COMMUNICATION AND IT SOLUTIONS

Empowering Unified Conferencing With Advanced Transcoding

POLYCOM

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The Emerging Market for Collaborative Applications

Unified Collaboration for the real-time enterprise and rapid advancements in telephony are transforming the way organizations do business today. Globalization and an ever-increasing need to drive productivity are steering dramatic changes in distributed enterprises' collaboration and communication needs. There is no mistaking the shift in end user focus from thriving on disconnected collaboration to the need for integrated solutions. Conferencing technologies have emerged to offer knowledge workers with these new expectations and experiences.

Conferencing is key among the many collaboration technologies that are shaping the way enterprises communicate. Today enterprises are enhancing productivity and saving thousands of dollars annually by implementing audio, web and video conferencing technologies as core collaboration tools. New conferencing tools are allowing enterprises to speed decision-making; increase efficiency and build competitive advantage; reduce travel time and expenses; increase flexibility; and empower dispersed teams and remote workers. With Unified Conferencing; voice, video, web and data tools allow people to communicate with one another any where, any time, and across any medium.

One requirement for organizations using Unified Conferencing is to help workers stay connected regardless of their network and endpoint capabilities. With the ongoing transition from circuit switched to IP networks and constantly evolving standards and protocols, conferencing end users are increasingly operating in heterogeneous environments. As a result, end users place a high value on tools that offer seamless connectivity and a reliable communications experience.

Advanced transcoding facilitates continuity and connectivity in the high velocity communications environment of today. By offering network products that are nimble and open to changes, vendors can ease out issues related to compatibility and interoperability between discrete networks, product platforms, and vendor solutions.

The Conferencing Market Landscape

Heightened awareness of conferencing and collaboration technologies and tangible benefits resulting from adoption are creating significant growth opportunities for the audio, web, and video conferencing markets. Whereas it is not only viewed as an alternative to business travel, the growing use of audio, web and video conferencing is driving efficiency in the most routine business applications and providing a competitive edge to customers.

Standing at $4.9 billon currently, the audio, web and video conferencing systems and services market is projected to grow to $9.5 billion by the year 2008. This growth will be driven by a number of factors, and recent developments mark an important evolution from stand-alone conferencing applications to an integrated, comprehensive toolset connecting people, information and business processes.

The following trends are opening up tremendous avenues for future growth:

- Migration to IP networks
- Increased use of ad hoc/ on demand conferences
- Integration of several collaborative elements such as presence detection, IM, and voice, video and web in the same conference
- Availability of simple and intuitive browser-based interfaces and broad spectrum network management tools
- Deployment of 3G networks bringing in mobile audio and video conferencing applications

As the lines between disparate conferencing platforms truly become blurred, separate conferencing "silos" become one merged collaboration suite. Unified conferencing facilitates the offering of end-to-end comprehensive solutions that ease issues related to compatibility and interoperability between isolated product platforms and varied networks. The convergence of voice, data and video conferencing in a common platform is unifying different communication elements, creating a new environment for integrated collaboration.

Challenges Facing the Network Manager

Today's network managers face a series of challenges. They are being asked to do more with less. With demands of pumping up productivity, beefing up security, stepping up reliability and cranking up manageability constantly being placed on them, network administrators are looking for solutions that are easy to extend, flexible, and do not require time intensive set-up and management processes. The way to achieve organizational productivity is to make sure that new and existing client technologies work seamlessly with the network infrastructure elements so organizations have the ability to roll out more end-to-end solutions that connect their employees to business processes.

Today's hybrid work groups are increasingly placing connectivity demands on the network administrators to bring in distinct collaboration and conferencing platforms over a variety of networks. To provide effective productivity tools, network administrators need network products that can handle the interoperability issues when connecting legacy and next generation endpoints and networks with easy set-up and little user involvement, delivering optimal video and audio quality and advanced features and control.

Deploying multiple conferencing applications that reside on separate networks not only increases the technology investments and operating costs but also demands increased support, service, training and management - a task that often falls on the network manager's shoulders. Network managers are therefore looking to solutions that are broad product suites offering multiple applications in a single platform, enhancing user productivity and ease of management. Unified Conferencing tremendously reduces the service and support time as well as user training, enhancing the cost advantage as well as organizational productivity.

Transcoding Facilitates Any-to-Any Communications

A key technology required to support the move to Unified Conferencing is comprehensive transcoding. Transcoding allows multiple conferencing systems with different communication protocols, bit rates, resolution rates, frame rates and audio and video compression schemes to conference together without requiring all systems to drop to the lowest common denominator. Transcoding puts the intelligence in the network, which enables all systems to perform at their highest capabilities. Behind the scenes, an intelligent network system can channel, organize and transmit information connecting any number of endpoints for easy use. Without full and automatic transcoding, end point devices are required to re-negotiate their capabilities, which is a major source of failed connections resulting in lower reliability. Thus, Multi-Way Transcoding opens up communication bottlenecks and combines heterogeneous endpoints to connect and communicate in a multi-network multi-protocol environment.

