

**Nate Carlson**

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**Professional Objective**

To take a leadership position in a team where I can pass on my knowledge to like-minded professionals, always have the opportunity to learn new things, and can put my existing skills to good use. I am primarily interested in full-time work in the Minneapolis/St. Paul metro area, but may consider relocation for the right position.

**Employment History****Sr. Systems Administrator / Sr. Geek**

*Internet Broadcasting Systems, Inc. (Minneapolis/St. Paul, Minnesota)*

*May 2005–Present*

I was initially hired by Internet Broadcasting as a Systems Administrator for IB's general infrastructure. In this role, my primary focus was to maintain and improve the existing environment. I pioneered the monitoring infrastructure, brought virtualization into the mix, and worked to improve the authentication infrastructure, among many other duties. As time passed, I moved on to leading the infrastructure teams for various environments, including NBCOlympics.com, NBCSports.com, our New Products team, and most recently our QC Environments project. My current role is focused on the architecture of IB's replacement Content Management System, which is both a software migration and a migration from legacy self-maintained data centers to an infrastructure as a service environment.

*Achievements:*

- **ibPublish 2, 2010-2013:** Lead the infrastructure and systems administration portion of the effort to migrate from our legacy CMS to a new platform which has been built on top of technology from CoreMedia, Kaltura, and others. In addition, I also lead the effort to build out the new platform on systems hosted at an infrastructure as a service provider instead of building out in traditional colo. To ensure the architecture was maintainable, we also migrated away from a homebrew configuration management tool to "infrastructure as code"-style configuration management with Puppet. These changes facilitate a hot/hot/hot serving configuration and lets us scale up or down without having to procure and install our own hardware -- which allows us to scale spend with traffic. Since the new platform has gone live, I have been working closely with other groups within IB (primary the frontend and backend development teams) to pinpoint problems or inefficiencies and resolve them. I also worked closely with multiple groups to migrate to a Maven-based build system for everything related to this project, with proper versioning and continuous integration.
- **DR Shore-up, 2009-2010:** Designed infrastructure changes to allow the DR environment to stay in sync with production without any on-going human intervention. Reduces administration labor and has a major benefit of ensuring that DR lags at most 15-30 minutes behind production.
- **DR Site Move, 2009:** Recommended and oversaw a project that consolidated our DR environment into another non-production data center; move saved significant spending (over \$16,000/mo) and improves the availability of the environment.
- **"Project 2011", 2009:** Acted as technical lead for a proposed re-design of our entire infrastructure to support 100% availability and scale to whatever size necessary. Plan was created on time and under the proposed budget and is in approval stages; however, even before approval, we have been able to take many of the concepts and apply them to our existing environment.
- **QC Environments, 2008:** Architected an environment to allow developers to quickly launch a customized environment for their current project. Includes automatic provisioning, VM lifecycle management, and many other technologies to minimize manual labor. Also laid groundwork for a full QA environment.
- **Slantly.com, 2008:** Scaled Slantly.com from a proof-of-concept site to a major presence on our news network. Worked extensively with development team to ensure we could handle high load with minimal hardware needs.
- **New Products, 2007-2008:** Designed environments for various New Products initiatives. Built systems where we could quickly bring up and tear down environments to test out new technologies, and integrate them into our processes. As products went into production, also built the proper environments to ensure we can properly test code before release and handle the traffic in production.

