

# SMARTNODE™ PRODUCT LINE OVERVIEW

From the leading manufacturer of UC, Connectivity, IoT & All-IP Solutions

## SmartNode

VoIP solutions that are  
*more than just talk*



**INDUSTRIAL**  
**COMMS**

**PATTON**<sup>®</sup>  
*Let's Connect!*<sup>™</sup>

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## VoIP Starts with SmartNode...

SmartNode integrates IP and TDM communications for Enterprise and Carrier access networks, offering VoIP gateways combined with IP access routing, WAN transmission, and transcoding functionality. SmartNode scales from 1 to 32,768 VoIP or fax calls with various telephony interfaces including analog FXS/FXO and digital ISDN BRI, PRI, DS3 and STM-1.

Award-winning SmartNode™ equipment delivers state-of-the-art VoIP technology that integrates seamlessly with existing analog PSTN, dig-

ital ISDN, and IP infrastructures. SmartNode provide any-to-any multipath switching, and supports simultaneous SIP, H.323, ISDN and PSTN calling—plus T.38 SuperG3 FAX and modem over IP.

SmartNode's proven interoperability with all major brands of softswitches and IP PBXs makes it easy for carriers and enterprises to deploy future-proof VoIP systems quickly and profitably. As VoIP Gateway pioneers since 1998, tens of thousands of SmartNode™ products are up and running in enterprise and carrier networks worldwide.

### Why SmartNode?

- ✓ Patton Quality and Reliability
- ✓ Industry-Best Customer Support
- ✓ Robust Enterprise Feature Sets and Functionality
- ✓ Flexible and Secure
- ✓ Proven Interoperability
- ✓ Swiss Engineered. Made in the USA.



2015 & 2019



2005, 2006, 2009, 2010,  
2012, 2015 & 2016



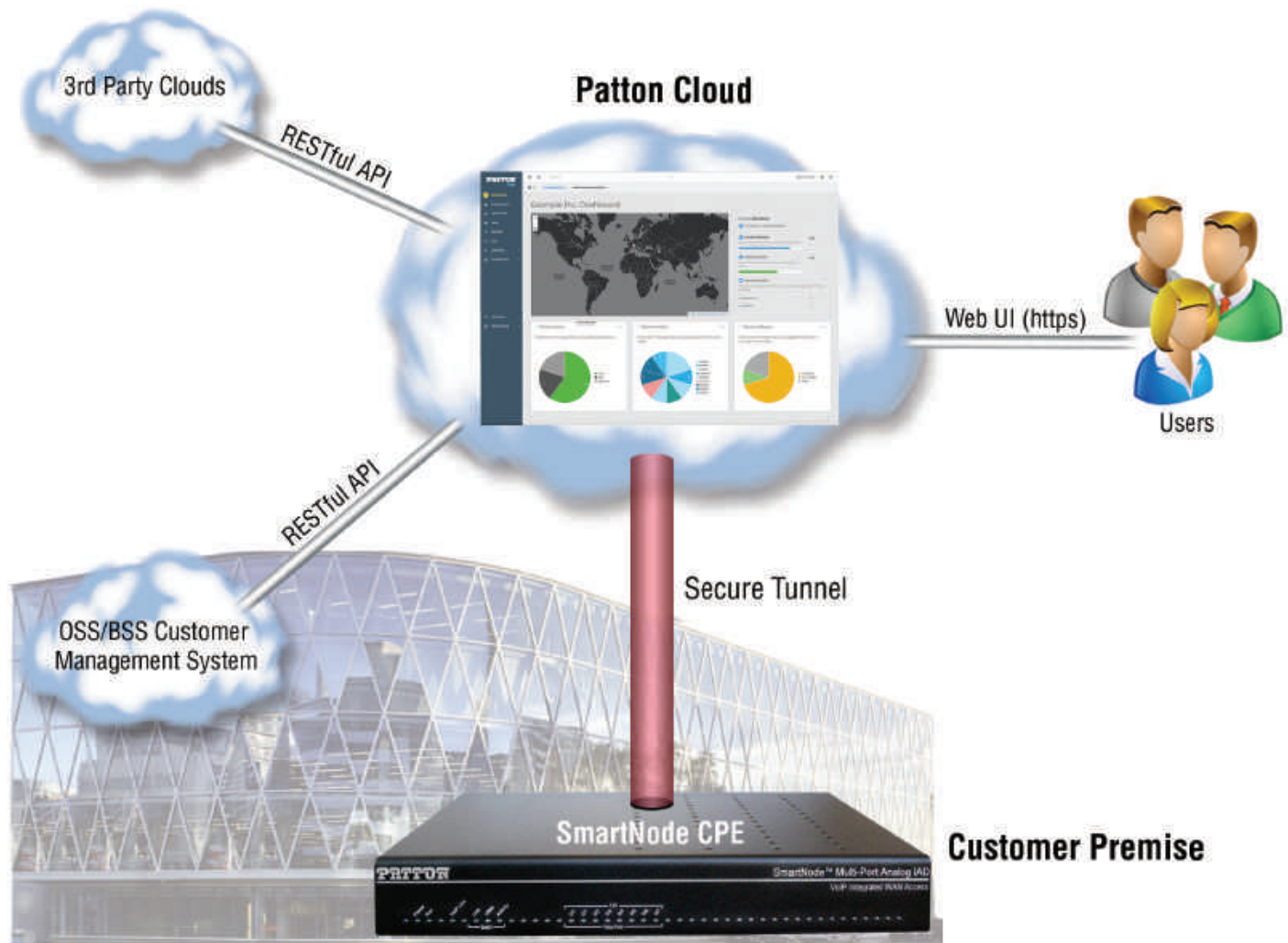
2007 & 2013



2007, 2009, 2012,  
2013 & 2015

# Patton Cloud

The Patton Cloud is a centralized portal to empower and simplify Edge Services, Hosted Telephony, SIP Trunking, Security and IoT Cloud Connectivity using the Cloud to make those services easily deployable, manageable and accessible.



90-Day FREE Trial!

Request your free trial of the Patton Cloud Professional Edition at [www.patton.com/cloud/#demo](http://www.patton.com/cloud/#demo)



## Patton Cloud Benefits

 <b>CENTRALIZED</b>	 <b>SIMPLE</b>	 <b>INEXPENSIVE</b>
 <b>SECURE</b>	 <b>PROFITABLE</b>	 <b>INTEROPERABLE</b>

## Service Plans

	BASIC	STANDARD	ADVANCED	PROFESSIONAL
Managed Devices	5*	10*	50*	500*
Status Dashboard	✓	✓	✓	✓
User/Role Management	✓	✓	✓	✓
Device CLI & Web Terminal Access	✓	✓	✓	✓
Redirect Service	✓*	✓	✓	✓
Provisioning	✗	✓	✓	✓
License Server	✗	✓	✓	✓
File Management, Back-up & Restore	✗	✗	✓	✓
Firmware/Software Updates	✗	✗	✓	✓
Notification & Alerting	✗	✗	✓	✓
Wizard Editor	✗	✗	✓	✓
Multi-Tenant Operation	✗	✗	✗	✓
Remote Support	✗	✗	✗	✓
API	✗	✗	✗	✓

\*For an unlimited number of Trinity and SmartWare devices

✗ Launching Wizards only - Modification / Creation of Wizards require Advanced or Professional plan

