

Microsoft NetMeeting and Windows XP Video Conferencing via Messenger

vs.

CloudMeeting Real-Time Internet Conferencing

June 3, 2004

We are often asked how CloudMeeting's real-time Internet conferencing and group communications solution compares with peer-to-peer solutions like Microsoft NetMeeting or Windows XP Video Conferencing using Messenger. Supplied as part of Microsoft Messenger and bundled with XP, Windows XP Video Conferencing (XPVC) is essentially the newest version of Microsoft NetMeeting. Our comments specifically cover XPVC, but apply equally to the better-known (and discontinued) NetMeeting, and can in a number of instances be applied to peer-to-peer solutions in general. As a function of the peer-to-peer architecture and for the many other reasons touched on in the comparison below, NetMeeting and XPVC have serious performance limitations and do not support high-quality group communication.

CloudMeeting's client software is one component of a holistic real-time internet communications platform reflecting a new approach to internet communications and distance collaboration. The client/sever architecture and patent-pending technologies used in the CloudMeeting platform were designed from the ground up to optimize Real-Time Internet Communications in groups, laying new ground and solving certain problems suffered by NetMeeting and other, similar solutions. In sum, CloudMeeting:

- Delivers the best possible group communications user experience on the Internet
- Provides secure communication consistent with the highest corporate standards
- Lets users connect at whatever speed they have available, and then dynamically optimizes that connection
- Easily intermixes up to 200 users, each with different off-the-shelf hardware and varying connection speeds
- Seamlessly integrates application and document sharing with voice, video, and instant messaging
- Co-exists with H.323 solutions

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NetMeeting/XPVC

Observations

Architecture

How is the data transported?	Client/server	Peer-to-peer	Quality, performance, and latency are highly constrained by the quality of the connection. Since peer-to-peer connections are dependent on public peering points, traffic may have much higher latency, and is subject to much more loss than CloudMeeting's client/server connections.
What protocols are used?	Transmits and receives multimedia data using a single dynamically adjustable stream of TCP requests. Patent-pending RTXP (Real Time Exchange Protocol) leverages TCP/IP to accomplish this. CloudMeeting is dependent on only TCP/IP for transport – the most universally adopted protocol on the internet.	Transmits and receives control and multimedia data using SIP, H.323, and T.120 protocols. H.323 and T.120 use UDP for transport, SIP uses TCP.	NetMeeting/XPVC's dependence on several protocols means extremely high overhead for bandwidth utilization and computer resources. Additionally, enterprise infrastructure must be specifically configured to support the protocols required by XPVC.

Firewalls/Proxies/NAT

Will it work with my firewall?	Requires only open outbound port 443 for TCP traffic for our servers, which is open on most all firewalls by default as it's used for secure traffic. As a true SSL data stream, it even works with application-level firewalls without configuration.	Requires an abundance of open outbound AND inbound ports for UDP, RTP, and TCP traffic. For audio and video streams, Microsoft's literature orients: "The streams are sent using dynamically allocated UDP ports in the range of 5004 through 65535. Without a way to open these UDP ports on any firewall in the path dynamically, the streams will fail to reach their destination."	Firewalls require significant configuration changes in order to work with NetMeeting/XPVC. Firewall effectiveness can be negatively impacted as a result. CloudMeeting is "firewall friendly".
Will it work with my proxy server?	Our solution includes direct support for all Socks 4.0 and Socks 5.0 compliant proxy servers (Microsoft ISA, for example).	Does not support Socks 4.0 or 5.0 Microsoft positions Universal Plug-n-Play devices as the solution. UPnP devices are not widely deployed. Support for Microsoft ISA is unclear.	It is difficult to configure NetMeeting/XPVC to work with existing proxy servers.
Will it work with a NAT device?	Yes, CloudMeeting works "out-of-the-box" with NATs.	No.	

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Security

Is it secure?	In addition to 128-bit SSL encryption for all data, CloudMeeting's architecture reflects a philosophy of "non-trusted clients". Clients have no specific responsibility for enforcing security policies.	Encryption is accomplished by turning off audio and video features. Future plans are constrained by slow-moving H.323 standard. For IM, Microsoft's web site says: "There is no encryption of information with Windows Messenger, with the exception of passwords. Any information is sent in plaintext format and is therefore open to viewing by anyone."	CloudMeeting delivers secure communications. NetMeeting/XPVC does not.
Is my IP address exposed?	User IP addresses are protected.	User IP addresses are sent to others using SIP protocol.	Hackers can attack NetMeeting/XPVC users using commonly available tools on the internet.

