SMARTNODE™ PRODUCT LINE OVERVIEW

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

SmartNode

VoIP solutions that are
more than just talk



PATTON®
Let's Connect!™

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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, digital 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.



TMC Communications Solutions Product Of The Year — 2015, 2019 & 2020

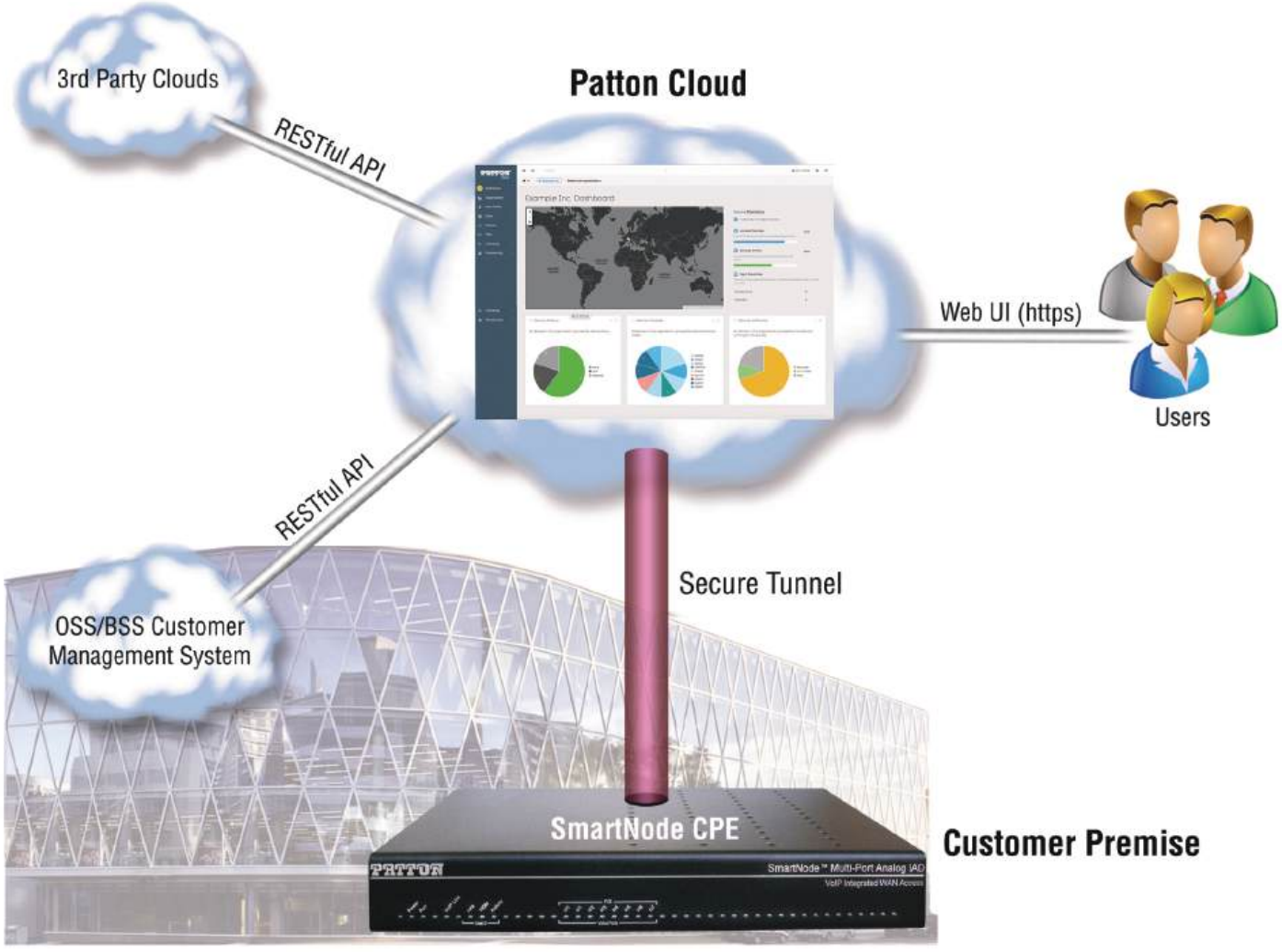
Internet Telephony Product Of The Year — 2005, 2006, 2009, 2010, 2012, 2015–2020

Product Of The Year TMC Unified Communications — 2007 & 2013

TMC Internet Telephony Excellence Award — 2007, 2009, 2012, 2013 & 2015



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



Patton Cloud Benefits

CENTRALIZED	SIMPLE	INEXPENSIVE
SECURE	PROFITABLE	INTEROPERABLE

Service Plans

	Basic	Standard	Advanced	Professional
Managed Devices	5	10	50	500
Basics	✓	✓	✓	✓
Redirect*	✓	✓	✓	✓
Provisioning**		✓	✓	✓
Licensing		✓	✓	✓
Files		✓	✓	✓
Basic Call Records		✓	✓	✓
File Synchronization			✓	✓
File Backup/Restore			✓	✓
Software			✓	✓
Alerts			✓	✓
Wizard Editor			✓	✓
Packet Capture			✓	✓
Call Quality Scoring			✓	✓
Advanced CDRs and Call Quality Metrics			✓	✓
LAN Device Discovery & Management			✓	✓
Multi-Tenant				✓
Support				✓
API				✓

