



SIP: Enabling Your Business to Leverage the Power of the Internet

**Session Initiation Protocol (SIP)
Comprehensive Customer Brief**

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Introduction

Traditionally, businesses around the world exchanged electronic information in two ways: speaking via telephones, and exchanging data via communications networks. Voice and data system architectures were radically different, with voice offering two-way, real-time communications, and with data using a store-and-forward approach. The emergence of the Internet as a communications infrastructure provides a new architecture that offers the best of both worlds, and lays the foundation for simpler, more powerful, and less costly integration of voice, data and multimedia communications using common infrastructures. With the emergence of wireless infrastructure and the rapid pace of change in business, relocation and mobility are key aspects of today's business reality.

Initially a text-based medium, the Internet has moved to become a pervasive medium that has fundamentally changed our lives. HTTP set the stage for the World Wide Web by establishing how computers accessed and displayed Web pages stored on central servers. More recently, the focus has been on using Internet infrastructure to integrate voice using Voice over Internet Protocol (VoIP) technologies such as Session Initiation Protocol (SIP).

SIP is recognized as an excellent way to achieve fully integrated communications over Internet infrastructure. It promises to have the same impact as HTTP on how we communicate in realtime: on mobile or standard phones, using computers, Personal Digital Assistants (PDAs) such as Palm™ Pilots, Blackberry™, iPAQ™, and any type of IP-based device. Not only does SIP enable VoIP communications, it can also be used for Instant Messaging, short messages and multimedia conferencing.

Many vendors and service providers have lined up behind SIP. Like VoIP in general, SIP is evolving and the technology community is working to ensure that as VoIP services and networks increase their deployment, SIP will reside at the core of that deployment.

SIP signals a new era of increased capability and flexibility for businesses around the world, offering a host of benefits and setting the stage for the emergence of even more capabilities in the future. This document provides an overview of the business implications of SIP, with examples of how SIP will enable a whole new generation of business services and advantages.

What exactly is SIP?

Session Initiation Protocol, or SIP, is a communication protocol that facilitates openness, connectivity, simplicity, choice and personalization. It is a standard that is being advanced by the Internet Engineering Task Force (IETF), the global non-profit Internet standards body behind Internet Protocol (IP) and HTTP. The IETF began standardization of SIP in 1996 to support multicast applications. Its simplicity, power and extensibility, however, led to SIP's rapid adoption for other uses across the IETF, notably for use with Voice Over Internet Protocol (VoIP) and for Instant Messaging.

Communications service providers saw VoIP as a way to merge their voice and data networks, reducing costs and opening up prospects for new and powerful applications. SIP offers a new degree of scalability and interoperability, and provides an easier way to build new services than earlier VoIP protocols.

From its inception, SIP was modeled closely after HTTP. Like HTTP, it was designed to

work over IP networks. One of the most powerful concepts of the Internet is the fact that applications can operate between a web server and a browser with no dependence on the underlying IP network. The same is true for SIP-based sessions (a session begins when you connect with other parties and ends when connections are terminated). A SIP server (such as a Mitel Networks 3050 Integrated Communications Platform) and client (such as a Mitel Networks 5055 SIP phone) have complete control over their session (voice, video, conferencing, Instant Messaging, etc.). This is in direct contrast to the model for service control in the traditional circuit-switched telecom world, where endpoints like phones lack call control capabilities and all services are controlled by a central switching element. SIP delivers maximum flexibility to the business owner and system users.

SIP is being adopted by major telecommunications service providers around the world. It has also been specified as the call control for the 3GPP next generation cellular network has been adopted by Microsoft™ for use in with Xbox™ and Windows Messenger™, by AOL and many others for Instant Messaging.

What does SIP mean for my business?

The implications of SIP to your businesses can be significant. Today's business environment increasingly relies on effective communication between people and locations. In addition, pressure to reduce your operating costs while innovating and increasing productivity has never been more intense. Add the desire for competitive businesses to offer better customer service, and the benefits of using the power of the Internet become all too clear.

Your business may be looking for simple, cost-effective ways to achieve all these things, and employees at all levels of your organization contribute best when technology works behind the scenes to make their jobs easier. From your customer to your employees and supply chain, the smooth and timely flow of information is critical for your success. Further, new multimedia capabilities allow your business to create and nurture its own communities that keep customers coming back, leverage supply channels, and contribute to growth over time.

