

## WHITE PAPER

# Affordable and Practical HD Conferencing over Satellite to Multiple Parties using EMC HD Connect and Temasys' Cloud Based Vidyo Service

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## INTRODUCTION

This short paper sets out the case for adopting Vidyo from Terasys and satellite connectivity from EMC to connect remote locations to other global locations with a degree of flexibility, scalability, and a high level of functionality, previously unknown, and at cost levels which demonstrate the lowest effective rate in the industry. As a result of this partnership of technology and capability, video conferencing from remote locations for engineering, operations, medical and a host of other reasons has just become affordable and doable. From desert locations deep in Asia, to oil rigs in the Pacific, or to ocean going maritime vessels, and land locked remote mining facilities, connectivity can be assured. Technically, the solution is simple, yet very powerful and robust. No special video equipment is required. Multiple (or an individual) devices (laptops, desktops, mobile devices) equipped with a Vidyo application, and quality web cam and headset, are linked into the satellite transceiver and router, which seeks an available public internet connection and joins multiple parties around the globe, via Terasys Vidyo Cloud servers, in a manner which shows greater efficiency, and 70 to 80 per cent savings, compared with old style “legacy” technology.

## CONNECTING MULTIPLE PARTIES

A typical, legacy<sup>1</sup> video conferencing network is shown at Figure 1. This network deploys proprietary end points connected by QoS or VPN network connectivity, to a proprietary Mutipoint Control Unit (MCU). These items of proprietary equipment are expensive and prohibit scalability, unless further proprietary units are purchased and network connectivity commands premium pricing.

Historically, the challenges of extending video conferencing across international boundaries has been frustrated by cost of equipment and the cost of network connectivity; once remote locations are brought into the equation as video endpoints, the magnitude of the technical challenge and cost of connectivity are multiplied exponentially. Therefore, organizations generally choose to compromise the video call’s effectiveness, when including a remote location, by using an audio link. This is often the only means that is used to bring the remote location into a multi - party video conference.

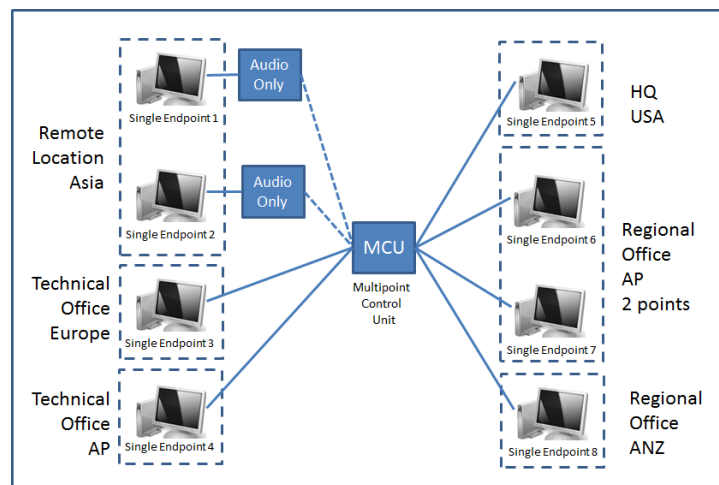


Figure 1 – Unconnected remote locations, legacy video conferencing technology and Infrastructure

<sup>1</sup> The term “legacy” is used to denote old, equipment intensive, video conferencing technology based on standards such as H323 (as used by Polycom, Cisco Tandberg, Radvision and Life Size), in comparison with new technologies based on H264 SVC (Scalable Video Codec) technologies from leading HD video conferencing application provider Vidyo Inc.

This configuration also has severe limitations due to the inability to share data, documents, and images from the remote location in real time and sometimes the quality of the audio link is compromised by low quality telecommunications networks in outlying areas. In organizations where the video participation of all parties, remote or otherwise, is deemed critical, the choice of satellite communications has been considered. To understand the potential of using satellite communications for video conferencing demands a broad understanding of the various service offerings and technologies.

## SATELLITE COMMUNICATION

Satellite communication uses Geosynchronous Earth Orbiting Satellites (GEOS), Medium Earth Orbiting Satellites (MEOS), or Low Earth Orbiting Satellite (LEOS) technology.

