



The Pillars of Collaboration

A C2C White Paper

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Introduction

The term collaboration describes the ability for people to work on a project together. In today's information age there are many aspects of a collaboration suite which are required to enable today's information worker to collaborate on a specific project. Organisations are becoming increasingly dispersed across the globe with many of the information workers located in different offices, time zones and in some cases working remotely from their homes or hotels.

Defining collaboration

Collaboration is an over used term by vendors and systems integrators to describe a particular solution they are marketing. Generally these solutions only meet a couple of the key pillars that make up a collaboration suite. This paper helps to define the pillars that make up a collaboration suite and briefly describe their features and uses.

Introduction

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The ability for a CIO to identify and address the individual requirements of today's workforce is the key to a successful whole of business collaboration solution.

This paper defines collaboration, describes the pillars of a collaboration solution and clarifies the features and benefits of each offering. We also discuss the profiling of the workforce and how this can form the basis of an organisations collaboration roadmap.

About C2C

C2C is a consultancy group dedicated to providing its clients with impartial guidance on effectively rolling out a collaboration strategy. C2C consultants have in-depth experience throughout the collaboration industry from working within vendors and service providers across Asia Pac.

C2C cuts through the vendor hype and provides its clients with a clear and concise roadmap that will fit within their IT budget and meet their overall business objectives.

With the speed of adoption of new collaborative technologies and the maturing of traditional collaborative technologies such as conferencing, collaboration is becoming a standard technology tool within organizations. Therefore requiring organizations to take a more holistic and strategic approach to collaboration.

This holistic and strategic approach includes evaluating how employees need and/or would like to communicate as well as understanding the right collaborative technologies to apply based on the profile and level of the employee.

Although collaborative technologies simplify communications, the expanded requirements, different technologies available and need for customization, make collaboration planning for any organisation much more complex.

Now more than ever, companies require impartial and strategic advice on what collaborative technologies to implement based on how those technologies will be used and who within the organisation will be using them.

Why Collaborate?

Today's CIO's are faced with the need to provide solutions that enable the organisation to perform at their optimum and reduce internal latency and costs. This is further compounded by a new generation of younger workers entering the workforce where they have essentially grown up with collaboration and multimedia tools in the consumer environment and expect the same experiences in the workforce.



Collaboration is a term that loosely describes the ability for people to work with one another whether they are in the same office or disparate locations. Collaboration enables today's information workers to make real-time decisions regardless of their time zone or physical location.

Throughout this paper we will define collaboration and the pillars that make up a collaboration suite thus enabling an organisation to get a comprehensive of all the collaboration tools available and start the planning process for their organisation.

Collaboration is an over used term by vendors and systems integrators to describe a particular solution that they are marketing. Whilst this may provide some level of real-time interaction it may not necessarily meet the whole of business objectives to make every employee available regardless of location, time zone or access device.

Today when information workers collaborate, we typically see them using at least four distinct real-time communication tools: a messenger client, the telephone, a data-sharing application, and possibly a video application. When combined with presence information about where users are, what applications or devices they are using and how to best reach them - these collaboration tools can become part of a virtual workplace in which employees can quickly get information they need and ad hoc groups can set up meetings on the fly. IP networks are increasingly facilitating an integration of these technologies into a unified collaborative communications solution.

The dictionary describes collaboration as;

col·lab·o·rate   kə'læb ə, reɪt - [Show Spelled Pronunciation](#) [kuh-lab-uh-reyt]

[Pronunciation Key - Show IPA Pronunciation](#)

-verb (used without object), -rat·ed, -rat·ing.

1. to work, one with another; cooperate, as on a literary work: *They collaborated on a novel.*

American Psychological Association (APA):

collaborate. (n.d.). *Dictionary.com Unabridged (v 1.1)*. Retrieved March 21, 2007, from Dictionary.com website: <http://dictionary.reference.com/browse/collaborate>

Chicago Manual Style (CMS):

collaborate. Dictionary.com. *Dictionary.com Unabridged (v 1.1)*. Random House, Inc. <http://dictionary.reference.com/browse/collaborate> (accessed: March 21, 2007).

Modern Language Association (MLA):

"collaborate." *Dictionary.com Unabridged (v 1.1)*. Random House, Inc. 21 Mar. 2007. <Dictionary.com <http://dictionary.reference.com/browse/collaborate>>.

