The converged IP network

The high performance and cost effective foundation for future productivity gains

An Allstream White Paper
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Introduction
As the business world faces the demands of the 21st century, technology advances in communications make possible new services and business models that become necessary for enterprises to adopt if they want to maintain their edge in a hyper-competitive world. Conferences and specialty magazines are abuzz with discussions about new trends such as mobility, collaboration, virtualization, converged networks, cloud, BYOD and others. These trends are ‘forces’ in the process of shaping the industry and most organization’s plans for the future in very significant ways. It is not surprising that enterprises and their IT managers find it difficult to sort through all this complexity in order to devise the most appropriate strategy for evolving their communications systems to best serve their circumstances and business objectives. Invariably, they learn that the quality and the performance of their network is a fundamental factor in determining their ability to move forward.

This document briefly examines the most common communications services and platforms used by enterprises today. It is intended to assist organizations to correctly evaluate their current status and plan the next steps in evolving their networks. It will also highlight the growing importance of IP based technologies in today’s enterprise networks, the benefits of the converged IP network, and the ways in which service providers can help businesses take advantage of the best features offered by these developments in communications.

The evolution of enterprise communications
Enterprise communications and information technologies (IT) have advanced tremendously during the last few decades. Today the era of faxes, dial-up modems and ISDN connections is making a fast exit. The transformation that is taking place can be looked at as an evolutionary process that involves five main areas:

→ Voice
→ Data
→ Internet Access
→ Security
→ IT Management

The division in five distinct categories is a bit arbitrary. However, this is a useful approach for examining the shape of enterprise communications networks today.
Voice Networks

Telephony, as a form of voice communication, is the oldest and arguably, still the most pervasive type of communications network that businesses employ today. No matter how many other options are available, hearing somebody’s voice is a powerful way to connect with others, influence them, resolve urgent issues and move business forward. Enterprise voice communications has come a long way, from its origins as a basic service during the analog telephone system era. In sequence it progressed through a number of technology phases that offer new and significant benefits:

- **Digital Telephony** – based on Time Division Multiplexing (TDM) and widely deployed through the Public Switched Telephone Network (PSTN), it provides a great variety of business friendly features.

- **Voice over IP (VoIP)** – the advent of IP technology changed the trajectory of voice network evolution and allowed efficient integration of voice traffic onto the Local Area Network (LAN).

- **Unified Communications** – as PSTN and the last POTS (Plain Old Telephone Set) devices are on their way out, they are replaced by a new IP enabled environment rich in productivity enhancing applications.

- **SIP trunking** – made possible great consolidation savings and opened the way to true collaboration by leveraging the converged IP network.

- **Hosted Voice or Hosted Unified Communications** – IT as a Utility arrangement through which voice and collaboration are no longer a stand-alone application and become just another service delivered by a 3rd party. To be effective this needs to be supported by a Quality of Service (QoS) enabled IP converged network and managed effectively by the 3rd party. Hosted services are now evolving to take maximum advantage of cloud based delivery mechanisms.

Voice communications continues to be the mainstay of any enterprise IT infrastructure.

Data Networks

In a world where businesses generate phenomenal amounts of data every day, data networks continue to grow in size, importance and sophistication. This is a process that initiated a couple of decades ago and has accelerated in recent years driven by the emergence of new advanced business applications, progress in communications technologies and a strong globalizing environment. In recognition of its magnitude and importance, this trend is presently referred to as “big data”.

Not long ago, data networks were mostly based on cumbersome and expensive Frame Relay, ATM or Leased Lines services. As far as the beneficiary business was concerned, those were most often, not networks at all, but aggregations of dedicated links. With the arrival of IP technology, new data connectivity services became available to enterprises. Carrier Ethernet services conveniently expand Local Area Networks (LANs) across geographies, while Multi-Protocol Label Services (MPLS) provide multi-site organizations with a flexible data network strengthened by robust traffic prioritization features. As a result, the number of packets handled by data networks has increased dramatically: Cisco’s Visual Networking Index forecasts an additional 4x
increase in network traffic by 2015. To accommodate this traffic growth many networks employ WAN optimization techniques and services for the purpose of controlling the amount of data packets generated by “chatty” protocols and applications.

Big data is giving rise to yet another trend – the virtualization of back-office technology. This is fueled by a massive growth in the use of data centres by businesses to house application servers and related data.

