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# Microsoft Skype for Business

Installation Guide for Patton SmartNode eSBC & VoIP Gateway



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#### **Document Revision History**

Version	Reason for Change	Date	Author
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## **1** Introduction

This Install Guide includes a general overview of requirements and provides the configuration basics to interconnect Patton SmartNode VoIP Gateways and SBC's with Microsoft<sup>®</sup> Skype for Business infrastructure.

#### Content of this document:

- Presentation of the Patton SmartNode VoIP Gateway concept
- Basics for a simple setup
- Sample SmartNode configuration file & Web Wizard working with Microsoft<sup>®</sup> Skype for Business 2015

#### NOT part of this document:

- Detailed configuration of Microsoft<sup>®</sup> Skype for Business 2015
- Detailed configuration capabilities of Patton SmartNode VoIP Gateways

For more technical details, please visit the Patton SmartNode webpage (<u>http://www.patton.com/smartnode</u>).

More configuration notes, samples and manuals are available. https://www.patton.com/manuals/

## 2 SmartNode overview

Patton's SmartNode eSBC & VoIP Gateway have been certified for Skype for Business 2015 by Tekvision accredited lab.

The SmartNoed products may be used in conjunction with Skype for Business for

- VoIP Gateway connecting legacy equipment to SfB
- PSTN Gateway (ISDN BRI / PRI, FXO)
- eSBC (Enterprise Session Border Controller
  - Service demarcation
  - Protocol conversion (SIP TCP to SIP UDP)
  - VoIP Security SIP TLS / SRTP
  - IPv4 to IPv6 conversion

The SmartNode products support the following features:

• Media bypass (enabled or disabled)



- Caller ID Restriction
- Call Park and Retrieve
- Simultaneous Ringing
- Call On Hold
- Call Fork
- Call Forward
- Blind and Consultative Transfer
- Conference (ad-hoc and Dial-in)
- DNS Load Balancing and Failover
- Fax
- IPv4 and IPv6 dual stack
- TCP/TLS and SRTP

## **3 Configure Skype for Business**

#### 3.1 Configuring the E-SBC device as an IP/PSTN Gateway

## This section describes how to configure the E-SBC device as an IP/PSTN Gateway in Skype for Business.

Configure the E-SBC device as an IP/PSTN Gateway and associate it with the Mediation Server:

On the server where the Topology Builder is located, start the Skype for Business Server 2015 Topology Builder (figure 1).





Figure 1

The following screen is displayed and Click the Download Topology from the existing deployment option and then click OK.



is is	Topology Builder 🛛 🗙					
Welcome to Topology Build Server topology document.	ler. Select the source of the Skype for Business					
Download Topology fro Retrieve a copy of the c store and save it as a lo existing deployment.	om existing deployment urrent topology from the Central Management cal file. Use this option if you are editing an					
<ul> <li>Open Topology from a local file</li> <li>Open an existing Topology Builder file. Use this option if you have work in progress.</li> </ul>						
<ul> <li>New Topology Create a blank topology and save it to a local file. Use this option for defining new deployments from scratch.</li> </ul>						
Help	OK Cancel					
	Figure 2					

In the file name field, enter a name and Click **Save** to save the downloaded topology.

5	Save Topology As		x
⊚ ⊚ - ↑ ႃ	« administrat 🕨 Documents 🛛 🗸 🖒	Search Documents	Q,
Organize 👻 New	folder	8==	- 🕜
🔆 Favorites	Name	Date modified	Туре
📰 Desktop	NewDefaultTopology.tbxml	6/17/2015 7:31 AM	TBXML Fi
鷆 Downloads	Project Topology.tbxml	10/13/2015 12:59	TBXML Fi
🔢 Recent places	Test-Topology-6-24-2015.tbxml	8/11/2015 12:59 AM	TBXML Fi
This PC This PC Desktop Documents Nownloads Music Pictures Videos	<ul> <li>✓</li> <li>✓</li> </ul>		>
File name:	Project topology		~
Save as type:	Topology Builder files (*.tbxml)		~
) Hide Folders		Save Can	cel



#### Downloaded Topology will be as shown below:

S S	kype for Business Server 2015, Topology Builder	_ <b>D</b> X
File Action Help		
File       Action       Help         ■       Skype for Business Server         ■       CleanDefaultTopology         >       □       Lync Server 2010         >       □       Lync Server 2013         ■       □       Skype for Business Server 2015         >       □       Standard Edition Front End Servers         □       □       Director pools         □       Director pools       □         □       Mediation pools       □         □       Persistent Chat pools       □         □       Video Interop Server pools       □         ■       SQL Server stores       □         □       File stores       □       □         □       File stores       □       □         □       Office Web Apps Servers       □       `         □       SIP Video trunks       □       SIP Video trunks         □       SIP Video trunks       □       Branch sites	SIP domain Simple URLs Central Management Server	
		1
	Ac	livate Windows

Right-click **PSTN Gateway** under shared components and from the pop-up menu, choose **New IP/PSTN Gateway**.

