

# White Paper

## OpenScape Video: Bringing HD Videoconferencing to Unified Communications

A White Paper from Siemens Enterprise Communications  
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**Communication for the open minded**

Siemens Enterprise Communications  
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## Executive Summary

Growing globalization, increased worker mobility and rising environmental awareness are driving many companies to rethink their corporate communications strategies. For more than a third of the enterprises in North America and Europe the solution was to deploy an enterprise Unified Communications (UC) solution. Enterprise UC provides a converged communications and collaboration environment that makes it easy for companies to stay in touch with workers, customers, suppliers and partners anywhere in the world.

One aspect of Unified Communications that is rapidly growing in popularity is videoconferencing. Today's videoconferencing is affordable, easy-to-use and includes end-points for everything from desktops to large meeting rooms. It is based on open standards such as SIP, and often includes high-definition video and audio to enrich the user experience. Videoconferencing has emerged as an important collaborative tool that can reduce the cost of business travel while satisfying the most environmentally conscious of companies.

Siemens OpenScape Video is the first single-vendor, unified videoconferencing solution for everyone in the enterprise. OpenScape Video provides the enterprise with a complete end-to-end videoconferencing solution as an integral part of an enterprise Unified Communications Solution. By integrating High Definition video, PC-based video and voice-only end-points into a Unified Communications network, OpenScape Video enhances enterprise-wide collaboration and increases employee productivity while reducing travel costs and carbon emissions.

*Including video in a unified communications implementation ensures that users will leverage the technology to its fullest, as well as reap the benefits of face-to-face collaboration without having to leave their communications environment—or their office.*

***Source: Leveraging the Value of Communications in the Enterprise, Frost & Sullivan, February 2008***

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## 1.0 Videoconferencing Enhances Unified Communications

Increased globalization and outsourcing together with the growing trends of employee teleworking and mobility are forcing companies to think bigger – to abandon the headquarters-centric approaches of the past to manage workforces, customers and strategic partners that are located globally. Companies are also seeing more of their workers spending increasing amounts of their time away from their desks. The 21<sup>st</sup> century worker is mobile and spends up to 40% of their work week on the plant floor, in the warehouse, or on the road. These growing trends toward enterprise globalization and employee mobility must be dealt with strategically so that companies can maintain their competitiveness.

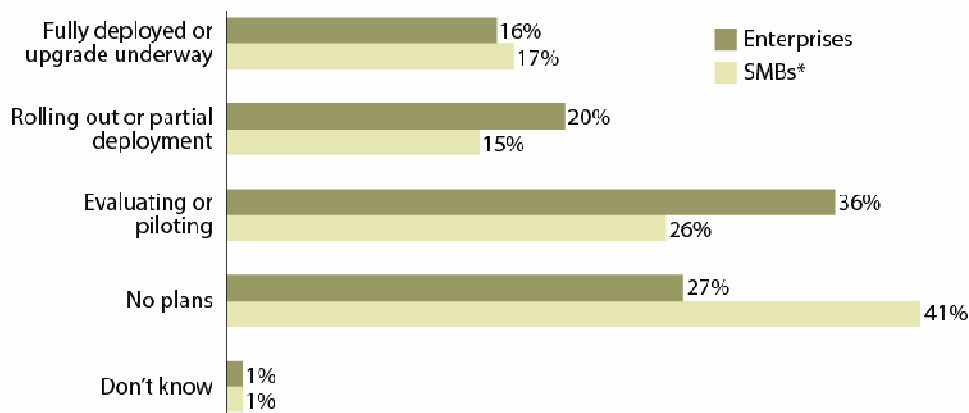
For the employee, there is good news and bad news. Business workers around the globe have more options for communicating than ever before; paper mail, fax, voice (fixed and mobile), email, conferencing (voice and video), and instant messaging (IM). However, employees are spending as much time managing their daily information flow, i.e. updating multiple contact lists, listening to multiple voicemail systems, and reading multiple emails, IM and text messages, as they are performing key job requirements. This overabundance of communications ‘channels’ and messaging modes can degrade employee productivity and responsiveness. This is the ‘Communications Paradox’ – where more communication channels negatively affect an employee’s ability to communicate and do work.