* For an unlimited number of devices

** Launching Wizards only—Modification/creation of Wizards require Advanced or Professional plan

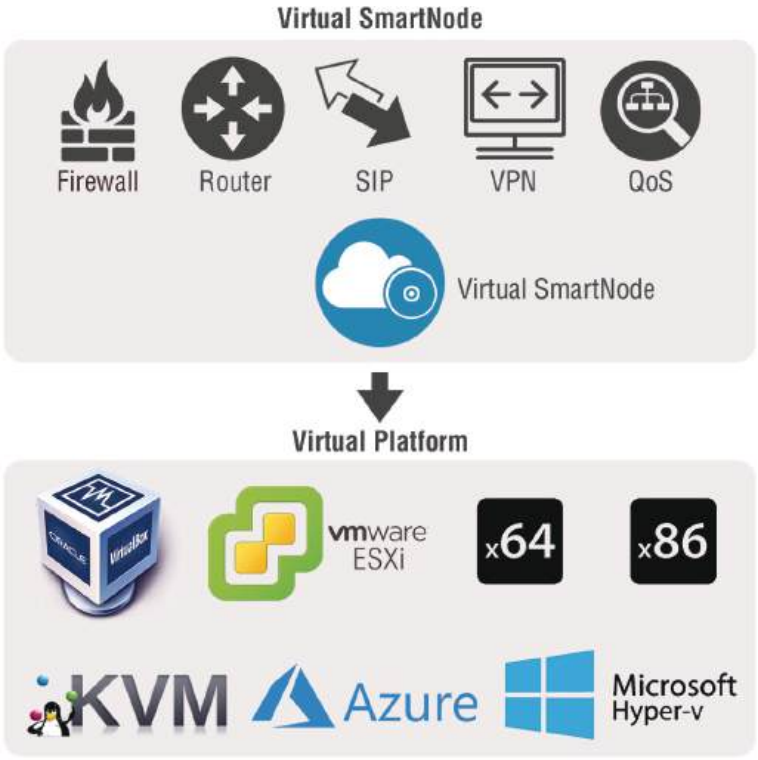
Virtual SmartNode

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

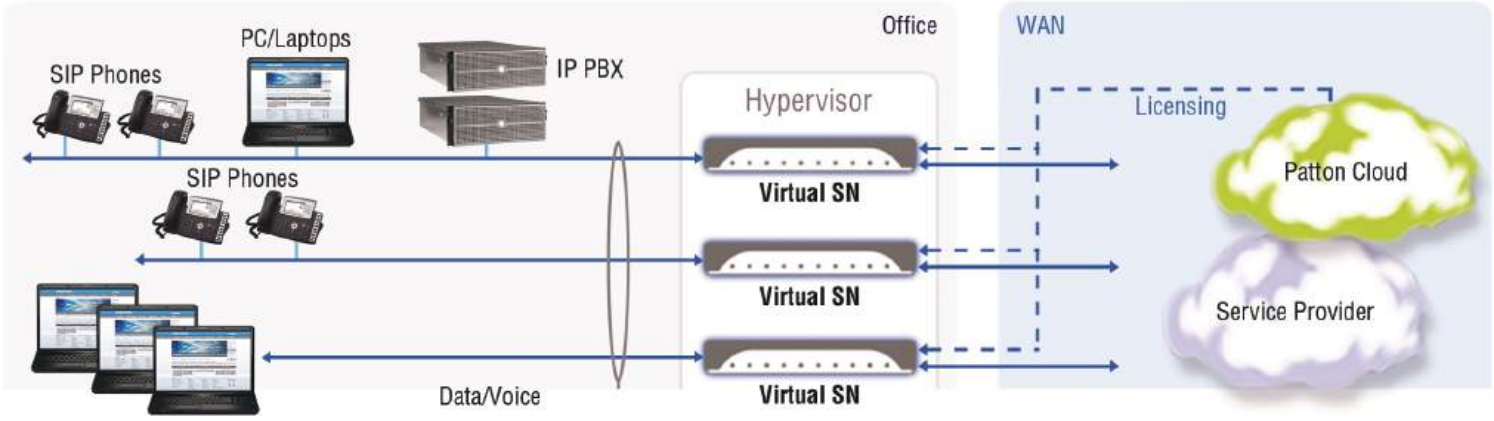
The Virtual SmartNode adapts to a variety of use cases that include:

- **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 features like: Patton Cloud Connect, IPv6 Networking & SIP, TLS and SRTP, Secure Zero Touch, 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.

Analog Gateways			
	SN200	SN4140	SN4740
			
Software	Trinity	Trinity	Trinity
Patton Cloud Connect	Yes	Yes	Yes
Telephony Interfaces	FXS & FXO	FXS	FXS (FXO soon)
Telephony Ports	1, 2 and 4	2, 4 or 8	16, 24, 32, 48, 72, 96, or 128
IP Router: IP Routing, QoS, VPN, etc.	No	No	Optional
Ethernet Ports	1	1 or 2	2
WAN Access	No	No	No

ISDN BRI Gateways		
	SN4130	SN4150
		
Software	Trinity	Trinity
Patton Cloud Connect	Yes	Yes
Telephony Interfaces	BRI	BRI, FXS, FXO
Telephony Ports	2, 4 or 8	2, 4 or 8
VoIP Channels	4, 8, 16	4, 8 or 16
IP Router: IP Routing, QoS, VPN, etc.	No	No
Ethernet Ports	1 or 2	1 or 2
WAN Access	No	No

T1/E1/PRI Gateways

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

Enterprise Session Border Controllers (eSBC)

	SN500	SN5300	SN5480	SN5490	SN5500	SN5530	SN5540	SN5550	SN5570	SN5600
										
Software	Trinity	Trinity	Trinity	Trinity	Trinity	Trinity	Trinity	Trinity	Trinity	Trinity
Patton Cloud Connect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Telephony Interfaces	N/A	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
SIP Sessions	4 to 30	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
Transcoded Calls	N/A	N/A	Up to 64	Up to 64	Up to 16	2, 4 or 8	2 or 4	2 or 4	16	N/A
Transcoding: Interconnect multiple VoIP networks	N/A	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
VoIP Gateway: Converts TDM to IP	No	No	No	No	No	Yes	Yes	Yes	Yes	No
IP Router: IP Routing, QoS, VPN, etc.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethernet Ports	2	4	2	2	2	2	2	2	2	2
WAN Access	N/A	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
SIP & RTP Security	Yes*	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.248 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
- Up to 48 Ethernet Ports
- 1+1 & N+1 Redundancy
- Scriptable Call Routing