Bandwidth

What if the amount of available bandwidth changes?	Continuously monitors and adjusts streams to fit within available bandwidth. This is accomplished by using "scalable streams" for video and document data.	No bandwidth monitoring	NetMeeting/XPVC users will occasionally see significant "gaps" in sessions, or complete loss of sessions. CloudMeeting users will not.
How is my connection monitored?	A mathematical model of the user's internet connection represents the entire path of data from a microphone, camera, or document to the other user's speakers or display device. This model is used to backsolve the amount of available bandwidth at any given time.	Does not monitor connection.	CloudMeeting has the ability to respond to bandwidth changes.
What are scalable streams?	Scalable streams are streams of audio, video or document data that can be easily scaled back to provide information to different users, at different data rates with minimal latency. Scaling a stream to a lower bandwidth results in less frequent updates, and/or reduced resolution.	Does not have scalable streams.	CloudMeeting has the ability to change the amount of bandwidth that it uses dynamically, on the fly, and works with low-bandwidth connections.

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Bandwidth (con.)

How is packet loss handled?	<p>CloudMeeting uses a patent-pending technology which combines multiple TCP streams and multiple sequencers to provide:</p> <ul style="list-style-type: none"> • Zero loss for document data • Extremely low latency video with zero image artifacts • Extremely low latency audio 	Multiple UDP transactions for audio, video and document data with different sequencers for each.	CloudMeeting's technology platform delivers a much higher quality experience, providing zero loss for document data, low latency video with zero visible image artifacts, and extremely low latency audio. NetMeeting/XPVC frequently suffers from loss of video and document data, visible image artifacts, and unpredictable audio latency.
How does it deal with the bandwidth demands of multiple users sharing an internet connection?	<p>CloudMeeting's Virtual Local Gateway feature can group users at a location and dynamically split available bandwidth between them. Virtual gateway bandwidth may be configured to any limit desired by the user. Individual users can also limit their own bandwidth use through a simple configuration in the client software.</p>	<p>Groups of users must coordinate and limit their use to fit within the constraints of the connection. There is no automated mechanism for accomplishing this. Hardware gateway devices could possibly be used to limit (but not split) bandwidth usage for a shared connection, but interoperability of such a device with SIP is not clear.</p>	NetMeeting/XPVC users should not use shared connections.

Performance

How much latency is there?	<p>Latency is minimized using several strategies, among them: (1) Multimedia streams are constantly monitored and tuned to maintain maximum throughput with minimal latency. (2) The streaming protocol prioritizes audio data higher than video or presentation data.</p>	<p>Latency is highly variable. Calls between users on a LAN will have low latency, but most Internet calls will experience high latency due to public peering points.</p>	<p>Conversations on CloudMeeting will have much more natural flow.</p>
How can you ensure that my audio will be received in a timely way?	<p>Audio data is prioritized higher than video or document data. And since bandwidth availability is continuously monitored, audio is transmitted with low latency.</p>	<p>High latency due to peer-to-peer connections.</p>	<p>Conversations on CloudMeeting will have much more natural flow.</p>

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Performance (con.)

How reliable is it?	CloudMeeting's on-board intelligence monitors the entire solution: the user's hardware, the user's internet connection, conditions on the Internet, and the service itself. Because of this, CloudMeeting is able to quickly diagnose and adapt to or repair problems as they arise. The user-friendly Configuration Wizard, Bandwidth Meter, Internet Weather feature, and extensive help files further facilitate use and problem diagnostics.	NetMeeting or XP is highly dependent on many things, none of which are centrally monitored. End users are responsible for diagnosing and repairing problems on their own.	It is harder for users to achieve reliability with NetMeeting than with CloudMeeting.
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Group Support

Does the solution support conferencing for groups of users?	CloudMeeting supports groups of up to 200 people. Meetings can start out with two users and dynamically grow or shrink over time. Reservations or advance set-up are not required. Server provides "multicast" functionality for distribution of media to participants.	NetMeeting/XP allows a user to run more than one session concurrently on a single computer. Small groups of 3 or 4 users are therefore possible, but not directly supported. When used with more than one other user, performance degrades as the number of participants increases.	CloudMeeting can be used for business meetings; NetMeeting/XPVC and peer-to-peer solutions in general are not really suitable.
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