



Oracle SBC Configuration Template Outline for Microsoft Teams with Twilio Elastic SIP Trunking

Technical Application Note





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1 Intended Audience

This document is intended for use by Oracle Systems Engineers, third party Systems Integrators, Oracle Enterprise customers, partners and end users of the Oracle Enterprise Session Border Controller (SBC).

Please note, applying a configuration to the SBC via the Configuration Assistant will overwrite any existing configuration currently applied to the SBC. **We highly recommend this only be used for initial setup of the SBC. This feature is not recommended to be used to make changes to existing configurations.**

2 Introduction

When you first log on to the E-SBC, the system requires you to set the configuration parameters necessary for basic operation. To help you set the initial configuration with minimal effort, the E-SBC provides the Configuration Assistant. The Configuration Assistant, which you can run from the Web GUI or the Acme Command Line Interface (ACLI), asks you questions and uses your answers to set parameters for managing and securing call traffic. You can use the Configuration Assistant for the initial set up to make to the basic configuration. See "Configuration Assistant Operations" in the [Web GUI User Guide](#) and "Configuration Assistant Workflow and Checklist" in the [ACLI Configuration Guide](#)

3 Revision History

| Date | Document Version | Template Version | Comments |
|------------|------------------|------------------|------------------|
| 21-05-2021 | 1.0 | 1.0 | Initial Revision |

4 Document Overview

This Oracle document describes how to use our Configuration Assistance feature as a quick and simple way to configure the Oracle SBC for integration with Microsoft Teams Direct Routing and Twilio Elastic SIP Trunking.

These software releases with the configuration listed below can run on any of the following products:

- AP 1100
- AP 3900
- AP 4600
- AP 6350
- AP 6300
- VME

5 Requirements

- SBC running release SCZ840p5A or later
- TLS certificate for the SBC preferably in PKCS format, or access to MSFT supported CA to sign certificate once CSR is generated by the SBC. A list of supported CA's can be found [here](#). For Twilio side, list of supported CA's can be found [here](#)
- The template can be downloaded from our app note link given below.
- <https://www.oracle.com/technical-resources/documentation/acme-packet.html>

The template designed for Teams Twilio can be found under “Configuration Assistant Templates” section of the app note page.

6 Microsoft Teams Twilio Trunk Configuration Assistance Template

The following outline assumes you have established initial access to the SBC via console and completed the following steps:

- Configured boot parameters for management access
- Setup Product
- Set Entitlements
- Configured HTTP-Server to establish access to SBC GUI

For more information on how to complete the above, please refer to Section 6 of the [Oracle SBC integration with Teams Direct Routing and Twilio Elastic Sip Trunking Application Note](#)