Carrier Gateways & SBCs

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

Enterprise Solutions

Legacy PBX to SIP Trunk Migration

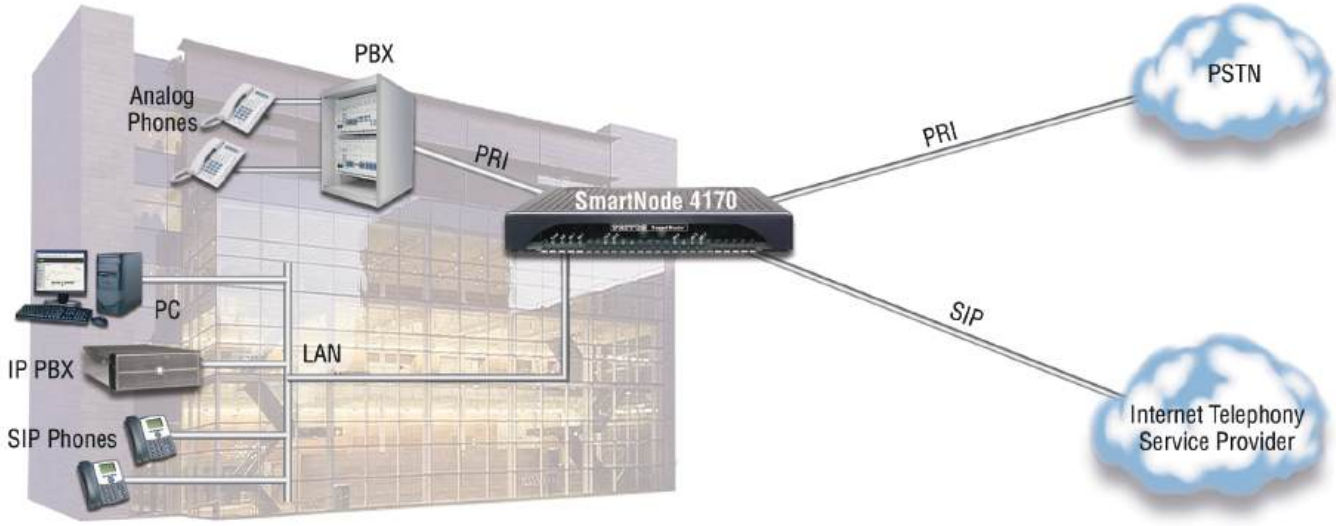
Solution Gateway

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

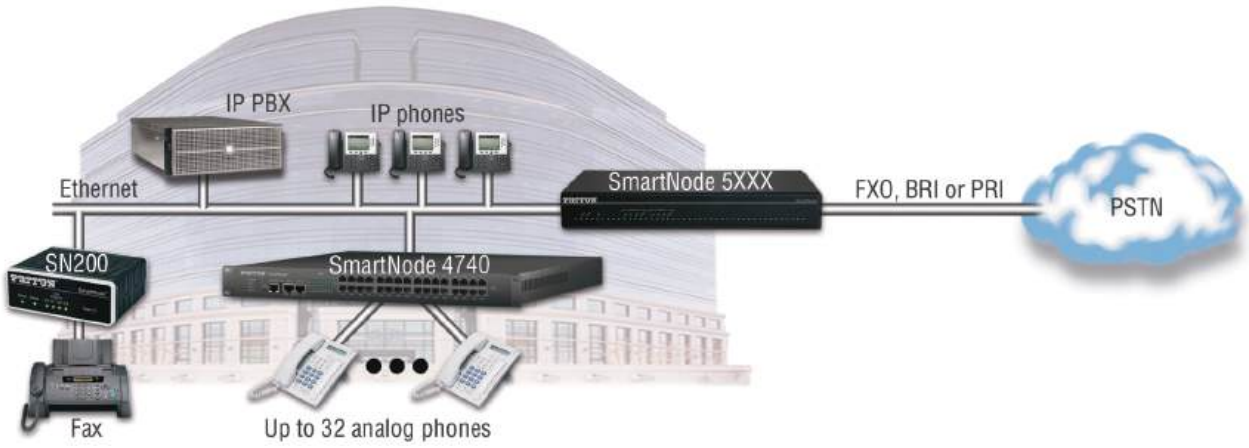
As the business grows and starts investing in next-generation IP telephones while at the same time utilizing the perfectly good analog/ digital phone equipment the same SmartNode providing any-to-any flexible call routing between legacy PBX, IP PBX, PSTN and SIP trunks.



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

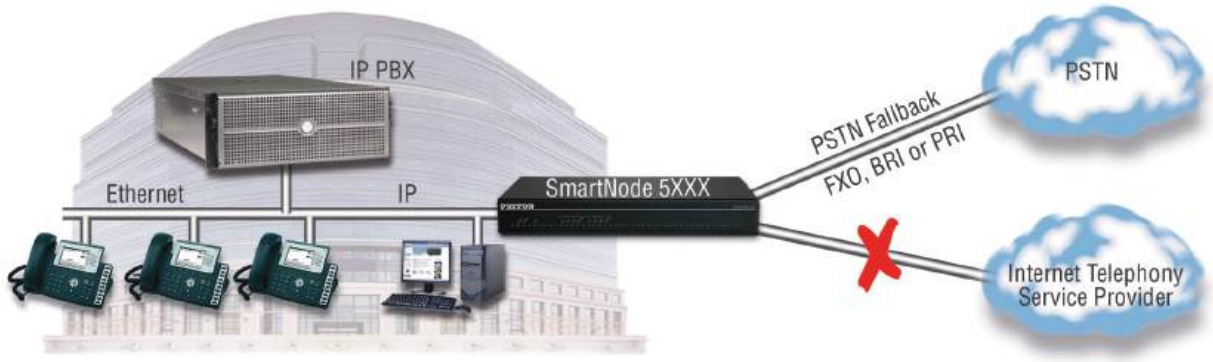
Many businesses wish to keep their existing traditional phone service provider connected to their IPPBX because they are satisfied with their current service, stuck in a contract or possibly don't trust VoIP too much yet. In these cases, offering Patton's SmartNode Gateways in conjunction with an All-IP 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.