In order to empower the information worker to collaborate there are various pillars that make up a collaboration solution which we will define and discuss throughout this paper.

Unified conferencing and collaboration as a key element of Unified Communications enables “**interactive real time** virtual communications specifically audio, video, and web conferencing that is tightly integrated with other critical enterprise communications tools as well as with day-to-day enterprise workflow applications so each conferencing technology is not a stand alone pillar of application but part of a bigger collaborative suite that can be used by workers, teams and organisations to communicate simply, effectively and seamlessly”.

This definition of unified conferencing and collaboration will further evolve as the market progresses from being nascent to mature. Today conferencing and collaboration has taken many shapes. It is a feature integrated into commonly used desktop productivity software. It is part of an enhanced IP PBX. It is also a stand alone desktop or room-based conferencing tool. Additionally, it may either be a software application deployed in-house or delivered as a hosted or managed service.

Regardless of the varied platforms, which will continue to exist to meet diverse end user needs, the end goal will increasingly evolve to be the same. Benefits of unified conferencing and collaboration are not just derived from integration of multiple modes of communications into a single interface but also from its true integration into the day-today enterprise workflow (enterprise applications and existing operating databases).



What are the Drivers for Collaboration?

To remain competitive in today's information age, organisations need to empower their workers to make real-time decisions and remove latencies from business processes. CIO's recognize the need to provide collaboration solutions to their organisation although they are often met with a myriad of applications, devices and network roadblocks to enable these solutions. Overcoming these roadblocks and building a collaboration roadmap that fits in with the companies cost and growth objectives is imperative in order to survive in today's market.

The common drivers for a collaboration roadmap are:

Increase profitability

Reduce operating costs

Improve efficiency

Reduce lead-time

Improve customer service and relations

Manage growth

Identify operational best practice

Improve organisational effectiveness

Improve supply chain performance

Implement innovative change

Control complex projects to deadline

Implement large scale transformation

Improve processes and methods

Improve sales and sales conversion

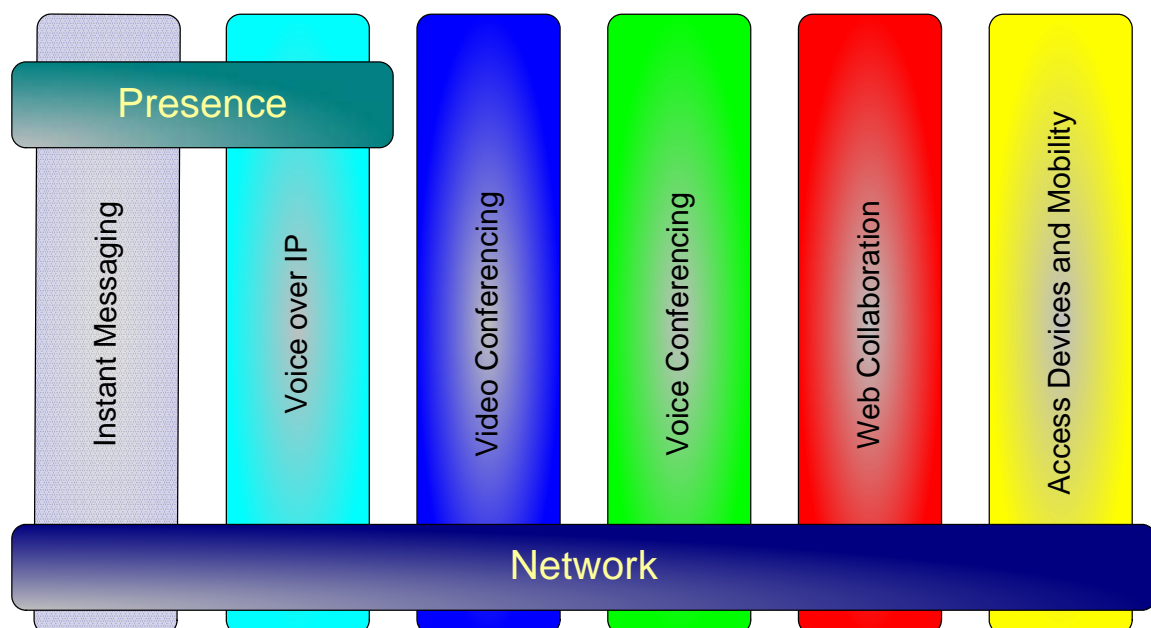


Nemertes Research

The Pillars of a Collaboration Solution

Here we will briefly describe the real-time benefits of the pillars that make up a collaboration solution. In many cases their value is diminished when implemented as a standalone service, however when integrated collectively the value is increased significantly.

