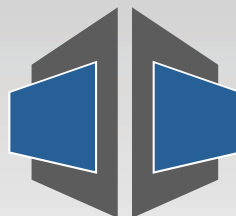# Desktop Video Conferencing

The Shape of Things to Come?

COMPARE BUSINESS PRODUCTS

Desktop Video Conferencing – A Fad or Something More?

There are thousands of video conferencing rooms of various sizes and quality all over the world. Why then, with so many facilities already available for high quality video conferencing are we talking about desktop video conferencing? Isn't this a step back?

Progress never halts – our imagination (or the lack of it) is the only issue. Look at three famous quotations:

- *"Everything that can be invented – has already been invented"* – a quotation (wrongly) attributed to the commissioner of the United States Patent Office in 1899.

- *"That's an amazing invention, but who would ever want to use one of them?"* Rutherford B Hayes, President of USA, 1876, talking to Alexander Graham Bell about the telephone.

- *"Who the hell wants to watch movies with sound?"* Harry Warner, president of Warner Brothers Studios, around 1918

I am sure if you look hard enough, you will find someone saying something similarly wise about desktop video conferencing.

Here is what we have to say:

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Key Issues with Room-Based VC Systems

Traditionally, one thought of video conferencing and telepresence as something that is horrendously expensive and complex. This perception is correct on several counts though there are improvements occurring. The key issues with the large room-based video conference systems are –

- **Costs** - modern desktop video conferencing solutions are available at a fraction of the cost of room-based systems, potentially saving millions of dollars.

- **Interoperability** – companies are realizing that older, proprietary systems are inflexible and do not allow for ad-hoc conferences. You can connect only to fixed locations – primarily within your own company. Modern work is not so rigidly defined. You need to work with people in locations that change daily. Increasing needs of businesses to outsource and use experts for specific niche tasks means that your systems should have the capability to create and tear down connections at will.

- **Collaboration** – companies have realized that simply talking face to face is not good enough. You need to share documents, view presentations, work on designs and do a hundred other things together to make your company more responsive and agile. If there is a complex fault in a component and an expert sitting on the other side of the globe needs to see this before she can support this need.

What Ails Room-Based Video Conferencing

- High costs
- Lack of interoperability
- Difficulty in collaboration
- Inflexibility

- **Inability to take advantage of latest improvements in technology** – room-based systems from most major suppliers often rely on proprietary systems and can be inflexible. They need specialist manpower to manage them and coordinate conferences. Modern systems that use cloud based video conferencing systems are freed from the complexities of management and the need to hire additional staff. Advances in smartphone and tablet technology, accompanied by improving cellular and Wi-Fi connectivity is giving rise to opportunities for ad-hoc, on the road video conver-

sations that elaborate systems are unable to provide.

How Companies Actually Use VC

A December 2012 study comprising 4737 respondents who were known users of video conferencing for business gives some great and valuable insights[1]. Some quick findings –

- While reduction in traveling costs is an important consideration, the key reason to adopt video at work is the increase in productivity. The real benefits lie in increasing business agility and improving decision making.

- Once people get used to video, they tend to use it regularly, perhaps once a day, definitely more than once a week.

- Users do not rely on using the video conferencing room alone. Desktops, notebooks, VoIP video phones, tablets, smart-phones – all are being put to regular use. People tend to use more than one device to video conference.

- People prefer to use the tablet to the smartphone to conference. Screen size matters.

| |
|---|
| **Video Conferencing in the British Medical Association** |
| 1,000 desktops in the UK
140 "from home" workers
25 associates in different countries |
| *"We use video conferencing like other companies use the telephone."* |
| George Birch, IT Support Team Leader |

- Users are exploring multi – vendor solutions. Compatibility across systems is becoming important.

- Video conferencing while on the road is set to double while conferencing by workers working out of homes will treble. Video from home will be an important revenue stream in the future.

- Greater density of video connected people leads to greater value from the system as Metcalf's law[2] takes over. (The value of a network rises as the square of the number of nodes in it).

