Successfully Defined**

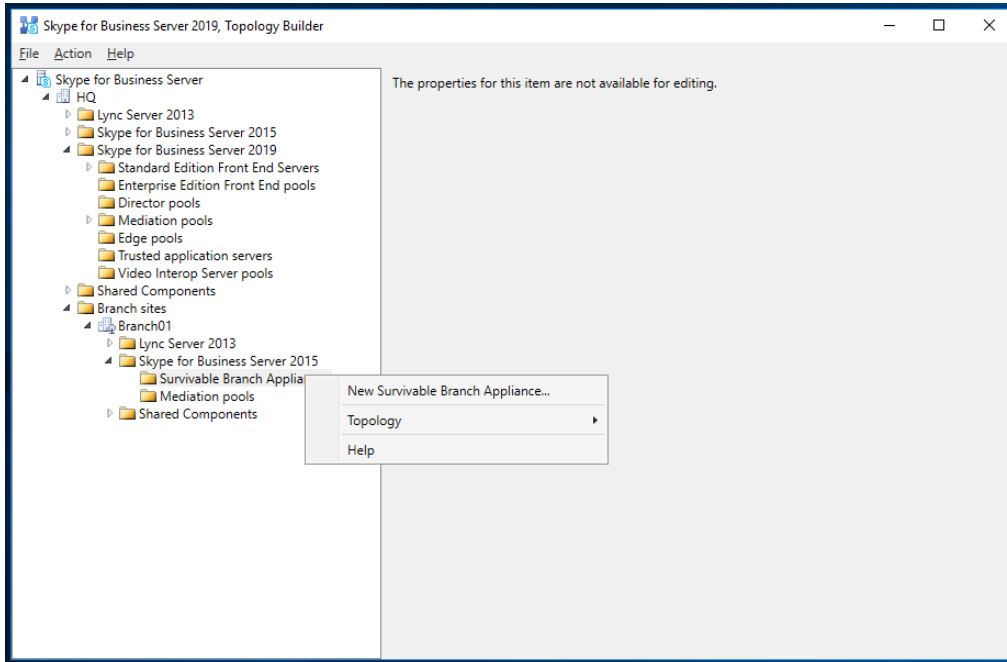


- 8. In the Topology Builder tree, expand the new branch site node that you created, right-click the required Microsoft platform to which you want to add the SBA (e.g. **Skype for Business Server 2015**), and then choose **New Survivable Branch Appliance**:



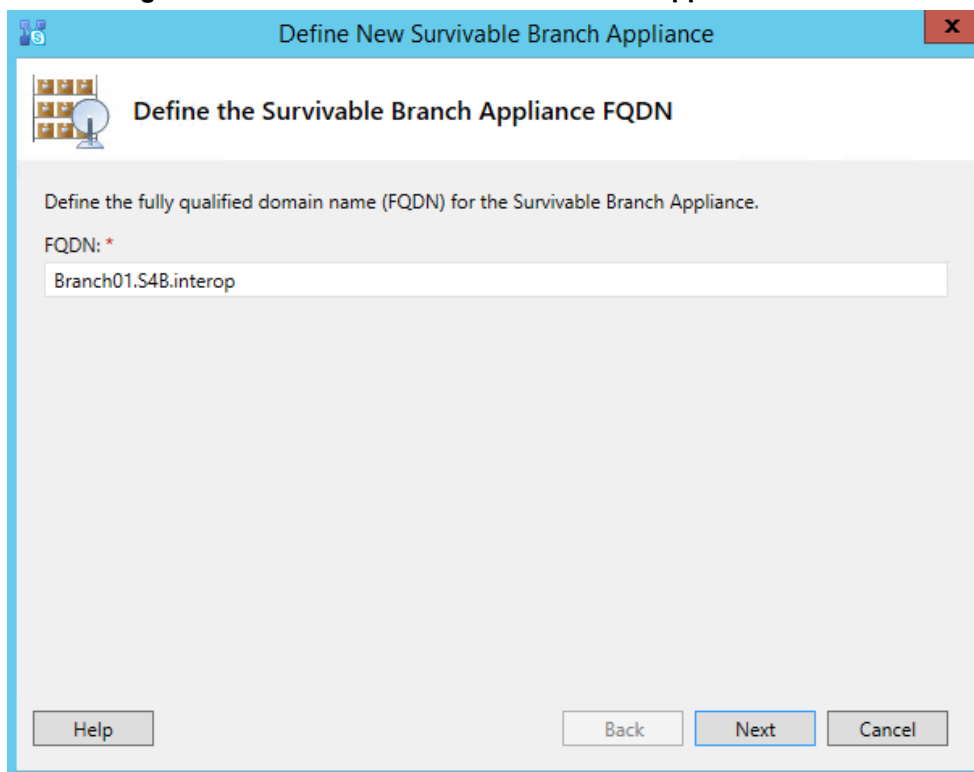
**Note:** For the Skype for Business Server 2019 platform, add the SBA under Skype for Business Server 2015.

**Figure 6-7: Select Skype for Business Folder to Add SBA**



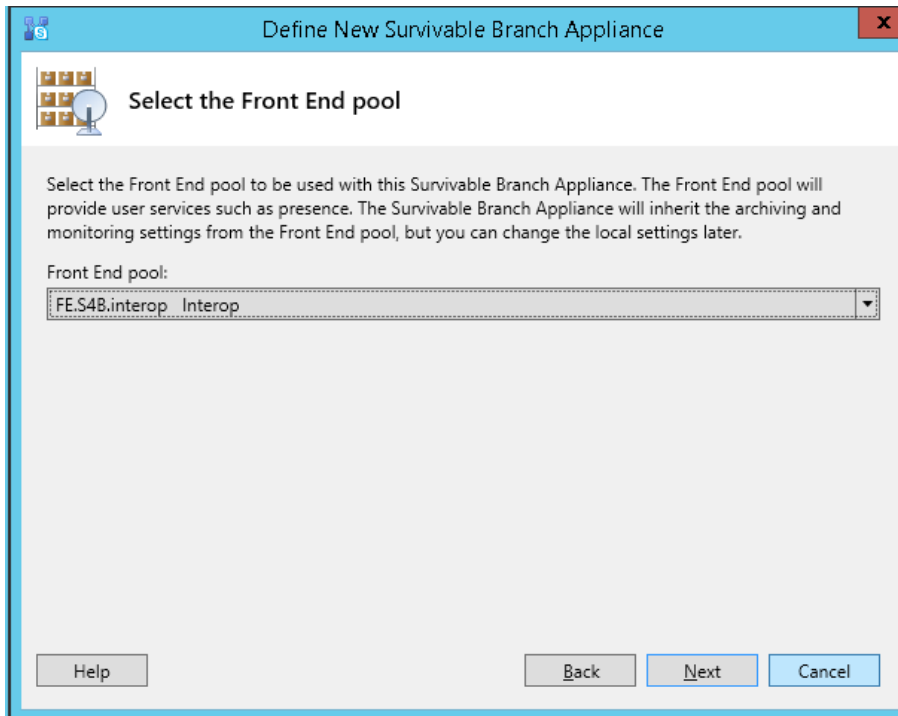
The following appears:

**Figure 6-8: Define New Survivable Branch Appliance - FQDN**



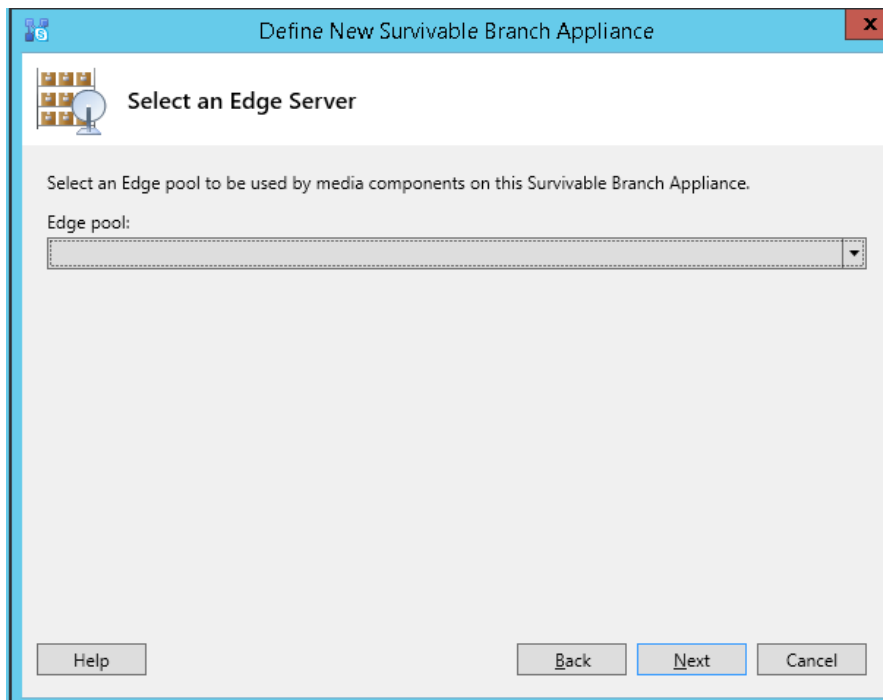
9. In the 'FQDN' field, enter the FQDN of the SBA, and then click **Next**; the following appears:

**Figure 6-9: Define New Survivable Branch Appliance - Front End Pool**



10. From the 'Front End pool' drop-down list, select the Front End pool to be used with the SBA, and then click **Next**; the following appears:

**Figure 6-10: Define New Survivable Branch Appliance - Edge Pool**



11. (Optional) From the 'Edge pool' drop-down list, select the Edge pool to be used with the SBA, and then click **Next**; the following appears:



Figure 6-11: Define New Survivable Branch Appliance - PSTN Gateway

Define the PSTN gateway used by the Mediation Server component of the Survivable Branch Appliance.

Fully qualified domain name (FQDN): \*

GW-Branch01.S4B.interop

Define root trunk name: \*

GW-Branch01.S4B.interop

Listening port for IP/PSTN gateway: \*

5067

SIP Transport Protocol:

TLS

Help Back Finish Cancel

**12.** Define the PSTN Gateway:

- a. In the 'Fully qualified domain name' field, enter the FQDN (e.g., "GW-Branch01.S4B.interop") of the PSTN Gateway.
- b. In the 'Listening Port for IP/PSTN Gateway' field, enter the SIP listening port (e.g., "5067") of the PSTN Gateway ("trunk"). This is the port to which the Mediation Server sends SIP messages to the PSTN Gateway.
- c. In the 'SIP Transport Protocol' field, select the transport type (e.g., TLS) used by the PSTN Gateway ("trunk") for SIP messages.

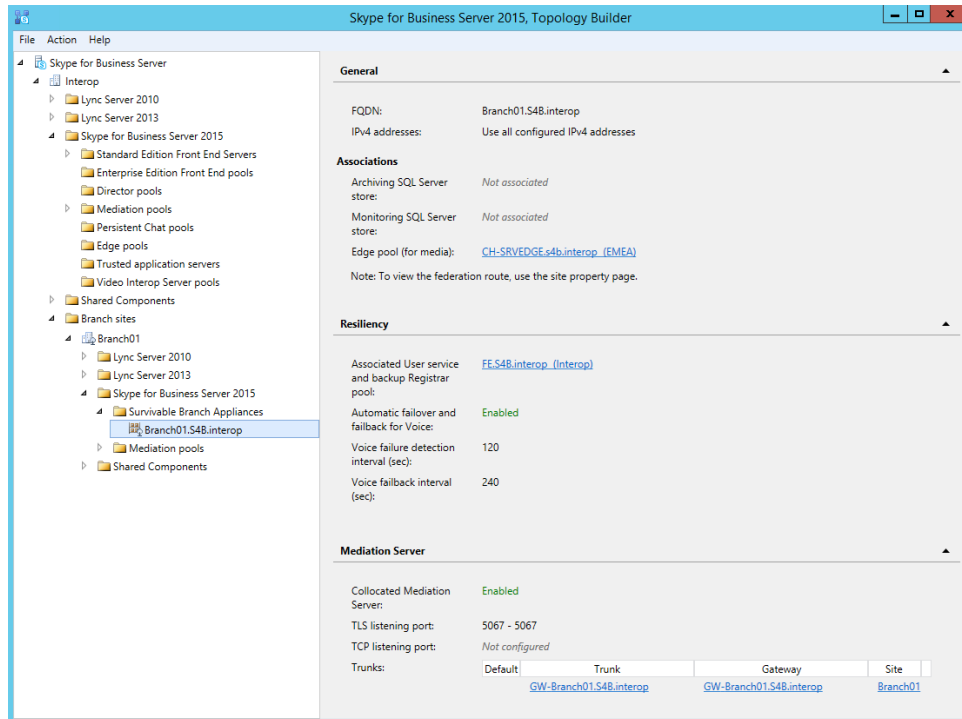


**Note:**

- Configure the same FQDN for the 'SIP Domain' parameter in the SBA Setup Wizard (see sections 11.10 and 11.11) and for the 'Subject Name (CN)' of the TLS Context in the Web interface of the PSTN Gateway (see Section 13.8.4).
- Configure the same listening port and transport type for the PSTN Gateway in the SBA Setup Wizard (see sections 11.10 and 11.11).

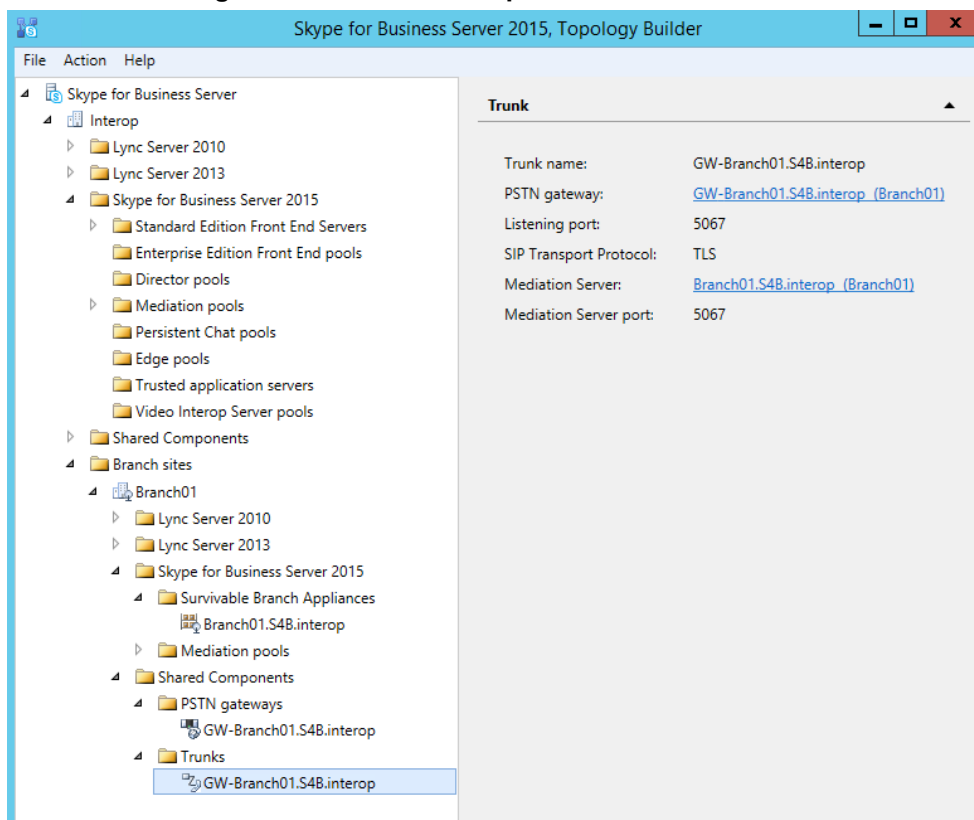
- d. Click **Finish**; the new SBA is added under the **Survivable Branch Appliances** folder, as shown below:

**Figure 6-12: SBA Branch Successfully Created**



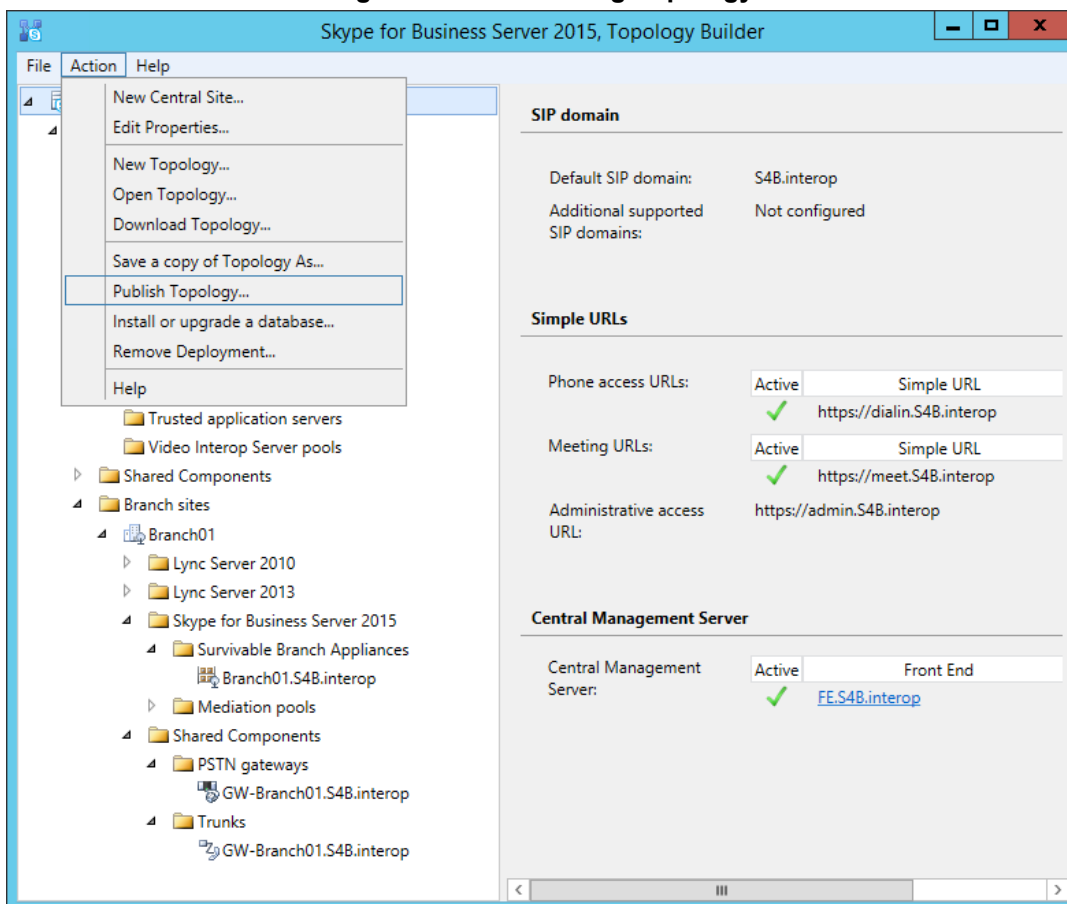
- 13. Open the **Shared Components** folder that is located under the SBA branch. You will notice that the PSTN Gateway and its trunk have been added to the respective folders, as shown in the example below:

**Figure 6-13: Shared Components of SBA Branch**



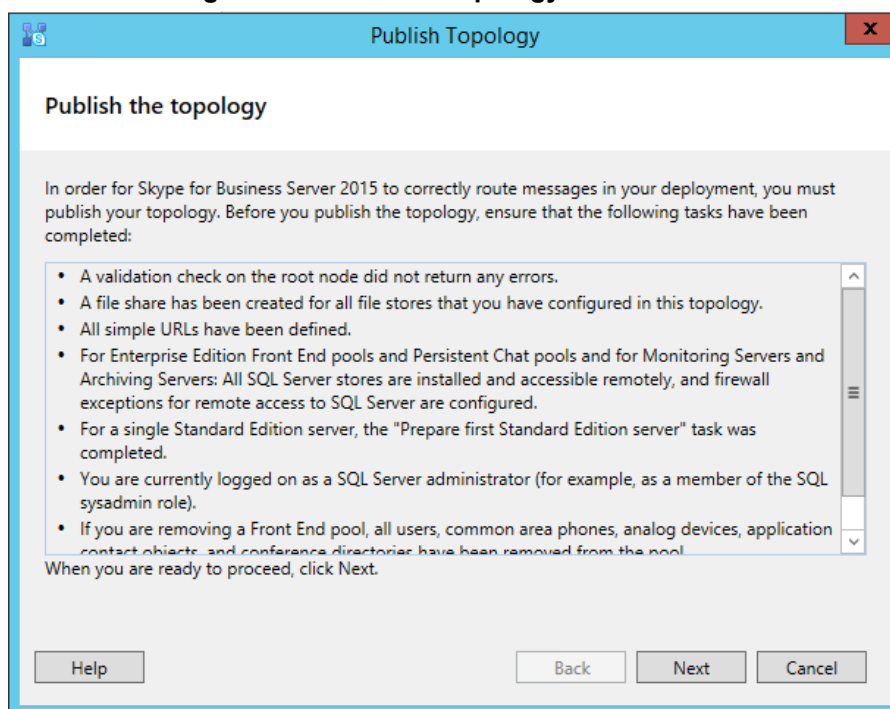
- In the Topology Builder tree, select the root node, and then from the **Action** menu, choose **Publish Topology**, as shown below:

**Figure 6-14: Publishing Topology**



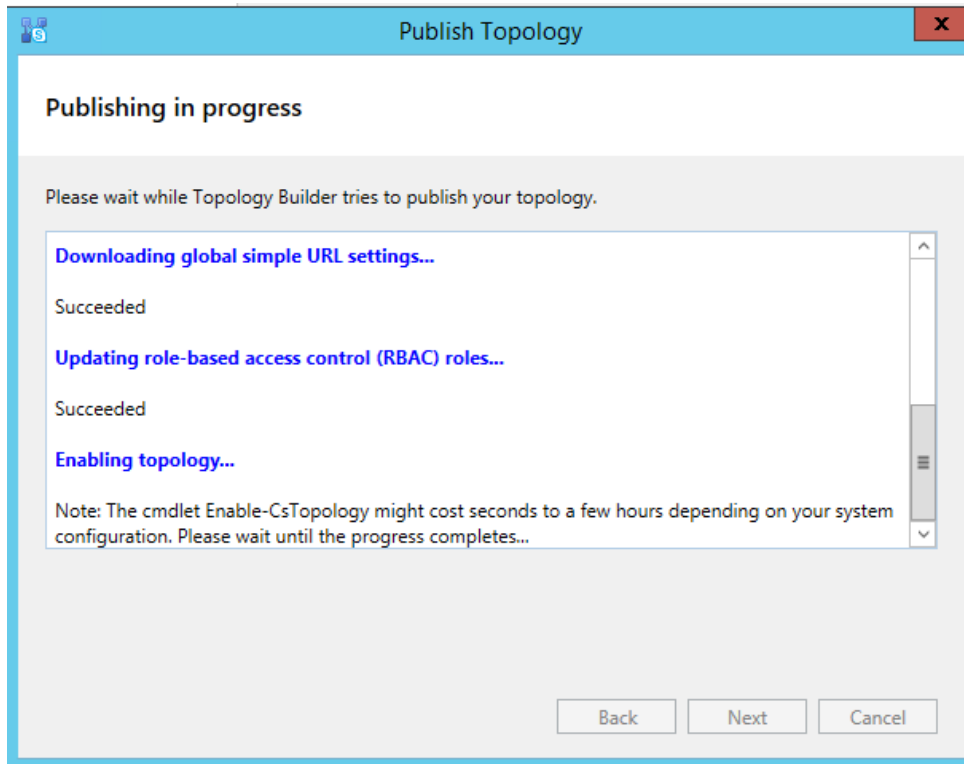
The following appears:

**Figure 6-15: Publish Topology Confirmation**



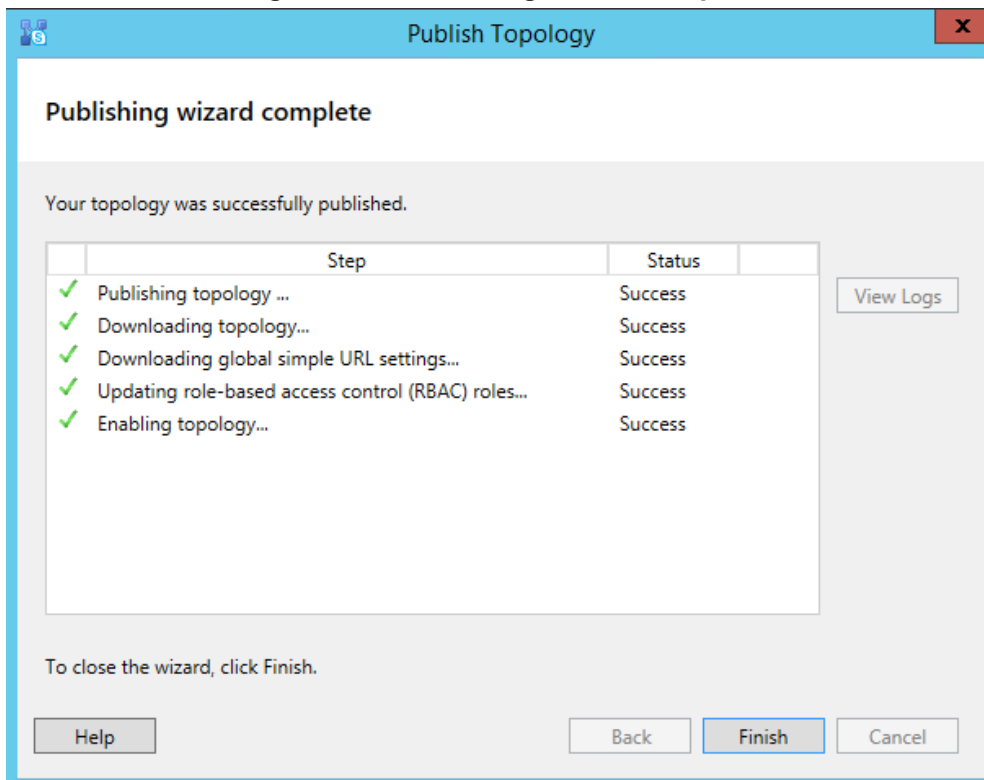
- Click **Next**; the Topology Builder starts publishing your topology, as shown below:

**Figure 6-16: Publishing in Progress**



- Wait until the publishing topology process completes successfully, as shown below:

**Figure 6-17: Publishing Wizard Complete**



- Click **Finish**.

# Part III

## Preparing SBA at Branch Site



## 7 Introduction

This part describes the preparation of the device at the branch site, which includes the following main sections:

1. Modifying Default IP Address
2. Resumption of SBA Wizard after Initial Network Configuration
3. Using the SBA Management Interface

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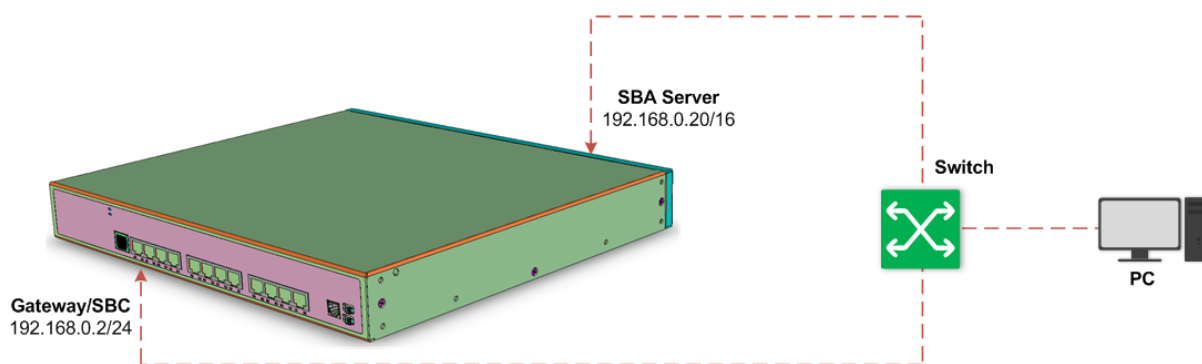


## 8 Modifying Default IP Address

This section describes how to assign a new IP address to the device's SBA and SBC/Gateway functionalities. These IP address are also used to access their management interfaces.

As the device provides not only SBA functionality but also optional SBC/Gateway functionality, for initial connection you need to cable both these functionalities to the network, as shown in the following illustration:

**Figure 8-1: Initial Cabling – SBA and SBC/Gateway**



Once cabled, you can change the default IP addresses of the SBA and SBC/Gateway to suit your networking scheme. The default IP addresses (and login usernames and passwords) are shown in the following table:

**Table 8-1: Default IP Address of SBA and SBC/Gateway**

Parameter	Value
<b>SBA Server</b>	
Management Network Interface	IP Address: 192.168.0.20/16
Management Login Credentials	<ul style="list-style-type: none"> <li>▪ Username: <b>Administrator</b> (case-sensitive)</li> <li>▪ Password: <b>Pass123</b> (case-sensitive)</li> </ul>
<b>SBC/Gateway</b>	
Management Network Interface	<ul style="list-style-type: none"> <li>▪ IP Address: 192.168.0.2/24</li> <li>▪ Default Gateway: 192.168.0.1</li> </ul>
Management Login Credentials	<ul style="list-style-type: none"> <li>▪ Username: Admin (case-sensitive)</li> <li>▪ Password: Admin (case-sensitive)</li> </ul>

Modifying the IP addresses are done in the following stages:

1. Modifying IP Address of SBA Server
2. Modifying IP Address of SBC/Gateway
3. Re-Cabling SBA and SBC/Gateway to Network



**Note:** After modifying the IP addresses of the SBA and SBC/Gateway, your connection to their management interfaces will no longer be available at the default IP addresses.

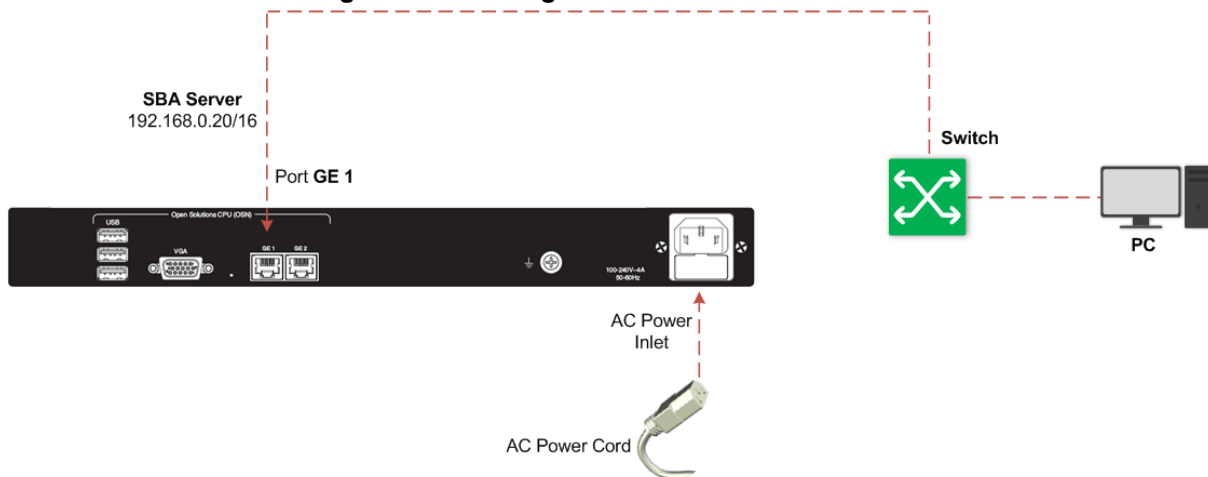
## 8.1 Modifying IP Address of SBA Server

The following procedure describes how to initially cable to the SBA Server in order to access its SBA Management interface to change its default IP address. When you initially access the SBA Management Interface, the SBA Setup Wizard starts.

➤ **To cable Mediant 800B SBA for connecting to SBA Management interface:**

1. Keep your computer connected to your switch, as you did for the SBC/Gateway cabling in the previous section.
2. Using an RJ-45 Ethernet cable, connect the Ethernet port **GE 1** on the OSN module, located on the rear panel of the device, directly to the switch. Connect the device to power (standard electrical outlet) using the supplied AC power cord.

**Figure 8-2: Cabling SBA to Network and Power**



**Note:** From SBA Version 7.2.113, NIC Teaming is supported, whereby the GE1 and GE2 ports are a teaming interface (with a MAC and IP address).