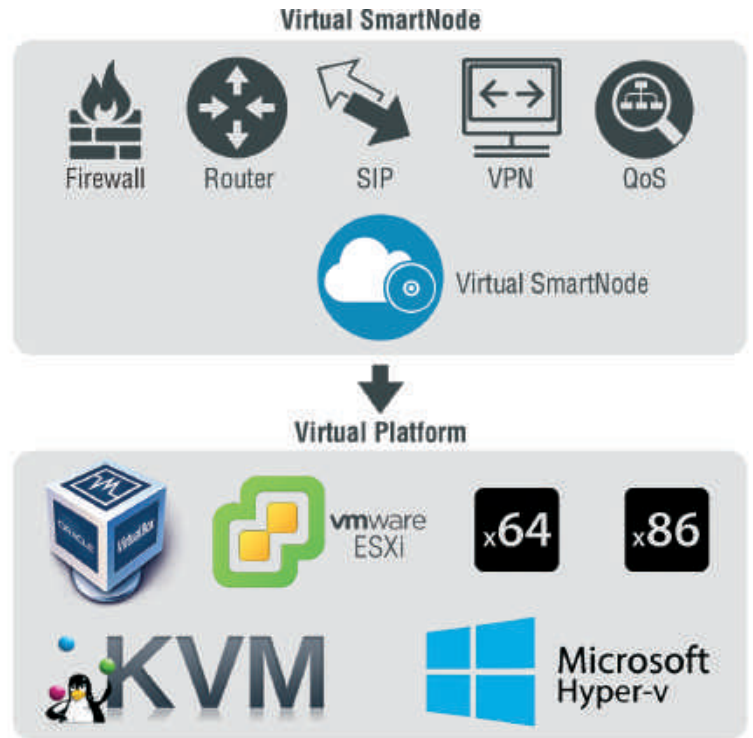
# Virtual SmartNode

The Virtual SmartNode provides a comprehensive feature set (as shown at right) that is required for you as an enterprise or service provider looking to virtualize your infrastructure.

## Use Case Examples

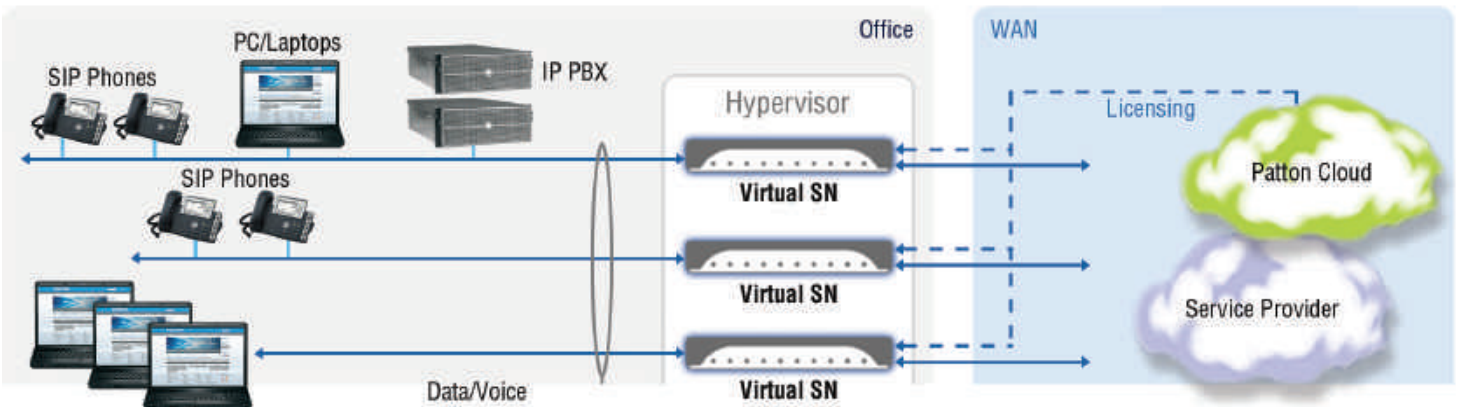
The Virtual SmartNode adapts to a variety of use cases that include:

- **eSBC**—for VoIP service demarcation functions such as network topology hiding (security), SIP normalization, Session control & routing, IPv4 to IPv6 Network translation, TCP to UDP protocol conversion.
- **VPN termination**—of VPN links from branch offices to central site
- **IP Routing**—scalable network router with NAT & NAPT, DHCPv4 & v6, RIP, BGP, VRRP, GRE and ACL functionality
- **IP Network Gateway**—IPv4 to IPv6 interoperability. WAN-LAN network separation, multi access link management and much more.



## Virtual SmartNode Application

Quickly and easily scales Virtual Networking Functions (VNF) that you need serving your clients, managed and orchestrated by using the Patton Cloud as shown below.









# SmartNode Product Comparison

Depending on the model, SmartNode comes with four software packages developed for different applications:





- **Trinity™**—Small/medium enterprise feature sets (including nextgen features like, Patton Cloud Connect, IPv6 Networking & SIP, TLS and SRTP, Secure Zero Touch, etc.).
- **SmartLink™**—Basic SoHo feature sets.

- **SmartWare™**—Small/medium enterprise feature sets (SIP, PSTN, Routing, QoS, transcoding, etc.).
- **SmartMedia™**—Large enterprise and carrier network feature sets (SIP, PSTN, Call routing, QoS, transcoding, SS7, etc.).

For more info, see [www.patton.com/products/smartnode\\_software.asp](http://www.patton.com/products/smartnode_software.asp).





Analog Gateways						
	M-ATA	SN200	SN4140	SN4300	SN4400	SN4900*
						
<b>Software</b>	SmartLink	Trinity	Trinity	SmartWare	SmartWare	SmartWare
<b>Patton Cloud Connect**</b>	No	Yes	Yes	Redirect Only	Redirect Only	Redirect Only
<b>Telephony Interfaces</b>	FXS	FXS & FXO	FXS	FXS or FXO	FXS or FXO	FXS or FXO
<b>Telephony Ports</b>	1	1, 2 and 4	2, 4 or 8	12, 16, 24 or 32	12, 16, 24 or 32	12, 16, 24 or 32
<b>IP Router: IP Routing, QoS, VPN, etc.</b>	No	No	No	No	Yes	Yes
<b>Ethernet Ports</b>	1	1	1 or 2	1	2	2
<b>WAN Access</b>	No	No	No	No	No	(Optional) Serial X.21 Serial V.35

\*The SN4900 differs from the SN4400 in that it has a redundant internal power supply, optional WAN access, and 0 to 50 °C operating temperature










ISDN BRI Gateways				
	SN-DTA	SN4120	SN4130	SN4150
				
<b>Software</b>	SmartWare	SmartWare	Trinity	Trinity
<b>Patton Cloud Connect**</b>	Redirect Only	Redirect Only	Yes	Yes
<b>Telephony Interfaces</b>	BRI (NT or NT+TE)	BRI (TE)	BRI	BRI, FXS, FXO
<b>Telephony Ports</b>	1 or 2	1 or 2	2, 4 or 8	2, 4 or 8
<b>VoIP Channels</b>	2 or 4	2 or 4	4, 8, 16...	4, 8 or 16
<b>IP Router: IP Routing, QoS, VPN, etc.</b>	No	No	No	No
<b>Ethernet Ports</b>	1	1	1 or 2	1 or 2
<b>WAN Access</b>	No	No	No	No

\*\*Cloud Connect - Redirect only: See page 21 for more details

### T1/E1/PRI Gateways

	SN4170	SN4970	SN4980	SN4990
				
<b>Software</b>	Trinity	Trinity	Trinity	Trinity
<b>Patton Cloud Connect</b>	Yes	Yes	Yes	Yes
<b>Telephony Interfaces</b>	PRI	T1/E1/PRI	T1/E1/PRI	T1/E1/PRI
<b>Telephony Ports</b>	1 or 2	1 or 4	1 or 4	1 or 4
<b>VoIP Channels</b>	15 to 30	15, 24, 30, 48, 60, 96 or 120	15, 24, 30, 48, 60, 96 or 120	15, 24, 30, 48, 60, 96 or 120
<b>VoIP Gateway: Converts TDM to IP</b>	Yes	Yes	Yes	Yes
<b>IP Router: IP Routing, QoS, VPN, etc.</b>	No	No	Yes	Yes
<b>Ethernet Ports</b>	1 or 2	1	2	2
<b>WAN Access</b>	No	No	No	Fiber, ADSL, G.SHDSL, VDSL
<b>Transcoding: Interconnect multiple VoIP networks</b>	No	No	Optional	Optional