- People know they can do better. Even though

many companies are using video for a number of innovative purposes, the users know that they are still not extracting all value that they can. IT managers and video conferencing tool venders need to be more imaginative and open minded about the technology.

Frequency of Use

When a large number of respondents – all confirmed video conferencing users – were asked about the frequency of use, nearly 65% were found to be using the technology weekly or even more often. One fifth used it once in a month or so while the rest used it a few times a year. Clearly, among companies that have this facility, regular usage is the norm.

Frequency of Use

Few Times a Year 14%

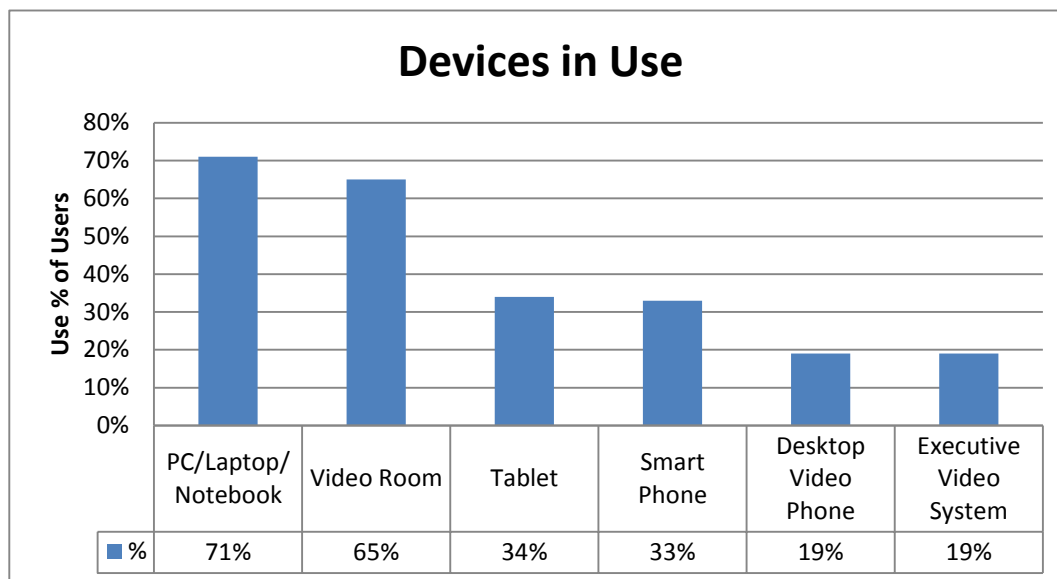Daily 25%

Monthly 21%
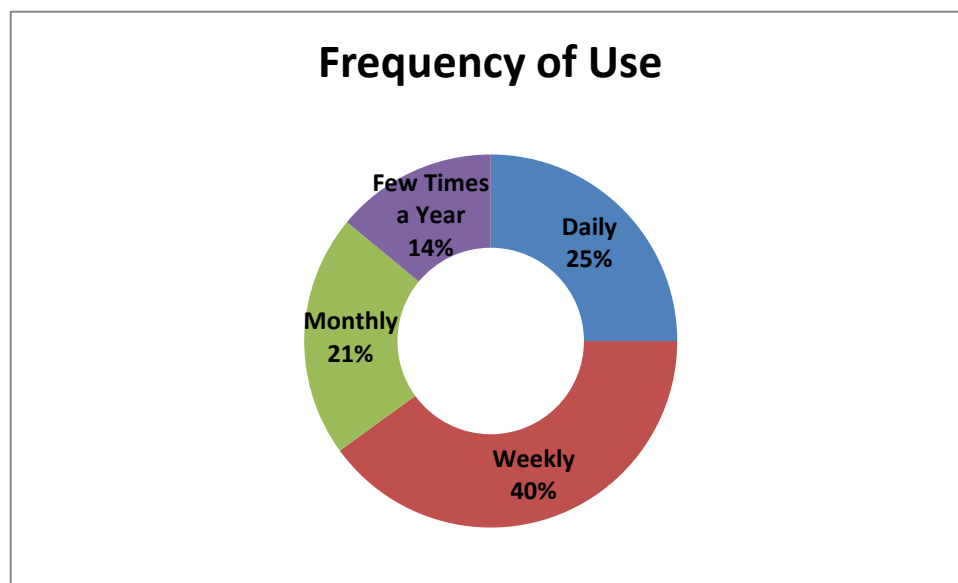
Weekly 40%

Obviously, those who use VC daily or weekly are not using it to merely replace business travel. People seldom travel so much. There is greater value being found than merely savings on travel costs.