SQL Server stores			
File stores			
PSTN New IP/PSTN C	ateway		
Generation Generatio Generation Generation Generation Generation Generation G	,		
🗀 Video 🛛 Help			
🚞 SIP Video trunks			
🚞 Branch sites			



Define the PSTN Gateway FQDN by providing an FQDN as shown below and click **Next.** 

16	Define New IP/PSTN Gateway	x
5	Define the PSTN Gateway FQDN	
Define th FQDN: *	he fully qualified domain name (FQDN) for the PSTN gateway.	
pattons	sbc.sfblabs.local	
Help	Back Next Cancel	]

Select Enable IPv4 and Click Next to proceed,



Define New IP/PSTN Gateway
Define the IP address
Enable IPv4     Use all configured IP addresses.     Imit service unage to calacted IP addresses.
PSTN IP address:
Enable IPv6
Use all configured IP addresses.
Limit service usage to selected IP addresses.      PSTN IP address:
Help Back Next Cancel

Define the root trunk by providing the Listening port as **5060**, Select SIP Transport Protocol as **TCP**, Select the **Mediation pool** as Associated Mediation Server and Associated Mediation Server port as **5060** as shown below and Click **Finish.** 

Edit Properties	x
Trunk name: *	
pattonsbc.sfblabs.local	
Associated PSTN gateway:	
pattonsbc.sfblabs.local CleanDefaultTopology	-
Listening port for IP/PSTN gateway: *	
5060	
SIP Transport Protocol:	
тср	-
Associated Mediation Server:	_
fe.sfblabps.local CleanDefaultTopology	•
Associated Mediation Server port: *	
5060	
Help OK Cancel	



Configured **PSTN gateway** and **Trunk** will be listed in the Topology Builder as shown below.

Sky	e for	Business Server 2015, To	pology Builder		_ 🗆 X
File Action Help					
File Action Help		PSTN Gateway FQDN: IPv4 addresses: Alternate media IP address: Trunks:	pattonsbc.sfblabs.local Use all configured lPv4 Not configured Root T ✓ pattonsbc.sfbla	l 4 addresses Trunk ibsJocal	Mediation Serv fe.sfblabps.local
Branch sites	~	<	ш	A	tivate Windows

#### **3.2** Associating the IP/PSTN Gateway with the Mediation Server

This section describes how to associate the IP/PSTN Gateway with the Mediation Server.

#### To associate the IP/PSTN Gateway with the Mediation Server:

- Expand the **Mediation pools** folder and then right-click the Mediation server pool.
- From the shortcut menu, choose **Edit Properties**, as shown in figure below.



File Action Help	^				
<ul> <li>Skype for Business Server 2015</li> <li>Standard Edition Front End Servers</li> <li>fe.sfblabps.local</li> <li>Enterprise Edition Front End pools</li> <li>Director pools</li> </ul>		Mediation Server PSTN TLS listening port: TCP listening port: Trunks:	gateway 5067 - 506 5060 - 506 Default	57 50 Trunk	Gateway 199.242.57.133
<ul> <li>Mediation pools</li> <li>festfulshoelocal</li> <li>festfulshoelocal</li> <li>festfulshoelocal</li> <li>festfulshoelocal</li> <li>festfulshoelocal</li> <li>festfulshoelocal</li> <li>festfulshoelocal</li> <li>festfulshoelocal</li> <li>festfulshoelocal</li> </ul>	er.		2	pattonsbc.sfblabs.local	pattonsbc.sfblabps.lor <u>172.16.29.195</u> pattonsbc.sfblabs.loc;
<ul> <li>▲ Trunks</li> <li>♥ pattonsbc.sfblabps.local</li> <li>♥ pattontrunk2</li> <li>♥</li> </ul>					

In Edit properties Window, Choose **PSTN gateway** and select the trunk listed under **Mediation server PSTN gateway** and click **Make Default** and click **OK** to associate the gateway with Mediation Server.