By moving from older paradigms that have limited potential, SIP unlocks a whole new generation of business processes and potential, and delivers a host of benefits to your business today, with even more to come in the future.

How will SIP benefit me now?

SIP offers one of the first truly converged systems for business communications. In addition to a growing number of emerging capabilities, businesses which adopt SIP will enjoy a host of immediate benefits, including:

- Open standard, with multiple vendors introducing many new features, products and services that all work together, so you have lots of freedom and choice
- Simplified communications network, with one set of cables to handle voice, data and video to every desk
- Easy set-up, so you don't have to be a technical expert to install or modify your SIP-based system and preferences

- Maximum flexibility, by allowing multiple dialing methods, choice of devices, use of wireless devices, ultra-flexible configurations, and interoperability with other systems
- Supports remote workers, by extending your company's network to them, wherever they are
- Scalable, making it easy to build on your systems as your company grows
- Futureproof, protecting your original investment by adding new services and capabilities via downloadable software, and by using open system architectures that are compatible with equipment from multiple vendors
- Reduced system costs, by having one system handle voice and data, meaning you have fewer components and one supplier instead of many
- Reduced long-distance bills, by placing long-distance calls and conference sessions over the Internet infrastructure instead of traditional communications infrastructures
- Potential for new competitive business advantages as new SIP-based services are offered over time
- Consistency across distributed organizations, by having the same dialing and access procedures to reach branch offices, home offices, teleworkers, and mobile employees
- Fast ramp-up, when adding new branch offices or new employees, or when reassigning or relocating staff
- Strengthens corporate culture inside distributed organizations, by dialing internally across distances, such as dialing by extension numbers – it feels like everyone is truly “inside” the organization
- Ability to dial locally, by connecting to regular public telephone systems

Will there be other benefits in the future?

The SIP model is that of the intelligent edge device. The SIP phone will become the desktop portal, whereby future applications and services can easily be delivered across the enterprise, enhancing the user experience. Facilities like Presence and Instant Messaging will be the basis for a new breed of pervasive connectivity solutions targeted at vertical market segments. With this in mind, many vendors and service providers are readying advanced new applications and services to take advantage of this emerging technology.

Over time, SIP will enable a host of new services and capabilities that will provide easy, personalized communications and excellent cost efficiency. As an individual user, complete control will be in your hands. You will create your own individual profiles to instruct communications networks on your preferences for how and where you can be reached, by whom, and when. For example, dialing your phone number will reach you wherever you are in the world on whichever means of communication is available to you at the time (cell phone, PDA, PC, tablet, or even a wearable communicator). Different rules can be set for the system to find you inside, or outside office hours, and you will be able to set different options for each person on your buddy list, such as your spouse.

Setting up a conference call will be as simple as programming your SIP device to recognize when all of your selected buddies are available to talk to you, and the call will be dialed automatically. Voice recognition will mean that you don't have to use a keyboard or numeric pad for any of these steps. If you're on a video conference at your desk and have to leave early, you can transfer the video conference to your wireless PDA to continue participating while you are in transit.

Location-based services, such as making dinner reservations while on holidays, will be available, and you will be able to program your profile to alert your London office when your plane lands. Your personal profile tells the hotel what newspaper you normally have – you can change this on the fly and from country to country. You may be renting a car, in which case the PDA slots into the dash and becomes your navigation tool – it knows where you are going and uses local map and travel info to guide you there. When you get into your hotel room you will have a broadband connection via either your 3G handset/PDA or the high-speed connection at the desk. You can choose which form of connectivity to use based on cost and/or convenience. "Presence" is an inherent feature of SIP-based systems, allowing the system to recognize your location and availability, routing communications to the right locations and devices as your schedule changes. And all this will be globally interoperable – you will be able to go anywhere in the world and access all of the services you get at home. You will be in complete control.

Once you have put SIP at the core of your communications network, all these capabilities become possible for you without changing your base equipment – you will simply download new capabilities as software becomes available, or add new devices and equipment as new capabilities make it attractive and cost effective. Or, your service provider will customize the right package of software to satisfy your needs.

What do I need to do to take advantage of SIP's power?