### Enterprise Session Border Controllers (eSBC)

	SN5300	SN5480	SN5490	SN5500	SN5530	SN5540	SN5550	SN5570	SN5600
									
<b>Software</b>	Trinity	Trinity	Trinity	Trinity	Trinity	Trinity	Trinity	Trinity	Trinity
<b>Patton Cloud Connect</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Telephony Interfaces</b>	None	None	None	None	2, 4 or 8 BRI	2, 4 or 8 FXS, FXO	2 or 4 BRI, FXS, FXO	1 or 2 PRI	None
<b>SIP Sessions</b>	Up to 60	Up to 80	Up to 80	Up to 200	Up to 200	Up to 200	Up to 200	Up to 200	Up to 1000
<b>Transcoded Calls</b>	N/A	Up to 64	Up to 64	Up to 16	2, 4 or 8	2 or 4	2 or 4	16	N/A
<b>Transcoding: Interconnect multiple VoIP networks</b>	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
<b>VoIP Gateway: Converts TDM to IP</b>	No	No	No	No	Yes	Yes	Yes	Yes	No
<b>IP Router: IP Routing, QoS, VPN, etc.</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Ethernet Ports</b>	4	2	2	2	2	2	2	2	2
<b>WAN Access</b>	G.SHDSL bis (ATM or EFM)	No	Fiber, G.SHDSL, VDSL/ADSL	Fiber, G.SHDSL, VDSL/ADSL	Fiber, G.SHDSL, VDSL/ADSL	Fiber, G.SHDSL, VDSL/ADSL	Fiber, G.SHDSL, VDSL/ADSL	Fiber, G.SHDSL, VDSL/ADSL	Ethernet
<b>SIP &amp; RTP Security</b>	Yes*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*

\* SIP-TLS



# Carrier-Grade TDM + VoIP SmartMedia Gateways & SBCs



▶ Up to 1,024 T1/E1s

▶ Up to 48 DS3s

▶ Up to 16 OC3/STM-1s



Connect your SS7 edge, core and peer zones with emerging H.323 and SIP networks. By supporting TDM-to-TDM, TDM-to-IP, and IP-to-IP architectures, the SmartNode 10K supports your Converged IP migration plan.

- SS7 Media & Signaling
- 1+1 & N+1 Redundancy
- Up to 48 Ethernet Ports
- Scriptable Call Routing

## Carrier Gateways & SBCs

	SN10100	SN10200			SN10300			SN10500
<b>Software</b>	SmartMedia	SmartMedia			SmartMedia			SmartMedia
<b>Application</b>	Gateway	Gateway			Gateway			SBC
<b>Telephony Interfaces</b>	T1/E1/PRI	T1/E1/PRI	DS3	STM-1	T1/E1/PRI	DS3	STM-1	None
<b>Telephony Ports</b>	4 to 8	16 to 64	1, 2, or 3	1	16 to 1024	1, 2, or 3	1 to 15 +1	Optional 16 E1/T1s
<b>VoIP Channels</b>	up to 256	up to 2,048			up to 32,768			25 to 5000 (SIP to SIP)
<b>VoIP Gateway: Converts TDM to IP</b>	Yes	Yes			Yes			Optional
<b>IP Router: IP Routing, QoS, VPN, etc.</b>	No	No			No			No
<b>Ethernet Ports</b>	2	2			up to 48			4 to 6
<b>WAN Access</b>	No	No			No			No
<b>Transcoding: Interconnect multiple VoIP networks</b>	No	No			No			up to 2,744

# Enterprise Solutions

## Legacy PBX to SIP Trunk Migration

### *Solution Gateway*

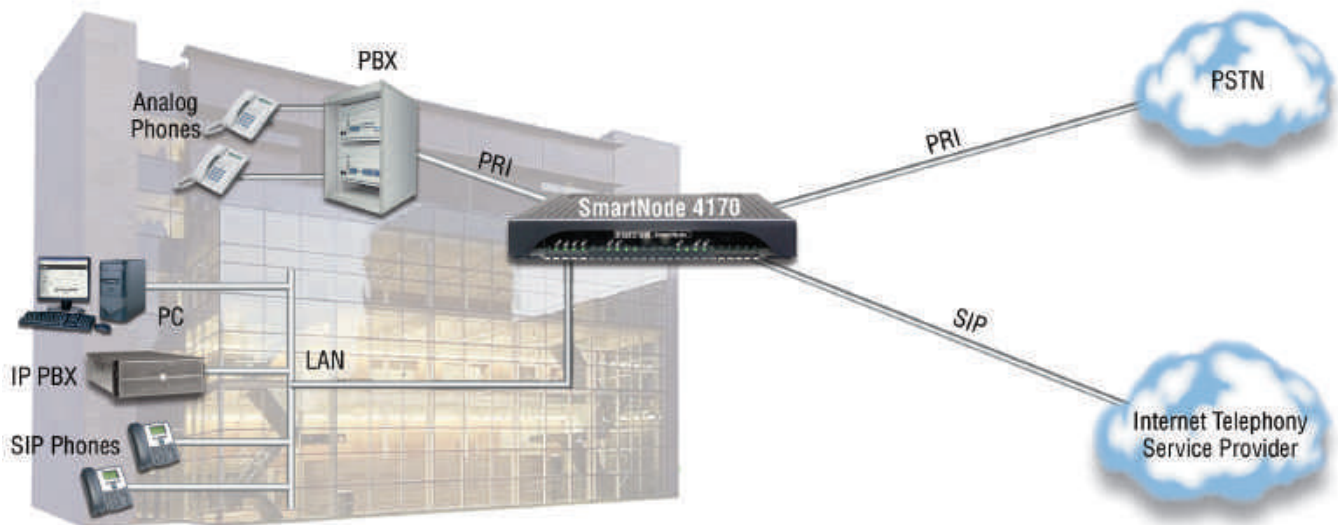
By installing a PRI SmartNode, it allows an enterprise connecting their PBX to a SIP Trunk service which helps to cut telephony costs significantly.



### *Solution Gateway-eSBC*

As the business grows and starts investing in next-generation IP telephones while at the same time utilizing the perfectly good analog/digital phone equipment the same SmartNode providing any-to-

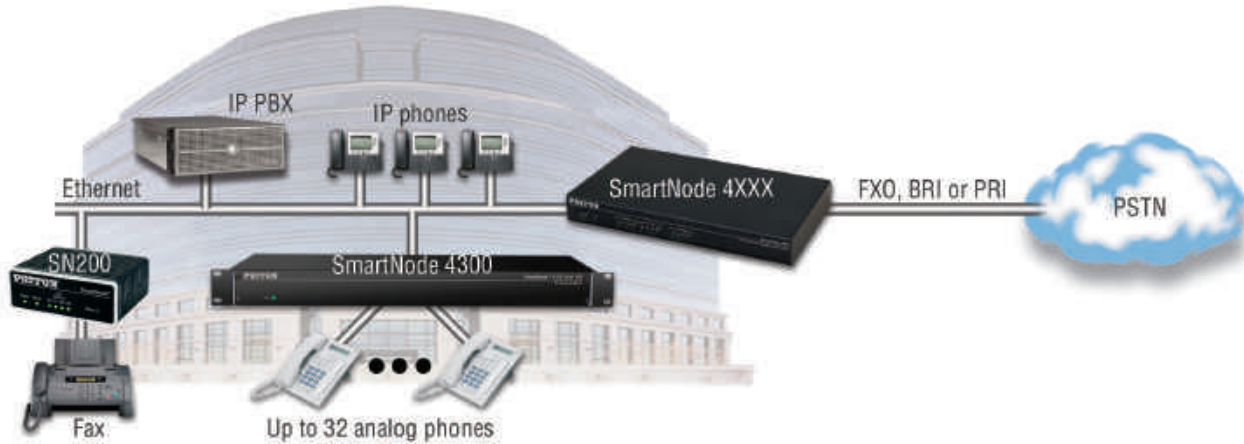
any flexible call routing between legacy PBX, IP PBX, PSTN and SIP trunks.



