White Paper

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Evolving towards a Global B2B Video Network

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1 Globalization, Enterprise Collaboration and Videoconferencing

Growing globalization, increased worker mobility and rising environmental awareness are driving many companies to rethink their enterprise communications strategy. Today's networked; hyper-competitive business environment demands new approaches to collaboration. In order to stay in tune with their markets and respond quickly to changes, organizations need to support efficient enterprise collaboration that connects employees, contractors, managers, supply chain, sales channel partners and customers. The ability to collaborate effectively is a strategic competitive advantage in today's knowledge-based economy, thus placing extreme importance on an efficient collaboration infrastructure.

In his powerful essay titled "The Globalization of Markets", Theodore Levitt, an early champion of a global approach, proposed that it was technology that was driving "the world toward a converging commonality." and stated…

> *"A powerful force drives the world toward a converging commonality, and that force is technology. It has proletarianized communication, transport, and travel. It has made isolated places and impoverished peoples eager for modernity's allurements. Almost everyone everywhere wants all the things they have heard about, seen, or experienced via the new technologies…Two vectors shape the world—technology and globalization. The first helps determine human preferences; the second, economic realities. Regardless of how much preferences evolve and diverge, they also gradually converge and form markets where economies of scale lead to reduction of costs and prices."*

As the environment for collaboration is changing, the "tried and true" collaboration method of face-to-face meetings has become too costly and has a huge impact on productivity. Organizations now need collaboration technologies that allow anyone, anywhere, anytime, and on any connected device to work together. With the potential for significant reduction in travel expenses and the ability to conduct productive meetings leading to efficient and effective decision-making, videoconferencing is fast emerging as one of the most feasible collaboration technology enterprise environment.

2 Videoconferencing "within" the Enterprise

Videoconferencing is not new – it has been available since the mid-1980s. However early enterprise videoconferencing systems couldn't gain the required attention as a key enterprise collaboration technology due to many reasons – the videoconferencing equipment was expensive and was often proprietary and vendor-specific, videoconferencing solution from one vendor was unlikely to interoperate with a solution from another vendor, companies had to pay for dedicated services even they were not being used. The high cost of videoconferencing might have been still acceptable if the user experience had been more compelling, but poor picture quality, low frame rate, bad system usability and a heavy burden on resources all created a sub-optimal user experience, resulting in limiting the growth of videoconferencing in an enterprise environment.

Videoconferencing is now making a comeback and is very different from the systems that were available 20 years ago. Today's videoconferencing is about High Definition (HD), IP networks and SIP (Session Initiation Protocol). Open standards are vital for the success of the new videoconferencing, and by supporting industry standards like H.323 and SIP; videoconferencing solutions can now interoperate with solutions from different vendors. In addition, using open standards like SIP allows for easy integration with IP-PBXs and other enterprise collaboration solutions. Another advantage for the new videoconferencing is that it runs over a standard IP network, allowing companies to leverage on their existing IP backbone instead of provisioning dedicated ISDN connections. The last but most significant change in the new videoconferencing is the improvement in the size, usability and reduced price of videoconferencing end-points.

With all these new advancements, the economic downturn, and the need for real-time, high-quality enterprise communications, videoconferencing is in the limelight again and is emerging as a popular visual collaboration tool. The other two note-worthy trends in videoconferencing today are – the different industry-specific applications that are available irrespective of the organization size, and the wide extent of usage within the enterprise ranging from executive boardrooms, conference rooms, desktops and home offices.

3 The need for On-demand Videoconferencing in the Enterprise

While videoconferencing adoption is increasing, it is still a paramount task for companies to integrate the technology into a larger communications infrastructure, manage it effectively and to achieve a strong return on investment.

One of the best approaches for companies to counter this and other critical business goals is on-demand videoconferencing, which allows for ad-hoc collaboration that's easy to use and cost effective. On-demand videoconferencing lets employees meet on the fly, without making plans or reservations in advance. As a result, they can collaborate exactly when they need to, with whomever they need to, as soon as the need arises. So if a group of marketing employees is working on an imminent new-product launch, they can quickly start a collaborative session to discuss the particulars face- to-face; or, a team of research and development professionals might initiate a video conference with web collaboration, to share documents and drawings as they discuss the product's particulars with the aid of video input.