3. Open a standard Web browser (for supported browsers, see Section 10), and then in the URL address field, enter the SBA Server's default IP address; the Login screen of the SBA Management Interface appears:

**Figure 8-3: SBA Management Interface - Login Screen**

Login to SBA Web Administration

Administrator ✉

Password 🔒

**Yes, I accept** [the terms & condition](#)

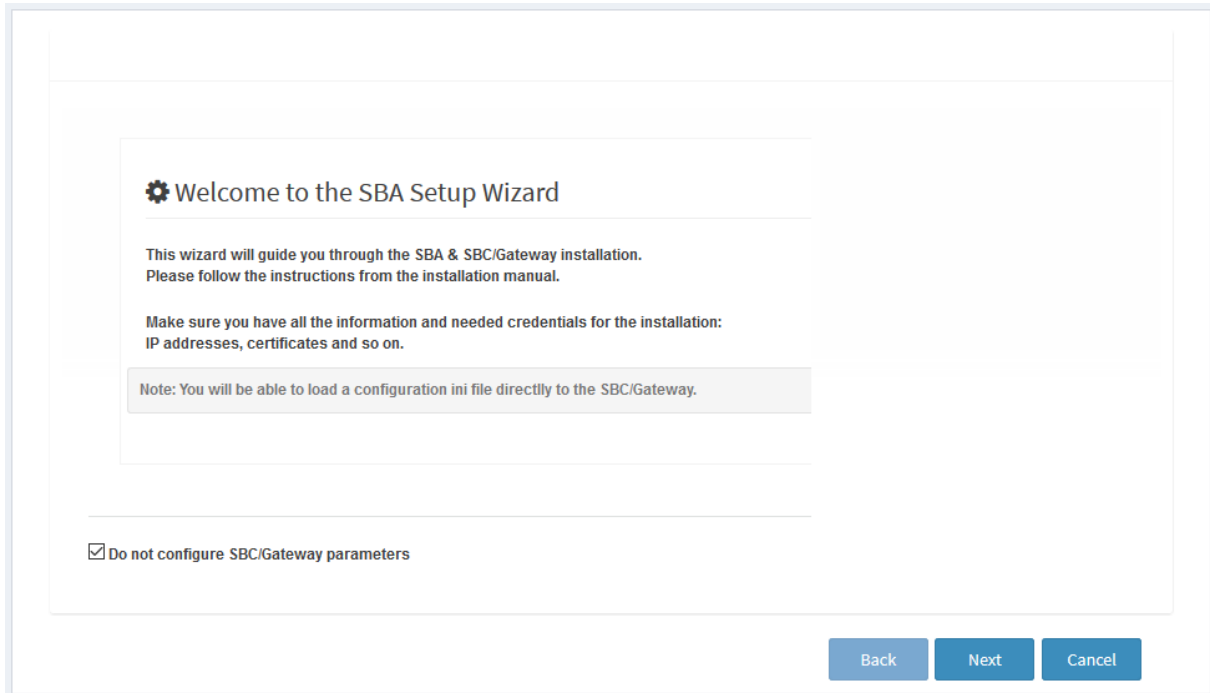
Sign In

4. Enter the default username and password, select the **Yes, I accept the term and**

**condition** check box, and then click **Sign In**; the Welcome page of the SBA Setup Wizard appears.

5. Select the **Do not configure E-SBC/gateway parameters** check box (default) to configure only SBA.

**Figure 8-4: SBA Setup Wizard - Welcome**



- Click **Next**; the Network Topology page appears:

**Figure 8-5: SBA Setup Wizard - Network Topology**

### Network Topology

**Network Adapters**

It is recommended to disable all unnecessary Network Adapters.

External	GE		Internal	Internal network
Status:	Connected		Status:	Connected
IP Address	10.21.2.128	<span style="background-color: #D9534F; color: white; padding: 2px 5px;">Disable</span>	IP Address	169.254.150.3 <span style="float: right;"><span style="background-color: #D9534F; color: white; padding: 2px 5px;">Disable</span></span>

Connect to:

SIP Trunk ▼

Template (Interop):

Microsoft Lync - Generic SIP Trunk ▼

SBC/Gateway networking:

Two ports: LAN and WAN ▼

SBA has its own LAN port

- Configure the network topology: The SBA has an external network interface and an internal network interface (which is connected via the SBC/Gateway network). It is recommended to have only one interface connected (enabled).



**Note:** For SBA versions earlier than Version 7.2.113, the NIC Teaming feature is not supported and therefore, two external NICs (depending on hardware) -- GE1 (External 1) and GE2 (External 2) may be displayed. In this case, it's recommended to disable the external interface that is not used.

8. Click **Next**; the SBA LAN Setup page appears:

**Figure 8-6: SBA Setup Wizard - SBA LAN Setup**

#### SBA LAN Setup

Wizard will be automatically reconnect to the new accessible IP address.

Select a Network Interface Card

GE

Use the following IP address

IP Address

10.21.2.128

Subnet Mask

255.255.0.0

Default Gateway

10.21.0.1

Use the following DNS server address

Preferred DNS Server

10.1.1.6

Alternate DNS Server

10.1.1.11

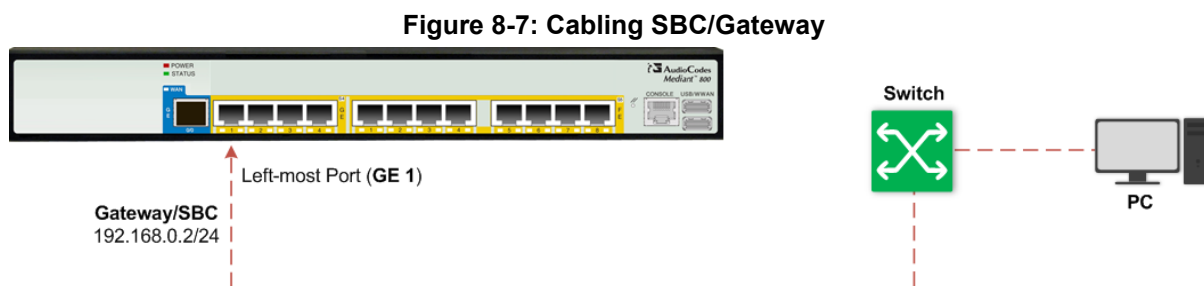
9. Configure the IP addressing scheme for the SBA server:
  - a. From the 'Select a Network Interface Card' drop-down list, select the required network card if there are several options. This should be the network card associated with the port that you enabled in the previous step.
  - b. Select the **Use the following IP address**.
  - c. In the 'IP Address', 'Subnet Mask' and 'Default Gateway' fields, enter a new IP address, subnet and default gateway for the SBA server.
  - d. In the 'Preferred DNS Address' and 'Alternative DNS Address' fields, enter the primary and secondary DNS addresses, respectively. The primary DNS server address is necessary for later connecting the SBA server to the network domain in Section 11.7
10. Click **Next**; your connection with the SBA server **becomes unavailable at the default IP address** (due to the new IP address).

## 8.2 Modifying IP Address of SBC/Gateway

The following procedure describes how to initially cable to the SBC/Gateway in order to change its default IP address.

➤ **To change the default IP address of SBC/Gateway:**

1. Connect your computer to your switch.
2. Change the IP address and subnet mask of your computer to correspond with the default IP address of the SBC/Gateway.
3. Using an RJ-45 Ethernet cable, connect Ethernet port **GE 1** (left-most port), located on the front panel of the device, directly to the switch:



4. On your computer, start a standard Web browser and in the URL address field, enter the default IP address to access the Web-based management interface of the SBC/Gateway; the Web interface's Web Login screen appears:

**Figure 8-8: Web Login Screen**

**Web Login**

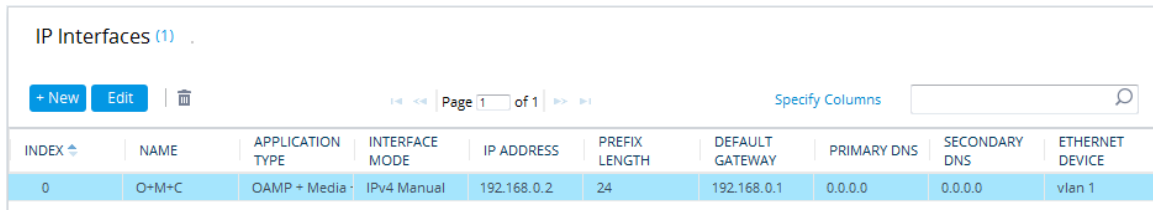
**Username**

**Password**

Remember Me Login

5. In the 'Username' and 'Password' fields, enter the default login username and password, and then click **Login**.

- Open the IP Interfaces table (**Setup** menu > **IP Network** tab > **Core Entities** folder > **IP Interfaces**):

**Figure 8-9: IP Interfaces Table**

INDEX ↕	NAME	APPLICATION TYPE	INTERFACE MODE	IP ADDRESS	PREFIX LENGTH	DEFAULT GATEWAY	PRIMARY DNS	SECONDARY DNS	ETHERNET DEVICE
0	O+M+C	OAMP + Media	IPv4 Manual	192.168.0.2	24	192.168.0.1	0.0.0.0	0.0.0.0	vlan 1

- Select the OAMP interface ("O+M+C"), click **Edit**, and then modify the IP address and any other networking parameters, as desired.
- Click **Apply**; your connection with the SBC/Gateway Web interface **becomes unavailable at the default IP address** (due to the new IP address).



**Note:** Keep the device connected to the power supply.

- Change your computer's IP address so that it's in the same subnet as the new IP address which you configured for the SBC/Gateway.
- Log in again to the Web interface of the SBC/Gateway, using its new IP address.
- Click the **Save** button, located on the toolbar, to save your new IP address to flash memory.

## 8.3 Re-Cabling SBA and SBC/Gateway to Network

Once you have changed the IP addresses of the SBA and SBC/Gateway from their default settings, you need to connect the SBA and SBC/Gateway to the network in which you want to deploy your device.

➤ **To connect the SBA and SBC/Gateway to the network:**

1. Disconnect your device's local cable connection with the switch and computer.
2. Re-cable the SBA and SBC/Gateway to the network.
3. Continue configuring the SBA through the SBA Setup Wizard, as described in Section 9.



## 9 Resumption of SBA Wizard after Initial Network Configuration

Once you have assigned new IP addresses to the SBA and SBC/Gateway (as described in Section 8), you need to resume the SBA Setup Wizard to continue SBA configuration.



**Note:** The SBA Setup Wizard uses the term "SBC" and "Gateway" to refer to the session border controller (SBC) and media gateway applications respectively, which are also supported by the device. The Skype for Business Topology Builder refers to these applications as the "PSTN Gateway" and "trunks".

### 9.1 Step 1: Access the SBA Setup Wizard

The following procedure describes how to access the SBA at its new IP address.

➤ **To access the SBA and resume SBA Setup Wizard:**

1. From a computer connected to the network, open a Web browser, and then enter the new IP address that you assigned to the SBA server in Section 8.1; the following appears:

**Figure 9-1: SBA Management Interface - Login Screen**

Login to SBA Web Administration

Administrator	✉
Password	🔒
<input type="checkbox"/> Yes, I accept <a href="#">the terms &amp; condition</a>	
<input type="button" value="Sign In"/>	

2. Enter the default username and password, select the **Yes, I accept the term and condition** check box, and then click **Sign In**; the SBA Setup Wizard resumes at the next wizard page.



**Note:** The default username is **Administrator** (case-sensitive) and the default password is **Pass123** (case-sensitive).

## 9.2 Step 2: Configure E-SBC and Gateway LAN and WAN

This step describes how to setup the connection of the gateway/SBC application to the Enterprise LAN or Enterprise WAN (depending on your Network Topology configuration (see Section 11.2).



**Note:** This step is only relevant if you are configuring the E-SBC/gateway parameters.

### 9.2.1 Step 2-1: Configure E-SBC and Gateway LAN

This step describes how to setup the connection of the gateway/SBC application to the Enterprise LAN.

Figure 9-2: SBA Wizard LAN Leg

SBC/Gateway LAN Setup

Physical Port:  
Group 1 (GE\_4\_1,2)

VLAN ID:  
untagged

IP Address:  
10.21.41.70

Subnet Mask:  
255.255.0.0

Default Gateway:  
10.21.0.1

Primary DNS:  
10.21.50.20

Secondary DNS:

Back Next Cancel

➤ **This step defines the following parameters:**

- **Physical Port:** Defines the physical port that should be used for connecting the SBC to the Enterprise LAN (typically to the Ethernet switch). On most devices, two physical ports may be used for Ethernet link redundancy. For example on the device, the first LAN link should be connected to the Gigabit Ethernet 0/1 port and the backup link should be connected to the Gigabit Ethernet 0/2 port.
- **VLAN ID:** Defines the VLAN ID used on the LAN network interface. When set to empty (untagged) or 1, traffic on the LAN network interface is untagged.
- **IP Address:** Defines the SBC's IP address on the LAN network interface. The IP address should be part of Enterprise LAN and therefore is typically "private" IP address. This address is used for communicating with the IP-PBX and/or Users that reside inside the LAN, as well as for the management (OAM) traffic.
- **Subnet Mask:** Defines the subnet mask of the Enterprise LAN.
- **Default Gateway:** Defines the default gateway of the Enterprise LAN.
- **NAT Global IP (Target IP Address in NAT Translation Table):** This is applicable only when SBC is connected via enterprise router that performs Network Address Translation (NAT). Defines the global IP address (of the Enterprise router) used by SBC when communicating with ITSP (for SIP Trunk application) or IP-PBX (for Hosted IP-PBX application).
- **Primary DNS:** Defines the primary DNS server of the Enterprise LAN. This parameter is mandatory if you use hostname / FQDN for IP-PBX address.
- **Secondary DNS:** Defines the secondary DNS server of the Enterprise LAN. This parameter is mandatory if you use hostname / FQDN for IP-PBX address.

## 9.2.2 Step 2-2: Configure E-SBC and Gateway WAN

This step describes how to setup the connection of the gateway/SBC application to the Enterprise WAN.



**Note:** This step is only relevant if you are configuring the E-SBC/gateway parameters.

Figure 9-3: E-SBC and Gateway WAN Setup

The screenshot shows the 'SBC/Gateway WAN Setup' configuration page. The fields are as follows:

- Physical Port:** A dropdown menu showing 'Group 2 (GE\_4\_3,4)'.
- VLAN ID:** A text input field containing 'untagged'.
- IP Address:** A text input field containing '195.179.192.153'.
- Subnet Mask:** A text input field containing '255.255.255.128'.
- Default Gateway:** A text input field containing '195.179.192.129'.
- NAT Global IP:** An empty text input field.
- Primary DN:** A text input field containing '80.179.55.100'.
- Secondary DN:** An empty text input field.

At the bottom right of the form, there are three buttons: 'Back', 'Next', and 'Cancel'.

➤ **This step defines the following parameters:**

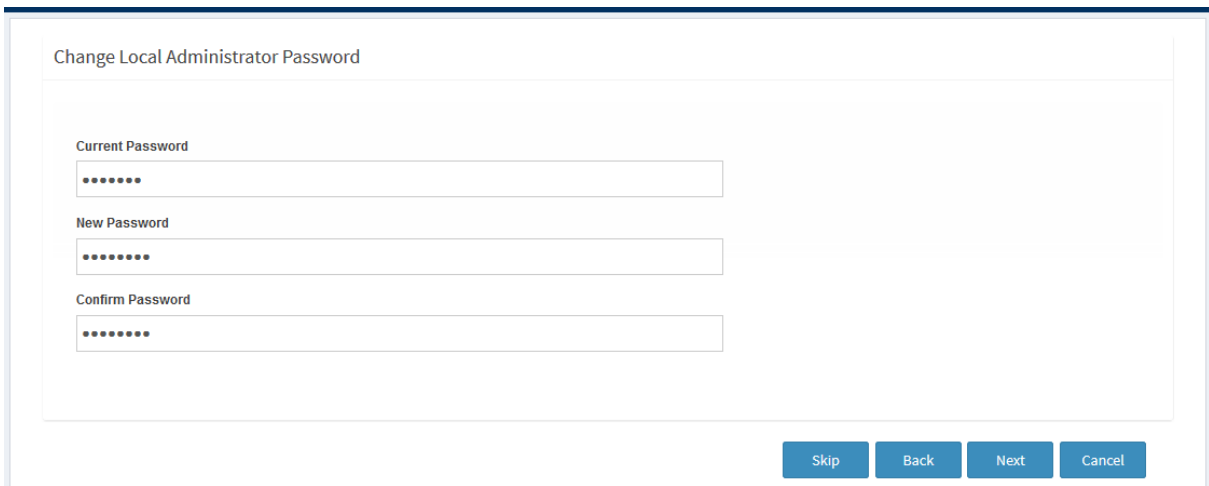
- **Physical Port:** Defines the physical port that should be used for connecting the to the DMZ port on the Enterprise router. On most devices, two physical ports may be used for Ethernet link redundancy.
- **VLAN ID:** Defines the VLAN ID that is used on the WAN network interface. When set to empty (untagged) or 1, traffic on the WAN network interface is untagged.
- **IP Address:** Defines the IP address on the WAN network interface. The IP address should be "public" (globally routable) and is used for communicating with ITSP and/or IP-PBX that resides outside the LAN. When the WAN network interface is the only interface that exists, it's also used for the management (OAM) traffic.

- **Subnet Mask:** Defines the subnet mask of the WAN network interface.
- **Default Gateway:** Defines the default gateway of the WAN network interface.
- **NAT Global IP (Target IP Address in NAT Translation Table):** This is applicable only when is connected via enterprise router that performs Network Address Translation (NAT). Defines the global IP address (of the Enterprise router) used by when communicating with ITSP (for SIP Trunk application) or IP-PBX (for Hosted IP-PBX application).
- **Primary DNS:** Defines the primary DNS server of the WAN network interface. This parameter is mandatory if you use hostname / FQDN for ITSP / IP-PBX address
- **Secondary DNS:** Defines the secondary DNS server of the WAN network interface. Leave it as empty if there is only one DNS server available.

### 9.3 Step 3: Change Local Administrator Password

This step describes how to change the password of the local administrator on the SBA.

**Figure 9-4: SBA Setup Wizard - Change Local Administrator Password**



Change Local Administrator Password

Current Password  
.....

New Password  
.....

Confirm Password  
.....

Skip Back Next Cancel

- **To change the local administrator password:**
1. Enter the current password of the local administrator.
  2. Enter the new password.
  3. Confirm the new password.

## 9.4 Step 4: Set Date and Time Zone

This step describes how to set the date and time zone for the OSN server.



**Note:** These settings are not synchronized with the E-SBC/gateway clock settings.

Figure 9-5: SBA Setup Wizard - Set Date and Time Zone

➤ To set the date and time zone of the SBA server:

1. Select the Time Zone of the SBA branch device that you are configuring.
2. Set the date and time of the SBA branch device.

## 9.5 Step 5: Join to the Domain

This step describes how to join the SBA branch to the domain.

Figure 9-6: SBA Setup Wizard - Join to Domain

➤ **To join to the domain:**

1. In the 'Domain Name' field, enter the domain name of the SBA branch site.
2. In the 'New Computer Name' field, enter the desired name for the SBA branch site device. The Computer Name string "AUDC" is by default used to identify the appliance.



**Note:** The computer name must be identical to the Computer Name configured in the AD (see Section 5, Adding SBA to Active Directory).

3. In the 'User Name' and 'User Password' fields, enter the domain username and password of the administrator who is authorized for the domain.
4. If you want to add the RTCUniversalSBATEchnicians group domain, do the following:
  - a. Click **Advanced**:

**Figure 9-7: SBA Setup Wizard - Join to Domain (Advanced)**

⚙ **Advanced**

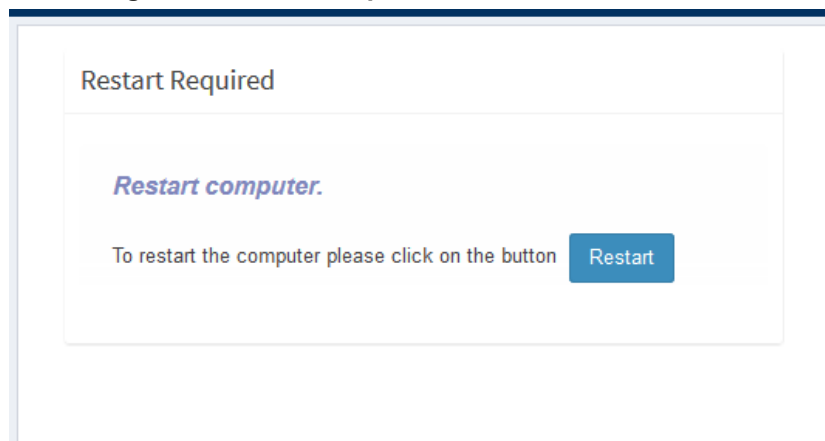
RTCUniversalSBATEchnicians in Domain

User with permissions

Password

- b. In the 'RTCUniversalSBATEchnicians in Domain' field, enter the group domain name.
  - c. In the 'User with permissions' field, enter the username.
  - d. In the 'Password' field, enter the password.
5. Click **Next**; you are prompted to restart the server:

**Figure 9-8: SBA Setup Wizard - Restart SBA Server**

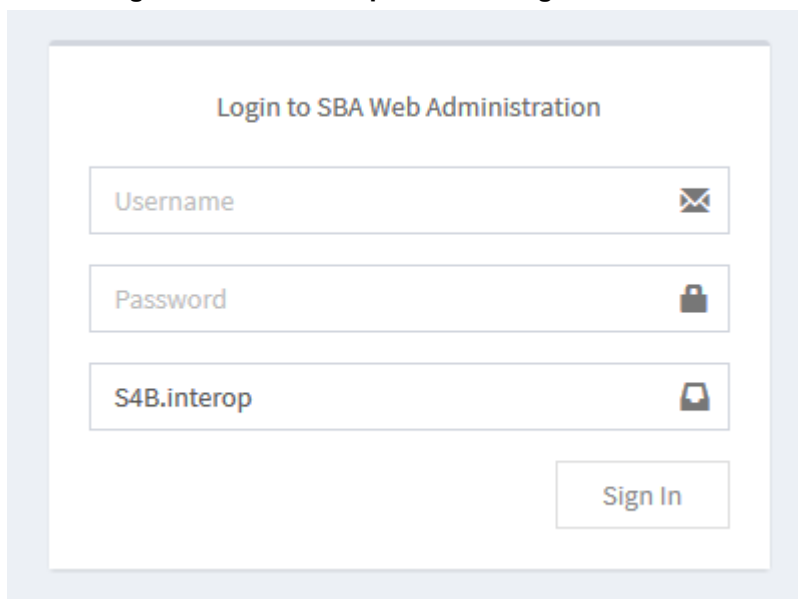


6. Click **Restart** to restart the SBA server; a message appears informing you that the SBA server is restarting.

## 9.6 Step 6: Login to Domain

This step describes how to login to the domain.

**Figure 9-9: SBA Setup Wizard - Login to Domain**

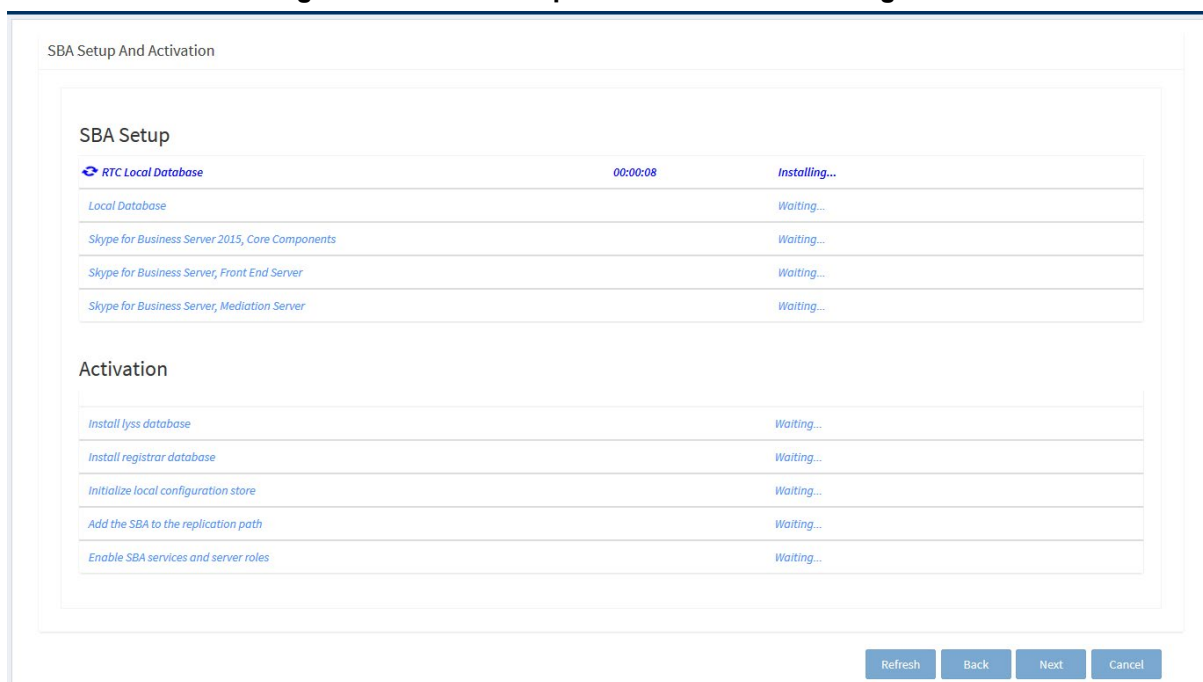


➤ **To login to the domain:**

1. Enter the domain administrator credentials.
2. Click **Sign In**.

Once you login to the domain the following screen is displayed showing the progress of the installation of the components of the SBA setup:

**Figure 9-10: SBA Setup Wizard - Installation Progress**

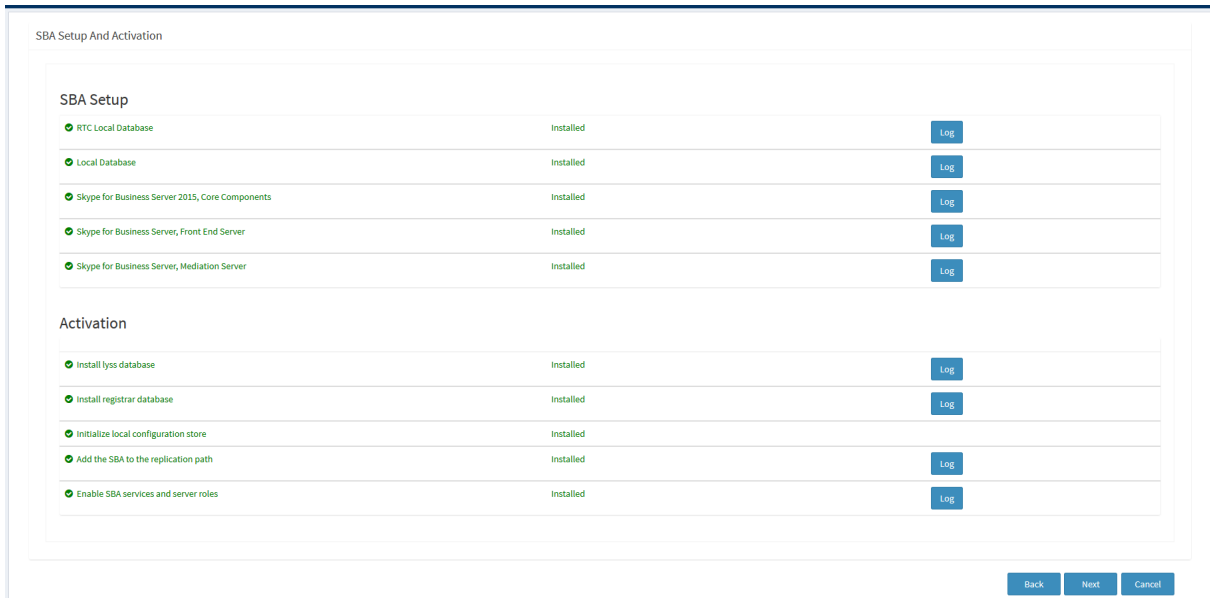


A timer adjacent to each component shows how long the installation process has taken.



Once all of the SBA components have been successfully installed, they are all displayed as shown in the screen below:

**Figure 9-11: SBA Setup Wizard - Installation Completed**



Note that you can view logs and reports at each stage of the installation.

3. Once the SBA branch appliance has installed of the components (all components are displayed in green as shown in the screen above), click **Next**.

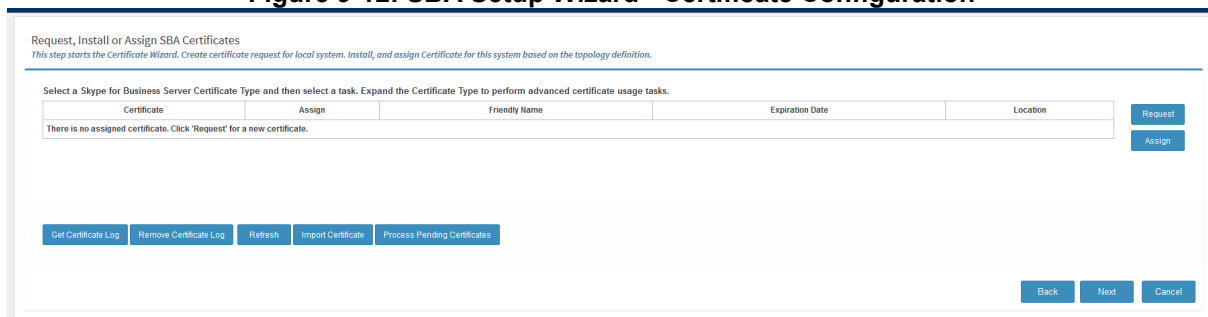
## 9.7 Step 7: Configure SBA Certificates

This step describes how to configure the certificates that are used to secure the connection between the SBA branch appliance and the Skype for Business server in the Data center.

You can implement certificates by using one of the following methods:

- Generating a Certificate Signing Request (CSR)
- Importing an existing certificate. See Importing an Existing Certificate on page 64.

**Figure 9-12: SBA Setup Wizard - Certificate Configuration**



The main certificate configuration screen above includes the following options:

- **Request:** Send a CSR request to a CA.
- **Assign:** Assign an existing certificate to the SBA appliance.
- **Get Certificate Log:** Open the log file for the selected certificate which includes the processing information for the certificate's deployment on the Skype for Business server.
- **Remove Certificate Log:** Remove the log file for the selected certificate from the installation certificate directory.
- **Refresh:** updates the list of certificates in the certificate list.
- **Import certificate:** import an existing certificate that has been processed by your enterprise's CA

### 9.7.1 Generating a Certificate Signing Request (CSR)

There are two methods that you can use to generate a certificate request:

- Send the request immediately to an Online Certificate Authority.
- Prepare the request Offline and then send the requests later.

When both options are selected, you can monitor the status of the requests in the Wizard.

➤ **To generate a Certificate Signing Request (CSR) :**

1. Click **Request** to send a CSR request to the Microsoft CA authority.

**Figure 9-13: SBA Setup Wizard - Certificate Signing Request (CSR)**

Request, Install or Assign SBA Certificates  
*This step starts the Certificate Wizard. Create certificate request for local system. Install, and assign Certificate for this system based on the topology*

---

Select a CA from the list detected in your environment

DC.S4B.interop\S4B-DC-CA

Friendly name:  
 Skype for Business Server 2015 Default certificate 01/16/2017 10:54:36 AM

Organization:  Organization unit:

Country/Region:

State/Province:  City/Locality:

User name:  Password:

Select one or more SIP domains for which a sip.<sipdomain> entry is to be added to the subject alternative names list.

All  
 S4B.interop

Subject alternative name:

Specify another CA, change the Certificate Template, Configure additional Subject Alternative Names, and more.

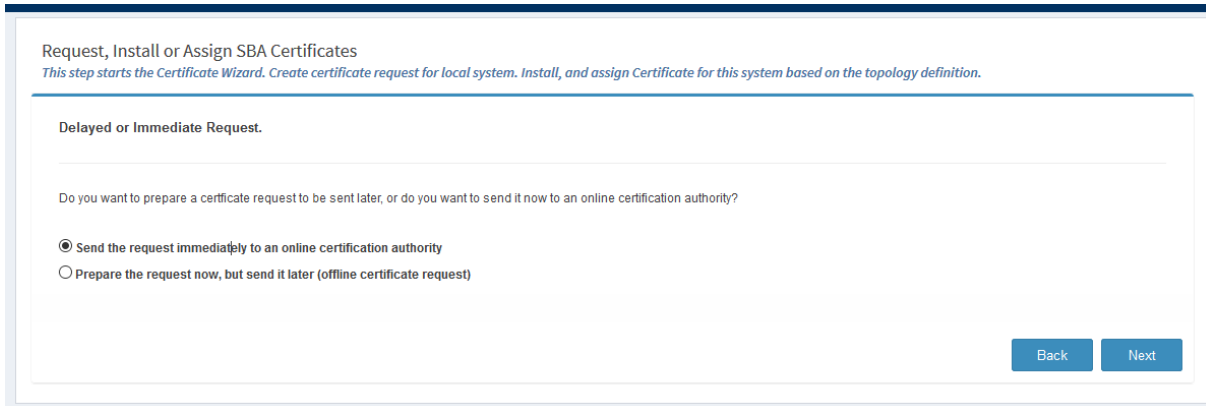
2. Enter the details of the CSR request:
  - **Friendly Name:** The name through which the certificate will be accessed (usually the fully-qualified domain name, e.g., www.domain.com or mail.domain.com).
  - **Organization:** The legally registered name of your organization/company.
  - **Organizational unit:** The name of your department within the organization (frequently this entry will be listed as "IT," "Web Security," or is simply left blank).
  - **City/locality:** The city in which your organization is located.
  - **State/province:** The state in which your organization is located.
  - **Country/region:** If needed, you can find your two-digit country code in our list.
  - **User name and Password** for the user who is authorized to request an online certificate.
  - **SIP Domain:** The SIP domain name is used when communicating with the Skype for Business Server. The domain name is used in the following SIP message headers when communicating with the SBC or Gateway application:
    - ◆ Subject name
    - ◆ Subject alternative name
    - ◆ Subject Alternative Name -Alternative name for the SBA appliance in the domain.

This name is the Fully Qualified Domain Name (FQDN) of the E-SBC (also configured in the Topology Builder in Section 6).

3. Do one of the following:

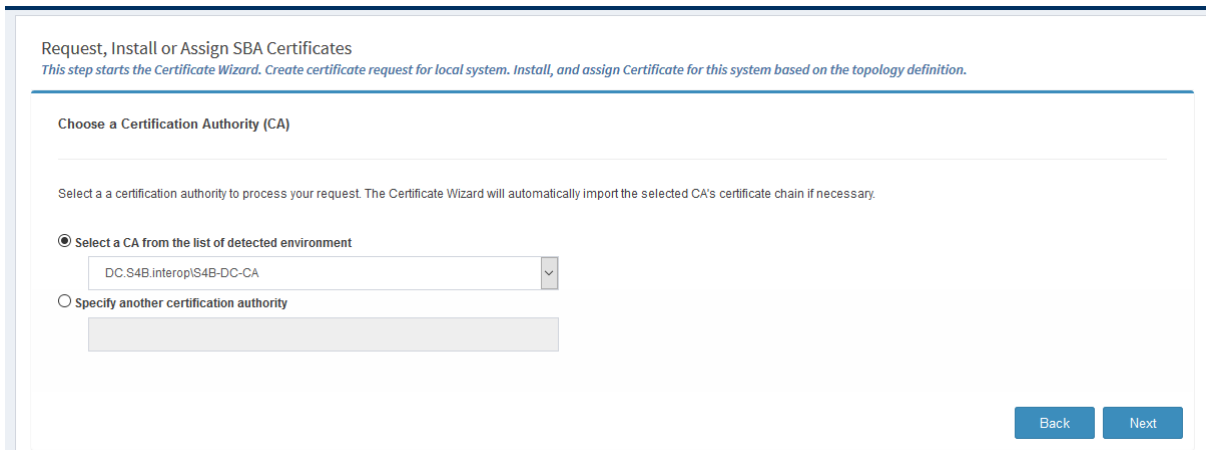
- e. If you wish to send the request immediately to an Online Certificate Authority, proceed to step 6.
  - f. If you wish to prepare the request and send it offline using Microsoft Windows or other tools, click the **Advanced** button and proceed to Step 4 below.
4. Click **Advanced**.