Implementing these pillars individually without consideration of the others and the impact on worker profiles is often a key mistake made by CIO's in the rush to get the organisation operating at higher efficiencies. There have been a number of high profile cases where a particular solution has had to be changed after a successful rollout in order to ensure interoperability with other collaboration applications.



□
Whilst this paper touches on each of the collaboration pillars there are far greater complexities within each one, which will require further consideration prior to execution across your network. Issues such as Security, QoS and network optimization are just a couple of examples which should be front of mind for any CIO.

VoIP

IP telephony whether it be an IP PBX or IP Centrex solution does not necessarily provide any real-time collaboration benefits as it is merely replacing the previous circuit switched service. The additional features that are available on some IP telephony services however do provide some real-time capabilities such as the ability to see presence directly on the handset or the ability to direct calls seamlessly regardless of your location.

For example, programming the phone to call your home number after hours and connect a co-worker in a different time zone. This is not necessarily a real-time benefit but it does however allow an information worker the option of initiating an after-hour, conference call from the home rather than working back late at the office.

The implementation of Voip should be the catalyst for adding additional collaboration solutions across the newly configured QoS network.

Instant Messaging

Instant messaging (IM), previously a consumer application is making significant progress into the corporate environment with many IT managers giving the nod to incorporate IM as a viable communications tool. While issues like security, interoperability, and regulatory compliance are still plaguing enterprise usage of IM, more and more businesses are now using it with the CIO's blessing.

IM's integration with presence management, conferencing, email and other broad based enterprise communication tools is rapidly opening the doorway to a whole new world of collaborative communications that enhances employee productivity and flexibility. IM gives workers the ability to pose questions and receive answers instantaneously, replacing the send and wait method associated with email. The growth of corporate use of IM will see the number of IM's replace emails by 2008.

The ability to find an available expert within an organisation regardless of their location and receive instant responses is a very compelling feature of IM, the days of sending an email to a colleague and waiting for a reply, uncertain whether they are away from their desk or busy within another task are long gone. Instant Messages can also be archived for compliance reasons and require far less space than email.

Powered by sophisticated presence awareness, IM is increasingly becoming the window to the world of enterprise communications. At the user level it is the front end that displays all contacts and indicates whether they are available by phone, IM, or e-mail. IM is increasingly offering click-to-call capabilities, so users can initiate an audio, video or data collaboration session ad-hoc without the added complexity of scheduling resources.

In addition IM now offers detailed management capabilities at both the end-user and administrator levels, so people can get very specific about who can reach them, as well as how and when.

- The number of enterprise IM users is expected to grow at a CAGR of 52.5 percent from 2005 to 2009.
- At present, about 80 percent of all IM in the workplace is public IM. Frost & Sullivan expects this percentage to decrease. By 2008, 50 percent of all IM in the workplace will be enterprise IM

Voice Conferencing

Voice conferencing is by no means a new technology although as the cents per minute rate from hosted providers has and continues to decline it is becoming increasingly viable for smaller businesses. The ability for participants to join in on a voice conference from any telephony device is essential to a collaboration solution.

Recent developments in the managed audio market and VoIP has lead to an increased number of self managed audio solutions further reducing costs as many of the callers are on-net, reducing the carriage costs from a hosted service and resulting in an ROI in some cases of less than 12 months.

IP PBX vendors also offer self hosted audio conferencing servers and with optional integration with Instant Messaging and Web Conferencing, this can provide smaller businesses the collaboration capabilities that were previously suited for large organisations.

Video Conferencing

Video in recent times has extended itself to the desktop and more recently to the home-based tele-worker through soft video clients. With the shift from ISDN based services to IP the call costs and ease of use are now at an acceptable level for video to become a mainstream device and in many cases a mission critical application. Data and other content can be shared through the same video stream.

The ability to see if a buddy has video enabled at their desk or the ability to launch or receive video calls through an IM client has paved the way for enormous growth in the video conferencing industry. This growth will continue through additional services such as 3G video connectivity to mobility devices.