And thanks to new pricing models, they can do all this without worrying about skyrocketing costs. With on-demand videoconferencing, the technology (the bridge port) does not need to be reserved, eliminating the need for a conferencing scheduling system or a conference operator. As a result, on-demand conferences can be completely ad-hoc, or they can be planned in advance and scheduled using Outlook or another calendaring tool. Either way, end-users and IT administrators don't need to think about the availability of the underlying technology.

On-demand videoconferencing does several things to support the next-generation enterprise:

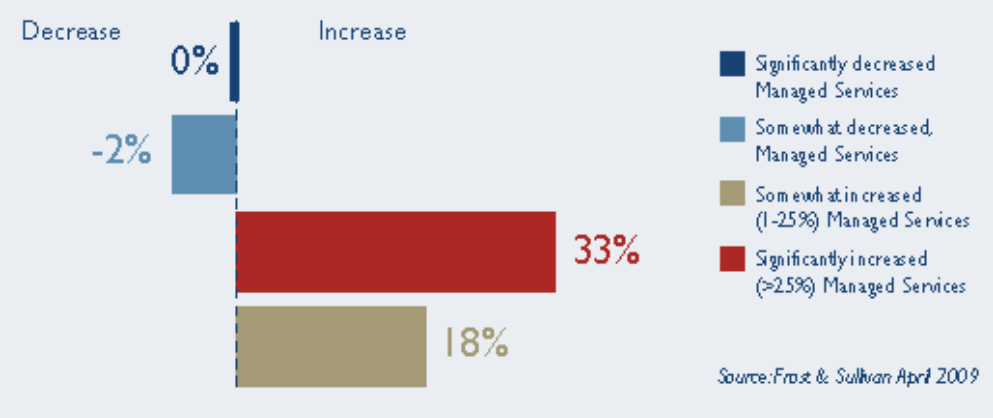
- It eliminates the need for IT to schedule and launch conferences, getting users up and
- running faster and regardless of where they are located (especially critical for time sensitive issues)
- It delivers a high-quality videoconferencing experience, without requiring that end users understand (or even think about) the underlying technology
- It enables companies to form project-focused teams comprising co-workers, partners, and even customers
- It helps managers integrate videoconferencing into daily business processes, to improve decision making, knowledge sharing, issue resolution and collaboration
- Its simplicity and fixed cost encourages increased, enterprise-wide use, boosting productivity and driving ROI.

4 Value of a Managed Videoconferencing Service Provider

On-demand videoconferencing is a very effective way of managing video collaboration within the enterprise, but organizations also have difficulty managing, budgeting, and controlling the cost of videoconferencing within the enterprise. Far too often companies must deal with unexpectedly high transport charges, meeting support and staffing costs, or external service fees (bridging, gateways, etc.). The combination of limited reliability, high resource requirements, and varying costs often causes the most significant problem of all – a low utilization of conferencing resources.

The problem in many organizations is the inability to effectively manage the internal conferencing service given the available financial and staff resources. This is the problem that a "managed service provider" can help resolve by acting as a partner and strong resource for the internal conferencing manager. There is a growing trend towards the use of hosted or managed services due to an increased awareness of their potential benefits. In a recent Frost & Sullivan end user survey, 47% of respondents indicated that they retained existing levels of investment in managed services over the past 12 months – and a further 51% of respondents actually increased investments in managed services over the same period.

Changes in Provisions Regarding Managed Services within the Past 12 Month



Source: Frost & Sullivan April 2009

A turnkey managed service offering should cover both the service and technology aspects of a videoconferencing environment. Typically, a managed service will provide a 'one-stop-shop' for the videoconference booking. Key tasks include: ensuring that meeting delegates are notified in advance; reserving rooms and associated equipment; and making sure that the appropriate network configuration is ready before the meeting start time. The service would also include a technical support helpdesk to resolve the users' meeting problems in a timely and least disruptive manner.

