

Cloud-Based Video Conferencing: a Flexible Approach to Face-to-Face Communication

Over the past decade, video conferencing has steadily evolved to become the must-have alternative to traditional audio conferencing. Technology advances such as cloud services, ubiquitous network connectivity (Wi-Fi, 3G/4G), mobility and WebRTC (Real-Time Communications) are making video conferencing inexpensive and accessible, moving it closer to widespread adoption.

Today, scalability and affordability have extended video beyond the boardroom to meet the demands of a growing mobile workforce. Cloud-based video conferencing has enabled companies to realize the full benefits of video: face-to-face contact, efficient knowledge transfers and a degree of personal interaction that's proven critical for businesses hoping to gain a competitive advantage. The coexistence of and, increasingly, the transition from expensive, conference room-based video conferencing hardware to software-based desktop and mobile devices strengthen corporate agility, responsiveness and productivity.

Video Conferencing: Changing Needs

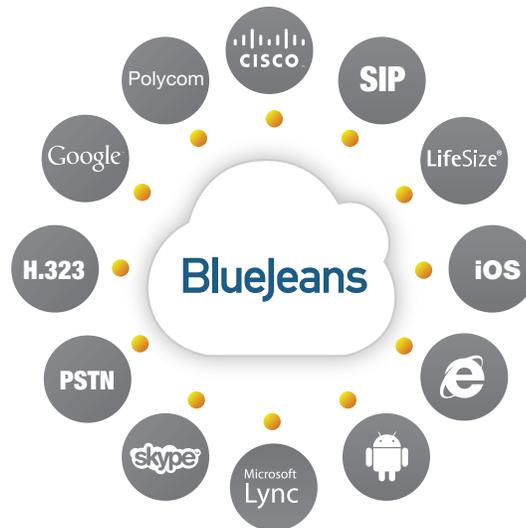
In the early 2000s, the introduction of low-cost (or at times free) audio/video chat via an Internet connection and online services (such as Skype, iChat, Google voice and video chat) shook up the communications industry. Soon after, HD webcams, increased computing power and bandwidth accessibility fueled the demand and growth of video conferencing and video chat solutions. In businesses, the recent trend toward bring your own device (BYOD) has increased the number of workers who rely on video-enabled smartphones and tablets to stay connected and productive. These devices are more than the cell phones, pagers, BlackBerrys of yesterday. They have started to replace the workers' need to be at the office to maintain contact and access to files, email and each other.

With each device capable of serving as a standalone video end point, users can now join video meetings from home, hotels or even the local coffee shop. These changes have led to an increased expectation that visual collaboration is readily available to all employees in the organization and, as a consequence, have resulted in a higher demand for multiparty video conferencing.

Instead of a single, point-to-point video call, multiparty video conferencing involves multiple locations. The process relies on a multipoint control unit (MCU), also known as a video bridge (equivalent to an audio conference bridge), which enables the simultaneous broadcast of all participants in a videoconference. MCUs are part of an organizations infrastructure that requires IT management, network connectivity, racks, cooling and maintenance contracts.

In the past, only companies with the capital to invest in both room-based video conferencing end points and standalone or embedded multipoint capabilities were able to offer collaboration and increased productivity through multiparty video communications. The traditional application for these meetings consisted of intracompany conferences — headquarters to remote offices. Rarely did these calls cover B2B meetings, since that required complex firewall configurations to allow access for outside companies.

Figure 1



Blue Jeans' cloud-based support provides expansive interoperability for multiple, platform-diverse users regardless of their location.

More recently, interest in alternatives to a hardware-based video ecosystem has been on the rise, driven by the availability of cloud- and browser-based video conferencing solutions and the demand for mobility. These newer options for video conferencing can complement the existing setup, and help overcome the inherent limitations of room-based systems, including:

High cost. Dedicated room systems to high-end, full, immersive end points are expensive to buy. They're also expensive to maintain, requiring dedicated staff and annual maintenance contracts. Coupled with a cloud-based service, the use of these systems can be extended — allowing the ability to maximize usage.

Lack of interoperability. Traditional video conferencing solutions don't support a mixed end point (multivendor, multiplatform) environment. Typically, users can communicate only within a single-vendor ecosystem. Connecting to an end point from another vendor is almost impossible; it may require significant investment in additional infrastructure to enable it and may limit the functionality available to each end point. With increasingly mobile workers, partners and customers operating from a variety of platforms and devices, this lack of interoperability limits the usefulness of a room-based video conferencing solution and its associated infrastructure.

Limited scalability. Companies that invest in hardware MCUs are limited by the fixed capacity built into the hardware. Adding capacity in most cases requires additional hardware that is offered in only incremental capacity jumps. Accommodating extra participants for occasional larger video conferences may be almost impossible or can dramatically increase costs because infrastructure upgrades or the use of a third-party service provider would be needed.

