



NordU
USENIX 2002

NordU2002 – The fourth NordU/USENIX Conference
February 18–22, 2002

Marina Congress Center, Helsinki, Finland

INVITATION PROGRAM

<http://www.nordu.org/NordU2002/>



FUUG



Program at a Glance

Tutorials			Conference Technical Sessions		
Monday, February 18	Tuesday, February 19	Wednesday, February 20	Thursday, February 21	Friday, February 22	
09.00–17.00 M1 Building Secure Software Why the standard approach to security doesn't work Gary McGraw M2 Sendmail Configuration and Operation (Updated for Sendmail 8.12) Eric Allman M3 Perl for System Administration – The Power and the Praxis Daniel Klein MT4 UNIX Kernel Internals: Data Structures and Algorithms, Part I Marshall Kirk McKusick	09.00–17.00 T1 Advanced Topics in DNS Administration Jim Reid T2 Issues in Unix Infrastructure Design Lee Damon T3 To BGP or not to BGP: Making the Internet Connection Vincent C Jones MT4 UNIX Kernel Internals: Data Structures and Algorithms, Part II Continued	09.00–17.00 W1 Inside the Linux Kernel Theodore Ts'o W2 High Availability Network Design Vincent C Jones W3am 09.00–12.30 Apache – A Secure Server Jan Saell W3pm 13.30–17.00 The Veritas SANPOINT Cluster with the Global Filesystem Paul Massiglia W4am 09.00–12.30 Upgrading from BIND8 to BIND9 Jim Reid W4pm 13.30–17.00 Sendmail and Security Eric Allman	08.30–10.00 Keynote in Plenum. Building Secure Software. How to Avoid Security Problems the Right Way, Gary McGraw <div><div>Session 1</div><div>Theme: Refereed Papers 10.30–11.15 Q*ADPZ An Open system for distributed computing Authors: Zoran Constantinescu and Pavlo Petrovic 11.15–12.00 Internet Security Management System for IPsec Authors: Su-Hyung Jo, Jac-Hoon Nah and Sung-Won Sohn 13.00–13.45 User-Centered Security Engineering Author: Daniela Gerd tom Markotten 13.45–14.30 Trust Management in Mobile IP-v6 Authors: Yuchen Zhou and Catharina Candolin 15.00–15.45 JAMUS: Java Accommodation of Mobile Untrusted Software Authors: Nicolas Le Sommer and Frédéric Guidec Theme: WWW and Scripting 15.45–16.30 The Synergy of Open Commercialism Ken Coar Theme: MICS 16.30–17.15 Samba 2.2 –You don't believe it's not Windows Volker Lendecke</div></div> <div><div>Session 2</div><div>Theme: New Trends 10.30–11.15 Mac OS X: Darwin with BSD Features Serge Robe 11.15–12.00 Sizing the Dinosaur: Workload Migration and Hardware Estimation for Linux in Virtual Machines David Boyes Theme: Security 13.00–13.45 SSH Traffic Analysis Solar Designer 13.45–14.30 IP-filtering Guido van Rooij 15.00–15.45 What to do after being hacked Jukka Mäkinen</div></div> <div><div>Session 3</div><div>Theme: Sponsor's Presentations 10.30–11.15 Information Centered Infrastructure Anders Olsson 11.15–12.00 VERITAS Volume Manager and File System for Linux Erik Möller 13.00–13.45 HP-UX on ITANIUM Speaker: HP-labs 13.45–14.30</div></div>	09.00–10.00 Keynote in Plenum. Open Source, Standards, and Networks: Tools of Liberty and Democracy Bruce Perens <div><div>Session 1</div><div>Theme: Storage and Clustering 10.30–11.15 Data Around the World Paul Massiglia 11.15–12.00 Sun Cluster 3 Kjell Högström 13.00–13.45 Object Oriented Programming for Multiprocessor Performance Jonathan Appavoo 13.45–14.30 Strategies for large-scale Computing Anders Ynnerman</div></div> <div><div>Session 2</div><div>Theme: FreeNIX 10.30–11.15 KDE and Qt Programming World Matthias Ettrich 11.15–12.00 Running Fsk in the Background Marshall Kirk McKusick 13.00–13.45 Cleopatra and her New Guard Werner Koch 13.45–14.30 Gnome – status and future Michael Meeks</div></div>	14.30–16.00 Keynote in Plenum Unix and its Children Peter H Salus
18.00 Welcome Reception			19.00 Conference Dinner		

Dear System Admins and Computer Fellows!