6	Edit Pr	operties	_	
PSTN gateway	Mediation Server PSTN gateway			•
	Listening ports: * TLS: 5067 - Enable TCP port The TCP port of this Mediation Server m The following trunks are associated with default. A default trunk is required only R2.	5067 TCP: 5060 - 1 nust be enabled because a TCP ga n this Mediation Server. Click Make when your topology contains Offi	5060 teway depends on it. e Default to mark a trunk a ce Communications Serve	ıs r 2007
	Trunk	Gateway	Site CleanDefaultTo	^ =
	✓ pattonsbc.sfblabps.local	pattonsbc.sfblabps.local	CleanDefaultTo pology	
	173100.105	Ма	CleanDefaultTo	efault
Help			OK	Cancel



Publish the Topology by selecting Action>Topology>Publish



#### Click **Next** to proceed **Publish topology** in the conformation screen.

19	Publish Topology	x
P	ublish the topology	
lr p ci	n order for Skype for Business Server 2015 to correctly route messages in your deployment, you must ublish your topology. Before you publish the topology, ensure that the following tasks have been ompleted:	
v	<ul> <li>A validation check on the root node did not return any errors.</li> <li>A file share has been created for all file stores that you have configured in this topology.</li> <li>All simple URLs have been defined.</li> <li>For Enterprise Edition Front End pools and Persistent Chat pools and for Monitoring Servers and Archiving Servers: All SQL Server stores are installed and accessible remotely, and firewall exceptions for remote access to SQL Server are configured.</li> <li>For a single Standard Edition server, the "Prepare first Standard Edition server" task was completed.</li> <li>You are currently logged on as a SQL Server administrator (for example, as a member of the SQL sysadmin role).</li> <li>If you are removing a Front End pool, all users, common area phones, analog devices, application contact objects, and conference directories have been removed from the pool.</li> </ul>	< III >
	Help Back Next Cancel	



Publish Topol	ogy 🛛 🗙
Publishing wizard complete Your topology was successfully published.	
Step       Publishing topology       Downloading topology       Downloading global simple URL settings       Updating role-based access control (RBAC) roles       Enabling topology	Status     View Logs       Success     Success       Success     Success       Success     Success
To close the wizard, click Finish.	
Help	Back Finish Cancel

Once the topology is successfully Published, Click **Finish** to Exit the Wizard as shown in above figure.

#### **3.3 Configurations in Skype for Business Server 2015 Control Panel**

Adding the Trunk to the Skype for Business Control Panel.

In Skype for Business Control panel, Under Voice routing, choose Trunk configuration, Click New and select Pool trunk.

5				Skype fo	r Business Serve	er 2015 Control	Panel		<b>_</b>	
Skype for Bu	siness Server								Administrator   6.0.9319.0   Privacy :	Sign o stateme
Home	DIAL PLAN	VOICE POLIC	Y ROUTE	PSTN USAGE	TRUNK CONFI	SURATION TEST	VOICE ROUTING			
Users Topology	Create vo	ice routing te	st case infor	mation						•
IM and Presence										
Persistent Chat					Q					
Voice Routing	- Aller -	/ 548 W	Action T	Commit T						
Voice Features	Site trunk		ACCOUNT	▲ Scope	State	Media bypass	PSTN usage	Calling number rules	Called number rules	
Response Groups	Pool trunk			Global	Committed			0	0	
Conferencing		-								
Clients										
Federation and External Access										
Monitoring and Archiving										
Security										
Network Configuration										



ele	ect a Service		0
			-
			ر ر
	Service	Site	
		CleanDefaultTopology	
	PstnGateway:pattonsbc.sfblabp	CleanDefaultTopology	
	PstnGateway:pattontrunk2	CleanDefaultTopology	
		ОК	Cancel

In the New Trunk configuration page select the parameters as shown below and click **OK**.



Skype for Busi	ness Server	Administrator   Sign ou 6.0.9319.259   Privacy statemen
Home	DIAL PLAN VOICE POLICY ROUTE PSTN USAGE TRUNK CONFIGURATION TEST VOICE ROUTING	
Users		
Topology	Create voice routing test case information	*
M and Presence		
Persistent Chat	New Trunk Configuration - PstnGateway:pattonsbc.stblabps.local	٩
/oice Routing		•
/oice Features	20	
esponse Groups	Encryption support level:	
Conferencing	Required	
lients	Enable sending refer to the pateway	
ederation and	✓ Enable media bypass	
External Access	Centralized media processing	
Monitoring and Archiving	Enable RTP latching	
Security	Chable forward call history	
Network	Enable forward P-Asserted-Identity data	
Configuration	Enable outbound routing failover timer	
	Associated PSTN Usages	
	Select Remove 👚 🦊	
	PSTN usage record Associated routes Act	ivate Windows

Select the newly added trunk and choose commit and Click Commit all.