**Figure 9-14: SBA Setup Wizard - Advanced Certificate Options**



5. Select the option **Prepare the request now; however send it later (offline certificate request)**; the CSR request is sent manually by the administrator (Skip to Step 8).
6. Click **Next**; if you selected to request the certificate immediately, the following screen is displayed:

**Figure 9-15: Online Certificate Request**



7. From the drop-down list box, select the desired CA from which to request a certificate or specify another CA in the text box and click **Next**.

**Figure 9-16: Select CA**

Request, Install or Assign SBA Certificates  
*This step starts the Certificate Wizard. Create certificate request for local system. Install, and assign Certificate for this system based on the topology definition.*

Specify Choose a Certification Authority (CA)

Select a certification authority to process your request. The Certificate Wizard will automatically import The selected CA's certificate chain if necessary

Specify alternate credentials for the certification authority.

User name:

Password:

8. Enter the user name and Password for the administrator who is authorized to request a certificate, select the "Specify alternate credentials authority" check box, and click **Next**; the following screen is displayed:

**Figure 9-17: Prepare the Request**

Request, Install or Assign SBA Certificates

*This step starts the Certificate Wizard. Create certificate request for local system. Install, and assign Certificate for this system based on the topology definition.*

**Prepare the Request**

---

**Name and Security Settings**

Type a name for the new certificate. The name should be easy for you to refer to and remember.  
 Note: The friendly name should not be confused with the subject name which will be determined automatically based on the certificate's usages on this computer.

**Friendly Name:**

Skype for Business Server 2015 Default certificate 03/11/2018 03:45:13 PM

**Bit Length:**

2048 ▾

Mark the certificate's private key as exportable.

**Configure Additional Subject Alternative Names**

Specify any additional subject alternative names to be added to the existing list of subject alternative names.

+

Clear All ✕

By default a SBA certificate request will use the WebServer certificate template. To specify a different certificate template, select the following check box.

Use alternate certificate template for the selected certification authority

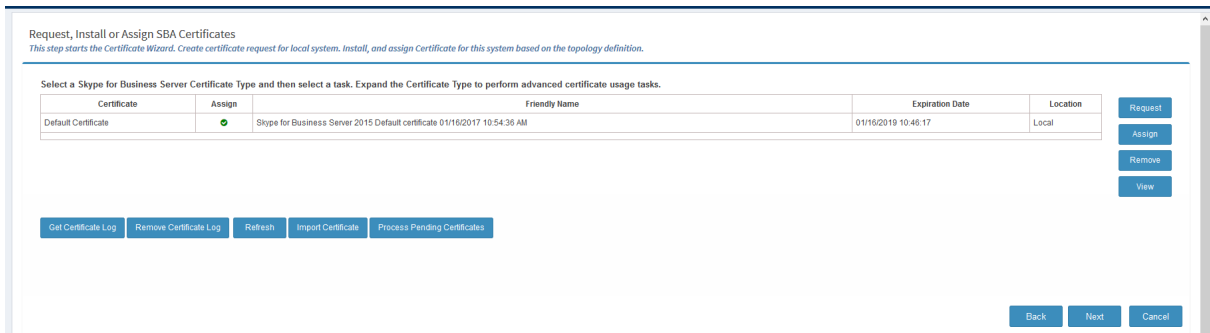
Certificate template name:

Back

Finish

Cancel

9. Enter the Friendly Name and Security Settings for the certificate:
  - Enter the Bit Length
  - Mark the certificate's private key as exportable
  - Configure additional alternative names
  - Enter the Certificate Template name if the default is not used
10. Click **Finish**; a summary of the certificate request is displayed:



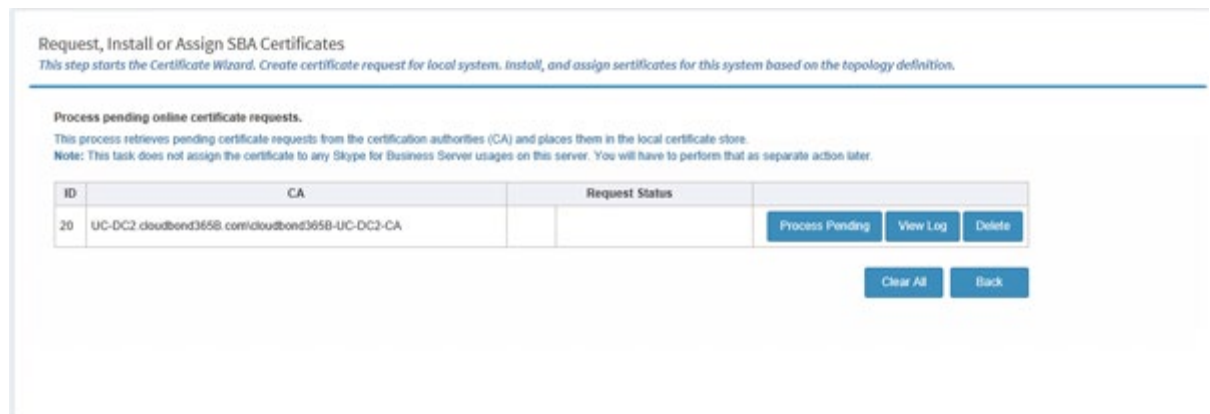
### 9.7.1.1 Pending Requests

When the Certificate Authority has not yet processed the Certificate request, it is in the pending state. When the pending certificate is processed, it is retrieved from the CA and copied to the local certificate store on the SBA server.

- **To view currently pending certificates and process them:**

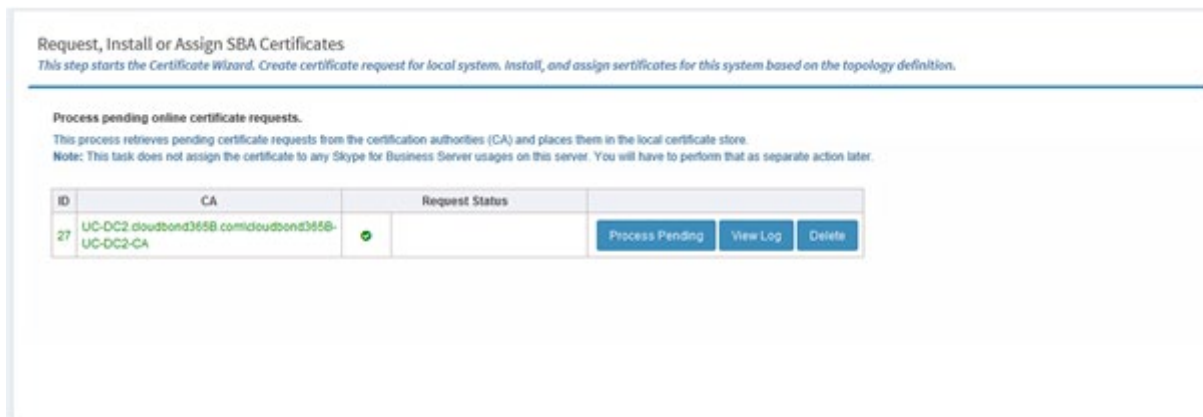
1. Click **Process Pending Certificates**.

**Figure 9-18: CSR Pending**



2. Click **Process Pending** button to process the pending certificate as described above.

**Figure 9-19: Certificate Process Pending**



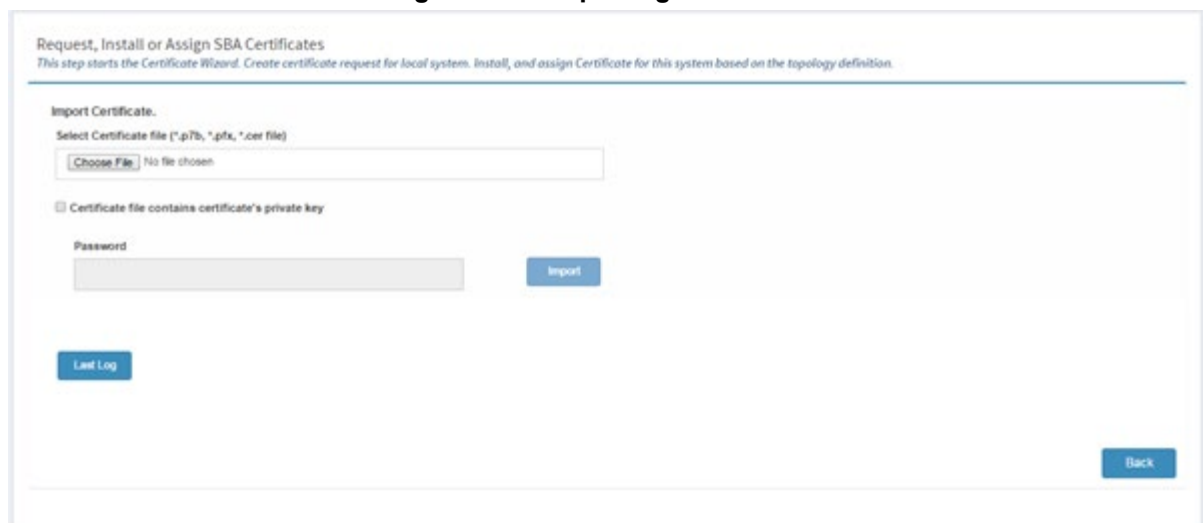
Once the pending request has been processed, it is highlighted in green as shown in the figure above.

## 9.7.2 Importing an Existing Certificate

This procedure describes how to import a certificate that you generated offline with an external CA and saved to your PC.

- **To import an existing certificate:**
  1. Click the **Import Certificate** button; the following screen is displayed:

**Figure 9-20: Importing Certificates**



2. Click **Browse** to browse to the certificate that you wish to import. The valid formats for importing are .p7b, .pfx and .cer files.
3. (Optional) Select the "Certificate file contains certificate's private key" check box to include a private key with the certificate and then enter the Password (passphrase) key for the private key.



4. Click **Import**.

**Figure 9-21: Import Certificate File**

**Request, Install or Assign SBA Certificates**  
*This step starts the Certificate Wizard. Create certificate request for local system. Install, and assign Certificate for this system based on the topology.*

---

Select a CA from the list detected in your environment

DC.S4B.interop\S4B-DC-CA

**Friendly name:**  
 Skype for Business Server 2015 Default certificate 01/16/2017 10:54:36 AM

**Organization:**  **Organization unit:**

**Country/Region:**

**State/Province:**  **City/Locality:**

**User name:**  **Password:**

Select one or more SIP domains for which a sip.<sipdomain> entry is to be added to the subject alternative names list.

All  
 S4B.interop

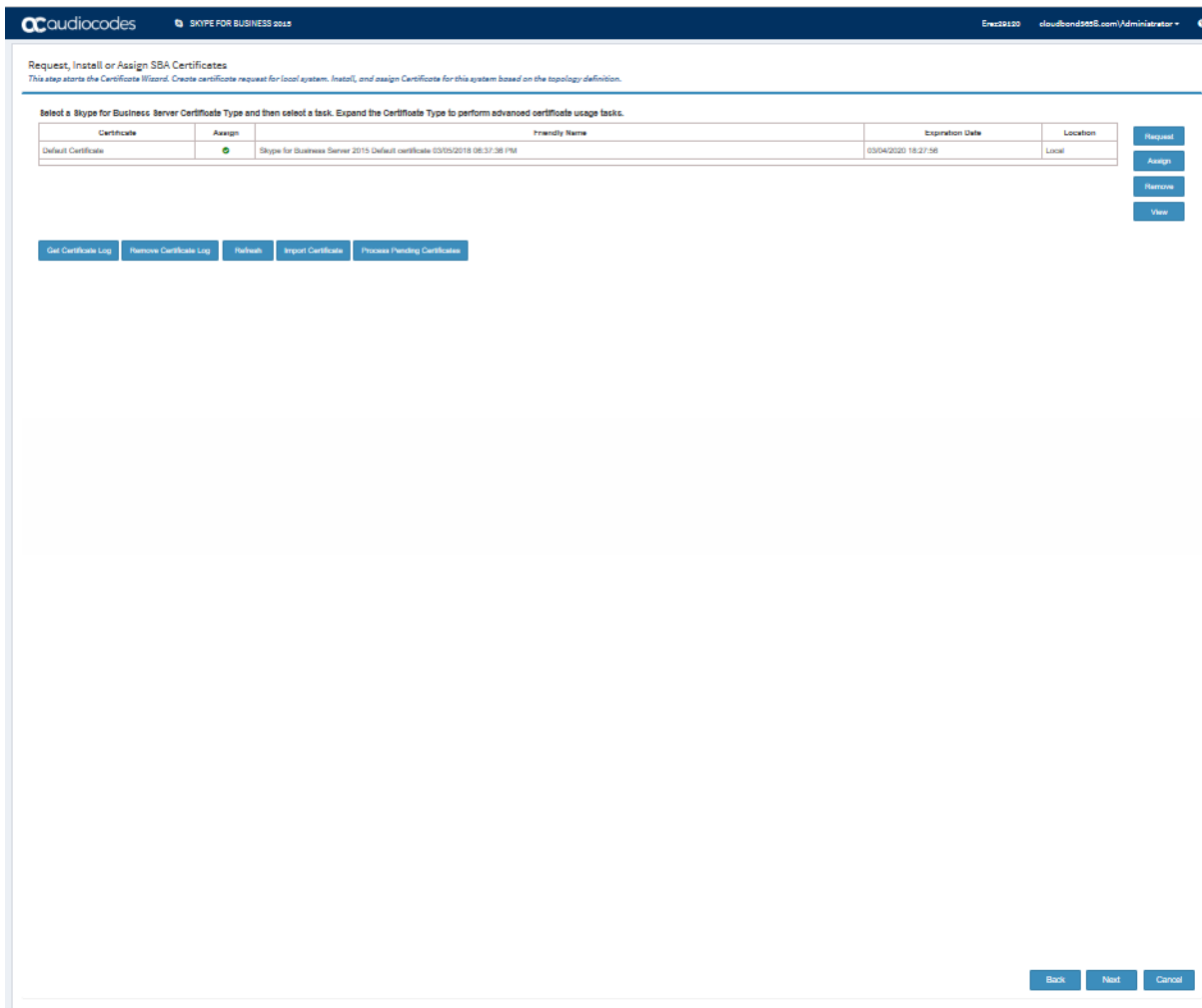
**Subject alternative name:**

Specify another CA, change the Certificate Template, Configure additional Subject Alternative Names, and more.

### 9.7.3 Assigning a Certificate

Once you have issued a CSR request to a Certificate Authority and the request has been processed (as shown in the figure below), it is automatically assigned. If however, you already have a list of other certificates that you later wish to reassign to the SBA, see the procedure below.

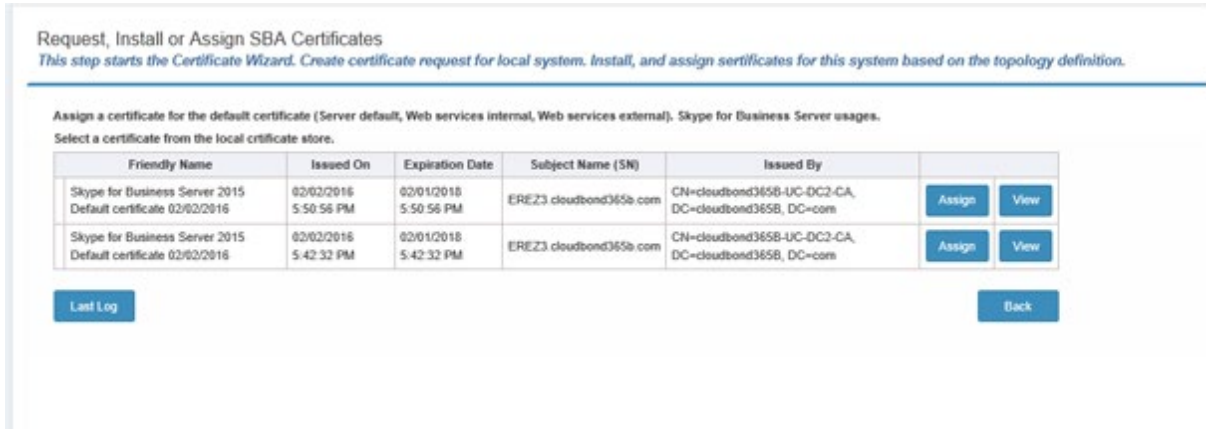
Figure 9-22: Assigning a Certificate



➤ To assign a certificate to the SBA installation:

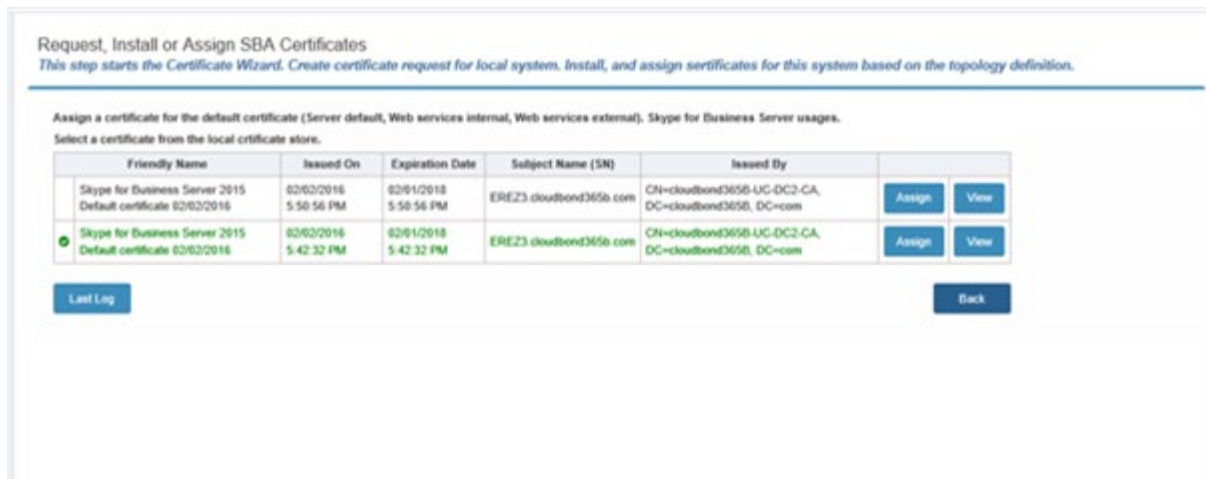
1. Click **Assign**; the following screen is displayed:

**Figure 9-23: Assigning a Certificate**



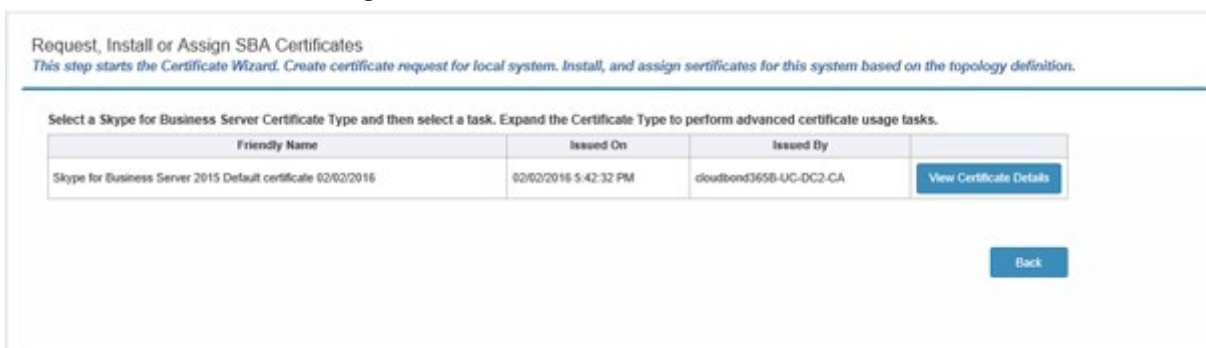
2. Click the **Assign** button adjacent to the certificate that you wish to install on the SBA; the assigned certificate is displayed in green as shown in the figure below:

**Figure 9-24: Assigned Certificate**



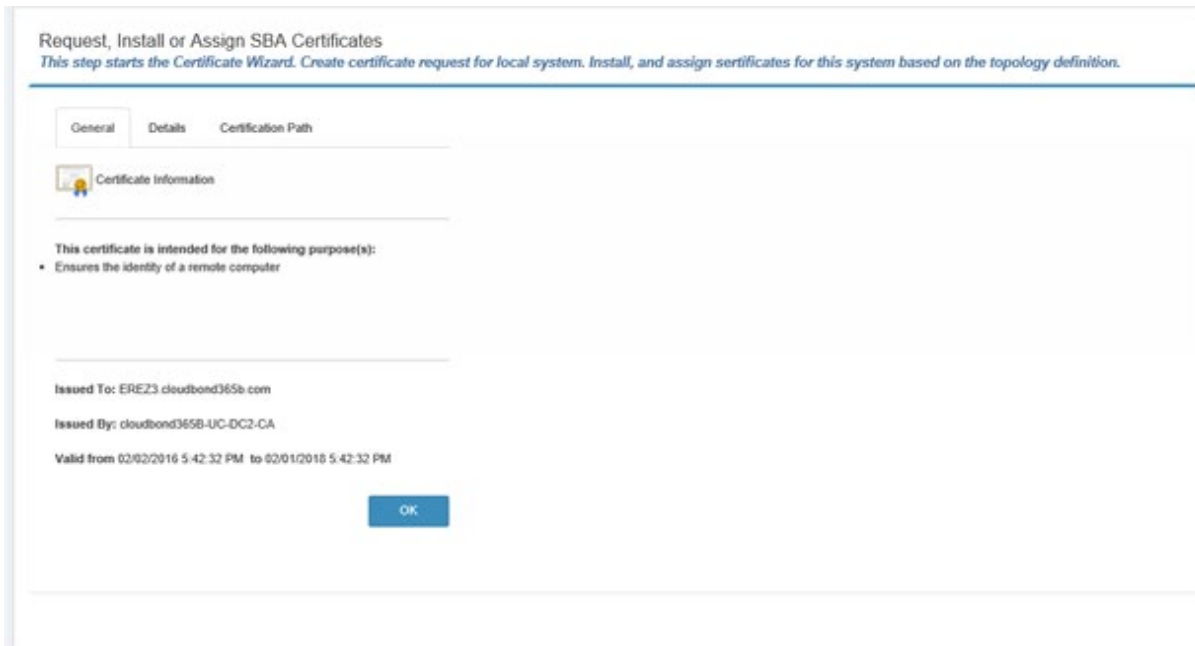
3. Click **View** to view the details of the certificate.

**Figure 9-25: View Certificate Details Button**



4. Click the **View Certificate Details** button to view the details of the certificate.

**Figure 9-26: View Certificate Details**



## 9.8 Step 8: Configure SBC/Gateway SBA Leg

This step describes how to configure the connection between the SBA and the E-SBC/gateway application. This step creates the Proxy Set and IP Group for the SBA connection with the E-SBC/gateway application.



**Note:** This step is only relevant if you chose to configure the SBC/gateway at the beginning of the wizard.

Figure 9-27: SBC/Gateway SBA Leg

The screenshot shows the 'SBC/Gateway: SBA Leg' configuration page. The fields are as follows:

- Network Interface:** LAN (dropdown)
- Address:** Ems29120.cloudbond366B.com
- SIP Domain:** (empty text box)
- Backup Address:** (empty text box)
- Keep Alive**
- Transport Type:** TLS (dropdown)
- Destination Port:** 5067
- Challenge Port:** 5067
- Media Protocol:** SRTP (dropdown)
- Base Port:** 8000
- Number Of Sessions:** 100

At the bottom right, there are three buttons: Back, Next, and Cancel.

➤ **This step includes the configuration of the following parameters:**

(Note that the equivalent parameter in the device's Web server is indicated in brackets).

- **Network Interface:** Shows the Network Interface that is used for communicating with the SIP Trunk.
- **Address** (Proxy Address table): Defines the IP address or FQDN of the SBA device. This address is configured in the Proxy Sets "Proxy Address" table.
- **SIP Domain:** (SIP Group Name or Gateway Name): Defines the SIP domain name that is used when communicating between the SBA and SBC. The domain name is used in the following SIP message headers when communicating with the Gateway and :

- for outbound calls: in Request-URI and To headers
- for inbound calls: in From header

This name is the Fully Qualified Domain Name (FQDN) of the E-SBC (also configured in the Topology Builder in Section 6, Step 9).

- **Backup Address:** Defines the FQDN of the Skype for Business Front End server. If the Front End has only one address, leave this field empty. Used in the event where the SBA device Address (defined above) does not respond.
- **Keep Alive** (Proxy Keep-alive): Enables the periodic keep-alive check of multiple SIP Trunk addresses.
- **Transport Type** (SIP Transport Type): Defines the SIP transport type for SBA-E-SBC/gateway connection.
- **Destination Port** (SIP Destination Port): Defines the SIP port used by the SBA-E-SBC/gateway connection.
- **Listening Port** (TLS Port): Defines the port used for SBA-E-SBC/gateway connection.
- **Media Protocol** (Media Security): Defines the media protocol type ("SRTP" is equivalent to Media Security enabled in device Web).
- **Base Port** (Port Range Start): Defines the first media port.
- **Number of Sessions** (Number of Media Session Legs): Defines the number of media sessions supported by the E-SBC. Note: The E-SBC allocates 10 media ports for each session. For example, if the base media port is 6000 and 100 sessions are supported, actual "range" of media ports allocated by the E-SBC is 6000-6999.

## 9.9 Step 9: Configure SIP Trunk/IP-PBX Leg

This step describes how to configure the connection between the E-SBC and the SIP trunk or IP-PBX. The example figure below shows a SIP Trunk configuration.



**Note:** This step is only relevant if you are configuring the E-SBC/gateway parameters and have applied either a SIP Trunk or IP-PBX template in the network topology (see Section 11.2).

The figure below shows an example for a SIP Trunk Configuration (for IP-PBX templates this screen is titled "SBC: SIP Trunk Leg").

**Figure 9-28: SIP Trunk Configuration**

The screenshot shows the 'SBC/Gateway: SIP Trunk Leg' configuration page in the Skype for Business administration console. The page includes the following fields and options:

- Network Interface:** A dropdown menu with 'WAN' selected.
- NAT Global IP:** A text input field.
- Address:** A text input field with 'sip.com' entered.
- SIP Domain:** A text input field.
- Backup Address:** A text input field.
- Keep Alive**
- Transport Type:** A dropdown menu with 'UDP' selected.
- Destination Port:** A text input field with '5061' entered.
- Listening Port:** A text input field with '5060' entered.
- Media Protocol:** A dropdown menu with 'RTP' selected.
- Media Port:** A text input field with '7000' entered.
- Number Of Sessions:** A text input field with '100' entered.
- Account Type:** A dropdown menu with 'None' selected.
- Trunk Stem Line:** A text input field.
- Username:** A text input field.
- Password:** A text input field.

At the bottom right of the page, there are three buttons: 'Back', 'Next', and 'Cancel'.

➤ **This step includes the configuration of the following parameters:**

(Note that the equivalent parameter in the device's Web server is indicated in brackets.)

- The following parameters configure the SIP Trunk address and communication protocol details:
  - **Network Interface:** Shows the Network Interface that is used for communicating with the SIP Trunk.
  - **NAT Global IP:** Shows the global IP address (of the Enterprise router) used

when communicating with the SIP Trunk. Applicable only when E-SBC is connected to the router that performs Network Address Translation (NAT).

Note: The Enterprise router must be configured to "port forward" all VoIP traffic from the SIP Trunk (that resides in WAN) to the E-SBC. The exact port forwarding configuration is shown in the ini file configuration summary at the end of the Wizard process. This consists of the E-SBC address, SIP listening port (e.g. 5060) and a range of media ports defined below (e.g. 6000-6999).

- **Address** (Proxy Address table): Defines the IP address or FQDN of the SIP Trunk.
- **Backup Address**: The Backup Address is the FQDN of the Skype for Business FE server. Used in the event where the SIP Trunk address (defined above) does not respond.
- **SIP Domain** (SIP Group Name or Gateway Name): Defines the SIP domain name that is used when communicating between the E-SBC and the SIP Trunk or IP-PBX. The domain name is used in the following SIP message headers:
  - ◆ for outbound calls: in Request-URI and To headers
  - ◆ for inbound calls: in From header

This name is the Fully Qualified Domain Name (FQDN) of the E-SBC (also configured in the Topology Builder in Section 6).

- **Keep Alive** (Proxy Keep-alive): Enables the periodic keep-alive check of multiple SIP Trunk addresses.
- The following parameters configure SIP ports and transport type used when communicating with the SIP Trunk.
  - **Transport Type** (SIP Transport Type): Defines the SIP transport type for SIP Trunk.
  - **Destination Port** (SIP Destination Port): Defines the SIP port used by the SIP Trunk.
  - **Listening Port** (TLS Port): Defines the SIP port used by the E-SBC when communicating with SIP Trunk.

Note: For the "One port: WAN" network topology, the E-SBC must use different Listening Ports when communicating with the IP-PBX and SIP Trunk.

- The following parameters configure Media protocol type (RTP/SRTP) and ports used by the E-SBC when communicating with the IP-PBX:
  - **Media Protocol** (Media Security): Defines the media protocol type ("SRTP" is equivalent to Media Security enabled in device Web).
  - **Base Port** (Port Start Range): Defines the first media port.
  - **Number Of Sessions** (Number of Media Session Legs): Defines the number of media sessions supported by the E-SBC.

Note: The E-SBC allocates 10 media ports for each session. For example, if the base media port is 6000 and 100 sessions are supported, actual "range" of media ports allocated by the E-SBC is 6000-6999.

- The following parameters configure E-SBC registration on the SIP Trunk:
  - **Enable Registration** (Enable Registration): Defines whether the E-SBC should perform registration on the SIP Trunk.
  - **Trunk Main Line**: Defines "leading number" assigned by the SIP Trunk. Many SIP Trunks use the same value for Trunk Main Line and Username parameters. For example, the IP-PBX registers this number on the softswitch on behalf of all its users.
  - **Username** (User Name): Defines the SIP authentication username (as provided by the SIP Trunk).
  - **Password** (Password): Defines SIP authentication password (as provided by the SIP Trunk).



## 9.10 Step 10: Configure Number Manipulation

This step configures number manipulations that modify caller / callee number for calls that pass through the E-SBC. This step is very important and must be adapted to your specific setup, because typically IP-PBX and ITSP use different numbering plans (e.g. IP-PBX may use 10-digit number format while ITSP uses a 7-digit format).

For each call "direction" (outbound / inbound), you may define different manipulation rules for caller (source) and callee (destination) numbers.



**Note:** This step is only relevant if you are configuring the E-SBC/gateway parameters.

Figure 9-29: Number Manipulations

The screenshot shows the 'Number Manipulations' configuration page. It has a header with the Audiocodes logo and 'SKYPE FOR BUSINESS 2015'. The page title is 'Number Manipulations'. There are four sections, each with a checkbox and three input fields:

- Destination Number Manipulation (Outbound calls)
  - Prefix: +
  - Remove: 1
  - Add:
- Source Number Manipulation (Outbound calls)
  - Prefix:
  - Remove: 0
  - Add:
- Destination Number Manipulation (Inbound calls)
  - Prefix: +
  - Remove: 0
  - Add: +
- Source Number Manipulation (Inbound calls)
  - Prefix: +
  - Remove: 0
  - Add: +

At the bottom right, there are three buttons: 'Back', 'Next', and 'Cancel'.

You can configure number manipulation rules for the following (select the check box adjacent to the desired set):

- Destination Number (Outbound calls)
- Source Number (Outbound calls)
- Destination Number (Inbound calls)
- Source Number (Inbound calls)

➤ Each of the above manipulation rules consists of the following three parameters:

- **Prefix:** Defines a prefix (digits in the beginning of the number) for which manipulation is applied. If set to "\*", manipulation is applied to all numbers.
- **Remove:** Defines the number of digits to be removed from the beginning of the number. If set to "0", no digits are removed.
- **Add:** Defines a new "prefix" to be added to the beginning of the number. If set to empty, no prefix is added.

