Jerome N. Freedman, Ph. D.

(415) 461-6476 · jerome@micah-affiliates.com · http://micah-affiliates.com/

SUMMARY

- Network traffic analysis, security and troubleshooting, protocol decoding, intrusion detection with expertise in Microsoft protocols: RDP, Active Directory, ADWS, SOAP, LDAP, SMB, RPC, XML
- Web design, web development and web services, including HTTP, CSS, JaveScript, PHP, MySQL, AJAX, jQuery, JSON, eCommerce
- **SQL** and secure RDBMS Database Application Program Development, front end tools for RDBMS, CASE
- Expert witness, patent analysis, corporate training
- Five patent applications through NGC/NAI (see "PATENTS")

SOFTWARE and SYSTEMS

LANGUAGES	C, C++, C#, Java, PHP, XML, Perl, 4GL, COBOL, FORTRAN, PL/1, BASIC, XML, XSD, etc.
NETWORK	**TCP/IP** (**HTTP**, **XML**, **SOAP**, FTP, POP3, SMTP, TelNet, SNMP, NNTP, **VoIP**, RTP, RTCP, SIP, RDP, **LDAP**, SMB, CIFS), RPC, NetWare, Lotus Notes
DATABASE	**Sybase**, MS SQL Server, Informix, **Oracle**, Ingres, HP Image, dBase, cTree, **cForm**, HPS
OS	Windows COM/DCOM/SDK/DDK/MFC/Visual C++, Unix/Linux, DOS, Macintosh
HARDWARE	Sun, Sequent, IBM and other Unix platforms, PCs, Macintosh, HP3000, VAX, Mainframes.

PROFESSIONAL EXPERIENCE

The Technical Committee of the Department of Justice, *Palo Alto, CA* [2004-present]: (http://thetc.org, http://www.justice.gov/opa/pr/2011/May/11-at-601.html), Software Design Engineer**:**

- Consulted to the members of the Technical Committee (TC) to monitor Microsoft's compliance with its obligations under the final judgment issued by the Department of Justice (DOJ). Responsibilities are related to the technical documents (TD) in the Microsoft Communications Protocols Program (MCPP).
- Wrote an **Ethereal/WireShark** protocol decoder for the Remote Desktop Protocol (RDP) and found serious problems with the TD within the first two months. This resulted in the DOJ changing it's procedures in cases like this and substantial changes in the direction TC took to monitor Microsoft's compliance, including increasing the staff to more than 50 engineers on three major projects: validation, prototyping and test suite generation. Responsible for hiring six engineers for the validation project.
- Worked on the validation project, which involved capturing 60+ terabytes of data packets from Microsoft test laboratories in Hyderabad, Pune, Beijing and Syracuse; analyzing them through packet analyzers run within the validation tool, all written by the team; and comparing the results to the **XML** representation of the TDs stored in a MySQL database.
    - Wrote the core packet capture filter (PCF) for the validation tool.
    - Created the PHP programs to parse the over 46,000 XML documents and store the results in the database for use by the validation tool. Designed and developed the Control Server to manage all of the validation efforts and report generation. Delivered these tools to Microsoft and they have been well received and are being used by several departments within Microsoft.
    - Developed protocol parsers for the validation project for **SOAP** based MCPP protocols, among others. Introduced innovative test coverage ideas for verifying test suite coverage of RDP from Microsoft data. Designed and implemented a method to discover and extract the XML content of .NET and other SOAP-based protocols over HTTP/TCP/UDP from the validation and test suite data.
- Analyzed a series of 26 TDs related to **Active Directory** and filed over 1000 issues for Microsoft to clarify and correct different aspects of each document. Perused the Microsoft source code in order to ascertain how Active Directory Web Services are implemented in C# and how the WSDL is generated. Implemented SAMBA on a

Linux box and joined the computer to the local test domain. Installed the Active Directory Web Services on a domain joined Windows computer. Worked on the Propero Java version of remote desktop program.

WildPackets, Inc., *Walnut Creek, CA* [2002-2003]**:** Senior Software Engineer

- Converted **EtherPeek NX Expert** written in *Delphi* to Visual Studio.NET using COM interfaces to process packets and access the results. The protocol specifications were deduced from an XML file.
- Contributed to a small team designing the next generation expert product (Orca), especially in the areas of long term data storage, trend analysis, latency and throughput analysis, and gigabit Ethernet data reduction techniques.

