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Professional Interests

Network engineering and the design, implementation and support of core WAN and LAN infrastructure.

Work Experience

Ariba, Inc in Sunnyvale, CA: **Network Engineer**   *Feb 2004 - present*

Member of 3-person team supporting all corporate network issues locally, and at all remote offices. (8 domestic & 14 international offices)
- Testing, documentation, and ongoing rollout of Aruba networks wireless infrastructure in production.
- Participation in network integration of recent acquisitions.

Santa Clara University in Santa Clara, CA: **Senior Network Engineer**   *Feb 2002 - Jan 2004*

Part of a small team responsible for supporting all networking issues on the Santa Clara University campus. My duties included:
- **Infrastructure Design and Deployment:**
    - Evaluated multihoming alternatives for the campus network, and set up BGP multihoming with Verio and SBCIS.
    - Led the design effort for the campus splitDNS architecture.
    - Set up and maintained bind 9 DNS servers and ISC v3 DHCP servers under Redhat Linux 7.3.
    - Participated in 3Com network core upgrade in 2002 and led core upgrade to Extreme BlackDiamond in 2003.
    - Wrote Perl scripts to automate various network management tasks.
    - Set up traffic policies and QoS to prioritize inbound and outbound application traffic using Packeteer's PacketShaper 6500.
    - Set up server load balancing on several web sites using Extreme Networks devices.
    - Tested and deployed Redline Networks SSL accelerator in conjunction with server load balancer.
    - IP address allocation, and re-IPing of dorm subnets to optimize route aggregation.
    - Planned and configured 4 levels of rate-limiting on dorm switches.
    - Maintained Extreme BlackDiamond core routers & Cisco border router.
- **Security:**
    - Identified firewall rule changes required for all projects I was involved in.
    - Set up iptables on DNS and DHCP servers running Redhat Linux 7.3.
    - Configured and maintain ACLs on core routers and border router to mitigate DDOS attacks and propagation of viruses.
- **Daily operations:**
    - Day-to-day troubleshooting, including traffic sniffing with Sniffer and tcpdump when necessary.
    - Tracking down and shutting down switch ports in abuse situations.
- **Planning and Project Management:**
    - Prepared vendor comparison charts for 802.11b access points and core routers.
    - Project planning for the network core upgrade and for all of my other projects.

Excite@Home Corporation in Redwood City, CA: Engineer   *May 1999 - December 2001*

Initially, was a **Network Design Engineer** participating in network design activities supporting products in Excite@Home's @Work division. Later, was a **Product Design Engineer** participating in design of residential gateway provisioning with the @Home service, and also heavily involved in the design and development of @Home's residential DSL product. Finally, was a **Network Systems Engineer** in Open Access Engineering, designing infrastructure to allow customer choice of ISP in the Excite@Home network.
- **Network Systems Engineer, Open Access and Systems Engineering**:   *Jan 2001 - December 2001*
    - Led the preliminary design effort for Boston Open Access trial in early phases.
    - Set up Open Access lab equipment and tested MPLS on Cisco 7206's.
    - Identified usage-based monitoring and billing requirements for Open Access product, and evaluated vendors in that space.
    - Met with leading router vendors to learn about RFC 2547 implementations. Assessed the viability of each product.
- **Product Design Engineer, Product Development**:   *Jan 2000 - Jan 2001*
    - Led the design effort for @Home residential DSL (networking requirements, authored technical specs, & developed data model).
    - Met with several vendors of broadband aggregation routers and evaluated Redback SMS 1800 and Nortel/Shasta routers.
    - Investigated and compared element and subscriber management systems from various vendors of DSL aggregation routers.
    - Identified feature enhancements required of Redback's AOS and Rhythm's Netop (subscriber mgmt system) for scale and reliability.
    - Participated in CLEC negotiations related to DSL.
    - Documented automated provisioning process for @Work HFC (cable) and residential gateway products.
    - Evaluated several dual-ethernet routers & residential gateways for use in @Home and @Work products (Netscreen 5, Cayman, etc)
    - Launched @Work HFC internet access product offering using Netscreen 5 routers.
    - Investigated network changes required in order to enable multicasting in @Home's regional networks.
- **Network Design Engineer, Network Engineering**:   *May 1999 - Jan 2001*
    - Prepared @Work RFP (Request for Proposal) responses and evaluated cost of Cisco hardware required for networking contracts.
    - Design of custom @Work access solutions (e.g. those requiring integrated firewalls, campus DSL access, etc)

Carnegie Mellon University in Pittsburgh, PA: **Senior Network Engineer** in the Network Engineering group, which is responsible for operation, troubleshooting, expansion, and maintenance of Cisco-based campus network infrastructure serving well over 10,000 devices based on a wide variety of hardware and operating system platforms. Duties included sharing in daily operation and troubleshooting of network infrastructure, and responsibility for multicast support, xDSL remote access, network management, network monitoring, and a variety of smaller projects. *August 1997 - April 1999*