In 2006 leading video vendors such as Tandberg, Polycom and Lifesize released High Definition video codec's. These codec's whilst more expensive than their CIF based predecessors provide a high quality image at higher bandwidths and are standards based, interoperating with the previous models. These codec's have significantly increased the end user acceptance of video as an alternative means to travel because of the improved quality.

Mobility Solutions

Mobile devices such as PDA's and Blackberry's are enabling today's mobile workforce to respond to internal and external demands in real-time. Deploying mobility devices is usually based around a process change or business initiative to enable mobile workers to operate more effectively which generally leads to rapid ROI.

Other drivers are the road warriors (generally sales people) who need to be able to perform a task from any location or other groups of workers that require time sensitive data remotely such as health inspectors. The ability to participate in voice, video and IM sessions whilst away from the office, allows for decisions to be made on the fly without having to return to the office or login from home.

Wireless laptop access is also a key consideration enabling remote workers to access the corporate network from any location.

Network

There are many separate papers available on how to configure your IP network to enable collaboration. Key considerations are security, firewall transversal and network optimization.

With the ever-increasing reach of the Internet, corporations are taking advantage of its flexibility and cost-effectiveness to expand and enhance their traditional IP-based enterprise networks and applications. This increases demand for greater capacities across the Internet.

Corporations have also discovered the value of IP-based, real-time voice and video applications. As these applications become more commonplace, network managers are creating networks that overlay voice and video applications on top of the traditional enterprise network. When real-time, media-rich applications are merged with traditional enterprise applications and networks, several key issues must be addressed, including latency, jitter, security, NAT and firewalls.

Because of multiple security risks from viral and hacker-based attacks, network managers have no desire to compromise the integrity of their organizations' enterprise networks. IT managers have their hands full simply trying to protect and secure the traditional enterprise. There is an understandable reluctance to deploy IP-based audio and video applications. Opening multiple TCP and dynamically changing UDP ports on the firewall is not a viable option to complete a single audio or video session across the Internet. Doing so could compromise the security of the enterprise.

Web Conferencing

There are a number of web based collaboration tools available today, all of which provide users with the ability to share and work on documents together in real-time. These services are generally hosted and typically incorporate an audio conferencing service.

A web conferencing service helps you run and participate in interactive meetings around the world with remote teams, prospects, customers, partners, colleagues, and global audiences—in real time and at a moment's notice.

Web-based collaboration services are receiving a strong boost with the resurgence of new business start-ups, increasing globalisation and growing deployment of broadband communications. Plentiful opportunities exist for service providers in a broad spectrum of companies such as small office-home office (SoHo), small and medium-sized businesses (SMBs), large global corporations as well as remote and teleworkers.

SMBs represent a particularly attractive target group since they need to access and harness the power of collaboration services but are unable to invest substantial amounts in complex technology or the skills to support it. For large global businesses, the key driving force is the need to communicate effectively across company boundaries and firewalls. These organisations require practical and secure collaboration solutions that can sidestep the constraints imposed by local IT departments.

With everyone participating from their desktops, hotels or home offices, teams can swap ideas, share information, mark up files, collaborate with whiteboards, or negotiate deals—at a fraction of the cost of travel.

Communicating with people more easily and quickly can help shorten sales cycles, increase productivity, and improve the bottom line.

Some examples of ways web conferencing is used today include:

- Conduct online sales demonstrations.
- Invite prospects to instant demonstrations or presentations.
- Invite industry experts to present to internal employees, customers, or prospects.
- Add surveys or other forms to gather information about attendees.
- Chat with a participant who expresses interest in your presentation or your product or service.
- Demonstrate an application and then engage trainees by turning control over to them so that they can practice.
- Open up sessions to collaborate with managers and other executives for policy discussions.



Knowledge Management

Knowledge management software allows organisations to share knowledge, find information, and collaborate more easily and more securely both within and across organizational boundaries. With smart, standards-based, electronic forms-driven solutions, you can collect business information from customers and partners through a web browser.

Lightweight Directory Access Protocol (LDAP) integration and support for other pluggable authentication providers makes it easier to work with non-active directory service sources, thereby simplifying extranet setups and facilitating tighter connectivity with customers, partners, and suppliers.

Incorporating enterprise content such as people and business data, along with documents and Web pages, to provide more comprehensive results.. This enables people to look for the information they need wherever they navigate within a portal.