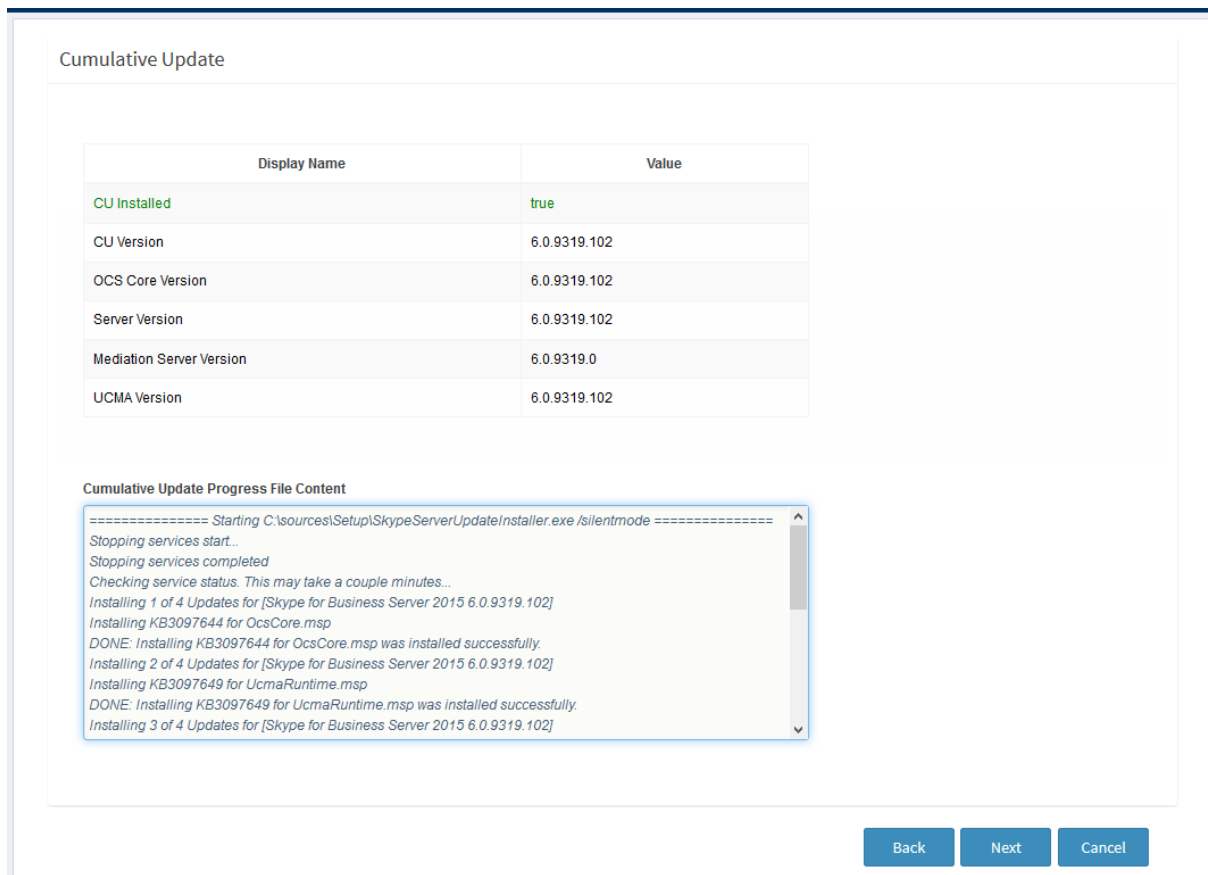
For example, if Prefix is "+972", Remove (digits) is "4" and Add is "0", then:

- number "+97239764000" is changed to "039764000"
- number "039764001" is left unchanged

## 9.11 Step 11: Run Cumulative Updates

The Wizard process includes the installation of Microsoft Skype for Business Server Cumulative Updates (CUs). When the Wizard completes, a screen similar to the following is displayed:

**Figure 9-30: SBA Setup Wizard - Cumulative Updates**

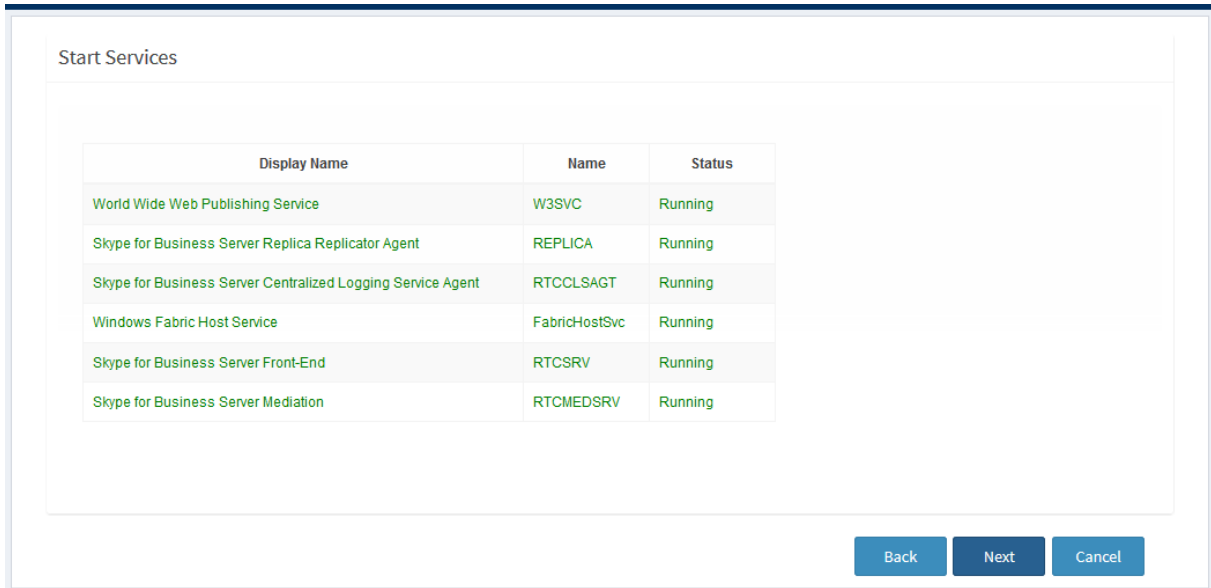


## 9.12 Step 12: Start Services

This step describes the process for startup of the SBA services.

The following example screen shows the beginning of the startup process where one service has been started (indicated in green).

**Figure 9-31: SBA Setup Wizard - Start Services**

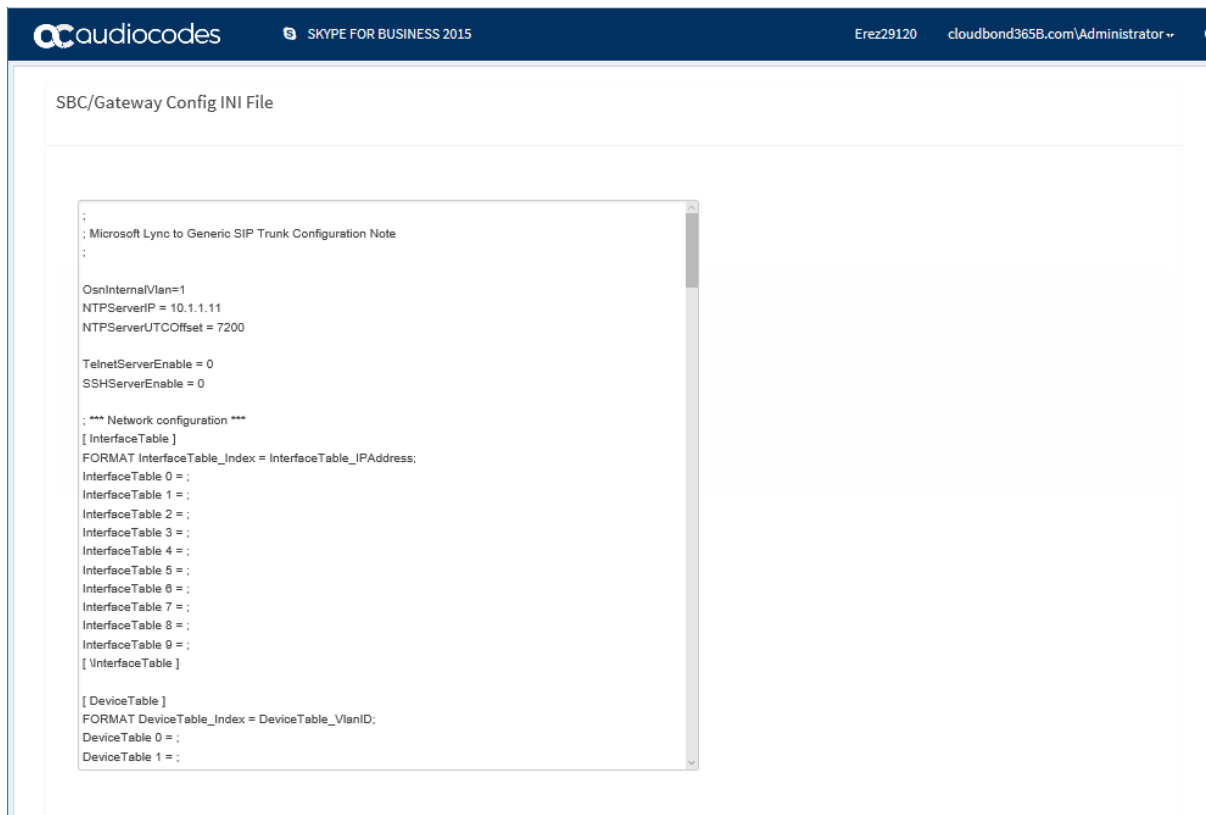


## 9.13 Step 13: Complete Wizard

At the conclusion of the Wizard process, one of the following is displayed:

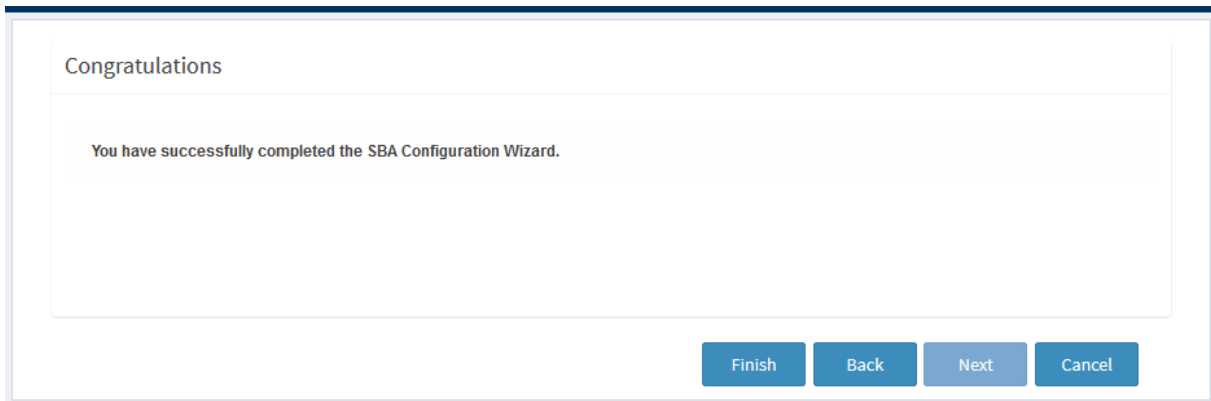
- If you have configured the E-SBC/gateway device, the generated gateway/E-SBC ini configuration file is displayed (note that you cannot edit this output until you save the ini file or load it to your device).

**Figure 9-32: Wizard Complete- E-SBC/gateway Configuration**



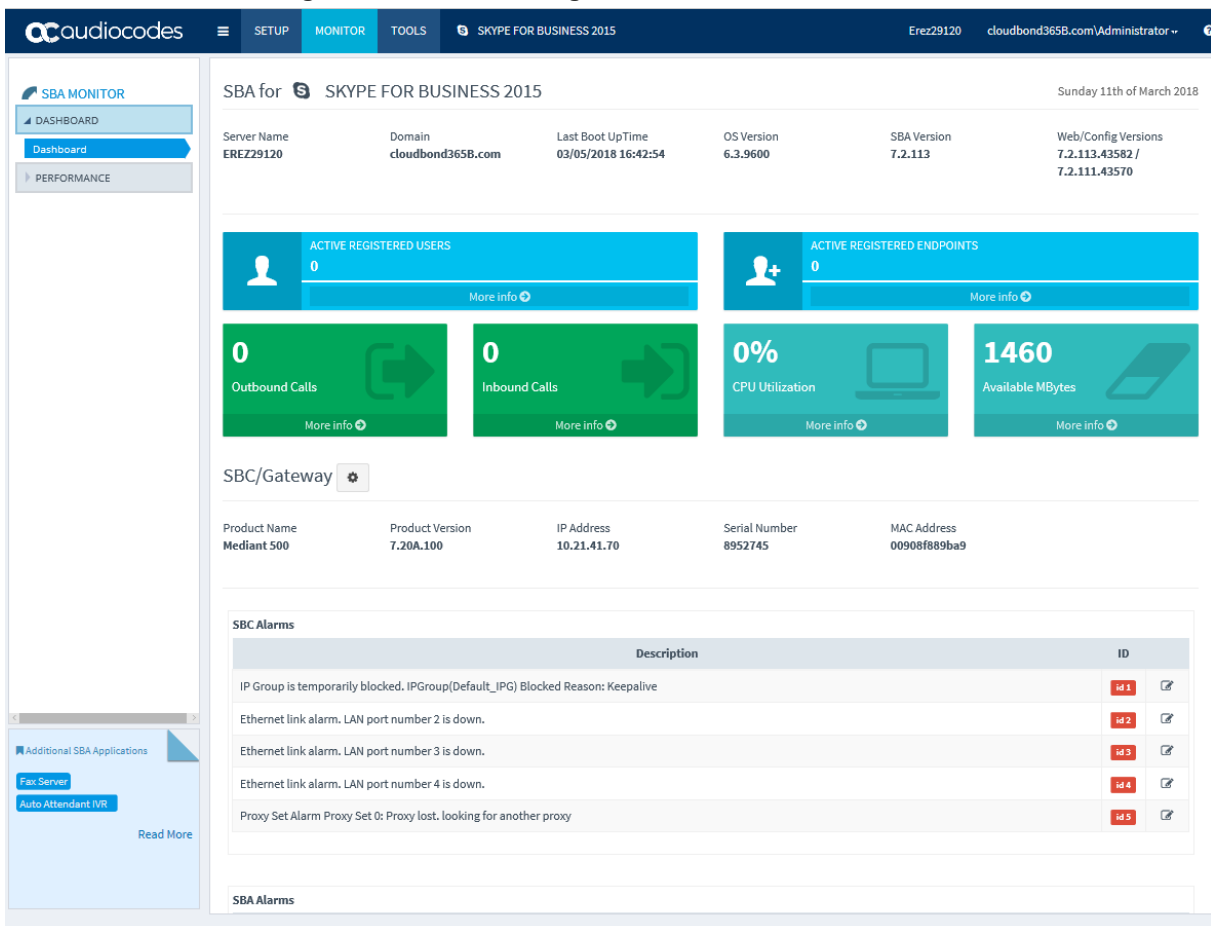
- If you have only configured the SBA, a successful notification screen is displayed.

**Figure 9-33: SBA Setup Wizard - Wizard Complete**



5. Click **Finish**; the SBA Setup Wizard closes and you are returned to the dashboard of the SBA Management Interface:

**Figure 9-34: SBA Management Interface - Dashboard**



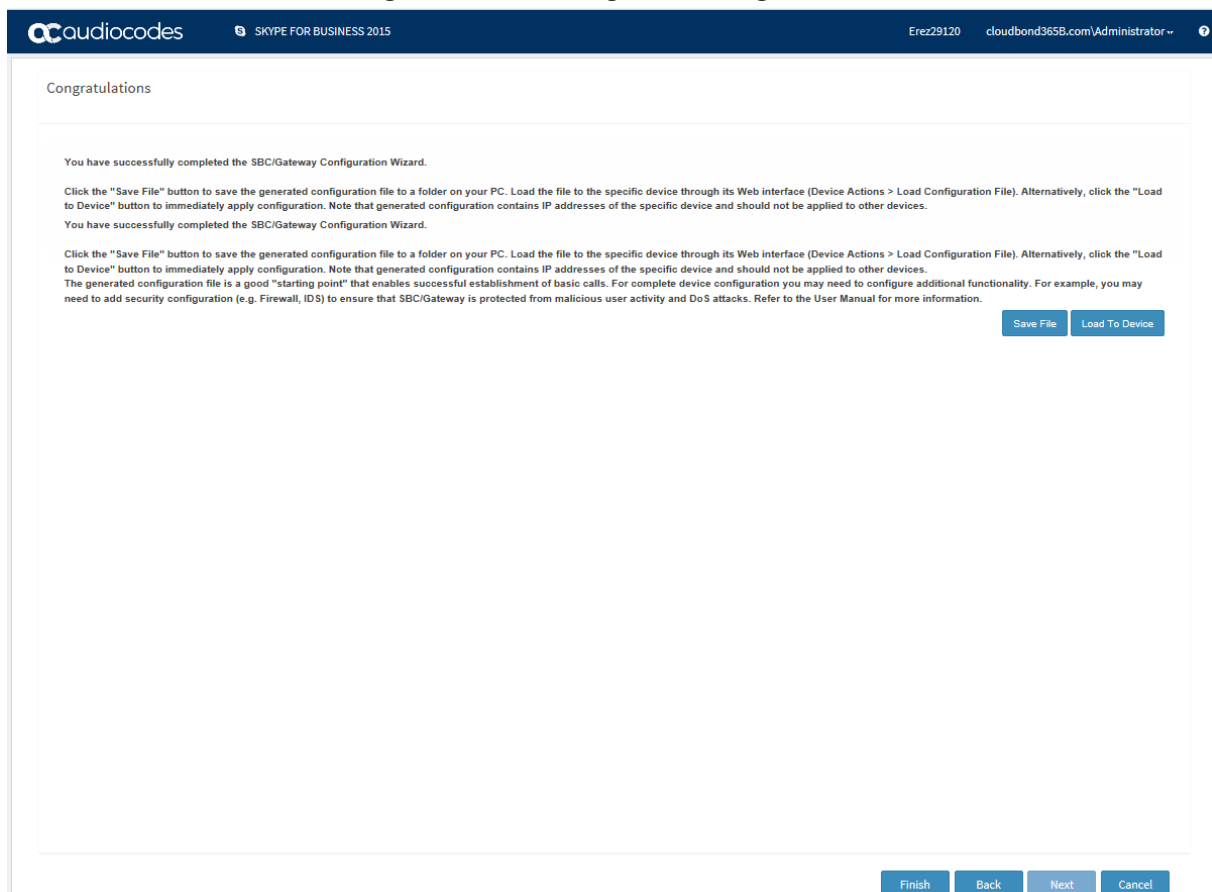
## 9.14 Step 14: Apply INI File to Device

At the conclusion of the Wizard process, you can either save the E-SBC/gateway ini file to your PC or load it to your device.



**Note:** This step is only relevant if you are configuring the E-SBC/gateway parameters.

Figure 9-35: Loading and Saving INI File



The wizard generates an ini file which includes the basic configuration of the E-SBC/gateway device. You can now perform one of the following actions:

- **Load to Device:** Load the configuration INI file immediately to the device.
- **Save File:** Save the INI file to your desired location and then later load it using the Embedded Web server tool for the device.

## 9.15 Step 15: Post Wizard Actions

Once you have completed the Wizard, click **Finish** to return to the SBA Management Interface Main Dashboard. You should now do the following:

- Uses the SBA Management Interface to perform various actions, such as connect to the E-SBC/gateway device from the SBA Management Interface dashboard link (see Chapter 12).
- Perform post-wizard configuration and fine-tuning such as configure PSTN trunks (see Part "Configuring Gateway and E-SBC (Manually) and Post-wizard Tuning on page 109).



**Note:**

- If you have deployed the "Local Gateway" template in your Network Topology, then specific parameters must be manually configured, such as the PSTN trunk configuration.
- For both the Gateway and E-SBC deployments, you need to use the device's Web server to manually configure and load the TLS certificates used to secure the connection between the Gateway and E-SBC and the Mediation server.

**This page is intentionally left blank.**

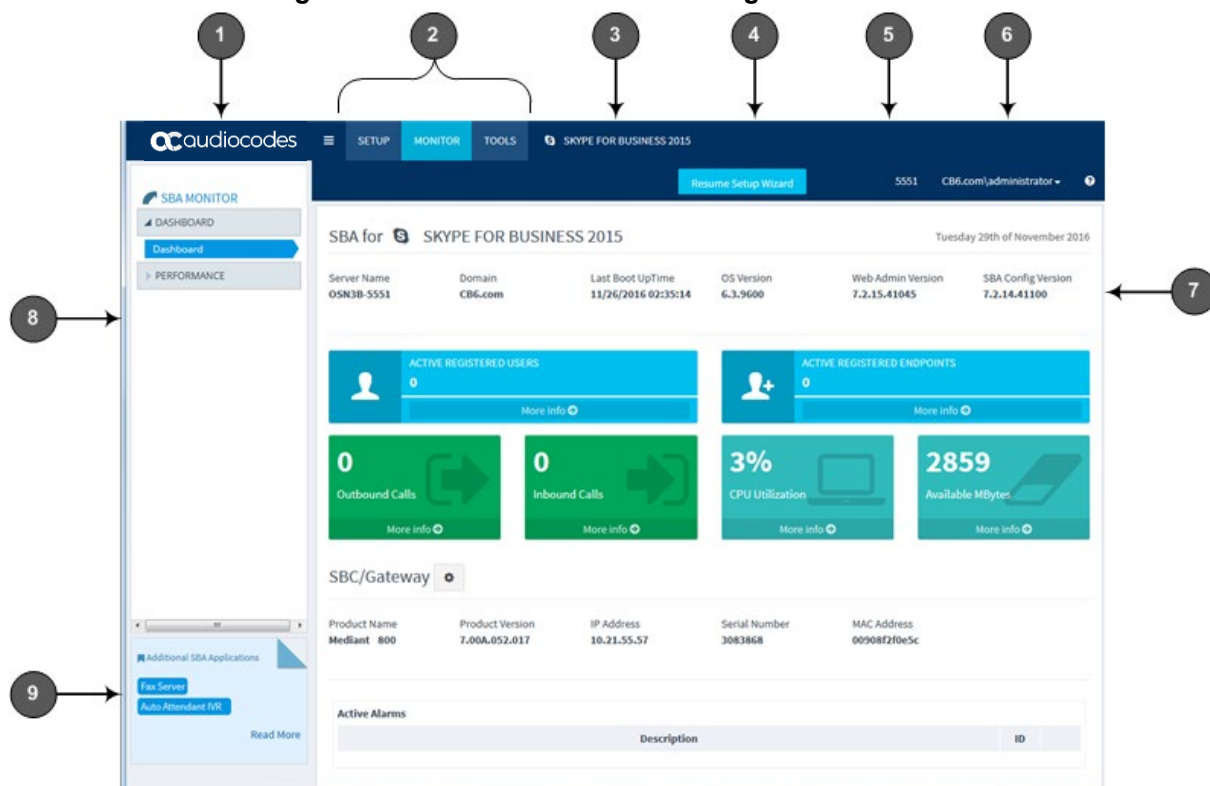


## 10 Using the SBA Management Interface

Once you have initially set up the SBA through the SBA Management Interface's SBA Setup Wizard, as described in Section 9, you can use the SBA Management Interface for full configuration, maintenance and monitoring of the SBA. In addition, if your SBA device is also employing gateway functionality (i.e., PSTN Gateway and/or SBC), you can use the SBA Management Interface for viewing basic monitoring of the gateway and for accessing the gateway's Web interface (single sign-on) for full gateway configuration.

The figure below shows the main areas of the SBA Management Interface:

**Figure 10-1: Main Areas of SBA Management Interface**



**Table 10-1: Main Areas of SBA Management Interface**

Item #	Description
1	When clicked, displays the Dashboard.
2	Menu bar with menus (Setup, Monitor and Tools).
3	Opens AudioCodes website, displaying the page on products for Microsoft.
4	<b>Resume Setup Wizard</b> button. If you exit the SBA Setup Wizard before its completion, you can later resume from the same wizard page, by clicking the button.
5	Displays the SBA computer name (defined when joining the domain). If clicked, a pop-up appears displaying system information.
6	Displays the currently logged-in username. When clicked, a drop-down menu appears with the <b>Logout</b> command, which if clicked, logs you out of the SBA Management interface.
7	Displays the properties of the SBA for Skype for Business. For more information, see Section 0.

Item #	Description
8	Navigation pane containing folders and page items, which depend on the menu selected from the menu bar.
9	Opens AudioCodes website, showing a page with additional SBA applications (Fax Server and Auto Attendant IVR).


## 10.1 Viewing General SBA Details

The following procedure describes how to view general SBA details.

➤ **To view general SBA details:**

1. From the **Monitor** menu, select the **Dashboard** folder, and then click **Dashboard**.
2. Under the SBA section, the following information is displayed:

**Figure 10-2: Viewing General SBA Details**

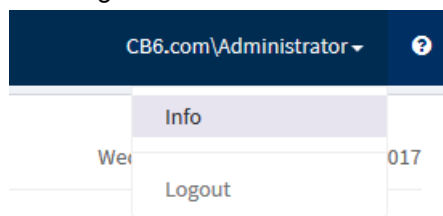
SBA for  SKYPE FOR BUSINESS 2015 Saturday 3rd of December 2016

Server Name	Domain	Last Boot UpTime	OS Version	Web Admin Version	SBA Config Version
Branch01	S4B.com	11/30/2016 14:40:27	6.3.9600	7.2.15.41045	7.2.14.41100

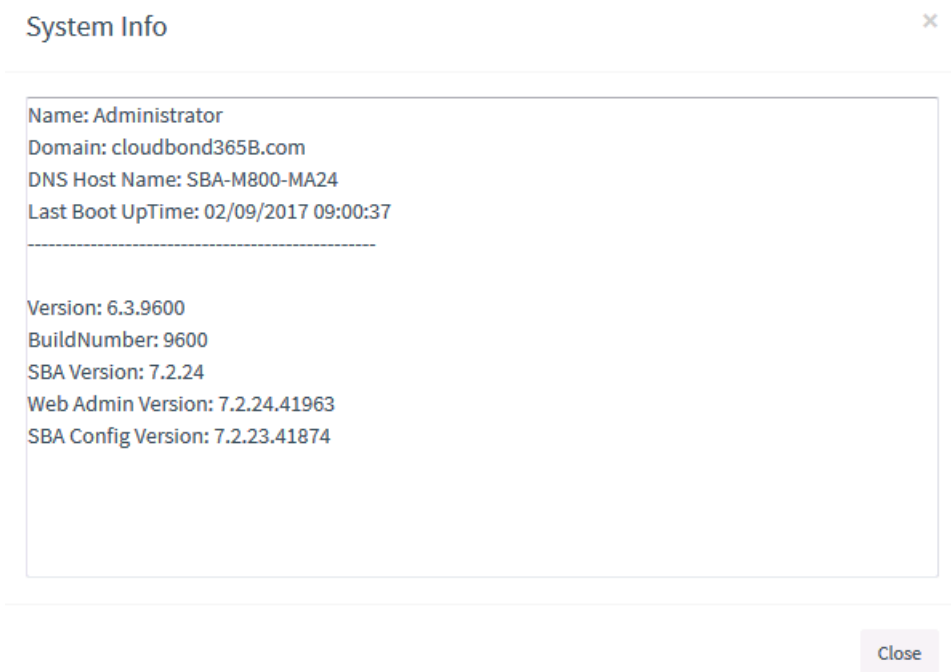
The following information is displayed:

- **Server Name:** Name of the SBA
- **Domain:** Domain name to which the SBA is joined
- **Last Boot Up Time:** Date and time at which the SBA server was last restarted
- **OS Version:** Version of the Windows Server 2012 R2 operating system
- **We Admin Version:** Version number of the SBA Management Interface
- **SBA Config Version:** Version of the SBA service

You can also view general SBA details, by clicking the arrow next to the logged-in username, and then choosing **Info**:



The System Info window appears:



The following information is displayed:

- **Name:** Username of the currently logged-in user
- **Domain:** Domain name to which the SBA is joined
- **DNS Host Name:** Name of the SBA
- **Last Boot Up Time :** Date and time at which the SBA server was last restarted
- **Version:** Version of the Windows Server 2012 R2 operating system
- **Build Number:** Build version of the Windows Server 2012 R2 operating system
- **SBA Version:** Software version of the SBA
- **Web Admin Version:** Version number of the SBA Management Interface
- **SBA Config Version:** Version of the SBA service

## 10.2 SBA Configuration

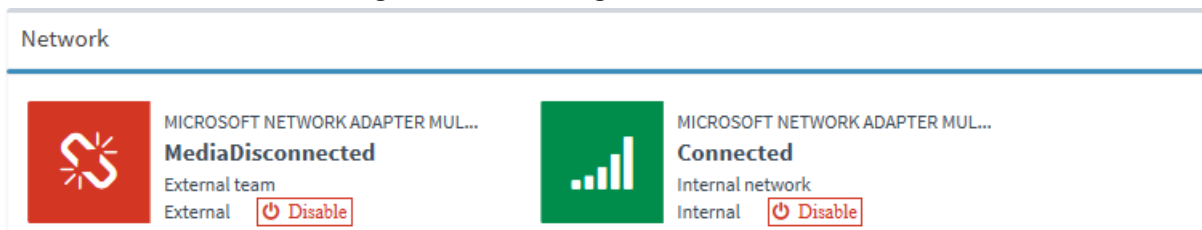
This section describes SBA configuration operations that you can do through the SBA Management Interface (in addition to configuration through the SBA Setup Wizard).

### 10.2.1 Viewing and Configuring Network Interfaces

The device includes the following network interface cards (NIC) on the OSN module:

- **External Ethernet Ports:**
    - From Version 7.2.213: If there are two external interfaces, NIC teaming is used.
      - ◆ **External Team:** By default, the NIC is enabled (192.168.0.20)
    - For previous versions:
      - ◆ **GE I:** By default, the NIC is enabled (192.168.0.20).
      - ◆ **GE II:** By default, the NIC is disabled.
  - **Internal Ethernet Port:** By default, the NIC is enabled and enabled for DHCP
- **To view and configure network interfaces:**
1. From the **Setup** menu, select the **Setup** folder, and then click **Network:**

**Figure 10-3: Viewing Network Interfaces**



2. To disable a network interface, click **Disable**; to enable a network interface, click **Enable**.
3. To configure a network interface, click the required network icon; the following appears:

**Figure 10-4: Configuring a Network Interface (e.g., External NIC Team)**

Network IP address and DNS address

---

**Network Interface Card**

**DHCP Or IP**

Obtain an IP address automatically

**IP Address**

**IP Mask**

**Default Gateway**

**DNS Address**




Obtain DNS server address automatically

**Preferred DNS server**

**Alternate DNS server**






4. As network configuration is explained in detail in the SBA Wizard section, see Section 8.1 for more information.

## 10.2.2 Viewing Installed SBA Components











You can view the status of the installed SBA for Skype for Business components. The icon  means that the component is installed and running normally; the icon  means that a problem exists with the component. If a problem exists, you can view a logged file, by clicking  (log) corresponding to the component, and also install the component again by clicking **install**.

- **To view status of installed SBA components:**
  - From the **Setup** menu, select the **Setup** folder, and then click **SBA Setup**:

**Figure 10-5: Viewing Installed SBA Components**

SBA Setup			
	RTC Local Database (MSSQLSRTCLOCAL)	12.0.2000.8	Express Edition (64-bit) <a href="#">Repair</a>
	Local Database (MSSQLSLYNCLocal)	12.0.2000.8	Express Edition (64-bit) <a href="#">Repair</a>
	Skype for Business Server 2015, Core Components	6.0.9319.0	6.0.9319.0 <a href="#">Repair</a>
	Skype for Business Server 2015, Front End Server	6.0.9319.0	6.0.9319.0 <a href="#">Repair</a>
	Skype for Business Server 2015, Mediation Server	6.0.9319.0	6.0.9319.0 <a href="#">Repair</a>

Activation		
	Install lyss database	<a href="#">Install</a>  (log)
	Install registrar database	<a href="#">Install</a>  (log)
	Initialize local configuration store	<a href="#">Install</a>  (log)
	Add the SBA to the replication path	<a href="#">Install</a>  (log)
	Enable SBA services and server roles	<a href="#">Install</a>  (log)

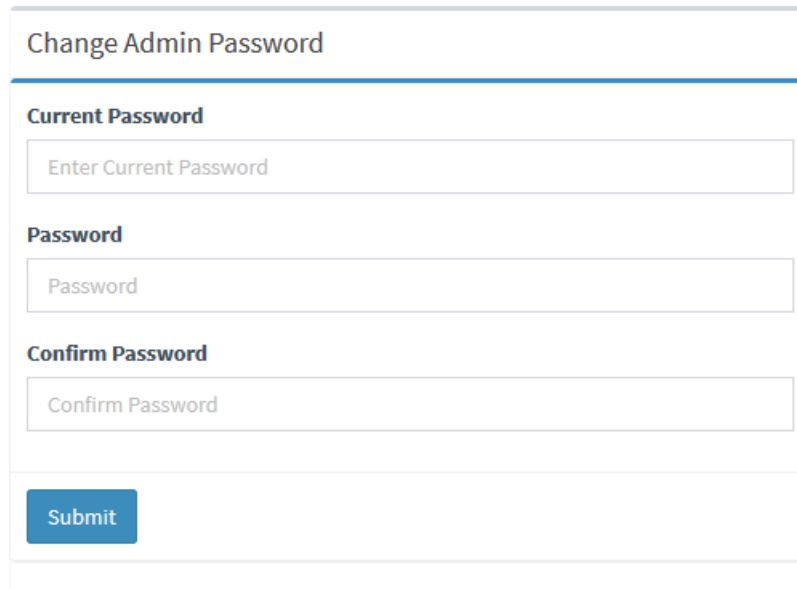
### 10.2.3 Changing the Login Password

The following procedure describes how to change the login password of the administrator who is currently logged into the SBA Management Interface.

➤ **To change the login password:**

1. From the **Setup** menu, select the **Setup** folder, and then click **Change Admin Password**; the following appears:

**Figure 10-6: Changing Login Password**



Change Admin Password

**Current Password**

**Password**

**Confirm Password**

Submit

2. In the 'Current Password' field, enter the current password.
3. In the 'New Password' field, enter the new password.
4. In the 'Confirm Password' field, enter the new password again.
5. Click **Submit**.

## 10.2.4 Configuring Date and Time

The following procedure describes how to configure the SBA server's date and time.

➤ **To configure the date and time:**

1. From the **Setup** menu, select the **Setup** folder, and then click **Date & Time**; the following appears:

**Figure 10-7: Configuring Date and Time**

2. Click the 'Date' field, and then select the date using the pop-up calendar.
3. Click the 'Time' field, and then select the time using the pop-up time box.
4. Click **Save Date & Time**.
5. From the 'Time Zone' drop-down list, select the UTC time zone in which the SBA is located, and then click **Save Time Zone**; the date in the 'Date' field is automatically adjusted according to the selected time zone.



## 10.2.5 Configuring SNMP

The following procedure describes how to configure SNMP-based communication between the SBA and AudioCodes One Voice Operations Center (OVOC) such as the EMS.