## Connecting Analog Legacy Terminals

When migrating to a VoIP network, many businesses find it difficult to replace every legacy terminal with a brand new IP terminal all at once. The SmartNode Gateway gives SMBs and hotels the ability to connect this existing equipment to their IP phone system.

As the world transitions to All-IP, fax has become a particularly hot topic as it has proven to be an indispensable technology. When sending faxes over a VoIP network, even the slightest interruption in the data stream will drop a fax. Hence, to ensure reliable fax delivery, SmartNode offers T.38 and G.711 fax-over-IP.



## IP PBX PSTN Gateway with Survivability

Many businesses wish to keep their existing traditional phone service provider connected to their IPPBX because they are satisfied with their current service, stuck in a contract or possibly don't trust VoIP too much yet. In these cases, offering Patton's SmartNode Gateways in conjunction with an All-IP setup enable you to provide the benefits of SIP while allowing businesses to continue using their trusted PSTN lines and existing telephony service providers.

If the business is satisfied, you can switch them over completely to the VoIP provider and possibly keep one or two POTS lines as a fallback.

### Survivability—Fallback

The best VoIP providers provide 99% reliability given the necessary bandwidth requirements. A SmartNode ensures businesses telephony continuity by setting their VoIP phone network up with survivability.

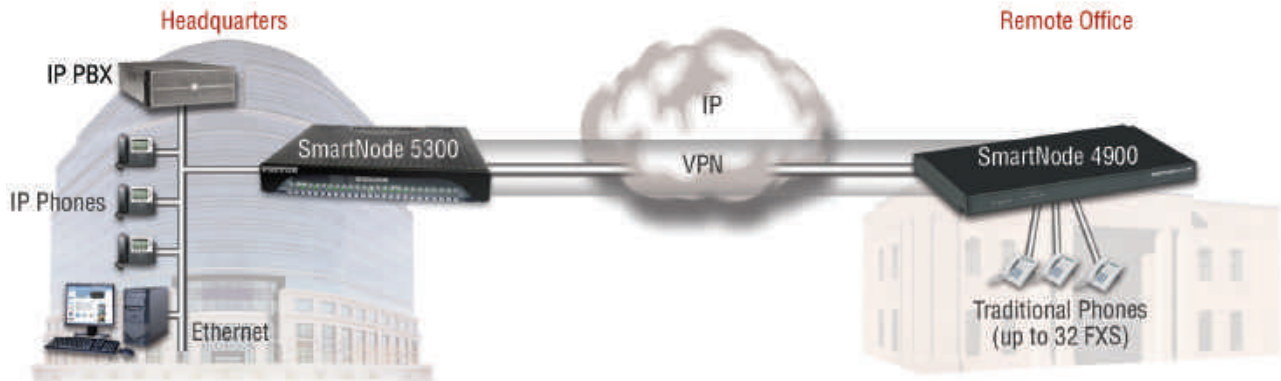
A SmartNode VoIP Gateway can be used to fallback to your PSTN lines (99.999% reliability) in cases where the Internet telephony service provider or Internet connection goes down.



## Connecting Remote Offices

The SmartNode Gateway can be used to connect analog, ISDN and IP telephony from a remote office to your IP PBX phone system in your headquarters.

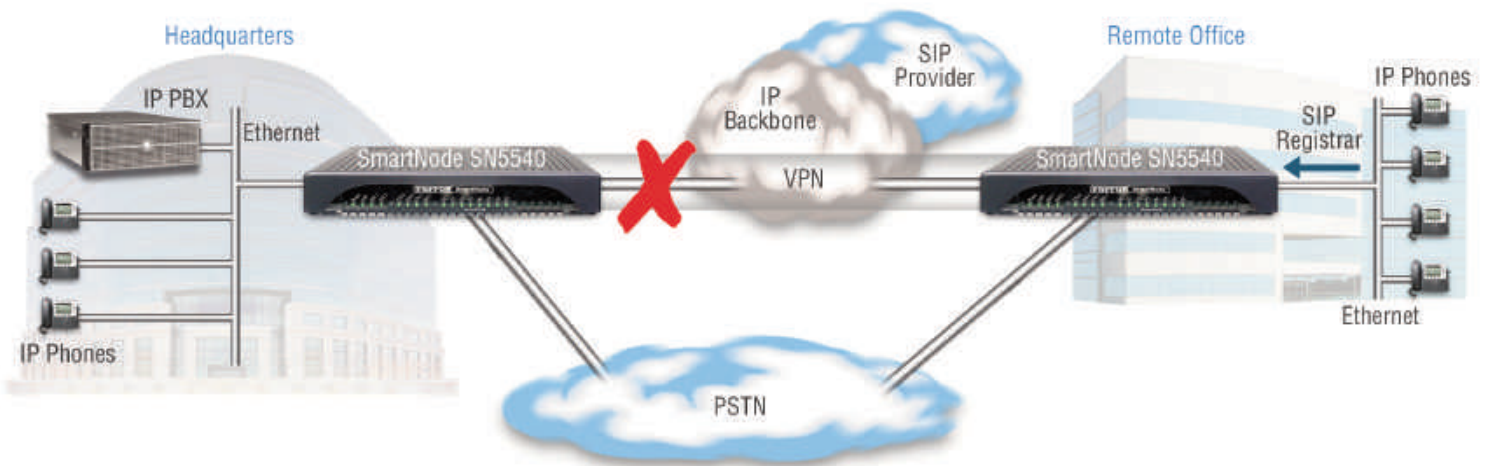
With integrated routing, QoS and VPN features, the SmartNode can ensure a secure connection and maximum voice quality between offices.



## Remote Office Survivability

A SmartNode provides a SIP Registrar for your IP phones in your remote office to register with the SmartNode directly rather than just the IP PBX in your headquarters. This way, in the case where you lose

your connection to your headquarters, the remote office can act independently making and receiving calls over PSTN lines.



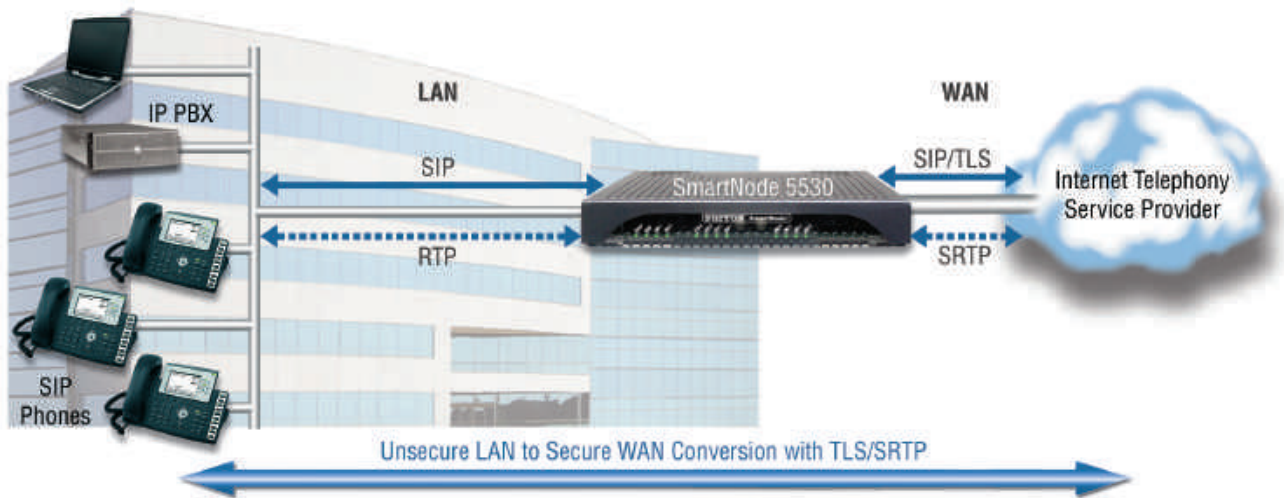
### All-IP Set-up with Enterprise Session Border Controllers