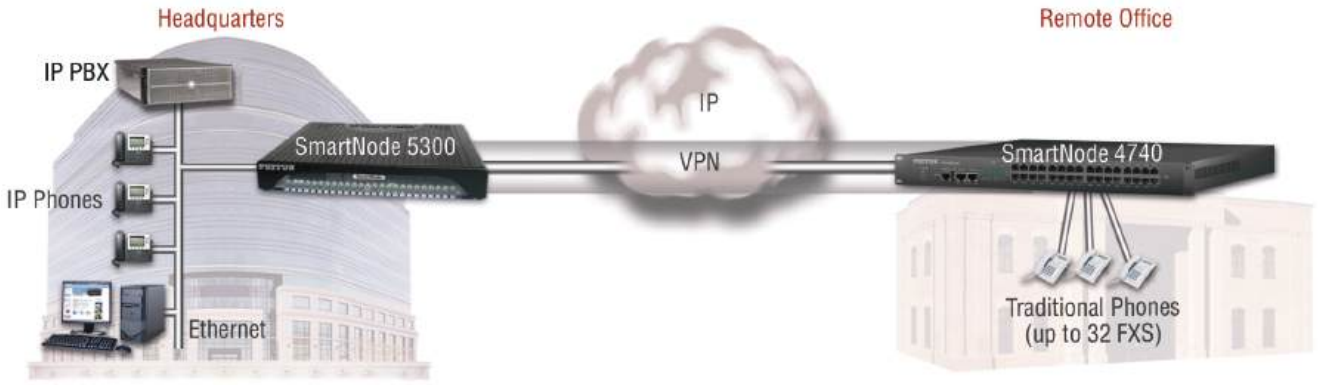
A SmartNode VoIP Gateway can be used to fallback to your PSTN lines (99.999% reliability) in cases where the Internet telephony service provider or Internet connection goes down.



Connecting Remote Offices

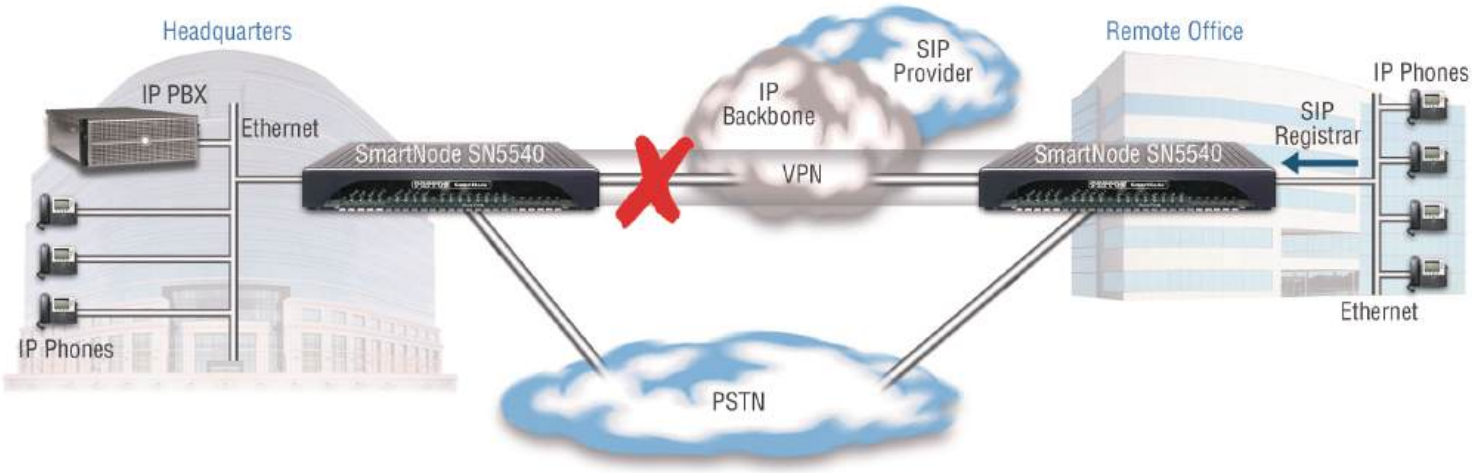
The SmartNode Gateway can be used to connect analog, ISDN and IP telephony from a remote office to your IP PBX phone system in your headquarters.

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



Remote Office Survivability

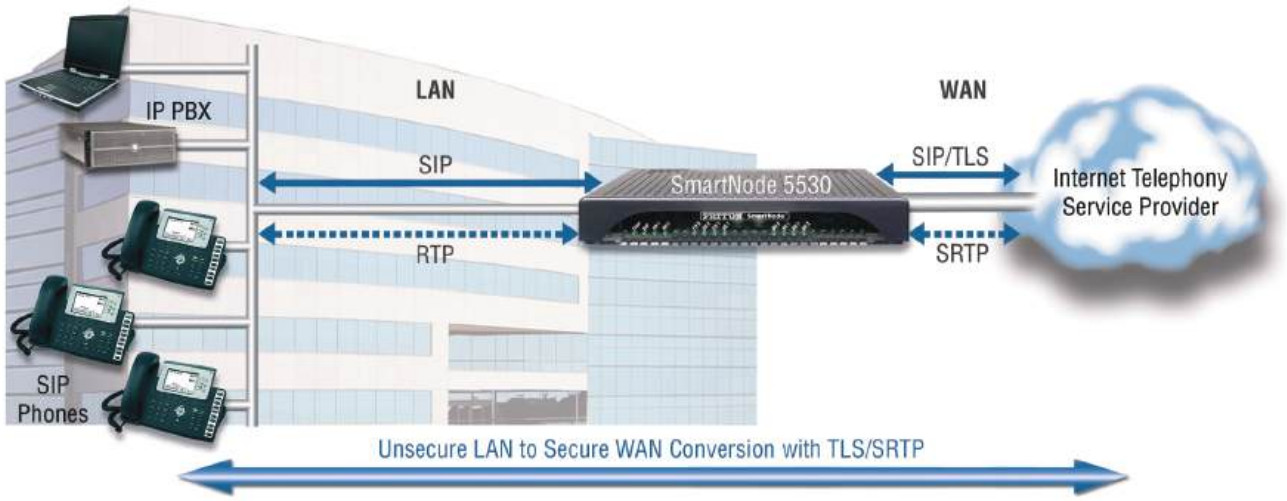
A SmartNode provides a SIP Registrar for your IP phones in your remote office to register with the SmartNode directly rather than just the IP PBX in your headquarters. This way, in the case where you lose your connection to your headquarters, the remote office can act independently making and receiving calls over PSTN lines.

