Chattiquette

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The term chatiquette is a variation of nettiquette and describes basic rules of online communication. To avoid misunderstandings and to simplify the communication between users in a chat these conventions or guidelines have been created. The chattiquette varies from community to community, in general it describes basic courtesy, introduces new user into the community and the associated network culture. As an example, it is considered rude to write only in UPPER CASE, because it looks like as if you are shouting.

Software and protocols

The following are common chat programs and protocols:

- AOL Instant Messenger (AIM)
- Camfrog
- Campfire
- Gadu-Gadu
- Google Talk
- ICQ (OSCAR)
- Internet Relay Chat (IRC)
- Jabber (XMPP)
- MUD
- MUSH
- PalTalk
- Pichat
- PSYC
- QQ
- SILC
- Skype
- Talk
- Talker
- TeamSpeak (TS)
- Windows Live Messenger
- Yahoo! Messenger

Chat programs supporting multiple protocols:

- Adium
- Digsby
- IMVU
- Kopete
- Miranda IM
- Pidgin
- Trillian
- Quiet Internet Pager

Videoconference (also known as a video teleconference) is a set of interactive telecommunication technologies which allow two or more locations to interact via two-way video and audio transmissions simultaneously. It has also been called visual collaboration and is a type of groupware. It differs from videophone in that it is designed to serve a conference rather than individuals.

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History

Videoconferencing uses telecommunications of audio and video to bring people at different sites together for a meeting. This can be as simple as a conversation between two people in private offices (point-to-point) or involve several sites (multi-point) with more than one person in large rooms at different sites. Besides the audio and visual transmission of meeting activities, videoconferencing can be used to share documents, computer-displayed information, and whiteboards. Simple analog videoconferences could be established as early as the invention of the television. Such videoconferencing systems consisted of two closed-circuit television systems connected via cable. During the first manned space flights, NASA used two radiofrequency (UHF or VHF) links, one in each direction. TV channels routinely use this kind of videoconferencing when reporting from distant locations, for instance. Then mobile links to satellites using specially equipped trucks became rather common.

Videoconferencing first demonstrated in 1968

This technique was very expensive, though, and could not be used for more mundane applications, such as telemedicine, distance education, business meetings, and so on, particularly in long-distance applications. Attempts at using normal telephony networks to transmit slow-scan video, such as the first systems developed by AT&T, failed mostly due to the poor picture quality and the lack of efficient video compression techniques. The greater 1 MHz bandwidth and 6 Mbit/s bit rate of Picture phone in the 1970s also did not cause the service to prosper.

It was only in the 1980s that digital telephony transmission networks became possible, such as ISDN, assuring a minimum bit rate (usually 128 kilobits/s) for compressed video and audio transmission. The first dedicated systems, like manufactured by pioneering VTC firms, PictureTel, started to appear in the market as ISDN networks were expanding throughout the world. Video teleconference systems throughout the 1990s rapidly evolved from highly expensive proprietary equipment, software and network requirements to standards based technology that is readily available to the general public at a reasonable cost. Finally, in the 1990s, IP (Internet Protocol) based videoconferencing became possible and more efficient video compression technologies were developed, permitting desktop, or personal computer (PC)-based videoconferencing. In 1992 CU-SeeMe was developed at Cornell by Tim Dorcey et al., IVS was designed at INRIA, VTC arrived to the masses and free services, web plugins and software, such as NetMeeting, MSN Messenger, Yahoo Messenger, SightSpeed, Skype and others brought cheap, albeit low-quality, VTC.

Technology

Dual plasma display videoconferencing system. The screen on the left is primarily used to show people during the conference or the user interface when setting up the call. The one on the right shows data in this case but can display a 2nd 'far site' in a multipoint call.

