Whitepaper

Voice Services based on IP

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1. Voice Services based on IP

Quick, fast and cost-efficient exchange of information is a key to better business. That's why more and more information is now digitalized before it is stored, analyzed and transmitted. From financial records to pictures, audio and video, the technology to store and transmit information as digital packets has changed the way we work, and the way we play.

The internet and its associated email messaging system have redefined the way we all communicate and do business. Its success is founded on the ability of IP – internet protocols – to create information packets and correctly deliver digital information packets across an adaptive network.

Businesses have rapidly adopted these robust internet protocols to manage information exchange within their business and with their key customers and suppliers. For instance, your business uses its WAN (Wide Area Network) to access mission-critical data and applications, and you rely on email to send and receive messages and documents with your colleagues and with your customers.

With the rapid growth of IP-based communication, it was only a matter of time until it was applied to voice calls. While Skype proved to the wider world that traditional telephone calls could be delivered over the internet, it was always going to be a large step to successfully implement IP voice services for large-scale enterprises.

Could IP-based telephony deliver the security, reliability and clarity required for business communication? Would it deliver cost-savings? And just like the web before it, could IP voice services be a game changer, enabling businesses to communicate in new and novel ways – a pathway to drive productivity, competitiveness and profitability?

IP voice services are now proving to be a serious communication tool. Early adopters are already benefiting from lower calling costs, increased productivity, a simpler communication infrastructure, and a more flexible platform that better supports their essential person-to-person calls.

Key Points

› More information is being handled in digital packets.
› Internet protocols now dominate the networked exchange of information.
› Voice over IP (VoIP) uses information networks to deliver voice calls.
› Voice services over IP are revolutionizing person-to-person calling.
› Voice services over IP yield attractive business benefits: reduced calling costs, increased productivity and robust security.

2. IP Telephony –
your next-generation telephone service

Voice over internet protocols – VoIP – uses internet technology to deliver your traditional telephone services. Essentially, it breaks your speech into digital packets. These packets are then sent over a network to the end caller where they are reassembled and turned back into sound.

The network that carries the call is probably the same network you use for email, data and business applications. These VoIP person-to-person calls can be carried on your WAN to call any of your business colleagues, or carried by the internet to call anyone with an internet connection.

VoIP is the process whereby two individuals talk to one another using their network connections.

IP Telephony – adding functionality to VoIP

VoIP is the digital equivalent of old-technology person-to-person calls. Like modern phone services you can add functionality to VoIP calls to create sophisticated IP Telephony.

IP Telephony delivers user-rich features such as call forwarding, voicemail, callback and operator assistance. Importantly, it also allows you to complete calls to people using conventional telephones.

IP Telephony lets you call anyone with a network or telephone connection, and can deliver the full suite of telephone functionality.

SIP Trunking – connecting your business to the world

Most businesses operate their own PBX (private branch exchange) to handle incoming and outgoing calls, plus switch inter-office calls. While these proprietary PBX systems have worked well within closed organizations, a new industry standard has been developed to ensure IP Telephony can be delivered across most PBX networks. Known as SIP (Session Initiation Protocol), this standard creates a logical voice channel – the SIP trunk – to connect your PBX to the national phone system. And because SIP uses your network to connect all ingoing and outgoing voice calls, your PBX can be located at any point in your network. For example, to improve performance and cut costs, your PBX can now be located at an always-available cybercenter.
SIP is the internet protocol for voice-quality calling. The standard has also been designed to cover upcoming real-time communication such as video calling and instant messaging.

Ensuring Quality of Service (QoS) – for high-end IP Telephony

While IP Telephony shares the same networks and protocols as conventional data transfer, timing is far more critical. Emails can be delivered within minutes without causing disruption. Voice signals, however, must be constantly delivered within a 50 millisecond window to avoid jitter and call degradation.
By selecting the right system and IT partner, your business can apply SIP trunking to achieve the Quality of Service (QoS) required for clear voice calls. Your IT partner will also play a key role in ensuring system security, protecting your calls from internal and external threats, including toll-fraud, DDI spoofing and third-party interceptions.

