

Christopher R. Hertel

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POSITION HISTORY

Storage Architect/Storage Systems Consultant

ubiqx Consulting, Inc., Saint Paul, MN, September 2007—Present

Alvarri, Inc., Minneapolis, MN, March 2006—September 2007

- Design, deployment, and management of a \$1.6M storage testing laboratory for a major supercomputer manufacturer.
- Network protocol analysis and software development focusing on CIFS, iSCSI, and NDMP.
- Samba Virtual File System development and documentation.
- Windows/Linux meta-data analysis.

Saint Paul Broadband Advisory Committee

July 2006—September 2007

- Member of a Committee to advise the Mayor and City Council regarding the design and deployment of Broadband services in Saint Paul, Minnesota.

Storage Network Design Engineer

University of Minnesota Data Management Services (UDMS), Minneapolis, Minnesota

February 2005—February 2006

- Design and deployment of a campus-wide IP storage network for the University of Minnesota.
 - Services cover both the Minneapolis and Saint Paul campuses—2730 acres, spanning the Mississippi river.
 - The campus community includes over 66,000 students, faculty, and staff; approximately 600 departments.
- iSCSI planning and deployment
 - Test and compare iSCSI targets (servers); select products for production deployment.
 - Design of network infrastructure, leveraging the existing 10GigE campus IP infrastructure .
- Creation of a central Network Attached Storage (NAS) service.
 - NFS and CIFS file sharing services available to the entire campus.

Network Design Engineer

University of Minnesota Networking and Telecommunications Services (NTS), Minneapolis, Minnesota

March 1996—February 2005

- Member of the Network Design Team. Responsibilities include:
 - Design lead for campus wireless networking.
 - Collaborate on overall campus network design and the development of long-term network strategy.
 - Design and implementation of small to large departmental networks.
 - Design and implementation of Internet services for off-campus University sites.
 - National and international inter-networking support (including Commodity Internet, Internet2, etc.).
 - Development and establishment of University network standards.
 - Second-tier support for network problem resolution.
 - Research, testing, and evaluation of emerging technologies.
- Adjunct member of the University Security Incident Response Team (SIRT) through 2000. Responsibilities included:
 - Designated SMB/CIFS network protocol expert for security issues.
 - Design of mechanisms to implement University Auditing requirements.
 - Detection of scans, probes, intrusions, and compromised systems.
 - Investigation of security incidents; Incident reporting and remote-site notification.
- Other Responsibilities:
 - Technical design lead for 802.11 wireless LAN projects and campus-wide wireless deployment.
 - Liaison between Network Design and University Data Services (SAN & NAS infrastructure).
 - Troubleshooting of all campus network services including DNS, routers, switches, & GigE backbone.
 - Collaboration on campus DSL, Broadband, Virtual Private Network (VPN) strategies, and off-campus connectivity.
 - Ethernet, Wireless, and other network connectivity options.
 - SMB/CIFS, and other higher-level protocol suites.
 - Domain Name Service (DNS) administration (approximately 50,000 entries).
 - Unix System Administration.
 - TCP/IP Network administration.

Samba Team Member

1997—Present

- One of approximately 20 to 30 developers world-wide with responsibility for the continued development of Samba, the popular Open Source implementation of Microsoft's SMB (aka. CIFS) protocol suite.
- Author of [Implementing CIFS - the Common Internet File System](#), a book describing the internals and workings of the SMB/CIFS protocol suite. ISBN: 0-13-047116-X, Prentice Hall PTR, August 2003.

jCIFS Team Co-Founder & Member

1999—Present

- Established the jCIFS project, which has produced a comprehensive Open Source SMB/CIFS client written in Java. jCIFS also provides LM, NTLM, and NTLMSSP authentication features, and WebDAV access to CIFS via Davenport.

Unix System Manager and IVR System Developer

DCA, Inc., Minnetonka, Minnesota

June 1993—March 1996

- Design, implement, and maintain a Unix-based Interactive Voice Response (IVR) System and associated applications.
- Install, configure, and maintain all Unix systems, including SVR4.2 PC systems and an NCR 3355.
- Install, configure, and maintain Novell NetWare systems (clients and servers).
- Perform TCP/IP Network Administration including configuration of services (name server, FTP, NTP, SMTP, etc), and integration with VAX/VMS and NetWare environments.

Consultant

ESP Software Services, Inc., Minneapolis, Minnesota

March 1992—June 1993

- Systems Analysis to develop a Front Office Consumer Loan package; First Bank Systems, Saint Paul, Minnesota.

