The Samsung Guide to SIP and SIP Trunks

SAMSUNG

The Samsung Guide to SIP and SIP Trunks

What is SIP?

The communications industry is notorious for its love of TLAs or three letter acronyms. One that business telephony users are hearing more and more is SIP, the de facto standard for voice over IP telephony (VoIP).

Standing for Session Initiation Protocol, SIP is a signalling protocol developed by the Internet Engineering Task Force to enable business quality voice communications over Internet Protocol (IP) networks, including broadband and service providers' Next Generation IP networks.

An open standard, SIP addresses the setting up, processing and ending of calls over IP networks and is applicable to all the elements involved in making a call including handsets/softphones, applications, telephone systems, gateways and the servers that make up IP networks.

SIP is not concerned only with voice, but encompasses text and video, conferencing, call re-routing, presence and mobility functions essential to the next generation of sophisticated voice applications, such as unified communications and fixed mobile convergence.

SIP compliance indicates that a device is able to communicate with any other SIP device or software application, from any manufacturer. To exploit the possibilities of VoIP to the full, it is helpful if all elements involved in a call are SIP-enabled, but it is not essential.

Even if your phone system and handsets aren't SIP compliant you can still enjoy some significant benefits of VoIP technology by installing a SIP gateway, like the Samsung Ubigate, which converts voice traffic from a conventional TDM phone system into a format suitable for routing over an IP network.

VoIP in Business

Millions of consumers and business people already have first hand experience of Voice over IP through services like Skype that can be used to make free or low cost calls over the internet. Such services have grown in sophistication and reliability and are now used on a daily basis for voice, video and conference calls.

VoIP is used in enterprises, too, via IP PBXs and IP gateways that allow businesses to route calls over public and private IP networks with the management controls, functionality and voice quality that business users demand.

The early adopters of VoIP tended to be large organisations that recognised the savings that could be made by converging internal voice and data networks into a single, unified infrastructure. The benefits were especially compelling for multi-site organisations that were able to link phone systems in different sites via a private IP network to avoid charges for internal, site-to-site calls and the cost of ISDN lines at each site.

Recently, the development of standards (SIP) for interoperability and falling prices have made VoIP a viable option for small and medium-sized businesses. One very popular application that supports today's flexible working practices is the ability to integrate a home worker with a SIP handset and broadband connectivity into a SIP-enabled PBX so that they appear as just another extension with access to the same phone system features as office-based colleagues.

Improvements in voice quality and reliability over IP networks mean that a growing number of businesses are choosing to use VoIP for external calls too. In most cases, this is done in parallel with existing ISDN lines, though this is starting to change now that telephone network providers like BT are offering SIP trunks as an alternative to ISDN lines for connecting a corporate PBX to the PSTN network linking telephone users around the globe.

SIP Trunks

SIP trunks provide PSTN capabilities via service providers' data networks instead of ISDN and offer a number of advantages over ISDN lines, including cost-savings, greater flexibility and on demand deployment.

Instead of having to buy and install a certain number of fixed ISDN lines (and install ISDN cards on the PBX), SIP trunks can be scaled up or down in line with customer demand without the need for physical installation: the only limitation is the customer's broadband capacity.

This has great potential for multi-site organisations as it makes it possible to share capacity between sites, which almost always results in the need for fewer channels

Other compelling reasons for adopting SIP trunks include fast roll-out of new channels; the ability to provide other sites with a communications capability without having to provide physical ISDN lines; and simpler business continuity planning.

Because SIP trunks are based on IP networks rather than physical ISDN wires into a company's premises, in the event of a fire, flood or other disaster, calls can automatically be routed anywhere there is a broadband connection. This removes the need to maintain a parallel set of ISDN lines in a separate location as back-up.

Business continuity is aided by the ability to port existing numbers to SIP trunks or use geographic numbers to project a local presence even if you are based on the other side of the globe.

SIP-enabled voice services

Perhaps the most convincing argument for SIP trunks is that Next Generation Networks like BT's 21CN are based on IP and so it makes sense to have an all IP communication network geared up to support the advanced communications that SIP makes possible.

As noted above, SIP relates not just to voice communications but also to other data types including video and data; it can be used for fixed and mobile devices; it gives users the ability to add functions, such as video or new participants at any point during a call; and it makes it possible to specify one's location and how one should be contacted.

These capabilities make SIP a key enabler of modern communications applications, notably Presence, Unified Communications, Multimedia Conferences and Fixed-Mobile Convergence.

Flexible deployment with Samsung Ubigate

SIP trunks can be used as a total or partial replacement for ISDN lines (some customers like to keep an ISDN as back-up in case the data connection fails) and can be used with IP-enabled or traditional PBXs. The latter will require a gateway to convert TDM voice signalling into a format compatible with IP networks.