- **Multicast infrastructure**: Designed multicast infrastructure for campus network and deployed multicast testbed. Identified and examined multicast issues relevant to migration of the current flat, bridged network to edge-routed topology.
- **xDSL remote access**:
  - Technical and administrative leadership of, and project management for, Carnegie Mellon University (CMU) HDSL trial.
  - Troubleshooting for CMU/Bell Atlantic ADSL trial, involving about 100 users using Westell modems.
  - Network engineering and deployment of CMU/NPTC (North Pittsburgh Telephone Company) ADSL trial, involving Paradyne Hotwire MVL products. Deployment included connection of CMU's network to NTPC network via T1 frame relay connection via a Cisco 2514.
  - Network engineering and deployment of CMU/Bell Atlantic commercial ADSL offering, based on Westell equipment and involving the connection of CMU's network to Bell Atlantic via an ATM DS3 link.
- **Network management**: Installed CiscoWorks for Solaris. Tested TrafficDirector with Fast Ethernet Switchprobe. Installed and configured Cisco Resource Manager to track Cisco device inventory and to facilitate image upgrades of Catalyst switches and various IOS devices.
- **Network monitoring and troubleshooting**: Resolved problems by analyzing traffic on campus backbone, ADSL subnets, and problem segments. Participated in diagnosis and resolution of external attacks on CMU's firewall-free environment. Tools employed included Unix tcpdump, Solaris snoop, and FTP Software's LANwatch for Windows 95. Also monitored traffic trends using MRTG and Cisco's Netflow.
- **Miscellaneous**:
  - Identified and performed router and switch image upgrades as necessary, both manually and via Cisco's Resource Manager.
  - Extended CMU's campus network to a remote location by using a pair of Cisco 762 ISDN routers.
  - Created input files for rapid, automated snmp-based configuration of various Catalyst switches using in-house "snmpconf" utility.
  - Participated in evaluations of beta switch hardware (Cisco 2916XL, 1924F).

Telesat Canada, Satellite Ground Systems in Ottawa, Canada: **Network Administrator**. Overhauled, documented, and maintained mission-critical satellite control LANs serving approximately 250 HP-UX workstations; designed and implemented analog and ISDN-based secure remote access solutions; planned and coordinated developer relocation. *September 1996 - July 1997*

- LAN overhaul: backbone upgrade to CAT5; switch installation (Catalyst 3000 switches); hub installation (HP AdvanceStack hubs) and SNMP enhancements; installation of HP LANProbe units; implementation of router-based access control (Cisco 2514 routers).
- LAN maintenance: LAN diagrams, installation of HP Openview and Ciscoworks for monitoring, administration of NCD WinCenter.
- Secure remote access: installation and configuration of Cisco 2511 access server (analog dialin) and Cisco 3640 & Cisco 766 units (ISDN and Centrex); access management via TACACS+ and CRYPTOCard's RB-1 tokens; X-windows support (Hummingbird Exceed & Xpress).
- Relocation planning/coordination: equipment & cabling requirements, Cisco 7204 backbone router install, subnet creation.

Public Works & Government Services Canada, Government Telecommunications & Informatics Services in Ottawa, Canada: Microtechnology officer positions (**LAN Administrator**, then **Coach**, and ultimately **Mentor**). *July 1991 - September 1996*

As LAN Administrator, installed and supported several ethernet and token ring LANs from scratch, and added remote access via Cubix dialin server. As Coach, standardized technical processes across all sites, optimized the network to accomodate growth, provided crisis support, and support and coordination to mentors at different sites. As Mentor, guided a team of 6 technical support officers, administered several critical Netware 3.1 and OS/2 LANs, evaluated hardware, and implemented contingency planning and fault tolerance for all Netware LANs.

Certification and Education

CheckPoint Certified Security Administrator (**CCSA**) *January 2004*
Cisco Certified Network Associate (**CCNA**) *February 2002*
Certified Novell Engineer (**CNE**) *December 1995*

University of Ottawa: Bachelor of Science (**B.Sc.**) in Computer Science, minor in French. Graduated w/ Honors. *1987 - 1991*

Networking Skills

- **Cisco Hardware**: Many routers (e.g., 6509, 75xx, 72xx, 251x, 4700, 3640, 76x), switches (e.g., 5000, 290x, 29xxXL, 19xx, 28xx, 3000), firewall (PIX), and VPN concentrators (e.g. 30xx)
- **Other Hardware**: Extreme BlackDiamond routers & Summit switches, HP AdvanceStack hubs; Bay Networks synoptics hubs
- **Technology**: Ethernet, Token ring, 802.1q VLANs, ADSL, wireless (802.11b), Frame Relay, ATM, ISDN, VPN (site-to-site & remote access)
- **Protocols**: layer 3 (IP, IPX), routing (RIP, RIPv2, OSPF, BGP4), multicast (PIM, DVMRP), group management (IGMP, IGMPv2, CGMP)
- **Operating Systems**: Cisco IOS through version 12.0, Redhat Linux, Windows (XP/98/95), Netware 3.1x, Netware 4.x
- **Management**: CiscoWorks for Switched Internets, Cisco Resource Manager, HP Openview, Netware Mgmt System (NMS), Cricket
- **Diagnostic Tools**: tcpdump, sniffer, LANwatch, snoop, switch probes, protocol analyzers, Fluke Enterprise LANMeter, kismet
- **Traffic Analysis**: open source tools (e.g., nettop, ntop), Cisco netflow
- **DNS/DHCP**: Bind 9, Cisco Network Registrar, ISC DHCP server

Personal

- I am a **legal permanent resident** of the United States, and I am a citizen of Canada.
- I am a native speaker of English. I am also fluent in spoken and written French and in spoken Bengali.