The core technology used in a video teleconference (VTC) system is digital compression of audio and video streams in real time. The hardware or software that performs compression is called a codec (coder/decoder). Compression rates of up to 1:500 can be achieved. The resulting digital stream of 1s and 0s is subdivided into labeled packets, which are then transmitted through a digital network of some kind (usually ISDN or IP). The use of audio modems in the transmission line allow for the use of POTS, or the Plain Old Telephone System, in some low-speed applications, such as video telephony, because they convert the digital pulses to/from analog waves in the audio spectrum range.
The other components required for a VTC system include:

- Video input : video camera or webcam
- Video output: computer monitor , television or projector
- Audio input: microphones
- Audio output: usually loudspeakers associated with the display device or telephone
- Data transfer: analog or digital telephone network, LAN or Internet

There are basically two kinds of VTC systems:

Dedicated systems (manufactured by companies such as Polycom, Sony, Tandberg, and Radvision Ltd.) have all required components packaged into a single piece of equipment, usually a console with a high quality remote controlled video camera. These cameras can be controlled at a distance to pan left and right, tilt up and down, and zoom. They became known as PTZ cameras. The console contains all electrical interfaces, the control computer, and the software or hardware-based codec. Omni directional microphones are connected to the console, as well as a TV monitor with loudspeakers and/or a video projector.

There are several types of dedicated VTC devices:

Large group VTC are non-portable, large, more expensive devices used for large rooms and auditoriums.

Small group VTC are non-portable or portable, smaller, less expensive devices used for small meeting rooms.

Individual VTC are usually portable devices, meant for single users, have fixed cameras, microphones and loudspeakers integrated into the console.

Desktop systems are add-ons (hardware boards, usually) to normal PCs, transforming them into VTC devices. A range of different cameras and microphones can be used with the board, which contains the necessary codec and transmission interfaces. Most of the desktops systems work with the H.323 standard. Videoconferences carried out via dispersed PCs are also known as e-meetings.

Echo cancellation

A fundamental feature of professional VTC systems is acoustic echo cancellation (AEC). AEC is an algorithm which is able to detect when sounds or utterances reenter the audio input of the VTC codec, which came from the audio output of the same system, after some time delay. If unchecked, this can lead to several problems including 1) the remote party hearing their own voice coming back at them (usually significantly delayed) 2) strong reverberation, rendering the voice channel useless as it becomes hard to understand and 3) howling created by feedback. Echo cancellation is a processor-intensive task that usually works over a narrow range of sound delays.

Multipoint videoconferencing

Simultaneous videoconferencing among three or more remote points is possible by means of a Multipoint Control Unit (MCU). This is a bridge that interconnects calls from several sources (in a similar way to the audio conference call). All parties call the MCU unit, or the MCU unit can also call the parties which are going to participate, in sequence. There are MCU bridges for IP and ISDN-based videoconferencing. There are MCUs which are pure software, and others which are a combination of hardware and software. An MCU is characterized according to the number of simultaneous calls it can handle, its ability to conduct transposing of data rates and protocols, and features such as Continuous Presence, in which multiple parties can be seen onscreen at once.

MCUs can be stand-alone hardware devices, or they can be embedded into dedicated VTC units.

Some systems are capable of multipoint conferencing with no MCU, stand-alone, embedded or otherwise. These use a standards-based H.323 technique known as "decentralized multipoint", where each station in a multipoint call exchanges video and audio directly with the other stations with no central "manager" or other bottleneck. The advantages of this technique are that the video and audio will generally be of higher quality because they don't have to be relayed through a central point. Also, users can make ad-hoc multipoint calls without any concern for the availability or control of an MCU. This added convenience and quality comes at the expense of some increased network bandwidth, because every station must transmit to every other station directly.

Issues

Some observers argue that two outstanding issues are preventing videoconferencing from becoming a standard form of communication, despite the ubiquity of videoconferencing-capable systems. These issues are:

Eye Contact: It is known that eye contact plays a large role in conversational turn-taking, perceived attention and intent, and other aspects of group communication. While traditional telephone conversations give no eye contact cues, videoconferencing systems are arguably worse in that they provide an incorrect impression that the remote interlocutor is avoiding eye contact. Telepresence systems such as the Polycom RPX have cameras located in the screens that reduce the amount of parallax observed by the users. This issue is also being addressed through research that generates a synthetic image with eye contact using stereo reconstruction.

Appearance Consciousness: A second problem with videoconferencing is that one is literally on camera, with the video stream possibly even being recorded. The burden of presenting an acceptable on-screen appearance is not present in audio-only communication. Early studies by Alphonse Chapanis found that the addition of video actually impaired communication, possibly because of the consciousness of being on camera.

The issue of eye-contact may be solved with advancing technology, and presumably the issue of appearance consciousness will fade as people become accustomed to videoconferencing.