For All-IP environments, a SmartNode Enterprise Session Border Controller (eSBC) can be placed at the edge of your network to provide several key voice quality, survivability, and security features:

- **Back-to-back-user-agent (B2BUA):** Isolates your network from the outside world to hide your private addresses and network topology for security purposes.
- **SIP Automated Survivability:** Patented self-learning survivability algorithm, which learns the SIP Registration Records of the SIP endpoints. Opposed to a regular B2BUA, the SmartNode in this case acts passive during normal operation and only becomes active in case a WAN link fails.
- **Transcoding:** Provide any-to-any codec conversion allowing efficient use of bandwidth and improved voice quality. Reduce

WAN-access bandwidth requirements by converting high bandwidth G.711 codec on your LAN to low bandwidth G.729 for WAN transport. Transcoding also provides seamless integration between multiple VoIP providers using different VoIP codecs.

- **Quality-of-Service (QoS):** Ensures voice quality by managing data communications so that voice packets and other real-time data are prioritized.
- **SIP Registrar:** Enables any registration and authentication scenario between IP PBX on one side and SIP Trunk provider on the other.
- **Security:** Translates SIP and RTP to SIP/TLS and Secure RTP when traffic is leaving the LAN side of the network.

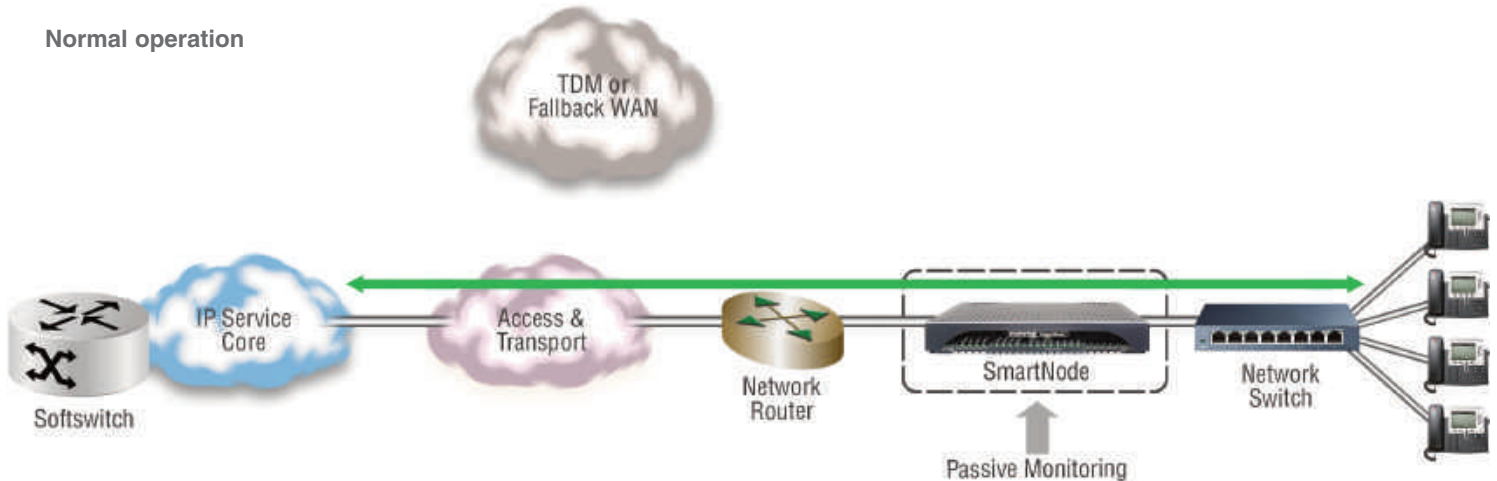


## Automated SIP Survivability Solution

Many organizations that chose to move forward with adopting an All-IP communications system will demand a comprehensive and innovative solution for the survivability problem. Patton's patented self-learning survivability algorithm—embedded in customer-

premise SmartNode enterprise session border controllers (eSBC)—combines intelligent self-learning capability with automated monitoring, switching and notification mechanisms.

### Normal operation



### Normal operation

The intelligent CPE engages in discovery operations to learn and record the fully qualified domain name (FQDN) of SIP servers residing in the provider networks (see image above). Further, the eSBC discovers and records the FQDN of each local IP endpoint (hardware SIP phones, IP softphones) located within the subscriber LAN environment.

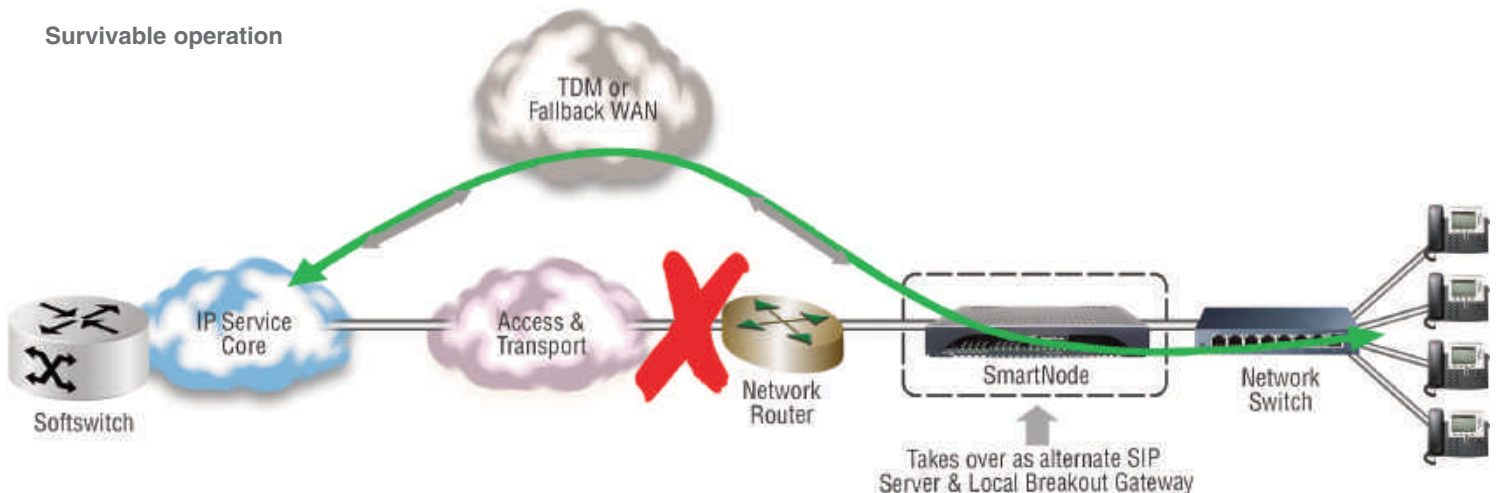
The CPE then monitors the up/down state of SIP servers. If no response is received from a server, a WAN failure is indicated, and link switchover is initiated.