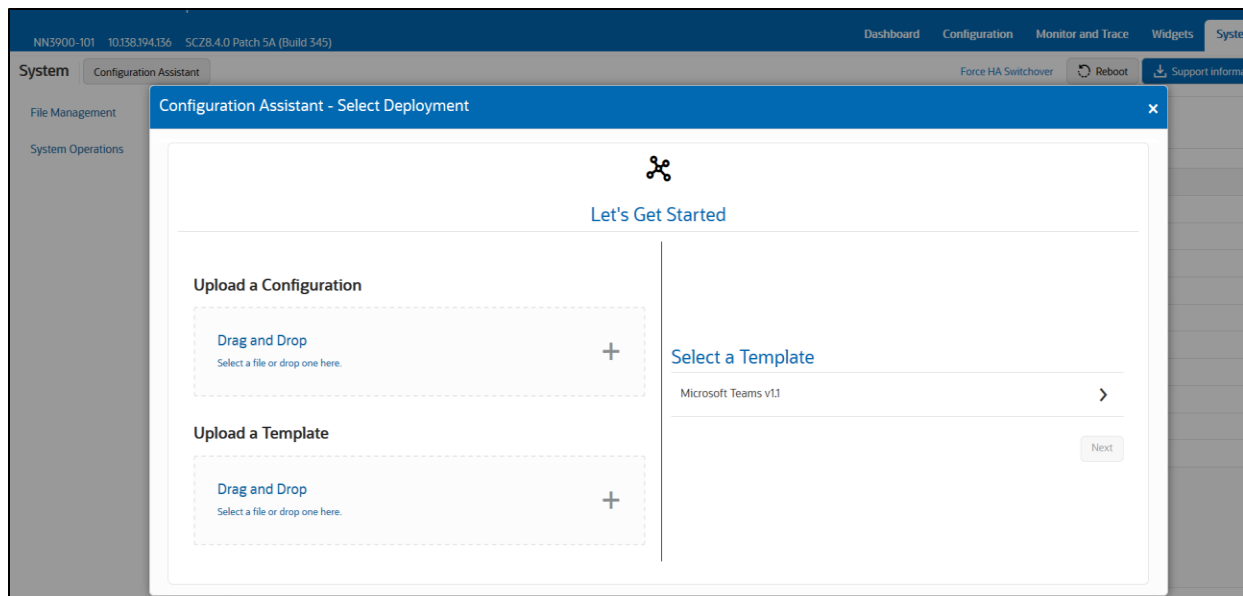
6.1 Initial GUI Access

The Oracle SBC WebGui can be accessed by entering the following in your web browser:

http(s)://<SBC Management IP>.

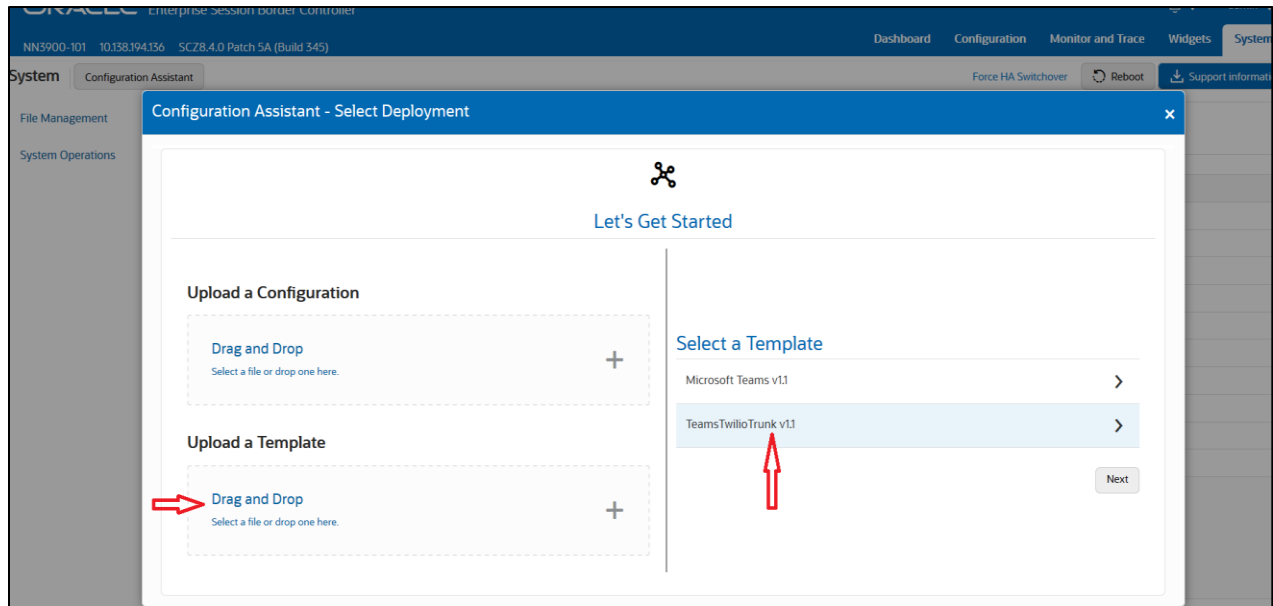
The username and password are the same as that of the CLI.