PC Network Team Manager and Micro Systems Software Engineer

Caisse Nationale de Crédit Agricole, Chicago, Illinois

1986—September 1991

- Designed and implemented a custom coast-to-coast wide area microcomputer network based on DEC PathWorks.
- Managed of a team of network and PC support personnel for all US offices of Crédit Agricole.
 - Hired and trained team; wrote performance reviews and provided career path planning assistance.
 - Managed support for all PC users, including budgeting, hardware & software configuration, and training.
 - Assigned and managed team projects.
 - Responsible for hiring and supervising contract programmers for special projects.
- Developed network applications, services, and support programs.
- Designed and developed remote access software to provide file and E'mail access via dial-up systems.
- Managed network servers (VAX/VMS & DEC PathWorks), including performance tuning, security management, hardware and software installation, configuration, and maintenance.
- Provided needs analysis, product research, system development, and user training for individual and large groups.

Senior Programmer

The Northern Trust Company, Chicago, Illinois

1984—1986

- Designed and developed system and application software, including securities tracking applications and inter-system data transfer utilities.
- Provided co-workers with training in programming languages and methodologies; established programming standards and procedures.
- Tested and evaluated third party software.

SPEAKING ENGAGEMENTS & TEACHING EXPERIENCE

SNIA CIFS Conference, August 2005

CIFS Foundations: The Basement Tour

Two Hour CIFS Tutorial

(presented 5 consecutive years: 2001-2005).

Penguicon2.0, April 2004

Moving Into the Network Neighborhood

Samba and CIFS introductory tutorial (2hrs).

GeekCruises Linux Lunacy IV, October 2004

Samba 3 Configuration and Operation

Three hour Samba, jCIFS, and SMB/CIFS file sharing tutorial presented on a cruise ship off the coast of Italy.

Twin Cities Java User's Group, January 2004

jCIFS: the SMB Can Opener

Programmer's introduction to jCIFS.

2nd Samba/eXPo, Göttingen, Germany, April 2003

The Ins and Outs of SMB Authentication

Overview of SMB/CIFS authentication systems.

Teaching

- Instructor, UofM College of Continuing Education, INet 4032 Storage Design & Administration (current).
- Guest Lecturer—Wireless Networks, Storage Technology, UofM College of Continuing Education B.A.S. Degree Program (2002-7).
- Substitute Instructor, B.A.S. Information Technology Infrastructure Major, Network Programming class (2004).
- Adjunct Faculty, North Hennepin Technical College (1999).
- Adjunct Faculty, National College of Education (1988-1989).
- Instructor, The Computer Institute, (1983).

CONSULTING

Certeon, Burlington, Massachusetts

CIFS Protocol and Authentication
October – November 2006

FineGround Networks, Campbell, CA

(now owned by Cisco Systems)
CIFS Authentication Mechanisms
February 2005

Peribit, Inc., Santa Clara, CA

(now owned by Juniper Networks)
CIFS Protocol Analysis
July – September 2004

Rainfinity, Inc., San Jose, CA

(now owned by EMC)
CIFS Protocol and Authentication
February – March 2002

Telco-Tech, GmbH, Berlin, Germany

Firewall/VPN Product Design
November 2000

Amiga, Inc., Snoqualmie, WA

Operating System Design and Evaluation
January – September 2000

WRITINGS

Implementing CIFS - the Common Internet File System

ISBN: 0-13-047116-X, Prentice Hall PTR, August 2003, 688 pages.

Storage Networking Industry Association (SNIA) Common Internet File System (CIFS) Technical Reference

Contributing Author, February 2002

Linux Magazine

- [jCIFS: The SMB Can Opener](#), Feature Article, February 2005
- [Understanding the Network Neighborhood](#), Feature Article, May 2001
- [The Story of Samba: Linux's Stealth Weapon](#) with Luke K. C. Leighton, September 1999

The UNIX System Today

Co-Author (provided the chapter on Samba)
ISBN: 1-85912-296-5, The Open Group, May 2000

TECHNICAL SKILLS

Operating Systems:

Linux, *BSD, Irix, Unix System V, Solaris, VAX/VMS, AmigaDOS, and (when absolutely necessary) Windows.

Programming & Shell Languages:

C, Java, HTML, Pascal, Modula-2, BASIC, M, DCL, PL/1, sh, ksh, bash, etc.

Networking:

Samba/CIFS, NFS, NAS, iSCSI, ATAoE, NDMP, TCP/IP, VPN, Fibre Channel, Ethernet, Routers, Switches, Hubs, WiFi Access Points, Firewalls, design, deployment, protocol development and analysis, etc., etc., etc.

EDUCATION

Degree:

- B.A. in Biology, Grinnell College, Grinnell, Iowa (1983)
- Foreign Study, Durham University, Durham, England (1981-82 academic year)

Graduate Courses:

- Real Time Operating Systems; Advanced Operating Systems;
University of Minnesota, 2001 (4.0 GPA)
- Compiler Design; Advanced Compiler Design; Computer Networks;
DePaul University, Chicago, Illinois, 1987-1990 (4.0 GPA)