As data centres become the prominent nodes of most data networks, demanding higher bandwidth and low latency data transmissions, service providers are rolling out Wavelength Division Multiplexing (WDM) technology based services – commonly known as wavelength services, in the form of higher speed Carrier Ethernet and specialized high speed services employing native Storage Area Network (SAN) protocols.

The combination of big data, virtualization and the need for high-speed data networks has driven the need for a risk-free way to access IT resources on a utility basis. The network architecture most often used for delivering IT as a Utility is commonly known as “cloud”. Moving forward into the future, virtualization of data applications, consumption of IT resources as a utility and cloud based networks are trends poised to make a major impact in the way businesses manage, store and distribute their data.

Internet Access

The Internet, as a viable business tool is less than 20 years old. Yet, it is hard to imagine a world without it. Its role continues to grow and the number of powerful business applications that it has sprung and the extent to which they have spread would have been difficult to imagine only a short time ago. For example, online merchandise sales in the US alone are expected to reach 270 billion a year by 2015. Deriving all the commercial benefits of IP requires a ubiquitous IP network. Therefore, leveraging the Internet in some fashion is critical for any business.

The Internet is now evolving at the same speed that business does. Early Internet access services were based on dial-up technology that today seems slow if not downright primitive. ADSL and cable access offer better performance making them very popular and effective Internet solutions for consumers and small or medium size business. Enterprises of all sizes today deploy Internet as a critical element of the larger IP network by provisioning Internet access through Ethernet at various speeds or through MPLS based VPN networks. In IT as a Utility configurations, Internet access elements such as web servers, proxies, and others are hosted and managed centrally by 3rd parties providing significant efficiency and flexibility benefits. This approach is often referred to as Managed Internet Services.
Network Security

The productivity and the many other benefits brought by the Internet come with associated risks. Every organization needs to be mindful of Internet borne security threats that can cause significant damage to a business’ bottom line, brand reputation and even long term survival. These threats can take many forms. Businesses require a thorough and well thought-out plan to address the various vulnerabilities that exist in its environment, often unbeknownst to the business owner. The overall security posture of a business is directly dependent on its IP network, wherein all facets of the network must be considered to ensure optimal and appropriate levels of security for the network, data centres, office locations, warehouses, etc.

Peripheral security posture

This is the traditional and earliest approach to enterprise security. Depending on the size of the enterprise, the network architecture and the nature of the business, security mechanisms are installed at either internal or external edges of the network. This approach may include anti-virus software on user stations, firewall capabilities installed in edge routers or specialized security appliances placed in front of the interface with the Internet and other external networks. These appliances monitor Internet traffic for patterns or behaviours that are potentially harmful to the network, and in many cases, are able to neutralize the threat before it enters the network.

Central security posture

This is a superior way to deploy security functionality through your network. Modern MPLS VPN based data services, for example, are able to offer security provisions that are built in the fabric of the network. Using traffic separation among different VPNs and network core concealment techniques, such services considerably reduce vulnerabilities and increase resistance to attacks. They do so in an effective and simple manner without the need of managing complex interoperability issues between stand-alone security mechanisms at the edge of the network. Due to the fact that such security arrangements are usually managed solutions (see page 6 for details), they are able to better detect and fend off threats as all functionality is managed by highly specialized personnel. With the advent of the cloud and the IT as a Utility model, an extra layer of centrally managed security provisions can be added in the 3rd party data centre that hosts and provides the enterprise business applications. These provisions have the role of securing the storage and transfer of virtualized applications as well as the data that is delivered through the cloud architecture.
IT Management

As the complexity of IT operations increases, the way business applications or elements of infrastructure are managed and maintained becomes a critical factor in delivering IT performance. In the early days of enterprise high tech systems evolution, management of each piece of equipment or software was an independent task, not necessarily connected to the surrounding environment. That was a practical approach given the disparate technologies, brands and standards that were deployed at one time in the same organization. The management tasks were performed internally by employees who needed to acquire specific knowledge for a multitude of devices and programs. That method was laborious and expensive; we can call it in-house distributed management.

The IP revolution has brought much needed standardization, efficiencies and new methodologies to the management of IT operations. Protocols like Simple Network Management Protocol (SNMP) or NetFlow have made possible the deployment of many centralized and effective management configurations. Such arrangements allow internal IT departments to manage their assets more efficiently and to deliver more performance to the organization. This approach implements the management function in a centralized internal mode.

Under intense competitive pressures, many organizations realized that entrusting the management of some applications or systems to outside vendors – also referred to as out-tasking – could lead to significant savings without performance penalties. The first IT components that were moved to external management under this model were the maintenance of “fleets” of desktop computers and some high-end business applications requiring specialized skills (e.g. SAP). While more and more IT elements are being transferred to external management, many organizations continue to in-house manage a significant part of their IT assets. They manage their networks in a mixed, internal and external, but still centralized manner.

