

Introduction

Patton SmartNode Gateways support a wide selection of VoIP Business service providers. Patton SmartNodes are also interoperable with the Italian service provider VoipVoice. Using industry standard protocols such as SIP and ISDN, Patton SmartNodes provide robust and high quality PSTN connectivity to any legacy PBX telephony system. Patton SmartNodes are also known for higher quality voice solutions and full interoperability with PSTN systems.

This application note provides the guidelines for to simply configure the Patton SmartNode as a gateway for the VoipVoice SIP business service. Also, the included Configuration Spreadsheet tool enables system integrators to streamline the gateway configuration process and allows for quick installation in many different environments.

Application Overview

Patton provides robust and high quality gateway solutions for any PBX system. The figure below shows a Patton SmartNode acting as a VoIP gateway for a small to medium office telephony system. VoipVoice and SmartNode communicate over the network using industry standard SIP. For our application, the SmartNode is connected with point-to-point BRI interfaces to the PBX. Optionally, the SmartNode can be connected to the PSTN with one BRI interface for fallback and synchronization purposes.

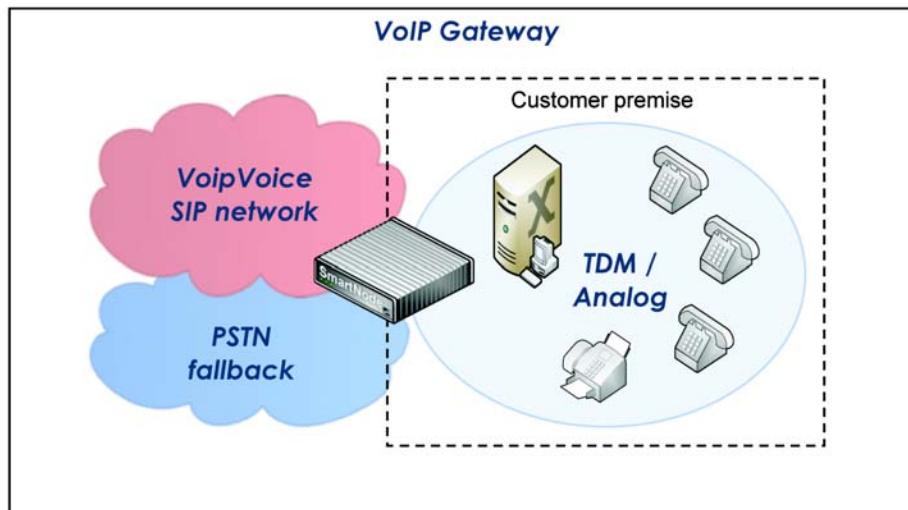


Figure 1. Patton SmartNode VoIP Gateway in the VoIPVoice Network

Application Highlights

This application provides many benefits to VoIP gateway installations, such as:

- Dynamic Hunt-Group to find the first available ISDN interface available for inbound calls
- Number validation for incoming calls to avoid VoIP fraud
- Options for DHCP or Static IP settings to support many network environments
- PSTN fallback option in case of a broken SIP connection
- Simple Cut-and –Paste configuration for a gateway installation

Application Configuration

Network Setup

The following assumptions have been made for the example network.

Table 1. Example Configuration Parameters

Parameter	Example Network	Your Network
Voice Codec	1) G.711Alaw, 2) G.729	
SIP Server Address	voip.voipvoice.com	voip.voipvoice.com
SmartNode LAN IP Address	DHCP	
Number of PBX (NT) BRI Ports	4	
Number of Fallback (TE) BRI Ports	1	

Configuration Spreadsheet Tool

An Excel spreadsheet has been provided in addition to this Application Note to streamline the configuration process. After performing a factory reset on your SmartNode gateway, follow the directions on the spreadsheet, adjust the available parameters, and copy the configuration generated into your SmartNode gateway. The SmartNode Configuration concept below provides an overview for the configuration parameters available in the spreadsheet.