Standards

The International Telecommunications Union (ITU) (formerly: Consultative Committee on International Telegraphy and Telephony (CCITT)) has three umbrellas of standards for VTC.

- ITU H.320 is known as the standard for public switched telephone networks (PSTN) or VTC over integrated services digital networks (ISDN) basic rate interface (BRI) or primary rate interface (PRI). H.320 is also used on dedicated networks such as T1 and satellite-based networks;

- ITU H.323 is known as a standard for transporting multimedia applications over LANs. This same standard also applies to older implementations of voice over IP VoIP. In recent years, the IETF's Session Initiation Protocol (SIP) has gained considerable momentum in practice for these two services;

- ITU H.324 is the standard for transmission over POTS, or audio telephony networks. 3G-324M is a 3GPP implementation for video call on 3G mobile phones.

In recent years, IP based videoconferencing has emerged as a common communications interface and standard provided by VTC manufacturers in their traditional ISDN-based systems. Business, government and military organizations still predominantly use H.320 and ISDN VTC. Though, due to the price point and proliferation of the Internet, and broadband in particular, there has been a strong spurt of growth and use of H.323, IP VTC. H.323 has the advantage that it is accessible to anyone with a high speed Internet connection, such as DSL.
In addition, an attractive factor for IP VTC is that it is easier to set-up for use with a live VTC call along with web conferencing for use in data collaboration. These combined technologies enable users to have a much richer multimedia environment for live meetings, collaboration and presentations.

Impact on the general public

High speed Internet connectivity has become more widely available at a reasonable cost and the cost of video capture and display technology has decreased. Consequently personal video teleconference systems based on a webcam, personal computer system, software compression and broadband Internet connectivity have become affordable for the general public. Also, the hardware used for this technology has continued to improve in quality, and prices have dropped dramatically. The availability of freeware (often as part of chat programs) has made software based videoconferencing

accessible to many.

For many years, futurists have envisioned a future where telephone conversations will take place as actual face-to-face encounters with video as well as audio. Sometimes it is simply not possible or practical to have a face-to-face meeting with two or more people. Sometimes a telephone conversation or conference call is adequate. Other times, an email exchange is adequate.
Videoconferencing adds another possible alternative, and can be considered when:

- a live conversation is needed;
- visual information is an important component of the conversation;
- the parties of the conversation can't physically come to the same location; or
- The expense or time of travel is a consideration.

Deaf and hard of hearing individuals have a particular interest in the development of affordable high-quality videoconferencing as a means of communicating with each other in sign language. Unlike Video Relay Service, which is intended to support communication between a caller using sign language and another party using spoken language, videoconferencing can be used between two signers.

Mass adoption and use of video conferencing is still relatively low, with the following often claimed as causes:

- Complexity of systems. Most users are not technical and want a simple interface. In hardware systems an unplugged cord or a flat battery in a remote control is seen as failure, contributing to perceived unreliability which drives users back to traditional meetings. Successful systems are backed by support teams who can pro-actively support and provide fast assistance when required.

- Perceived lack of interoperability: not all systems can readily interconnect, for example ISDN and IP systems require a bridge. Popular software solutions cannot easily connect to hardware systems. Some systems use different standards, features and qualities which can require additional configuration when connecting to dissimilar systems.

- Bandwidth and quality of service: In some countries it is difficult or expensive to get a high quality connection that is fast enough for good-quality video conferencing. Technologies such as ADSL have limited upload speeds and cannot upload and download simultaneously at full speed. As Internet speeds increase higher quality and high definition video conferencing will become more readily available.

- Expense of commercial systems - a well designed system requires a specially designed room and can cost hundreds of thousands of dollars to fit out the room with codecs, integration equipment and furniture.
  For these reasons many hardware systems are often used for internal corporate use only, as they are less likely to run into problems and lose a sale. An alternative is companies that hire out video conferencing equipped meeting rooms in cities around the world. Customers simply book the rooms and turn up for the meeting - everything else is arranged and support is readily available if anything should go wrong.