Skype for Bu	siness Server			Administrator   Sign 0.9319.259   Privacy statem
Home	DIAL PLAN VOICE POLICY ROUTE PSTN USAGE TRUNK CONFIGURATION	N TEST VOICE ROUTING		
Users				
Topology	Create voice routing test case information			~
IM and Presence				
Persistent Chat	٩			
Voice Routing				
Voice Features	♦ New ▼      ✓ Edit ▼ Action ▼ Commit ▼      Paviaw uncommitted changes			
Response Groups	Name Review and on millinges Medi	a bypass PSTN usage	Calling number rules	Called number rules
Conferencing	PstnGateway:pattonsbc.sfblabps.k     Cancel selected changes	<b>√</b>	0	0
Clients	PstnGateway:sonussbc.sfblabps.lc Cancel all uncommitted changes	Sonus PSTN	0	0
Federation and External Access				
Monitoring and Archiving				
Security				
Network Configuration				
			Activate Windo	)WS
			Go to System in Cor	trol Panel to activate

**Configuring Voice Policy in Control panel**. Under **Voice Routing >Voice Policy** Click **New** and choose **User Policy**.



Home	DIAL PLAN VOICE POLICY ROUTE PSTN USAGE TRUNK CONFIGURATION TEST VOICE ROUTING	
Users		
Topology	Create voice routing test case information	~
IM and Presence		
Persistent Chat	٩	
Voice Routing		0
Voice Features	New     Edit     Action     Commit      Site policy     A Srong     State     DETN usage     Description	U
Response Groups	User policy al Global Committed	
Conferencing	3 voice policy 1 User Committed PSTN-1	
Clients		
Federation and External Access		

#### Name the New Voice Policy and Click New under Associated PSTN Usages.



#### Name the New PSTN Usage Record and Click New under Associated Routes.

Home	DIALPLAN VOICE POLICY ROUTE PSTNUSAGE TRUNK CONFIGURATION TEST VOICE ROUTING
Users	
Topology	Create voice routing test case information
IM and Presence	
Persistent Chat	New Voice Policy ▶ New PSTN Usage Record
Voice Routing	
Voice Features	Patton, PSTN
Response Groups	
Conferencing	Associated Routes
Clients	New Seec. Show details. Kemove
Federation and	Name Fallen o nach



Name the **New voice Route** and add an associated trunk to it. To add trunk click the **Add** button under **Associated trunk** and choose the corresponding trunk and click **OK**.

Home	DIAL PLAN VOICE POLICY ROUTE PSTN USAGE TRUNK CONFIGURATION TEST VOICE ROUTING	
Users Topology	Create voice routing test case information	~
IM and Presence	Fritt Voire Policy > New PSTN I Isane Record > New Voire Route	
Persistent Chat		(2)
Voice Routing		<b>^</b>
Voice Features	Match this pattern: *	
Response Groups		
Conferencing	Edit Reset 🕐	
Clients		
Federation and	Suppress caller ID	
External Access	Alternate caller ID:	
Monitoring and Archiving		
Security	Add	
Network		
Configuration	Breathant	

Select **OK** in **New voice route**, **New PSTN Usage record** and **Voice Policy** pages. Commit for the changes by selecting **Commit All**.

DIAL PLAN VOICE POLICY ROUTE PSTN USAGE TRUNK CONFIGURATION TEST VOICE ROUTING	
Create voice routing test case information	~
٩	
	•
	U
Name Scope State Revenued Galages Description	
2 VP-1 User Uncom Cancel selected changes Test	
Cancel all uncommitted changes	
	DIAL PLAN     VOICE POLICY     ROUTE     PSTN USAGE     TRUNK CONFIGURATION     TEST VOICE ROUTING         Create voice routing test case information            • New        • Edit       • Action       • Commit       •       Name       • Scope       state       • Review uncommitted changes       • Description       • Commit       • Commit       • Commit       • Commit       • Committee       • Committeee       • Committee       • Committe

Under **Trunk Configuration** choose the corresponding Trunk and Select **Associated PSTN Usages**.

Once the appropriate PSTN usage is added to the Trunk, Click **OK** and commit for the changes made.

Note: The Route and PSTN Usage created under Voice policy will be listed in ROUTE and PSTN USAGE in Voice Routing section in Control panel. Also the



Route and PSTN usage can be configured separately and can be added while configuring Voice Policy.

#### **3.4 Configuring Users in Skype for Business control panel**

Click on **Users** in Control panel and click **Find** and select a test user. This test User is an Enterprise Voice enabled user for Skype for Business Server. Now, select a user and provide the corresponding **Voice Policy**, the **Line URI** and click **Commit**. Make sure the user is enabled for Enterprise voice.

*Note*: To add new users, Select Users> Enable users>Add>Find and select from listed. Assign the new user to a pool, specify a SIP URI, Select Telephony as Enterprise voice. Also provide Line URI and Voice policy and click Enable, to enable it for Skype for Business Server.