The advent of the “cloud” opens new opportunities for businesses that seek to harness the benefits of IT convergence. The recent proliferation of IT as a Utility delivery models and cloud computing architectures has accelerated the adoption of 3rd-party IT management to the point where many enterprises entrust one or more 3rd-party providers all their IT management functions, from hosting, installation and configuration, to updates, security, monitoring, troubleshooting and repairs. This solution frees an organization from many complexities and maintains the benefits of centrally located management – representing a form of centralized external management.
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Five common networking stages

To better illustrate how an enterprise can effectively evolve its communications network infrastructure to maximize productivity and achieve better business results, we will examine an example of an organization, Enterprise X, that moves through five stages, progressing with each stage to a more advanced and more productive type of communications environment. The case of Enterprise X and the selection of the five stages are obviously arbitrary. In real life situations, there could be a multitude of possible enterprise network configurations and quite a number of permutations of diverse communications services deployed.

Figure A below illustrates the five selected stages of evolution for the Enterprise X network.

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The following sections take a closer look at each of the five stages.
Stage 1 – The Traditional Model

A traditional model configuration for Enterprise X looks similar to the architecture depicted in Figure 1.

Figure 1

Although quite functional in serving the organization's basic business needs, this configuration does not facilitate productive collaboration, agility or cost effectiveness. Below is a summary of its drawbacks:

- The enterprise manages three separate networks and connectivity links requiring in some cases, three separate service providers
- Complexity in managing and maintaining proprietary TDM PBX platforms
- Expensive PRI interfaces and monthly fees
- Limited scalability for Internet and data connectivity make expansions or changes difficult to execute
- Management is performed in isolation for each element of infrastructure with no centralized strategy or equipment, creating additional complexity and overloading valuable specialized personnel
- Limited security capabilities derived from disparate firewalls deployed on Internet access connections
- Customer experience may suffer because of ADSL limitations in pushing Internet content to customers
- Legacy data connectivity may create obsolescence issues that are difficult to overcome

These disadvantages add up to a significant cost and productivity deficit that would typically affect Enterprise X's ability to be competitive in the market place.
Stage 2 – The IP Enabled Network

In this model, Enterprise X has adopted VoIP, converging their internal voice network onto the internal LAN and extending their Internet and data connectivity through a Carrier Ethernet service. Simultaneously, they introduced centralized management applications that help in-house specialized personnel manage the IT assets more efficiently.

This stage offers a number of significant advantages:

- Substantial savings due to having only one internal network to operate and maintain
- Simplification through the elimination of expensive and cumbersome telephone wiring
- Scalability improvements with VoIP system capacity to easily accommodate changes in the size of the network or the number of users
- Ease of installation and deployment across the organization
- Easy integration with PC based business applications
- Centralized IT management delivers savings and improved performance

Some drawbacks still remain:

- Expensive PRI circuits and connection fees are still necessary
- Productivity enhancing multimedia applications (e.g. videoconferencing) are not robust enough across the WAN because of lack of QoS controls
- Security vulnerabilities still exist as security provisions implemented only at the edge of the network and most without a central coordinated strategy
Stage 3 – The IP VPN Network

At this stage, in addition to the advantages described above, Enterprise X enjoys the full range of benefits offered by a UC environment deployed over an MPLS VPN network. The core MPLS network offers the security and privacy of a private network together with the QoS capabilities required by latency sensitive applications. The network configuration is illustrated in Figure 3 below.

Figure 3

Benefits of this configuration include:

- Improved productivity with the availability across the WAN of features like; audio-conferencing, videoconferencing, presence, collaboration, etc.
- Improved efficiency and network cost savings by migrating inter-location voice traffic from the PSTN to the WAN. QoS control in the WAN allows for prioritization of real-time sensitive voice traffic.
- Ability to communicate with colleagues and partners using a variety of devices and applications.
- MPLS QoS and Traffic Engineering capabilities allow provisioning of most applications demanding high bandwidth and low latency. Devising a network optimization strategy and deploying WAN Optimization services or equipment can further increase performance benefits.
- Effective security protection provided by managed services are built in the core fabric of the network.