- NBCSports.com, 2006-2007: Worked closely with NBC and our team to build and maintain the infrastructure for developing and hosting NBCSports.com. Built out all environments needed for quick development cycles with solid testing. At the conclusion of the project, worked to integrate lessons learned back into general IB workflow.
- NBCOlympics.com, 2005: Interfaced with NBC, Sun, and IB internal resources to build up the architecture to host the NBCOlympics.com site for the 2006 Torino games.
- Worked with project managers to develop plans to move code between environments and thoroughly test code before a Production release.
- Researched, selected, and negotiated contracts with hosting providers for various projects.
- Pioneered virtualization within our organization, and helped move to an almost entirely virtualized production environment.
- Implemented Nagios monitoring system for our entire network.
- Stabilized our existing LDAP infrastructure (aging Netscape LDAP servers), and later worked with our Windows team to migrate to Active Directory authentication.
- Worked with team to maintain network of hundreds of Linux-based servers.
- Migrated our existing RedHat Enterprise Linux 3 infrastructure to RHEL5.
- Migrated legacy Solaris-based systems to Linux.
- Provided backup support for our Network team, including critical networking outage support.
- Assisted in critical outage situations to isolate the root cause, put a temporary fix in place, and recommend long-term fixes.
- Provided recommendations for hardware expansions (network, server, and storage), and helped to project future needs.

### **Consultant/Owner**

*Nathan Carlson Consulting*

*Jan 2000–Present*

I have been doing some private consulting for many years. I mainly focus on Linux solutions, but do also venture out into other environments if someone is in need. As part of my consulting business, I also sublet colocation space to try to make colo affordable to geeks who want to get a system up in a stable environment. My consulting work is limited to outside of my regular job's hours, and is primarily done remotely.

#### *Achievements:*

- Operate a small network of colocated machines in various sites around the country to host my sites and act as hot backups to customer sites.
- Maintained a local company's Linux server infrastructure, phone systems, and Windows workstations.
- Assisted various companies in projects to cutover from standard digital phones to VoIP-based systems, and to cut over from TDM-based phone lines to VoIP.
- Worked with clients around the world to help with web site performance tuning, VPN configuration, server architecture recommendations, and many other tasks.

### **Sr. Network Engineer / Sr. Systems Administrator**

*Real Time Enterprises, Inc.*

*October 1999–April 2005*

Real Time Enterprises is a small local company that offers ISP services and computer/network consulting services. At Real Time, I was responsible for administration of both our internal networks and many of our client's networks. I also researched and implemented many leading-edge solutions for us and our clients. During my tenure at Real Time, I also wrote and presented two sessions at our Minneapolis-area Linux Conferences.

#### *Achievements:*

- Administration of Real Time's networks
- Administration of our client's networks
- Extensive pre- and post-sale work with our sales people.
- Provided Level 3 tech support for our clients
- Performed various network security audits
- Implemented Snort for intrusion detection on multiple networks
- Implemented LDAP-based authentication for many of our clients
- Implemented a monitoring strategy for our local and wide-area networks, along with many customer's networks
- Researched and implemented various types of VPN's, including PPTP, IPSec, and SSL-based VPN's
- Wrote and presented seminar on Linux on the Desktop for Real Time's 2000 Linux Conference
- Wrote and presented seminar on Basic Linux Security for Real Time's 2001 Linux Conference

- Designed and implemented cutover plan to renumber around 4000 hosts (including all of our servers) to a new range of IP addresses with minimal interruption
- Researched and implemented secure wireless networks using a VPN transport to overcome WEP weaknesses.
- Set up High-Availability solutions for various clients using Heartbeat and ldirectord on Linux platforms. Also using DRBD for disk replication.
- Secondary contact for 24x7 on-call rotation.

### **Network Engineer**

*Bethany Press International*  
August 1997–September 1999

Implemented Linux-based mail, web, and database servers. Supported Novell Netware and Windows NT servers, along with Windows-based workstations. Designed a web application that tied a SQL database to their existing Visual Foxpro application for job order status, and allowed customers to access real-time job data over the internet.

### **PC Technician / Systems Administrator**

*Miatec Computers, Inc.*  
July 1996–July 1997

Built PC's, hardware troubleshooting and repair, remote network installations (everything from pulling and terminating cable to installing servers and workstations), web site design for the company, and system administration on Linux, NT, and Novell platforms.