Skype for Busi	ness Server	Administrator   6.0.9319.259   Privacy st
Home	USER SEARCH	
Users	Edit Skype for Business Server User - testuser1	
Topology	Commit 🛛 🗙 Cancel	
IM and Presence	Display name:	
Persistent Chat	testuser1	
Voice Routing	✓ Enabled for Skype for Business Server	
Voice Features	SIP address: *	
Response Groups	siptestuser1 @ sfblabps.local V	
Conferencing	Registrar pool: fe.sfblabps.local	
Clients	Telephony:	
Federation and External Access	Enterprise Voice 💌 🕐	
Monitoring and Archiving	Line UR: tet+197	
Security	Dial plan policy:	
Network	<automatic> View</automatic>	
Configuration	Voice policy:	
	<automatic> View</automatic>	
	Conterencing policy:	
	* ANALY TELEVISION	Activate Windows

Similarly the other required users can be Configured. Provide the User credentials (SIP URI and Password) in the **Skype for Business Client** to login.



Sign in Address Example: <u>user1@sfbdomain.local</u> and Password. Change the DNS of the machine having the client to Domain Controller IP and Install the DC certificate if required.

#### **3.5 Default Configurations:**

Refer	Enabled
Media Bypass	Enabled
Centralized media processing	Enabled
RTP latching	Off (always)
History Info	Enabled
P-Asserted-Identity	Disabled
RTCP checks	RTCPActiveCalls- false
	RTCPCallsOnHold-false
	Enable sessionTimer -
	true.

#### **Powershell comments for Configurations:**

 Set-CsTrunkConfiguration –Identity Service: PSTNGateway: trunk FQDN – RTCPActiveCalls \$false –RTCPCallsOnHold \$false –Enable SessionTimer \$true.

Administrator: Skype for Busin	ess Server Management Shell 🛛 🗖 🗙
Enable3pccRefer ForwardPAI EnableFastFailoverTimer EnableLocationRestriction NetworkSiteID	: False ^ False : : True : False : :
Identity OutboundTranslationRulesList SipResponseCodeTranslationRulesList OutboundCallingNumberTranslationRulesList Pescription ConcentratedTopology EnableBupass EnableMobileTrunkSupport EnableReferSummort EnableReferSummort MaxEarlyDialogs PeasureDiseFreeNeri Refeasting iboost MaxEarlyDialogs PeasureDiseFreeNeri RiCPActiveCalls RiCPActiveCalls SKIPMode EnablePIDFLOSupport EnablePIDFLOSupport EnablePIDFLOSupport EnablePIDFLOSupport EnablePIDFLOSupport EnableOnlineVoice ForwardCallHistory	: Service:PstnGateway: .local : O : O : O : True : True : True : True : True : True : False : False
EnableSpecketer ForwardPAI EnableFastFailoverTimer EnableLocationRestriction NetworkSiteID	False       False       If True       False       False       If True



1. "Get-CsTrunkConfiguraton" to get the current Trunk configuration.

## **4 Configure basic settings on the Patton device**

#### 4.1 Concept

This schema (figure xyz) describes the configuration concept of the Patton SmartNode PSTN gateway:



For more information on how to configure your Patton SmartNode SBC or Gateway, please refer to the corresponding software configuration guide:

https://patton.com/manuals/



#### **4.1.1 Required Information**

In order to configure your Patton SmartNode, be sure to have all the required information ready:

- IP addresses / FQDN's
- DNS servers
- NTP server
- PSTN trunk parameters

#### 4. 2 Initial setup using Wizard

For ease of use, the Web Wizard is a simple, step by step based config tool. To make use of it, visit <u>https://www.patton.com/wizard/</u> and download the corresponding Wizard to your SmartNode and execute it from there.

#### **4.3 Manually Configure Patton's IP parameters**

IP parameters of Patton device are being configured under *context ip*. Doing so, the following options are available:

<a.b.c.d m=""></a.b.c.d>	Interface IPv4 address/mask	
<a.b.c.d></a.b.c.d>	Interface IPv4 address	
<a:b:c::x m=""></a:b:c::x>	Interface IPv6 address/mask	
<a:b:c::x></a:b:c::x>	Interface IPv6 address	
dhcp	Acquire an IP address over DHCP	
dhcp6	Acquire an IP address over DHCPv6	
Config snipped of an example config for IP settings:		

context ip ROUTER

interface WAN ipaddress DHCP dhcp



use profile napt NAPT\_WAN DHCP

interface LAN
ipaddress LAN 192.168.1.1/24

#### **4.4 Configure DNS**

A DNS server is required when Skype for Business is configured with its DNS name on the Patton device, to resolve the DNS name to an actual IP address.