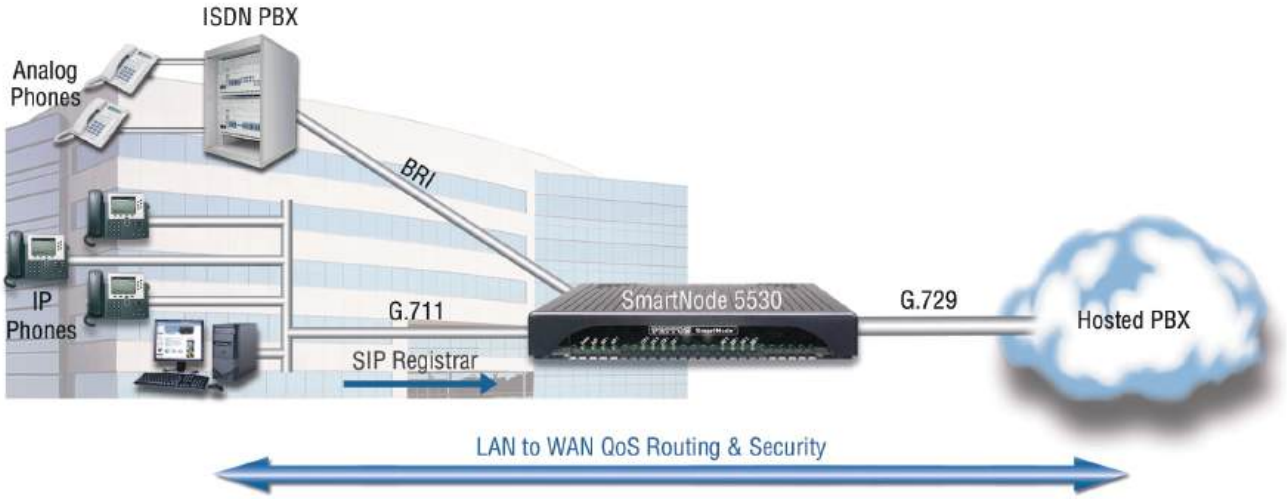


All-IP Set-up with Enterprise Session Border Controllers

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.

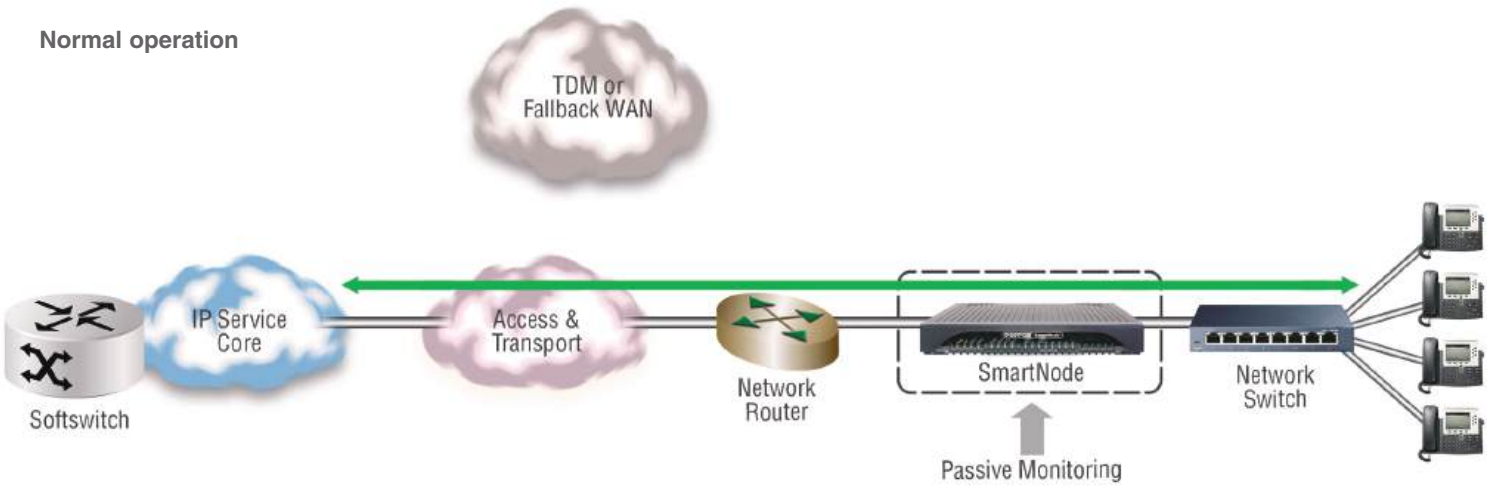




Automated SIP Survivability Solution

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.

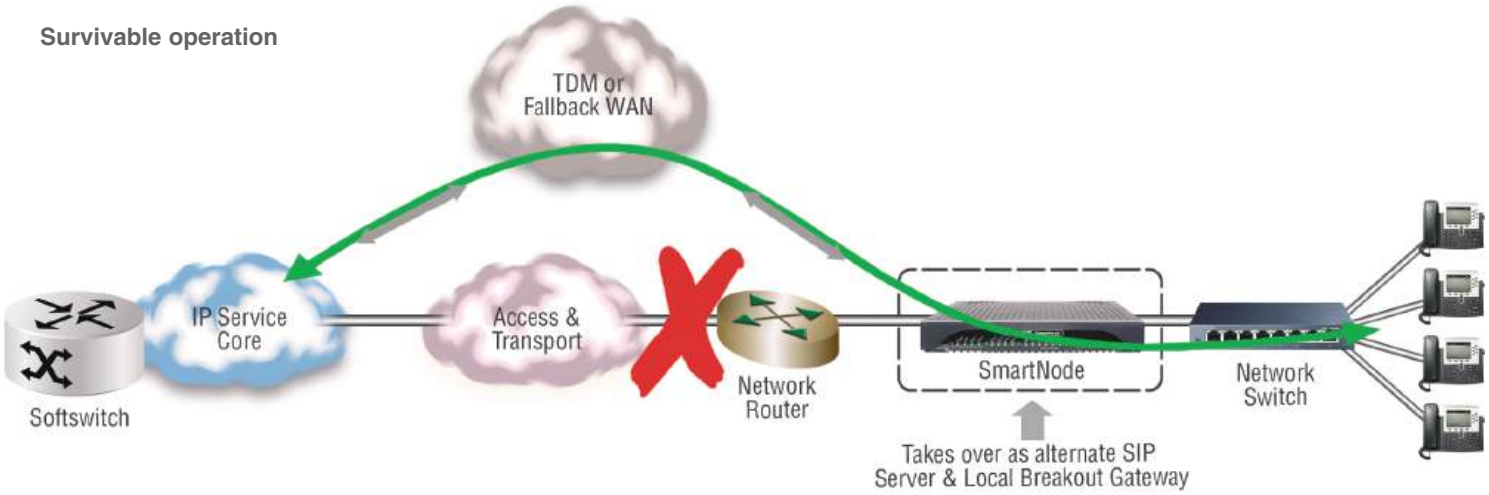
The CPE then monitors the up/down state of SIP servers. If no response is received from a server, a WAN failure is indicated, and link switchover is initiated.

