

Accounting at gigabit speeds the trials and tribulations

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Objectives

- To limit Internet costs by applying a charging model
- Enable gigabit Internet to the core of the network
- Enable greater variety of Internet services
- Save money for staff and students
- Improve security for QUT Internet users

Scope of the Project

- Review all areas related to provision of Internet services at QUT
- To investigate new products and methodologies in which to provide Internet services
- Provide Internet access at gigabit speeds

Main Project Components

- Accounting for usage
- Security
- Group based security policies
- Gigabit throughput
- Compliant with backend systems
- Reliable logging
- Fully redundant systems
- Caching of data

Benefits of IP over session based accounting technologies

- No client side configuration required
- Less times authentication is required as longer overall sessions
- Less processing grunt required as the system counts bytes. It does not record http session start and stops
- Additional information available to the client due to web page for login

Benefits of IP over session based accounting technologies Cont.

- Multicast, VoIP and other protocols supported
- Real audio and other unusual applications handled by default
- User based policies easier to manage
 - Traffic shaping
 - Firewall profiles
 - Accounting profiles
- Data packet size does not significantly affect processing overhead

Disadvantages of IP over session based technologies

- Requires a stateful firewall for the same level of user protection
- Different security considerations
 - Spoofing
- Greater load on DNS
- No multi-user host support
- In the case of a total router failure some accounting data is lost.

Our choices to date

- Proxy appliances deployed in transparent mode
- IP based accounting system
- Stateful Firewall with extra features
- See the notes attached to this slide for what we compared between different solutions

How QUT clients will be affected

- A Different system yet with minimal visible change
 - Web page for login
 - Reporting will be different
 - Required to leave browser open for connection
- Applications configured through socks
 - Will not work upon change to new system
 - Will need to remove settings before applications will function
- Requires an advanced browser or static assignment

Affected Network Components

- DNS service
 - Load increase as PC's going direct instead of authenticated proxy caching requests
- Billing system
 - Default accounting system outputs do not equal expected billing system inputs
- Network design
 - At least for us this required significant change

Issues

- Advanced Browser (Vendor system dependant)
 - Http 1.0 or better
 - Http redirect (302)
 - Http refresh
 - Http Spawning
 - Cookies
- Multi user hosts (Any IP based system)
 - Includes any system that has concurrent users on a single IP address
 - IP based systems cannot handle this case

Top 5 things to remember for changing from Session based technologies to IP

A 3000% increase in bandwidth will cause stress on any system and associated systems

Session to IP based accounting is a fundamental change treat it accordingly

Beware your existing bench marks, figures and concepts may no longer be accurate

Buy only what you need the market is evolving rapidly

Enabling new technologies is great but are you ready to support and maintain them.

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Questions / Comments?

- What are we trying to achieve
 - Transition to a faster Internet service
 - Transition to a more functional service
 - Minimal \$ outlay and maintenance
 - Minimal \$ risk to the university
- Who to contact for more information
 - Peter Newman
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Proposed Test Network Design

Test IAS Network Design v4.1
Drawn on 17 May '04 Updated on 27 May '04

NOTE:
A) QUT Internet (10.0.0.0)
B) Address Pool (10.0.0.0) address pool

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Proposed Accounting Design

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Accounting design things to do

Pre cutover design accounting
Drawn on 17 May '04

NOTE:
New design on the first Policy decision, the time is
now critical may be dangerous

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