De-Perimeterisation

This Decades Security Challenge

Paul Simmonds
Global Information Security Director, ICI
Background

- Everything is business driven
  - All projects must have a return on investment
  - Cost saving is the management mantra
  - Speed to market makes all the difference

- Security
  - We are losing the war on good security
  - We let in both port 80 and port 25
  - The M&M Model is "old-hat" & non-sustainable

We are too busy putting our fingers in the dyke walls to notice that the dam has already been breached.
It only takes a single computer...

A majority of global corporates were affected by Blaster …..

Worst Virus Infection 2003

- Around 30% of PC’s at any point in time have ineffective AV
  - 2004 DTI Information Security Breaches Survey, Source: PWC (13% have no AV at all)
- It only took one Blaster (or Sasser) infected PC inside your network.

Frequency of Update of AV Software

- 59% Automatically/Immediately
- 13% Daily
- 11% Weekly
- 7% Monthly/Quarterly
- 22% Annually/Never
- 15% Don’t Know
- 2% Other
So much for the corporate perimeter

It’s 11pm, do you know where your data is?

- Once upon a time, people were either staff of non-Staff
  - Now there is every variant under the sun
- Once upon a time we made no external connections
  - Now we connects to the Internet, to clients, to JV’s to 3rd parties, to suppliers, to home workers
  - There is every way imaginable of connecting and of doing business
  - And there is every type of device, NAT boxes, Blackberry, Wireless Access Points and VoIP.
Maybe what we actually need is a new model

- We are trying to protect the money
- So we pay £100,000 for a custom truck.
- Why not just protect the money?
- So we pay £10,000 hi-tech money container.
IDS is dead – at the perimeter

Intrusion detection's permanent placement in the Trough of Disillusionment does not mean that it is obsolete. – Gartner

- Imagine a burglar at the railway station….
  - Can you spot then in the crowd?

- Now only screen the people coming up your drive
  - Still a lot of people, but each with a legitimate function
  - Can you spot then yet?

- So look for people trying your doors and windows
  - If you can exactly define permissible behaviour, then you can easily spot anomalies.
What is the new cost model?

*Anything that’s free is worth what you pay for it.*  Anon.

- Ballpark for a fully serviced Ethernet port with Internet connectivity is around $20 / month
  - What’s the true cost of your Ethernet ports?
  - Include – WAN, Border Security, Routers, Switches, Staff, Support, Cabling etc.
- Do you still need a border?
  - Maybe what we actually want is a sieve
  - And maybe a QoS boundary

*And this becomes an ROI justification only…..*
There are also business benefits

### Traditional Option

**New Sales Office**
- Design WAN extension
- Talk to WAN provider
- Negotiate with local PTT
- Install leased line or VPN
- Install encryptors and routers
- Install switch and private wiring
- Train local support staff
- Configure & commission LAN
- Install and configure local PC’s
- Negotiate with local PTT for phone lines
- Install local exchange

*Time to market ~ 1 to 6 months*

### Deperimeterised Option

**New Sales Office**
- Find fully serviced office with Internet connectivity
- Plug in PC’s
- Plug in VoIP phones

*Time to market ~ Days*

**Cost savings – Enormous**

**Manpower saving – Enormous**

**Security – Increased**

**Flexibility – Large**

“Cleverness has never been associated with long delays”

Sun-Tzu, *The Art of War* c 400BC.
What de-perimeterisation is not . . .

- Simply removing your border security
- Removing / replacing your firewalls
- Just distributing your security devices inside
- A crusade against deep packet inspection
- Web Services
- Document repositories
- A distributed data model
- The elimination of IDS / IPS
- A sales opportunity

. . . . but it may involve all or some of the above.
So what is de-perimeterisation?

It’s fundamentally an acceptance that:

- Most exploits will easily transit perimeter security
  - We let through e-mail
  - We let through web
  - Any encrypted traffic (SSL, SMTP-TLS, VPN etc.)
- IDS has little/no benefit at the perimeter
- That a hardened perimeter strategy is at odds with current and/or future business needs
- That a hardened perimeter strategy is un-sustainable.
So what is de-perimeterisation?

It’s a concept;
- It’s how we solve the business needs for our businesses without a hardened perimeter
- It’s how businesses leverage new opportunities when there is no hardened perimeter
- It’s a set of solutions within a framework that we can pick and mix from
- It’s defence in depth

And of course;
- It must be open, interoperable and OS agnostic.