Samsung Ubigate multi-service business gateways allow all individuals and businesses to enjoy the benefits of SIP communications regardless of the type of phone or phone system installed.

The Ubigate sits between public phone networks and a customer's private phone system and ensures full compatibility between the IP and TDM worlds so that calls can be routed between an IP phone system and the PSTN, for example, or between a SIP trunk and digital phone system or analogue handset in the home.

The Ubigate is not just a voice gateway but a fully converged voice and data solution that acts as a data routing platform, a firewall/VPN, and a switching platform. It even includes a soft PBX with voice mail and auto attendant features. Because Ubigate is fully modular, customers can install it for one purpose and then activate additional functionality as their needs change.

Powerful processors in the Ubigate ensure that different voice and data tasks can be carried out simultaneously without any degradation of performance, with voice prioritisation and quality of service (QOS) for business-grade voice communcations.

Customers use Ubigate for a variety of applications. It can be used to connect a WAN, such as a leased line, into the office; it can be used as a full IP, SIP-based PBX, with the option of data routing, WAN networking and security; or it can be used to SIP-enable a legacy PBX.

Proven performance

One application for which Ubigate is proving very popular is the provision of SIP trunks to businesses with diverse and unknown telecoms equipment and capabilities.

Growing confidence in the ability of their 'next generation' IP networks to deliver PSTN-quality voice communications is encouraging network providers throughout Europe to offer SIP trunking services both to businesses and consumers.

To do this effectively, mass providers need a device on the customer's premises that acts as an interface between their SIP trunks (delivered via broadband) and the existing on-site telecoms equipment, regardless of make or model.

Network providers throughout Europe, including the UK, have chosen Samsung's Ubigate to fulfil this role. With remote management capabilities and prioritisation of voice traffic, Ubigate enables providers to emulate a standard ISDN service, including Caller Line Identity (CLI) and DDI numbers, over SIP trunks without the need for customers to upgrade their phone system or invest in additional hardware.

A direct connection

Businesses with SIP-compliant Samsung IP phone systems like the OfficeServ 7000 Series and the Ubigate (it comes with a built-in soft PBX), can enjoy the benefits of SIP trunks without the need for any additional equipment.

When used with SIP phones, they provide a direct connection to the growing number of SIP services and SIP trunk providers with no delays or loss of speech quality that can occur when converting an IP signal to TDM (used by non-IP devices) or when changing a codec.

The OfficeServ 7000 and Ubigate have already been certified to work with solutions (see website for a full list) and are constantly being tested against new services as they are brought to market.

Network provider' IP networks promise to transform business communications with the seamless integration of voice, data, video and business software. Samsung's IP phone systems, whether used in an all IP infrastructure or, in the case of the Ubigate, to SIP-enable a TDM phone system will enable businesses of all sizes to take advantage of the next generation of SIP-based communications services to cut costs, raise productivity and improve customer service.

SIP Applications

SIP applications bring a new era of mobile and multimedia communications to businesses and consumers.

Presence. Providing a solution to hit or miss attempts at communication, Presence uses highly visible colour icons to show the availability of contacts and how they would like to be contacted at any time. Contact lists on a SIP-enabled deskphone or softphone show at a glance whether someone is in a meeting; already engaged on a call; or out of the office but contactable on a mobile phone.

Unified Communications. SIP-based unified communications solutions offer a single inbox for voice, email messages, text messages and IM for improved message handling, as well as Presence information allowing users to respond to messages in the most appropriate manner.

Multimedia Conferences. Support for other data types in the same session allows users to incorporate voice, video and data at any point during a call, including video communications, white-boarding and application-sharing for improved collaboration between dispersed teams.

Fixed-Mobile Convergence. A SIP client installed on a smartphone makes it possible to integrate mobile devices with the company PBX and cut mobile phone bills by routing calls from a mobile via the office phone system.

Reach Me Anywhere. SIP improves the likelihood of reaching a contact at the first time of trying by being able to ring devices in two locations simultaneously (e.g. home and office) and by specifying where you can be reached so that calls are automatically routed to the right location.

Ubigate features

Hardware:	USB Port	Aux Port
	Compact Flash	Modular Configuration
	Hot Swap Modules	Rack Mounting
	Console Port	Flash

Security:	Firewall	IP Spoofing
	SIP ALG	Traffic Scheduling
	VPN	IPSec
	Encryption	Internal Security
	MAC filtering	ISM
	Real time monitoring	Signature based detection and prevention

Switch/Router:	LAN switching	Layer 2 protocol
	IPv6	Quality of Service
	WAN protocols	Routing protocols

Voice:	Caller ID/Name	Call Forwarding
	Call Hold / Retrieve	Call Pickup
	Call Transfer	Call Waiting
	Incoming Call Blocking	Tone - Dial, Ringback, Busy, Congestion, Wait, Hold, Progressing, Howling, Programmable