➤ **To configure SNMP:**

1. From the **Setup** menu, select the **Setup** folder, and then click **SNMP**.
2. Under the SNMP Information group, in the 'Contact' and 'Location' fields, enter the contact person and physical location respectively:

**Figure 10-8: Configuring SNMP Information**

3. Under the Trap Community Name group, do the following:
  - a. In the 'Trap Community Name' field, enter the trap community string for the SNMPv2 user. Alternatively, you can use the default "public" string.
  - b. Click **Add**, and then in the dialog box, enter destinations to send the traps (e.g., the EMS server's IP address), and then click **Add** to apply your destinations and to close the dialog box.

**Figure 10-9: Configuring Trap Community String and Destinations**

4. Under the Accepted community names group, select the required privilege right (ReadWrite or ReadOnly), and then click **Edit** to configure the community name whose SNMP hosts are allowed to send SNMP requests to the SBA.

**Figure 10-10: Configuring Read-Write Privileges per Community Name**

Accepted community names	
<b>Accepted community names:</b>	
Rights	Community
ReadWrite	private
ReadOnly	public

[Edit](#)

- Under the SNMP Trusted Manager group, configure from whom to accept SNMP packets:
  - Accept SNMP packets from any host:** All SNMP packets from all SNMP hosts belonging to any community listed in Accepted community names are processed. No SNMP packets are rejected on the basis of the host name or IP address of the source host or the list of acceptable hosts.
  - Accept SNMP packets from these hosts:** SNMP hosts and SNMP management systems that can send SNMP requests to this SNMP host. Click **Add** to add the trusted managers. This setting provides a higher level of security than use of a community name, which can contain a large group of hosts. You can add the names of any SNMP host or SNMP management system that belong to any community listed in Accepted community names. Only SNMP packets received from the hosts in this list are accepted. All other SNMP messages are rejected, and then authentication traps are sent.

**Figure 10-11: Configuring Trusted Managers**

SNMP Trusted Manager

Accept SNMP packets from any host  
 Accept SNMP packets from these hosts

Add
Edit
Remove

## 10.2.6 Configuring Certificates

The following procedure describes how to configure the certificates that are used to secure communication between the SBA and the datacenter.

➤ **To configure certificates:**

1. From the **Setup** menu, select the **Setup** folder, and then click **SBA Certificate**.

**Figure 10-12: Configuring Certificates**

Request, Install or Assign SBA Certificates

*This step starts the Certificate Wizard. Create certificate request for local system. Install, and assign Certificate for this system based on the topology definition.*

---

Select a Skype for Business Server Certificate Type and then select a task. Expand the Certificate Type to perform advanced certificate usage tasks.

Certificate	Assign	Friendly Name	Expiration Date	Location
Default Certificate	✔	Skype for Business Server 2015 Default certificate 01/13/2017 04:34:42 PM	01/13/2019 16:30:46	Local

Get Certificate Log
Remove Certificate Log
Refresh
Import Certificate
Process Pending Certificates

Request
Assign
Remove
View

2. As certificate configuration is explained in detail in the SBA Wizard section, see Section 9.7 for more information.

## 10.2.7 SBC/Gateway Certificate

The following procedure describes how to configure the SBC/Gateway certificates that are used to secure communication between the SBA and the SBC/Gateway. SBC/Gateway certificate is needed only if TLS is used between the SBC/Gateway and the SBA. If TCP is used, there is no need for signing the SBC/Gateway with a certificate.

The SBC/Gateway can hold several certificates (TLS Contexts). The SBA GUI handles only TLS Context 0 of the SBC/Gateway certificate, which is the default certificate context.



**Note:** The SBC/Gateway certificate can also be managed through the SBC/Gateway Web interface. If you wish to change the private key or use a different certificate context (instead of TLS Context 0), then use the SBC/Gateway Web interface.

➤ **To configure certificates:**

1. From the **Setup** menu, select the **Setup** folder, and then click **SBC GW Certificate**.

Figure 10-13: Configuring SBC/GW Certificates

SBC GW Certificates  
This step starts the SBC GW Certificate Wizard. Create, request, export or import certificate for local system. Export, import or remove trusted certificates

**SBC/Gateway context 0 Certificate.**

Common Name	Issuer	Version	Expires	Common Alternative Name
GW1.cloudbond365b.com	cloudbond365B-UC-DC2-CA	2	1/15/2019	

Export Create CSR Request Certificate Import

**Trusted Certificates**

Common Name	Issuer	Version	Expires	Common Alternative Name
RootCA	RootCA	2	12/31/2029	
cloudbond365B-UC-DC2-CA	cloudbond365B-UC-DC2-CA	2	12/30/2020	

Export Import

- The upper part manages the SBC/Gateway certificate and the lower part manages the CA root certificates. For creating a certificate, you can have two options -- automatic enrolment or manual:

- Automatic enrolment: Click **Request Certificate**.
- Manual: First create a CSR (click **Create CSR**) and after the certificate is ready, import it (click **Import**).

If you wish to export the certificate, click **Export**. This exports the SBC/Gateway certificate without the private key.

➤ **Request Certificate – automatic certificate enrolment**

- Click **Request Certificate**; the following appears:

SBC GW Certificates  
This step starts the SBC GW Certificate Wizard. Create, request, export or import certificate for local system. Export, import or remove trusted certificates

Select a CA from the list detected in your environment \*

UC-DC2.cloudbond365B.com/cloudbond365B-UC-DC2-CA

Common Name [CN] \*

Enter subject name

Company name [O] (optional) Organizational Unit [OU] (optional)

Enter company name Enter organizational unit

Locality or city name [L] (optional) State [ST] (optional)

Enter locality name Enter state name

Country code [C] (optional) Signature Algorithm

SHA-1

Request Certificate Cancel

- Fill in the information, and then click **Request Certificate**.



**Note:** SBC/Gateway automatic enrolment does not support pending certificate. If it is needed, use the manual procedure by creating a CSR and then importing the signed certificate.

### ➤ CSR – import – manual certificate

1. Create a CSR by clicking **Create CSR**; the following appears:

SBC GW Certificates

*This step starts the SBC GW Certificate Wizard. Create, request, export or import certificate for local system. Export, import or remove trusted certificates*

2. Fill in the information, and then click **Create CSR**.
3. Download the CSR that is signed by your CA.
4. Click **Import**; the following appears:

SBC GW Certificates

*This step starts the SBC GW Certificate Wizard. Create, request, export or import certificate for local system. Export, import or remove trusted certificates*

5. Select the signed certificate, and then click **Send File**.

### ➤ CA Root – Trusted Certificate

1. The CA root of your CA must be loaded to the SBC/Gateway. To import the CA root, obtain it from your CA in PEM format and then use the **Import** button on the Trusted Certificate section; the following appears:

SBC GW Certificates

This step starts the SBC GW Certificate Wizard. Create, request, export or import certificate for local system. Export, import or remove trusted certificates

Send trusted certificates file from your computer to the device.  
The file must be in textual PEM format.

לא נבחר קובץ בחירת קובץ

Send File Cancel

2. Select the CA root certificate, and then click **Send File**.

### 10.2.8 Access List

The following procedure describes how to configure which IP addresses are allowed to access the SBA Web and RDP. This setup limits access to the SBA part only and not to the SBC/Gateway part (for the SBC/Gateway access list, use the SBC/Gateway Web interface).



**Note:** Pay attention to which IP address/subnet you specify. You can mistakenly block yourself to the SBA. If this occurs, use the screen and keyboard to connect to the SBA locally and open the Web interface locally to fix the access list.

➤ **To configure the Access List:**

1. From the **Setup** menu, select the **Setup** folder, and then click **Access List**.

Access List

Select the Web and RDP access list:  
*Any* – Web and RDP can be access from any IP.  
*Authorized IP/Subnet* – Web and RDP can be access from the list of IP/Subnet that you define.  
 Adding IP/Subnet can be done in one of the following formats:  
 Single IP4 address (e.g. "192.168.0.17")  
 Single IP4 subnet by subnet mask (e.g. "192.168.0.17/255.255.255.0")  
 Single IP4 subnet by network bits (e.g. "192.168.0.17/24")

Any  
 Authorized IP/Subnet

Save

2. By default, any IP address can access the Web and RDP (**Any** option).
3. To allow SBA management from a specific IP/Subnet, select the **Authorized IP/Subnet** option; the following appears:

### Access List

Select the Web and RDP access list:  
**Any** – Web and RDP can be access from any IP.  
**Authorized IP/Subnet** – Web and RDP can be access from the list of IP/Subnet that you define.  
Adding IP/Subnet can be done in one of the following formats:  
Single IP4 address (e.g. "192.168.0.17")  
Single IP4 subnet by subnet mask (e.g. "192.168.0.17/255.255.255.0")  
Single IP4 subnet by network bits (e.g. "192.168.0.17/24")

Any

**Authorized IP/Subnet**

4. You can add an IP address/subnet in one of the following formats:
  - Single IPv4 address (e.g. "192.168.0.17")
  - Single IPv4 subnet by subnet mask (e.g. "192.168.0.17/255.255.255.0")
  - Single IPv4 subnet by network bits (e.g. "192.168.0.17/24")
5. Click **Add**
6. Click **Save** to save your changes.

## 10.3 Gateway-Related Operations

If you are also using your device for Gateway functionality (i.e., PSTN Gateway and/ or SBC), you can use the SBA Management Interface for various Gateway-related operations, as described in this section.



**Note:** To enable communication between the SBA Management Interface and the Gateway's Web interface, ensure the following:

- Internal VLAN is enabled (OSNInternalVLAN=1).
- Gateway/SBC software version (.cmp) is 7.00A.053.006 or later.

### 10.3.1 Viewing Gateway Information

The following subsections describe how to view various information relating to the Gateway.


#### 10.3.1.1 Viewing Gateway Details

The following procedure describes how to view details about the Gateway.

➤ **To view gateway details:**

1. From the **Monitor** menu, select the **Dashboard** folder, and then click **Dashboard**.
2. Scroll down the page to the SBC/Gateway section:

**Figure 10-14: Viewing Gateway Details**

SBC/Gateway 

---

Product Name	Product Version	IP Address	Serial Number	MAC Address
Mediant 800B	7.10A.036.018	10.21.41.89	8952484	00908f889aa4

---

The following information is displayed:

- **Product Name:** Name of the Gateway model
- **Product Version:** Software version currently running on the Gateway
- **IP Address:** IP address of the Gateway's OAMP interface
- **Serial Number:** Serial number of the Gateway's CPU
- **MAC Address:** MAC address of the Gateway



### 10.3.1.2 Viewing Gateway Alarms

The following procedure describes how to view active alarms raised by the Gateway.

➤ **To view active gateway alarms:**

1. From the **Monitor** menu, select the **Dashboard** folder, and then click **Dashboard**.
2. Scroll down the page to the Active Alarms section:


**Figure 10-15: Viewing Active Gateway Alarms**

Active Alarms		
Description	ID	
Module Alarm: IF-Module Mismatch.	id 1	
Ethernet link alarm. LAN port number 2 is down.	id 4	
Proxy Set Alarm Proxy Set 0: Proxy lost. looking for another proxy	id 19	

### 10.3.2 Accessing Gateway's Web Interface

If required, you can access the Gateway's Web interface from the SBA Management Interface. The Gateway's Web interface allows you to fully configure Gateway functionality.

➤ **To access the gateway's Web interface:**

1. From the **Monitor** menu, select the **Dashboard** folder, and then click **Dashboard**.
2. Scroll down the page to the SBC/Gateway section, and then click ; the Web interface of the Gateway opens.

For more information on using the Gateway's Web interface, refer to the Gateway's *User's Manual*.

## 10.4 Performance Monitoring

The SBA Management Interface allows you to monitor the SBA.

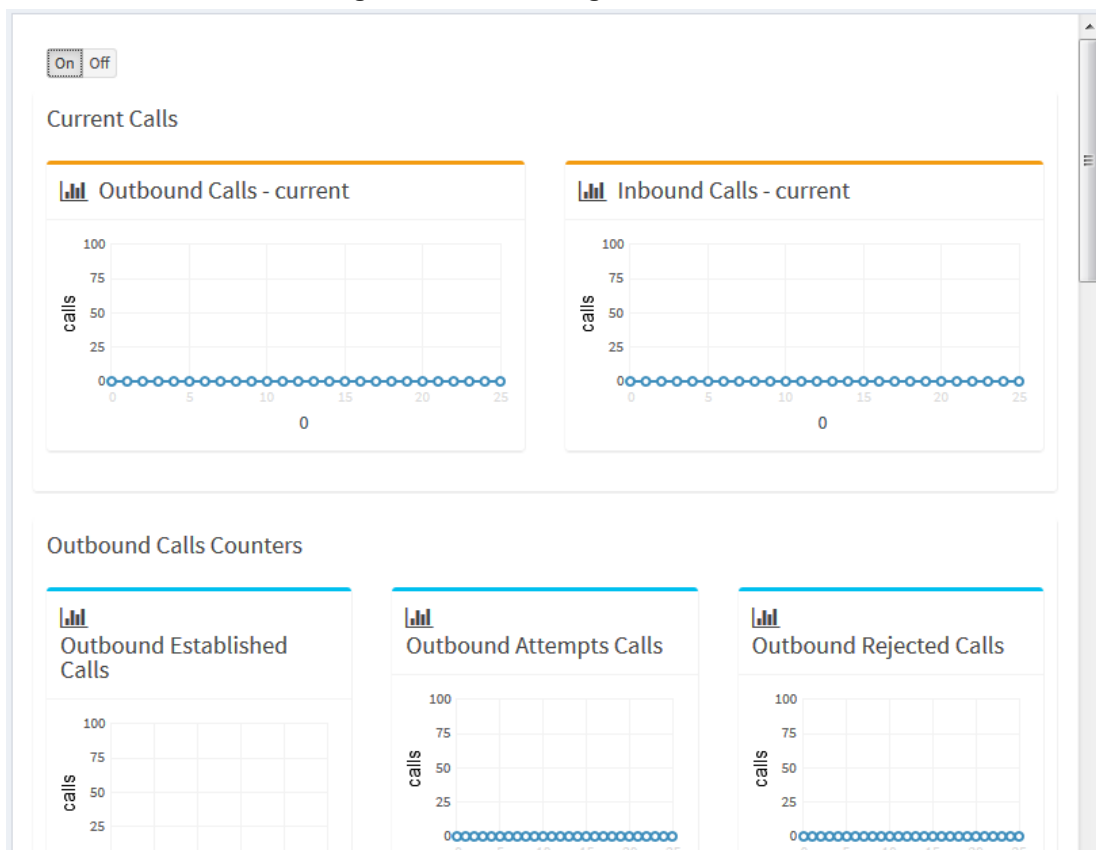
### 10.4.1 Viewing Call Statistics

The following procedure describes how to view call statistics.

➤ **To view call statistics:**

1. From the **Monitor** menu, select the **Performance** folder, and then click **Calls**.
2. Click **On** to enable statistics or **Off** to disable.

**Figure 10-16: Viewing Call Statistics**



**Table 10-2: Call Statistics Description**

Graph	Description
<b>Current Calls</b>	
Outbound Calls - current	Number of current outbound calls
Inbound Calls - current	Number of current inbound calls
<b>Outbound Calls Counters</b>	
Outbound Established Calls	Number of outbound established calls
Outbound Attempts Calls	Numbers of outbound call attempts
Outbound Rejected Calls	Number of outbound calls that were rejected
Outbound Invites Calls	Number of sent SIP INVITE messages

Graph	Description
Active Outbound Priority Calls	Number of currently active outbound priority calls
Active Outbound Media Bypass Calls	Number of currently active outbound media bypass calls
Outbound Media Bypass Calls	Number of outbound media bypass calls
<b>Inbound Calls Counters</b>	
Inbound Established Calls	Number of inbound established calls
Inbound Attempts Calls	Numbers of inbound call attempts
Inbound Rejected Calls	Number of inbound calls that were rejected
Inbound Invites Calls	Number of received SIP INVITE messages
Active Inbound Priority Calls	Number of currently active inbound priority calls
Active Inbound Media Bypass Calls	Number of currently active inbound media bypass calls
Inbound Media Bypass Calls	Number of inbound media bypass calls

## 10.4.2 Viewing Registered Users Statistics

The following procedure describes how to view active registered user statistics, which includes users and endpoints.

➤ **To view registered user statistics:**

1. From the **Monitor** menu, select the **Performance** folder, and then click **Active Users**.
2. Click **On** to enable statistics or **Off** to disable.

**Figure 10-17: Viewing Active Users**



### 10.4.3 Viewing General SBA Server Statistics

The following procedure describes how to view general statistics of the SBA server.

➤ **To view SBA server statistics:**

1. From the **Monitor** menu, select the **Performance** folder, and then click **Key Health Indicators**.
2. Click **On** to enable statistics or **Off** to disable.

**Figure 10-18: Viewing SBA Server Statistics**



**Table 10-3: SBA Server Statistics**

Graph	Description
<b>General Server Health</b>	
Available Bytes	Available physical memory (in MBytes) for running processes
CPU Utilization	Current utilization of CPU (in %)
Avg. Disk Sec/Read	Average time of disk-read latency
Avg. Disk Sec/Write	Average time of disk-write latency

Graph	Description
<b>SQL Server</b>	
MSSQL RTC Page Life Expectancy	Number of seconds that the SQL server (RTC Local) expects a data page to remain in the cache
MSSQL Lync Page Life Expectancy	Number of seconds that the SQL server (Lync Local) expects a data page to remain in the cache
<b>Front-end Server</b>	
Database – Queue Latency	Average time a request is held in the request queue to RTCDyn database
Database – Sproc Latency	Average time to execute a sproc call against RTCDyn database
Database – Throttled	Number of requests rejected with a retry since the database queue latency was high
REG Database – Queue Latency	Average time a request is held in the request queue to RTC database
REG Database – Sproc Latency	Average time to execute a sproc call against RTC database
REG Database – Throttled	Number of requests rejected with a retry since the database queue latency was high
Shared Database – Queue Latency	Average time a request is held in the request queue to RTCShared database
Shared Database – Sproc Latency	Average time to execute a sproc call against RTCShared database
Shared Database – Throttled	Number of requests rejected with a retry since the database queue latency was high

## 10.5 Maintenance

This section describes various maintenance operations.

### 10.5.1 Upgrading SBA Software and Cumulative Updates

The following procedure describes how to upgrade the SBA Management Interface and Cumulative Updates (CU).



**Note:** During the CU update process, one or more Skype for Business services are temporarily stopped (e.g., Front End service) and as a result, currently active traffic is terminated. Therefore, it is recommended to perform this update during low-traffic periods. For more information on updating CU, see Section 19.

➤ **To upgrade SBA software and CU:**

1. From the **Tools** menu, click **SBA Software Upgrade**; the following appears:

**Figure 10-19: Upgrading SBA Software and CU**

### SBA Upgrade

SBA GUI update

Skype Cumulative Update and the default the CU

**Select file to upload:**

No file selected.

**Arguments:**

2. Depending on what you want to upgrade, select one of these options:
  - **SBA GUI update** to update the SBA Management Interface.
  - **Skype Cumulative Update** to update the CU.
3. Click **Browse** to select the file that you want to load, and then click **Upload**.

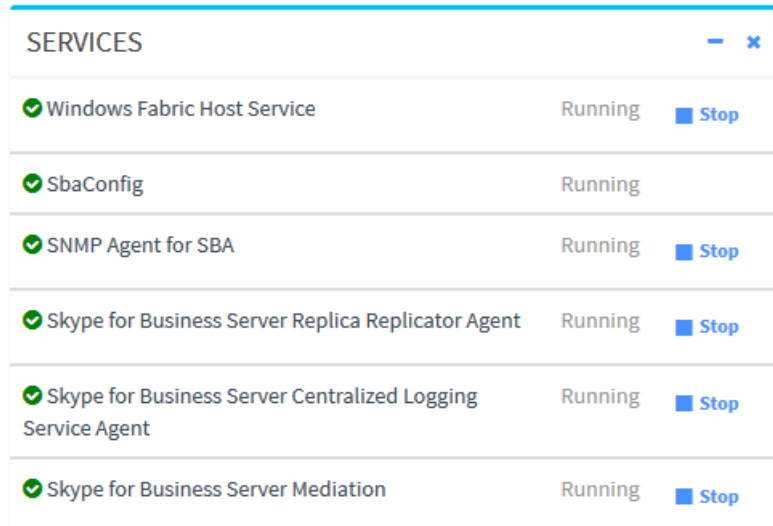
## 10.5.2 Stopping and Starting SBA Services

The following procedure describes how to stop and start SBA services.

➤ **To stop and start SBA services:**

1. From the **Tools** menu, click **SBA Services**; the following appears:

**Figure 10-20: Stopping and Starting SBA Services**



SERVICES		
Windows Fabric Host Service	Running	Stop
SbaConfig	Running	
SNMP Agent for SBA	Running	Stop
Skype for Business Server Replica Replicator Agent	Running	Stop
Skype for Business Server Centralized Logging Service Agent	Running	Stop
Skype for Business Server Mediation	Running	Stop

2. Do one of the following:
  - To stop a service, click the corresponding **Stop** button; the service displays the "Stopped" status message.
  - To start a service, click the corresponding **Start** button; the service displays the "Running" status message.

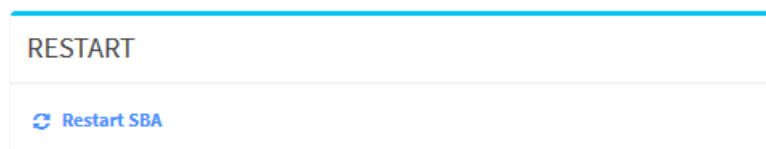
## 10.5.3 Restarting SBA Server

The following procedure describes how to reset the SBA.

➤ **To restart the SBA:**

1. From the **Tools** menu, click **SBA Services**; the following appears:

**Figure 10-21: Restarting SBA**



2. Click **Restart SBA**.

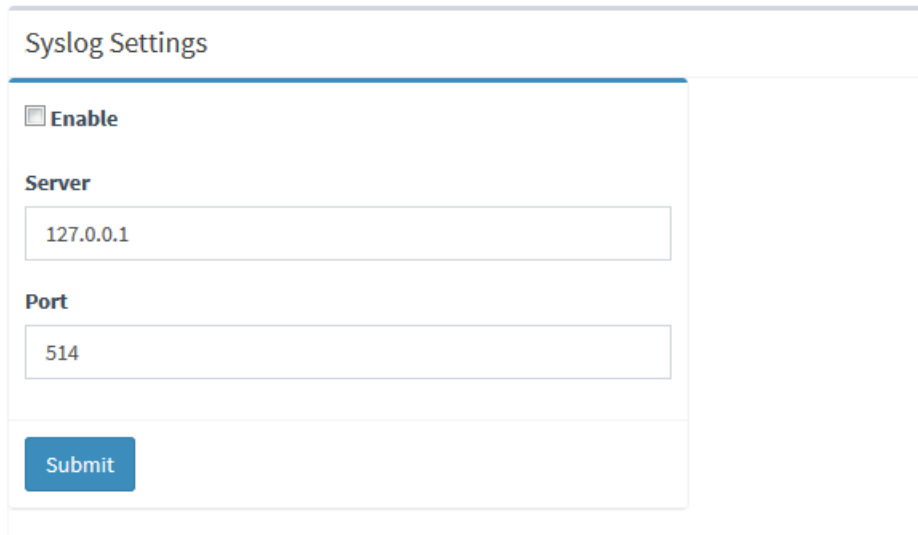
## 10.5.4 Configuring Syslog

The following procedure describes how to enable the SBA to send SBA configuration logs (see SBA Configuration Logs on page 105) to a Syslog server (for diagnostics).

➤ **To configure Syslog:**

1. From the **Tools** menu, click **SBA Syslog**; the following appears:

**Figure 10-22: Configuring Syslog**



Syslog Settings

Enable

**Server**

127.0.0.1

**Port**

514

Submit

2. Select the **Enable** check box.
3. In the 'Server' field, enter the Syslog server's IP address.
4. In the 'Port' field, enter the Syslog server's port.
5. Click **Submit**.



## 10.5.5 Viewing Logged SBA Management Interface Activities

The following procedure describes how to view logged activities performed in the SBA Management interface such as logging in and out of the GUI.

➤ **To view logged activities:**

1. From the **Tools** menu, click **Web Admin Logs**; the following appears:

**Figure 10-23: Viewing Logged SBA Management Activities**

SBA Web Admin Logs

Display last  rows

Last Log	
log.txt	<a href="#">Show</a> <a href="#">Download</a>

Archive	
Date	Name
2016/11/30 18:03:12	logger_2016_12_03__10_14.txt

2. From the 'Display last' drop-down list, select the number of row records to display.
3. Click **Show** to view the contents of the logged file or **Download** to save the logged file to your PC.

## 10.5.6 Viewing Logged SBA Configuration Activities

The following procedure describes how to view logged SBA configuration operations.

➤ **To view logged SBA configuration:**

1. From the **Tools** menu, click **SBA Configuration Logs**; the following appears:

**Figure 10-24: Viewing Logged SBA Configuration Operations**

SBA Configuration Logs

Display last  rows

Last Log			
sba-config-log.txt		Show	Download

Archive			
Date	Name		
2016/12/01 02:44:46	201611301644-sba-config-log.txt	Show	Download
2016/12/01 02:38:36	201612010238-sba-config-log.txt	Show	Download
2016/12/01 02:33:00	201612011334-sba-config-log.txt	Show	Download
2016/11/30 18:03:12	201611301803-sba-config-log.txt	Show	Download
2016/11/28 19:15:05	201611280915-sba-config-log.txt	Show	Download

2. From the 'Display last' drop-down list, select the number of rows to display.
3. Click **Show** to view the contents of the logged file or click **Download** to save the logged file to your PC.

## 10.5.7 Restoring SBA to Factory Defaults Remotely

You can restore the SBA to factory defaults, by using the SBA Management Interface to remotely soft-burn the image of the SBA. This is instead of using the USB. This uses the image from the D:\ partition. By default, the same SBA image is used as the one that was used to burn the SBA on the previous occasion. If you want to burn a different SBA image, then replace the existing .wim file, located on the D:\ partition.

When updating an existing SBA with the new SBA Management Interface, the upgrade file does not include the remote burn package. Therefore, you need to download the burn package separately and install it on the SBA through RDP. If the remote burn package is not installed on the SBA, the SBA Management Interface displays a message with the download link.

**Note:**

- Remote soft-burn of the SBA image restores only the SBA OSN to factory defaults (not the SBC-Gateway).
- If the SBA hosts a virtual machine, restoring the SBA to factory defaults deletes the virtual machine. Therefore, if you need the virtual machine, before restoring the SBA to factory defaults, make a backup of the virtual machine through Hyper-V and keep the backup on an external storage device (as the C drive will be formatted).

**Figure 10-25: Restoring SBA to Factory Defaults**

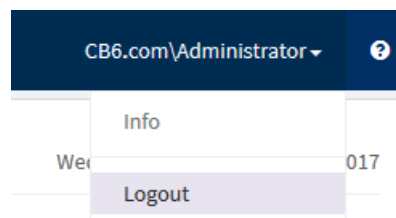
The screenshot shows the SBA Management Interface with the 'SBA Restore To Factory Defaults' page. The interface includes a navigation menu on the left with 'SBA Restore Defaults' selected. The main content area features a red warning box with the following text: 'This option burn the SBA machine with the image that located at D:\. You may select a static IP address which be set to the new image or DHCP option. Once you submit the option, the current SBA machine will no longer functioning. The burn process can take about an hour and the machine is inaccessible during that period. Once the image burn is completed, the new SBA machine is restarted with the selected network settings. You shell run the setup to configure the new image.' Below the warning is a form titled 'Select SBA IP address to restore' with radio buttons for 'Static' (selected) and 'DHCP'. The 'Static' option has a dropdown menu showing '10.21.29.120'. At the bottom of the form is a red 'Restore' button with a lightning bolt icon.

## 10.6 Logging Out

The following procedure describes how to log out SBA Management Interface.

➤ **To log out SBA Management Interface:**

1. Click the arrow located next to the logged-in username:



2. Choose **Logout**.

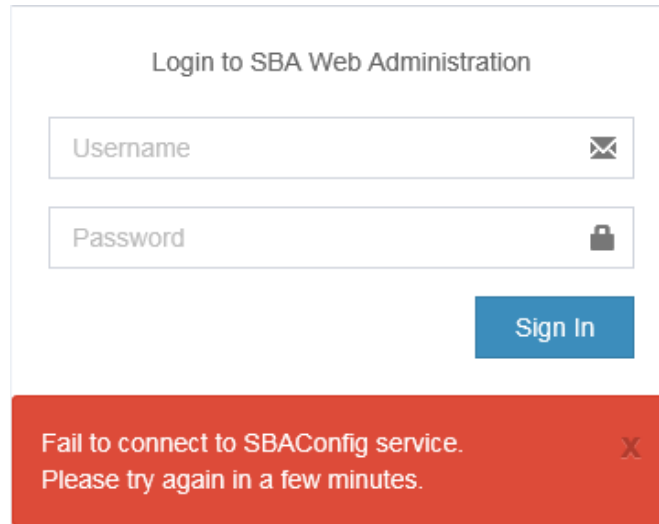
## 10.7 Troubleshooting

The following table lists troubleshooting SBA Management Interface

### 10.7.1 Login Failure due to Connection Failure with SBA Service

If you manually restart the SBA server and then attempt to login before the SBA Configuration service has restarted, the following message may appear:

**Figure 10-26: Fail to Connect to SBA Configuration Service**

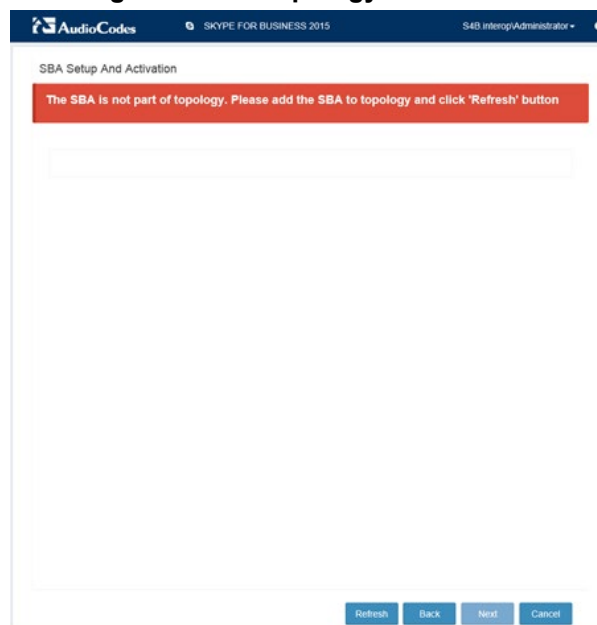


To resolve the problem, wait a few minutes and then try logging in again.

### 10.7.2 SBA Topology not Created

If the SBA Topology has not been configured, the following message is displayed after joining the SBA to the domain (see Section 11.8):

**Figure 10-27: Topology Not Defined**



# Part IV

## **Configuring Gateway/SBC Manually and Post-Wizard Tuning**



# 11 Introduction

When you deployed network topology using the SBA Wizard tool, Gateway and E-SBC parameters were either directly configured in the Wizard or the deployed Wizard template included parameters with pre-configured default values. This part is designed to assist you to verify and supplement the configuration of these parameters. This is done using step-by-step procedures for manually configuring the Gateway and E-SBC device residing on the SBA Branch appliance. The configuration is done through the embedded Web server (Web interface) of the Mediant 800B Gateway and E-SBC. The following summarizes these configuration scenarios:

- Verifying or running the equivalent to the basic Gateway and E-SBC setup that was performed using the SBA Wizard (see Chapter 11).
- Performing supplementary configuration for fine-tuning the basic SBA Wizard configuration setup (see note below) and configuring parameters that cannot be configured using the SBA Wizard.

**Note:** Supplementary configuration is required for specific settings as follows (also indicated by footnotes throughout this chapter):

- The TLS certificates used to authenticate the connection between the AudioCodes device and the Mediation server must be configured manually using the procedures described in Section 13.8.
- The Voice coders must be configured manually.
- The FXS ports and PSTN trunks configuration (see Chapter 18) are not configured by the SBA Wizard, therefore you must perform this configuration manually.
- The Normalization Rules for Gateway (PSTN) and E-SBC (see Chapter 19) describe supplementary information for advanced configuration (the basic configuration was performed in the SBA Wizard in Section 11.12).
- The configuration examples shown in this section show the configuration of the Gateway and E-SBC Skype for Business leg. Examples are not provided for the configuration of the SIP Trunk or IP-PBX legs (for more information, refer to the appropriate SIP Vendor or IP-PBX interoperability documentation).
- If you wish to configure the SBA Branch appliance as both a Gateway and E-SBC, you need to manually configure the device to support the second Application type i.e. to support both Tel-to-IP and IP-to-IP calls. For more information, refer to *Mediant SBC Configuration Examples*.



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## 12 Configuring the Connection with the Mediation Server

The procedure below describes how to configure the address (IP address or FQDN) of the Mediation Server through which the Gateway communicates with Skype for Business. If you have more than one Mediation Server in the cluster, proxy redundancy functionality can also be configured.

### 12.1 Step 1: Configure Gateway Name

This step describes the configuration of the Proxy and Registration mechanism for the Mediation Server connection.

➤ **To configure the Proxy and Registration:**

1. Open the Proxy & Registration page (**Configuration** tab > **VoIP** menu > **SIP Definitions** > **Proxy & Registration**).

**Figure 12-1: Proxy and Registration Page**

Gateway Name

2. In the 'Gateway Name' field, assign a unique FQDN name to the Gateway or E-SBC within the domain, for example, 'gw.SkypeForBusiness.com'. This name is identical to the name that is configured in the Skype for Business Topology Builder (see Section 9.1).



**Note:** The Gateway and SBC FQDN name is included in the SIP messages and is retrieved from either the 'Gateway Name' or the 'SIP Group Name' (in the IP Group). For more information on the use of these parameters, refer to the *Mediant 800B Gateway & E-SBC User's Manual*.

3. Click **Apply** to apply your settings.
4. On the toolbar, click **Burn** to save the changes to the devices flash memory.