In response to globalization, increased worker mobility and the Communications Paradox, companies are developing Unified Communications (UC) strategies and implementing UC solutions. This approach facilitates a global focus and improves the usability of communications while reducing communications challenges. Analyst group Frost & Sullivan defines Unified Communications as, “The merging of telephone, e-mail, conferencing, presence and instant messaging functionality into a single application that serves as the standard communications environment for the office worker.” Furthermore, UC provides a single, consistent front-end to a fully merged communications and collaboration environment. It adapts to a worker’s needs based on the task at hand and the availability and capability (presence) of the recipient; co-worker, customer, supplier or partner. UC is becoming imperative to companies globally. According to the analyst group Forrester, more than half of SMBs and almost 75% of large enterprises in North America and Europe are evaluating, installing or running UC solutions.



### Unified Communications Implementation Status

“At what stage are you in implementing any hardware, software, or services to support unified communications?”



Base: 839 decision-makers at North American and European enterprises

\*Base: 1,203 decision-makers at North American and European SMBs

Source: Enterprise Network And Telecommunications Survey, North America And Europe, Q1 2007

\*Source: SMB Network And Telecommunications Survey, North America And Europe, Q1 2007

A key element of UC is collaboration. Companies that have employees, suppliers, customers and partners located globally are looking for new, low-cost ways to facilitate collaboration. The tried and true collaboration method—the face-to-face meeting—has become too costly and has a huge impact on productivity. Because of constantly rising crude oil prices and high hotel prices, business travel for meetings has become increasingly expensive. Furthermore, companies are becoming more conscious of the environment and their carbon footprint and are looking for new ways to become ‘green.’ The answer is that companies are turning to new technologies to provide cost-effective, environmentally conscious collaboration methods for their global network. Videoconferencing has emerged as an important collaborative tool that not only reduces the cost of business travel and satisfies the most environmentally conscious of companies, but can actually improve productivity and shrink product life-cycles when deployed correctly.

*Collaboration with external teams /partners is at 41% adoption today and shows the highest likely growth of any application – another 40% – over the next 12 months.*

***Source: Collaboration with Teams and Partners, Wainhouse Research, November 2007***

## 2.0 The New, Improved Videoconferencing

Videoconferencing (VC) is not new—it has been available since the mid 1980s. However, early enterprise videoconferencing solutions had many problems. VC equipment was expensive. It was often proprietary and vendor specific, which meant that companies would be locked into a single vendor solution that was unlikely to interoperate with VC systems from other companies. In addition, because it required a telephone circuit, the setup was expensive to maintain. Companies had to pay for dedicated connections even when they were not using the system. The high cost of Videoconferencing might have been acceptable if the user experience had been more compelling. However, poor picture quality, low frame rate and bad system usability created a sub-optimal experience. For all of these reasons and more, the original video conferencing never caught on in the marketplace.

Videoconferencing is recently making a comeback and it is very different from the systems of 20 years ago. Today's VC is about High-Definition (HD), IP networks, and SIP (Session Initiation Protocol). Because of its popularity in the consumer market, people are comfortable with High Definition technology and they expect the same high-quality picture and sound in an enterprise VC solution. HD video is perfect for enterprise videoconferencing. More than half of the information communicated during a face-to-face meeting is non-verbal – body language, facial expressions and eye movements all provide important clues and hints that augment the verbal discussion. Only HD videoconferencing with its larger picture and improved clarity has the capability to relay these important non-verbal communication cues accurately and effectively. Frost & Sullivan reports that despite their relative newness, HD videoconferencing end-point shipments are already equal to Standard Definition (SD) end-point shipments. It is clear that High Definition video is the future of videoconferencing.