If there is no configuration on the SBC, the configuration assistant will show immediately upon login to the SBC GUI:

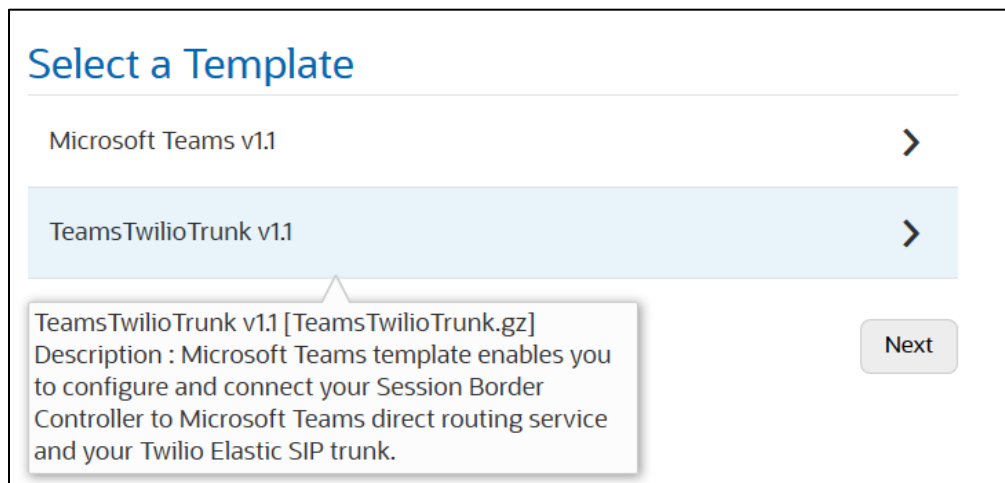


As you can see in the screen shot above, on the right side, Microsoft Teams is already listed under “Select a Template” which is the default template along with this patch. Please select “Upload a Template” tab on left hand side and select the TeamsTwilio template downloaded from the app note site to upload that to the SBC. **The template downloaded from the app note site will be in .gz(zipped) format.**

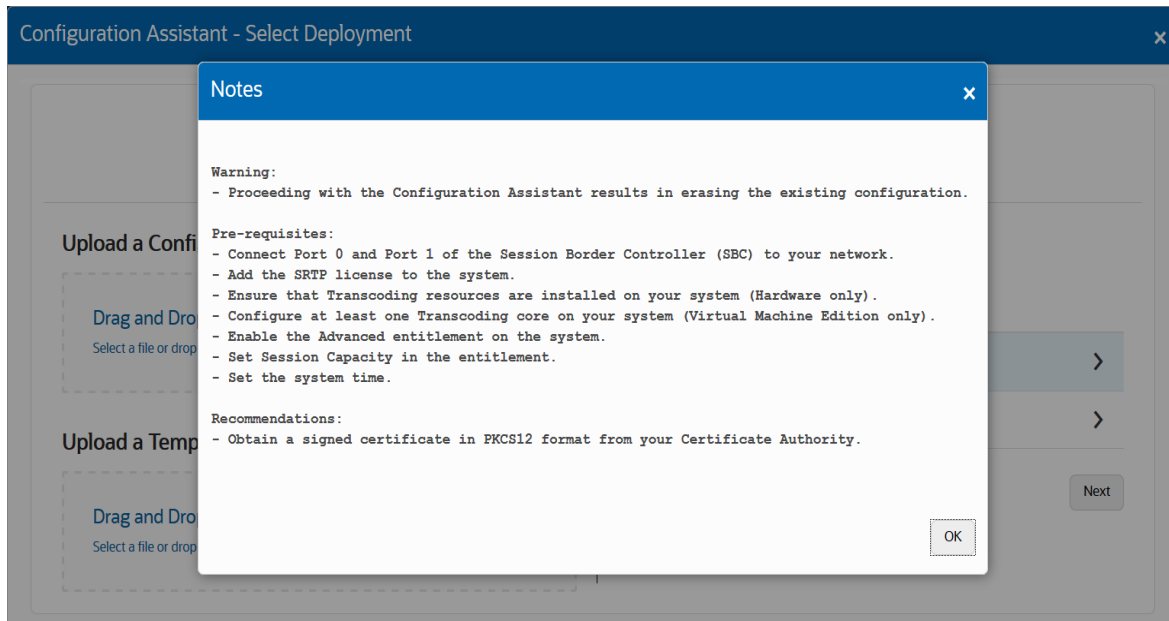
As an alternate, the template file downloaded from the site can also be loaded to /code/configAssistant/templates folder of the SBC using WinSCP or any file transfer software. Once done, the template shows up under Select Template tab as shown below.