One disadvantage is that outside the enterprise locations, voice and data are still handled by two distinct networks, making it necessary to maintain direct subscriptions to the PSTN. Additionally, the PRI infrastructure and the associated monthly fees are still required.
Stage 4 – The All IP Converged Network

This is a stage where expanded convergence of voice and data networks provides the organization with new efficiencies and business benefits. The introduction of SIP trunking simplifies the network configuration and the expense of managing it in a very significant way. It does this by extending the converged local IP network beyond the borders of the enterprise and by bringing 100% of Enterprise X’s voice traffic onto the data connection used for data traffic. Also, in the example shown here, there is now a high speed wavelength connection between the data centre and the headquarters, allowing the transfer and processing of large quantities of data with maximum speed and minimum delay. Furthermore, in this stage, Enterprise X has out-tasked some of its IT management functions to an external provider. The new configuration is illustrated in Figure 4 below.

The compelling new benefits for the enterprise at this stage include:

- Up to 40% savings in telecom monthly expenses through the use of SIP trunking (fewer, if any, PRI connections and lower long distance charges)
- Consolidated UC infrastructure served by centralized SIP trunking deployment results in less PBX equipment to support and manage
- Major connectivity simplification by having one single outside connection for voice, data and Internet traffic
- High speed, low latency connection for transferring and processing the massive amounts of data generated by modern business operations

Figure 4
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- Better customer service enabled by virtual telephony presence in geographical areas where the enterprise has no physical presence
- Flexibility for expansions or changes delivered by the remarkable scalability of SIP trunking service
- Out-tasking some IT management functions to an external provider brings new efficiencies
- Improved efficiency, reduced cost and strategic improvements through the convergence of voice and data traffic on both LAN and WAN
- Faster and less capital intensive deployment of new applications made possible by the standards-based converged IP network
- Further simplification and automation can be achieved through deployment across the WAN of new communication-enabled business processes (CEBPs)
- The simple architecture and the high performance delivered by the converged network is the ideal environment for supporting the most advanced business communication trends including mobility, virtualization, collaboration, BYOD, etc.

Leveraging the maximum benefits of the IP converged network can sometimes be difficult because of the sheer complexity of managing all its elements. This is why many enterprises decide to transition their network to the next stage in this evolutionary process.

Stage 5 – Managed IT as a Utility

In stage five, Enterprise X has adopted the IT as a Utility model for its IT operations. All network and business application services are provided on an “as needed” basis by an external provider of cloud services. To access the services it needs, Enterprise X connects through its converged IP and wavelength links to the “virtual” data centre implemented in the cloud based architecture of the provider. The secure nature of the IP VPN network allows the enterprise to trust the provider to deliver the network functionality itself as a resource in accordance with a contracted Service Level Agreement (SLA). In addition to the central security provisions built into the core of the MPLS network, this model features central data centre security protection mechanisms that are specific to a highly virtualized and consolidated environment (e.g. securing traffic between virtualized applications). IT management for all services, including security, is performed externally, from the cloud, by the provider. This needs to include managing security for the traffic originating from sources on the Internet, outside the perimeter of the IP VPN. A typical example is managed DDoS protection, a service without which the commercial viability of the enterprise Internet connection would be compromised.

It is worth noting that an IT as a Utility model can be implemented without a cloud configuration but in a less efficient manner.
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This cloud configuration for Enterprise X is illustrated in Figure 5 below.

Figure 5

The managed IT as a Utility model offers Enterprise X new benefits and efficiencies:

• A new data centre can be set up quickly and with no up-front investment
• Total flexibility for expanding the operations or for implementing any changes
• Ability to shift IT expenses from CAPEX to OPEX
• Predictable monthly charges allow for effective budget planning
• Access to highly trained specialists and the most advanced technology
• Business continuity, when a power outage or natural disaster strikes the enterprise’s facilities, critical data and the IT infrastructure in the cloud are still available and operational
• Availability of 24/7/365 expert monitoring and assistance
• Ability to quickly introduce the latest technology, upgrade to the latest versions or adapt to the newest trends
How Allstream can help move your communications network forward

The example of Enterprise X shows that, by gradually adding new elements of network infrastructure and communications services, an organization can move their operations to new levels of productivity. A key factor in the success of such an evolutionary transition, is partnering with a quality service provider that understands the value of the converged IP network and can assist you in implementing the best business networking solutions.

With more than 150 years of history of supporting Canadian businesses and a robust portfolio of leading edge communications services, Allstream is the ideal partner in helping you better serve your customers, increase sales and improve productivity.

To better understand how Allstream can help your business safely navigate the path to significant gains, it is useful to refer again to Enterprise X and their transition phases.