An all-encompassing managed service will build on the basic elements of technical support and resource reservation to deliver a complete meeting solution. This will involve managing all aspects of the meeting, thereby allowing users to focus their efforts wholly on the subject matter without being distracted by the underlying technologies. Overall, the managed service arrangement can be helpful in delivering an organisations' communications strategy in a very pragmatic and efficient manner. It enables the company to maximize the benefits from existing infrastructure, resources, and other technology assets held.

5 Benefits of a Managed Videoconferencing Service Provider

A managed videoconferencing service provider can provide host organizations with a strong combination of performance, reliability, and cost-effectiveness for their videoconferencing environment (irrespective of the service delivery model - customer-hosted, ASP or hybrid)

- **Productivity gains, business process acceleration**: A managed service can make it easier for users to get access and use the equipment when they need it most. By working closely with users, the service provider can help reduce contention for available resources by careful capacity management – for example, anticipating surges in demand around critical phases of a project. Furthermore, it can support the actions of a company to strengthen its competitive positioning by establishing new and more effective ways of serving customers.

- **Cost Reductions**: The ability for visual communications to help companies save costs by replacing some travel is already well-established. However, by deploying a managed service for videoconferencing – a company may achieve faster and more substantial savings. Working with the service provider, the company can identify and target the types of travel that can be easily replaced with videoconferencing, without impacting on overall business efficiencies and results.

- **Performance and Services**: Perhaps the most significant benefit of deploying a professional managed service offering is consistent and reliable conferencing performance for the end-user community. All managed service offerings worthy of consideration provide a level of proactive end-point and videoconferencing network monitoring beyond that conducted internally by most organizations today. When activated and combined with the troubleshooting and remedial efforts of the vendor, this results in increased meeting success rates, and an associated increase in user satisfaction. The best vendors will provide a service level agreement (SLA) that financially guarantees the success of your company's conferencing under their management program.

- **Valuing people and getting more from them**: A managed service can do this by supporting more options and greater flexibility in connecting people: from PC-based video units to videoconference group system to telepresence; multiple locations; sharing of graphics and other presentations; and even bringing into a vital conference call people on the road – perhaps with access only to a mobile phone. The value added benefit of the managed service is based on ensuring that all the connections can be made quickly and efficiently, without distracting people from the core activities of getting on with business and serving customers.

- **Management Benefits**: Managed service offerings provide additional benefits for internal videoconferencing managers. Specifically, the tracking and reporting tools within the service help make videoconferencing a quantifiable entity. Internal managers will have a series of reports and metrics available to them for internal justification, risk aversion, and performance improvement initiatives.

- **Staffing Issues**: Another major benefit of a managed service offering is the ability to limit the internal resources needed to support videoconferencing. Note that the use of such a service does not remove the need for an internal videoconferencing team. Instead, the managed service becomes a resource that serves and supports the videoconferencing management staff while relieving the daily headaches of employing and training those individuals.

6 B2B Videoconferencing and Telepresence "between" enterprises

As enterprises begin to increasingly use videoconferencing as an intra-company collaboration tool, the need for inter-company collaboration with their customers, suppliers and partners, which was more of a latent need earlier, is beginning to surface as a requirement in their collaboration strategy. Now, enterprises no longer want to be restricted to separate islands, but want to cross the boundaries and be part of an ecosystem where irrespective of the type of video equipment, network or service provider, they can seamlessly and securely establish inter-company video connections. This situation creates a unique opportunity to create a B2B video exchange capable of delivering inter-company connectivity with flexible service deployment models, instead of inter-connecting through standard ISDN and Internet technologies; both of which present difficulties in deployment due to issues around cost, scalability and performance.

This scenario presents a whole new set of problems, where now not only are organizations faced with the challenges of worrying about their own videoconferencing requirements and environment, but now need to consider the videoconferencing environments of their customers, suppliers and partners.

From a service provider's perspective, they have to now extend their capabilities beyond their network to create interconnection options between other providers to enable B2B video connections for their customers as well as other providers' customers so that the end users can seamlessly connect to each other irrespective of the service provider.