Key Points
> › IP Telephony is a feature-rich VoIP phone service delivered over information networks.
> › SIP is the industry standard for IP Telephony that connects business networks to the world-wide phone system.
> › SIP lets you locate your PBX at the most-efficient location on your network, even across national borders.
> › To achieve the QoS (Quality of Service) required for IP voice calls, you will need to select the right system and IT partner for your business.
> › Security in your network and IP Telephony service is an important factor to be managed by your IT partner.

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3. Implementing IP Telephony – a revolution or an evolution?

While IP Telephony represents a real revolution in calling technology, the good news is that it can be implemented in a stepped fashion that makes best use of capital expenditure, while delivering measurable reductions in operating costs.

For most businesses, the gradual implementation of IP Telephony will be the preferred option. This includes delivering IP Telephony services over existing networks, and replacing aging legacy systems with SIP-enabled devices that future-proofs your network for real-time communication.

All pathways to IP Telephony need an underlying network that is voice-ready. To achieve this you need to implement a quality control mechanism which ensures that sufficient bandwidth is always available to handle real-time communication.

As each network component becomes voice-capable, it is then a matter of selecting the right solution for your operating environment. This includes options for On-Net IP Telephony for voice calls within your organization, Off-Net IP Telephony to handle calls outside your network, and fully-integrated IP Telephony for a complete service.

	LAN /WAN	On-Net IP Telephony	Off-Net IP Telephony	Fully integrated IP Telephony
Use existing TDM (ISDN) PBX	VoIP Ready (where necessary)	With TDM/SIP convertors	With TDM/SIP convertors	-
Migrate from TDM to IP PBX	VoIP Ready	X	X	Possible
Use existing IP PBX	VoIP Ready	X		Possible
Managed IP Telephony solutions	VoIP ready	X	X	X
Hosted IP Telephony solutions	VoIP ready	X	X	X

Pathways to IP PBX services

Delivering IP Telephony over an existing IP PBX
IP PBXs offer a ready pathway to lower calling costs. Because IP PBXs can be easily adapted to handle all on-net traffic, businesses can benefit from lower costs for all their inter-site calls.

Migration to SIP is also relatively easy, with the connection of external SIP trunks a cost-efficient way to replace expensive ISDN connections. With SIP trunking your business is no longer tied to local phone systems, and you can complete cross-border calls without having to deal with local gateways and lines.

Retaining an existing non-IP PBX
Non-IP PBXs are typically nearing the end of their productive life. Inline technology, however, can be applied to convert calls from the PBX into VoIP packets so the calls can be completed over the organization's WAN. Moreover, SIP trunking can be implemented as a flexible, low-cost replacement for ISDN.

Businesses benefit from being able to run their internal phone system over their existing data network without having to replace their legacy PBX system.

Migrating to an IP PBX
While IP Telephony can be achieved on a non-IP PBX, businesses may select to future-proof their call system by upgrading to an IP PBX. IP PBXs offer multiple benefits, including the ability to replace multiple PBXs with a single system that reduces your total cost of ownership.

To manage the capital expense associated with purchasing a new IP PBX, your new calling system can be delivered as a managed service within your network, or hosted on the cloud platform for the most flexible implementation of IP Voice services.

Managed IP Telephony

For managed IP Telephony the IP PBX and related application servers are placed within your business network, either onsite or in a secured cybercenter. A managed IP PBX provides low-cost entry to IP Telephony with services provided at a monthly fee.

Hosted IP Telephony

Hosted cloud solutions are being rapidly adopted by progressive enterprises. Flexible and cost-efficient, cloud-based PBX means you no longer face onerous hardware investments. Instead, your business switches to using future-ready solutions that use advances in network technology to deliver safe and secure IP Telephony.

Key Points
› IP Telephony can be implemented via a series of stepped upgrades.
› Your migration pathway is based on your operating system and business requirements.
› Signal converters can deliver IP Telephony over non-IP PBXs.
› Upgrading to an IP PBX can deliver multiple benefits.
› IP PBXs can be delivered as managed or cloud-based services to reduce your total cost of ownership.

4. Your benefits from IP Telephony

IP Telephony delivers multiple benefits including lower costs, increased productivity, a feature-rich service with built-in redundancy, and a platform for future advances in how we collaborate and communicate with one another.