### 12.2 Step 2: Configure Routing Mode

1. Open the Routing Settings screen (**Setup** menu > **Signalling & Media** tab > **Routing** > **Routing Settings**).

**Figure 12-2: Routing Settings Page**

Redundant Routing Mode

2. From the 'Redundant Routing Mode' drop-down list, select **Proxy**. This setting ensures that if a SIP 5xx message is received in response to an INVITE message sent to the primary proxy (i.e., Mediation Server on the device), the PSTN Gateway or E-SBC re-sends it to the redundant proxy (i.e., Mediation Server at the datacenter). To configure alternative routing upon receipt of a SIP 503 response (as required by Skype for Business), see Section 12.4.
3. Click **Apply** to apply your settings.
4. On the toolbar, click **Burn** to save the changes to the devices flash memory.

## 12.3 Step 3: Proxy Sets

This step describes the configuration of the Proxy Set for the Mediation server connection.

➤ **To configure Proxy Sets:**

1. Open the Proxy Sets table (**Setup** menu > **Signalling & Media** tab > **Core Entities** > **Proxy Sets**).

**Figure 12-3: Proxy Sets Table**

The screenshot shows the configuration interface for a Proxy Set named 'SBA'. At the top, there is a dropdown for 'SRD' set to '#0 [DefaultSRD]'. Below this are four main sections: 'GENERAL', 'REDUNDANCY', 'KEEP ALIVE', and 'ADVANCED'. The 'GENERAL' section includes fields for Index (1), Name (SBA), Gateway IPv4 SIP Interface (#1 [Int-SBA-GW]), SBC IPv4 SIP Interface (--), and TLS Context Name (--). The 'REDUNDANCY' section includes Redundancy Mode (Homing), Proxy Hot Swap (Enable), Proxy Load Balancing Method (Disable), and Min. Active Servers for Load Balancing (1). The 'KEEP ALIVE' section includes Proxy Keep-Alive (Using OPTIONS), Proxy Keep-Alive Time [sec] (60), and Keep-Alive Failure Responses. The 'ADVANCED' section includes Classification Input (IP Address only) and DNS Resolve Method.

- a. Click the **Add** button to create a Proxy Set for PSTN calls.
  - b. From the 'Proxy Keep-Alive' drop-down list, select **Using OPTIONS** to discover whether a particular Mediation Server in the cluster is available.
  - c. From the 'Proxy Hot Swap' drop-down list, select **Enable**. If there is no response from the first Mediation Server after a user-defined number of retransmissions, the INVITE message is sent to the redundant Mediation Server. The number of retransmissions is configured by the Number of RTX Before Hot-Swap parameter in the 'Proxy & Registration' page (see Section 13.1).
  - d. From the 'Redundancy Mode' drop-down list, select **Homing**. If the SBA application fails and the PSTN Gateway or E-SBC switches over to the Mediation Server at the datacenter, then when the SBA application resumes functionality again, the PSTN Gateway or E-SBC switches back to the Mediation Service on the SBA application.
  - e. Click **Apply** to apply your settings.
2. Click the **Proxy Address Table** link at the bottom of the screen.
  3. Click the **New** button and configure two proxy servers for redundancy. If the SBA application fails (at the branch office), the PSTN Gateway or E-SBC switches over to the Mediation Server located at the datacenter:
    - Index 0: IP address or FQDN of the Mediation Server running on the device and configure **TLS** Transport type with port **5067**.

- Index 1: IP address or FQDN of the Mediation Server running at the datacenter and configure **TLS** Transport type with port **5067**.



**Note:** If you configured the Mediation Server address as an FQDN, ensure that you configure the DNS server (see Section 13.8.3).

**Figure 12-4: Proxy Sets Address List**

INDEX	PROXY ADDRESS	TRANSPORT TYPE
0	SBA15.SFB15.local: 5067	TLS
1	FE15.SFB15.local: 5067	TLS

4. Click **Apply** to apply your settings.
5. On the toolbar, click **Burn** to save the changes to the devices flash memory.

## 12.4 Step 4: Reasons for Alternative Routing

This step describes how to configure reasons for alternative routing for Tel-to-IP calls.

### ➤ To configure reasons for Alternative Tel-to-IP Routing:

1. Open the 'Reasons for Alternative Routing' page (**Setup** menu > **Signalling & Media** tab > **Gateway** > **Routing** > **Alternative Routing Reasons** > **Reasons for Tel-to-IP**).
2. Click **New** to add a new entry with the Release Cause **503 Service Unavailable**.

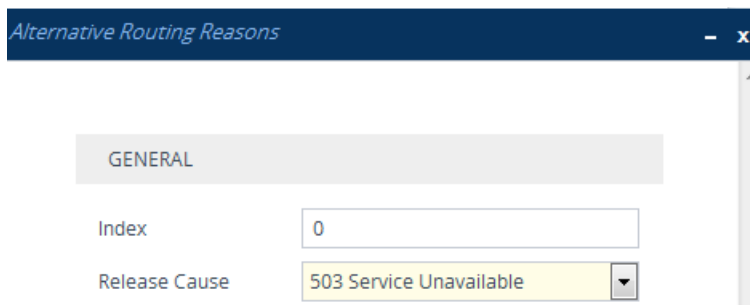
**Figure 12-5: Add Alternative Reason**

3. Click **Apply** to apply your settings.
4. On the toolbar, click **Burn** to save the changes to the devices flash memory.

### ➤ To configure reasons for Alternative SBC Routing:

1. Open the 'SBC Alternative Routing' page (**Setup** menu > **Signalling & Media** tab > **SBC** > **Routing** > **Alternative Reasons**).
2. Click **New** to add a new entry with the Release Cause **503 Service Unavailable**.

**Figure 12-6: Add Alternative Reason**



3. Click **Apply** to apply your settings.
4. On the toolbar, click **Burn** to save the changes to the devices flash memory.

➤ **To Configure Fake Retry After (for both Gateway and SBC):**

1. Open the SIP General Parameters page (**Configuration** tab > **VoIP** menu > **SIP Definitions** > **General Parameters**).

**Figure 12-7: SIP Definitions General Settings**



2. In 'Fake Retry After' field, enter the time **60** (in seconds). When the PSTN Gateway or E-SBC receives a SIP 503 response (from the Mediation Server) without a Retry-After header, the PSTN Gateway or E-SBC behaves as if the 503 response includes a Retry-After header with this user-defined period.
3. Click **Apply** to apply your settings.
4. On the toolbar, click **Burn** to save the changes to the devices flash memory.

## 12.5 Step 5: Media Realms

This step describes how to create a Media Realm for the PSTN and SBC media.

➤ **To create a Media Realm:**

1. Open the Media Realms table (**Configuration** tab > **VoIP** menu > **VoIP Network** > **Media Realms** table).

**Figure 12-8: Media Realm-LAN**

The screenshot shows a web-based configuration window titled "Media Realms". It is divided into two main sections: "GENERAL" and "QUALITY OF EXPERIENCE".

**GENERAL Section:**

- Index: 1
- Name: Skype
- Topology Location: Down
- IPv4 Interface Name: #0 [Voice] (with a "View" link)
- Port Range Start: (empty field)
- Number Of Media Session Legs: (empty field)
- Port Range End: (empty field)
- Default Media Realm: No

**QUALITY OF EXPERIENCE Section:**


- QoE Profile: -- (with a "View" link)
- Bandwidth Profile: -- (with a "View" link)

2. Click **New** to add a Media Realm for LAN:
  - a. Configure the Port Start Range.
  - b. Ensure that the Number of Media Session Legs is configured according to the feature key.
  - c. Click **Save**.
3. (SBC only) Click **New** to add a Media Realm for WAN:
  - a. Configure the Port Start Range.
  - b. Ensure that the Number of Media Session Legs is configured according to the feature key.
  - c. Click **Save**.

Figure 12-9: Media Realm-WAN

Figure 12-10: Configured Media Realms

Media Realms (3)

+ New Edit  Page 1 of 1 Show 10 records per page

INDEX	NAME	IPV4 INTERFACE NAME	PORT RANGE START	NUMBER OF MEDIA SESSION LEGS	PORT RANGE END	DEFAULT MEDIA REALM
0	DefaultRealm	Voice	20000	4553	65529	Yes
1	LAN_IF	Voice	6000	100	6999	No
2	WAN_IF	WANSP	7000	100	7999	No

4. Click **Apply** to apply your settings.
5. On the toolbar, click **Burn** to save the changes to the devices flash memory.

## 12.6 Step 6: SIP Interfaces (SBC Only)

This step describes how to configure the SIP interfaces for the SBC calls.



**Note:** The gateway application uses the default SIP interface (you later configure this interface for TLS see Section 12.9). However, you may create a new SIP interface for the gateway application if you wish to change default settings.

➤ **To configure SIP interfaces:**

1. Open the SIP Interfaces table page (**Configuration** tab > **VoIP** menu > **VoIP Network > SIP Interface Table**).
2. Click **New** to add a SIP Interface for the LAN SBC calls:

**Figure 12-11: Gateway SIP Interface**

SIP Interfaces [Int-SBA-GW]

SRD #0 [DefaultSRD]

GENERAL	MEDIA
Index: 1	Media Realm: #1 [LAN_IF] <a href="#">View</a>
Name: Int-SBA-GW	Direct Media: Disable
Topology Location: Down	
Network Interface: #0 [Voice] <a href="#">View</a>	SECURITY
Application Type: GW	TLS Context Name: #0 [default] <a href="#">View</a>
UDP Port: 0	TLS Mutual Authentication: [ ]
TCP Port: 5068	Message Policy: -- <a href="#">View</a>
TLS Port: 5067	User Security Mode: Not Configured
Encapsulating Protocol: No encapsulation	Enable Un-Authenticated Registrations: Not configured
Enable TCP Keepalive: Disable	Max. Number of Registered Users: -1

- a. From the Application Type drop-down list, select the GW application type.
  - b. From the Media Realm drop-down list, select the Media Realm for the LAN that you configured above.
  - c. In the 'TLS Port' field, enter **5067**.
  - d. Click **Apply** to apply your settings.
3. Click **New** to add a SIP Interface for the LAN SBC calls:
    - a. From the Application Type drop-down list, select the GW application type.
    - b. From the Media Realm drop-down list, select the Media Realm for the LAN that you configured above.
    - c. In the 'TLS Port' field, enter **5067**.
    - d. Click **Apply** to apply your settings.

Figure 12-12: SBC SIP Interface

SIP Interfaces [Int-SBA-SBC]

SRD #0 [DefaultSRD]

GENERAL		MEDIA	
Index	2	Media Realm	#0 [DefaultRealm] <a href="#">View</a>
Name	Int-SBA-SBC	Direct Media	Disable
Topology Location	Down	<b>SECURITY</b>	
Network Interface	#0 [Voice] <a href="#">View</a>	TLS Context Name	#0 [default] <a href="#">View</a>
Application Type	SBC	TLS Mutual Authentication	
UDP Port	0	Message Policy	-- <a href="#">View</a>
TCP Port	5066	User Security Mode	Not Configur
TLS Port	5069	Enable Un-Authenticated Registrations	Not configur
Encapsulating Protocol	No encapsulation	Max. Number of Registered Users	-1
Enable TCP Keepalive	Disable		

- Repeat the above steps if you are configuring a connection with a remote IP-PBX or SIP trunk interface.
- On the toolbar, click **Burn** to save the changes to the devices flash memory.

Figure 12-13: Configured SIP Interfaces

SIP Interfaces (3)

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Page 1 of 1 Show 10 records per page

INDEX	NAME	SRD	NETWORK INTERFACE	APPLICATION TYPE	UDP PORT	TCP PORT	TLS PORT	ENCAPSULATING PROTOCOL	MEDIA REALM
0	SIPInterface_0	DefaultSRD	Voice	GW	5060	5060	5061	No encapsulation	--
1	Int-SBA-GW	DefaultSRD	Voice	GW	0	5068	5067	No encapsulation	DefaultRealm
2	Int-SBA-SBC	DefaultSRD	Voice	SBC	0	5066	5069	No encapsulation	DefaultRealm



## 12.7 Step 7: IP Groups

This step describes how to create an IP Group for the PSTN calls and SBC calls.

➤ **To add IP Groups:**

1. Open the IP Group table (**Setup** menu > **Signaling & Media** tab > **Core Entities** folder > **IP Groups**).
  - a. Click **New** to create an IP Group of Type 'Server' for the PSTN calls.
  - b. Click **Apply** to apply your settings.

**Figure 12-14: IP Group-Gateway**

*IP Groups [SBA]*

GENERAL		QUALITY OF EXPERIENCE	
Index	1	QoE Profile	-- <a href="#">View</a>
Name	SBA	Bandwidth Profile	-- <a href="#">View</a>
Topology Location	Down		
Type	Server	<b>MESSAGE MANIPULATION</b>	
Proxy Set	-- <a href="#">View</a>	Inbound Message Manipulation Set	-1
IP Profile	-- <a href="#">View</a>	Outbound Message Manipulation Set	-1
Media Realm	-- <a href="#">View</a>	Message Manipulation User-Defined String 1	
Contact User		Message Manipulation User-Defined String 2	
SIP Group Name		<b>SBC REGISTRATION AND AUTHENTICATION</b>	
Created By Routing Server	No	Max. Number of Registered Users	-1
Used By Routing Server	Not Used	Registration Mode	User Initiates Reg
Proxy Set Connectivity	NA	Authentication Mode	User Authentication

### 12.7.1 SBC

This step describes how to configure an SBC IP Group. The IP Group represents an IP entity on the network with which the SBC communicates. Once IP Groups are configured, they are used to configure IP-to-IP routing rules for denoting source and destination of the call.

In the SBA and SBC topology, IP Groups must be configured for the following IP entities:

- SBC Mediation Server located on LAN (see example configuration below)
- Vendor SIP Trunk or IP-PBX located on WAN (refer to the relevant AudioCodes Interop documentation).

➤ **To create an IP Group for the Skype for Business Server 2015:**

1. Open the IP Group table (**Setup** menu > **Signaling & Media** tab > **Core Entities** folder > **IP Groups**).

- Click **New** to create an IP Group of Type 'Server'.

**Figure 12-15: IP Group-SIP Trunk/IP-PBX**

- Configure the Skype for Business Proxy Set that you created in Section 12.3.
- Configure the Skype for Business Media Realm that you configured in Step 0.
- Click **Apply** to apply your settings.

**Figure 12-16: Configured IP Groups**

INDEX	NAME	SRD	TYPE	SBC OPERATION MODE	PROXY SET	IP PROFILE	MEDIA REALM	SIP GROUP NAME	CLASSIFY BY PROXY SET	INBOUND MESSAGE MANIPULATIC SET	OUTBOUND MESSAGE MANIPULATI SET
0	Default_IPG	DefaultSR	Server	Not Configure	ProxySet_0	--	--		Disable	-1	-1
1	SBA	DefaultSR	Server	Not Configure	--	--	--		Enable	-1	-1
2	ITSP	DefaultSR	Server	Not Configure	--	--	--		Enable	-1	-1

## 12.8 Step 8: Routing

This step describes how to configure Tel-to-IP and IP-to-IP Routing.

### 12.8.1 IP-to-Tel Routing

This step describes how to configure IP-to-Tel routing for the gateway calls.

- **To configure IP-to-Tel routing:**

- Open the IP-to-Tel Routing page (**Setup** menu > **Signaling & Media** tab > **Gateway** folder > **Routing** > **IP-to-Tel Routing**).

2. Click **New** to create an IP-to-Tel Routing rule for Skype for Business to FXS gateway calls.

**Figure 12-17: IP-to-Tel Routing Rule (Skype for Business to FXS)**

*IP-to-Tel Routing [SfB to FXS]*

GENERAL	ACTION
Index <input type="text" value="0"/>	Destination Type <input type="text" value="Trunk Group"/>
Name <input type="text" value="SfB to FXS"/>	Trunk Group ID <input type="text" value="1"/>
	IP Profile <input type="text" value="--"/> <a href="#">View</a>
	Trunk ID <input type="text" value="-1"/>
	Call Setup Rules Set ID <input type="text" value="-1"/>
MATCH	
Source IP Group <input type="text" value="#1 [SBA]"/> <a href="#">View</a>	
Source SIP Interface <input type="text" value="Any"/> <a href="#">View</a>	
Source IP Address <input type="text"/>	
Source Phone Prefix <input type="text"/>	
Destination Phone Prefix <input type="text" value="+1732652100[0-1]"/>	
Destination Host Prefix <input type="text"/>	
Source Host Prefix <input type="text"/>	

3. Click **Apply** to apply your settings.
4. Click **New** to create an IP-to-Tel Routing rule for ITSP calls.

Figure 12-18: IP-to-Tel Routing Rule (All to ITSP)

IP-to-Tel Routing [All to ITSP]

GENERAL	ACTION
Index: 1	Destination Type: Trunk Group
Name: All to ITSP	Trunk Group ID: 2
	IP Profile: -- View
	Trunk ID: -1
	Call Setup Rules Set ID: -1

MATCH
Source IP Group: -- View
Source SIP Interface: Any View
Source IP Address:
Source Phone Prefix:
Destination Phone Prefix: *
Destination Host Prefix:
Source Host Prefix:

5. Click **Apply** to apply your settings.
6. On the toolbar, click **Burn** to save the changes to the devices flash memory.

Figure 12-19: Configured IP-to-Tel Routing Rules

IP-to-Tel Routing (2)

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INDEX	NAME	SOURCE IP GROUP	SOURCE SIP INTERFACE	SOURCE IP ADDRESS	SOURCE PHONE PREFIX	DESTINATION PHONE PREFIX	TRUNK GROUP ID
0	SfB to FXS	SBA	Any			+1732652100[0-1]	1
1	All to ITSP	--	Any			*	2

## 12.8.2 IP-to-IP Routing

This step describes how to configure IP-to-IP call routing rules.

For the SBA topology, the following IP-to-IP routing rules need to be configured to route calls between Skype for Business Server 2015 (LAN) and Vendor SIP Trunk or IP-PBX (WAN):

- Calls from Skype for Business Server 2015 to Vendor SIP Trunk or IP-PBX (see example below)
  - Calls from Vendor SIP Trunk or IP-PBX to Skype for Business Server 2015 (refer to relevant AudioCodes Interop documentation).
- **To configure IP-to-IP routing for Skype for Business Server 2015:**
1. Open the IP-to-IP Routing page (**Setup** menu > **Signaling & Media** tab > **SBC** folder > **Routing** > **IP-to-IP Routing**).
  2. Create a new IP-to-IP Routing OPTIONS rule:

- a. Click **New** to create a new rule.

**Figure 12-20: IP-to-IP Routing Options Rule**

Routing Policy #0 [Default\_SBCRoutingPolicy]

GENERAL	ACTION
Index: 0	Destination Type: Dest Address
Name: OPTIONS	Destination IP Group: -- View
Alternative Route Options: Route Row	Destination SIP Interface: -- View
	Destination Address: internal
	Destination Port: 0
	Destination Transport Type: --
	Call Setup Rules Set ID: -1
	Group Policy: Sequential
	Cost Group: -- View

MATCH
Source IP Group: Any View
Request Type: OPTIONS
Source Username Prefix: --
Source Host: --
Source Tag: --

- b. Click **Apply** to apply your settings.
- 3. Create a new IP-to-IP Routing rule for SBA to ITSP calls.
  - a. Click **New** to create a new rule.

Figure 12-21: SBA to ITSP Routing Rule

- b. Click **Apply** to apply your settings.
- 4. Create a new IP-to-IP Routing rule for ITSP to SBA calls:
  - a. Click **New** to create a IP-to-IP Routing rule for SBA to ITSP calls.

Figure 12-22: ITSP to SBA Routing Rule

- b. Click **Apply** to apply your settings.
5. On the toolbar, click **Burn** to save the changes to the devices flash memory.

### Configured IP-to-IP Routing Rules

INDEX	NAME	ROUTING POLICY	ALTERNATIVE ROUTE OPTIONS	SOURCE IP GROUP	REQUEST TYPE	SOURCE USERNAME PREFIX	DESTINATION USERNAME PREFIX	DESTINATION TYPE	DESTINATION IP GROUP	DESTINATION SIP INTERFACE	DESTINATION ADDRESS
0	OPTIONS	Default_SBCR	Route Row	Any	OPTIONS			Dest Address	--	--	internal
1	SBA to ITSP	Default_SBCR	Route Row	SBA	All			IP Group	ITSP	--	
2	ITSP to SBA	Default_SBCR	Route Row	ITSP	All			IP Group	SBA	--	

## 12.9 Step 9: SIP TLS Connection

TLS provides encrypted SIP signaling between the PSTN Gateway or E-SBC and the Mediation Server. When using TLS, you also need to configure the Gateway or E-SBC with a certificate for authentication during the TLS handshake with the Mediation Server.

### 12.9.1 Step 9-1: Enable SIP TLS Listening Port

This step describes how to configure the SIP TLS listening port (see Section 0).

### 12.9.2 Step 9-2: Configure the NTP Server Address

The procedure below describes how to configure the Network Time Protocol (NTP) server. This is important for maintaining the correct time and date on the PSTN Gateway or E-SBC, by synchronizing it with a third-party NTP server. This ensures that the PSTN Gateway or E-SBC has the same date and time as the Certification Authority (CA).

➤ **To configure the NTP server address:**

1. Open the Time & Date page (**Setup** tab > **Time And Date**).

**Figure 12-23: Configuring NTP Server Address**

NTP SERVER

**Primary NTP Server Address (IP or FQDN)** •

**Secondary NTP Server Address (IP or FQDN)**

NTP Update Interval      Hours:       Minutes:

NTP Authentication Key Identifier     

NTP Authentication Secret Key

2. In the 'Primary NTP Server Address (IP or FQDN)' field, enter the IP address of the NTP server.  
(e.g., **10.15.27.1**).

3. Configure the appropriate Time Zone.



**Note:** If you configured the NTP address as an FQDN, ensure that you configure the DNS server (see Section 13.8.3).

4. Click **Apply** to apply your settings.
5. On the toolbar, click **Burn** to save the changes to the devices flash memory.

### 12.9.3 Step 9-3: Configure the DNS Server

The procedure below describes how to configure the IP address of the Domain Name System (DNS) servers. This is required if the Mediation Server is configured with an FQDN, in which case, the DNS is used to resolve it into an IP address.

➤ **To configure the DNS servers:**

1. Open the Interface Table page (**Setup** tab > **IP Network** menu > **Core Entities** folder> **IP Interfaces**).
2. Create a new IP interface for the Voice interface:
  - a. Click **New** to create a new interface.
  - b. In the 'Primary DNS' and 'Secondary DNS' fields, enter the IP address of the Primary and Secondary DNS server respectively.

**Figure 12-24: IP Interface-Voice**

IP Interfaces [Voice] -

GENERAL		IP ADDRESS	
Index	<input type="text" value="0"/>	Interface Mode	<input type="text" value="IPv4 Manual"/>
Name	<input type="text" value="Voice"/>	IP Address	<input type="text" value="10.15.7.8"/>
Application Type	<input type="text" value="OAMP + Media + Control"/>	Prefix Length	<input type="text" value="16"/>
Ethernet Device	<input type="text" value="#0 [vlan 1]"/> <a href="#">View</a>	Default Gateway	<input type="text" value="10.15.0.1"/>
DNS			
Primary DNS	<input type="text" value="10.15.27.1"/>		
Secondary DNS	<input type="text" value="10.15.28.1"/>		

- c. Click **Apply** to apply your changes.



3. Create a new IP interface for the WAN interface:
  - a. Click **New** to create a new interface.

**Figure 12-25: IP Interface-WAN**

IP Interfaces [WANSP]

GENERAL		IP ADDRESS	
Index	<input type="text" value="1"/>	Interface Mode	<input type="text" value="IPv4 Manual"/>
Name	<input type="text" value="WANSP"/>	IP Address	<input type="text" value="195.189.192.238"/>
Application Type	<input type="text" value="Media + Control"/>	Prefix Length	<input type="text" value="24"/>
Ethernet Device	<input type="text" value="#1 [vlan2]"/> <a href="#">View</a>	Default Gateway	<input type="text" value="0.0.0.0"/>

DNS	
Primary DNS	<input type="text" value="0.0.0.0"/>
Secondary DNS	<input type="text" value="0.0.0.0"/>

- b. Click **Apply** to apply your changes
4. On the toolbar, click **Burn** to save the changes to the PSTN gateway flash memory.

**Figure 12-26: Configured IP Interfaces**

IP Interfaces (2)

[+ New](#) [Edit](#) [🗑️](#)      Page 1 of 1      Show 10 records per page

INDEX ↕	NAME	APPLICATION TYPE	INTERFACE MODE	IP ADDRESS	PREFIX LENGTH	DEFAULT GATEWAY	PRIMARY DNS	SECONDARY DNS	ETHERNET DEVICE
0	Voice	OAMP + Media +	IPv4 Manual	10.15.7.8	16	10.15.0.1	10.15.27.1	10.15.28.1	vlan 1
1	WANSP	Media + Control	IPv4 Manual	195.189.192.238	24	0.0.0.0	0.0.0.0	0.0.0.0	vlan2

## 12.9.4 Step 9-4: Configure Gateway or E-SBC Certificate

This step describes how to exchange a certificate with Microsoft Certificate Authority (CA). The certificate is used by the device to authenticate the connection with Skype for Business Server 2015.<sup>1</sup>

The procedure involves the following main steps:

- a. Generating a Certificate Signing Request (CSR).
- b. Requesting Device Certificate from CA.
- c. Obtaining Trusted Root Certificate from CA.
- d. Deploying Device and Trusted Root Certificates on E-SBC.



**Note:** The Subject Name (CN) field parameter should be identically configured in the DNS Active Directory and Topology Builder (see Chapters 8 and 9).

➤ **To configure a certificate:**

1. Open the TLS Contexts page (**Configuration** tab > **System** menu > **TLS Contexts**).
2. In the TLS Contexts table, select the required TLS Context index row (usually default index 0 will be used), and then click the **TLS Context Certificates** arrow button, located at the bottom of the TLS Contexts page; the Context Certificates page appears.
3. Under the **Certificate Signing Request** group, do the following:
  - a. In the 'Subject Name [CN]' field, enter the E-SBC FQDN name (e.g., **Gateway.S4B.interop**).  
This FQDN is also configured in the Topology Builder.
  - b. Fill in the rest of the request fields according to your security provider's instructions.

<sup>1</sup> You cannot load certificates to the device for the Gateway and SBC TLS context using the SBA Wizard.

4. Click the **Create CSR** button; a textual certificate signing request is displayed in the area below the button:

**Figure 12-27: Certificate Signing Request – Creating CSR**

Certificate Signing Request	
Subject Name [CN]	ITSP.S4B.interop
Organizational Unit [OU] (optional)	
Company name [O] (optional)	
Locality or city name [L] (optional)	
State [ST] (optional)	
Country code [C] (optional)	

**Create CSR**

After creating the CSR, copy the text below (including the BEGIN/END lines) and send it to your Certification Authority for signing.

```

-----BEGIN CERTIFICATE REQUEST-----
MIIBWjCBxAIBADABMRkwFwYDVQQDDBBJVFNQLlM0Q15pbmRlcm9wMIGfMA0GCSqG
SIb3DQEBAQUAA4GNADCBiQKBgQCzEs8XTnY8be/t77eEDG7rTg747GQ30DFOC4Rs
x+e9KfbErZgxMYqGT8u04AU0wU9LUPkkq+8gI6w2bg3boW0kg/9hrnNL2rfltgcn
30oSHP0SPiKMRNznCCO90b03tbr9kuHm1wPRQ7yT6k7xS3XBBSigqT4LQbjBTltt
dH3bQIDAQABOAAwDQYJKoZIhvcNAQEFBQADgYEAim/GA2E1ZQbZaR6CZyIawilt
u65w450NFHmaCluHSyZ8keM8d1Ux14hkw7t5ygAD8KbxvKHRVaCgcQrAK2v8u1Pf
TvN+bwJ+kQ0d59C1xa82e0o1wB3buPq5+qWdGTF+MyJWGVf8SIc1c6+zFoc+BEZY
7tQ8y0J8od0aDhStDfQ=
-----END CERTIFICATE REQUEST-----

```

5. Copy the CSR from the line "**-----BEGIN CERTIFICATE REQUEST-----**" to "**-----END CERTIFICATE REQUEST-----**" to a text file (such as Notepad), and then save it to a folder on your computer with the file name *certreq.txt*.
6. Send the *certreq.txt* to your system administrator.
7. Save the file you received from your system administrator as *certroot.cer* to a folder on your computer.
8. In the E-SBC's Web interface, return to the **TLS Contexts** page and do the following:
  - a. In the TLS Contexts table, select the required TLS Context index row (typically, the default TLS Context at Index 0 is used), and then click the **TLS Context Certificates** arrow button, located at the bottom of the TLS Contexts page; the Context Certificates page appears.
  - b. Scroll down to the **Upload certificates files from your computer** group, click the **Browse** button corresponding to the 'Send Device Certificate...' field, navigate to the *gateway.cer* certificate file that you saved on your computer in Step 1414, and then click **Send File** to upload the certificate to the E-SBC.

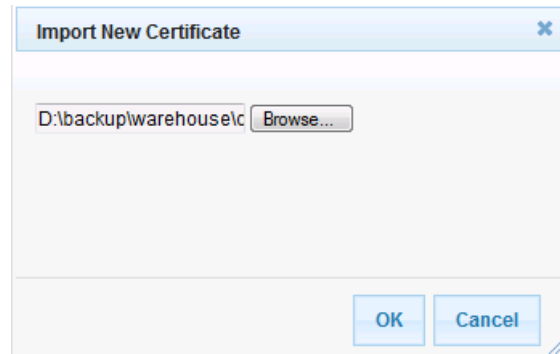
**Figure 12-28: Upload Device Certificate Files from your Computer Group**

Upload certificate files from your computer	
Private key pass-phrase (optional)	audc
Send <b>Private Key</b> file from your computer to the device. The file must be in either PEM or PFX (PKCS#12) format.	
<input type="text"/>	<input type="button" value="Browse..."/> <input type="button" value="Send File"/>
<b>Note: Replacing the private key is not recommended but if it's done, it should be over a physically-secure network link.</b>	
Send <b>Device Certificate</b> file from your computer to the device. The file must be in textual PEM format.	
<input type="text"/>	<input type="button" value="Browse..."/> <input type="button" value="Send File"/>

- c. In the E-SBC's Web interface, return to the **TLS Contexts** page.

- d. In the TLS Contexts table, select the required TLS Context index row, and then click the **TLS Context Trusted-Roots Certificates** arrow button, located at the bottom of the TLS Contexts page; the Trusted Certificates page appears.
- e. Click the **Import** button, and then select the certificate file to load.

**Figure 12-29: Importing Root Certificate into Trusted Certificates Store**



9. Click **OK**; the certificate is loaded to the device and listed in the Trusted Certificates store.
10. Click **Submit** to apply your changes.
11. On the toolbar, click **Burn** to save the changes to the PSTN gateway flash memory.
12. On the toolbar, from the Device Actions drop-down list, choose **Reset**, and then in the 'Maintenance Actions' page, click the **Reset** button; the Mediant 800B resets and your settings are saved to the flash memory.

## 13 Configure IP Profile

This step describes how to configure IP Profiles. The IP Profile defines a set of call capabilities relating to signaling (e.g., SIP message terminations such as REFER) and media (e.g., coder and transcoding method).

In the SBA and SBC topology, IP Profiles need to be configured for the following IP entities:

- Microsoft Skype for Business Server 2015 - to operate in secure mode using SRTP and TLS (see example below)
- Vendor SIP trunk or IP-PBX- to operate in non-secure mode using RTP and UDP (refer to relevant AudioCodes Interop documentation).
- Connection to analog device.

➤ **To configure IP Profile for the Skype for Business Server 2015:**

1. Open the IP Profile Settings page (**Setup** tab > **Signaling & Media** > **Coders and Profiles** > **IP Profile Settings**).
2. Click **New**, and then configure the parameters as follows:

Parameter	Value
<b>General</b>	
Index	<b>1</b>
Name	<b>S4B</b>
<b>Media Security</b>	
SBC Media Security Mode	<b>SRTP</b> (set to <b>RTP</b> if the Skype for Business site does not support SRTP i.e. if the 'Encryption Support Level' parameter is set to "Not Supported" in the Trunk Configuration in the Skype for Business Topology).
Symmetric MKI	<b>Enable</b>
MKI Size	<b>1</b>
SBC Enforce MKI Size	<b>Enforce</b>
Reset SRTP State Upon Re-key	<b>Enable</b>
Generate SRTP Keys Mode:	<b>Always</b>
<b>SBC Early Media</b>	
Remote Early Media RTP Detection Mode	<b>By Media</b> (required, as Skype for Business Server 2015 does not send RTP immediately to remote side when it sends a SIP 18x response)
<b>SBC Media</b>	
Extension Coders Group	<b>AudioCodersGroups_1</b>
Use Silence Suppression	<b>Transparent</b> or <b>Add</b>
<b>SBC Signaling</b>	
Remote Update Support	<b>Supported Only After Connect</b>
Remote re-INVITE Support	<b>Supported Only With SDP</b>
Remote Delayed Offer Support	<b>Not Supported</b>

SBC Forward and Transfer	
Remote REFER Mode	<b>Handle Locally</b> (required, as Skype for Business Server 2015 does not support receipt of SIP REFER)
Remote 3xx Mode	<b>Handle Locally</b> (required, as Skype for Business Server 2015 does not support receipt of SIP 3xx responses)

Figure 13-1: Skype for Business IP Profile

3. Click **Apply** to apply your settings.

➤ **To configure IP Profile for the Skype for Gateway:**

1. Open the IP Profile Settings page (**Setup** tab > **Signaling & Media** > **Coders and Profiles** > **IP Profile Settings**).
2. Click **New**, and then configure the parameters as follows:

Parameter	Value
<b>General</b>	
Index	<b>1</b>
Name	<b>Gateway</b>
<b>Media Security</b>	
Gateway Media Security Mode	<b>Mandatory</b> (set to <b>Preferable-Single media</b> if SRTP is not supported i.e. if the 'Encryption Support Level' parameter is set to "Not Supported" in the Trunk Configuration in the Skype for Business Topology).
Symmetric MKI	<b>Enable</b>
MKI Size	<b>1</b>
SBC Enforce MKI Size	<b>Enforce</b>
Reset SRTP State Upon Re-key	<b>Enable</b>
Generate SRTP Keys Mode:	<b>Always</b>
<b>Gateway</b>	

Early Media	<p><b>Enable</b></p> <p>Enables the Early Media feature for sending media (e.g., ringing) before the call is established per specific calls.</p> <p>This parameter can also be configured globally (see Section 13.1.1).</p>
Early 183	<p><b>Enable</b></p> <p>Enables the device to send SIP 183 responses with SDP to the IP upon receipt of INVITE messages per specific calls.</p> <p>This parameter can also be configured globally (see Section 13.1.1)</p>

Figure 13-2: Gateway IP Profile

3. Click **Apply** to apply your settings.
4. On the toolbar, click **Burn** to save the changes to the devices flash memory.