To configure DNS server reachable at x.x.x.x ip address configuration should look like:

```
dns-client
  name-server x.x.x.x
```

#### 4.5 Configure Location Service applicable for Skype for Business

There are two key parameters required to be set:

**Domain** FQDN or IP of the Mediation pool (in our example *fe.sfblabps.local* )

Transport protocol TCPSkype for Business is supporting SIP over TCPtherefore we should force TCP as transport protocol

location-service SER\_LOCATION\_S4B
domain 1 fe.sfblabps.local
match-any-domain

identity-group DEFAULT

call outbound
 transport-protocol force tcp



# 4.6 Configure Context SIP Gateway applicable for Skype for Business

Under context sip gateway the location service is to be bound, which was created before:

bind location-service SER\_LOCATION\_S4B

Under context sip gateway interface we should bind IP address which we will use for communication between Patton and Skype for Business:

bind ipaddress ROUTER LAN LAN

```
context sip-gateway GW_SIP_S4B
bind location-service SER_LOCATION_S4B
interface SIP
  transport-protocol udp+tcp 5060
  no transport-protocol tls
  bind ipaddress ROUTER LAN LAN
context sip-gateway GW_SIP_S4B
  no shutdown
```

#### 4.7 Configure call routing and SIP interfaces

When it comes to call routing, number manipulation and various types of interfaces SIP or PSTN *context cs* is configuration module we need. Call routing and number manipulations are different from case by case but when we are about to configure SIP interface towards to Skype for Business we should pay attention on few things:

- Check Skype for Business availability with periodical sip OPTIONS requests

This is typical requirement and it can be realized by using *penalty-box: penalty-box sip-option-trigger interval 60 timeout 60 force tcp* 



**Note:** Pay attention that we are forcing tcp here, Skype for Business is supporting SIP over TCP

- Skype for Business Mediation pool FQDN or IP
   We should define it as *remote* parameter:
   *remote fe.sfblabps.local*
- Associated PSTN gateway parameter
   FQDN or IP which we configured on Skype for Business we should put as local parameter under SIP interface:
   local pattonsbc.sfblabps.local
- Accept and send PRACK
   One of the requirements was to enable sending and receiving PRACK
   messages:

prack accept required prack emit supported

SIP interface towards to Skype for Business looks then as follows:

interface sip IF\_SIP\_S4B bind context sip-gateway GW\_SIP\_S4B route call dest-table RT\_TO\_WAN remote fe.sfblabps.local local pattonsbc.sfblabps.local no early-proceeding address-complete-indication accept set prack accept required prack emit supported use profile sip-tunneling in-out TRANSFER penalty-box sip-option-trigger interval 60 timeout 60 force tcp session-timer 1800



#### 4.7.1 Configure SIP interface towards to PSTN

Every provider has its own requirements in terms of SIP trunk. In our example a SIP Trunk from the provider VERIZON was used.

SIP History-info header provides identity of the call forwarder, this identity is required by Verizon SIP trunk in the diversion header. To be able to do that we have to configure the following:

address-translation outgoing-call diversion-header user-part history-info hostpart history-info

SIP interface towards Verizon SIP Trunk looks as follows:

```
interface sip IF_SIP_VERIZON
bind context sip-gateway GW_SIP_VERIZON
route call dest-table RT_TO_LAN
remote x.x.x.x 5060
hold-method direction-attribute sendonly
no early-proceeding
address-complete-indication accept set
address-translation outgoing-call diversion-header user-part history-info host-part
history-info
use profile sip-tunneling in-out TRANSFER
penalty-box sip-option-trigger interval 60 timeout 60 force udp
session-timer 1800
```

#### **4.7 Context CS Configuration Sample**

Here is the example of the *context cs* configuration. Please note that call routing and number manipulations are something which differ from case by case:

```
context cs SWITCH
no shutdown
mapping-table called-e164 to called-e164 MT_OUT_DNIS
map (.%) to \1
mapping-table called-e164 to called-e164 MT_IN_DNIS
map (.%) to +1\1
mapping-table calling-e164 to calling-e164 MT_IN_ANI
map (.%) to +1\1
```