GEOS provides services from stationary satellites positioned to provide global coverage at 35,000 plus KM above the earth, each satellite within a constellation providing overlapping coverage to encircle the globe. There are a large number of GEOS operators and users, ranging from, governments to military and commercial businesses, telecommunication organizations, global media and entertainments conglomerates, and scientific consortiums. It is estimated that there are some 300 GEOS in orbit. MEOS and LEOS both provide services from constellations of orbiting satellites linked together and to earth stations to provide coverage across the globe. MEOS orbit at between 2000 and 35000 km above the earth; and LEOS between 500 and 2000 km above earth.

GEOS service providers include a number of organizations who provide bandwidth services which may connect the remote location to a (receiving) earth station and to the Internet via a GEOS satellite. These organizations are contenders to provide internet which may facilitate video conferencing. Typical of such GEOS related organizations are Inmarsat and Emerging Market Communications (EMC) referred to later in this paper.

MEOS operations will start in mid, 2013, from O3b, the world's first MEOS consortium. While bandwidth availability has been indicated at speeds which may support video conferencing, the costs and business model has yet to be announced. O3b may be a viable contender to supply the bandwidth necessary to deliver video conferencing to and from remote locations. LEOS (for example, services provided by Iridium) may be discounted as a suitable channel for video conferencing due the limitations of bandwidth delivered by LEOS (maximum 128kbps).

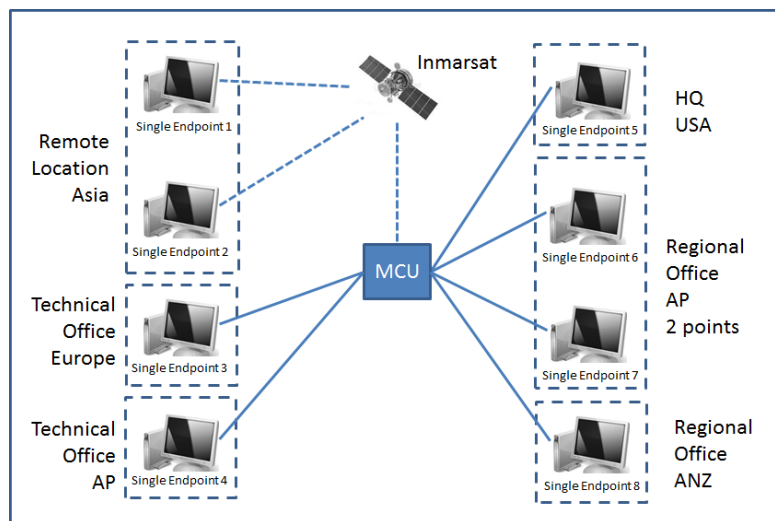


Figure 2 – Singalarly connected remote locations, connected to legacy Infrastructure

## EXTENDING VIDEO CONFERENCING

Taking the conventional, legacy video conferencing network and extending it to remote locations is possible via a satellite provider offering a VSAT<sup>2</sup> connection. Such a configuration is shown in Figure 2 (above). In this example, specific and proprietary “end points”, which are dedicated to video conferencing, are required at the remote locations. This example configuration includes the use of Inmarsat as a bandwidth provider. While practical and capable in providing connectivity, Inmarsat services are all provided on a “best effort” basis, therefore any contracted for bandwidth is still subject to deterioration in capacity and service when there are significant demands on the satellite.

## VIDEO CONFERENCING AT REMOTE LOCATIONS – A NEW PARADIGM

In the past three years, Vidyo ([www.vidyo.com](http://www.vidyo.com)) have brought a new “[disruptive technology](#)” into the market and created a means by which High Definition video conferencing can be delivered over the public internet using devices (end points) which are everyday items in the hands of employees of all levels and business executives of all types, wherever they may be – laptops, desktop computers, mobile devices (iPad), and Smart Phones. This same technology platform is extended to Conference Room Systems and Telepresence Suites, Vidyo video conferencing application is a truly ubiquitous platform. Gone is the need for expensive MCUs and proprietary end points, making video conferencing available simply, quickly, and truly scalable, at low cost. [Temasys Communications](#) provides Vidyo as a Cloud Service, creating even greater global access to HD video conferencing, on a subscription basis.

Stepping into the GEOS space with a unique satellite communication proposition is [Emerging Market Communications](#) (EMC) - a premier provider of hybrid global satellite and terrestrial communications. Utilizing a high quality, fully managed network, EMC offers maritime services, teleport services, and private, end-to-end satellite and terrestrial networks in more than 140 countries. EMC provides affordable “Always Available” On demand satellite capacity.