Setting up a SIP-based communications network can be as simple as installing Mitel's 3050 Integrated Communications Platform (a server with built in features like firewall and voice mail) and SIP telephone handsets at each desk. Your communications network may need other components to connect your current systems to the newer SIP system. Talk to your telephone company or communications service provider about how to adopt SIP within your company. You can also go to Mitel's website at www.mitel.com and find SIP under the "products" category, where we can refer you to a local solutions provider.

Migrating to SIP from circuit-switched PBXs

Except for rare "greenfield" cases where networks are designed and established for the first time, most network and IT managers will migrate from existing PBX systems, most of which are circuit-switched systems that likely still run well. A transition plan towards IP communications could be undertaken in several phased steps, as follows:

- Introduce plain IP trunking between PBXs using SIP signaling over IP, for various Internet access services, private lines (T1-T3) and frame relay. This requires only voice enterprise gateways between the PBXs and the IP network.
- Use shared network gateways for global voice access to the PSTN.
- Add SIP phones to gradually replace PBX desktop phones for new expansions or when moving offices. Network-based SIP servers can maintain consistent dialing

plans between the legacy network part with PBX phones only and the new SIP phones.

- Add/replace PBX functionality with SIP-based enterprise servers or with “IP Centrex” ISP-based solutions.
- Add IP Communication capabilities using enterprise features such as SIP voice mail, SIP conferencing, SIP presence and Instant Messaging, SIP dialog servers, 3rd party call control, user preferences, etc. A special place in this portfolio is taken by firewall traversal for SIP signaling, voice and video. The availability of many such services using enterprise SIP servers, SIP PC User Agents and firewall/NATs has made such features possible earlier in the market than previously believed feasible.

Migrating to SIP from H.323, IP PBX and softswitch systems

Various IP voice systems on the market can be classified as H.323 systems (though no interoperability with other H.323 systems may generally be assumed), proprietary IP PBX systems and softswitch systems using one of the master-slave protocols such as MEGACO/H.248, MGCP, or some of their variants. The transition scenario from such systems to IP communications involves the following steps:

- H.323 PBX: Deploy H.323-SIP signaling converters for Gatekeeper-to-SIP proxy signaling. Dual mode (H.323 and SIP) VoIP gateways can be deployed in the transition for large installed H.323 systems.
- Miscellaneous IP PBXs and softswitch: Use the SIP signaling capability where available as the service/feature creation infrastructure (Megaco/H.248 is fully compatible underneath this at the gateway level, but is not involved in service/feature interactions). Explore the use of PBX TDM trunks to connect IP PBXs that do not support SIP to the TDM side of VoIP gateways.

What is Mitel doing about SIP?

Mitel Networks recognizes the promise and potential of SIP, the emerging protocol of choice for setting up telephony, multimedia, conferencing, and other kinds of advanced communications sessions via the Internet. Based on our 30-year history of building high-quality voice-based products from the PBX switch to the desktop handset, our portfolio of IP-based phones and peripherals, integrated communications platforms and IP-based applications is already among the most advanced and comprehensive on the market. And we're committed to leveraging our leadership in VoIP to provide service providers and their customers with an equally sophisticated and complete SIP desktop portfolio to support the next generation of converged broadband services.

A comprehensive SIP desktop portfolio

The Mitel Networks SIP desktop portfolio provides business users with easy, intuitive access to sophisticated SIP-based services without compromising voice quality, reliability, or functionality. Beginning with the Mitel Networks 5055 SIP Phone and 3050 Integrated Communications Platform, and including both 5305 and 5310 conference units, our SIP desktop portfolio will increasingly extend to serve the different needs of users across your entire enterprise – from affordable, single line models for occasional users and multi-line browser-equipped Webphones for communications-intensive users, to powerful networking capabilities for networks of small offices and available wireless units, attendant devices, and more.

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Mitel Networks is proud to be an active member of the SIP Forum and have been involved in IETF's SIP working groups, advancing open global standards for IP communications such as SIP.

Conclusion

These are exciting times in the business world, and in the IP communications world. The emergence of SIP as the standard for converged communication services across a wide variety of platforms offers new capabilities to users, and new efficiencies and competitive advantages to enterprises. Businesses and consumers alike will benefit from increased productivity and a rich choice of alternatives for their communications needs.

Mitel Networks is an active member of the SIP Forum, a trade association that promotes the use of SIP technology.

For more information, please visit our websites:

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