Voice First

Redefining the User Experience

White Paper

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White Paper

MITEL White Paper

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1. Executive Summary

Videoconferencing holds tremendous potential for improving the way people communicate. Enterprises are increasingly under pressure to do more things with fewer resources. People with dispersed team members or offices, customers and partners find that traveling for face-to-face meetings reduces their productivity and they yearn for an alternative way of communicating.

Many have recognized the potential for visual communications yet, in the past, found the implementation and management of videoconferencing technologies too complex and costly to justify deployment. With the advent of IP-based videoconferencing for higher reliability, increased bandwidth and manageability in enterprise IP networks, some of the barriers to the adoption of videoconferencing are falling.

One of the biggest remaining barriers to videoconferencing is the user experience. Two market leaders in their respective industries have combined forces to address this and other issues. Prior to the collaboration of Mitel Networks and VCON, configuring and launching a video call required training or the assistance of a technician. Now through Mitel Networks Voice First™ solution, the user experience is squarely addressed and video communications is made as easy as the “touch of a button.”

With Voice First, video is seamless, simple to manage and use, and can penetrate the enterprise without burdening budgets, IT groups, telecommunications departments or users. The rest, as they say, is history.

2. Videoconferencing Overview

2.1 *Ancient History*

Real-time video communications was first demonstrated as part of an AT&T Bell Labs exhibit at the 1964 Worlds Fair in New York City. The vision, of a tabletop terminal capable of displaying as well as sending video and audio over global, ubiquitous networks, became the pursuit of many companies in the decades to follow. Despite the lack of sufficiently powerful processors, or reliable and high bandwidth digital networks, Nippon Electric Corporation (NEC) and British Telecom released proprietary solutions for boardroom applications in the decades that followed the first public demonstrations. In the 1980s, other pioneers in the field such as Compression Labs, Inc. (CLI), VTEL and PictureTel, continued to innovate in the field of video communications.
As video telephony, or "videoconferencing" as we call it today, had much in common with telephony, manufacturers of equipment, service providers and customers sought to develop standards to make devices interoperable and upon which a market could develop. In 1990, the H.320 specification for video communications over integrated digital subscriber networks (ISDN) was ratified by the International Telecommunications Union (ITU). The emergence and validation of the H.320 standard and global ISDN services marked the beginning of an industry, because customers could mix and match products and services from different vendors to solve their unique business challenges.

But, even with standards-based equipment, the industry was plagued by unreliable operating systems, costs that ranged between $40,000 and $100,000 or more per installation, and relatively low quality video and audio experiences that fared poorly when compared with television quality video or face-to-face meetings. For these reasons, many that tried videoconferencing swore it was not worth the effort and abandoned their attempts in favor of traveling to face-to-face meetings.

2.2 *Vision Approaches Reality*

Perseverance on the part of investors, customers and vendors led to the formation of industry associations, user groups and conferences dedicated to the improvement of videoconferencing. Today, after a decade of hype exceeding realities and hassles often exceeding returns, videoconferencing is deployed in large enterprises worldwide to reduce travel. It is especially valued in organizations with internationally distributed facilities facing time-critical decisions. But, the total investment has been high. The cost of maintenance and operation of ISDN and leased line-based networks for internal company communications prevents growth within the largest companies and inhibits adoption by smaller and medium sized companies. Even in large well-tuned networks, the problems associated with archaic and sometimes confusing user interfaces and dialing plans force the average enterprise videoconferencing user to rely on a technical "expert" to place calls from one meeting room to another meeting room.

Given the challenges associated with the "traditional" videoconferencing paradigm, applications have largely been limited to formal events. When attendees or participants in a high impact or high urgency meeting, such as executive management committee or board of directors meetings, cannot for one reason or another meet face-to-face, videoconferencing is a powerful and cost effective alternative to travel. When body language, facial expressions and non-verbal communications or physical objects provide important input for decision making or as part of a transfer of urgent or timely information, videoconferencing is demonstrably superior to a telephone call or audio and data conference.