Connect and share knowledge. New knowledge management tools empower employees to create and use people networks, both inside and outside their organizations, so they can connect and share knowledge more quickly and efficiently with other people.



Where to From Here?

As mentioned earlier in this paper there is a large amount of disparate collaboration tools available for today's enterprise. The challenges for CIO's are to determine which solutions are right for their organisation to meet their immediate needs and to provide a scalable platform for the future. Choosing the right platform and integrating the various components of a collaboration suite is a complex task and carries with it a high element of risk.

Sorting through the vendors and service providers marketing hype along with staying ahead of the organisations short and medium term goals is a challenge worthy of impartial advice.

Why bring in outside help? Why use consultants when you can implement change yourself?

We have not yet come across a company that is seeking to improve, yet is not already making improvements.

Experience shows that:

Every client recognises that the need for improvement is a constant, and opportunities to do better always exist.

Every client has people within the organisation that are capable of implementing results.

So, why do clients not implement the results themselves and instead use us?

In looking at the most common reasons, you may recognise one that more appropriately fits your situation.

The overriding reason why clients use [C2C Analysis](#) to deliver step change improvements in performance is a **financial** one. Our extensive experience of **implementing** collaboration programs, coupled with our ability to focus on delivery of results without being sidetracked by everyday management issues ensures that we achieve results **quicker**.

- Carry out an objective **health-check** identifying opportunities for further improvement on current practice.
- Create and implement innovative solutions, at a time when people are beginning to **run short of fresh ideas**.
- Deliver solutions to specific problems. (This is most typically used when management of improvement is assigned consistently to a handful of the best people, who as a result are **constantly tied up** and unavailable, to take on additional initiatives).
- Deliver a significant, **measurable improvement** that goes beyond the clients' own capability for managing change
- Act as a **catalyst** to accelerate results from current initiatives.
- Implement improvements where we have **expert knowledge**, yet there is little experience internally.
- Provide a cost effective short-term resource to **transfer** knowledge or skills, without any long-term headcount, or payroll implications.
- Use our skills in **project management** to ensure an important programme is delivered on time and to budget.
- Provide **objective mapping** of all internal initiatives to ensure they will deliver results in a consistent manner and in line with group strategy.
- Identify and implement best practice from a **wider experience base** than exists internally.
- Establish, implement and **mentor** self-directed teams - to generate innovative results internally on an ongoing basis.
- Provide an additional resource in **large-scale transformation programs** where more resource is required than internally available.



Glossary of Terms

Application sharing:

Application sharing is a feature that allows two people to work together when one of the individuals doesn't have the same application, or same version of the application. In application sharing, one user launches the application and it runs simultaneously. Both users can input information and otherwise control the application using the keyboard and mouse. Although it appears that the application is running on both P'Cs, it actually is running on only one, yet each user operates as though the application were running on both PC's. Files associated with the application can be easily transferred, so the results of the collaboration are available to both users immediately. The person who launched the application can lock out the other person from making changes, so the locked-out person sees the application running but cannot control it.

Bandwidth

The data-carrying capacity of a communication channel.

BRI

Basic Rate ISDN is the standard copper line ISDN service. It usually comprises two 64Kbs channels and a 16Kbs signaling channel. Improvements in video conferencing technology mean that good picture and voice quality may be enjoyed with just one BRI (providing 128Kbs by using both channels).

Bridge

An electronic device that enables communication signals to cross from one network circuit to another. Also known as a Multipoint Control Unit or MCU, which links three or more conference sites so they can communicate simultaneously.

CIF

A video format that supports both NTSC and PAL signals. CIF is part of the ITU H.261 videoconferencing standard. It specifies a data rate of 30 frames per second (fps), with each frame containing 288 lines and 352 pixels per line.

Gatekeeper:

The gatekeeper is the brain of an H.323 network, performing essential control, administrative, and managerial functions. However, the gatekeeper does not route any data packets in a network. These continue to rely on standard network routing equipment. The primary purposes of a gatekeeper are address translation and zone administration using layer three of the OSI model.

Gateway:

A gateway is a network point that acts as an entrance to another network. On the Internet, a node or stopping point can be either a gateway node or a host (end-point) node. Both the computers of Internet users and the computers that serve pages to users are host nodes. The computers that control traffic within your company's network or at your local Internet service provider (ISP) are gateway nodes. Can transcode or allow different protocols to talk to each other.