Once you highlight “TeamsTwilioTrunkv1.1” template, you will see a pop up with the filename and description of the templates purpose:



Click **Next**. The following “Notes” will be displayed.

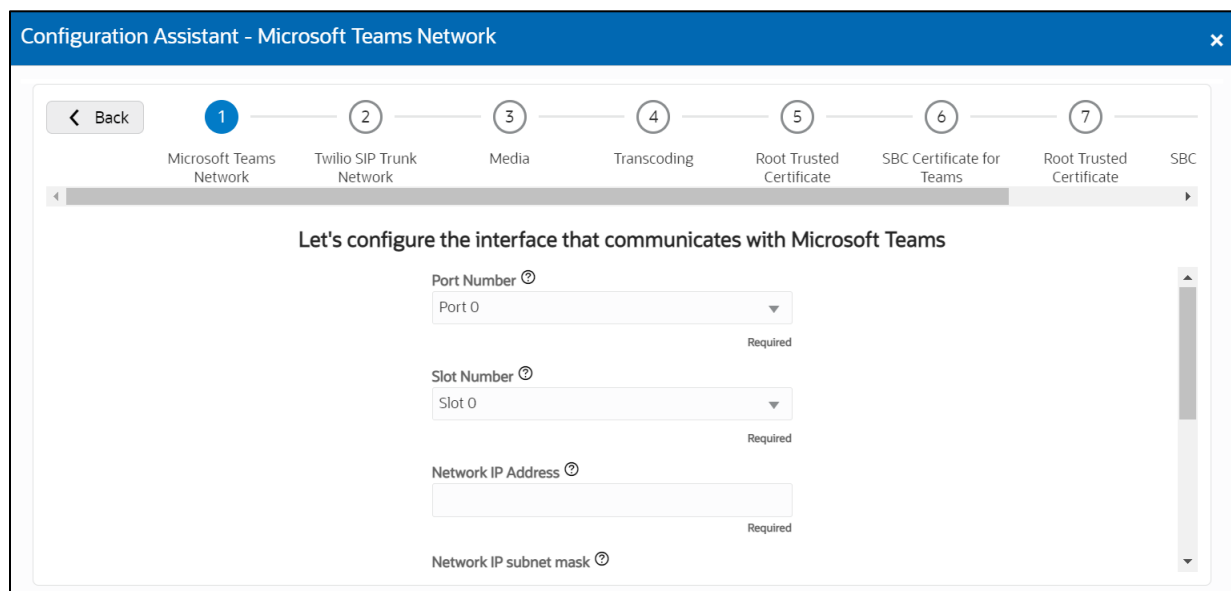


Click OK at the bottom.

6.2 Networking

6.2.1 Page 1-Microsoft Teams Network

Page 1 of the template is where you will configure the network information to connect Microsoft Teams Direct Routing.



Next to each field is a help icon. If you hover over the icon, you will be provided with a description or definition of each field. Also, pay close attention to which fields are listed as “required”.

6.2.2 Page 2-Twilio Elastic SIP Trunk Network

Page 2 of the template is where you will configure the network that connects to Twilio Elastic SIP trunking.

The top entry box on this page, “Twilio Session Agent IP/hostname”, in this field is where you will enter the next hop IP address for sip signaling to and from your Twilio Elastic SIP trunk.