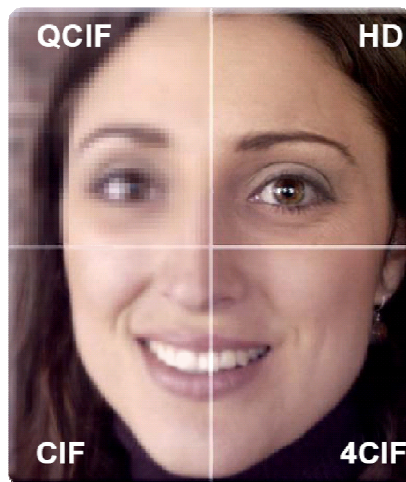


Image Quality at various Videoconferencing Resolution

QCIF (176 by 144 pixels)  
CIF (352 by 288 pixels),  
4CIF (704x576 pixels)  
HD (1280 by 720 pixels)

Open standards are vital for the success of the new Videoconferencing. By supporting important industry standards like H.323 and SIP, vendors are assured that their VC solution is flexible, scalable and will interoperate with VC solutions from other vendors. In addition, using open standards like SIP allows for easy integration with IP-PBXs and enterprise UC solutions. This integration makes the VC solution more flexible and easy-to-use. Another advantage for the new VC is that it runs over a standard IP network. Companies are no longer forced to provision dedicated ISDN connections to handle their VC traffic. Instead, they can leverage their existing IP backbone. This makes the new HD VC much more affordable to maintain. There has also been a huge improvement in the size, usability and price of new VC end-points. In the past the only options were large boardroom units and telepresence systems that were expensive and difficult to operate. However the availability of smaller, low-cost room VC systems and executive desktop end-points are making VC easier to deploy.

The new VC is less expensive to purchase and maintain, it provides a better user experience for call setup and it is more flexible and future proof. Given all of these improvements, is it any wonder that there is such a high-level of interest and excitement surrounding the technology? Frost & Sullivan projects the VC end-point market to almost quadruple over the next few years from \$1.09 B (USD) in 2007, to \$3.9 B (USD) in 2014. It is clear that videoconferencing, especially HD videoconferencing is going to be a valuable addition to the enterprise UC strategy.

## 3.0 HD Videoconferencing Architecture

As discussed above, HD VC is an important element of enterprise collaboration within a UC solution. But what are the components of an enterprise HD videoconferencing solution, and how do they fit together? An enterprise grade HD videoconferencing solution consists of the following key components:

### PBX/UC Infrastructure

At the core of the HD VC solution is the enterprise IP-PBX and in many cases an integrated Unified Communications system. This “UC Engine” provides the required communications control features and on-ramps to the Public IP Network (Internet) and the PSTN. The UC engine enables signaling for videoconferencing via SIP or H.323.

Other features that are provided by the PBX/UC infrastructure include:

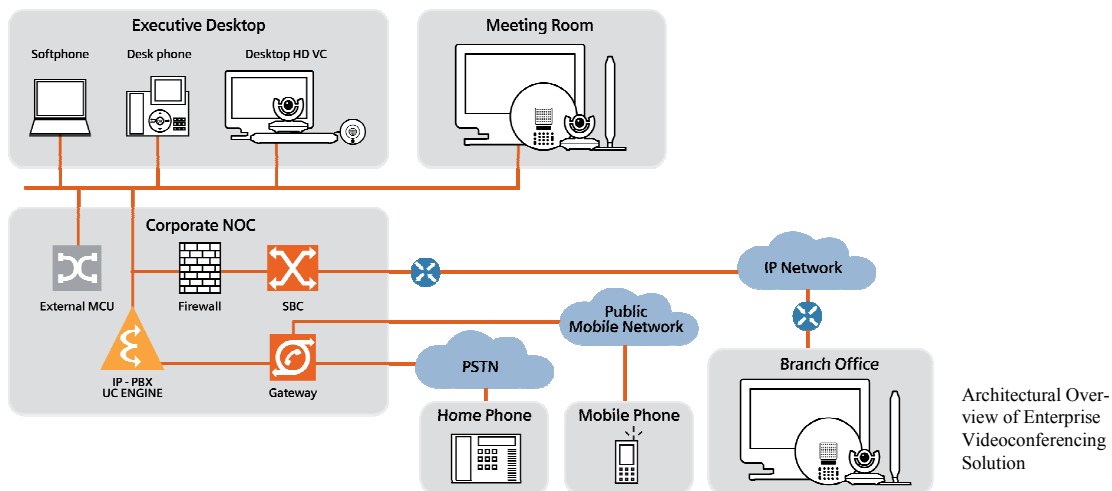
- QoS Management
- Session Detail Reporting
- Licensing and Administration Features
- Call Admission Control (CAC)

### End-points

HD videoconferencing end-points come in a variety of sizes and capabilities. At the high-end are expensive Telepresence systems in dedicated facilities. These systems are composed of dozens of different components and can cost hundreds of thousands of dollars and require full-time staff to setup and maintain even simple conferences. Lower cost VC end-points that are designed and built for standard conference rooms and desktops typically integrate all of the necessary components (camera, monitor and microphones) into a few pieces of equipment. In addition, many new enterprise videoconferencing systems allow Standard Definition and non-video end-points to participate in an HD videoconference.