Figure B below shows how specific Allstream services can enable Enterprise X to move from one stage to another and take advantage of an increasing array of business benefits.
The following paragraphs provide a brief description of the Allstream services indicated in Figure B on page 13.

**IP Telephony**

Allstream IP Telephony solutions are based on high performance IP PBX systems, IP phones and messaging solutions from Cisco, Avaya, Mitel and other industry leaders. The IP PBXs and the IP phones in our portfolio support your voice network on your LAN and considerably reduce the complexity and expense of having to maintain two separate networks. In addition, a converged local IP network facilitates the adoption of new, integrated voice and data business applications such as collaboration, tele-presence and many others.

**Switched Ethernet**

Allstream Switched Ethernet offers a low latency, high bandwidth solution that connects remote LANs and enables information and application sharing among geographically dispersed offices. Access speeds range from 1 to 1000 Mbps, delivering the flexibility to scale to higher bandwidth as needed. This solution provides remote offices with high-speed access to any application server residing at your host site and, at the same time, helps you effectively consolidate network administration.

**Business Internet**

Allstream Business Internet provides the dedicated high-speed access you need to support all of your critical online tasks. IP telephony, virtual private networks, videoconferencing, remote teleworkers and a full range of Internet-based communications tools, ensures you can access the applications that are essential to your business.

To connect your organization, you’ll find what you need in our portfolio of affordable Internet solutions, including Ethernet at various speeds and T1 access. All of our Internet access services provide full Domain Name Service (DNS), an ample supply of email boxes, static Internet protocol (IP) address options, web hosting services and, when necessary (or by request), customer premise hardware.

**Unified Communications**

Allstream Unified Communications solutions provide businesses with a communications environment where workers can get in touch with their colleagues, customers or partners using a variety of devices and media. Our solutions are delivered using a broad array of communications products and services such as VoIP platforms, collaboration, presence, videoconferencing and others. We partner with leading industry vendors (Avaya, Cisco, Mitel, etc.), to bring you the best available technology and the most productive tools. Our close relationship with our vendor partners—reflected in our high certification standings, coupled with the depth of our own communications and technical expertise, allow us to recommend and provide the best UC solutions for your business.

**Business IP VPN**

Allstream Business IP VPN provides businesses with a connectivity solution that enables growth and expansion to any location while reducing cost and increasing productivity. Based on MPLS technology, Allstream Business IP VPN leverages the flexibility and intelligence of IP routing to reliably transport data. This allows you to implement a highly effective and secure communications environment between several offices and extend the reach of your existing network by simply and efficiently interconnecting new locations.
Secure Connect

Allstream Secure Connect provides a complete suite of network security functions that are embedded in the core of the Allstream Network and are able to intercept and neutralize security threats long before they can pose any risk to your network. Offered as an option for subscribers of either Allstream Business IP or Allstream Business Internet, Secure Connect is a managed service that does not require customers to invest in any new equipment, security software or specialized personnel.

Secure Connect enables IP network extensibility wherein customers can connect their preferred Internet service to Allstream’s IP VPN and ensure the integrity and security of packets traversing the extended IP network.

WAN Optimization

Allstream Managed WAN Optimization dramatically improves the effective throughput of your WAN connections, accelerating existing key business applications and freeing bandwidth for the installation of more applications and services. To achieve this goal, the service provides the installation at each relevant business site of WAN optimization appliances or, in case of mobile workers, of mobile client software. This technology improves bandwidth utilization using techniques that include data de-duplication and latency optimization through adjustments of the Transmission Control Protocol (TCP) transport protocol. It also achieves measurable acceleration of common business applications by optimizing the traffic they generate.

The service includes design, procurement, installation, configuration, monitoring and live view performance management of appliances.

SIP Trunking

Allstream SIP Trunking leverages the advances in SIP and Internet technologies to offer a better way to deploy voice and data communications. It allows businesses to converge 100% of their outbound and inbound voice traffic onto the same connection that transfers data between their offices or to customer and supplier sites. This results in significant financial, productivity and strategic business benefits.

Using a MPLS data network or the Internet in order to deliver voice services, Allstream SIP Trunking supports a rich set of telephony features backed by superior management functionality and outstanding reliability.

Storage Private Line

Allstream Storage Private Line (SPL) is a Wavelength Division Multiplexing based service that enables enterprise customers to simplify storage implementation by offering native SAN connections within the same metropolitan areas or selected cities. The wavelength based architecture ensures zero congestion and offers more throughput than similar speed services deployed on other architectures, such as fibre channel over Ethernet. Allstream SPL ensures compliance with a complex regulatory framework while providing data connectivity at speeds of up to 10Gbps.