Configuration Assistant - Twilio SIP Trunk Network

Progress bar: 2 (Twilio SIP Trunk Network), 3 (Media), 4 (Transcoding), 5 (Root Trusted Certificate), 6 (SBC Certificate for Teams), 7 (Root Trusted Certificate), 8 (SBC Certificate for Twilio). Skip >

Let's configure the Session-Agent and the Network-Interface that communicates with the Twilio Elastic SIP Trunk

Twilio Session Agent IP/hostname ⓘ
Required

Twilio Session Agent Port ⓘ
Required

Port Number ⓘ
Port 1
Required

Slot Number ⓘ

Once all required boxes are populated on each page, Top Right, *Skip* becomes *Next*. Click *Next* to proceed to the next page of the template.

6.3 Media and Transcoding

6.3.1 Page 3-Media

Page 3 of the template is where you configure the SBC for media bypass or non-media bypass. Your Teams side configures determines whether or not media will flow directly between the SBC and your Teams client, or from the SBC to a Microsoft Cloud media server.

Configuration Assistant - Media

Progress: 1 (Teams) ✓, 2 (Twilio SIP Trunk Network) ✓, 3 (Media) 3, 4 (Transcoding) 4, 5 (Root Trusted Certificate) 5, 6 (SBC Certificate for Teams) 6, 7 (Root Trusted Certificate) 7, 8 (SBC Certificate for Twilio) 8

Next >

Let's configure Media

Do you want to enable Media Bypass? No ☒ Yes ?

Click **Next** to proceed to the next page of the template.

6.3.2 Page 4-Transcoding

Page 4 is where you will be able to configure transcoding between the SBC and Microsoft Teams, and/or between your Twilio Elastic SIP trunk and Microsoft Teams.

Configuration Assistant - Transcoding

Progress: 1 (Teams) ✓, 2 (Twilio SIP Trunk Network) ✓, 3 (Media) ✓, 4 (Transcoding) 4, 5 (Root Trusted Certificate) 5, 6 (SBC Certificate for Teams) 6, 7 (Root Trusted Certificate) 7, 8 (SBC Certificate for Twilio) 8

Next >

Let's configure transcoding

Do you want to enable transcoding features (Comfort Noise, RTCP)? No ☒ Yes ?

Do you want to select media codecs (SBC to Twilio SIP trunk)? No ☒ Yes ?

Just to note, Microsoft Teams requires the use of both Comfort Noise and RTCP on call flows. Once transcoding features is set to “yes”, you will then have an option to select additional media codecs you want included in offers/answers toward Teams.

Configuration Assistant - Transcoding

1 2 3 4 5 6 7 8 Next

soft Teams network Twilio SIP Trunk Network Media Transcoding Root Trusted Certificate SBC Certificate for Teams Root Trusted Certificate SBC Certificate for Twilio

Let's configure transcoding

Do you want to enable transcoding features (Comfort Noise, RTPCP)? No ☒ Yes ?

Do you want to select media codecs (SBC to Microsoft Teams)? No ☒ Yes ?

Select media codecs ?

SILK X PCMU X

Required

Do you want to select media codecs (SBC to Twilio SIP trunk)? No ☒ Yes ?

Select media codecs (SBC to SIP Trunk) ?

PCMU X G722 X

If you select yes to either question regarding media codecs, you will be presented with a required drop down. You can select as many codecs from the list presented as you would like for each side.

6.4 Security

6.4.1 Page 5-Import Baltimore Root Trusted CA Certificate

Page 5 of this template is where the SBC will import the Baltimore Root CA certificate, which Microsoft uses to sign the certs it presents to the SBC during the TLS handshake.

Configuration Assistant - Root Trusted Certificate

1 2 3 4 5 6 7 8 Next

ims Twilio SIP Trunk Network Media Transcoding Root Trusted Certificate SBC Certificate for Teams Root Trusted Certificate SBC Certificate for Twilio

Let's start provisioning the trusted root certificate for Teams.