7 Building B2B Video Networks – Challenges and Requirements

To provide an effective and efficient B2B video connection environment, maintain a high quality of service (QoS) and an acceptable quality of experience (QoE), a service provider has to build a B2B video network that is easy to connect for both the enterprises and other service providers, and should address the below baseline requirements:

- **Connectivity, Bandwidth and QoS**: Network connectivity is a key component to ensure bandwidth and to create end-to-end Quality of Service (QoS). Connection through the Internet does not provide either a guarantee of bandwidth or consistent QoS. So any proposed solution must demonstrate a well designed path that both guarantees bandwidth and recognizes class markings and treats high priority streams with the right forwarding behavior so that low packet loss and low jitter can be achieved.

- **Inter-connection**: Service providers and carriers provide both bandwidth and QoS within their own networks, and if the B2B connections are made within the same service provider, there isn't much of a problem, but, if the B2B connections are to be made with multiple service providers, then the B2B service provider should create a video exchange, where enterprises and carriers can interconnect and ensure QoS support across enterprise, carrier and service provider boundaries.

- **Protocol Inter-operability**: Videoconferencing equipment providers usually support both H.323 and SIP protocols, but in the Telepresence arena, most of the solutions in the market use proprietary tools. These protocol issues are very relevant while trying to establish connections between single-codec to multi-codec systems. Therefore, it is paramount for a B2B service provider to provide inter-operability across a multitude of protocols to facilitate inter-company video connections.

- **Equipment compatibility**: While most video conferencing products today are using H.264 compression, and video streams are supported over RTP on IP streams, there are numerous incompatible ways to set up calls. Long-time vendors of enterprise video conferencing equipment support the H.323 and SIP protocols, and interoperate. Desktop solutions often use a server-based setup model with other protocols. Integration with unified conferencing solutions usually requires SIP, but may have other hooks as well to make the systems properly display presence.

- **Security**: Security is a critical issue and both network and call security should be addressed in a B2B environment, and a B2B network should be able to effectively manage the processes, infrastructure, call content, encryption, and policies around video end-points permissions in a secure manner without compromising on data.

- **Dialing Plan**: While in pure voice telephony (PSTN), there is a single, global dialing plan, there is no matching scheme for video communications. It is essential to build a similar scheme to make a B2B Video Network feasible.

- **Video Managed Services Cooperation**: Many videoconferencing and telepresence systems today are supported by a managed services provider to ensure the equipment is properly set up; the images are framed correctly, and in many cases to start the calls so attendees need only show up in the right room at the right time. For a B2B call, two or more managed service providers may be involved because different enterprises have contracted with different vendors. A B2B Video Network should be address the issues regarding the process for managing the combined call the bridging resources management, set-up and fault management policy etc. The managed service providers in the B2B Video Network will need to work out how to connect at an application level to best serve their customers through cooperation with other service providers.

In addition to the above, ease-of-use and affordability are two key areas that need to be addressed by the service providers within the B2B Video network to make it appealing for their customers to increase usage and deliver a good end-user experience.