OS Agnostic: Delivery on a platform / processor / screen size independent device, usually implies a high level language, compiles “on-the-fly”.
Four Phases to de-perimeterisation

- **Phase 1**
  - **Now:** Move outside the perimeter
    Move non-corporate items outside the corporate perimeter and enable Internet connected working

- **Phase 2**
  - **Soon:** Remove hardened perimeter
    Pervasive authenticated access, transport encryption

- **Phase 3**
  - **Near Future:** No perimeter
    Connection level authentication, data level encryption

- **Phase 4**
  - **Future:** Data Level Authentication
    Data inherently secure and will only operate in validated secure environments by authorised people.
Phase 1 - *Move outside the perimeter*

- Move non-corporate items outside the corporate perimeter
- Deliver external services outside the corporate perimeter
- Enable Internet connected working for staff and 3rd parties.

**Solutions**

- Web Services facing Internet with services delivered by;
  - Standards Browser (Thin or Lean Client)
  - Browser Technology (Lean or Thick Client)
  - XML, SAML, WS-Trust etc. (Lean or Thick Client)
- Staff connecting via xDSL
- Security provided by SSL/TLS
  - Extra security provided by ActiveX, Radius, SecurID etc.

**Issues**

- Secure use on non-secure computers (e-mail in Internet Café)
- Integration of authentication systems (SSO when web hosted).

---

Lean Client: Full OS with minimal application load, possibly just a browser.
Phase 2 - Remove hardened perimeter

- The border becomes a QoS boundary / cost justification
- The border acts as a sieve – blocking the “lumps” only
- Parts of business connect to systems needed directly via the Internet
- Connection to 3rd parties is direct (system to system).

Possible Solutions / Technologies

- All corporate network devices allow only encrypted protocols
- Authenticated tunnels make multiple “on-the-fly” connections
- Remote extensions are ad-hoc xDSL
- Remote / Home office use encrypted VoIP phone
- All network connection are authenticated (802.1x)
- Islands of secure data / services, application - application transactions.

Issues

- Availability of System and OS support for above solutions
- Open standards vs. closed / de-facto standards
- Ability to monitor and correlate security information from many islands
- Internal security of systems (patch and vulnerability management).
Phase 3 - *No perimeter*

- Move from system level authentication, to;
  - Connection level authentication, and Data level validation
    - can’t connection to server / data store if no rights to the data
    - If you connect you can only see those files to which you have rights

**Possible Solutions / Technologies**

- Databases with table level and cell level access/encryption
- On-the-fly authentication for;
  - Granular System Access, Tunnel Creation, Application Execution
  - External Access, Resource Usage
- Cross business authentication of credentials (that works and is open)
- Application level firewalls & IDS.

**Issues**

- Need to classify data / Standards for data classification
- Systems that support data level validation
- Application that allow granular security
- How do I trust/validate external users or even outside my business unit.
Phase 4 - *Data Level Authentication*

**Today**
- File on disk with file level privileges inherited from the file creator and container
- Copy that file to another server
- New file has privileges based on creator and new container.

**Issues**
- Cross company (global) authentication
- All new application set
- Standards for data classification
- Provision of inherently secure data standards
- Provision of (open) validated secure environments.

**Tomorrow**
- File on disk holds data that is encrypted with specified read and write privileges
- Copy that file to another server
- Data has exactly the same read and write privileges as before.
So we can do this all tomorrow?

Phase 1
- Corporates
- Medium / Small

Phase 2
- Corporates
- Global Corporates

Phase 3
- Early Adopters
- The Rest

Phase 4
- Bleeding Edge
- The Rest

Years:
- 2004
- 2005
- 2006
- 2007
- 2008
So do we just sit back and wait?

Let’s review some of the issues . . .

- Patching and configuration management
- Standards for data classification
- Authentication
- Document level authentication
- Data lifetime and data expiry
- Multiple secure pipes
- Application level execution authorisation
- VoIP with VPN built-in
- Cross-enterprise trust and authentication.

How sure are we that the security / computing industry will deliver if we don’t tell them what we want . . .
Jericho Forum

What is the Jericho Forum?

- It’s a group of like-minded corporates and organisations working on the issues of de-perimeterisation
- It’s hosted by the OpenGroup (http://www.opengroup.org/jericho)

Participants include:

- Quantas
- Airbus
- ICI
- BP
- Barclays Bank
- Goldman Sachs
- Royal Dutch/Shell
- BAE SYSTEMS
- HBOS
- Royal Mail
- Standard Chartered Bank
- British Broadcasting Corporation
- Geisinger Health System
- The Open Group
- Credit Suisse First Boston
- Royal Bank of Scotland
- UBS Investment Bank
- UK Cabinet Office
- Rolls-Royce
- Boeing
- Northern Rock
- Unilever
- Credit Agricole
- Pfizer
- ING
- YELL
- Deutsche Bank
- Reuters
- Eli Lily
- Procter & Gamble

So the people shouted, and the trumpets were blown. As soon as the people heard the sound of the trumpet, the people raised a great shout, and the wall [of Jericho] fell down flat, Joshua 6, vs 20