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).

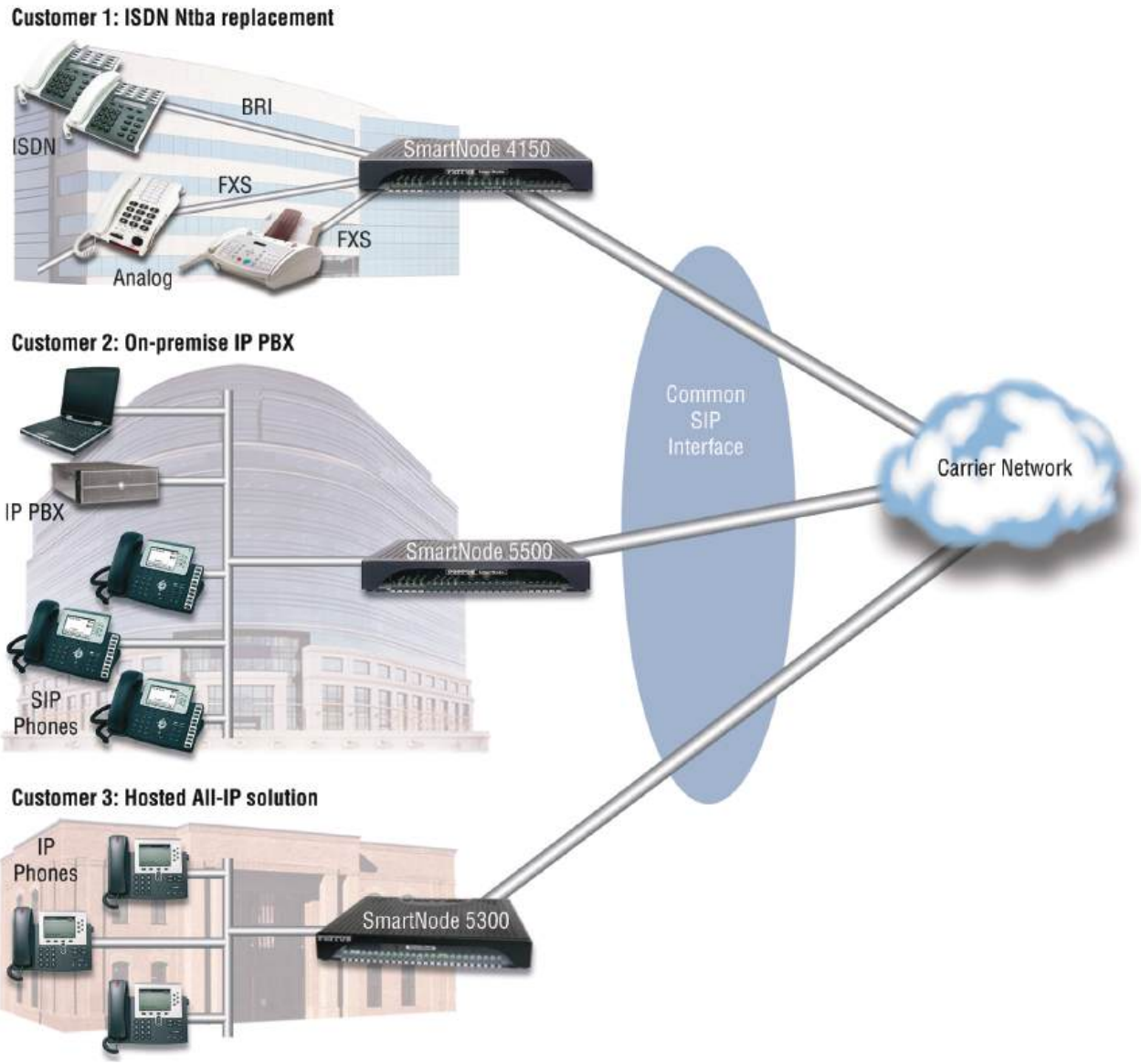
During this state the CPE is always checking if the WAN link is up again. Once back up, things revert back to normal operation.

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.



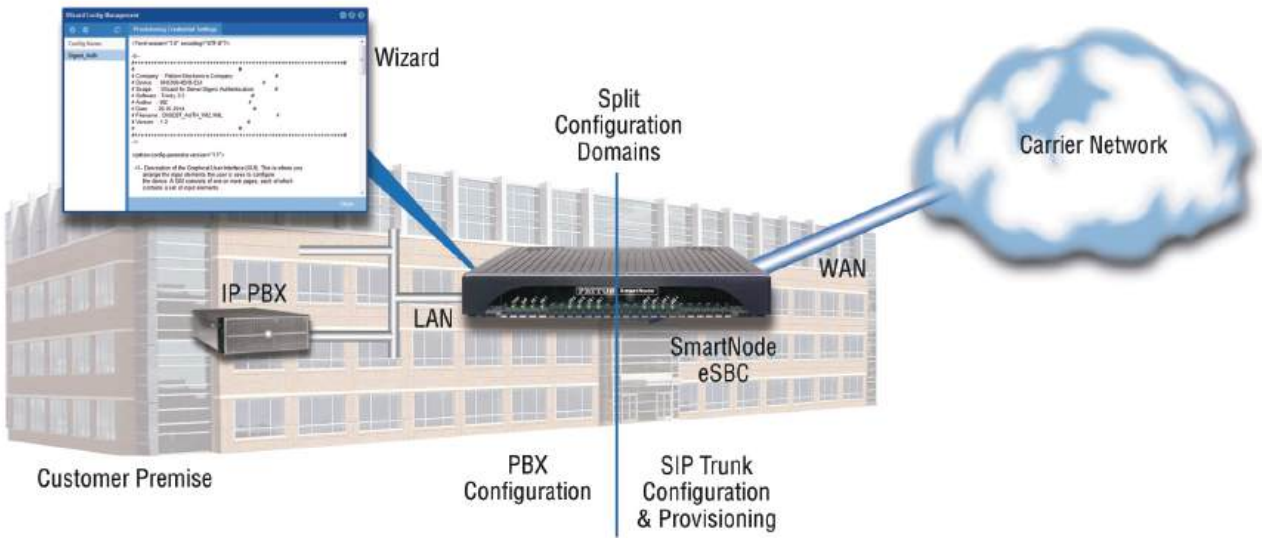
Carrier CPE: Session Border Controller for SIP Normalization