Hosted Collaboration

Allstream Hosted Collaboration Solution (HCS) is a unified communications solution that is used in conjunction with SIP trunking and IP VPN network connectivity. It offers complete UC software, hardware and networking functionality – from the cloud. The service supports a rich variety of applications including voice, unified messaging, presence, instant messaging, mobility, conferencing, customer care and more. Utilizing the advanced versions of the same applications offered by our on premise
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UC solutions, Allstream HCS is delivered from the cloud and is billed on a per user/per month basis. The end user experience remains the same regardless of deployment model, on-premise, hosted/cloud or a hybrid of the two.

Our service provides the latest most widely used collaboration applications in the industry, while helping enterprises preserve capital, increase productivity and mitigate technology risks.

Managed Security Services

Bringing together state of the art advanced technology, a team of network security experts and world class security research, Allstream Managed Security Services (MSS) provide organizations with 24/7/365 management, monitoring and analysis of their networks, applications and data traffic. Our service includes complete management of security provisions for all elements of the IT enterprise infrastructure, including business application servers, network infrastructure elements, firewall components and intrusion detection/prevention systems.

Allstream MSS delivers enhanced security, significant cost savings and access to the latest technology and expertise. It also allows businesses to dedicate in-house technical personnel to strategic and core business activities.

“Converging” on future communications trends and benefits

The five stages undergone by Enterprise X, represent merely a simplified example for a process that can, in reality, follow a variety of paths.

Regardless of the chosen route, the common destination and the enabler of further advances toward future benefits needs to be the converged IP network. Successful adoption of leading edge applications or operating models offered by the latest trends in enterprise communications require without exception, the underlying support of a quality, high performance network and the presence of effective and centralized management of all elements of IT infrastructure.

Cloud computing architectures, with their promise of fast, low cost, customizable implementations, cannot operate without an integrated and powerful network moving data to and from the cloud. BYOD initiatives that allow employees to leverage a multitude of devices and enhance their productivity also rely on IP networks that are able to accommodate an increased number of users and applications while, at the same time, treating them in a unified standards-based manner. Virtualization is a relatively recent technology that allows business applications to run as “virtual” and “portable” software programs, sometimes sharing physical servers with other applications, moving in-between physical servers or even geographical sites in an efficient, optimized manner. This approach offers spectacular productivity and cost benefits and at the same time, places specific new requirements on the enterprise networks. Only a robust IP converged network can deliver high performance for both traffic between geographical sites and traffic between the virtual applications themselves regardless of their initial location in a particular physical server or site.

It is clear that deploying a converged IP network offers your enterprise the best prospects for taking full advantage of emerging trends and technologies. Allstream can help you plan and implement your IP network in order to better serve your business needs now and in the future.
Conclusion

In a global and competitive business world enterprises strive continuously to streamline their operations, reduce costs and achieve superior business results. To succeed, they need to optimize all aspects of their operations including their business communications infrastructure. This requires taking full advantage of the remarkable benefits offered by advances in business communications made possible by IP technology. Nowadays, those organizations seeking to upgrade their networks can look forward to the impressive efficiencies and opportunities offered by communications environment paradigms like the converged IP network, unified communications or SIP trunking. Beyond that, enterprises can pursue the promises of future productivity enhancing developments, like cloud, collaboration, virtualization and the power of mobility.

Moving in this direction does not require an instantaneous transformation. Rather, in most cases, it is a journey, whose pace and stages are highly dependent on the circumstances of each organization. It is a journey that leads to strategic improvements, improved customer service, reduced costs and higher profitability.
About Allstream

Allstream is the only national communications provider working exclusively with business customers. Our focus is helping you simplify IT operations to improve productivity, maximize performance and manage costs. Our IP solutions are delivered on a fully managed, fully secure national network and backed by our industry-leading commitment to customer service: The Allstream Service Guarantee. Driven by the expertise of our 2,500 employees across Canada, we operate a 30,000 km fibre-optic network combining advanced IP connectivity, digital switching, Ethernet-featured services, and the latest security technologies. Our portfolio includes the highest-capacity voice, data and Internet connections, unified communications, and managed services, all flexibly designed for the needs of large, mid-market and small businesses. We can help you compete more profitably by converging voice and data over a single, reliable, end-to-end infrastructure that delivers exceptional quality of service between metropolitan centres.