Devices in Use

This is an interesting question because it shows what is prevalent today and the shape of things to come. To begin with, video conferencing in companies is not limited to a single device type. Even where there are elaborate group video rooms set up, users use multiple devices and the use of desktop video

conferencing is actually quite prevalent. See the data below –

Devices in Use

	PC/Laptop/ Notebook	Video Room	Tablet	Smart Phone	Desktop Video Phone	Executive Video System
%	71%	65%	34%	33%	19%	19%

Data shows that desktop video conferencing is already quite common. Even though desktop VC may not have been sanctioned officially in large companies, the use of freely available, personal video conferencing clients (Skype etc.) is allowing individual to collaborate and get their work done.

Even though desktop video phones and executive video systems are not in extensive use, they still seem to have a role with one fifth of use being attributed to each.

Tablet and smartphones taken together already equal the share of other major video conferencing systems. This will only increase as better connectivity becomes available. Increasing availability of video to people who are on the move will open another avenue of increasing effectiveness.

If the same data is examined by breaking it down between SMEs and large companies, it is seen that SMEs make greater use of desktop based systems whereas large companies prefer more formal video rooms. Obviously, affordability has a role to play in this choice as well. Both types of companies use smartphones and tablets in approximately equal measure.

When employees who were already using video conferencing were asked what their company was actually using VC for, these were the answers they gave –

Use	% of users polled
Meetings with customers and partners	71%
Remote training	60%
Interviewing candidates	44%
Remote visual inspection/designs/troubleshooting	27%
Online buying/customer support	26%
Supporting business continuity	25%
Experts' interaction with customers	14%

Look carefully at this list. How many of these tasks need a dedicated high quality video telepresence room? Practically every role in this list can be met by using more versatile, desktop / mobile based video conferencing systems. Some applications such as assuring business continuity simply demand a flexible, Internet based solution.

While the uses listed above result in a reduced need to travel, more importantly, they result in much greater capability and new opportunities for the business. Take for instance interviewing candidates. By being able to video conference with prospective candidates, HR managers are able to explore a much large number of prospective employees from many diverse regions. The company has a richer pool of candidates to select from.

When video conferencing allows your experts to interact with clients, it gives you opportunities that simply did not exist earlier. You are able to resolve customer issues better than if you had to make your expert travel to each site. The same expert can handle a larger number of issues. Customer satisfaction rises, so does repeat business.

Consider remote visual inspection of a machine part - say a drill in an oilfield in the Middle East. In an earlier era, an expert would have to travel and he could take considerable time to reach depending on the location. After an assessment, rectification would begin which could involve movement of spares

etc. All this while the expert is unavailable for any other work and critical equipment is off line. A remote visual inspection makes a big difference to the repair time.

The Need for Desktop VC

A large number of users who were already confirmed to be familiar with video conferencing, were asked what developments would make them use the technology more frequently. The answers showed that users were not so much concerned with the quality of the images or sound – although there has to be a minimum acceptable level. They were more concerned with the ease of use, ready availability and the capability to have ad-hoc video conferences.

When users were given a number of choices and were asked to select the ones they felt would make video conferencing more prevalent, the responses they gave were very illuminating. See the table below -

Feature	% of respondents wanting
Ease of use	75%
More accessibilty	85%
Ad-hoc participant list	94%
Video available at my work station	80%
Available from within applications	83%
Available on mobile devices	78%

Every response above shows that there is a pressing need for a video conferencing solution that is not highly structured and formal. A solution that can accommodate participants on as required basis (colleagues, clients, sub-contractors, developers, testers, lawyers) and one that can function when any number of participants are not connected to a LAN but are using their mobile sets.