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.

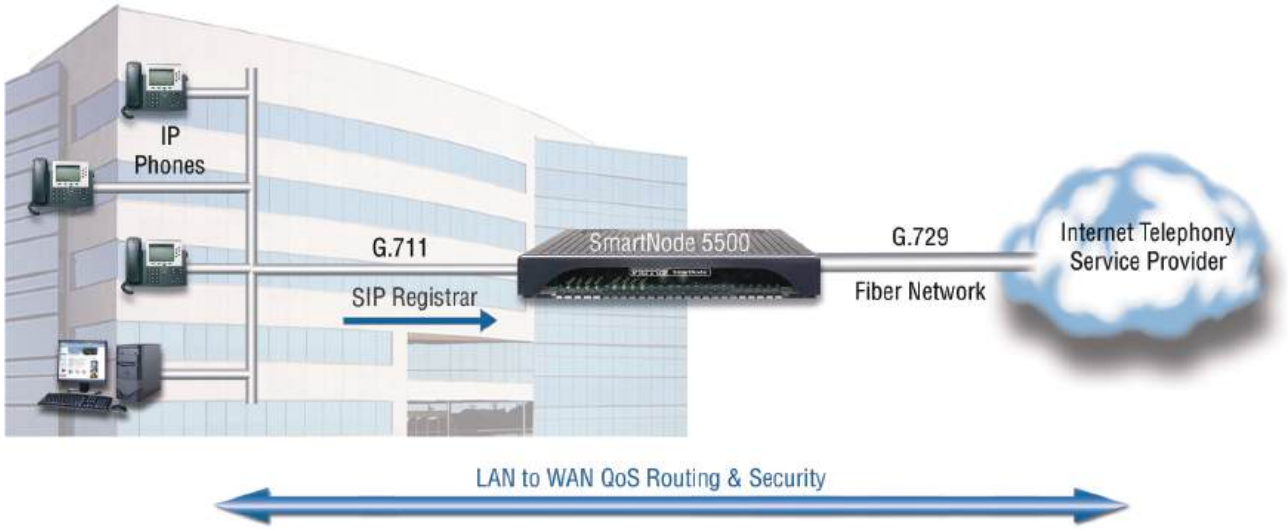


*Any provisioning solution supporting tftp, http or https will work with the Patton SmartNode.

Hosted PBX and On-premise IP Carrier CPE: PBX

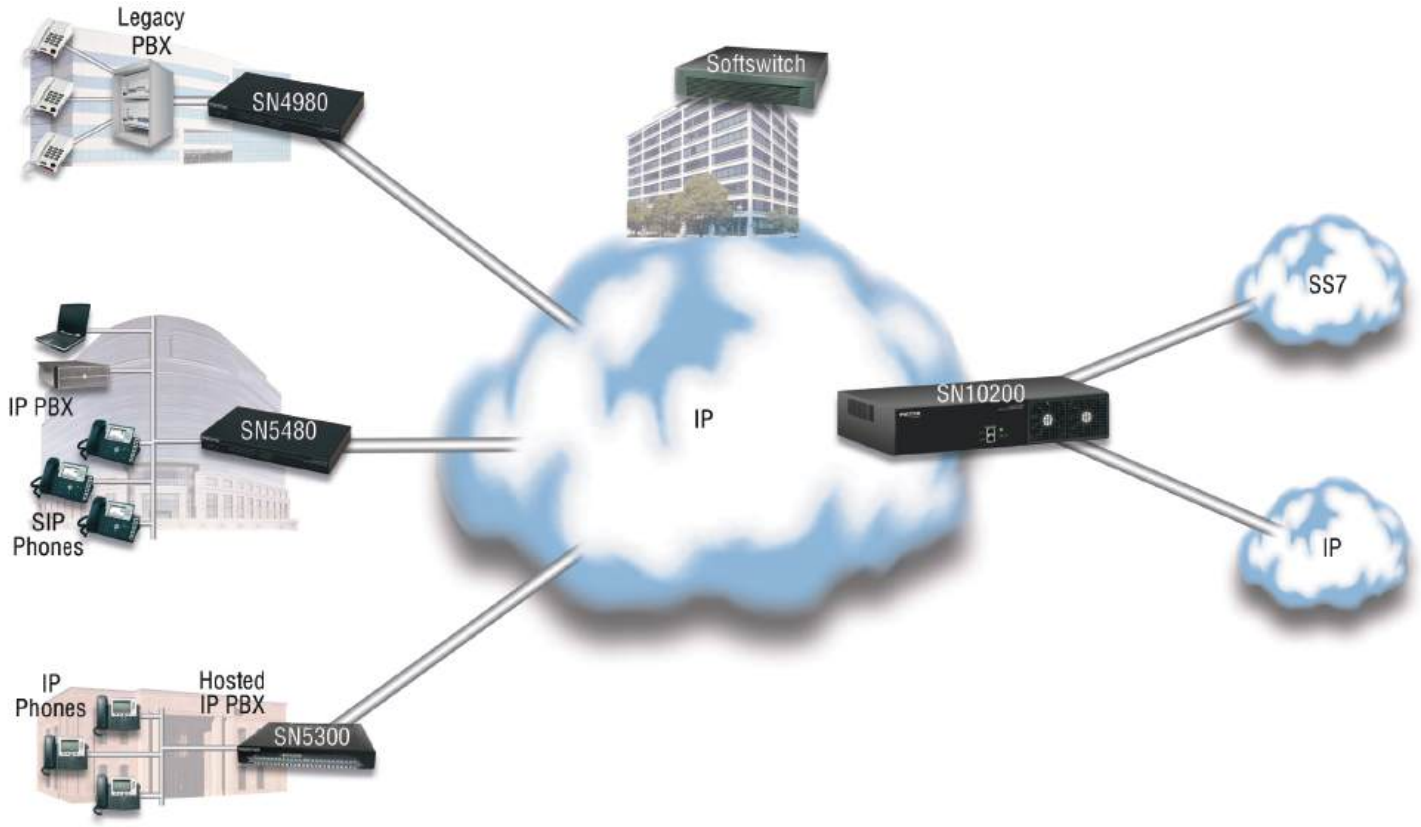
With the wide variety of SIP phones available on the market today, the same number of softswitch SIP profiles is required to support each vendor's SIP phone. By utilizing the SmartNode Enterprise Session Border Controller with the SIP Back-to-Back user agent, a single softswitch profile can be used to 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.