2.3 *Where To Now?*

Many business managers—the current end users and future customers of video—intuitively understand the power of visually communicating, however, the number of deployed videoconferencing systems are fewer in number and more complex to use than telephone handsets or personal computers.

Like telephony and computer networks, the potential (indeed, the promised) benefits of videoconferencing will be realized by the masses when the technology is ubiquitous. While many advances have been made since its inception, the ubiquity of videoconferencing must be preceded by advances in terminals as well as networks. Parts of the terminal equation leverage well-established standards ratified by the same international standards body responsible for the H.320 protocol and companion standards (ITU). For example, the H.263 and H.263+ video compression protocols widely supported in today's videoconferencing end point products take advantage of greater processing power and improvements to the earlier Discreet Cosine Transform (DCT) algorithms adopted in H.261 to provide higher quality video (smooth motion) at lower bit rates than possible in previous generation products. The Siren audio compression protocol builds upon earlier proprietary work that has been commercialized and licensed by leading vendors.
The first step towards extending the reach and manageability of networks suitable for videoconferencing came when engineers recognized that networks using Internet Protocol (IP) could be adapted or enhanced to provide a low latency environment necessary for real-time communications.

2.4 *IP-based Videoconferencing*

Building upon the experiences and technologies developed for circuit-switched networks (such as ISDN) and proprietary IP-centric conferencing solutions, a complementary and far more flexible suite of products and services is emerging today.

These and other innovations specifically optimized for packet networks are already included in the "umbrella" H.323 protocol. The H.323-compliant market reflects investments of a community of companies cooperating to provide complete solutions for conferencing on IP networks. The spectrum of solutions extends from conference rooms into network devices and even out to the desktops of individual users. By virtue of the adoption of standards, complementary and competing products from diverse sources are interoperable and, by using Application Programming Interfaces (APIs), may be combined to support new capabilities that are not available from a single vendor. For example, telephony-like "supplementary" services such as call transfer, call forward, hold and hunt groups, are now possible in IP-based videoconferencing networks.

As a result of continued deployment of network infrastructure around the globe and in enterprises, there is also more IP bandwidth available at a lower price, and the bandwidth is more manageable than in any earlier communications network. Converged voice and data networks are gaining momentum and offer a transport option for video as well. Unlike the ISDN network paradigm which charged customers a per minute usage charge, IP networks are considered more suitable for a flat "all you can eat" cost model. In fact, there are other cost benefits with IP videoconferencing associated with the fact that the management for the underlying IP network is already cost justified for data applications and that the network termination and packetization hardware is ubiquitous.

Benefit	IP	ISDN
Network can be used for other applications when not used for videoconferencing	Yes, easily if the applications are internal to the organization	In theory, but not in practice
Support for advanced “telephony-like” features such as call forward, call transfer and hold	Yes, provided that the network has been provisioned with appropriate software (e.g., gatekeeper)	No
Ease (and cost) with which one may add or move an endpoint on the network once the system is in place	Small increment, requires assigning an IP address to a new system and maybe no action at all for a move	Each additional system costs the same (in time and materials) as initial implementation to purchase and install
Web-like management and scheduling interfaces	Yes, single network connection offers support for management and transport via proprietary software or gatekeepers	Yes, for certain devices that are also IP connected (requires that the device be provisioned with 2 networks), using commercial products

Table 1. Comparison of IP and ISDN Benefits other than cost

For these and other reasons, IP is the transport of choice for new videoconferencing deployments. In the future, IP-based videoconferencing solutions will complement—and in many settings, gradually displace—legacy systems.

