AARNet: Supporting e-Research collaboration

Dr Greg Wickham

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About AARNet

- Australia’s Internet Service Provider for Research and Education

  *Australia’s Academic and Research Network*

- Not-for-profit company limited by shares
- Shareholders are the universities and CSIRO
- Board elected by shareholders
- Shareholders are also clients
- AARNet holds a carrier license
Statistics

- **Universities**
  - 38

- **Students**
  - 700,000

- **Staff**
  - 75,000

- **Offices**
  - 6 (Brisbane, Sydney, Canberra, Melbourne, Adelaide, Perth)

- **POP**s
  - 30

- **Equipment Locations**:
  - 150+

- **Built fibre**
  - 300Km +

- **Staff**
  - 42

- **Core Network**
  - 5,800Km of fibre
AARNet International Connectivity
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CERN Large Hadron Collider

ATLAS Detector

LHC Control Room
Australian Synchrotron
Medical Demo – Aug-08 (APAN-26)

Live surgical demonstration performed at Kyushu University (Japan)

Professor Stitz (Royal Brisbane Hospital)

Professor Bokey (Concord Repatriation Hospital)

DVTS – STD DEF @ 30Mbps
Uncompressed HD Video (1.5Gbps)
Compessed HD Video
(30 – 150 Mbps)

At the conclusion of the two-way interaction, researchers and technicians in San Diego and Melbourne (on screen) engage in a ‘virtual high-five’ salute after two months of intensive collaboration to get the OzIPortal-Calit2 link up and running. [Photos by Alan Decker]
Super Computing 08 – Nov 08

Streaming 4K compressed video to UQ

- Streams from the US
- 4 x HD resolution
- Sub 1Gbps
Supporting Collaboration

The Collaboration Network

australian access federation

eRSA eResearch SA

enabling discovery, innovation, collaboration

National Computational Infrastructure

National Video Conferencing Service

Australian National Data Service

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Network Infrastructure

- Designed in 2003, deployed in 2004
  - Life span 7 years
  - Limited equipment choices
  - Vendors weren’t “green” in 03/04

- Vendor’s “greening” up

- We are at the mercy of the vendors
Network Infrastructure

- Requirements priority:
  1. Functionality
  2. Performance
  3. Green

- Members want cost effective performance
  - Driving down costs
  - Features being used to maximise infrastructure investment
  - Side affect – sometimes it’s green
Systems Administration

- Two distinct areas:
  - Network Monitoring / Accounting
  - Corporate Systems (email, telephony, business administration)

- Server Strategy
  - Virtualisation - Load up 1 server rather than N lightly used
  - 2.5” HDD – smaller, less heat, environmentally more tolerant
  - Saves $$$’s
  - … and green

- ACER
  - Recycling
System Administration

- Equipment in
  - 30 POP sites (major locations, capital cities)
  - 120+ distributed locations

- Corporate servers
  - Virtualised – From 30 to 4 + a SAN

- Storage
  - Currently 300TB, soon to be 550TB
  - Moving to a HSM solution using disks
  - RAID 10 Rule of ‘3’ (c/w RAID5 > 12TB)
Video Collaboration

- “How green is an airplane seat?”
  - Apples and apples?

- Video is NOT the only strategy
  - Vendors use it as a “green” marketing strategy
  - Mehrabian’s Rule (7% - 38% - 55%)

- It’s a line call as to whether video alone saves $$$’s.
  - ~2 year life cycle on equipment
Video Collaboration

- Standards Video Conferencing
  - Each office has a VC system
  - Moving towards HD

- Desktop based conferencing
  - Cisco VT advantage
  - Not great quality
  - Gigabit PCs require new phones (equipment life cycle)
  - Supplements the phone call
    - “Head over the top of the cubicle”
    - Non verbal communication queues
  - Used in preference to room based VC systems
Video Collaboration

- Video landscape is evolving
  - Not all standards based systems interoperate as you would expect
  - There are a lot of ‘non standards’ based products

- Vendor’s tout:
  - “No more travel”
  - But in reality it is an adjunct technology

- For us...
  - Face to face meetings still important in critical decision making
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Conclusion

- Not green by design:
  - Functionality is a primary requirement
  - Performance
  - Cost control
  - Green

“It’s not that easy being green”
AARNet – Your Network

Questions?