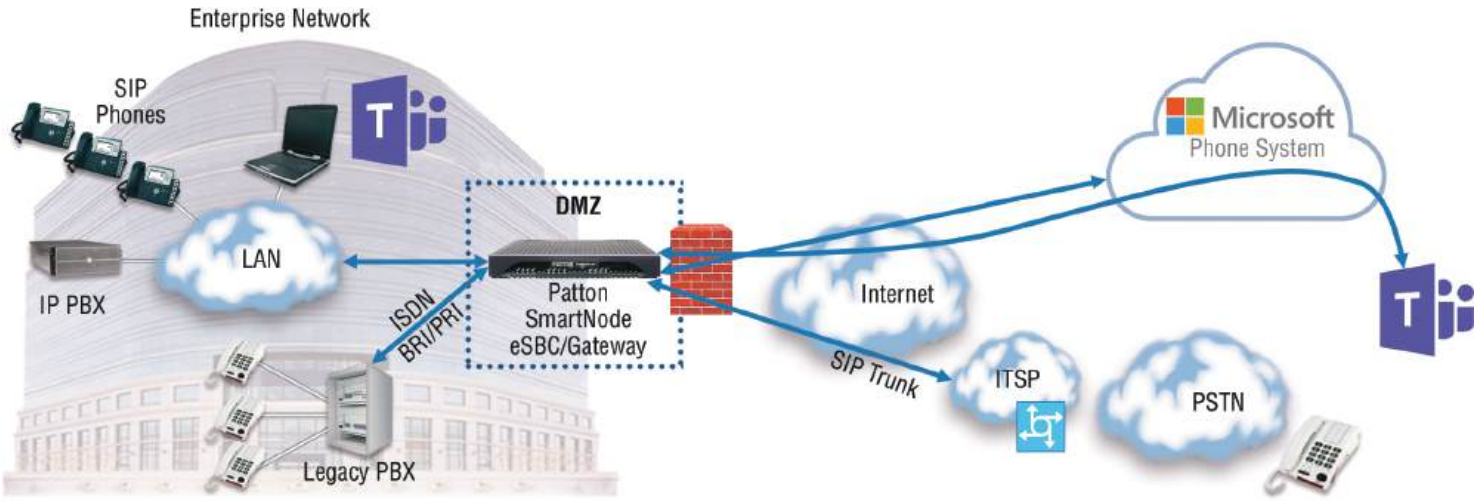
Certified for
Microsoft Teams

Microsoft Teams Certified For Direct Routing

Patton SmartNode devices unify traditional telephony and SIP-based All-IP systems with MS Teams Phone System using Direct Routing. Enterprises can benefit from numerous advantages by choosing Patton SmartNode SBC and hybrid SBC.

Features Overview

- Direct Routing Certified
- System and technology convergence
- Legacy Equipment Integration (BRI, E1/T1, Analog)
- PSTN Integration (BRI, E1/T1, FXO)
- Call Distribution, Forking
- Simultaneous Ringing, Ring-Groups
- Survivability & Failover
- Call Quality Monitoring & Alerting
- SIP Security, Network Topology Hiding
- Patton Cloud Orchestrated & Monitored
  - Floating Software Feature Licensing
  - Remote Troubleshooting
  - Call Quality Monitoring



SmartNode Certifications

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

Enterprise Telephony Solutions

Microsoft Teams

UNIFY Harmonize your enterprise

Alcatel·Lucent Enterprise Application Partner

STARFACE COMFORTPHONING

3CX

pascom

swyx

MONKEYVOICE

AVAYA

Skype for Business

Asterisk

Let's CALL

Carrier Softswitch, IMS and Cloud Solutions

aarenet

broadsoft

centile

Metaswitch Networks

CIRPACK

ribbon

…and more! Check our partners page for more info at 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.



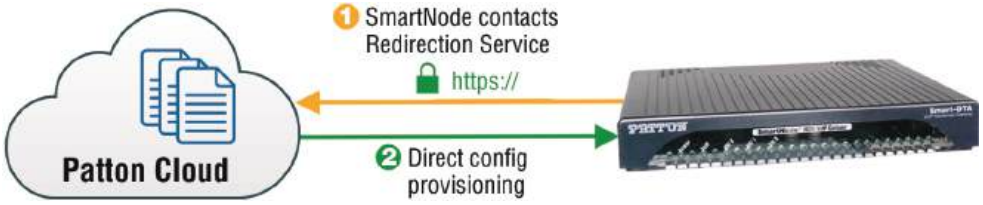
Options

At least two options are available for carrying out the Zero-Touch provisioning feature included with the Patton Cloud Service. In addition, Patton offers custom provisioning solutions for large-scale deployments.

Option 2: Patton Cloud based zero touch provisioning



Option 1: Zero Touch with external provisioning server



Benefits

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

* not including SN10xxx products

Notes

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