Lower total cost or ownership

Keeping in touch used to require three connections; a data network, a phone network, and a power supply, each with its own infrastructure and cost centers. IP Telephony is a true game changer in the way we communicate. By conducting all calls over your data network, IP Telephony means your business can now discard its stand-alone phone system, and cut calling costs.

The merging of voice traffic into your business network allows for better utilization of network capacity and effectively lowers the unit cost of data transfer. Moreover, the implementation of IP PBX removes the location dependency of traditional PBX services, allowing your business to replace multiple PBXs with a single service situated at the most logical and cost-efficient location on your network.

IP PBXs can also be delivered as managed or hosted services, replacing capital-intensive infrastructure investments with manageable monthly fees. And by making network access the key to calling, any future changes in business telephony can be easily made at the network level.

Lower calling costs

By using your WAN to process all inter-business calls, IP Telephony immediately cuts inter-site calling costs. The trans-national reach of the underlying network also means costly long-distance calls are replaced by low-cost local connections.

Increased productivity

IP Telephony adds to business productivity, making your business more flexible and better connected. With IP Telephony, network access delivers full feature-rich telephony services including call forwarding and voice mail, so your work colleagues can stay in touch and quickly respond to new business opportunities.

In addition, IP Telephony is a cost-effective and easy-to-implement solution for seamless communications between various sites, resulting in productivity gains across your business.

Secure and robust phone services

As a network-based service, IP Telephony features the latest technology for continuous service performance, including built-in redundancy and instant rerouting. Caller security is provided by secure network protocols, with the option to complete calls over secure and encrypted IP VPN lines without having to access the public internet.

Fit-for-future phone services

With IP Telephony, the network becomes a trusted platform to deliver full business phone services. The introduction of real-time communication on a robust and reliable platform creates the space where businesses can develop new and better ways to communicate with one another – and with your customers.

IP Telephony creates a communication environment that can change the way customers experience your business. Your work force becomes better connected, with the flexibility to better respond to changing market conditions, and always be available to meet the information needs of your key customers.

Using international WAN connections, sales groups and collaborative development teams can work together in real time, freely sharing information without the restrictions associated with physical separation.

Key Points
› IP Telephony delivers multiple benefits.
› Reduced infrastructure costs by merging voice services into your existing data network.
› Lower calling costs by using the WAN to carry voice calls.
› Improved service reliability and security by accessing the latest network technology.
› IP Telephony prepares your business for the future of business communication.

5. KPN International, your partner for IP Telephony

To successfully implement IP voice services you need a communications partner that understands your business and operating environment.

At KPN International we will work with your business to develop your unique pathway to full IP Telephony. Starting from your current phone system and business needs, KPN International will implement a plan that delivers your business real and measurable benefits every step of the way.

Benefit from the Dutch Touch

KPN International provides high-quality, global communication services to more than 700 corporate clients across 180 countries. From our Netherlands base, KPN International will deliver your business our unique Dutch Touch based on our core Dutch values:

> › **Reliability** you expect from low-latency, high-capacity networks.
> › **Flexibility** to manage all your internal and international communication needs.
> › **Creativity** that turns your challenges into business-winning solutions.
> › **Empathy** to understand your business and your markets so we always deliver the right results.

Combined with our extensive product portfolio, international network and innovative partnerships, KPN International is your pathway to better business.

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Comprehensive portfolio of IP Voice Services

KPN International can deliver and maintain all the services required for IP Telephony, tailored to your requirements. We can deliver IP services over a non-IP PBX, or implement an IP PBX that future-proofs your business for the next generation of real-time collaborative communication.

Your IP PBX can be operated as a managed service within your network, or delivered as a hosted cloud service to reduce your capital expenditure while providing maximum access to full IP Telephony.

Whatever pathway your choose, with KPN International you will quickly realize the benefits of IP Telephony as your business creates new ways to keep connected within your work teams and with your customers.

Key points
› KPN International will work with your business to implement IP Voice services.
› Your pathway will fit your current operating environment and your future communication needs.
› Benefit from our Dutch Touch for a full and flexible IP Telephony service.

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