DNS
Doing Nothing the Same

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A History of our DNS

- We took to the Internet early - before it was the Internet, or the Information Superhighway as it was known a few years ago.
- We have a Class A network.
- Bell-Northern Research (now part of Nortel) is even mentioned in the Cricket Book.
- Since my presentation at LISA 10, our network has “grown” by about 50% to 186,000 IP addresses.

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How to Have a Problem

- Have many legal subsidiaries, and have them all act autonomously.
- Register many Internet domains - preferably in different top level domains.
- Buy companies - do not integrate their namespaces.
- Maintain different DNS philosophies.
- Set up internal root servers, let everyone manage one.
- Make no major changes after the early years.
- “DNS can be 95% misconfigured, and still work” Avery 94

How to Have a Solution

- Raise visibility of the problem.
- Get an influential senior manager as your sponsor.
- Standardize your Corporate Identity.
- Standardize your processes, and methodologies.
- Standardize your support policies and service levels.
- Standardize your IP management.

A History Lesson from LISA 10

- People either fear change, or are too busy to deal with it.
- Some may feel that the network should be run as a democracy. This is not the right place to hold a popularity contest.
- Legacy systems will never go away. You are working on the legacy systems of tomorrow, and you are trying to interface them with those of today.
- It is easier to add than to subtract.
- EMail must be the center of gravity since everything is attracted to it.

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Designing a Solution

- Itemize and solve your problems.
- Meet on neutral ground.
- Use your network diagram.
- Use your desktop equipment profiles.
- Use your employee profiles.

The Nortel Architecture

- A single top level domain - nortel.com.
- Fewer and larger domains.
- Domains are geographic, not organizational.
- Most servers are cache only and recursive.
- Authoritive servers are nonrecursive.
- Exploit xfernets to control unofficial servers.
- Only forward to the Internet, never internally.

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Name Conversion

- Having an IP repository makes the job much easier.
- The data must be duplicated into the new domains in advance.
- Algorithm must be able to duplicate the old data back into the old domain after conversion.
- Conversion happens when the in-addr.arpa domains are changed.
- Data must exist in both the old and new domains for a transition period.
- Communicate the change widely, and frequently.

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Support Structure

- Nortel provides global support from a single location.
- This group “owns and operates” the DNS.
- Automate distribution.
- Remote maintenance processes.
- Automate fault detection, and correction.

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Desktop Deployment

- If you have any DNS servers, you already have DNS users.
- Deployment will have already crept with nonoptimal configurations.
- Communication is essential.
- Only visit user desktops once.
- Publish configuration information but keep it in a single place.

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Challenges

- Funding.
- Minimizing the risk.
- Communication of the change to all the users.
- Finding all data where the domain is hardcoded.
- Finding all code where not enough space is allocated for a fully qualified domain name.

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Doing Nothing the Same

- single top level domain nortel.com vs nt.com, bnr.ca, bnr.co.uk, nortel.ca, nortel.co.uk, etc
- 6 subdomains vs 288
- dedicated DNS servers vs shared
- central global dedicated support vs distributed
- purchased IP repository vs proprietary

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The Future

- Unification of Nortel's portion of the Internet.
- Global email address changes.
- Reduce, then eliminate usage of old domains.