The Challenge

Video conferencing has matured as a technology. Moving past the restrictions imposed by ISDN, it has moved on to IP with all the attendant benefits. There are proven advantages of video conferencing in improving collaboration and decision making, reducing travel costs and supporting flexible and dispersed work.

The difficulty lies in making video conferencing part of regular work. The challenge also lies in making it available to a larger user set, people who could be working out of homes or on the road or working with people who are not part of your well established video conferencing facilities - think of your suppliers, sub-contractors and clients.

The difficulty also lies in making video conferencing spontaneous and natural. You are in the middle of a complex piece of work and feel the need to discuss your design with a colleague. The phone and email are quite inadequate. You need the ability to initiate a video conference with your colleague, from within the application you are currently working on. Share the design, work on it together, see the same picture and evolve better ideas together. All of this while ensuring that your connection is secure, the picture quality is good and the discussion is recorded and stored in a safe location.

> How to make video conferencing part of regular work? Make it possible no matter the location. Make it natural and reliable.

The real challenge lies in not knowing where your co-worker is at this precise moment. She could be at her desk, on the road, in the airport or anywhere else. The video conference must take place regardless of location and device.
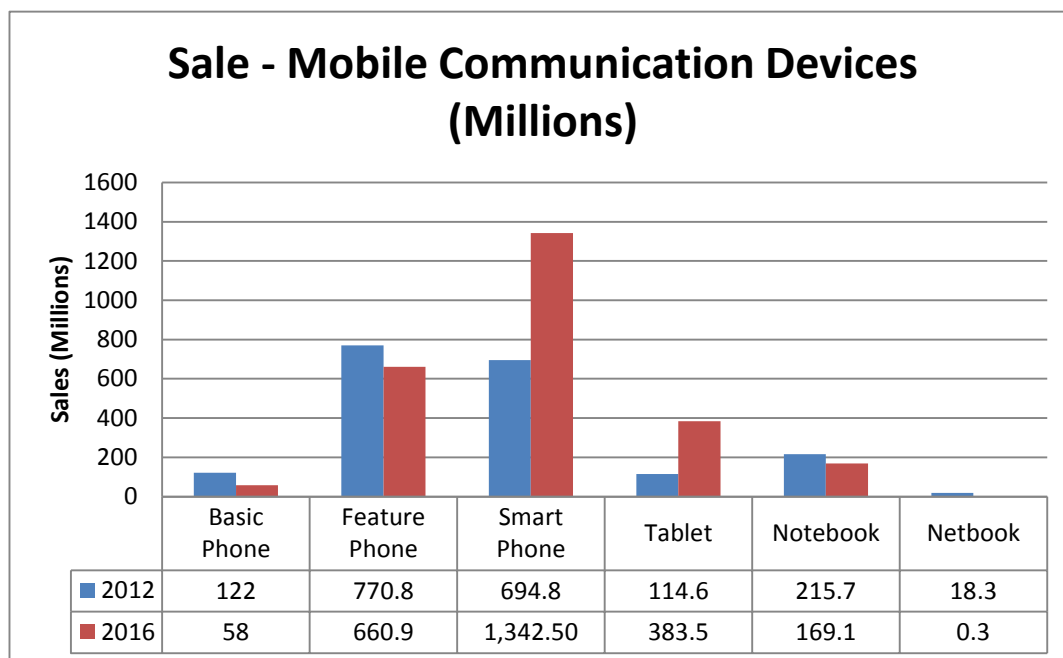
For these reasons and more, video conferencing is moving out of the board room and on to desktops and mobile devices.

What Supports the Demand for Desktop Video?

There are several reasons why there is a rapidly increasing demand for business related video conferencing applications. Technology and individuals have come together in such a way that desktop video conferencing has become possible as well as practical. The key reasons are –

Bandwidth - bandwidth has ceased to be much of an issue. Post the dot-com bubble, there is an enormous overcapacity in fiber optic cables. Telecom companies thought that this investment would pay them heavily in the future, but with the advent of technologies such as wavelength division multiplexing etc. the capacity of existing networks increased by as much as 100 times. As a result, there has been an exponential drop in bandwidth charges. Applications that were impractical just a decade ago are suddenly possible.