SmartNode Configuration Concept

Figure 2 shows a sample configuration diagram. Note that Patton offers training to teach customers how to make best use of all the features in SmartNode (<http://www.patton.com/training/>).

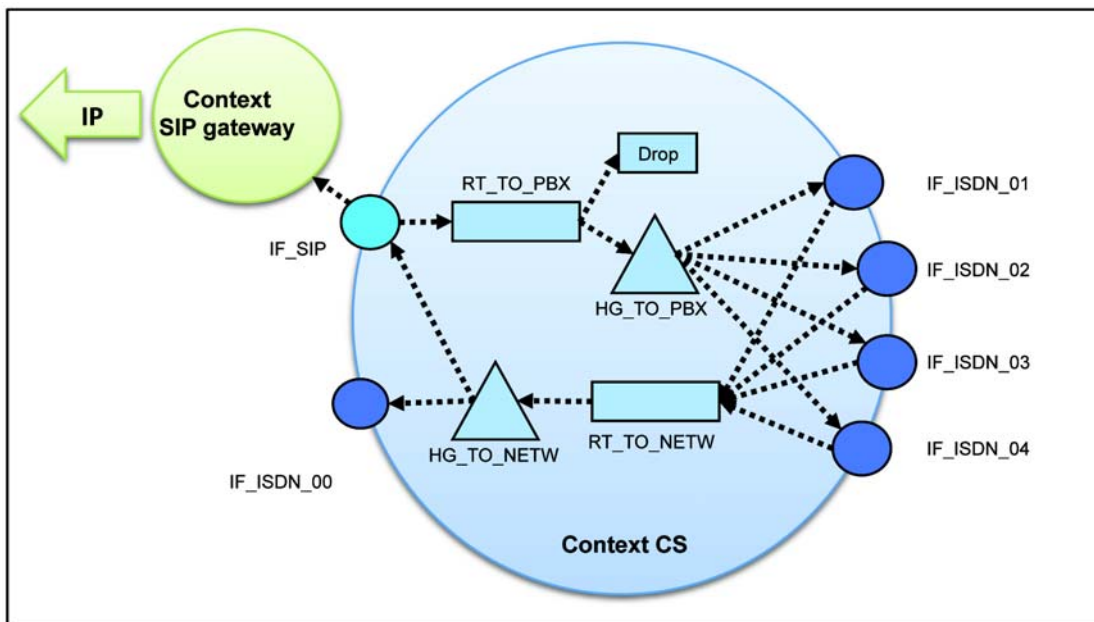


Figure 2. 5-Port SmartNode VoIP Gateway in the VoIPVoice Network

SmartNode Spreadsheet Tool Configuration

1. Administrator Settings

It is highly recommended that you secure your SmartNode from the access of unauthorized persons. This can be done by setting the Name and Password in the Spreadsheet tool. Note that all fields in YELLOW can be configured by the user.

Parameter	Input	Notes
Administrator:	Administrator	Name of the Administrator account
Password:		Password of the Administrator account

Figure 3. Spreadsheet Administrator Settings

2. LAN Network Settings

The SmartNode Ethernet port must be configured appropriately to fit into your network. The Spreadsheet Tool provides two basic options for LAN configuration. You can either set your LAN IP address to “DHCP”, or you can statically set your IP address.

Parameter	Input	Notes
LAN IP Address:	192.168.1.10	Type in "DHCP" for dynamic addressing.
LAN IP Address Mask:	255.255.255.0	Not used if "DHCP" is defined as the LAN IP address
Default Gateway:	192.168.1.1	Not used if "DHCP" is defined as the LAN IP address
DNS Server:	192.168.1.1	Not used if "DHCP" is defined as the LAN IP address
SNTP Server:	europe.pool.ntp.org	Not used if "DHCP" is defined as the LAN IP address

Figure 4. Spreadsheet Network Settings

Note that if “DHCP” is selected, the Mask, Gateway, DNS and time Server values will not be used, as these will be provided by the DHCP server. For static configuration, simply enter in a valid IP address, IP Mask, DNS and time server.