### Survivable state

Upon detection of a WAN failure, the CPE becomes the SIP server providing the necessary features allowing local station to station calls, emergency calls (e.g. 112 / 911) as well as regular calls, by rerouting them in to the PSTN or over an alternate WAN link being wired or wireless (see image below).

During this state the CPE is always checking if the WAN link is up again. Once back up, things revert back to normal operation.

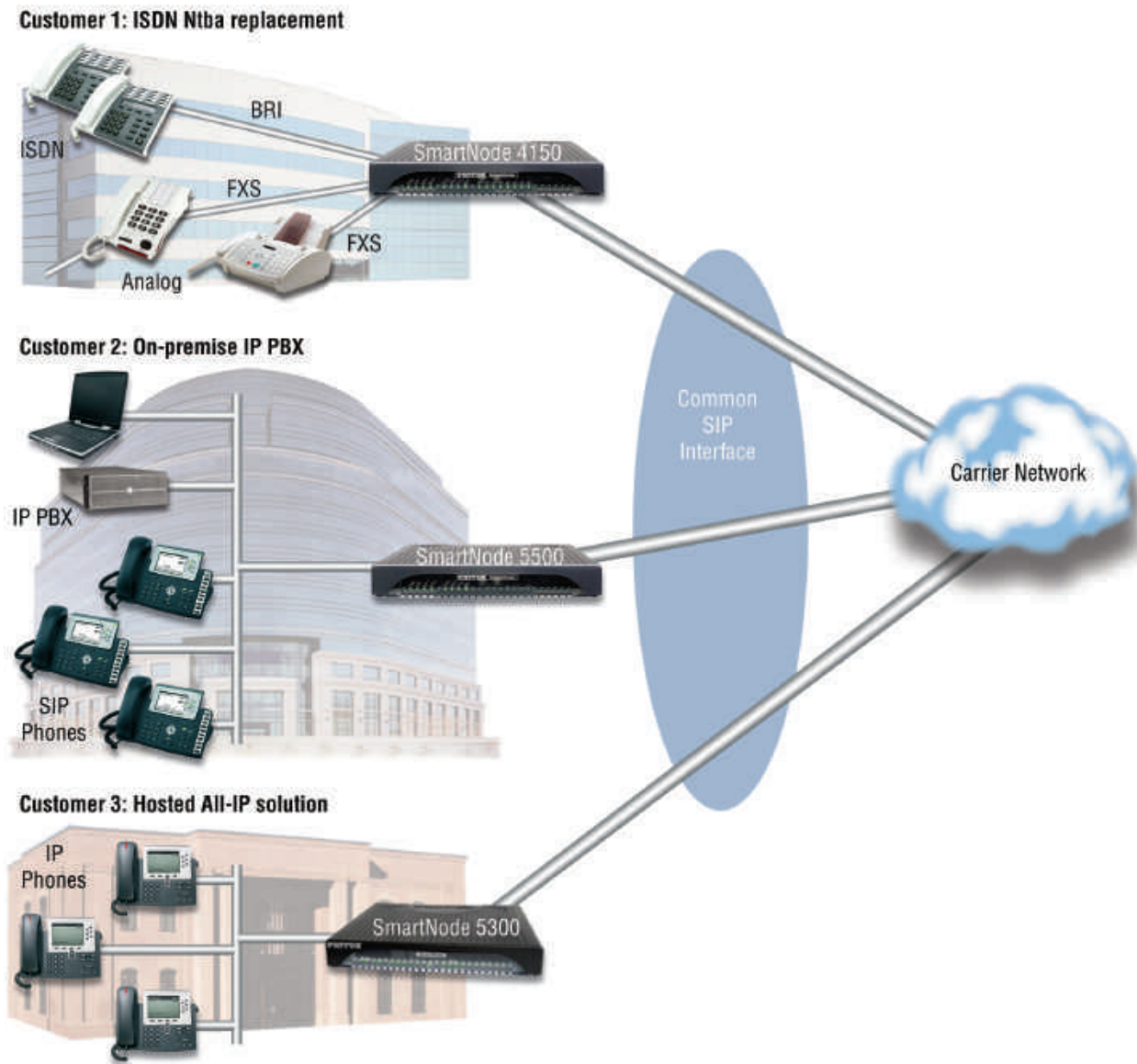
### Survivable operation



# Carrier Solutions

The Patton SmartNode™ product line supports IP PBX and hosted PBX, as well as legacy PBX systems. The feature-rich capabilities of the Patton SmartNode VoIP CPE means the service provider can have a single vendor solution that supports all VoIP services to the

end user. By providing a single and consistent SIP interface for all three of the above services, Patton can help you simplify VoIP deployment while controlling your OAM costs.



The Patton SmartNode™ solution operates under a single software platform allowing ease of installation and configuration, regardless

of the application being supported. And the specific features explained above are available on all SmartNode products.

## Carrier CPE: Legacy PBX

As a growing number of Service Providers are offering VoIP services, they face the challenge of connecting a wide array of legacy PBX systems. The SmartNode will always provide the same SIP to the service provider regardless of the type of legacy PBX attached to it.

Patton's SmartNode supports all varieties of legacy PBXs, regardless of the type of trunk supported. This includes Analog, BRI, PRI, DS3 or STM-1 connections.



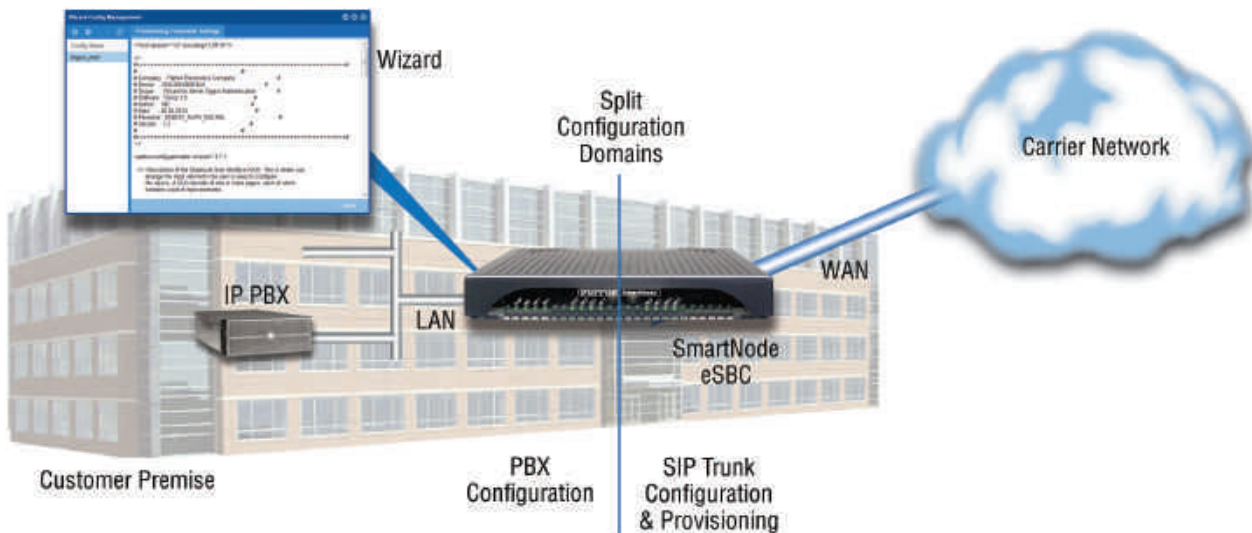
## Carrier CPE: Session Border Controller for SIP Normalization

The major problem for carriers is the wide selection of IP PBXs available on the market today. Even though each IP PBX provider claims to be SIP standards based, each system does something different with the SIP protocol. This means the service provider must have a unique softswitch profile for each type of IP PBX system that ties directly to OAM (operations, administration and maintenance) costs.