8 PSTN and PSVN – Analogy between the two frameworks

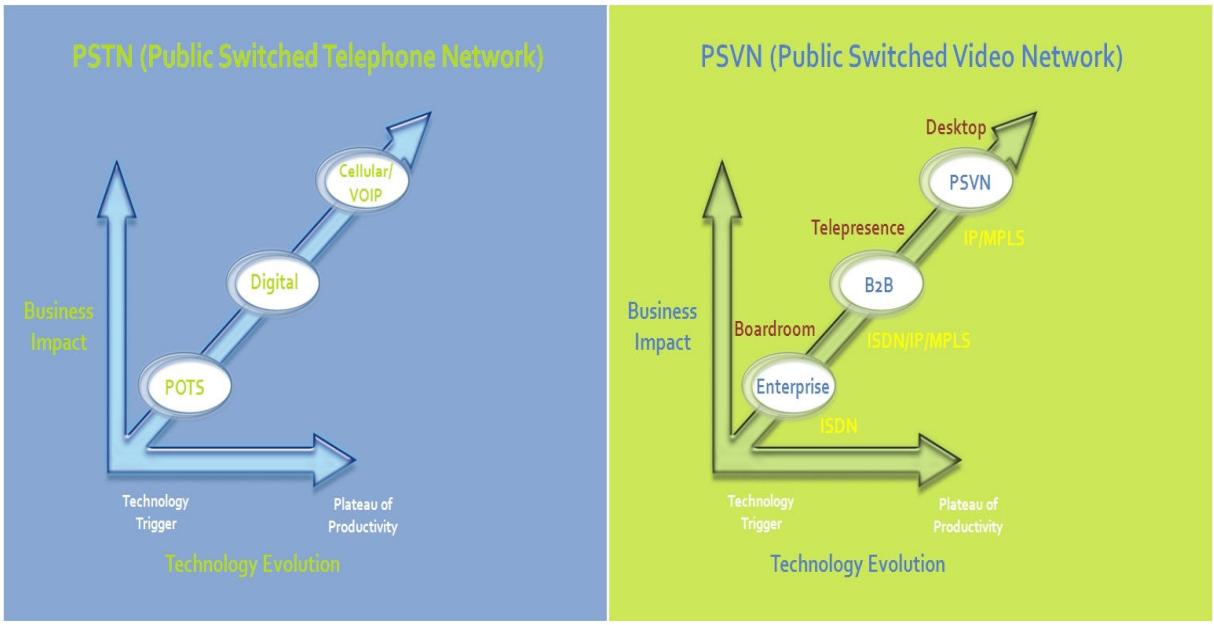
In telephony, as PSTN (Public Switched Telephone Network) evolved over time, the value to the end user was the ability to reach anyone in the world, at anytime using any telephone. The evolution began with analog telephones connected to the POTS (Plain Old Telephone System). Carriers connected different POTS clusters together to facilitate global calling. This system evolved over a period of time moving to the digital world and into new applications like the cellular and Voice over IP technologies. Each step in the evolution process enhanced inter-connectivity between different telephone service providers, ultimately resulting in providing more value to the end user, increasing usage adoption and creating new user applications.

A similar trend is emerging in the video world, where sometime back traditional boardroom endpoints leveraged the PSTN (ISDN) to connect to anyone, anywhere using any video device. This has slowly evolved to Enterprise IP video over MPLS networks, which provides the end user with a high-quality end user experience. Now, enterprises are looking at inter-company communication outside their enterprise boundaries using either legacy ISDN or the Internet, both of which as we now have degraded the end user experience quality.

As the demand for inter-company video communication between enterprises increases, the need to inter-connect different video exchanges that now function as islands becomes imperative and a high priority. This creates a unique opportunity for implementing a PSVN (Public Switched Video Network), aimed at bringing different videoconferencing service providers together from across the globe to create a collaborative effort in defining a Public Global B2B Video Network, and to develop a standard set of best practices, value added applications, processes and infrastructure that are required to inter-connect seamlessly.

The PSVN in essence is very similar to the PSTN, in a way that it will create a framework to allow disparate B2B video exchanges to inter-connect and facilitate video end-point communication to any other video end-point irrespective of the type of video equipment, network or service provider, time of day or geography.