Figure 1: Multi-Way Transcoding

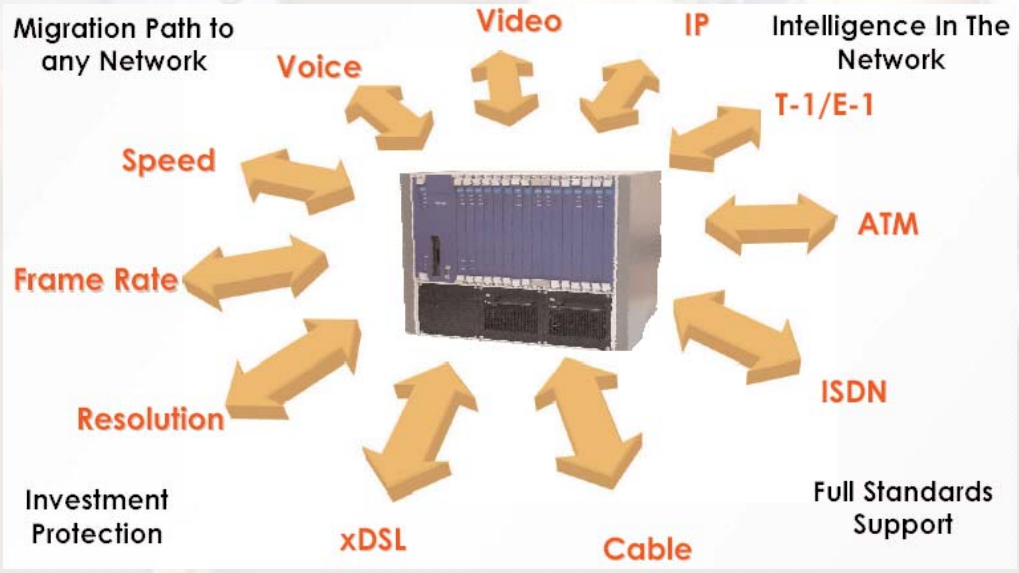

Figure 1 above illustrates multi-way transcoding.

While videoconferencing has so far remained a standalone application, it is now morphing into a collaborative tool that offers integrated functionality. Transcoding, meant to carry end users through the era of "hybrid environments", is important because of three key phenomena:

- Transition from switched networks to IP (H.323 and SIP)
- The move to converged conferencing where the end user wants to deploy multiple media and technologies in a single conference jumping from one device and/or network to another
- An ever increasing range of endpoints that are emerging for deployment as a result of continually evolving standards and technology advancements

These trends are increasingly requiring end users to bridge multiple devices over varied networks and speeds in a single conference. This highlights the need for seamless and comprehensive automatic transcoding.

Figure 2: Transcoding Variables

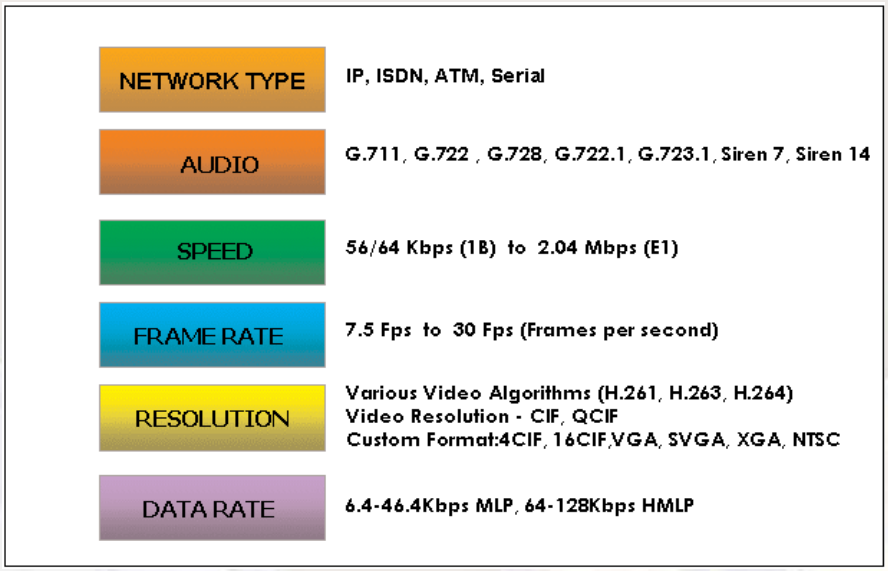

Figure 2 shows the various parameters that require transcoding in a conference call. The arrival of ad hoc conferencing requires instant connectivity that does not offer network administrators full knowledge of the various parameters coming into a call or the characteristics of each end point device. Automatic and full transcoding resolves the complexity of heterogeneous end points and environments in a way that is transparent to the end users, while offering reliable and seamless connectivity that does not need a high level of set up and support from the network administrators.

At its simplest level, Unified Conferencing provides the ease of use of dialing a single number to enter a virtual meeting room that offers voice, video and data collaboration regardless of the endpoint device or network. This ease of use and functionality is facilitated by comprehensive transcoding.