Network General/Network Associates, Inc., *Santa Clara, CA* [1995-2002]: Senior Software Engineer, Software Architect

- Implemented the Segmentation and Reassembly engine (patents 1, 3) for portable protocol interpreter decodes (PPI). Completed **protocol decodes** for **Oracle** TNS/SQL*Net – Net8, **Sybase** and **Microsoft SQL Servers**, and **Lotus Notes** for the **Sniffer** Network Analyzer with complete reassembly of messages passing between clients and servers. Solved a recurring defect in several protocols involving multiplexed request and reply packets (patent 2) with an elegant solution that resulted in a generic fix that could be applied to multiple protocols. **Trained** many software engineers on the Sniffer Expert (patent 4) and PPI development, including several in Pune, India, Dallas and NAI Labs in Los Angeles and Washington, DC.
- Responsible for design, coding, implementation and testing of the following **session and application layer Expert protocols** in C++ using COM and DCOM objects: **Oracle** TNS/SQL*Net – Net8, **Sybase/Microsoft SQL Server**, **Lotus Notes**, FTP, TFTP, NNTP, POP3, SMTP, RLOGIN, RSH, TELNET, among others. Also implemented filter and display on selected objects.
- Designed **Application Monitoring** for Internet Suite (HTTP, FTP, SMTP, POP3, TELNET, and NNTP), Database Suite (Oracle, Sybase), and Application Suite (Lotus Notes). Developed **Application Response Time** management information base (MIB) for Sniffer Pro.
- Wrote a NGC Total Network Visibility Guide, *How Sybase and Microsoft SQL Server Databases Impact Network Performance* for the marketing department as well as **wrote** and delivered **classes** on *Introduction to SQL* and *Troubleshooting Sybase and Microsoft SQL with Expert*
- Wrote a program to capture network packets using the **Berkeley Packet Filter** and *libpcap* and analyze them using the Hifn MeterFlow packet classification engine. The results are displayed using an in-house demonstration program. Wrote a similar program for utilizing the WebConsole user interface with packets captured in a similar manner.

TRW Financial Systems, *Oakland, CA* [1989-1994]: Consulting Software Designer and Project Manager

- Wrote Sybase CT-Library C language interface, stored procedures, interprocess communications with message queues, and DCE/RPC development for **image** based print packets in a Sun/Solaris environment.
- Developed **4GL image based application** using Plexus and Microsoft Windows SDK.
- Coded **Embedded SQL** in C on the Sun and Plexus 4GL on the PC's for the Informix database.
- Designed a strong data modeling and database for image based **table driven data entry** (TDDE) system as well as document image systems for the processing of warrantee registration cards. Created internal and external design documentation (functional specifications) for TDDE and several image based work flow systems. Managed the software development efforts for a pilot project which became a multi-million dollar contract.
- Delivered sales support presentations leading to major contracts.

Sybase, Inc., *Emeryville, CA* [1988-1989]: Senior Software Engineer and Project Leader

- Implemented **Sybase Secure SQL Server** (B1 level of trust) in C for **DECnet-Ultrix** on a Vax.

- Led the C language porting efforts of the Sybase Secure Sybase SQL Toolset to VAX/VMS (two releases), VAX/SEVMS and Sun OS MLS (multi-level secure system).
- Developed C language code for a Secure Server Simulator and a Trusted Multiplexor (a Sybase Open Server application) on a VAX under VMS and SEVMS.

***Select Information Systems, Inc**., Kentfield, CA* [1981-1982]: President, Vice President, Founder

- Designed, developed and implemented in ASM, C and RATFOR ***SELECT***, the first microcomputer based word processing package which contained its own self-teaching module, a merge print facility and a spelling checker.
- Managed a team of 12-15 software engineers, documentation specialists, QA engineers and support staff. Responsible for negotiating contracts with DEC, Altos, NEC, Victor Business Products, and others.