For example, New York has seen bandwidth costs reducing by 50% year on year and at the end of the second quarter of 2012, they were about $3.50 per megabit[3], figures for the rest of US and most of the developed world show similar trends. Of course most end users pay a bit more than this because of costs of last mile connectivity etc., but the overall trend remains.

Sale - Mobile Communication Devices (Millions)

	Basic Phone	Feature Phone	Smart Phone	Tablet	Notebook	Netbook
2012	122	770.8	694.8	114.6	215.7	18.3
2016	58	660.9	1,342.50	383.5	169.1	0.3

Hunger for video – with bandwidth being so affordable, people are no longer satisfied with static images sent via email. This is more prominent in the younger generation that has grown up with streaming video. As this group is entering the workforce, they are applying their knowledge of rich media to collaborate better with colleagues and clients all over the world.

Proliferation of mobile devices – the increasing proliferation and capabilities of smartphones and tablets are allowing users to work while on the move[4]. The work day is extending and individuals can be productive regardless of where they are. Basic phones and notebooks are seeing declining sales while tablet shipments are anticipated to grow at a Compound Annual Growth Rate (CAGR) of 35%. See the graph below for a view of the mobile device landscape between 2012 and 2016.

The graph of growth rates is even more instructive. Growth is seen only in smartphones and in tablets. Every other mobile device is going to see negative growth.
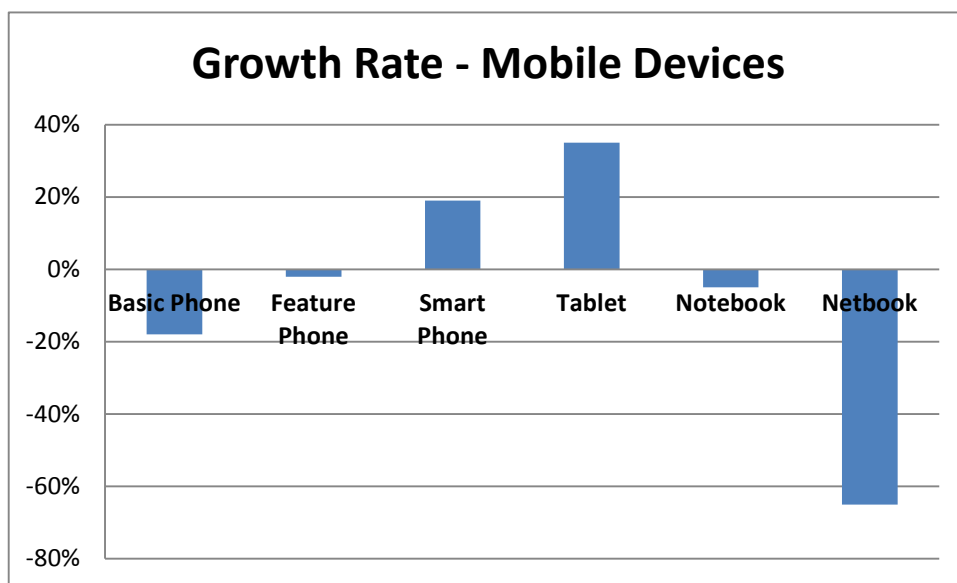
This data has implications for video conferencing. With individuals who are going to be increasingly mobile, video conferencing on the move just cannot take off unless there is connectivity. Fortunately, there are 3G and 4G networks and increasing availability of Wi-Fi in public places.

Increasing 3G / 4G connectivity - There is a rapid change underway in mobile connectivity as well. 2G connections (currently numbering about 4.8 billion are set to see a decline while 3G and 4G connections