The ISDN and IP worlds will coexist for the foreseeable future, each filling a role defined by economics and access to appropriate networks. When people with end points on ISDN networks need to be reached by IP-based videoconferencing users or the reverse, communication between these two networks can be achieved via H.320/H.323 gateways. As far as end users are concerned the video gateways are transparent network “entities,” providing termination of respective networks, facilitating a smooth translation between signaling protocols as well as transcoding of any compression algorithms that may differ between the two end points in their respective networks.

Videoconferences involving more than two end point systems, regardless of their network or protocols, can make use of a multipoint conferencing unit or MCU in virtually the same manner an audio conference of more than two telephones can use a voice bridge. Multipoint conferencing units or “servers,” are available for ISDN network users, IP network users and some models are integrated, supporting both ISDN and IP on the same platform at the same time. Multipoint conferences can be set in either voice activated switching mode, showing only the speaker on the screen of all participants except the speaker who sees only the previous speaker, or in continuous presence, showing all the participants together as if they were playing Hollywood Squares.

Mitel Networks understands that as customer markets globalize and limited financial resources reduce business travel options and incentives, the need for remote meeting tools that enhance collaboration among distributed enterprises is higher than ever before. The company has assessed the aforementioned progress in IP-based videoconferencing and seized an opportunity to add value to existing and future communications solutions by integrating its core technologies with those of VCON, an industry leader in IP-videoconferencing.

3. The Mitel Networks Relationship with VCON

Through its relationship with VCON, Mitel Networks is able to address the chief remaining obstacle to the exponential expansion of videoconferencing: ease of use. Through a revolutionary new concept called Voice First, Mitel Networks has made videoconferencing as easy as placing a phone call.

Until the availability of Voice First solutions, videoconferencing terminals—be they group or individual desktop systems—have required the user to learn a new user interface before initiating and being productive during a video call. Some user interfaces appear on a monitor and navigation is performed using a handheld remote control to move from menu to menu and select options from any individual menu. Other applications based on PC operating systems, rely on a keyboard and mouse for call initiation and control. In addition, users (of non-Mitel systems) have been required to confer in advance of a video session to exchange the "phone number" (for ISDN) or IP address of the terminal to be called.

By leveraging the most ubiquitous and intuitive interface available to the business customer, namely a telephone, Mitel Networks' Voice First eliminates the need for user training, exchanges of dialing information in advance of calls and a range of technical support services associated with the use of complex communications devices.

The complimentary relationship leverages the strengths of both Mitel and VCON. Mitel Networks provides the core converged IP communications platform, desktop phones and networking technologies. Most real-time communications begin with voice, and the voice exchange establishes the relationship between users. In this arena, Mitel has a recognized track record of innovation coupled with an intense focus on improving the user experience through intuitive, high-quality user terminals and feature-rich communications platforms.

Now that people are deploying converged IP solutions for their voice and data traffic and converged applications, Mitel recognizes that the ground work is being laid for a new model of communications to emerge where customers will seek the added value that video brings.
VCON, for its part, has the depth and technical "know how" to build successful IP videoconferencing products. It has invested over 300 man-years of development specifically towards IP-centric videoconferencing products. Approximately one third of this investment has been towards the development of the MXM, VCON's video PBX and network management platform.

VCON's IP videoconferencing technology advantage is already recognized in markets where widespread adoption of IP networks is paving the way for IP-based videoconferencing. The company has shipped over 70,000 end points since inception in 1994. Its customers boast the world's largest IP-based videoconferencing deployments. One of these—a network of 1,850 end points—ties together over 120 locations for training applications. The VCON value proposition will become even more clear and compelling when desktop videoconferencing increases in popularity.
As we will describe below and users will experience firsthand, the Mitel and VCON technology assets/strengths are complementary and together produce unprecedented end user and network manager experiences. Even Polycom, a leading videoconferencing system manufacturer, with its SoundStation technology, has lacked depth in the voice management, call control engines and user-interface design expertise to bring a comparable solution to market.