This device receives SIP requests from the customer premise equipment and reformats the SIP to meet the requirements for the service provider softswitch.

This SIP normalization standardizes setup because no matter what vendor IP PBX is used at the customer premise, the SIP presented to the service provider is always the same—eliminating the need for individual service profiles for each vendor's IP PBX.

Also moving the typical SBC features of these VoIP Routers from the Carrier network to the customer premise provides the customer with QoS, transcoding and a security demarcation point.



\*Any provisioning solution supporting tftp, http or https will work with the Patton SmartNode.

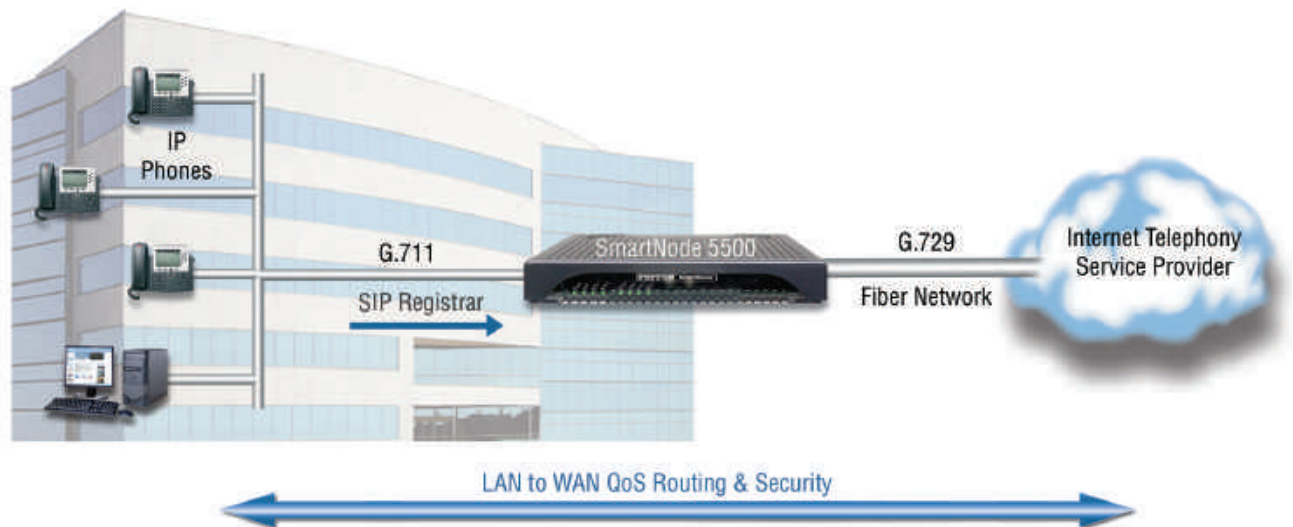


## Hosted PBX and On-premise IP Carrier CPE: PBX

With the wide variety of SIP phones available on the market today, the same number of softswitch SIP profiles is required to support each vendor's SIP phone. By utilizing the SmartNode Enterprise Session Border Controller with the SIP Back-to-Back user agent, a single softswitch profile can be used to support all varieties of SIP phones. This will allow control of OAM costs by not utilizing support personnel's valuable time to develop and implement multiple SIP phone profiles.

A second problem is that most SIP phones require registration to some type of softswitch or Session Border Controller to be able

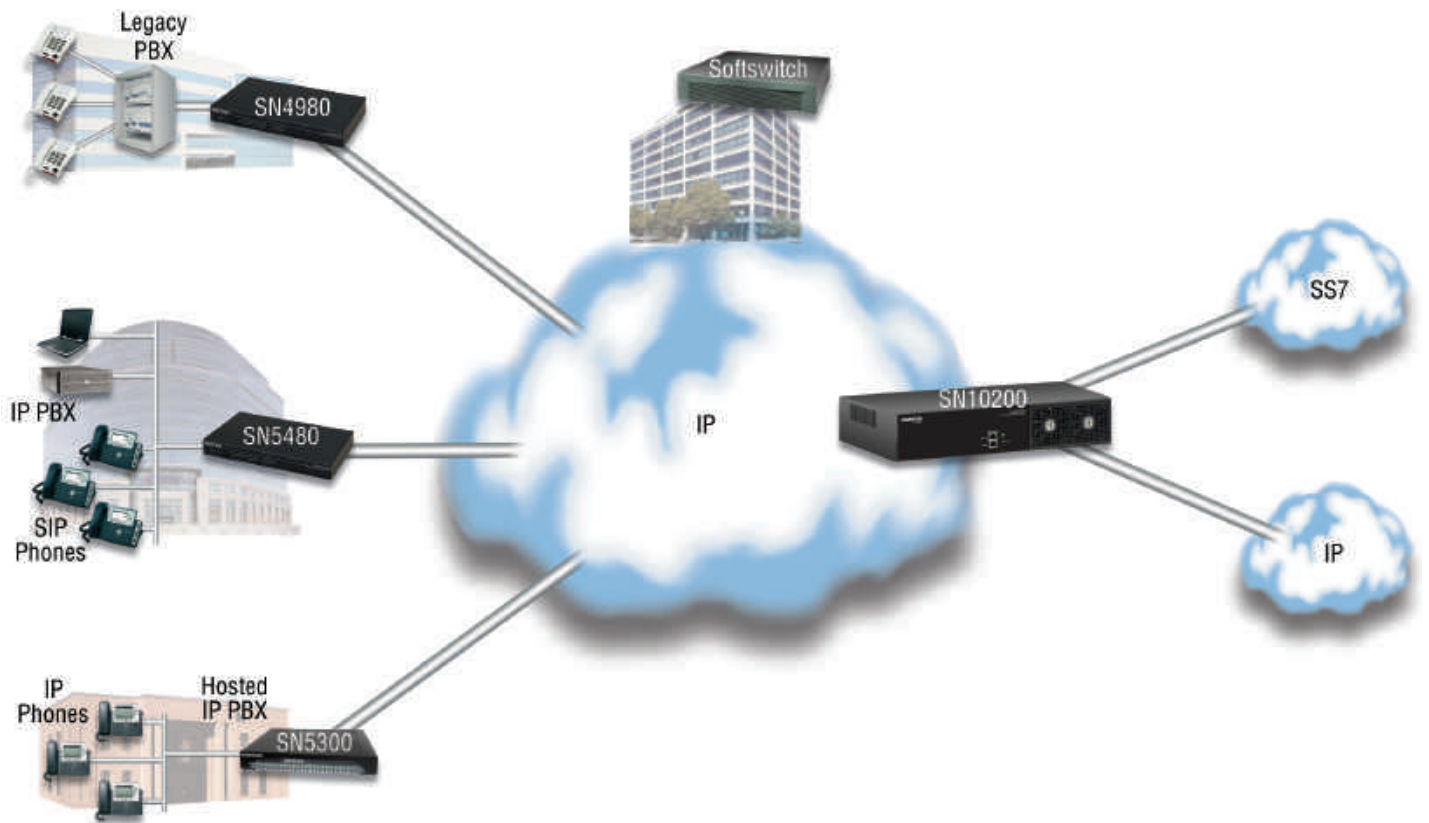
to function. Most eSBCs on the market today support a SIP registrar function to allow SIP to continue operation in the case of a softswitch failure. But in the case of a broadband connection failure, the SIP phones will not be able to reach the SBC to registrar and will not function. The solution for this problem is to move that eSBC functionality to the customer premises. By complementing the SBC functionality with the SmartNode eSBC that supports SIP registration, all SIP phones will be able to operate locally without the broadband connection.