Do you consent to installing the Baltimore CyberTrust Root? No ☒ Yes ?

Certificate:

Data:

Version: 3 (0x2)

Serial Number: 33554617 (0x20000b9)

Signature Algorithm: sha1WithRSAEncryption

Issuer:

C=IE

O=Baltimore

OU=CyberTrust

CN=Baltimore CyberTrust Root

Validity

Not Before: May 12 18:46:00 2000 GMT

Importing the Baltimore Root CA certs is enabled by default.

6.4.2 Page 6-SBC Certificates for Teams side.

Page 6 of this template is where you will either import or create a tls certificate for the SBC.

The screenshot shows the 'Configuration Assistant - SBC Certificate for Teams' window. The progress bar at the top indicates the following steps: 1. Microsoft Teams Network (checked), 2. Twilio SIP Trunk Network (checked), 3. Media (checked), 4. Transcoding (checked), 5. Root Trusted Certificate (checked), 6. SBC Certificate for Teams (active), 7. Root Trusted Certificate, and 8. SBC Certificate for Twilio. A 'Skip >' button is visible at the end of the progress bar.

Let's start provisioning SBC certificates for Teams Side

Certificate provisioning type ⓘ
PKCS12
Required

Fully Qualified Domain Name or Common Name ⓘ
Required

PKCS12 certificate (.p12 or .pfx) ⓘ
Upload
Required

PKCS12 certificate password ⓘ

6.4.2.1 PKCS12 Import

By default, the SBC is set to import a certificate in PKCS 12 format. This is the simplest and recommended way to add a certificate to the Oracle SBC. Using this method, you will add the SBC's hostname under "FQDN or Common Name" field, upload a certificate from a Microsoft support CA, and enter the certificates password.

6.4.2.2 Certificate Signing Request (CSR)

The alternative to importing a PKCS12 certificate to the SBC is to configure a certificate and generate a certificate signing request that you will have signed by a Microsoft supported CA

The screenshot shows the 'Configuration Assistant - SBC Certificate for Teams' window. The progress bar at the top indicates the following steps: 1. Microsoft Teams Network (checked), 2. Twilio SIP Trunk Network (checked), 3. Media (checked), 4. Transcoding (checked), 5. Root Trusted Certificate (checked), 6. SBC Certificate for Teams (active), 7. Root Trusted Certificate, and 8. SBC Certificate for Twilio. A 'Back' button is visible at the start of the progress bar, and a 'Skip >' button is visible at the end.

Let's start provisioning SBC certificates for Teams Side

Certificate provisioning type ⓘ
CSR
Required

Fully Qualified Domain Name or Common Name ⓘ
Required

Country ⓘ

State ⓘ

Locality ⓘ

Organization ⓘ

Organization Unit ⓘ

Same as PKCS12, you will enter the SBC's hostname under "FQDN or Common Name" field (required) and answer the remaining question presented on this page (optional).

6.4.3 Page 7- Import DigiCert Root Trusted CA Certificate for Twilio Elastic SIP trunk.

Page 7 of this template is where the SBC will import the DigiCertRoot CA certificate, which Twilio Elastic SIP trunk uses to sign the certs it presents to the SBC during the TLS handshake.

Configuration Assistant - Root Trusted Certificate

Let's start provisioning the root trusted certificate for Twilio.

Do you consent to installing the DigiCert Root Cert ☒ Yes

Certificate:
Data:
Version: 3 (0x2)
Serial Number:
08:3b:e0:56:90:42:46:b1:a1:75:6a:c9:59:91:c7:4a
Signature Algorithm: sha1WithRSAEncryption
Issuer:
C=US
O=DigiCert Inc
OU=www.digicert.com
CN=DigiCert Global Root CA
Validity
Not Before: Nov 10 00:00:00 2006 GMT
Not After : Nov 10 00:00:00 2031 GMT
Subject:
C=US
O=DigiCert Inc
OU=www.digicert.com
CN=DigiCert Global Root CA

Importing the DigiCert Root CA certs is enabled by default

6.4.4 Page 8-SBC Certificates for Twilio Elastic SIP trunk side.

Page 8 of this template is where you will either import or create a tls certificate for the SBC. The Procedure to import the SBC certificate for Twilio Side is same as the way it is done for Teams side.