## 13.1 Configuring Early Media (Global Settings)

Early media refers to audio and video that is exchanged before a call is accepted by the recipient. In the IP Profile configuration (see above in Section 13), you can configure early media settings according to specific calls. These parameters can also be configured globally and in addition, there are also other global settings.

### 13.1.1 PSTN Gateway

According to Skype for Business requirements, AudioCodes PSTN Gateway must send a SIP 183 with SDP immediately after it receives an INVITE. The RTP packets however, will not be sent until the PSTN Gateway receives an ISDN Progress, Alerting and Progress Indicator or Connect message. For example, if the PSTN Gateway receives ISDN Progress, it starts sending RTP packets according to initial negotiation, but there is no need to re-send the 183 response.

➤ **To configure the Early Media feature for the gateway:**

1. Open the Gateway General Settings page (**Setup** tab > **Signaling & Media** > **Gateway** menu > **Gateway General Settings**).
2. From the 'Play Ringback Tone to Tel' drop-down list, select **Play Local Until Remote Media Arrive**. If a SIP 180 response is received and the voice channel is already open (due to a previous 183 early media response or due to an SDP in the current

180 response), the PSTN Gateway plays a local ringback tone if there are no prior received RTP packets. The PSTN Gateway stops playing the local ringback tone as soon as it starts receiving RTP packets. At this stage, if the PSTN Gateway receives additional 18x responses, it does not resume playing the local ringback tone.

- From the 'Forking Handling Mode' drop-down list, select **Sequential handling**. The PSTN Gateway opens a voice stream toward the first 18x SIP response that includes an SDP and disregards any 18x response with an SDP received thereafter.

**Figure 13-3: Gateway General Settings Page**

Gateway General Settings

FAX	BEHAVIOR
<b>Fax Signaling Method</b>	<b>NAT IP Address</b>
No Fax	0.0.0.0
<b>Detect Fax on Answer Tone</b>	<b>Channel Select Mode</b>
Initiate T.38 on Preamble	Cyclic Ascending
<b>SIP T.38 Version</b>	<b>Tel to IP No Answer Timeout</b>
Not Configured	180
<b>T.38 Fax Session</b>	<b>Play Ringback Tone to IP</b>
Disable	Don't Play
<b>T.38 Fax Max Buffer</b>	<b>Play Ringback Tone to Tel</b>
3000	Play Local Until Remote M
	<b>Enable Semi-Attended Transfer</b>
	Disable
	<b>Forking Handling Mode</b>
	Sequential handling

- Click **Apply** to apply your settings.
- Open the SIP Definitions General Settings page (**Setup tab > Signaling & Media > SIP Definitions menu > SIP Definitions General Settings**).

**Figure 13-4: SIP Definitions General Settings**

GATEWAY SETTINGS	GATEWAY SESSION EXPIRES
<b>PRACK Mode</b>	<b>Session-Expires Time</b>
Supported	0
<b>Early 183</b>	<b>Minimum Session-Expires</b>
Enable	90
<b>183 Message Behavior</b>	<b>Session Expires Method</b>
Progress	re-INVITE
<b>3xx Behavior</b>	<b>Session Expires Disconnect Time</b>
Forward	32
<b>Call Transfer using re-INVITEs</b>	
Disable	
<b>First Call Ringback Tone ID</b>	
-1	
<b>Enable Delayed Offer</b>	
Disable	
<b>Source Header For Called Number</b>	
use RequestURI header	
	<b>DISCONNECT SUPERVISION</b>
	<b>Broken Connection Mode</b>
	Disconnect
	<b>Broken Connection Timeout [100 msec]</b>
	100

- From the 'Early 183' drop-down list, select **Enable**.  
You can also configure this parameter per call in the IP Profile (see Section 13).
- Click **Apply** to apply your settings.
- Open the Media Settings page (**Setup tab > Signaling & Media > Media > Media Settings**).



Figure 13-5: Media Settings-Enable Early Media

Media Settings	
<b>GENERAL</b>	
Nat Traversal	Disable NAT
Enable Continuity Tones	Disable
Inbound Media Latch Mode	Dynamic
Number of Media Channels	0
Enforce Media Order	Disable
SDP Session Owner	AudiocodesGW
<b>ROBUSTNESS</b>	
New RTP Stream Packets	3
New RTCP Stream Packets	3
New SRTP Stream Packets	3
New SRTCP Stream Packets	3
Timeout To Relatch RTP (msec)	200
Timeout To Relatch SRTP (msec)	200
Timeout To Relatch Silence (msec)	10000
Timeout To Relatch RTCP (msec)	10000
<b>SBC SETTINGS</b>	
Preferences Mode	Doesn't Include Extensions
Enforce Media Order	Disable
<b>GATEWAY SETTINGS</b>	
Enable Early Media	Enable

9. From the 'Enable Early Media' drop-down list, select **Enable**.  
You can also configure this parameter per call in the IP Profile (see Section 13).

### 13.1.2 Forking Handling-SBC

You should configure the SBC forking handling so that the SBC opens a voice stream toward the first 18x SIP response that includes an SDP and disregards any 18x response with an SDP received thereafter.

➤ **To configure Forking Handling Mode for the SBC:**

1. Open the SBC General Settings page (**Setup** tab > **Signaling & Media** > **SBC** menu > **SBC General Settings**).
2. From the 'Forking Handling Mode' drop-down list, select **Sequential**.

**Figure 13-6: SBC General Setting**

SBC General Settings

GENERAL	
<b>Direct Media</b>	Disable
Unclassified Calls	Reject
<b>Forking Handling Mode</b>	Sequential
No Answer Timeout [sec]	600
BroadWorks Survivability Feature	Disable
Max Forwards Limit	10
Max Call Duration [min]	0

3. Click **Apply** to apply your settings.
4. On the toolbar, click **Burn** to save the changes to the devices flash memory.

## 14 Configuring Voice Coders (with Silence Suppression)

The PSTN Gateway or E-SBC communicates with the Mediation Server using either the G.711 A-law or G.711  $\mu$ -law (Mu-Law) voice coder. In addition, silence suppression can be enabled per coder, which is recommended for improving the performance of the Mediation Server. The procedure below shows how you can change the default coder.

➤ **To configure the voice coder and silence suppression:**

1. Open the Coder Groups page (**Setup** tab > **Signaling & Media** > **Coders and Profiles** > **Coder Groups**).

**Figure 14-1: Coder Groups Page**

Coder Groups

Coder Group Name: 0 : AudioCodersGroups\_0

Coder Name	Packetization Time	Rate	Payload Type	Silence Suppression	Coder Specific
G.711A-law	20	64	8	Disabled	

2. From the 'Coder Name' drop-down list, select the required coder (the Wizard only configures the G711A-law coder by default)<sup>2</sup>.
3. From the 'Silence Suppression' drop-down list, select **Enable**<sup>3</sup>.
4. Click **Apply** to apply your settings.
5. On the toolbar, click **Burn** to save the changes to the devices flash memory.

<sup>2</sup> Only the G711A-law coder is configured in the SBA Wizard

<sup>3</sup> Not configured by the SBA Wizard

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# 15 Configuring Comfort Noise and Gain Control

The Skype for Business network provides high voice quality by implementing suppression of typing noise during calls and improved generation of "comfort noise," which reduces hissing and smoothens over the discontinuous flow of audio packets. You may need to configure the PSTN Gateway or E-SBC to match these voice quality features, by enabling silence suppression, comfort noise generation and echo canceller (enabled by default).



**Note:** Silence suppression is configured per coder type, as described in Chapter 15.

➤ **To configure voice quality:**

1. Open the RTP/RTCP Settings page (**Setup** tab > **Signaling & Media** > **Media** > **RTP/RTCP Settings**).

**Figure 15-1: RTP RTCP Settings Page**

Packing Factor	<input type="text" value="1"/>	Burst Threshold	<input type="text" value="-1"/>
Comfort Noise Generation Negotiation	<input type="text" value="Enable"/>	Delay Threshold	<input type="text" value="-1"/>
FW Non Configured Packet Handling	<input type="text" value="Handle as Invalid Packet"/>	R-Value Delay Threshold	<input type="text" value="-1"/>
FW Invalid Packet Handling	<input type="text" value="Issue Warnings Only"/>	Minimum Gap Size	<input type="text" value="16"/>
RTP Base UDP Port	<input type="text" value="6000"/>		
Analog Signal Transport Type	<input type="text" value="Ignore Analog Signals"/>		
<b>PAYLOAD TYPES</b>			
RFC 2833 TX Payload Type	<input type="text" value="96"/>		
RFC 2833 RX Payload Type	<input type="text" value="96"/>		
RFC 2198 Payload Type	<input type="text" value="104"/>		
Fax Bypass Payload Type	<input type="text" value="102"/>		
Modem Bypass Payload Type	<input type="text" value="103"/>		
Enable RFC 3389 CN Payload Type	<input type="text" value="Enable"/>		
<b>RTCP-XR COLLECTION SERVER</b>			
Gateway RTCP XR Report Mode	<input type="text" value="Disable"/>		
RTCP XR Collection Server	<input type="text" value=""/>		
RTCP XR Collection Server Transport Type	<input type="text" value="Not Configured"/>		
SBC RTCP XR Report Mode	<input type="text" value="Disable"/>		
<b>MULTIPLEXING</b>			
RTP Multiplexing Local UDP Port	<input type="text" value="0"/>		
RTP Multiplexing Remote UDP Port	<input type="text" value="0"/>		

2. (Gateway Only) From the 'Comfort Noise Generation Negotiation' drop-down list, set **Enable** to enable comfort noise generation.

For SBC devices, configure parameter 'Use Silence Suppression' in IP Profile (see Chapter 13).

3. From the 'Enable RFC 3389 CN payload Type' drop-down list, verify that this parameter is set to **Enable**.
4. Click **Apply** to apply your settings.
5. On the toolbar, click **Burn** to save the changes to the devices flash memory.

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# 16 Configuring FXS Ports and PSTN Trunks (Gateway Only)

This section describes how to configure FXS ports and PRI (i.e., E1/T1) or BRI trunks connected to the PSTN Gateway.



**Note:** The SBA Wizard only configures a default Trunk Group, therefore you must perform the configuration described in this section.

## 16.1 Step 1: Enabling FXS Ports and PSTN Trunks

The procedure below describes how to enable the FXS ports and PSTN trunk (E1/T1) channels of the Enhanced gateway. This is done by defining telephone numbers for the channels and assigning them to Trunk Groups. To ensure correct routing of IP-to-Tel calls, you need to define different Trunk Groups for the digital trunk and the FXS module.

➤ **To enable the FXS ports and PSTN trunks:**

1. Open the Trunk Group Table page (**Setup** tab > **Signaling & Media** > **Gateway** menu > **Trunk & Groups** > **Trunk Groups**).

**Figure 16-1: Trunk Group Table Page**

Group Index	Module	From Trunk	To Trunk	Channels	Phone Number	Trunk Group ID	Tel Profile Name
1	Module 1 PRI	1	1	1-31	1000	2	None
2	Module 2 FXS			1	17326521000	1	None
3	Module 2 FXS			2	17326521001	1	None
4							None
5							None
6							None
7							None
8							None

2. Define the following Trunk Groups:
  - Trunk Group #2: PRI module (E1/T1) with one span (1-31 channels)
  - Trunk Group #1: FXS module with two FXS channels – Channel 1 with phone number +17326521000 and Channel 2 with phone number +17326521001
  - Those numbers need to be configured as TelUri numbers for analog devices in Skype for Business environment using the powershell command `New-CsAnalogDevice`.
3. Click **Apply** to apply your settings.
4. On the toolbar, click **Burn** to save the changes to the devices flash memory.

## 16.2 Step 2: Configuring the Channel Select Method

Once you have enabled the PSTN trunk and FXS ports, and assigned them to Trunk Groups, you need to configure the method for which IP-to-Tel calls are assigned to channels within each Trunk Group.

- **To configure the channel select method for each Trunk Group:**
- 1. Open the Trunk Group Settings page (**Setup** tab > **Signaling & Media** > **Gateway** menu > **Trunk & Groups** > **Trunk Group Settings**).

**Figure 16-2: Trunk Group Setting Page-Trunk Group #1**

**Figure 16-3: Trunk Group Setting Page-Trunk Group #2**

**Figure 16-4: Trunk Group Settings Configured**

Trunk Group Settings (2)

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INDEX	NAME	TRUNK GROUP ID	CHANNEL SELECT MODE	REGISTRATION MODE	SERVING IP GROUP	ADMIN STATE	STATUS
0		1	By Dest Phone Numbr	Don't Register	--	Unlocked	
1		2	Channel Cyclic Ascenc		--	Unlocked	



2. For the FXS ports (i.e., Trunk Group #1), from the 'Channel Select Mode' drop-down list, select By Dest Phone Number. This setting sends the call to a specific FXS user according to the called (destination) number.
3. For the PSTN trunk (i.e., Trunk Group #2), from the 'Channel Select Mode' drop-down select Cyclic Ascending. This setting sends the call to the next available channel, in ascending cyclic order.
4. Click **Apply** to apply your settings.
5. On the toolbar, click **Burn** to save the changes to the device's flash memory.

## 16.3 Step 3: Configuring the Trunk

The procedure below describes basic configuration of the physical trunk.

➤ **To configure the physical trunk:**


1. Open the Trunk Settings page (**Setup** tab > **Signaling & Media** > **Gateway** menu > **Trunks**).

**Figure 16-5: Trunk Settings Page**

The screenshot shows the 'Trunk Settings' page with a status bar at the top displaying trunk icons. The page is divided into three main sections: GENERAL, TRUNK CONFIGURATION, and GWAPP SETTINGS.

GENERAL		GWAPP SETTINGS	
Module ID	1	PSTN Alert Timeout	-1
Trunk ID	1	Transfer Mode	Disable
Trunk Configuration State	Not Configured	Local ISDN Ringback Tone Source	PBX
Protocol Type	E1 EURO ISDN	Set PI in Rx Disconnect Message	Not Configured
TRUNK CONFIGURATION		ISDN Transfer Capabilities	Not Configured
Clock Master	Recovered	Progress Indicator to ISDN	Not Configured
Auto Clock Trunk Priority	0	Select Receiving of Overlap Dialing	None
Line Code	HDB3	B-channel Negotiation	Not Configured
Line Build Out Loss	0 dB	Out-Of-Service Behavior	Not Configured
Trace Level	No Trace	Remove Calling Name	Use Global Parameter
Line Build Out Overwrite	OFF	Play Ringback Tone to Trunk	Not Configured
Framing Method	Extended Super Frame	Call Rerouting Mode	None
		ISDN Duplicate Q931 BuffMode	0

2. On the top of the page, a bar with trunk number icons displays the status of each trunk:
  - Grey - disabled
  - Green - active
  - Yellow - RAI alarm
  - Red - LOS / LOF alarm
  - Blue - AIS alarm
  - Orange - D-channel alarm (ISDN only)

Select the Trunk that you want to configure, by clicking the desired trunk number icon.
3. If the trunk is new, configure the trunk as required. If the trunk was previously configured, click the Stop Trunk button  to de-activate the trunk.
4. Basic trunk configuration:
  - a. From the 'Protocol Type' drop-down list, select the required trunk protocol.

**Note:**

- If the 'Protocol Type' field displays 'NONE' (i.e., no protocol type selected) and no other trunks have been configured, after selecting a PRI protocol type, you must reset the PSTN Gateway.
- All PRI trunks of the PSTN Gateway must be of the same line type - E1 or T1. However, different variants of the same line type can be configured on different trunks, for example, E1 Euro ISDN and E1 CAS (subject to the constraints in the Release Notes).
- BRI trunks can operate with E1 or T1 trunks.
- If the trunk can't be stopped because it provides the clock (assuming the PSTN Gateway is synchronized with the E1/T1 clock), assign a different E1/T1 trunk to provide the clock or enable 'TDM Bus PSTN Auto Clock' in the 'TDM Bus Settings' page (see Section Configuring the TDM Bus on page 147).
- To delete a previously configured trunk, set the Protocol Type parameter to 'None'.

5. Continue configuring the trunk according to your requirements.
6. When you have completed configuration, click the **Apply Trunk Settings** button to apply the changes to the selected trunk.
7. On the toolbar, click **Burn** to save the changes to the PSTN gateway flash memory.

## 16.4 Step 4: Configuring the TDM Bus

The procedure below describes how to configure the TDM bus of the PSTN Gateway.

➤ **To configure the TDM bus:**

1. Open the TDM Bus Settings page (**Setup** tab > **Signaling & Media** > **Gateway** menu > **Media** > **TDM Bus Settings**).

**Figure 16-6: TDM Bus Settings Page**

The screenshot shows the 'TDM Bus Settings' page with two main sections: 'GENERAL' and 'DIGITAL PCM'. The 'GENERAL' section includes: 'TDM Bus Clock Source' (Internal), 'TDM Bus PSTN Auto FallBack Clock' (Disable), 'TDM Bus PSTN Auto Clock Reverting' (Disable), and 'TDM Bus Local Reference' (1). The 'DIGITAL PCM' section includes: 'PCM Law Select' (MuLaw), 'Idle PCM Pattern' (255), and 'Idle ABCD Pattern' (0x0F). Each dropdown menu has a lightning bolt icon to its right, indicating a warning or important setting.

2. Configure the TDM bus parameters according to your deployment requirements.
3. Click **Apply** to apply your settings.
4. On the toolbar, click **Burn** to save the changes to the PSTN gateway flash memory.

## 16.5 Step 5: Configuring FXS Port Transfer Behavior

Since the Mediation server does not support receiving SIP Refer messages, you must configure the Enhanced gateway FXS port to send INVITE messages (in the event when call transfer is initiated from the FXS port).



**Note:** For this feature to work, media channels should be configured according to the number of FXS ports (see below).

- **To configure the FXS port transfer feature using the re-invites parameter:**
- 1. Open the SIP Definitions General Settings page (**Setup** tab > **Signaling & Media** > **SIP Definitions** > **SIP Definitions General Settings**).
- 2. From the 'Call Transfer using re-INVITEs' drop-down list, select **Enable**

**Figure 16-7: Enable Call Transfer Using Re-invites**

SIP Definitions General Settings

<div style="background-color: #f0f0f0; padding: 2px; margin-bottom: 5px;">GENERAL</div> <p>Send Reject (503) upon Overload <span style="float: right;">Enable ▾</span></p> <p>Retry-After Time <span style="float: right;"><input type="text" value="0"/></span></p> <p>Fake Retry After <span style="float: right;"><input type="text" value="0"/></span></p> <p>X-Channel Header <span style="float: right;">Disable ▾</span></p>	<div style="background-color: #f0f0f0; padding: 2px; margin-bottom: 5px;">SBC SETTINGS</div> <p>Enable Subscribe Trying <span style="float: right;">Disable ▾</span></p> <p>Minimum Session-Expires [sec] <span style="float: right;"><input type="text" value="90"/></span></p> <p>Session-Expires [sec] <span style="float: right;"><input type="text" value="180"/></span></p>
<div style="background-color: #f0f0f0; padding: 2px; margin-bottom: 5px;">GATEWAY SETTINGS</div> <p>PRACK Mode <span style="float: right;">Supported ▾</span></p> <p>Early 183 <span style="float: right;">Disable ▾</span></p> <p>183 Message Behavior <span style="float: right;">Progress ▾</span></p> <p>3xx Behavior <span style="float: right;">Forward ▾</span></p> <p>Call Transfer using re-INVITEs <span style="float: right;">Enable ▾</span></p> <p>First Call Ringback Tone ID <span style="float: right;"><input type="text" value="-1"/></span></p> <p>Enable Delayed Offer <span style="float: right;">Disable ▾</span></p>	<div style="background-color: #f0f0f0; padding: 2px; margin-bottom: 5px;">GATEWAY SESSION EXPIRES</div> <p>Session-Expires Time <span style="float: right;"><input type="text" value="0"/></span></p> <p>Minimum Session-Expires <span style="float: right;"><input type="text" value="90"/></span></p> <p>Session Expires Method <span style="float: right;">re-INVITE ▾</span></p> <p>Session Expires Disconnect Time <span style="float: right;"><input type="text" value="32"/></span></p>
<div style="background-color: #f0f0f0; padding: 2px; margin-bottom: 5px;">DISCONNECT SUPERVISION</div> <p>Broken Connection Mode <span style="float: right;">Disconnect ▾</span></p> <p>Broken Connection Timeout [100 msec] <span style="float: right;"><input type="text" value="100"/></span></p>	

3. Open the Media Settings page (**Setup** tab > **Signaling & Media** > **Media** > **Media Settings**).
4. In the 'Number of Media Channels' field, enter the number of media channels; two media channels for each FXS port (device reset required).

**Figure 16-8: Media Settings**

Media Settings

<div style="background-color: #f0f0f0; padding: 2px; margin-bottom: 5px;">GENERAL</div> <p><b>Nat Traversal</b> <span style="float: right;">Disable NAT <input type="text"/></span></p> <p>Enable Continuity Tones <span style="float: right;">Disable <input type="text"/> ⚡</span></p> <p>Inbound Media Latch Mode <span style="float: right;">Dynamic <input type="text"/></span></p> <p>Number of Media Channels <span style="float: right;">2 <input type="text"/> ⚡</span></p> <p>Enforce Media Order <span style="float: right;">Disable <input type="text"/></span></p> <p>SDP Session Owner <span style="float: right;">AudiocodesGW <input type="text"/></span></p> <div style="background-color: #f0f0f0; padding: 2px; margin-top: 10px;">SBC SETTINGS</div> <p>Preferences Mode <span style="float: right;">Doesn't Include Extensions <input type="text"/></span></p> <p>Enforce Media Order <span style="float: right;">Disable <input type="text"/></span></p> <div style="background-color: #f0f0f0; padding: 2px; margin-top: 10px;">GATEWAY SETTINGS</div> <p><b>Enable Early Media</b> <span style="float: right;">Disable <input type="text"/></span></p>	<div style="background-color: #f0f0f0; padding: 2px; margin-bottom: 5px;">ROBUSTNESS</div> <p>New RTP Stream Packets <span style="float: right;"><input type="text" value="3"/></span></p> <p>New RTCP Stream Packets <span style="float: right;"><input type="text" value="3"/></span></p> <p>New SRTP Stream Packets <span style="float: right;"><input type="text" value="3"/></span></p> <p>New SRTCP Stream Packets <span style="float: right;"><input type="text" value="3"/></span></p> <p>Timeout To Relatch RTP (msec) <span style="float: right;"><input type="text" value="200"/></span></p> <p>Timeout To Relatch SRTP (msec) <span style="float: right;"><input type="text" value="200"/></span></p> <p>Timeout To Relatch Silence (msec) <span style="float: right;"><input type="text" value="10000"/></span></p> <p>Timeout To Relatch RTCP (msec) <span style="float: right;"><input type="text" value="10000"/></span></p>
--	--

5. Click **Apply** to apply the changes.
6. On the toolbar, click **Burn** to save the changes to the PSTN gateway flash memory.

# 17 Configuring Number Manipulation Rules

This chapter describes in detail how to configure both gateway and SBC number manipulation rules.

## 17.1 Configuring Gateway Number Manipulation

Skype for Business implements the standard E.164 format, while the PBX or PSTN implements other number formats for dialing. If the PSTN Gateway is connected to a PBX or directly to the PSTN, the PSTN Gateway may need to perform number manipulations for the called and/or calling number to match the PBX or PSTN dialing rules or to match Skype for Business E.164 format.

Therefore, the PSTN Gateway must be configured with manipulation rules to translate (i.e., normalize) numbers dialed in standard E.164 format to various formats, and vice versa. Manipulation needs to be done for outbound calls (i.e., calls received from Skype for Business clients through Skype for Business) and inbound calls (i.e., calls destined to Skype for Business clients).

Number manipulation (and mapping of NPI/TON to SIP messages) rules are configured in the following Manipulation tables:

- For Tel-to-IP calls:
  - Destination Phone Number Manipulation Table for Tel-to-IP Calls
  - Source Phone Number Manipulation Table for Tel-to-IP Calls
- For IP-to-Tel calls:
  - Destination Phone Number Manipulation Table for IP-to-Tel Calls
  - Source Phone Number Manipulation Table for IP-to-Tel Calls

### ➤ To configure gateway number manipulation rules:

1. Open the Tel to IP Manipulation table (**Setup** tab > **Signaling & Media** > **Gateway** > **Manipulation** > **Dest Number Tel->IP** ).
2. Click the **New** button to create a new manipulation rule.

**Figure 17-1: Destination Phone Number Manipulation Table for Tel-to-IP Calls**

*Destination Phone Number Manipulation for Tel-to-IP Calls [Add+]*

GENERAL	ACTION
Index: <input type="text" value="0"/>	Stripped Digits From Left: <input type="text" value="0"/>
Name: <input type="text" value="Add+"/>	Stripped Digits From Right: <input type="text" value="0"/>
MATCH	
Source Trunk Group: <input type="text" value="-1"/>	Number of Digits to Leave: <input type="text" value="255"/>
Source Prefix: <input type="text" value=""/>	Prefix to Add: <input type="text" value="+"/>
Destination Prefix: <input type="text" value=""/>	Suffix to Add: <input type="text" value=""/>
Destination IP Group: <input type="text" value="#1 [SBA]"/> <a href="#">View</a>	TON: <input type="text" value=""/>
	NPI: <input type="text" value=""/>
	Presentation: <input type="text" value=""/>

3. Click **Apply** to apply your settings.
4. Open the IP to Tel Manipulation table (**Setup** tab > **Signaling & Media** > **Gateway** >

Manipulation > Dest Number IP->Tel ).

Figure 17-2: Destination Phone Number Manipulation Table for IP-to-Tel Calls

*Destination Phone Number Manipulation for IP-to-Tel Calls [Remove +]*

GENERAL	ACTION
Index: 0	Stripped Digits From Left: 1
Name: Remove +	Stripped Digits From Right: 0
	Number of Digits to Leave: 255
	Prefix to Add:
	Suffix to Add:
	TON:
	NPI:
	Presentation:
MATCH	
Source IP Address:	
Source Prefix:	
Source Host Prefix:	
Destination Prefix: +	
Destination Host Prefix:	
Source IP Group: Any <a href="#">View</a>	

5. Click the **New** button to create a new manipulation rule.
6. On the toolbar, click **Burn** to save the settings to the device; the device resets, saving the settings to flash memory.

## 17.2 Configuring SBC Manipulation

- To configure SBC inbound manipulation rules:
1. Open the Inbound Manipulations table (**Setup** tab > **Signaling & Media** > **SBC** > **Manipulation** > **Inbound Manipulations**).
  2. Click **New** to create new rules (see examples below).

Figure 17-3: SBC Inbound Manipulations

*Inbound Manipulations [Incoming call Add+ to Source]*

Routing Policy: #0 [Default\_SBCRoutingPolicy]

GENERAL	ACTION
Index: 0	Manipulated Item: Source
Name: Incoming call Add+ to Source	Remove From Left: 0
Additional Manipulation: No	Remove From Right: 0
Manipulation Purpose: Normal	Leave From Right: 255
	Prefix to Add: +
	Suffix to Add:
MATCH	
Request Type: All	
Source IP Group: #2 [ITSP] <a href="#">View</a>	
Source Username Prefix:	
Source Host:	



*Inbound Manipulations [Outgoing call Remove+ to Source]*

Routing Policy #0 [Default\_SBCRoutingPolicy]

GENERAL	ACTION
Index: 1	Manipulated Item: Source
Name: Outgoing call Remove+ to Source	Remove From Left: 1
Additional Manipulation: No	Remove From Right: 0
Manipulation Purpose: Normal	Leave From Right: 255
	Prefix to Add:
	Suffix to Add:

MATCH
Request Type: All
Source IP Group: #1 [SBA] <a href="#">View</a>
Source Username Prefix: +
Source Host:

The configured inbound manipulation rules are shown below:

**Figure 17-4: Configured SBC Inbound Manipulation Rules**

Inbound Manipulations (2)

+ New Edit Insert ↑ ↓ | Page 1 of 1 | Show 10 records per page

INDEX	NAME	ROUTING POLICY	ADDITIONAL MANIPULATION	MANIPULATION PURPOSE	SOURCE IP GROUP	SOURCE USERNAME PREFIX	DESTINATION USERNAME PREFIX	MANIPULATION ITEM	REMOVE FROM LEFT	REMOVE FROM RIGHT	LEAVE FROM RIGHT	PREFIX TO ADD	SUFFIX TO ADD
0	Incoming call	Default_SBC	No	Normal	ITSP			Source	0	0	255	+	
1	Outgoing call	Default_SBC	No	Normal	SBA	+		Source	1	0	255		

- **To configure SBC outbound manipulation rules:**
  1. Open the Outbound Manipulations table (**Setup tab > Signaling & Media > SBC > Manipulation > Outbound Manipulations**).
  2. Click **New** to create new rules (see examples below).

Figure 17-5: SBC Outbound Manipulations

Outbound Manipulations [Incoming call Add+ to Destination]

Routing Policy #0 [Default\_SBCRoutingPolicy]

GENERAL	ACTION
Index: 0	Manipulated Item: Destination URI
Name: Incoming call Add+ to Destination	Remove From Left: 0
Additional Manipulation: No	Remove From Right: 0
Call Trigger: Any	Leave From Right: 255
	Prefix to Add: +
	Suffix to Add:
	Privacy Restriction Mode: Transparent

MATCH
Request Type: All
Source IP Group: #2 [ITSP] <a href="#">View</a>
Destination IP Group: #1 [SBA] <a href="#">View</a>
Source Username Prefix: +

Outbound Manipulations [Outgoing call Remove + Destination]

Routing Policy #0 [Default\_SBCRoutingPolicy]

GENERAL	ACTION
Index: 2	Manipulated Item: Destination URI
Name: Outgoing call Remove + Destination	Remove From Left: 1
Additional Manipulation: No	Remove From Right: 0
Call Trigger: Any	Leave From Right: 255
	Prefix to Add:
	Suffix to Add:
	Privacy Restriction Mode: Transparent

MATCH
Request Type: All
Source IP Group: #1 [SBA] <a href="#">View</a>
Destination IP Group: #2 [ITSP] <a href="#">View</a>
Source Username Prefix:

The configured outbound manipulation rules are shown below:

Figure 17-6: Configured SBC Outbound Manipulation Rules

Outbound Manipulations (2)

+ New Edit Insert

Page 1 of 1 Show 10 records per page

INDEX	NAME	ROUTING POLICY	ADDITIONAL MANIPULATION	SOURCE IP GROUP	DESTINATION IP GROUP	SOURCE USERNAME PREFIX	DESTINATION USERNAME PREFIX	MANIPULATED ITEM	REMOVE FROM LEFT	REMOVE FROM RIGHT	LEAVE FROM RIGHT	PREFIX TO ADD	SUFFIX TO ADD
0	Incoming ca	Default_SBC	No	ITSP	SBA	*	*	Destination	0	0	255	+	
2	Outgoing ca	Default_SBC	No	SBA	ITSP		+	Destination	1	0	255		

# Part V

## Maintenance



## 18 Upgrading SBA to Skype for Business

This chapter describes how to upgrade your device from Microsoft Lync Server (2010 / 2013) to Skype for Business and includes the following steps:

1. Upgradeable Mediant 800 SBA Platforms
2. Installing the SBA Skype for Business Image
3. Configuring the SBA



**Note:** SBA Skype for Business is compatible with Gateway/SBC software version (.cmp) 7.00A.053.006 and later.

### 18.1 Upgradeable Mediant 800 SBA Platforms

The following table lists the different Mediant 800B SBA platforms with Lync and indicates which can be upgraded to Skype for Business (including required SBA upgrade kit).