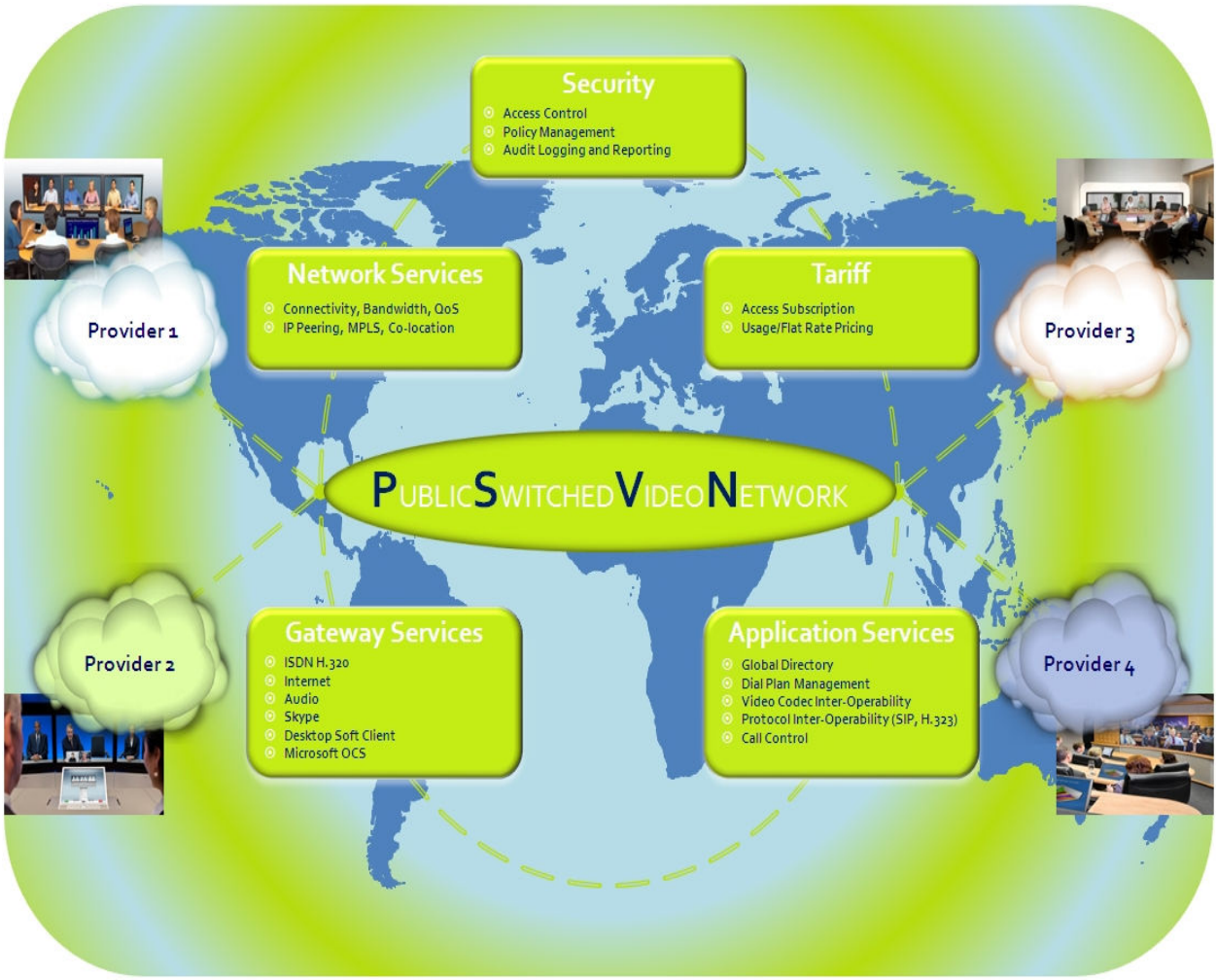
The following provides a comparison between the evolution of PSTN and PSVN:



Analogy between PSTN and PSVN Frameworks

9 PSVN – A framework for B2B Video Exchanges

The PSVN is currently in the infancy stage as different videoconferencing service providers (carriers, managed service providers, video exchanges etc.) start to form solutions, individually or together, to take into the marketplace. We anticipate that many different islands of B2B video exchanges will begin to appear in the marketplace in 2010 to meet the early enterprise customers with requirements for inter-company video communications.



PSVN (Public Switched Video Network)

Each of the following areas represents considerations within the framework. The relevancy, definition and launch date of each component will be impacted by the following, but limited to, regulatory requirements, commercial viability, market opportunity, business risk, territorial market share, customer demands.