Configuration Assistant - SBC Certificate for Twilio

Progress bar: Microsoft Teams Network (✓), Twilio SIP Trunk Network (✓), Media (✓), Transcoding (✓), Root Trusted Certificate (✓), SBC Certificate for Teams (✓), Root Trusted Certificate (✓), SBC Certificate for Twilio (8), Review

Let's start provisioning SBC certificates for Twilio Side

Certificate provisioning type ⓘ
PKCS12
Required

Fully Qualified Domain Name or Common Name ⓘ

Required

PKCS12 certificate (.p12 or .pfx) ⓘ

Required

PKCS12 certificate password ⓘ

6.4.4.1 PKCS12 Import

By default, the SBC is set to import a certificate in PKCS 12 format. This is the simplest and recommended way to add a certificate to the Oracle SBC. Using this method, you will add the SBC's hostname under "FQDN or Common Name" field, upload a certificate from a Twilio supported CA, and enter the certificates password.

6.4.4.2 Certificate Signing Request (CSR)

The alternative to importing a PKCS12 certificate to the SBC is to configure a certificate and generate a certificate signing request that you will have signed by a Twilio supported CA

Configuration Assistant - SBC Certificate for Twilio

Progress bar: Microsoft Teams Network (✓), Twilio SIP Trunk Network (✓), Media (✓), Transcoding (✓), Root Trusted Certificate (✓), SBC Certificate for Teams (✓), Root Trusted Certificate (✓), SBC Certificate for Twilio (8), Review

Let's start provisioning SBC certificates for Twilio Side

Certificate provisioning type ⓘ
CSR
Required

Fully Qualified Domain Name or Common Name ⓘ

Required

Country ⓘ

State ⓘ

Locality ⓘ

Organization ⓘ

Organization Unit ⓘ

Same as PKCS12, you will enter the SBC's hostname under "FQDN or Common Name" field (required) and answer the remaining question presented on this page (optional).

6.5 Review

At the end of the template, you will notice in the top right, a "**Review**" tab. If all 8 pages presented across the top are showing green, indicating there are no errors with the information entered, click on the "Review" tab:

| Microsoft Teams Network | Generated Configuration | TeamsCSR CSR |
|-------------------------------|-------------------------|-------------------------|
| Port Number | certificate-record | |
| Port 0 | name | BaltimoreRootCert |
| Slot Number | common-name | Baltimore CyberTrust Ro |
| Slot 0 | certificate-record | |
| Network IP Address | name | DigiCertRootCert |
| 141.146.36.68 | common-name | DigiCert Root CA |
| Network IP subnet mask | certificate-record | |
| 255.255.255.192 | name | TeamsCSR |
| Network Gateway IP Address | common-name | sbcs.com |
| 141.146.36.65 | extended-key-usage-list | serverAuth |
| Primary DNS server IP Address | | ClientAuth |
| 8.8.8.8 | certificate-record | |
| DNS Domain | name | TwilioCSR |
| | state | California |
| | locality | Redwood City |
| | organization | Oracle Corporation |
| | unit | Oracle CGBU-LABS BOSTON |
| | common-name | telechat.o-test06161977 |
| | http-server | |
| | name | webServerInstance |

On the left side of the review contains the entries for each page. Each page has an "**Edit**" tab that can be used to make changes to the information entered on that specific page without having to go through the entire template again.

On the right side of the review page, under the "**Generated Config**" tab is the ACLI output from the SBC. This is the complete configuration of the SBC based on the information entered throughout the template.

Also on the right side of the review page you may see another tab, "**TeamsCSR CSR**".

