



DNS

Doing Nothing the Same

Joel Avery
Ottawa, Canada
javery@nortel.ca

Andrew Macpherson
Harlow, England
andrew@nortel.co.uk

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.**

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.**

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.**
- ◆ **Authoritative servers are nonrecursive.**
- ◆ **Exploit xfernets to control unofficial servers.**
- ◆ **Only forward to the Internet, never internally.**

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.**

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.**

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.**

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.**

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**

The Future

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