Polycom MGC - Offering Full Automatic Transcoding

The Polycom MGC fully and automatically transcodes the necessary connection parameters in a conference call: bandwidth, resolution, video algorithms, frame rates and audio algorithms.

Polycom's transcoding implementation is comprehensive and relatively simple:

- There is virtually no limit to the number of parameters that can be transcoded using Polycom's implementation. As a result, in a transcoded conference, every end point is able to operate at optimum capabilities and is not forced to downgrade to a lower parameter specified in the selection of transcoded parameters. This is because a dedicated DSP is used for each conference or party (conference on a port), and there is no limit to the number of variables or parameters that can be transcoded in a single conference. This facilitates conferences to join in with their set of unique parameters (bit rates, audio, frame rates, format and resolution) required for any single participant in a conferencing session. This also facilitates advanced conferencing features such as personal Continuous Presence (CP) layouts and the ability for the end user to change CP layouts on the fly (Click&View) through a GUI using the end point remote control.

- Full and automatic transcoding results in reliable communications. Because no endpoint has to re-negotiate connection parameters, the reliability of call connection on Polycom MGC is high, ensuring connectivity in every conference. Moreover, because there is a dedicated processor for each conference, if for any reason an end point cannot meet the conference requirements, the MCU negotiates with the end point to optimally select the next best connection parameter without affecting the quality of the call.
- MGC's transcoding implementation is easy to set up. It lets the administrator enable the transcoding feature in a point and click, resulting in comprehensive and automatic transcoding of all variables in a call. Operators do not have to specify which parameters are to be transcoded.
- Comprehensive transcoding facilitates voice, video and data conferencing on a single platform, so it does not require separate investments in multiple devices and networks. This reduces the initial investment, ongoing costs, and the level of service and support required to manage conferencing applications.

When comparing the implementation of transcoding on Polycom MGC with competitors' solutions, several key differentiators emerge. Competitive solutions transcode bit rates, audio, frame rates, format and resolution but offer limited transcoding. Some solutions will let the end user transcode within preset parameters of up to only 4 variables. In other words, the conference administrator selects a few parameters that typically apply to a majority of conferences but not the full range. This provides up to 4 rate matched streams that are transcoded together. In such a conference, each multimedia processor or DSP's processing power is shared by the entire system, and is available to all end-points or conference participants, which sets an upper limit on the variables that can be transcoded. Such a solution requires the conference administrator to predetermine and predefine the values required for any conferencing session to ensure sufficient computing power for their applications. Additionally, Polycom MGC offers full audio transcoding in all configurations as a standard feature. Competitive solutions offer audio transcoding by adding a "daughter card" that is offered as an option. Audio transcoding on competitor solutions requires the conference operator to choose the priority of audio codecs used in each conference and to enable or disable support for G.722.1, depending on the characteristics of the endpoints joining the call.

As conferencing and collaboration technologies become more pervasive, network administrators will have less knowledge of the characteristics of endpoints and networks in a conference call. Comprehensive transcoding does not require the network manager to predefine and control the variables that require transcoding, allowing them to incorporate new technologies, standards and network protocols as they evolve over time.

Conclusions

The conferencing industry has a number of alternatives in terms of features and pricing for transcoding solutions. Polycom MGC offers significant benefits of functionality and helps to ensure scalability of the solution to new devices and networks.

Key benefits of Polycom's implementation of transcoding include:

- Flexibility - The modular and flexible architecture of Polycom MGC facilitates the evolution of videoconferencing to Unified Conferencing letting the end user benefit from enhanced productivity resulting from the shift to next-generation networks and collaborative solutions.
- Reliability - The comprehensiveness of full and automatic transcoding ensures anytime anywhere connectivity without limits on conferencing parameters.
- Quality - Comprehensive transcoding enables all systems to perform at their highest capabilities delivering optimal conference quality.
- Manageability - Ease of set up and implementation reduce the burden of back end management from network managers.
- Higher ROI - Full and automatic transcoding facilitates converged conferencing over a common platform eliminating the need to invest in multiple devices residing over disparate networks.

We believe that these benefits speak directly to end users' desire to bring in integrated voice, video and web into a single conference. Polycom MGC is based on a scalable architecture that is open to complex communication environments, accommodating next generation standards, protocols, and networks. It offers a migration path that provides investment protection and flexibility to connect a wide range of options of client systems.

Offering multiple network connectivity, comprehensive transcoding, enhanced continuous presence, and an easy to set up and use interface enables Polycom MGC to deliver a solution that the network administrator, conference administrator, and the end user seeks. It's anytime, anywhere functionality, along with integrated voice and data conferencing capabilities position it well for productive collaborative sessions.

This paper is part of an on-going coverage of worldwide Information and Communications Technologies markets by Frost & Sullivan (www.frost.com), an international growth consulting company. Working closely with our clients, we use advanced market research methods to identify and analyze the critical market challenges they must address to become successful competitors in their industry. Our solutions are focused on these challenges in order to provide our clients strategies, which enable them to increase revenues, market share, and profitability.

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