mapping-table calling-e164 to calling-e164 MT\_OUT\_ANI map (.%) to 1routing-table called-e164 RT\_TO\_WAN route default dest-interface IF SIP VERIZON CF OUTGOING routing-table called-e164 RT TO LAN route default dest-interface IF SIP S4B CF INCOMING complex-function CF\_INCOMING execute 1 MT\_IN\_DNIS execute 2 MT\_IN\_ANI complex-function CF OUTGOING execute 1 MT\_OUT\_DNIS execute 2 MT\_OUT\_ANI interface isdn IF\_ISDN interface sip IF\_SIP\_VERIZON bind context sip-gateway GW\_SIP\_VERIZON route call dest-table RT TO LAN remote x.x.x.x 5060 hold-method direction-attribute sendonly no early-proceeding address-complete-indication accept set address-translation outgoing-call diversion-header user-part history-info host-part history-info use profile sip-tunneling in-out TRANSFER penalty-box sip-option-trigger interval 60 timeout 60 force udp session-timer 1800

interface sip IF\_SIP\_S4B bind context sip-gateway GW\_SIP\_S4B route call dest-table RT\_TO\_WAN remote fe.sfblabps.local local pattonsbc.sfblabps.local no early-proceeding address-complete-indication accept set prack accept required prack emit supported use profile sip-tunneling in-out TRANSFER penalty-box sip-option-trigger interval 60 timeout 60 force tcp session-timer 1800



## **5 Patton Configuration Sample**

The SBC Configuration sample connecting the SIP provider and Skype for Business on premise is as follows. To adjust it according to your needs you will have to change the highlighted parts of it. This configuration was generated for a SN5571/2E30VRHP

**Note:** The "context cs" part concerns the call handling of your configuration. For more information on how to configure the call routing on your Patton SmartNode, please refer to the official software configuration guide:

https://www.patton.com/manuals/

```
#------#
#
                                                          #
# Patton Electronics Company
                                                          #
# SN5571/2E30VRHP v1.5 (SmartNode 5571 VoIP eSBC)
                                                          #
                                                          #
# S/N: 00A0BAXXXXXX
# Test: 3.14.T4991-2 2018/11/06
                                                          #
# Generated configuration file
                                                          #
#
                                                          #
#-----
                                                         - #
cli version 4.00
system hostname patton
rtp-port-range 6000 9999
actions
 rule PROV_STARTUP
   condition ip address:WAN.DHCP LINKUP initial
   condition system ntp TIME_INITIALIZED
   action 1 "provisioning execute PF_PROVISIONING_CONFIG"
profile aaa DEFAULT
 method 1 nodems continue-on-reject
 method 2 local
 method 3 none
console
 use profile aaa DEFAULT
telnet-server
 use profile aaa DEFAULT
 no shutdown
ssh-server
 use profile aaa DEFAULT
 no shutdown
snmp-server
 shutdown
web-server
```



```
protocol http port 80
 protocol https port 443
  use profile aaa DEFAULT
 no shutdown
ntp
 server 0.patton.pool.ntp.org
 server 1.patton.pool.ntp.org
 server 2.patton.pool.ntp.org
 server 3.patton.pool.ntp.org
 no shutdown
profile napt NAPT_WAN
dns-server
 host 192.168.1.1 smartnode.local
 relay dns-client
 no shutdown
dns-client
 name-server x.x.x.x
profile dhcp-server DHCPS LAN
 network 192.168.1.0/24
 lease 24 hours
 default-router 192.168.1.1
 domain-name-server 192.168.1.1
 include 192.168.1.10 192.168.1.99
profile tls DEFAULT
 authentication incoming
 authentication outgoing
 private-key pki:private-key/DEFAULT
 own-certificate 1 pki:certificate/DEFAULT
 diffie-hellman-parameters pki:diffie-hellman-parameters/DEFAULT-2048
profile provisioning PF_PROVISIONING_CONFIG
 destination configuration
 use profile tls DEFAULT
 location 1
https://redirect.patton.com/$(system.mac);mac=$(system.mac);serial=$(system.serial);hwMajor=$(syst
em.hw.major);hwMinor=$(system.hw.minor);swMajor=$(system.sw.major);swMinor=$(system.sw.minor);swDa
te=$(system.sw.date);productName=$(system.product.name);cliMajor=$(cli.major);cliMinor=$(cli.minor
);osName=Trinity;subDirTrinity=/Trinity;subDirSmartWare=;dhcp66=$(dhcp.66);dhcp67=$(dhcp.67)
 location 2 $(dhcp.66)
 location 3 $(dhcp.66)/$(system.mac).cfg
 location 4 http://$(dhcp.66)/$(dhcp.67)
 location 5 http://$(dhcp.66)/$(system.mac).cfg
 location 6 tftp://$(dhcp.66)/$(dhcp.67)
 location 7 tftp://$(dhcp.66)/$(system.mac).cfg
 activation reload immediate
profile tone-set DEFAULT
profile voip DEFAULT
 codec 1 g711ulaw64k rx-length 20 tx-length 20
 codec 2 g711alaw64k rx-length 20 tx-length 20
 media-processing forced
 dtmf-relay rtp
 sdp-ptime-announcement
 rtp statistics
 silence-suppression
profile pstn DEFAULT
```