4. Mitel Networks Voice First

Voice First is the result of Mitel fusing VCON's complementary technology to create a breakthrough solution—a product that through the synergy of a voice, video and IP networking experience significantly differentiates the Mitel value proposition while also lowering the traditional barriers to the deployment and adoption of videoconferencing.

With Voice First, launching a videoconference is as easy as pushing a button on a Mitel IP phone. Behind the scenes, this solution leverages seamlessly integrated hardware and software components. The application, Voice First, is quickly enabled by an administrator or IT professional installing application software on the Mitel Networks 3300 Integrated Communications Platform (ICP). The enterprise-grade 3300 ICP already supports up to 700 IP phones per controller, offering users over 600 features. Where there are multiple controllers in a network, the 3300 ICP processors transparently negotiate services on behalf of users. Customers of the 3300 ICP also benefit from a suite of speech-enabled applications and contact center solutions. The 3300 ICP supports the widest portfolio of phones, appliances and desktop peripherals in the industry as well as an elegant migration path from Mitel's Time Division Multiplex base of voice communications products.

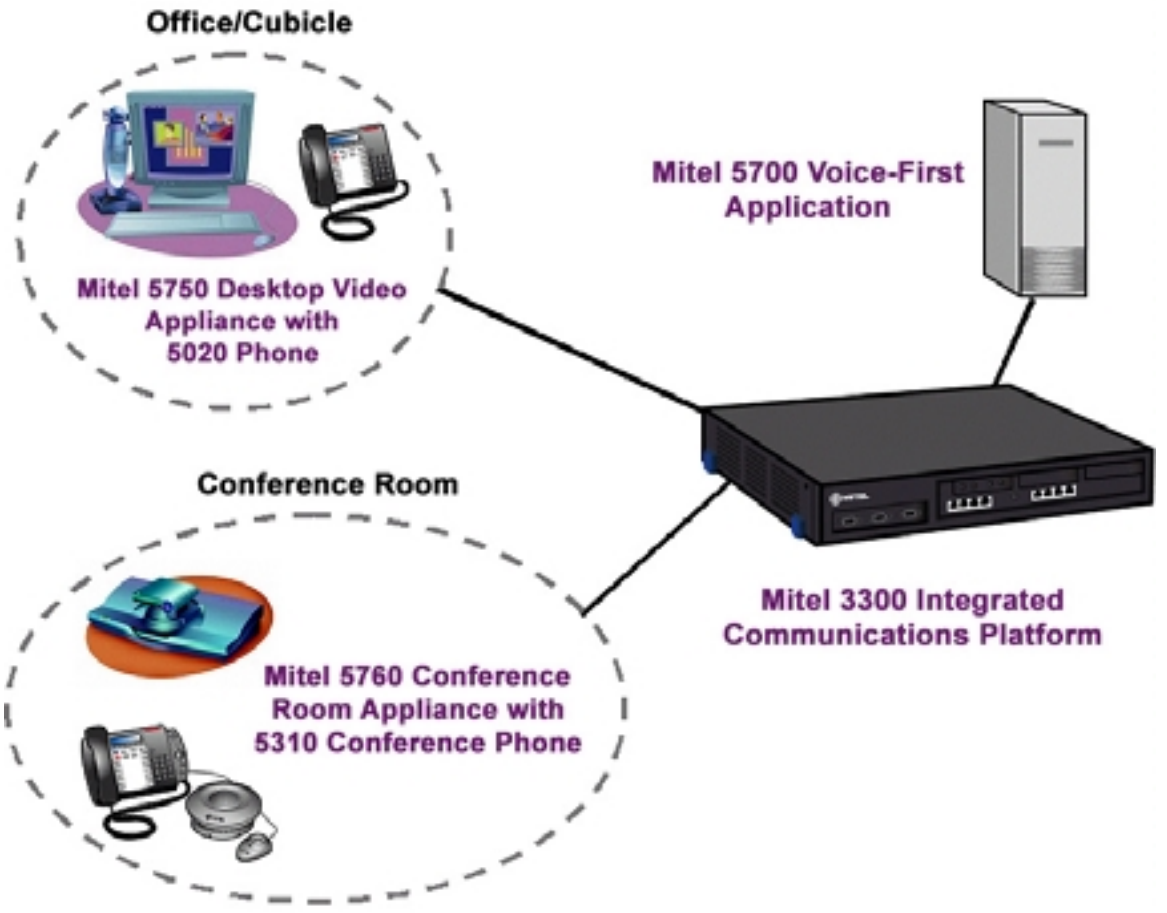
In an IP network, Voice First is enabled when the 3300 ICP communicates with VCON's Media Exchange Manager (MXM) across the enterprise IP network. The VCON MXM is an IP video Private Branch Exchange (PBX). A complete enterprise software solution, the MXM combines a video PBX with a remote management server, H.323 gatekeeper and online directory in the first-ever suite of integrated client/server applications and services designed to facilitate enterprise-wide real-time interactive, visual communications.