Impact on education

Distance education

Videoconferencing provides students with the opportunity to learn by participating in a 2-way communication platform. Furthermore, teachers and lecturers from all over the world can be brought to classes in remote or otherwise isolated places. Students from diverse communities and backgrounds can come together to learn about one another. Students are able to explore, communicate, analyze and share information and ideas with one another. Through videoconferencing students can visit another part of the world to speak with others, visit a zoo, a museum and so on, to learn. These "virtual field trips" (see history of virtual learning environments) can bring opportunities to children, especially those in

geographically isolated locations, or the economically disadvantaged. Small schools can use this technology to pool resources and teach courses (such as foreign languages) which could not otherwise be offered.
Here are a few examples of how videoconferencing can benefit people around campus:

Faculty member keeps in touch with class while away for a week at a conference

Guest lecturer brought into a class from another institution

Researcher collaborates with colleagues at other institutions on a regular basis without loss of time due to travel

Faculty member participates in a thesis defense at another institution

Administrators on tight schedules collaborate on a budget preparation from different parts of campus

Faculty committee auditions a scholarship candidate

Researcher answers questions about a grant proposal from an agency or review committee

Student interviews with an employer in another city

Tele Seminar

Impact on medicine and health

Videoconferencing is a very useful technology for telemedicine and Tele Nursing applications, such as diagnosis, consulting, transmission of medical images, etc., in real time in countries where this is legal. Using VTC, patients may contact nurses and physicians in emergency or routine situations, physicians and other paramedical professionals can discuss cases across large distances. Rural areas can use this technology for diagnostic purposes, thus saving lives and making more efficient use of health care money.

Special peripherals such as microscopes fitted with digital cameras, video endoscopes, medical ultrasound imaging devices, auto scopes, etc., can be used in conjunction with VTC equipment to transmit data about a patient.

Impact on business

Videoconferencing can enable individuals in faraway places to have meetings on short notice. Time and money that used to be spent in traveling can be used to have short meetings. Technology such as VOIP can be used in conjunction with desktop videoconferencing to enable low-cost face-to-face business meetings without leaving the desk, especially for businesses with wide-spread offices. The technology is also used for telecommuting, in which employees work from home.

Videoconferencing is now being introduced to online networking websites, in order to help businesses form profitable relationships quickly and efficiently without leaving their place of work.

Although it already has proven its potential value, research has shown that many employees do not use the videoconference equipment because they are afraid that they will appear to be wasting time or looking for the easiest way if they use videoconferencing to enhance customer and supplier relationships. This anxiety can be avoided if managers use the technology in front of their employees.

Impact on law

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Videoconferencing has allowed testimony to be used for individuals who are not able to attend the physical legal settings. In a military investigation in North Carolina, Afghan witnesses have testified using videoconferencing.

Landmarks

1995 First public videoconference and peace cast between continent of North America and Africa. Demonstration of Tele presence, audience interaction, virtual dancing, etc. Linked a techno air in San Francisco with a techno-rave and Cyberdeli in Cape Town.

1998 Winter Olympics opening ceremony in Nagano, Japan. Seiji Ozawa conducts the Ode to Joy from Beethoven's Ninth Symphony simultaneously across five continents in real time.

Data conferencing refers to a communication session among two or more participants sharing computer data in real time. Interaction and presentation devices such as a screen, keyboard, mouse, camera, etc. can be shared or be able to control each other computer. It is used to distinguish from video conferencing and audio conferencing.

The data can include screen, documents, graphics, drawings and applications that can be seen, annotated or manipulated by participants.

Application Sharing is an element of remote access, falling under the collaborative software umbrella that enables two or more users to access a shared application or document from their respective computers simultaneously in real time. Generally, the shared application or document will be running on a host computer, and remote access to the shared content will be provided to other users by the host use

Granting access

Access is typically granted in one of three ways, depending on the architecture of the Application Sharing software.

a) If the software allows the shared content to be accessed from the web, the host user will usually define and provide a username/password combination to the remote users he/she wishes to grant access to; they can then enter the log-in information on the appropriate website and access the shared material. One example of software that features Application Sharing in this manner is next.

b) If the software is required on both ends to access the shared content, granting access will be governed by the mechanisms of that particular software, but will usually require some sort of user authentication as well. One example of software that features Application Sharing in this manner is MSN Messenger.

c) The shared content (being an application or entire desktop) can be accessed using a permission based software approach. This technique helps to ensure that the application or desktop being controlled cannot be accessed without direct live approval, helping to eliminate the security risk of taking control of a desktop when the user is not present.