The Blue Jeans Network Approach

At a time when organizations seek to streamline operations and increase efficiencies, the desire to support a larger number of platform-diverse users in face-to-face video meetings is on the rise. Doing so requires that the solution offer a rich user experience, reliable connectivity, expansive interoperability and the flexibility to meet variable demand. Emerging cloud-based video conferencing solutions can complement pre-existing on-premise solutions by allowing customers to leverage previous capital expenditures and thus benefit from the flexibility offered by the cloud-based solution.

A cloud-based alternative from Blue Jeans Network overcomes many of the limitations of traditional video deployments without requiring organizations to abandon their existing investments.

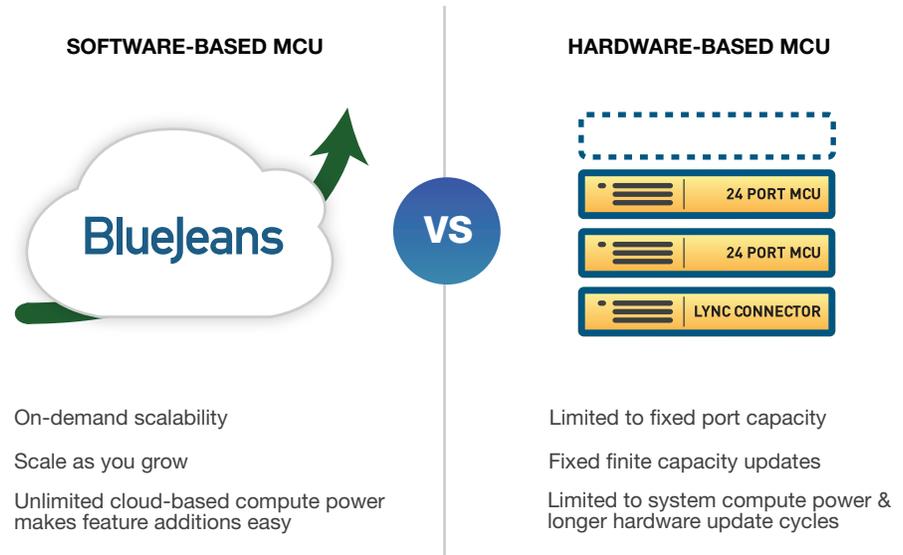
Blue Jeans circumvents the limitations of on-premise solutions by offering:

Interoperability. Blue Jeans enables video conferencing between multiple users on any video client, including Skype, Google video chat, Microsoft Lync, Jabber, room-based video systems (Cisco/Tandberg, Polycom, LifeSize, and others), and standard Web browsers (Chrome, Internet Explorer, Firefox and Safari). At the least, a Web browser, camera and Internet access

are all that's required to join a Blue Jeans meeting. Meetings take place from wherever people are, rather than from a fixed location with a room system, providing instantaneous face-to-face interaction.

Scalability. A multipoint cloud-based video conferencing infrastructure supports the dynamic expansion of user capacity to meet demand. Such high scalability, or "bursting," enables Blue Jeans customers to easily accommodate any increase in the number of conference participants. Moreover, browser access, which only requires Internet connectivity and a camera (embedded or external), also increases the number of potential users by allowing video conferencing access from any device.

Figure 2



A hardware-based MCU offers limited connectivity and is expensive to maintain in contrast to the cost-effective flexibility of cloud-based video conferencing.

Ease of use. Blue Jeans offers an intuitive, easy-to-use Web interface that allows individual users to schedule, join and host meetings. In-meeting controls give participants the ability to change layouts, share screens, mute audio/video, view meeting participants lists and manage their meetings. At the enterprise level, Blue Jeans offers software-based routing for capacity on-demand and agile deployment for enterprise-wide rollouts. Single sign-on (SSO) and Security Assertion Markup Language (SAML) support simplify onboarding users into the organization. All system management, software enhancements and updates are administered by Blue Jeans.

Pricing. Blue Jeans' cloud-based video conferencing service offers an elastic model that enables clients to pay for service based on usage: multiple plan types include pay-as-you-go, ports plan and unlimited usage.

Performance. Blue Jeans' high-performance video platform ensures that participants receive the best audio/video experience. Since all of the video transcoding is done in the Blue Jeans cloud, each participant receives the highest quality video that their connection allows ensuring an optimized meeting experience for each user.

Extensibility. Integration with business applications provides Blue Jeans customers the ability to extend the use of the service with familiar applications they already use, such as Microsoft Outlook for scheduling, Salesforce.com for in-application video calling, and LinkedIn for viewing participant profiles.

Standards-Based Security

When it comes to cloud-based solutions, security is a big concern for every user. It is important to note that security best practices are necessary, such as updated antivirus software, strong passwords and sound policies regarding online interactions.

Blue Jeans includes robust encryption processes (automatic and user-controlled) and user-account protections.