At the user's office or in a meeting room, all that is required for Voice First is a Mitel Networks IP Phone and a videoconferencing end point. Mitel Networks 5020 IP Phones provide the call launch signaling, the audio capture (via telephone handset or hands-free microphone), echo cancellation and the speaker for receiving audio from other parties.

On the personal computer in the user's office, administrators need only add a Windows-compliant software application and the Mitel Networks 5750 Desktop Video Appliance–a USB compression camera. The combination of software and compression camera offer customers the ability to conduct real-time interactive videoconferences up to 1.5 Mbps, exchange data files and to collaborate using an electronic whiteboard. The software application includes the VCON PacketAssist Architecture for enhanced Quality of Service in IP networks and the Interactive Multicast technology that enables an end user to multicast from the videoconferencing application to users on any multicast-enabled IP network.

In the meeting or conference room, a 5310 Boardroom Conference Unit is employed in conjunction with a 5760 Videoconferencing Appliance. This combination of products fully supports group videoconferencing experiences without requiring a personal computer. The elegant set-top Mitel Networks 5760 Videoconferencing Appliance features include IP and ISDN videoconferencing up to 512kbps at 30 frames per second full screen resolution over IP and 384kbps over ISDN, T.120 data conferencing support, and PacketAssist Architecture for enhanced Quality of Service capabilities, Interactive Multicasting, and centralized management.

Once sites are video-enabled, a user in a private office with a 5020 IP Phone or a meeting room with a 5310 Boardroom Conference Unit begins by dialing another party in the conventional manner. When another party is also video enabled with the Mitel Networks 5700 Voice First application, a light appears on the handset or boardroom conference phone. Through the seamless integration with the 3300 ICP and 5700 Voice First Application, an IP videoconference is established with the simple "push of a button."



Voice First Deployment

The Mitel Networks application level solution leverages the power of IP networks, IP telephony and videoconferencing technologies to offer a tightly integrated and improved user experience anywhere in the enterprise. Before the Voice First solution, collaborators could never be sure when video might add value. With Voice First, people may begin their meeting with voice and, in an ad-hoc manner enhance their communications with voice and video.

4.1 *Benefits of Voice First*

Simplicity - Voice First means videoconferencing with the push of a button. After nearly 100 years since its initial offering, people are accustomed to the telephone. It is the ubiquitous and intuitive user interface for voice conversation. Frequently, telephones are located near a personal computer in an office environment, or on the table in a meeting room. With all the necessary user controls on the telephone Voice First removes any requirement for user training. The added benefits of video are experienced immediately, just by looking at the personal computer or larger group-size monitor for the video.

Segregation of media in the two devices - By having the audio input and output through a telephone interface, the customer is able to maximize the technologies already in place in the business environment. By using a personal computer and compression camera or a dedicated appliance for video capture and decoding, the highest quality experience is available at the touch of a button. By eliminating a separate user interface, the learning curve associated with this new solution is essentially zero.