Type of access

Once the applications or documents to be shared and whom they are to be shared with have been determined, there are generally two types of access that can be granted to remote users.

Control Access – the host user allows remote users to actually control, edit, and manipulate the shared content; most Application Sharing software allows the host to revoke Control Access at any time. During the remote control session, keyboard and mouse are remotely controlled. Usually a hot key is provided to revoke access.

View Access – the host user only allows remote users to passively view the shared content; remote users have no ability to edit or effect change in the shared content whatsoever.

Uses

There are two primary applications of Application Sharing, each contingent on the Type of Access granted.

Virtual teams. Team members can collaborate on the same document, making instantly apparent changes in real-time.
View Access – this configuration is most suitable to a training scenario. The remote user (trainee) can passively view the actions of the host (trainer) without being able to interrupt or Control Access – this configuration is most widely used to facilitate collaboration by manipulate the shared content.

Instant Messaging (IM) is a form of real-time communication between two or more people based on typed text. The text is conveyed via computers connected over a network such as the Internet.

Overview

Instant messaging (IM) and chat are technologies that create the possibility of real-time text-based communication between two or more participants over the internet or some form of internal network/ intranet. It is important to understand that what separates chat and instant messaging from technologies such as e-mail is the perceived synchronicity of the communication by the user - Chat happens in real-time before your eyes. Some systems allow the sending of messages to people not currently logged on (offline messages), thus removing much of the difference between Instant Messaging and e-mail.

While many IM services have additional features such as: the immediate receipt of acknowledgment or reply, group chatting, conference services (including voice and video), conversation logging and file transfer, those functions are beyond the scope of this article.
IM allows effective and efficient communication, featuring immediate receipt of acknowledgment or reply. In certain cases Instant Messaging involves additional features, which make it even more popular, i.e. to see the other party, e.g. by using web-cams, or to talk directly for free over the Internet.

It is possible to save a conversation for later reference. Instant messages are typically logged in a local message history which closes the gap to the persistent nature of e-mails and facilitates quick exchange of information like URLs or document snippets (which can be unwieldy when communicated via telephone).

History

In early instant messaging programs each character appeared when it was typed. The UNIX "talk" command shown in these screenshots was popular in the 1980s and early 1990s.
Instant messaging actually predates the Internet, first appearing on multi-user operating systems like CTSS and Multics in the mid-1960s. Initially, many of these systems, such as CTSS'.SAVED, were used as notification systems for services like printing, but quickly were used to facilitate communication with other users logged in to the same machine. As networks developed, the protocols spread with the networks. Some of these used a peer-to-peer protocol (eg talk, ntalk and ytalk), while others required peers to connect to a server (see talker and IRC). During the Bulletin board system (BBS) phenomenon that peaked during the 1980s, some systems incorporated chat features which were similar to instant messaging; Freelancing Roundtable was one prime example.

In the last half of the 1980s and into the early 1990s, the Quantum Link online service for Commodore 64 computers offered user-to-user messages between currently connected customers which they called "On-Line Messages" (or OLM for short). Quantum Link's better known later incarnation, America Online, offers a similar product under the name "AOL Instant Messages" (AIM). While the Quantum Link service ran on a Commodore 64, using only the Commodore's PETSCII

text-graphics, the screen was visually divided up into sections and OLMs would appear as a yellow bar saying "Message From:" and the name of the sender along with the message across the top of whatever the user was already doing, and presented a list of options for responding. As such, it could be considered a sort of GUI, albeit much more primitive than the later UNIX, Windows and Macintosh based GUI IM programs. OLMs were what Q-Link called "Plus Services" meaning they charged an extra per-minute fee on top of the monthly Q-Link access costs.

Modern, Internet-wide, GUI-based messaging clients, as they are known today, began to take off in the mid 1990s with ICQ (1996) being the first, followed by AOL Instant Messenger (AOL Instant Messenger, 1997). AOL later acquired Mirabilis, the creators of ICQ. A few years later ICQ (by now owned by AOL) was awarded two patents for instant messaging by the U.S. patent office. Meanwhile, other companies developed their own applications (Excite, MSN, Ubique, and Yahoo), each with its own proprietary protocol and client; users therefore had to run multiple client applications if they wished to use more than one of these networks. In 1998 IBM released IBM Lotus Sametime, a product based on technology acquired when IBM bought Haifa-based Ubique and Lexington-based Databeam.