Blue Jeans mitigates vulnerabilities to provide secure video conferencing by:

- Applying media encryption — H.235 V3 (128-/256-bit AES) — to all video conferencing calls and enabling users to set preferred levels of encryption for further security.
- Bare minimum user information enables secure application access and ensures that all back-end services are secured and routinely audited for vulnerabilities. Passwords and other sensitive user information are SHA-hashed for privacy.
- Visual (on-screen) and audible alerts notify meeting hosts and participants of other attendees joining or exiting meetings and alert users to unencrypted end points joining meetings (which can be dropped from calls if desired).
- Enhanced optional user and admin encryption settings are available that require all participants to validate their endpoint before joining a meeting.
- Enabling dynamic conference ID and passcode generation.
- In-meeting controls: lock meetings, view participant lists, mute individual participant audio/video channels, drop participants, and force layouts.

The Blue Jeans service provides a secure way for users to join meetings, both intra- and intercompany, without exposing the corporate network to vulnerabilities. Users dial out to join a conference — as opposed to allowing others to dial into their network. That approach, in combination with accompanying meeting IDs and passwords, ensures a secure connection from the corporate network.

Figure 3



**END-TO-END ENCRYPTED VIDEO MEETINGS ACROSS
MULTIVENDOR PLATFORMS**

Blue Jeans makes it easier and more cost-effective put scale to accommodate additional end users unlike the built-in limitations of on-premise systems.

Video Conferencing for the Future

The current business environment will only grow more complex due to expanded global commerce, increasing mobility, and the demand for constant innovation. The need to meet these challenges is driving organizations to seek out ways to easily integrate new systems and unify platforms.

As companies move to improve business agility and outperform competitors, they're finding that scalable, multipoint cloud-based video conferencing increases employee productivity, helps to meet 24/7 business demands and improves communication.

Cloud-based video conferencing appeals not only to individual users and SMBs — larger enterprises are also realizing the value it can add to their existing video ecosystem. In particular, large organizations with a mix of legacy and new video conferencing platforms are able to overcome the obstacles between these disparate systems. Cloud-based video services can help to alleviate the unfavorable impact legacy video hardware solutions have on organizational development and productivity due to their complexity, disparate user experiences and inoperability.

By adding cost-effective, interoperable, cloud-based capabilities to their existing ecosystem, businesses can help mitigate these problems. Moreover, the advantages enabled by cloud-based video conferencing lead to superior productivity based on user mobility, effective collaboration and an increased competitive advantage.

Emerging Trends In Multipoint Conferencing

Innovations in networking, cloud services and mobility are helping to make cloud-based video conferencing more attractive to end users and organizations as a whole. Forces shaping multipoint conferencing today include:

Mobility. Mobile device use in the workplace offers benefits, but also presents challenges in terms of security, device management and support. But it's a trend that's not going away. And users depend on cloud services on these devices more than they realize. Communications platforms, productivity tools, social media and entertainment are generally cloud-enabled. Affordability, mobile innovations and improved wireless networks will help to drive the use of cloud-based video conferencing, both within organizations and outside.

WebRTC. This open standard enables any Web developer to add real-time audio/video communication features to applications. As the standard evolves, the possibility of true cross-browser capability extends the reach of browser-based video conferencing.

Virtualization. The use of virtualization in the data center has led to a money-saving increase in processing power by eliminating the need to purchase more expensive hardware. Virtualization also helps organizations meet the high-intensity processing requirements of video conferencing, especially as it pertains to high definition (HD) and multiple users. This access to on-demand processing power enabled by virtualized servers improves the scalability potential for hosted video conferencing. Increased capacity has also led to more software-only video conferencing options, both for traditional on-premise systems and cloud-based solutions.

Interoperability (multivendor/multiplatform). As interoperability issues continue to persist in a multivendor environment, companies will need to look for cost-effective solutions that can bring together their disparate systems. With interoperability solved, companies will be able to select low-cost video end points such as browsers and mobile devices that fit the needs of their organizations and employees. Alternative deployment models — cloud-managed services, software-based and non-MCU-based — will allow organizations to extend their current infrastructure without additional significant investment.

High definition. Delivering a high definition experience in video conferencing comes at a cost: rapid increases in network bandwidth demands due to end point display size (desktop, mobile, dedicated video room). High definition also requires a consistent, reliable network connection. Blue Jeans' cloud-based computing architecture adds minimal latency and optimizes video streams (up to 720p at 30 fps) for an ideal meeting experience. The integration of Blue Jeans video services with leading cloud-based business applications (LinkedIn and Salesforce.com), and the introduction of Web browser functionality and mobile application development are further examples of recent technology trends Blue Jeans Network has introduced to meet the varied needs of businesses. ◆

◆ ABOUT BLUE JEANS NETWORK

At Blue Jeans Network, our mission is to make video communications as easy and pervasive as audio communications, enabling more effective collaboration at work, at home, and on the road. Our cloud-based conferencing service makes this possible by enabling customers to connect with each other seamlessly any time, anywhere, and from practically any device. Blue Jeans Network extends high quality video communications beyond the traditional boundaries of specialized conference rooms and into the mainstream, allowing individuals and employees throughout an enterprise to interact more effectively with each other, and with their customers, partners, suppliers, family, and friends. Blue Jeans Network is a private company headquartered in Mountain View, California. For more information go to: <http://bluejeans.com> or follow the company @BlueJeansNet