Lower overall costs of deploying video - Voice First combines best of breed technologies already in the Mitel customer enterprise with a powerful complementary platform developed through collaboration with VCON. By comparison with traditional videoconferencing deployments, Voice First reduces the customer's hardware costs by eliminating the need to purchase speakers and high quality microphones. By leveraging the centralized and unified application management console, Voice First offers the rich media communications to customers with reduced management costs. It also eliminates the cost of user training frequently included in the total cost of videoconferencing ownership.

Flexibility - With Voice First, the Mitel Networks IP phone user can decide when videoconferencing enhances a specific meeting or communications initiative during a meeting and quickly add video to a voice-only conference. This flexibility is another distinct advantage over traditional videoconferencing user paradigms where a telephone call must be concluded and people generally change meeting environments for video. The seamless, one-touch option will reduce barriers associated with initiating a video and accelerate the user familiarity and acceptance of video in real-time interactive business communications.
Using Voice First in a network that includes multipoint conferencing support, the users may also elect to transfer a video call by touching the "transfer" button on the Mitel phone without needing to plan ahead or disconnect a call. If needed any Voice First enabled point to point video conference can gracefully expand to include three or more end points in a voice activated switching or continuous presence multipoint conference, by simply pressing the "conference" button on the Mitel phone.

Manageability - Voice First is a network-based application that is centrally managed to provide administrators or IT managers' control just like any other telecommunications service. In the Voice First management console, administrators can select which locations are allowed to use specific features. For example, the manager can designate those sites with access to a multipoint videoconferencing server, or access to a gateway to the public telephone network where ISDN videoconferencing systems may be reached. The user's data rate and bandwidth usage options are also within the manager's control, eliminating the risk of over burdening the corporate network with video traffic during peak usage periods.

Seamless integration at the desktop and conference room Any user with Voice First can reach another video-enabled location, regardless of the specific implementation at the location. A desktop user can reach people in a conference room and vice versa without changing behaviors or environments, or compromising on the quality of the experience. This interoperability will further contribute to lowering barriers to the adoption of videoconferencing in enterprise.

5. Conclusion

Voice First is a breakthrough solution that will significantly improve common business processes. In the conference room, the applications for video enhanced communications include group meetings for project management and review. Board meetings are regularly conducted between remote locations via a videoconferencing service. At the desktop, the Voice First solution offers an unprecedented immediacy and ease of use. The convergence of voice, video and data made possible with Voice First will most quickly benefit those people in an organization who need to enhance business relationships and voice meetings with visual information.

Although long promoted as the primary advantage of videoconferencing, the reduction or replacement of business travel by videoconferencing is a relatively short term and tactical view of this technology. Mitel Networks believes that Voice First is key to enhancing the most widely used and customary communications device: the telephone handset. The immediate benefits of Voice First are that it makes a richer experience possible without raising the need for training, additional management personnel or higher expenses. With Voice First, the benefits of videoconferencing will be accessible to any size of enterprise using Mitel Networks' Integrated Communications Platforms. Once the capabilities of videoconferencing are not longer limited to large enterprises and the FORTUNE 100, they will permeate value added supply chains, enhancing communications between companies that to date have relied solely on voice and data for their business activities. In addition, Mitel Networks will continue to integrate Voice First capabilities into its other product lines. In the future, Mitel Networks' 6500 Unified Communications solutions will also support real-time and store and forward methods of communication. Through the expansion and continued development of Voice First, the business customers choosing Mitel Networks solutions will experience unprecedented simplicity around the exchange of information and sharing of ideas. Enhancements will leverage all the technologies at Mitel's disposal, on the desktop, in the network and in the conference or meeting room facilities. Mitel's customers can expect that the future of collaboration will be simpler for users and easier to install and manage than ever before, seamlessly incorporating the latest capabilities in the most familiar, user-friendly environment.