will increase. By the end of 2012, 3G networks were in place in about 185 countries - run by about 500 operators. This implies that about 75% of the world's mobile users have the potential to access 3G services. By the year 2017, 3G and 4G connections will account for slightly more than 50% of the mobile connections. The writing for 2G is on the wall and Docomo in Japan and SK Telecom and KT in South Korea have already shut down 2G networks to make spectrum available for 4G[5].
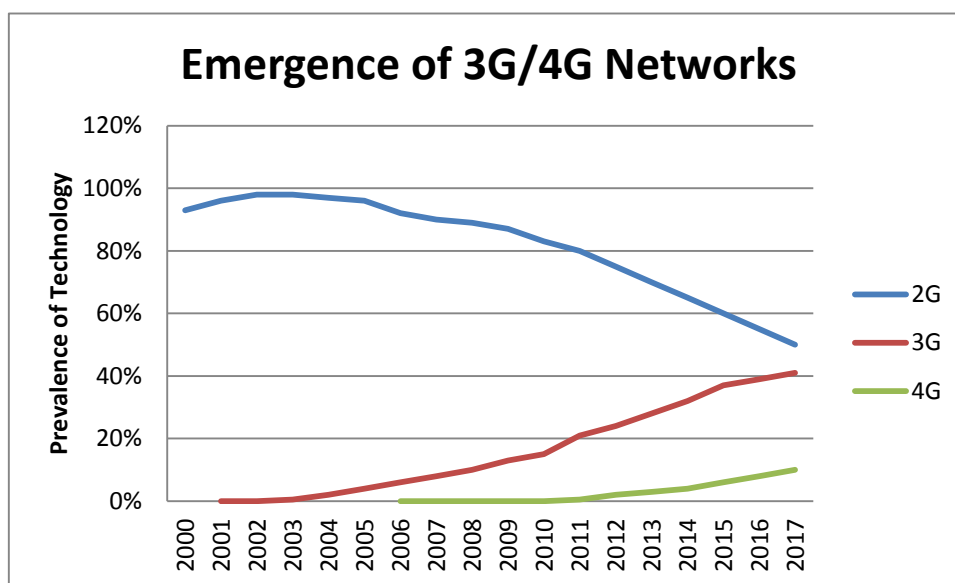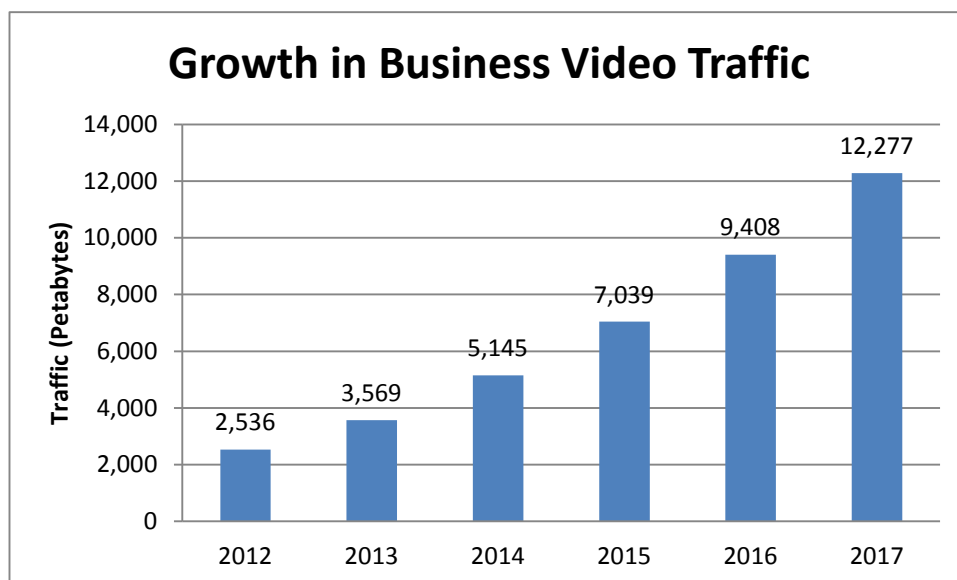

Much of this high speed connectivity will go to fuel higher capacity applications for smartphones and tablets. Video conferencing will be an obvious gainer.

How is Business Video Traffic Growing?

Cisco should know. After all the bulk of Internet traffic runs on Cisco routers and other networking equipment. Cisco has taken data collection and analysis to a level where they are able to measure just about anything that moves on the Internet.