**Mediant 800B SBA Platforms and Required SBA Upgrade Kit**

SBA Platform		Upgradeable?	Orderable SBA Upgrade Kit
CPN	Description		
<b>M800-xxx-SBA</b> or <b>M800B-xxx-SBA</b>	OSN2 with 2G RAM	No (but can be used as Lync SBA in a Skype for Business environment)	n/a
<b>M800-xxx-SBA</b> or <b>M800B-xxx-SBA</b>	OSN2 with 4G RAM	Yes	<b>M800-SBA-SFB-UP</b> <ul style="list-style-type: none"> <li>• OSN pre-installed with Windows Server 2012 R2 and Microsoft Skype for Business SBA</li> <li>• License for Windows 2012 R2 OS</li> <li>• License for Skype for Business SBA</li> <li>• Dongle with Skype for Business image (for backup)</li> </ul>
<b>M800-xxx-SBA-N</b> or <b>M800B-xxx-SBA-N</b>	OSN5 with 2G RAM	No (but can be used as Lync SBA in a Skype for Business environment)	n/a

To identify your Mediant 800B SBA's OSN storage size (2 GB or 4 GB), do one of the following:

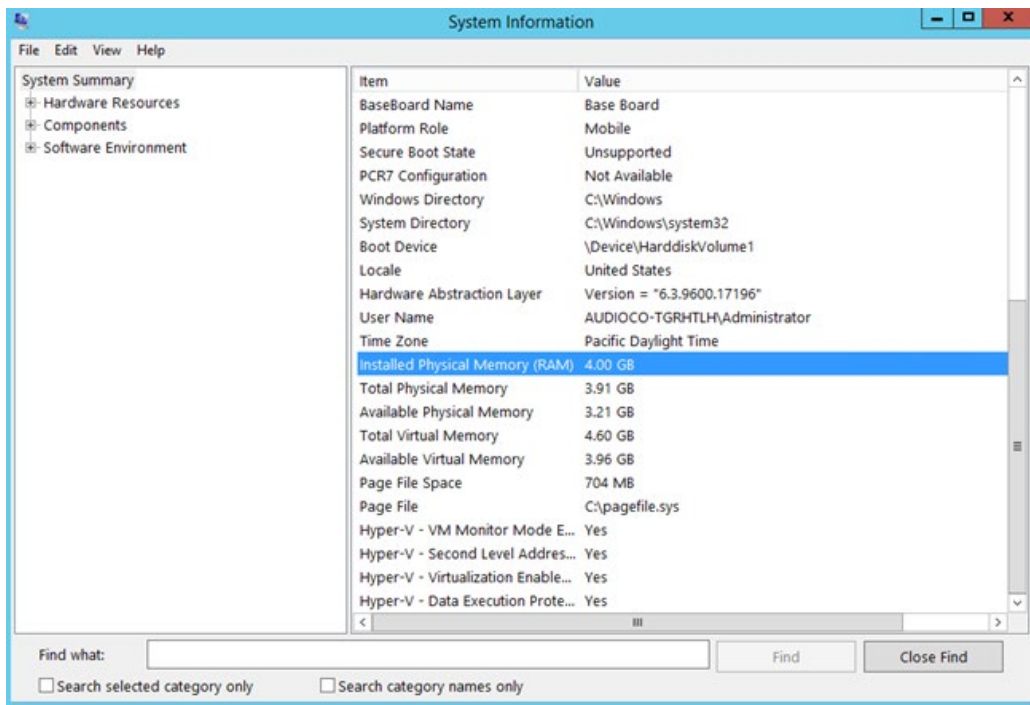
- **Method 1:** The table below lists all Mediant 800 SBA hardware P/Ns with their hardware revisions whose OSN2 is 2-GB RAM (and therefore, **cannot** be upgraded to Skype for Business):

**Mediant 800B SBA Platforms with OSN 2-GB RAM**

Hardware P/N	H/W Rev. (inclusive)	Description
GGWM00071	P01-04	Mediant 800 SBA 4FXS 4FXO 2LAN w OSN w/o PoE w Fans
GGWM00073	P01-06	Mediant 800 SBA 1PRI 12LAN w OSN w PoE w Fans
GGWM00074	P01-06	Mediant 800 SBA 1PRI 4FXS 12LAN w OSN w PoE w Fans
GGWM00075	P01-05	Mediant 800 SBA 4FXS 4FXO 12LAN w OSN w PoE w Fans
GGWM00076	P01-05	Mediant 800 SBA 4FXS 4FXO 4BRI 12LAN w OSN w PoE w Fans
GGWM00091	P01-04	Mediant 800 SBA 4FXS 4FXO 2LAN w OSN w/o PoE w Fans w T1 Wan
GGWM00099	P01-03	Mediant 800 SBA 4FXS 8FXO 4LAN w OSN w/o PoE w Fans
GGWM00118	P01-03	Mediant 800 SBA 4BRI 4LAN w OSN w/o PoE w Fans
GGWM00122	P01-03	Mediant 800 SBA 4BRI 8FXS 4LAN w OSN w/o PoE w Fans
GGWM00170	P01	M800B/SBA/4LAN/E1T1/Celeron
GGWM00171	P01	M800B/SBA/4LAN/E1T1/4FXS/Celeron
GGWM00172	P01	M800B/SBA/4LAN//E1T1/8FXS/Celeron
GGWM00173	P01	M800B/SBA/4LAN/4FXS/4FXO/Celeron
GGWM00174	P01	M800B/SBA/4LAN/4FXS/4FXO/4BRI/Celeron
GGWM00175	P01	M800B/SBA/4LAN/4FXS/8FXO/Celeron
GGWM00176	P01	M800B/SBA/4LAN/4FXS/4FXO/T1WAN/Celeron
GGWM00195	P01	M800B/SBA/4FXS/4FXO/Celeron/AutoAttendant
GGWM00196	P01	M800B/SBA/4FXS/E1T1/Celeron/AutoAttendant

- **Method 2:** View OSN storage size in the OS information of the OSN2:
  - a. Connect to Mediant 800 SBA through Remote Desktop Protocol (RDP).
  - b. Run ***Msinfo32***.
  - c. Open the System Information window, and then view the physical memory of the OSN server, as shown in the example below:

**Figure 18-1: Viewing OSN Memory Size (e.g., 4 GB) in OSN Server**



## 18.2 Installing the SBA Skype for Business Image

The SBA Skype for Business application is provided on the USB dongle that is shipped in your ordered SBA upgrade kit. The image also includes Microsoft Windows Server 2012 R2 installation.



**Warning:** When you install the SBA Skype for Business image, all previous SBA settings are restored to default settings.

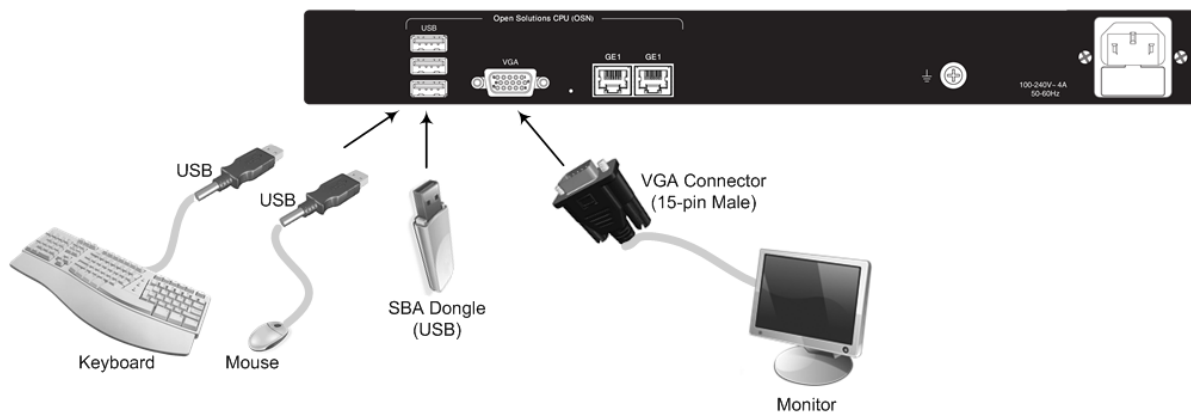


**Note:** For upgrading Microsoft Skype for Business Server on your device, you can also use AudioCodes SBA ProConnect tool, which is designed for remote management of multiple SBA devices. For more information, refer to the *SBA ProConnect User's Manual* and contact your AudioCodes representative.

➤ **To install the SBA Skype for Business image:**

1. Establish a direct connection with the OSN server using the VGA (see Section 21.1).
2. Plug the SBA dongle into one of the available USB ports on the rear panel:

**Figure 18-2: Connecting SBA Dongle for Direct Connection via VGA**



3. Reset the OSN server through Windows, as described in Section 22.2.



4. At the prompt, type the following:

```
X:\windows\system32>gorecover.bat
```

The following appears:

```
X:\windows\system32>gorecover.bat

X:\windows\system32>X:"\Program Files\RecoveryUtil\RecoveryUt
***** RECOVERY UTIL LOG *****
INFO: ***** Reading INI file parameters... *****
The filename, directory name, or volume label syntax is incor
The filename, directory name, or volume label syntax is incor
***** Configure remote desktop server *****
CONFIRM: Do you want to run recovery utility? (Y/N) █
```

5. At the confirmation prompt, type the following:

```
X:\windows\system32>Y
```

The Skype for Business and Windows installation begins. When complete, the following appears:

**Figure 18-3: Installation Complete**

```
Copyright (C) Microsoft Corp. All rights reserved.
Version: 6.1.7600.16385

[ 100% ] Applying progress
Successfully applied image.
Total elapsed time: 5 min 55 sec

INFO: ***** Set boot to be from image *****
bcdboot.exe C:\Windows /s C: /vBoot files successfully created.
The operation completed successfully.
The operation completed successfully.
The operation completed successfully.
INFO: Copying recovery image to second partition.
copy E:\imageM1K.wim D:\imageM1K.wim
      1 file(s) copied.

X:\windows\system32>
```

6. Unplug the SBA dongle from the USB port.
7. At the prompt, type the following:

```
X:\windows\system32>exit
```

The SBA server restarts to complete installation.

## 18.3 Configuring the SBA

Configure the SBA through the Web-based (HTTP) SBA Management interface's SBA wizard as described in Chapter 9.

## 19 Installing Microsoft Cumulative Updates

This chapter describes how to install Microsoft Cumulative Updates (CU) for SBA Skype for Business on your device. Installation is done through the device's Web-based (HTTP) SBA Management interface.



### Note:

- During the CU update process, one or more Skype for Business services are temporarily stopped (e.g., Front End service) and as a result, currently active traffic is terminated. Therefore, it is recommended to perform this update during low-traffic periods.
- For installing Microsoft Cumulative Updates (CU) on the device, you can also use AudioCodes SBA ProConnect tool, which is designed for remote management of multiple SBA devices. For more information, refer to the *SBA ProConnect User's Manual* and contact your AudioCodes representative.

### ➤ To install Microsoft CU:

1. Download the CU file (*SkypeServerUpdateInstaller.exe*) from AudioCodes' website at <https://audiocodes.sharefile.com/d-s8a84c39bff6446da>.
2. Log in to the SBA Management interface.

**Figure 19-1: Login Screen of SBA Management Interface**

3. Open the SBA Upgrade page (**Tools** menu > **SBA Software Upgrade**).
4. Select the **Skype Cumulative Update** option:

**Figure 19-2: SBA Upgrade Page**

5. Click **Browse** to select the downloaded Microsoft CU file.
6. Click **Upload**.

## 20 SBA Skype for Business Recovery

If you experience an SBA Skype for Business system failure, you need to re-install the SBA Skype for Business image, as described in Section 18.2 on page160.

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## 21 Connection Methods to SBA Server

You can connect to the SBA server using the following connectivity methods:

- Direct connection through VGA (see Section 21.1)
- HTTP/S connection (see Section 21.2)
- Remote Desktop connection (see Section 21.3)

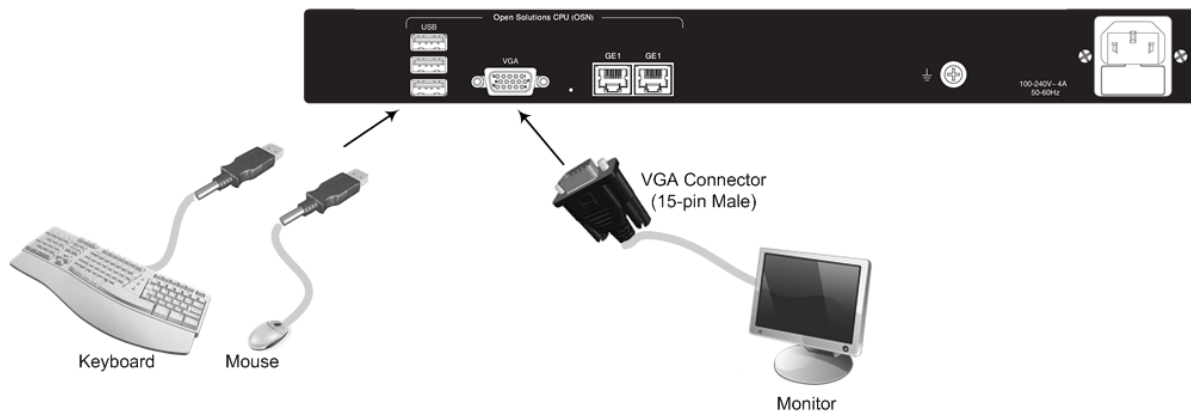
### 21.1 Direct Connection through VGA

The following procedure describes how to connect to the SBA server through a direct connection using the VGA connector.

➤ **To connect to SBA through a VGA-based connection:**

1. Using a 15-Pin D-type male connector, connect your monitor to the VGA female port located on the rear panel and labeled **VGA**.
2. Connect your mouse to one of the USB ports located on the rear panel and labeled **USB**.
3. Connect your keyboard to one of the USB ports located on the rear panel and labeled **USB**.

**Figure 21-1: Connecting SBA using VGA**



## 21.2 Connecting through HTTP/S

The following procedure describes how to connect remotely to the SBA server through HTTP/S.

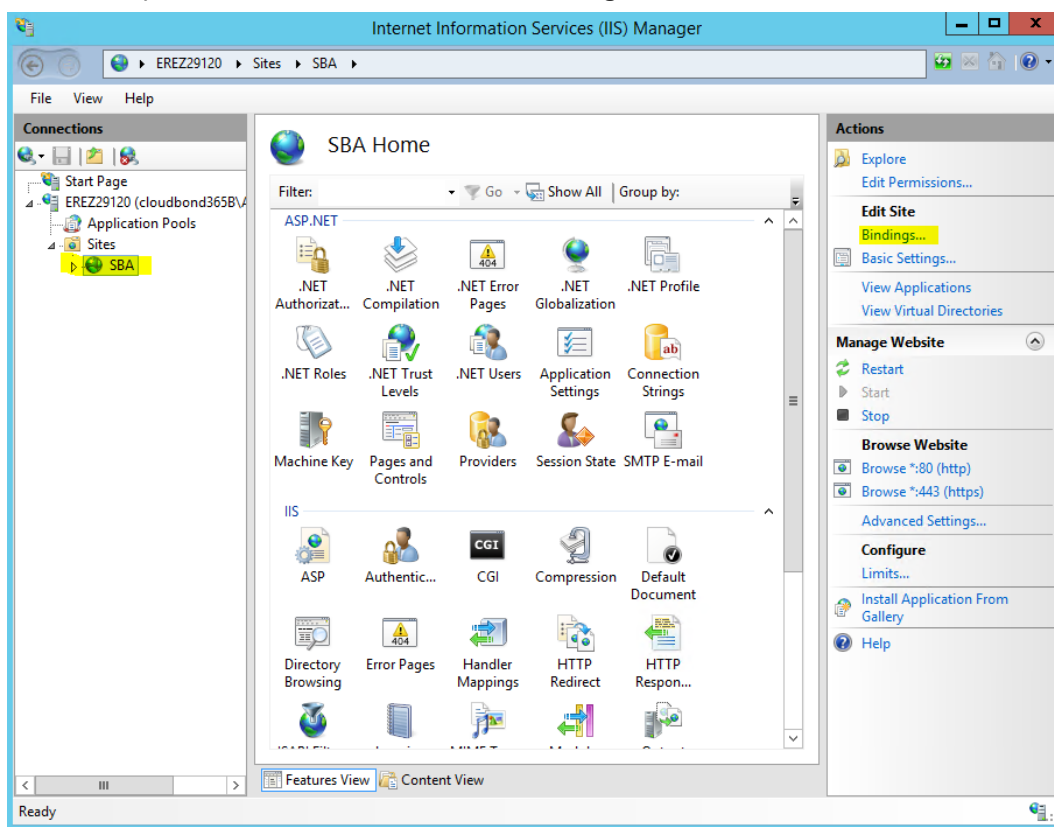
➤ **To connect to SBA through HTTP/S:**

1. Cable the OSN module to your network, as described in Section 8.3.
2. On your PC, open a Web browser, and then enter the IP address of the SBA Management interface.

If you require HTTPS for the Web interface, the easiest way to do this is to finish the SBA setup through HTTP, and then configure HTTPS support. This is done because in the setup procedure, a certificate is added to the SBA and it can be used by the Web server. If you wish to implement HTTPS from the beginning, you need to create a certificate for the server and use it for the Web.

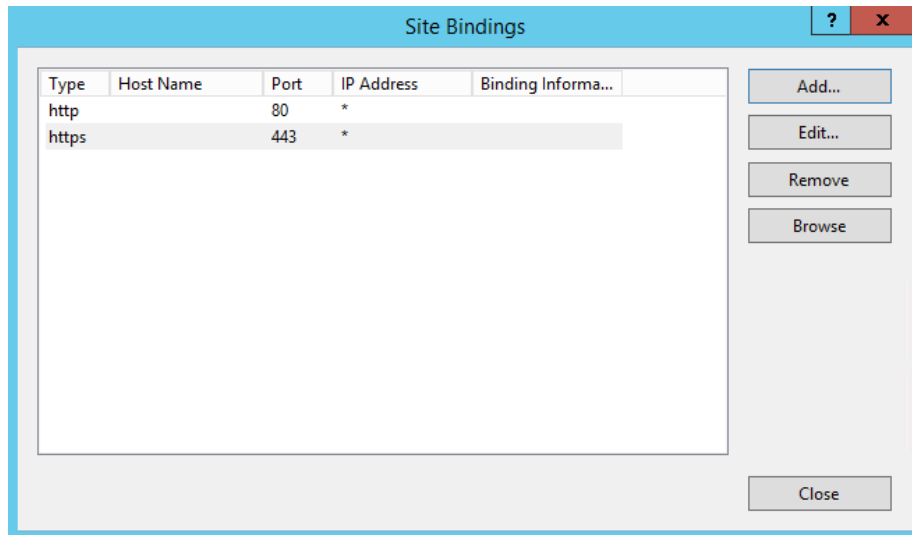
➤ **To configure HTTPS for SBA Web interface:**

1. Install a certificate for the SBA (through the normal SBA setup procedure, or added manually).
2. Open Microsoft Internet Information Services (IIS).
3. Open the SBA site and then click **Bindings**:

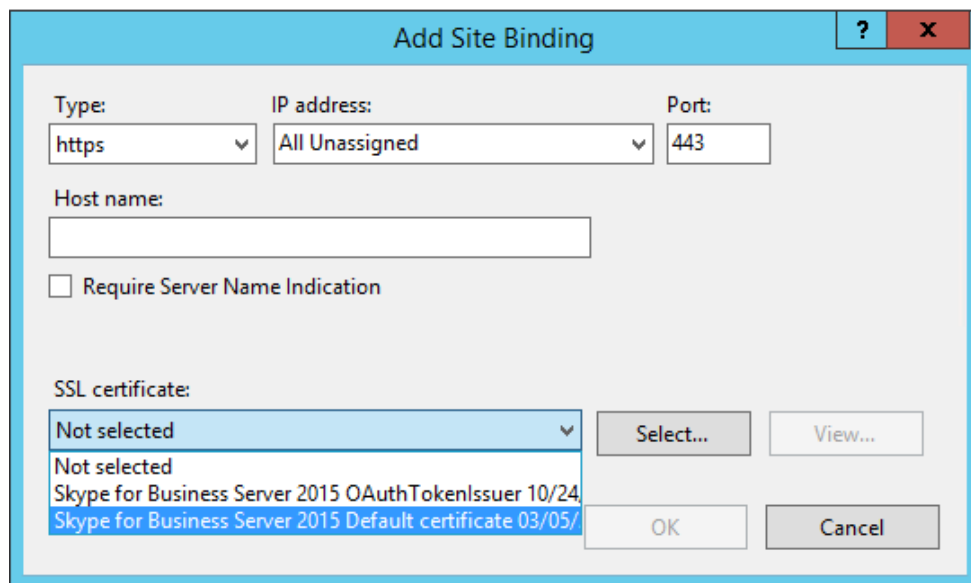




The following appears:



- If you don't have a binding line for HTTPS, click **Add**. If you have the HTTPS line, click **Edit**; the following appears:



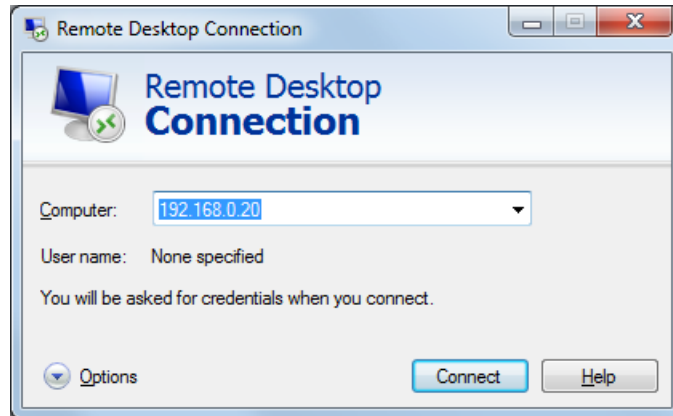
- From the 'Type' drop-down list, select **https**.
- From the 'SSL certificate' drop-down list, select the certificate created by the SBA setup (or use the certificate that you added for the Web interface). **Note:** Don't select the OAuth certificate.
- For the certificate created by the SBA, use the SBA FQDN as the Subject Name (SN). (When you access the SBA's Web interface using this as the Web certificate, you need to enter the SBA's FQDN as the URL.)
- You can add this like as note for the previse item
- By default, binding to port 80 is available. If you want to enable access only through HTTPS (and block HTTP), you need to delete this HTTP binding. Before doing this, check that HTTPS is functioning.

## 21.3 Connecting to SBA through Remote Desktop

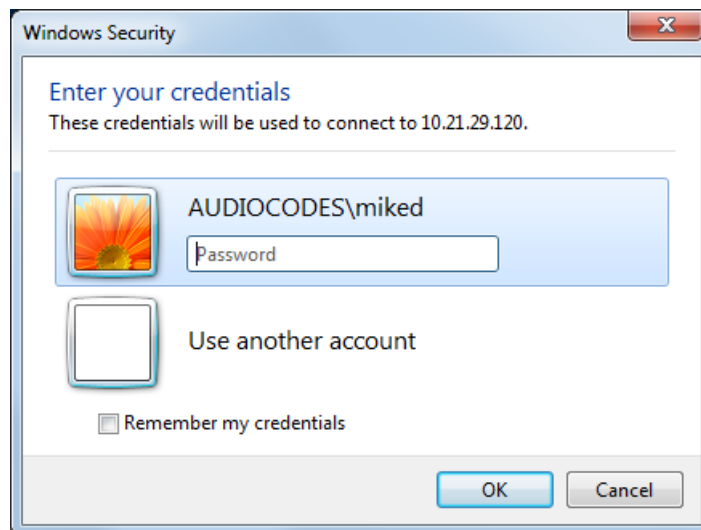
The following procedure describes how to connect remotely to the SBA server through Windows Remote Desktop.

➤ **To connect to SBA through Remote Desktop:**

1. Cable the OSN module to your network, as described in Section 8.3.
2. Start the Remote Desktop Connection program on your PC, and then in the 'Computer' field, enter the IP address of the SBA:



3. Click **Connect**:



4. Enter the SBA's password, and then click **OK**; you are connected to the SBA server.
5. Open the Web browser, and then enter the IP address of the SBA management server.

## 22 Resetting the SBA Server

You can reset the SBA server using the following methods:

- Hardware reset (see Section 22.1)
- Windows restart (see Section 22.2)
- SBA Management interface (see Section 22.3)

### 22.1 Resetting SBA using Reset Button

The following procedure describes how to reset the SBA server using the reset pinhole button on the rear panel.

➤ **To reset SBA using reset button:**

- Insert a sharp-pointed object (such as a drawing pin) into the reset pinhole button located on the rear panel, and then extract it after a second; the OSN server performs a reset.

### 22.2 Resetting SBA through Windows

The following procedure describes how to reset the SBA server through Windows on which the SBA server is running.

➤ **To reset SBA by shutting down Windows:**

1. Connect to the SBA server (Remote Desktop or direct through VGA).
2. Perform a Windows restart (e.g., from the **Start** menu, click **Restart**).

### 22.3 Resetting SBA through SBA Management Interface

You can reset the SBA through the SBA Management interface, as described in Section 10.5.3 on page 103.

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## 23 Running Anti-Virus Software

When Anti-Virus software is run on SBA components, make sure that the Antivirus file scanning exclusions are based on the Microsoft recommendations at <https://technet.microsoft.com/EN-US/library/mt629173.aspx?f=255&MSPPErr=-2147217396>.



# Part VI

## SNMP





## 24 SNMP Trap Alarms

This section describes the SNMP trap alarms of the SBA.

### 24.1 SBA Services Status Alarm

**Table 24-1: acSBAServicesStatusAlarm**

<b>Alarm</b>	acSBAServicesStatusAlarm		
<b>OID</b>	1.3.6.1.4.1.5003.9.30.2.2.0.1		
<b>Description</b>	Services status alarm. The services are Front End Server, Mediation Server, Replica Server, and Centralized Logging Service for Microsoft Skype for Business (Centralized Logging is not available for Lync 2010).		
<b>Source Varbind Text</b>	SBA Server		
<b>Alarm Text</b>	Indicates which of the above-mentioned services is down.		
<b>Event Type</b>	Other		
<b>Probable Cause</b>	Other		
<b>Additional Info</b>	When an SBA is configured, displays the 'SBA Description' field.		
<b>Alarm Severity</b>	<b>Condition</b>	<b>Text</b>	<b>Corrective Action</b>
<b>Critical</b>	Service is down	"SERVICE_STOPPED"	Start the service and check why the service stopped, using the event viewer.
<b>Major</b>	Service is paused	"SERVICE_PAUSED"	Start the service and check why the service paused, using the event viewer.
<b>Cleared</b>	Service is running	"SERVICE_RUNNING"	-
<b>Indeterminate</b>	Service in indeterminate state	"SERVICE_CONTINUE_PENDING" "SERVICE_PAUSE_PENDING" "SERVICE_START_PENDING" "SERVICE_STOP_PENDING"	Start the service and check why the service is in indeterminate state, using the event viewer.

## 24.2 SBA Disk Space Alarm

**Table 24-2: acSBADiskSpaceAlarm**

<b>Alarm</b>	acSBADiskSpaceAlarm		
<b>OID</b>	1.3.6.1.4.1.5003.9.30.2.2.0.4		
<b>Description</b>	Sent if the disk (C) usage level exceeds configured thresholds. Thresholds can be configured in the snmp_sba.ini under C:\SBA (requires service restart for the changes to take effect).		
<b>Source Varbind Text</b>	SBA Server		
<b>Event Type</b>	Other		
<b>Probable Cause</b>	Other		
<b>Additional Info</b>	-		
<b>Alarm Severity</b>	<b>Condition</b>	<b>Text</b>	<b>Corrective Action</b>
<b>Critical</b>	Disk usage level is over 90%	"Disk space usage Critical !!! (over 90%)"	Remove unnecessary files from disk. Clean log files.
<b>Major</b>	Disk usage level is between 80% and 90%	"Disk space usage Major (80 - 90%)"	Remove unnecessary files from disk. Clean log files.
<b>Cleared</b>	Disk usage level is below 80%	"Disk space usage is OK (0 - 80%)"	-

### 24.2.1 SBA CPU Status Alarm

**Table 24-3: acSBACpuStatusAlarm**

<b>Alarm</b>	acSBACpuStatusAlarm		
<b>OID</b>	1.3.6.1.4.1.5003.9.30.2.2.0.2		
<b>Description</b>	Sent if the SBA server's CPU utilization is above the threshold.		
<b>Source Varbind Text</b>	Processor Information/%Processor Time/_Total		
<b>Event Type</b>	Other		
<b>Probable Cause</b>	Other		
<b>Additional Info</b>	-		
<b>Alarm Severity</b>	<b>Condition</b>	<b>Text</b>	<b>Corrective Action</b>
<b>Critical</b>	CPU is greater than 90%	"High CPU usage Above 90%"	Using the task manager, check if the CPU load is constant or not. Locate the process that is causing the high CPU usage and check if high CPU is reasonable (for example, high CPU when performing Windows updates or running traces on the SBA). If there isn't a reason for the high CPU, reset the SBA and if this doesn't solve the issue, contact AudioCodes support.
<b>Major</b>	CPU greater than 80%	"High CPU usage Above 80%"	See corrective action above.
<b>Cleared</b>	CPU is less than 76%	-	-

## 24.2.2 SBA Memory Status Alarm

**Table 24-4: acSBAMemorytatusAlarm**

<b>Alarm</b>	acSBAMemorytatusAlarm		
<b>OID</b>	1.3.6.1.4.1.5003.9.30.2.2.0.3		
<b>Description</b>	Sent when the level of available physical memory on the SBA server is below the threshold.		
<b>Source Varbind Text</b>	Memory/% Available MByte		
<b>Event Type</b>	Other		
<b>Probable Cause</b>	Other		
<b>Additional Info</b>	-		
<b>Alarm Severity</b>	<b>Condition</b>	<b>Text</b>	<b>Corrective Action</b>
<b>Critical</b>	Available memory is less than 4%	"High memory usage, available memory is Below 4%"	<p>Using the task manager, locate the process that is causing the high memory usage.</p> <p>The SQL process can use a huge amount of memory, which is normal.</p> <p>If you install extra tools on the SBA, remove or disable them and check if this solves the high memory usage.</p> <p>On 2G RAM SBAs, memory usage can be high, but it should not have any impact on the service that the SBA provides.</p> <p>Perform a Windows update and SQL server update.</p> <p>If there isn't a reason for the high memory, reset the SBA and if this doesn't solve the issue, contact AudioCodes support.</p>
<b>Major</b>	Available memory is less than 7%	"High memory usage, available memory is Below 7%"	See corrective action above.
<b>Cleared</b>	Available memory is less than 8%	-	-

### 24.2.3 SBA Certificate Expired Alarm

**Table 24-5: acSbaCertificateExpiredAlarm**

<b>Alarm</b>	acSbaCertificateExpiredAlarm		
<b>OID</b>	1.3.6.1.4.1.5003.9.30.2.2.0.5		
<b>Description</b>	Sent when the certificate that is used to secure the connection between the SBA and the Datacenter is about to expire. The alarm is sent when the number of days to certificate expiration is below the threshold.		
<b>Source Varbind Text</b>	-		
<b>Event Type</b>	Other		
<b>Probable Cause</b>	Other		
<b>Additional Info</b>	-		
<b>Alarm Severity</b>	<b>Condition</b>	<b>Text</b>	<b>Corrective Action</b>
<b>Critical</b>	Number of days to certificate expiration is less than 2 days	"Certificate will expire in 2 days."	Using Windows mmc tool, check the expiration date of the certificates and locate the expired certificate. Sign the expired certificate and install it on the machine.
<b>Major</b>	Number of days to certificate expiration is less than 30 days	"Certificate will expire in 30 days."	See corrective action above.
<b>Cleared</b>	New valid certificate is installed.	-	-

### 24.2.4 SBA Performance Counter Alarm

**Table 24-6: acSbaPerfCounterAlarm**

<b>Alarm</b>	acSbaPerfCounterAlarm		
<b>OID</b>	1.3.6.1.4.1.5003.9.30.2.2.0.6		
<b>Description</b>	Sent when the configured performance counter's value is above or below the configured threshold.		
<b>Source Varbind Text</b>	(Performance counter full path)		
<b>Event Type</b>	Other		
<b>Probable Cause</b>	Other		
<b>Additional Info</b>	-		
<b>Alarm Severity</b>	<b>Condition</b>	<b>Text</b>	<b>Corrective Action</b>
<b>Critical</b>	Monitored value crossed the "Critical" threshold	"Performance counter <Full Path of Performance Counter> is <Above or Below> <Threshold Value>"	-
<b>Major</b>	Monitored value crossed the "Major" threshold	"Performance counter <Full Path of Performance Counter> is <Above or Below> <Threshold Value>"	-
<b>Cleared</b>	Monitored value falls below the "Major" threshold	-	-

## 25 Performance Monitoring SNMP MIBs

The following table lists the SNMP MIBs that provide performance monitoring status of the SBA.

**Table 25-1: Performance Monitoring MIBs for SBA Status**

MIB Name	Description
acSBAFrontEndServerStatus	Displays the status of the SBA Front End Server: <ul style="list-style-type: none"> <li>▪ service_continue_pending: The service is about to continue.</li> <li>▪ service_pause_pending: The service is pausing.</li> <li>▪ service_paused: The service has paused.</li> <li>▪ service_running: The service is running.</li> <li>▪ service_start_pending: The service is starting.</li> <li>▪ service_stop_pending: The service is stopping.</li> <li>▪ service_stopped: The service has stopped.</li> <li>▪ service_not_installed: The service is not installed or has installation errors.</li> </ul>
acSBAMediationServerStatus	Displays the status of the SBA Mediation Server: <ul style="list-style-type: none"> <li>▪ service_continue_pending: The service is about to continue.</li> <li>▪ service_pause_pending: The service is pausing.</li> <li>▪ service_paused: The service has paused.</li> <li>▪ service_running: The service is running.</li> <li>▪ service_start_pending: The service is starting.</li> <li>▪ service_stop_pending: The service is stopping.</li> <li>▪ service_stopped: The service has stopped.</li> <li>▪ service_not_installed: The service is not installed or has installation errors.</li> </ul>
acSBAReplicaServerStatus	Displays the status of the SBA Replica Server: <ul style="list-style-type: none"> <li>▪ service_continue_pending: The service is about to continue.</li> <li>▪ service_pause_pending: The service is pausing.</li> <li>▪ service_paused: The service has paused.</li> <li>▪ service_running: The service is running.</li> <li>▪ service_start_pending: The service is starting.</li> <li>▪ service_stop_pending: The service is stopping.</li> <li>▪ service_stopped: The service has stopped.</li> <li>▪ service_not_installed: The service is not installed or has installation errors.</li> </ul>

MIB Name	Description
AcSBACentLoggingAgentStatus	Displays the status of the SBA Central Logging agent: <ul style="list-style-type: none"> <li>▪ Skype for Business:                             <ul style="list-style-type: none"> <li>✓ service_continue_pending: The service is about to continue.</li> <li>✓ service_pause_pending: The service is pausing.</li> <li>✓ service_paused: The service has paused.</li> <li>✓ service_running: The service is running.</li> <li>✓ service_start_pending: The service is starting.</li> <li>✓ service_stop_pending: The service is stopping.</li> <li>✓ service_stopped: The service has stopped.</li> <li>✓ service_not_installed: The service is not installed or has installation errors.</li> </ul> </li> <li>▪ Lync 2010:                             <ul style="list-style-type: none"> <li>✓ service_non_available: The service is not supported by Lync 2010.</li> </ul> </li> </ul>
acSBASetupStatus	Displays the SBA setup status: <ul style="list-style-type: none"> <li>▪ setup_not_done: No step has been done.</li> <li>▪ setup_done: All steps have been successful.</li> <li>▪ setup_partial: At least one step is successful, not completed or returns an error.</li> </ul>

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