### **Group Memberships**

Twin Cities Linux User's Group (TCLUG)  
Twin Cities PHP User's Group (TCPHP)  
USENIX  
USENIX's System Administrator's Guild (SAGE)

### **Skills with various products**

*Networking/Communications:* Cisco IOS management (Advanced), WAN Circuits (DS1/DS3/Gig-E WAN/etc) (Expert), VoIP (SIP, IAX, etc.) (Advanced), BGP: Configuring, maintaining, and tweaking (Advanced), OSPF: Configuring, maintaining, and tweaking (Intermediate), IPSec (Advanced), IPv4 (Expert), IPv6 (Advanced).

*Hardware:* Cisco IOS-based routers and switches (Advanced), Dell Servers, Workstations, Laptops, Networking (Expert), SuperMicro Servers (Expert), F5 BigIP (Advanced), F5 3DNS (Advanced), HP BladeSystem, p- and c-Class (Advanced), Sun SPARC and X86-based systems (Intermediate), Wireless Networking (Various Vendors, 802.11a/b/g/n, WPA, etc) (Expert).

*Content Distribution Networks:* Akamai (Advanced), SoftLayer CDNLayer (Intermediate), Amazon CloudFront (Intermediate).

*Operating Systems:* Linux: Used for ~15 years on a daily basis; all major distributions (Expert), Solaris: Used primarily for NBC Olympics (Intermediate), Windows, client versions up to 7 (Advanced).

*Specific Linux Distributions:* Debian (Expert), Ubuntu (Expert), RHEL Redhat Enterprise Linux 3, 4, and 5 (Advanced).

*Configuration Management:* Puppet - including infrastructure-as-code style configurations (Advanced).

*Virtualization Technologies:* Xen OSS (Expert), Citrix XenServer / Xen Cloud Platform (Expert), VMware Workstation and Server (Advanced), VMware ESX (Intermediate).

*Programming/Scripting Languages:* Bash (Advanced), Perl (Advanced), PHP (Advanced), HTML (Intermediate), XML/XSL (Intermediate).

*Java Application Servers:* Tomcat Administration (Advanced).

*Software build and continuous integration:* Maven (writing POMs, release management, etc) (Advanced), Atlassian Bamboo (Continuous Integration) (Advanced), Jenkins (Continuous Integration) (Beginner).

*Software:* Asterisk (Advanced), DNS (Bind, PowerDNS) (Expert), Mail Transfer Agents and IMAP/POP3 servers (Postfix, Dovecot, Courier IMAP, etc) (Expert), NIS/NFS/YP (Expert), Openswan (Expert), OpenVPN (Advanced), LVM2 (Advanced), Samba (Expert), Atlassian Confluence (server administration) (Advanced), Atlassian Fisheye/ Crucible (Advanced).

*Web Servers:* Apache (Expert), nginx (Advanced).

*HA/Cluster Architecture:* DRBD (Disk replication) (Advanced), Heartbeat (Linux HA) (Advanced), Redhat Cluster Suite (Advanced), Clustered Filesystems (OCFS2, GFS, GFS2) (Advanced), Monit (Process Supervisor) (Advanced).

*Load Balancers:* Apache (yeah, it's a LB too) (Advanced), HAProxy (Expert), Foundry ServerIron XL (Advanced), LVS with Ipdirectord (Open-source load balancing solution) (Advanced), F5 Big-IP (Advanced).

*Storage:* EMC CLARiiON (Intermediate), NexSan SAN Appliances (Advanced), Brocade SAN switches (Advanced), Fibre Channel (including zoning, multipathing) (Advanced), NetApp (Intermediate), NexentaStor (ZFS-based) (Advanced).

*Monitoring Software:* Cacti (Advanced), MRTG (Advanced), Opsview (Advanced), Nagios (Advanced), Many, many others as need has demanded.

*Database Servers:* MySQL, including clustering and replication (Advanced), MongoDB, including replication sets (Advanced), Postgres (Intermediate), Oracle, including RAC (Intermediate).

*Code Management:* Subversion, both administration and usage (Advanced), CVS, both administration and usage (Advanced).

*Cloud Computing:* SoftLayer IAAS Services (Advanced), Amazon EC2 Provisioning+Management (Intermediate), Amazon S3 (Intermediate).

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