

Integrating voice, video and data networks

Case Study:

Steve Johnston
Manager, IT Infrastructure
Edith Cowan University
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About Edith Cowan University

- Origins go back to 1902 when it began as a teaching college.
- Has three metropolitan campuses in Perth and a regional campus in Bunbury, a city 200kms south of Perth.
- Has more than 300 courses are offered through five faculties.
- Western Australia's second largest university with approximately 2,500 staff and 22,500 students.
- International enrolments exceed 3,000; students originate from over 80 countries.
- ECU is a market leader in education to the service professions.

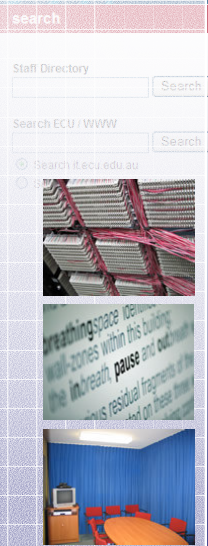


Installation Timeline

- 1999 – Network upgrade (Nortel Networks)
- 2000 – Core upgrade (Nortel Passport 8600)
- 2001 – Firewall, proxy, internet authentication, etc.
- 2002 – Restructure, resilience, appliance installation, etc.
- 2003 – VoIP Trials, Polycom Video Conferencing, etc.
- 2004 – PABX Upgrade, SIP Trial commences, etc.
- 2005 – Wireless Campus Project (Nortel Adaptive / Nortel Mesh).

The ECU network developed slowly over approximately 5 years.

The network required considerable maturity before this pilot project was possible.



Network Landscape

- 22,500 student users, 2,500 staff users.
- 4,000 workstations deployed across the University (including 600 Apple Macintosh PC's).
- 2,000 fixed line analogue and digital telephone handsets (400 mobile telephones).
- 400 Nortel BayStack 450's in 140 stacks spread across all campuses of the University.
- 100 servers of various description (mainly Linux/Intel Windows/Intel).
- 20 Passport 8600 Ethernet Routing Switches (core routing infrastructure).
- 6 fixed video conference locations.





Requirements Specification

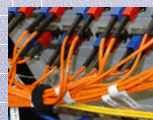


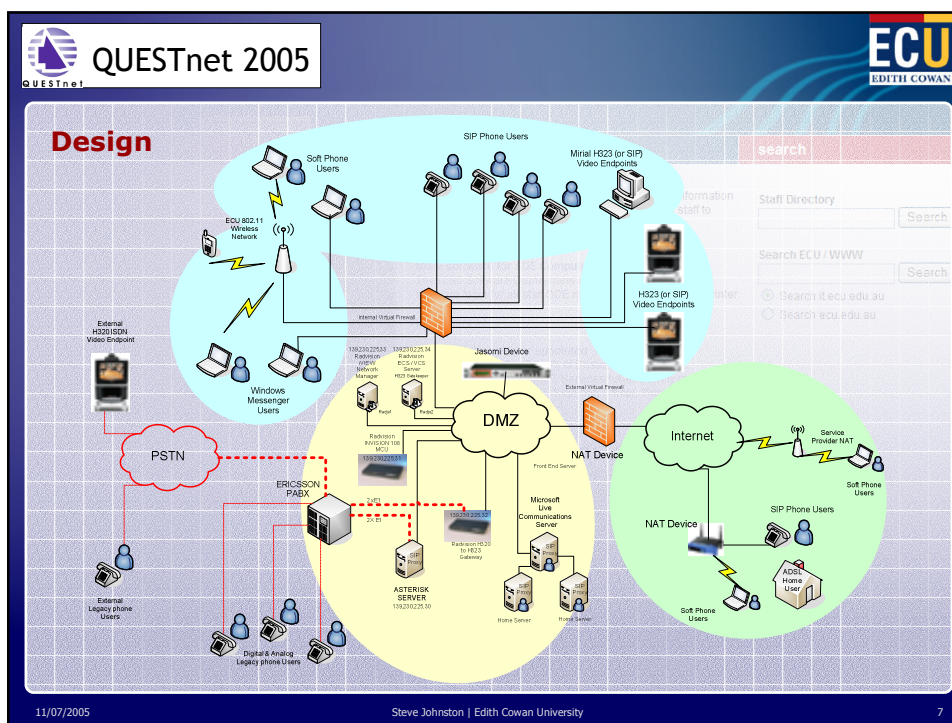
- **Integration** – protecting the investment in traditional PABX equipment, existing video conferencing equipment, external video conference facilities, etc.
- **Voice over IP** – enabling the integration of voice services over IP.
- **Video over IP** – enabling the integration of video services over IP.
- **Multi-conferencing** – allowing multiple clients (using multiple technologies or protocols) to communicate with each other simultaneously.
- **Multiple protocols** – allowing various protocols to integrate with each other 'seamlessly'.
- **Flexible clients** – 'anywhere, anytime, any client' – anything from fixed Polycom end points, high-end desktop cameras (such as Polycom Via Video), low-end desktop cameras (using SIP or H.323), traditional phones, mobile phones, instant messaging clients, etc.
- **Video capture** – the ability to include a recording device in conferences.
- **Exchange Integration** – the ability to automatically schedule resources using the Exchange/Outlook calendar.



Equipment List

- **Ericsson MD110** – installed in 1994. Provides interconnection to telecommunications carriers; supports approximately 2,000 fixed-line handsets across the University.
- **Polycom Video Conference** – 6 fixed video conference end-points across University campuses.
- **Asterisk 'Soft-PABX'** – Linux-based freeware soft-PABX.
- **Radvision Devices** – iView network Manager, ECS/VCS H.323 gatekeeper, inVision MCU, H.320/H.323 gateway, etc.
- **Starbak** – encoder (streaming video gateway), VCG (recorder).
- **Jasomi Device** – session border controller (overcomes issues with NAT and firewall).
- **Microsoft Live Communications Server 2005** – instant messaging client, voice client, video client, etc.





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Trial Result

- Successful integration between all clients within the System.
- Protocol integration – H.323, H.320, SIP, analogue, mobile, etc.
- Voice, video, data sharing the same infrastructure (IP / Ethernet) – convergence.
- Web conference support – Starbak
- Multi-conference support (multiple end-points, multiple protocols, etc).
- Unexpected demand – instant messaging growth (all staff / all students on LCS 2005).
- Lecture 'to camera' success using Starbak and other infrastructure.
- Video streaming success over slow networks (one way).
- Development of a very successful, integrated communications system.

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- Additional fixed video conference locations.
- Additional multi-conference connections (currently limited to 20 concurrent connections).
- Integration with AARNet (SIP, H.320, H.323, etc).
- Integration with external instant messaging clients (ICQ, Yahoo, MSN, etc).
- Instant messaging 'controls' (file sharing restrictions, peer-to-peer restrictions, security, virus issues, etc.).
- Marketing requirements: advertising availability, usage, documentation, etc.
- Traditional PABX replacement – green field locations such as new buildings, etc. (with suitable integration capability).
- Software/hardware SOE.
- Support for 'SOE' work-from-home configurations.



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