profile rip DEFAULT profile sip DEFAULT autonomous-transitioning profile sip-tunneling TRANSFER header referred-by message INVITE message CANCEL message BYE message 180 message 183 message 200 message 3xx message 4xx message 5xx context ip ROUTER interface WAN ipaddress DHCP dhcp use profile napt NAPT\_WAN DHCP interface LAN ipaddress LAN 192.168.1.1/24 routing-table DEFAULT context ip ROUTER use profile dhcp-server DHCPS LAN profile packetsmart DEFAULT profile ppp DEFAULT profile r2 DEFAULT cwmp-client session-retry-maximum 1 no shutdown stun shutdown context cs SWITCH no shutdown mapping-table called-e164 to called-e164 MT\_OUT\_DNIS map (.%) to \1 mapping-table called-e164 to called-e164 MT\_IN\_DNIS map (.%) to +1\1 mapping-table calling-e164 to calling-e164 MT\_IN\_ANI map (.%) to +1\1 mapping-table calling-e164 to calling-e164 MT\_OUT\_ANI map (.%) to \1 routing-table called-e164 RT TO WAN route default dest-interface IF\_SIP\_VERIZON CF\_OUTGOING

routing-table called-e164 RT\_TO\_LAN



route default dest-interface IF\_SIP\_S4B CF\_INCOMING complex-function CF INCOMING execute 1 MT\_IN\_DNIS execute 2 MT\_IN\_ANI complex-function CF OUTGOING execute 1 MT OUT DNIS execute 2 MT OUT ANI interface sip IF\_SIP\_PSTN bind context sip-gateway GW\_SIP\_PSTN route call dest-table RT\_TO\_LAN remote x.x.x.x hold-method direction-attribute sendonly no early-proceeding address-complete-indication accept set use profile sip-tunneling in-out TRANSFER penalty-box sip-option-trigger interval 60 timeout 60 force udp session-timer 1800 interface sip IF\_SIP\_S4B bind context sip-gateway GW SIP S4B route call dest-table RT TO WAN remote fe.sfblabps.local local pattonsbc.sfblabps.local no early-proceeding address-complete-indication accept set prack accept required prack emit supported use profile sip-tunneling in-out TRANSFER penalty-box sip-option-trigger interval 60 timeout 60 force tcp session-timer 1800 location-service SER LOCATION S4B domain 1 fe.sfblabps.local match-any-domain identity-group DEFAULT call outbound transport-protocol force tcp location-service SER\_LOCATION\_PSTN domain 1 x.x.x.x match-any-domain identity-group DEFAULT call outbound transport-protocol force udp call inbound context sip-gateway GW\_SIP\_S4B bind location-service SER LOCATION S4B interface SIP transport-protocol udp+tcp 5060 no transport-protocol tls bind ipaddress ROUTER LAN LAN context sip-gateway GW SIP S4B



context sip-gateway GW\_SIP\_PSTN bind location-service SER LOCATION PSTN interface SIP\_WAN transport-protocol udp+tcp 5060 no transport-protocol tls bind ipaddress ROUTER WAN WAN context sip-gateway GW\_SIP\_PSTN no shutdown sip-survivability shutdown port ethernet 0 0 bind interface ROUTER WAN no shutdown port ethernet 0 1 bind interface ROUTER LAN no shutdown port e1t1 0 0 port-type e1 clock master framing crc4 shutdown port e1t1 0 1 port-type e1 clock master framing crc4 shutdown

## **6 Contacting Patton for Assistance**

Patton Electronics offers a wide array of technical services.

#### https://www.patton.com/support/support.asp

If you have questions about any of our other products we recommend you begin your search for answers by using our technical knowledge base. Here, we have gathered together many of the more commonly asked questions and compiled them into a searchable database to help you quickly solve your problems.



REGION	North America	Western Europe	Central & Eastern Europe
Location	Maryland, USA	Bern, Switzerland	Budapest, Hungary
Time Zone	EST/EDT	CET/CEDT	CET/CEDT
	UTC/GMT - 4/5 hours	UTC/GMT + 1/2 hours	UTC/GMT + 1/2 hours
Business	Monday-Friday	Monday-Friday	Monday-Friday
Hours	8:00am to 5:00pm	09:00 to 12:00	8:30 to 17:00
		13:30 to 17:30	
Email	support@patton.com	support@patton.com	support@patton.com
Phone	+ 1 301 975 1007	+41 31 985 25 55	+36 439 3835
Fax	+1 301 869 9293	+41 31 985 2526	