On Page 6 or page 8 of the template, if you chose CSR from the drop down menu instead of PKCS, the SBC configures a certificate record and generates a certificate signing request for you. Also, if you choose CSR on both pages (pages 6 and 8), there will be two CSR's on the review page.

Click the copy button under the CSR, and paste the output into a text file. Next, provide the txt file to your CA for signature. Once the certificate is signed by a Microsoft or Twilio supported CA, you will need to import that certificate into the SBC manually, either via ACLI or through the GUI.

Note: if you chose to import a certificate in PKCS12 format, the CSR tab will not be present under review.

6.6 Download and/or Apply

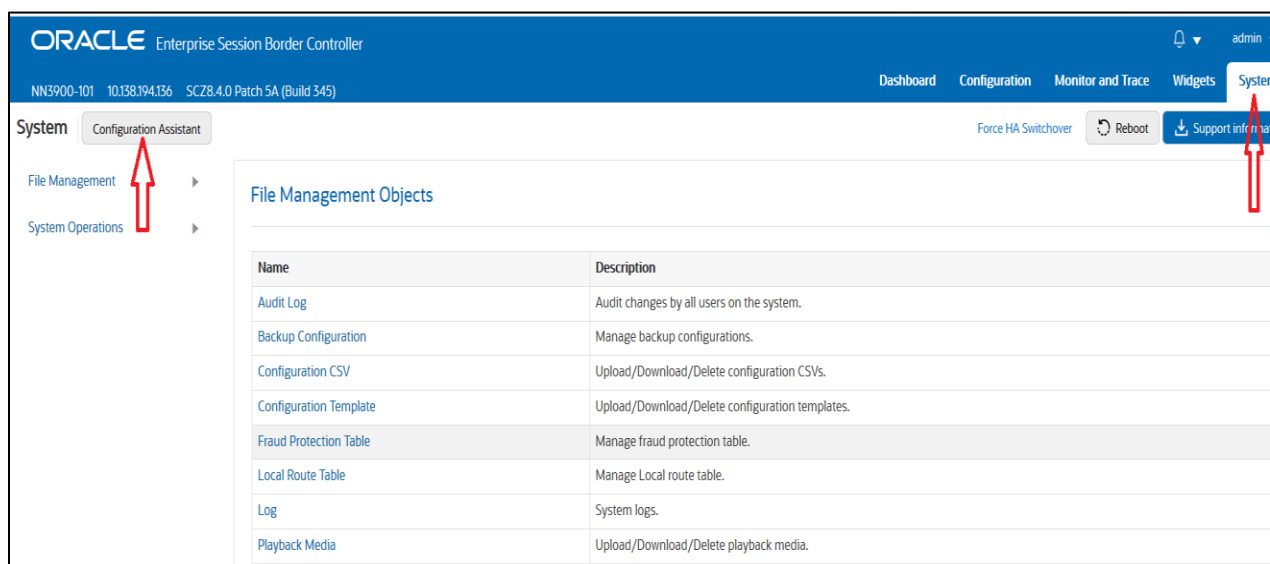
Now that the entries provided throughout the template have been reviewed, and the CSR has been copied into a text file (optional), the template provides you with the ability to “Download” the config by clicking the “**Download**” tab on the top right. Next, click the “**Apply**” button on the top right, and you will see the following pop up box appear:

Now you can click “**Confirm**” to confirm you want to apply the configuration to the SBC. The SBC will reboot. When it comes back up, the SBC will have a basic configuration in place for Microsoft Teams Direct Routing.

7 Configuration Assistant Access

Upon initial login, if the Configuration Assistant Template does not immediately appear on the screen, you can access by clicking on the “**SYSTEM**” tab, top right of your screen.

Next, click on the “**Configuration Assistant**” tab, top left.



This allows end users to access the Configuration Assistance at any time through the SBC GUI.



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Oracle Corporation, World Headquarters

500 Oracle Parkway
Redwood Shores, CA 94065, USA

Worldwide Inquiries

Phone: +1.650.506.7000
Fax: +1.650.506.7200

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