As per details on Cisco website[6], business video traffic is going to grow at a cumulative annual growth rate of about 37% between the years 2012 to 2017. The graph shows this growth in petabytes (one PB = 1015 bytes or 1000 terabytes).

Growth in Business Video Traffic

Traffic (Petabytes)

Year	Traffic
2012	2,536
2013	3,569
2014	5,145
2015	7,039
2016	9,408
2017	12,277

If any more pointers to where desktop video conferencing is headed are needed, look no further than Microsoft. Microsoft's Lync communication system works intimately with the cloud based Office 365 suite of applications to give users instant messaging, Voice over IP and desktop video conferencing while they work.

Since Lync is linked to the Exchange Server, speaking to colleagues is as simple as clicking their name in a directory listing. Lync is not the only such application in existence. There are a number of others that give similar capabilities. Some of these have a free service as well. Besides Lync, you could check out the following (listing alphabetic) –

- Adobe Connect

- Brother OmniJoin

- Cisco WebEx Meetings

- Citrix GoToMeeting

- Google + Hangouts

- Skype 5.10

The trend with all of these services is to move away from being bound to proprietary hardware. Practically any computer with a webcam and browser or a tablet / smartphone can run these applications. Most run on a standard browsers while others may use a local client. The key issue is that they are all leading to a world where video conferencing is as natural as walking into the neighboring cubicle - and just as easy.

The Way Ahead

As has been brought out earlier in this paper, small and medium businesses tend to go more for desktop video conferencing systems. These businesses do not have the luxury of large support staff and high performance networks. They need to work with what is commercially available readily.

In most cases, you would be looking for a cloud based service. A number of vendors are available in this space. Some have already been mentioned briefly in the previous few paragraphs.

Setting up takes minutes. You do not require dedicated hardware, most systems will recognize the hardware that your participants are using and will make appropriate adjustments to use them optimally. All cloud based systems come configured with standard settings that allow them to negotiate your firewalls and proxy servers (if any). Therefore *you do not need any additional manpower* to run your VC systems.

Cloud-Based VC Systems

Costs: **Down**

Implementation Time: **Down**

Capability: **Up**

Adequate security is built in and your conference will be secure whether you are working with someone in your own premises or with a client half way across the world.

Since costs are based on usage, there is no upfront expenditure other than on webcams or microphones. Even here, you are free to choose the hardware that suits your purpose. HD cameras are quite affordable and this is about all that you need to buy.

Since all the complex hardware is in the cloud, you simply need to have an Internet connection. Shared connections are fine; the system adjusts to the bandwidth available. Most good cloud based systems automatically manage every conference participant's bandwidth, video quality and the processing power. This ensures that the best possible experience is delivered within the limitations of these parameters.

Here is the icing on the cake – when you upgrade your equipment – say from a dual core to a quad core processor, your video conferencing capabilities are automatically expanded. In a room-based, proprietary system, you are wedded to the version you buy unless you upgrade.

Most systems will give you a collaboration tool bar like those featured in the Microsoft Suite programs (Word, Powerpoint, etc.)[7]. The capabilities are self-explanatory.

All conferences can be recorded and played back at will.

Conclusions

VC has for far too long languished in the domain of a few, privileged individuals and was not available to many users in companies. This situation is changing rapidly and with the arrival of desktop video conferencing, large numbers of users are being brought into the network. This is bringing great benefits to enterprises.

While travel reduction is the first benefit that comes to mind, the real benefit of video conferencing lies in the improved collaboration and coordination opportunities it provides. Modern systems are far more flexible as compared to earlier ones and as a result, you can conference with just about anyone who has an Internet connection. This is giving rise to new ways of working and making companies far more agile and efficient. This is the real benefit desktop video conferencing brings to companies.

The desktop paradigm is being extended to the mobile and the tablet as well. If you have broken the shackles of room-based video conferencing, why stay tied to Ethernet cable? Cloud based video conferencing systems are taking video to practically any device that can run a browser and can connect to Wi-Fi or 3 / 4 G cellular networks.

Video conferencing is well on its way to becoming an essential tool of corporate communication. It is here to stay. Competitive companies can get even better by making the best use of the technology.

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