H.264:

The latest ITU standard for video compression. It is based on MPEG-4 and renders roughly equal video quality with H.263, but at half the bit rate (e.g. 256 Kbps instead of 512 Kbps for an H.263 stream. It was ratified in July 2003.

H.320:

The ITU standard for video conferencing over digital networks such as ISDN.

H.321:

The ITU standard for adaptation of H.320 video conferencing over digital networks such as B-ISDN.

H.323:

The ITU standard for video conferencing over packet switched networks such as LANs and the Internet.

ISDN

Integrated Services Digital Network: Global standard for digital dial services, comprises Basic Rate (Two channels of 64kbit/s, see BRI); Primary rate (32 channels). ISDN extends digital telecom network out through the access network to provide end-to-end digital circuit switched services.

jitter

The change in latency with time. This is a network problem that is very important to video quality. Significant jitter destroys video.

NAT:

Network Address Translation (NAT) is the translation of an Internet Protocol address (IP address) used within one network to a different IP address known within another network. One network is designated the inside network and the other is the outside. Typically, a company maps its local inside network addresses to one or more global outside IP addresses and unmaps the global IP addresses on incoming packets back into local IP addresses. This helps ensure security since each outgoing or incoming request must go through a translation process that also offers the opportunity to qualify or authenticate the request or match it to a previous request. NAT also conserves on the number of global IP addresses that a company needs and it lets the company use a single IP address in its communication with the world.

PRI

Primary Rate Interface. An ISDN connection utilizing 23 64Kbps B channels (bearer) and a single 16Kbps D Channel (Delta). Also commonly called a T1.

QCIF

A standard related to CIF, QCIF (Quarter CIF), transfers one fourth the amount of data and is suitable for videoconferencing systems on slower connections or telephone lines.

<p>CODEC: An acronym for COder/DECoder. In short, a codec is a piece of hardware or software that takes some signal (such as video or audio) and converts it to a format suitable for transportation using a specific set of protocols. Equipment on the receiving end must also use these same protocols. The H.323 standard is a collection of protocols designed to ensure compatibility between products of various manufacturers. Even though the term "codec" specifically refers to the hardware or software converter, the term has come to include the entire set of video conferencing terminal equipment. Someone saying "codec" is most likely referring to a set of terminal equipment. The terms "video conferencing terminal" and "codec" are used interchangeably.</p> <p>H.320 ITU standards governing video conferencing standards across circuit-switched ISDN (see ISDN).</p> <p>DNS Name: The domain name system (DNS) is the way that Internet domain names are located and translated into Internet Protocol addresses. A domain name is a meaningful and easy-to-remember "handle" for an Internet address.</p> <p>Firewall: A firewall is a set of related programs, located at a network gateway server, that protects the resources of a private network from users from other networks. (The term also implies the security policy that is used with the programs.) An enterprise with an intranet that allows its workers access to the wider Internet installs a firewall to prevent outsiders from accessing its own private data resources and for controlling what outside resources its own users have access to.</p>	<p>H.323 ID: This name can be descriptive such as a room name, BL-123, a location, Accounting Dept., or a person's name.</p> <p>H.350 H.350 is a series of Recommendations (standards) from the International Telecommunications Union, the branch of the United Nations that addresses global telecommunications standards. H.350 standardizes the way that multimedia conferencing information is stored in LDAP directories, so that multimedia collaboration can integrate with enterprise directories for scalability, manageability and security. Documents in the series include the base H.350 document, and sub documents H.350.1, H.350.2, etc. each addressing a particular conferencing protocol.</p> <p>Interoperability The ability of conferencing systems and devices to work together with complete compatibility, especially with respect to features, functions, and performance. Standards based technologies help ensure interoperability.</p> <p>IP Internet Protocol: the network protocol governing the Internet and increasingly accepted as the future standard for local, wide area and public networks for all traffic, including voice and video.</p>	<p>SIP SIP stands for Session Initiation Protocol. SIP is a text-based protocol, similar to HTTP, for initiating communication sessions such as video and audio conferencing, telephony, instant messaging, presence, and events notification (including uses in interactive gaming and virtual reality.)</p> <p>Web conferencing Where two or more participants can share computer applications and data in real time across a network. Enables collaborative working.</p>
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