In 2000, an open source application and open standards-based protocol called Jabber was launched. Jabber servers could act as gateways to other IM protocols, reducing the need to run multiple clients. Multi-protocol clients can use any of the popular IM protocols by using additional local libraries for each protocol. IBM Lotus Sametime's November 2007 release added IBM Lotus Sametime Gateway support for XMPP.
Recently, many instant messaging services have begun to offer video conferencing features, Voice Over IP (VoIP) and web conferencing services. Web conferencing services integrate both video conferencing and instant messaging capabilities. Some newer instant messaging companies are offering desktop sharing, IP radio and IPTV to the voice and video features.
The term "instant messenger" is a service mark of Time Warner and may not be used in software not affiliated with AOL in the United States. For this reason, the instant messaging client formerly known as Gaim or gaim announced in April 2007 that they would be renamed "Pidgin".

Cooperation

Pidgin's tabbed chat window in Ubuntu
Standard free instant messaging applications offer functions like file transfer, contact lists, the ability to have simultaneous conversations etc. These may be all the functions that a small business needs but larger organisations will require more sophisticated applications that can work together. The solution to finding applications capable of this is to use enterprise versions of instant messaging applications. These include titles like Jabber, Lotus Sametime, Microsoft Office Communicator, etc., which are often integrated with other enterprise applications such as workflow systems. These enterprise applications, or Enterprise Application Integration (EAI), are built to certain constraints, namely storing data in a common format.

There have been several attempts to create a unified standard for instant messaging: IETF's SIP (Session Initiation Protocol) and SIMPLE (SIP for Instant Messaging and Presence Leveraging Extensions), APEX (Application Exchange), Prim (Presence and Instant Messaging Protocol), the open XML-based XMPP (Extensible Messaging and Presence Protocol), more commonly known as Jabber and OMA's (Open Mobile Alliance) IMPS (Instant Messaging and Presence Service) created specifically for mobile devices.

Most attempts at creating a unified standard for the major IM providers (AOL, Yahoo! and Microsoft) have failed and each continues to use its own proprietary protocol.

However, while discussions at IETF were stalled, Reuters head of collaboration services, David Gurle (the founder of Microsoft's Real Time Communication and Collaboration business), signed the first inter-service provider connectivity agreement on September 2003. This agreement enabled AIM, ICQ and MSN Messenger users to talk with Reuters Messaging counterparts and vice-versa against an access fee. Following this, Microsoft, Yahoo! and AOL came to a deal where Microsoft's Live Communication Server 2005 users would also have the possibility to talk to public instant

messaging users. This deal established SIP/SIMPLE as a standard for protocol interoperability and established a connectivity fee for accessing public instant messaging clouds. Separately, on October 13, 2005 Microsoft and Yahoo! announced that by (the Northern Hemisphere) summer of 2006 they would interoperate using SIP/SIMPLE which is followed on December 2005 by the AOL and Google strategic partnership deal where Google Talk users would be able to talk with AIM and ICQ users provided they have an identity at AOL.

There are two ways to combine the many disparate protocols:

One way is to combine the many disparate protocols inside the IM client application.
The other way is to combine the many disparate protocols inside the IM server application. This approach moves the task of communicating to the other services to the server. Clients need not know or care about other IM protocols. e.g., LCS 2005 Public IM Connectivity. This approach is popular in Jabber/XMPP servers however the so-called transport projects suffer the same reverse engineering difficulties as any other project involved with closed protocols or formats.
Some approaches allow organizations to create their own private instant messaging network by enabling them to limit access to the server (often with the IM network entirely behind their firewall) and administer user permissions. Other corporate messaging systems allow registered users to also connect from outside the corporation LAN; by using a secure firewall-friendly HTTPS based protocol. Typically, a dedicated corporate IM server has several advantages such as pre-populated contact lists, integrated authentication, and better security and privacy.
Some networks have made changes to prevent them from being utilized by such multi-network IM clients. For example, Trillion had to release several revisions and patches to allow its users to access the MSN, AOL, and Yahoo! networks, after changes were made to these networks. The major IM providers typically cite the need for formal agreements as well as security concerns as reasons for making these changes.