Using HD Connect from EMC, and a hosted Vidyo video conferencing solution from Temasys, accessing into one of the multiple Vidyo server banks located across the globe, an organization can bring remote location users into a video conference, with full data, document and video sharing capability (Figure 3).

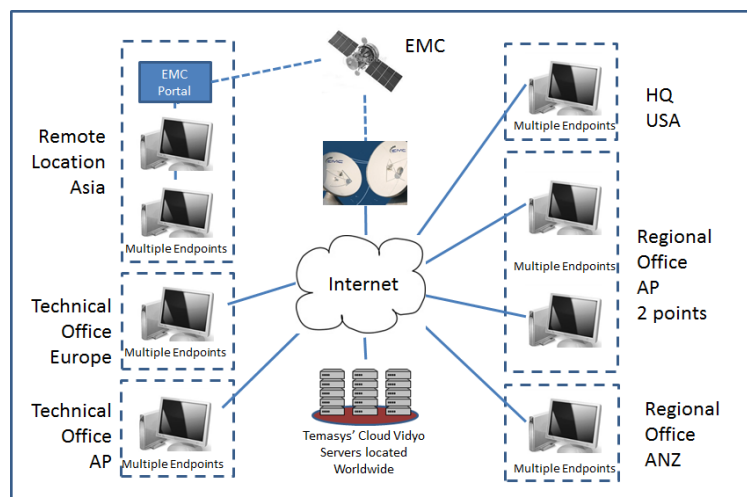


Figure 3 –Remote locations connected, without limitation to End Points across the Organization

<sup>2</sup> VSAT (Very Small Aperture Tunnel) communication relies on GEOS to beam small diameter signals which can be unique and dedicated thus provided higher band width capability.

Using the simple eight end point configuration as an example, the EMC – Temasys option reduces capital expenditure required by 80 per cent and monthly recurring charges are reduced by 72 per cent, compared to the legacy option (Figure 2). And, in addition to the financial savings, the possibility to expand scope and number of participating users can be achieved quickly and easily at minimal cost. If the number of participants rose from eight to 20, with a fifty percent rise in the satellite users, and a doubling of the numbers of other participants, dispersed globally, the monthly recurring cost would rise by a miserly \$3500 per month.

The incredible financial attractiveness of the EMC – Temasys proposition arises from Vidyo’s unique and patented architecture which securely and effectively levers everyday desktops, lap tops, and mobile devices, and the public internet, to provide a high quality and reliable HD video conferencing experience which rivals the best of the legacy technology and out performs most legacy propositions. EMC’s unique satellite technology brings remote locations onto the public internet at the click of a mouse, allowing the local Vidyo desktop application to connect to Temasys’ servers, and to users across the globe.

## CONCLUSION

The old, legacy ways of extending video reach to remote locations is costly and require expensive, cumbersome equipment, and these technologies are being made redundant by newer application based video conferencing technology, embodying Scalable Video Codec to handle the variations in the internet bandwidth, are brought to the market by Vidyo and Temasys Communications. Using EMC’s patented access portal which provides an always available and ready on demand VSAT link to the global internet backbone, joined with Temasys’ Vidyo Cloud service, users can be on line, from wherever they are located, in short notice and at minimal cost.

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We are changing the face of video conferencing, one Vidyo conference at a time.

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Temasys is a Vidyo Certified Reseller and a Global Service Provider. Vidyo was founded in 2008, and based in New Jersey, USA, (for information on Vidyo see [www.vidyo.com](http://www.vidyo.com)). Vidyo are recognized as the world leader in delivering secure High Definition Video Conferencing over the Public Internet. A recipient of numerous awards, Vidyo provides leading edge solutions using their patented H264 SVC technology which adapts to the variability in the public internet.



Temasys' global infrastructure employs a wide range Vidyo Servers, to provide full functionality and a comprehensive service. Servers are based in Asia Pacific (Singapore), North America (Fremont, California) and Europe (Amsterdam). Although almost the entire world is accessible today over the Temasys network, through 2012, Temasys will be extending its server network to South America, the Middle East, and China, this will extend and maintain a high quality service and manage the anticipated growth in our traffic.



Emerging Markets Communications provides mission-critical, end-to-end communication solutions to governments, non-governmental organizations (NGOs) and multinational corporations operating in remote regions of the world as well as providing infrastructure access services for GSM operators, PTTs and ISPs globally. As a vertically integrated service and technology company, EMC's Unified Communications (Voice, Data, Video) customers benefit from EMC's wholly owned and managed satellite and terrestrial MPLS network.