Network Services

- Connectivity, Bandwidth, QoS
- IP Peering, MPLS, Co-location

Application Services

- Global Directory
- Dial Plan Management
- Video Codec Inter-Operability
- Protocol Inter-Operability (SIP, H.323)
- Call Control

Gateway Services

- ISDN H.320
- Internet
- Audio
- Skype
- Desktop Soft Client
- Microsoft OCS

Tariff

- Access Subscription
- Usage/Flat Rate Pricing

Security

- Access Control
- Policy Management
- Audit Logging and Reporting

In terms of the inter-connectivity options, the different B2B video exchange could resort to one of the below approaches or both:

- **Consortium (Closed environments)**: The Consortium approach would be scenario where a group of video service providers would form a proprietary framework, often closed, to facilitate connectivity and deliver services to their customers for a fee. The consortium takes a proprietary approach to the market and expects the other players to connect with them for a fee. We anticipate multiple consortiums to evolve over time within the industry, followed by interoperability requests and consolidation. This approach will quickly increase the transfer of video traffic across a broad set of customers, but will face business and commercial challenges due to the proprietary nature of the framework as they try to gain market share in the early days. From an architecture perspective, we anticipate these groups to assemble a solution that delivers video services using an infrastructure strategically placed in the network for customers to access. Architecture would include, but not limited to Bridging platforms, call control, gateway services. The solution would provide secure meeting facilitates for 3rd party customers to connect to. Point to point services would not be provided between customers, forcing customers to incur additional charges to connect to this common infrastructure.

- **Peering**: Much like the evolution of the Internet, this approach would leverage the investments that video service providers and customers have already made in technology and the network to connect different islands together using a common set of best practices, rules, and architecture without investing in a new set of infrastructure. In this system, customers would be allowed to connect point to point in a secure manner using a self launch model. Services that require video infrastructure to support the call, such as a multi-point call, would leverage either of the customers MCU assets, and operational policies and procedures would dictate where calls would be hosted.

10 Benefits of the PSVN framework

The benefits of the proposed PSVN are three-fold:

- **User Community**: The PSVN framework will provide the ability for users to connect via video to anyone, anywhere, anytime and via any network or video device, enabling true global presence for their business.

- **Service Provider Community**: Disparate service providers will be able to build a set of governing rules and regulations, best practices, ratify architecture and tariffs, to deliver a high-quality video service that is easy to connect to, cost-effective and always on.

- **Videoconferencing Industry**: By making inter-company connectivity easier for both the service providers and the end-users, the PSVN framework will facilitate increased usage of video communications by end-users for various applications resulting in mass adoption of videoconferencing technology for both intra-company and inter-company communications.

About the Author

Dan Tanel, Chief Technology Officer
Tel: +1-647-722-8510
Email: dtanel@bcsglobal.com

As BCS Global's Chief Technology Officer, Dan Tanel is responsible for helping drive the company's technological innovations and strategy, in line with BCS Global's corporate goals. During his career, Dan has lead numerous initiatives involving the design and implementation of next generation networks and advanced IP based communication and collaboration services to service providers and enterprise customers.

Dan is a key proponent at BCS Global for advocating technologies and new business models aimed at driving adoption of Video Communications in the marketplace. An important part of Dan's responsibilities in this role is to listen, speak and foster relationships with industry analysts, partners and customers to understand the future requirements, constraints and challenges of the videoconferencing and telepresence marketplace – all geared towards developing effective solutions and adding value to the customers as well as the industry as a whole.

About BCS Global

BCS Global Networks Limited is a leading worldwide provider of managed videoconferencing, telepresence and visual collaboration services. The company owns a fully deployed Global Video Exchange, which enables users across the world to meet instantaneously regardless of their video system, network provider or type of connection. It offers a complete set of managed services and a 24x7 global live video and audio help-desk support to its customers worldwide.

Headquartered in the UK, with offices in New York, Shanghai, Toronto and Hong Kong, BCS Global provides managed video services to its customers across the globe from different industry verticals, as well as supports major carriers and their customers globally.

BCS Global's comprehensive videoconferencing and telepresence solutions help its customers transform their business collaboration using video, resulting in enhanced productivity, improved collaboration, reduced costs and quick ROI.

North America: +1-866-897-2503

EMEA: +44 (0)1753- 705-400

APAC: +852-3679-3698

North America: na-info@bcsglobal.com

EMEA: eu-info@bcsglobal.com

APAC: apac-info@bcsglobal.com

www.bcsglobal.com