3. VoIP Settings

Set the IP hostname of the VoipVoice SIP server into the “Server IP” field of the Spreadsheet Tool. If not explicitly specified, the port of the server does not need to be changed. Set the username and password of your account to the corresponding fields. The codecs are already preset and do not need a change neither.

In case your Smartnode is connected behind a NAT, the NAT router must statically forward the RTP ports of the Smartnode. You can find the port range in the corresponding fields of the Spreadsheet Tool. If the port range is not valid for your network, you may change it. The local SIP port does not need to be changed.

Parameter	Input	Notes
SIP Server IP or FQDN	voip.voipvoice.it	Example 192.168.1.1, or sip.mydomain.com
SIP Server Port	5060	Default is 5060
SIP Username	512345	Username of the VoipVoice SIP Account
SIP Password	1234	Password of the VoipVoice SIP Account
G.711 u-law	No	This codec is unselected by default
G.711 a-law	Yes	This codec is selected by default
G.729	Yes	This codec is selected by default
Local SIP port	5060	Normally no change required.
Local RTP port range start	4864	First port of RTP port range. The value must be even
Local RTP port range end	5375	Last port of RTP port range. The value must be odd

Figure 5. Spreadsheet VoIP Settings

4. Number Validation

For security reasons, it is recommended to specify the telephone numbers you are using in your network. All other incoming numbers should be rejected by the Smartnode. This helps to avoid some sort of VoIP telephony fraud. The default setting only blocks numbers with leading zeros. All other numbers pass the system. A list of examples is showed in the helptext of the corresponding Spreadsheet fields. If more than one rule is needed, add them to the fields from the top down.

Parameter	Input	Notes
Expression 1	[1-9].%	Default expression: Any numbers except ones with leading 0
Expression 2		Optional field to add more expressions
Expression 3		Optional field to add more expressions
Expression 4		Optional field to add more expressions
Expression 5		Optional field to add more expressions

Figure 6. Spreadsheet Number Validation Settings

5. ISDN Settings

Set the ISDN layer 2 protocol according to the configuration of the ISDN interfaces of your PBX and the fallback ISDN interface.

Parameter	Input	Notes
Layer2 protocol Fallback port (0/0)	pmp	ISDN protocol point-point or point-multipoint
Layer2 protocol PBX ports	pp	ISDN protocol point-point or point-multipoint

Figure 7. Spreadsheet ISDN Settings

Configuration Import

To generate and apply the configuration file to your SmartNode, follow the steps below:

1. Once you have processed all of the required settings, select the table that fits your SmartNode model.
2. Copy the whole content of column C and paste it into a file on your PC.
3. Access your Smartnode with the GUI. To localize the device, you may use the SmartDiscovery Tool: <http://upgrades.patton.com/list.asp?model=SmartNode%20Utilities&flag=1>
4. Import the stored configuration file to the Smartnode.
5. Reboot the device.

Additional Information

Software Upgrades

For the latest SmartNode software releases, visit <http://upgrades.patton.com>.

SmartNode Certification Training

For a list of upcoming SmartNode training seminars, visit <http://www.patton.com/training>.

Contacting Patton

Complete sample configurations for this application and more are available on the Patton website:

<http://www.patton.com/voip/appnotes>

<http://www.patton.com/voip/confignotes>

<http://www.patton.com/support>

http://www.patton.com/manuals/SCG_r56.pdf

If you have any additional questions, feel free to contact Patton's Technical Support:

- E-mail support—e-mail sent to support@patton.com will be answered within 1 business day
- Telephone support—standard telephone support is available five days a week—from 8:00 am to 5:00 pm EST (1300 to 2200 UTC)—by calling +1 (301) 975-1007

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