### External Multipoint Control Unit (MCU)

The MCU is a bridging or switching device that establishes conference calls between multiple participants in any combination of audio, video (SD and/or HD) and data, depending on the capabilities of each participant. Some external MCUs translate and transcode media streams to optimize the bandwidth requirements for each conference end-point. The MCU is an optional component, but can provide benefits to companies that hold videoconferences with many participants and/or a variety of end-points with different capabilities, i.e. voice-only, SD video, and HD video.



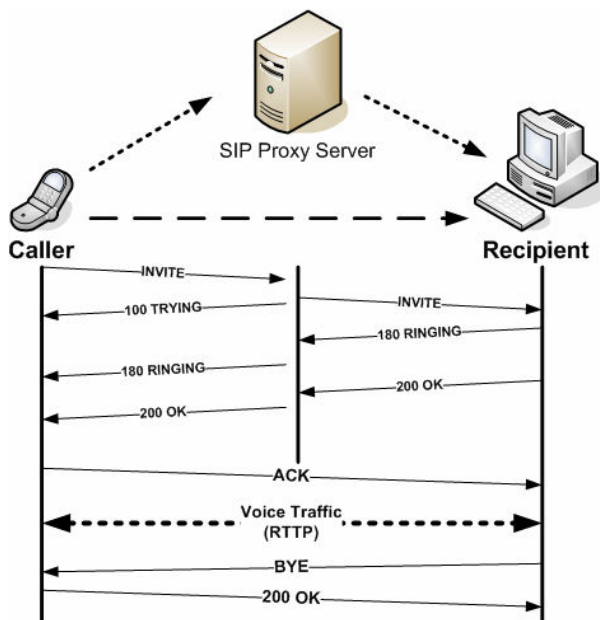
## Session Border Controller (SBC)

An SBC is a device that manages VoIP and Video calls to and from a protected enterprise network. The device may either act as a firewall, or co-operate with existing firewall devices in the DMZ to open the firewall and allow VoIP signalling and media streams to pass through. The SBC can also provide call admission control to manage which calls may be passed in and out of the network and reject calls when necessary, thus protecting the corporate network from Denial of Service attacks and network congestion.

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### What is SIP?

SIP is the Internet Engineering Task Force (IETF) signalling protocol (RFC 3261) used for presence, messaging, VoIP, audio/video conferencing and events notification. In telephony, there has always been a clear distinction between the two phases of a voice call. The first phase is "call set up," and includes all of the details needed to get two telephones talking. Once the call has been set up, the phones enter the "data transfer" phase of the call and use an entirely different family of protocols to actually move the media packets (voice and video) between the two end-points. In the world of voice and video over IP, SIP is the "call set up" protocol. It manages call set up, routing, authentication and other feature messages between end-points. Once the call is established, transport protocols such as RTP (the Real-time Transport Protocol) actually transfer the media stream between end-points. Due to its power and simplicity, SIP has become the primary standard of internet telephony and promises to do the same for video-conferencing.



SIP Messaging using a SIP Proxy Server

## 4.0 End-to-end HD Videoconferencing from Siemens

OpenScape Unified Communications Server is the industry's first software based enterprise voice, video and unified communications application. At the core of the OpenScape UC Server are OpenScape Voice (formerly HiPath 8000 Softswitch) and OpenScape UC Application, both of which are integrated into a single, powerful UC suite.

### 4.1 OpenScape Voice

OpenScape Voice is an open IT-based communications system. It is a native SIP real-time IP system designed to provide enterprises with a robust telecommunications delivery infrastructure. Scalable to as many as 100,000 users per system, and a virtually unlimited number of users in a large network, OpenScape Voice can be deployed and managed as an IT / Data Center based communications solution. Because it shares a common origin with the network operator voice systems sold by the Nokia Siemens Networks company, OpenScape Voice is the only truly carrier grade product for the enterprise. It is designed to provide architectural strength through its scalability, resiliency, adherence to open standards, and manageability.