## Carrier Network

The end-of-life (EOL) of parts used to maintain a TDM infrastructure is forcing Service Providers to replace TDM-based equipment. As a result, Service Providers are migrating their networks to All-IP. This can be best accomplished using a SmartNode 10XXX Series media gateway that enables the delivery of VoIP services by bridging voice traffic between the public switched telephone network (PSTN)—

based on time-division multiplexing (TDM)—and IP networks such as the Internet. Whether sitting at the network core or at the edge, SmartNode media gateways enable service providers to introduce VoIP into their networks while maintaining the quality and the reliability of traditional TDM networks.



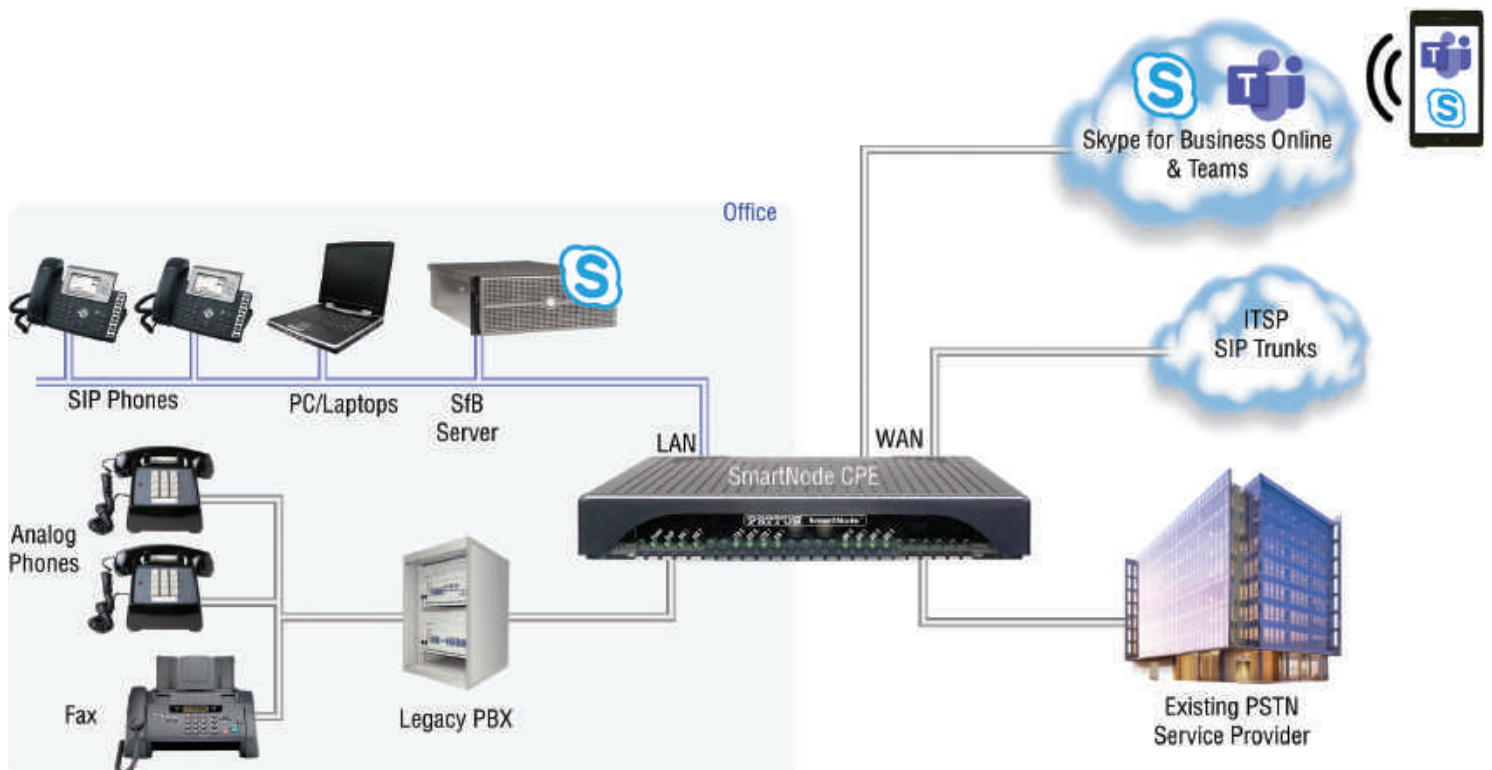
## Microsoft Skype for Business/Teams

All of Patton's eSBC and gateway products—including the Virtual SmartNode—are validated by the Microsoft-defined categories of SBC and Enhanced Gateway.

Patton, in combination with Skype for Business, offer a unified communication solution that simplifies and accelerates All-IP environment for SMEs. Providing a solution that is based on the lowest

OPEX in the market with its Virtual SBC centrally orchestrated and managed through a single portal: The Patton Cloud.

Covering every need of SME customers from Mobile applications, Skype for Business Online and on-premise (hybrid), legacy equipment integration and failover and survivability.



## SmartNode Certifications

Patton's interop certification program includes all the major technology brands.

### Enterprise Telephony Solutions



### Carrier Softswitch, IMS and Cloud Solutions



...and more! Check our partners page for more info at [www.patton.com/partners/](http://www.patton.com/partners/)

# Zero Touch Provisioning

Minimize your OpEx: CPE installation in less than 5 minutes!

*Standard on all SmartNode products\**

The Patton Zero-Touch Provisioning solution enables remote provisioning of SIP-trunk subscribers—avoiding the dreaded and costly truck roll. The solution ensures interoperability with just

about any IP PBX (legacy or ALL-IP) or unified communications platform on the market, through the Patton Cloud.



## Options

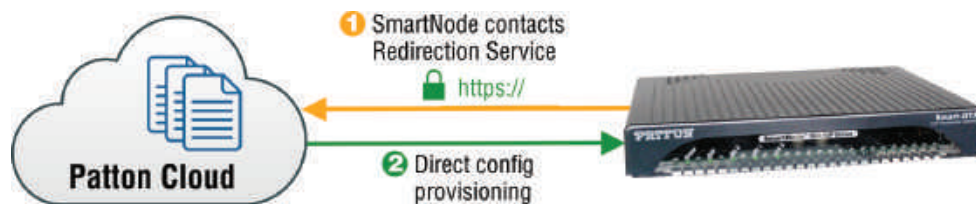
At least two options are available for doing the Zero-Touch provisioning included with the Patton Cloud Service.

In addition, Patton offers custom provisioning solutions for large-scale deployments.

### Option 1: Zero Touch with external provisioning server



### Option 2: Patton Cloud based zero touch provisioning



## Benefits

- **Cost-savings:** streamlined service provisioning and subscriber turn-up with no truck roll
- Ensured **interoperability** of network elements from multiple vendors
- Assured **service quality**
- Easy, streamlined **CPE management** from the [Patton Cloud](#)

\* not including SN10xxx products







Industrial Communication Products Ltd  
Tel: +44 (0) 203 086 9569

Web: [www.industrialcomms.co.uk](http://www.industrialcomms.co.uk)  
E-mail: [sales@industrialcomms.com](mailto:sales@industrialcomms.com)

[www.patton.com](http://www.patton.com)

**Patton Electronics Co.**  
7622 Rickenbacker Drive  
Gaithersburg, Maryland 20879  
USA  
Phone +1 301 975 1000  
Fax +1 301 869 9293  
E-mail [sales@patton.com](mailto:sales@patton.com)

**Patton-Inalp Networks AG**  
Meriedweg 7  
CH-3172 Niederwangen  
Switzerland  
Phone +41 (31) 985 25 25  
Fax +41 (31) 985 25 26  
E-mail [we@patton.com](mailto:we@patton.com)

**Patton Hungary Zrt**  
Gábor Dénes utca 4.  
Infopark Building C, Budapest H-1117  
Hungary  
Phone +36 1 439 4840  
Fax +36 1 439 4844  
E-mail [ce@patton.com](mailto:ce@patton.com)