OTHER RELEVANT EXPERIENCE

***Micro Applications & Hardware (MICAH),** Greenbrae, CA* [1979-present]: Independent Consultant

- ***Secerno, Ltd.**, Oxford, UK* [2006-2007]: Developed an Oracle wire client (OWC) which monitors (IDS) and optionally modifies (IDP) Oracle 9 and 10 SQL statements in either intrusion detection mode (IDS) or intrusion prevention mode (IDP). The OWC is written in C for Linux/Unix based platforms and incorporated into a shared library.

- ***NetPredict, Inc**, Menlo Park, CA* [2000-2004]: Designed a **Packet Capture** (PCF) capability for *NetCalibrator* using the Berkeley Packet Filter (BPF – developed by Lawrence Berkeley Laboratory) *libpcap* library and driver based on *tcpdump* made publicly available by Politecnico di Torino as *winpcap*. PCF integrates with NetCalibrator using a custom designed socket interface. Enhanced PCF to include RTP and RTCP protocols. Collaborated on the design of a 24x7 monitoring system using a Linux server and the code base of PCF.

- ***NewTerra Inc.**, Mill Valley, CA* [2003-2004]: Developed real estate lead generation website using PHP, MySQL, Photoshop and Dreamweaver. This site creates custom web pages for real estate agents and brokers who subscribe for a market share.

- ***AAE Systems, Inc**., Sunnyvale, CA* [2004]: Solved a network performance problem with the Visual Studio.NET C++ Csocket interface and Wireshark in 4 days when it was expected to take two weeks.

- ***Alliance Data Systems**, Redwood Shores, CA* [1995-1996] Used Microsoft Visual C++ and MFC to build and enhance a **TIFF file viewer**. Ported the Silicon Graphics TIFF library to run efficiently under Microsoft Windows..

- ***Oracle Corp**., Belmont, CA* [1989]: Evaluated and maintained Oracle's Ally Development environment.

Developed **proprietary marketable software**, including accounting programs (G/L, A/R, A/P and Payroll) in BASIC, a versatile printer graphics package in FORTRAN, and CP/M and MP/M operating systems for Z80-based computers in Z80 assembler. Invented and implemented in **C/C++** a proprietary forms-oriented visual programming application development environment called **cForm**, which has been ported to Unix, and Macintosh based systems.

Designed and implemented multiple web sites based on HTML, JavaScript, AJAX, jQuery, PHP and MySQL.

Jerome N. Freedman, Ph. D.

(415) 461-6476 · (603) 691-8911 fax · jeromef@netzero.net

LITAGATION SUPPORT EXPERIENCE

***IP Legal Services**, Paoli, PA* [2008]: Performed **patent review** and search of possible infringements of AMD patents related to network security through disrupting packet flows based programmable conditions found on multiple network ports.

***Brobeck, Phleger & Harrison**, Palo Alto, CA* [2001]: **Expert witness** activities, including patent reviews from Sun and IBM related to Java, JDBC, J2EE and other technical issues for one of America's leading law firms.

PATENTS

	Patent Number	Date Issued	Title
1	7181748	02/27/2007	Multi-Layer Protocol Reassembly That Operates Independently Of Underlying Protocols, And Resulting Vector List Corresponding Thereto
2	7103675	09/05/2006	Multiplexed Request and Replies in a Communications Channel
3	N/A		System And Method For Heuristic Determination Of Network Protocols
4	7493659	09/17/2009	Network Intrusion Detection and Analysis System and Method
5	N/A		Network Analyzer Co-Processor System and Method

EDUCATION

Ph. D.	Computer Science, Columbia Pacific University
M. S.	Physics, University of Chicago
M. A.	Physics, Washington University
	Physics, University of Chicago and Boston University - completed course work for Ph. D.
B S.	Chemical Engineering, Purdue University

COMMUNITY SERVICE

***Marin AIDS Project**, San Rafael, CA*[2007-2010]: Served on the Board of Directors and provided guidance to clients in healing.

***Institute for Health and Healing**, San Francisco, CA*[2007-2010]: Served on the Advisory Council and participated in various activities including web site design, hospital visits and the chaplaincy program.

***Pine Steet Clinic**, San Anselmo, CA*[2009-present]: Co-lead *Mindfulness in Healing*, a support group to inspire well-being and self-advocacy in health matters.