### 4.2 OpenScape UC Application

OpenScape is a full-spectrum Unified Communications software suite that provides a single view of people, teams, and the ideal communications media to reach people in real-time. OpenScape removes communications guesswork and expense from workflow, and dramatically improves key business processes. Embedded into workflow applications (hosted or on-premise), OpenScape brings this single communications view into the context where people work, thereby providing true business process integration.

### 4.3 OpenScape Video

OpenScape Video is the industry's most affordable true High Definition video end-point for both meeting rooms and executive desktops. OpenScape Video offers a range of High Definition videoconferencing end-points that transmit at 1280 x 720 pixels resolution (720 p) at 30 frames per second (FPS) with a 16 x 9 image ratio, while using only 1 Mbps of IP network bandwidth. OpenScape Video end-point codecs and embedded Multi-point Control Units (MCU) handle an extensive list of resolutions, allowing users to get the best video for their available bandwidth, and eliminating the lowest common denominator resolution disappointment. As a result, standard definition (SD) end-points participating in a multi-point session will not downgrade the HD image transmitted to the HD capable end-points. All OpenScape Video end-points support both SIP and H.323.

**OpenScape VHD600** is an ideal High Definition videoconferencing end-point for medium and large-sized meeting rooms. It includes an embedded Multiple Control Unit (MCU), an HD conference phone, HD PTZ camera, and support for two HD displays and two HD camera inputs; the VHD600 provides an immersive visual experience for conducting effective, multi-participant meetings between several sites. The embedded MCU allows the VHD600 to initiate and host a High Definition multi-point videoconference of 6-way Voice Activated Switching (VAS) or 4-way Continuous Presence (CP), without the need for an external MCU. Voice is an integral part of the HD video conference experience. The VHD600 includes the OpenScape VP100, a High Definition conference speakerphone equipped with an internal circular array of 16 microphones.

**OpenScape VHD400** is an excellent High Definition videoconferencing end-point for small and medium-sized meeting rooms. It includes an embedded Multiple Control Unit (MCU) enabling 4-way continuous presence (CP) videoconferencing, an HD conference phone, HD PTZ camera, and support for a single HD display. The embedded MCU transcodes each conference end-point stream separately and supports 48 different resolutions up to 720 p, thus maximizing the image quality for every bandwidth and end-point capability.

**OpenScape VHD100** is an affordable High Definition videoconferencing end-point for the desktop or a small meeting room. It includes an HD Microphone, HD camera, and support for single HD display. The VHD100 offers a cost-effective way of equipping frequent travelers and teleworkers with a personal video end-point that can replace a portion of their travel with face-to-face meetings over videoconferencing.

## 4.4 Siemens OpenScale Services

Siemens offers a broad portfolio of solutions and services to enhance the reliability, availability and security of voice, video and data networks and applications. OpenScale Services, from Siemens, are a complete portfolio of consultancy, integration and managed communication services delivered directly in over 50 countries. Twenty-four hours a day, seven days a week, Siemens' global network of service professionals are responsible for the realization, maintenance and management of some of the most complex and geographically dispersed communication networks on the planet. Siemens delivers these services in more than 50 countries across a broad range of vertical markets, including financial services, utilities, public sector and retail.

**Professional Services** are important in today's communications arena. It is difficult to implement any kind of new technology without expert help. Siemens has expertise in many industries, technologies, platforms, and software.

**Managed Services** are growing in popularity and help to manage day-to-day operations and IT initiatives. Siemens can help with routine tasks like asset management, help desk support, password resets and general network management. Siemens offer multiple options for technology deployment and service management to suit the different needs of our customers ranging from management of technology on customer premises (CPE), through to fully hosted, off-site delivery models.

**Hosted Solutions** have always been an attractive solution for SMEs but recently they have become more popular in the large enterprise market. Siemens can host and manage everything from voice and video telecom services to WLAN/VoWLAN and FMC solutions.

