

Putting you in the picture – International Video Conferencing over Internet.

The company: Trustees Executors, a mid-sized financial company providing front-and-back office services to both the corporate and private sectors.

The brief: to improve the communication between the companies' geographically distributed management structure (Auckland/Wellington/New York).

The solution: Dedicated video conferencing facilities. Via internet.

The timeframe: solution implemented within 4 weeks, 18 months ago.

While video conferencing has been utilised in NZ for over a decade, only recently have the technologies and the NZ communications infrastructure allowed effective conferencing over internet. Prior to that, reliance has been on communicating via the restrictive and costly ISDN service using dedicated phone channels.

Trustees Executors were one of the early adopters of IP-based video conferencing for their corporate communications. IP provides a strong strategic advantage but comes with limitations and may not always provide the most cost-effective communications medium.

This paper details the project findings and the case both for and against IP over ISDN for corporate video-conferencing.

Strategy

The specific requirements from Trustees Executors were to

1. establish dedicated video conferencing facilities within the company
2. that would provide robust communications and acceptable quality of service between their distributed management team
3. over both national and international links.

This facility was to provide a key strategic advantage with corporate communications and (potentially) considerable savings in travel costs and time. Prior to this Trustees had no video conferencing capability whatsoever.

There was a further strategic consideration to ensure rapid adoption of this technology within the company, and that was to ensure this service was perceived as "free to use" by the staff. Fiscal constraint should not be a governing factor in its usage. The internal accounting policies could make or break the success of this technology.

Bottom-line: The accounting policy can make or break the adoption of new technologies. Fiscal constraints can lead to reluctant adoption of technology benefits if not managed carefully.

Presentation

Though there are standard protocols for video conferencing, the high end vendors – Tandberg, Polycom – have their own proprietary protocols that enhance these

standards. For greatest efficiency the nodes in the VC loop should share at least a common make of product and ideally a common model to ensure maximum protocol compatibility and optimum data compression.

As the New York node of Trustees was already equipped with a Polycom VSX7000 this set the standard for the Auckland and Wellington offices. The cameras were matched with 42" plasma screens and permanently located in the larger meeting rooms, one on a wheeled plinth and one wall-mounted.

There was no question that to ensure robust reliable systems the choice was to run with the high-end units. Web cams would just not cut the mustard in the board rooms.

Bottom line: For mission-critical requirements commit to purchasing top-of-the-range units and arrange dedicated facilities. Select matching units to optimise efficiency.

Communication

While most of the rest of the civilised world has abandoned ISDN in favour of IP, Australia and NZ are lagging. Should Trustees adopt IP for their video conferencing to communicate with the rest of the world or ISDN to communicate locally? IP and ISDN do not communicate except through cumbersome and expensive third-party bridging services.

After trialling IP-based video conferencing (thanks, Asnet!) it was apparent that the technology had matured to the extent that that IP based video conferencing was viable. And not just for webcams on 19-inch monitors; the context for Trustees was 42-inch plasma screens in boardrooms.

The cost of communications was the next consideration. As the company already had already implemented a national communications infrastructure it made sense to if possible, piggy-back off this for IP-based video conferencing. The current network was underutilised even with their recent VoIP telephony implementation. It was also priced at a fixed monthly charge irrespective of the amount of traffic so followed the desired cost model.

However, further testing showed that even with optimised protocols a minimum bandwidth of 384KB was required for acceptable quality of image. Though the communication protocols dynamically adapt to lower bandwidths, the subsequent pixilation and image degradation was hard to tolerate for any extended period.

The local internet access could accommodate the bandwidth requirements. The international internet access could not. A capacity upgrade would be required.

Being a relatively early adopter of IP-based video conferencing a major concern was the unregulated bandwidth capacity of the internet. While private networks can be capacity controlled and data prioritised, this cannot be done with the public network. Loss of bandwidth results in pixilation, jitter and dropouts. Symptoms familiar to most webcam users.

A further consideration was security. ISDN uses dedicated end-to-end phone links so security is not an issue because the physical medium is controlled. But this is not the situation with IP - all that is required to establish a video conference over the internet is the network address of the other party. If their VC unit is turned on and set to auto-answer then the conference will commence with no notification or prompting. Gate-crashing like this is highly intrusive especially when the calling party is unknown.

All things considered, the choice was made for Trustees Executors to go the radical IP route rather than the typical ISDN.

Outcome

In short, a complete success story. Right from day one the video conferencing facilities were in use between 2 and 4 hours daily.

1. A simple one-page “how to use this” document was kept with the units and provided adequate training for most staff on most occasions.
2. The concerns over unregulated internet traffic proved to be unwarranted. Testing typically show less than 0.01% packet loss over a 1-hour video conferencing session between Wellington and New York.
3. There was unanticipated contention between the video traffic and VoIP telephony traffic on the internal network resulting in disappointing packet loss. There were two choices for resolution:
 - a. the Path of Righteousness – applying quality of service to the video traffic to ensure packet prioritisation, or
 - b. the Path of No Further Budget – using the internet instead of internal network.The second option it was, and it worked well.
4. Security and access control. To prevent gate crashing, the units were initially left on but with the microphones muted. Some staff had issues un-muting the microphones so eventually the units were simply switched off when not in use.

Bottom line #1: *Provided you have 384KB bandwidth available, use IP for video conferencing both nationally and internationally. It is clean, simple and flexible.*

Bottom line #2: *But in doing so, accept that there are very few companies in NZ or Australia that you will (at present) be able to invite to your video conference. This is changing but we're not there yet.*

Bottom line #3: *Don't forget security. It's very disconcerting having the nearby camera come to life when you least expect or want it.*

Cost-Benefit Analysis

The initial cost-benefit analysis was straightforward though based on an erroneous assumption. The business case assumed that video conferencing would reduce the

requirement for face-to-face meetings by some 80%, with the consequent reduction in travel time and personnel costs offsetting the capital expenditure of VC within just over 6 months.

However the assumption that there would be an 80% reduction in travel requirements was, in hindsight, too optimistic. It eventuated that the Video Conferencing supplemented rather than replaced the existing travel schedule. With the video conferencing facilities, face-to-face meetings previously held weekly were now held fortnightly and supplemented with daily ad-hoc video conferences.

Bottom line: *Video conferencing will increase the number of meetings rather than reduce cost of travel.*

Cultural changes

The company adapted to the technology more rapidly than anticipated. The benefits to the management team could not be overstated.

1. Less formality. Meetings, even international, could be called ad-hoc for relatively trivial reasons.
2. Rapid adoption not just by the management team but also HR, operational and customer teams, for inter-departmental communication.

The culture shift was complete one morning a few months after implementation, when one of the popular Wellington staff cut a birthday cake for morning tea and the Auckland staff video-conferenced in to join the festivities.

Bottom line: *The world is indeed a smaller place with video-conferencing over internet.*