*Forrester's view is that telepresence will form only a small part of the market; the more powerful opportunity is to add video at all levels — from PCs to meeting rooms, presentation theaters, and board rooms.*

*Source: Videoconferencing: You Need An Enterprisewide Strategy - Forrester Research, August 2007*

## 5.0 Benefits of OpenScape Video

### **Enhanced Collaboration**

As a key component of the Siemens OpenScape UC Server, OpenScape Video adds a new, valuable dimension to corporate communications. The OpenScape UC client software allows enterprise users to see the real-time presence status of their colleagues on each of their available communication tools (including video), and to initiate a video call by dialing a number, or by simply clicking a button on their PC user interface. Because of its low-cost and low complexity, OpenScape Video makes HD video communications and enhanced collaboration benefits available and accessible to all levels of the enterprise. By integrating with the SIP-based OpenScape Voice soft switch, every OpenScape Video end-point is registered as a SIP client on the corporate telecommunications system, and is assigned its own dedicated phone-like number. As a result, setting up a video call is as easy as dialing a phone number. In addition, joining a video conference is no longer limited to people who have access to videoconferencing equipment. OpenScape Video integrated with OpenScape UC Server enables any SIP-based end-point to participate in a video conference; whether it is PC software based video client or even a voice-only phone.

### **Reduced Travel Cost**

Recent research indicates that business travellers take one business trip per month that averages three nights duration. American Express estimates this travel to cost \$1,110 for domestic journeys and \$3,171 for international destinations. Reducing annual business travel by a third can save a company almost \$10,000 per year, per traveller. OpenScape Video is ideal for reducing travel costs as meetings with remote colleagues can be conducted without leaving the office. With OpenScape Video you can experience face-to-face interaction at a fraction of the cost of travelling while avoiding the hassle, delays and exhaustion of business travel, and improving employee work-life balance.

### **Lowering Carbon Emissions**

Business travel is a contributor to pollution and global warming. Increasingly, green initiatives by companies are playing a significant role in the effort to offset and decrease carbon emissions. Video communications is a green and practical option for replacing travel and reducing the carbon footprint of the enterprise.

### **Increased Productivity**

Enterprise-wide availability of videoconferencing boosts the enterprise's capability to communicate effectively with remote colleagues. The ability to add an accurate visual dimension into the conference raises the participants level of engagement compared to voice conferences, leading to better sharing of information and opinions, optimized teamwork, and faster decisions. In addition to the cost savings, there is a tremendous productivity benefit to reducing business travel for face-to-face meetings. Now the time an employee spends driving, flying, and parking on the way to a meeting is available for productive work or even another videoconference.

## 6.0 Conclusion

OpenScape Video is the first single-vendor, unified videoconferencing solution for everyone in the enterprise. By integrating High Definition video, PC-based video and voice-only end-points into a Unified Communications network, OpenScape Video enhances enterprise-wide collaboration and increases employee productivity while reducing travel costs and carbon emissions. Supported by Siemens OpenScale Services and their global reach of professional, managed and hosted services, OpenScape Video provides the enterprise with a complete end-to-end videoconferencing solution as an integral part of an enterprise Unified Communications Solution. More information about the Siemens strategy for Unified communications and product information about OpenScape Unified Communications Server are available at <http://www.siemens.com/openscapevideo>.

Siemens Enterprise Communications is a thought leader and innovator in the enterprise communications industry. We are one of the leading players in the market with full coverage of all the relevant markets from a strong European base with global reach. We have the passion, commitment, skills and expertise to deliver a range of cutting-edge technologies, outstanding products and professional services supported by an enterprise that has the financial strength to outperform the rest in a competitive and consolidating market.

*HD videoconferencing has reached the point where it's a significant upgrade in terms of quality, and competitive enough in terms of cost vs. SD systems, to appeal to organizations evaluating videoconferencing technology for room-based environments.*

**Source: *High-Definition Videoconferencing Moves to the Forefront - Gartner, March 2008***

Munich-based Siemens Enterprise Communications GmbH & Co. KG, a wholly owned subsidiary of Siemens with more than 15,000 employees, is one of the world's leading vendors of Open Communications solutions for enterprises of all sizes. Our products, solutions and services make business processes more productive, faster and more secure - with any device, network or IT infrastructure.

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