It is with great pleasure I greet you, but also with sadness for the current events in the world. I think that all of us agree to that the world is not the same after September 11. We started the year in the era of new understanding and humanity between people. The new millennium crisis was over and we could look forward to a millennium of good development in the human area.

Then we were all baffled about what we could witness on TV. And the feeling of insecurity started to affecting all parts of our life. But I think that we have to continue to show that life goes on and that we don't let anyone rule it.

So I am VERY GLAD to be able to introduce you to the new conference in Helsinki, Finland. As this is the 4th year we are running the NordU conference it seems that it is generating more and more interest, and as a REAL USENIX conference in the Nordic area it is a very unique event.

The conference has its normal mixture of invited talks, tutorials and refereed papers. Good, solid and high quality tutorials give you the possibility to learn from very high and international well-known speakers. We have of course some very good keynote speakers and invited talks, and also some very nice refereed papers.

You will find all that you expect from a Usenix conference, a social program with nice events, where you can meet and socialize with you colleagues. We have the famous Birds-of-a-Feather sessions where you can meet and discuss with friends and foes, colleagues and vendors. As usual we have a vendor exhibition that helps us to see what is new in the market.

Finally we will show our strong commitment to Open Source and Free Software by having the FREENIX track where we will hear about new and interesting things in the world of GNU/Linux and BSD.

So help us all to make this a really memorable event and hurry up and register, and I'll see you in Helsinki.

And Remember - No Ties!



Jan Säll



Tutorial Program

Tutorials Monday, February 18, 09.⁰⁰–17.⁰⁰

M1

Building Secure Software Why the standard approach to security doesn't work

Computer security takes on more importance as commerce becomes e-commerce and business embraces the Net. However, little progress has been made in the security field, especially when vendor technology is considered. Popular press coverage of computer security orbits around basic technology issues such as what firewalls are, when to use the DES encryption algorithm, which anti-virus product is best, or how the latest email-based attack works. The problem is, many security practitioners don't know what the problem is. It's the software! Internet-enabled software applications, especially custom applications, present the most common security risk encountered today, and are the target of choice for real hackers. This tutorial is all about software security risk and how to manage it. The trick is to begin early, know your threats (including language-based flaws and pitfalls), design for security, and subject your design to thorough objective risk analyses and testing. This tutorial covers material that software practitioners, including architects and languages researchers, can use to avoid security problems and produce more secure Internet-based code.

Prerequisites: Some software development experience, C and C++ and basic security knowledge

Basic outline:

Introduction to Software Security

- Security goals
- Software project goals
- Java Architecture as an example

Software Risk Management for Security

- Performing a Risk Analysis
- Integrating into the software lifecycle
- Attack trees
- ITS4 and implementation scanning
- Software security case study (Visa smart cards)

Software Security Risks

- Identifying software security risks
- Top software risks
 - buffer overflow
 - race conditions
 - randomness
 - cryptography
 - client trusts
 - authentication

Software Security Tradeoffs and Tricks

- Selecting technologies
- The software security tradeoff
- Building an Internal Software Security Group
- Open source and closed source
- Access control (Unix and NT)
- Applying cryptography
- Database security
- Through the firewall



Instructor:

Gary McGraw, Cigital's Chief Technology Officer, is a noted authority on mobile code security and software security. Dr. McGraw consults with major e-commerce vendors, including Visa, MasterCard, and the Federal Reserve. He has written over sixty peer-reviewed technical publications,

and is principal investigator on grants from Air Force Research Labs, DARPA, National Science Foundation, and NIST's Advanced Technology Program. Dr. McGraw has co-authored four books, including *Java Security* (Wiley 1996), *Securing Java* (Wiley 1999), *Software Fault Injection* (Wiley 1998) and *Building Secure Software* (Addison-Wesley 2001), the first book in the world on software security. Dr. McGraw holds a dual PhD in Cognitive Science and Computer Science from Indiana University and a BA in Philosophy from UVA.

M2

Sendmail Configuration and Operation (Updated for Sendmail 8.12)

Who should attend:

Systems administrators who want to learn more about the sendmail program, particularly details of configuration and operational issues (this tutorial will not cover mail front ends).

Content:

This will be an intense, fast-paced, full-day tutorial intended for people who have already been exposed to sendmail. This tutorial describes the latest release of sendmail from Berkeley, version 8.12. After introducing a bit of the philosophy and history underlying sendmail, this tutorial covers:

- The basic concepts of configuration: mailers, options, macros, classes, keyed files (databases), and rewriting rules and rulesets.
- Configuring sendmail using the M4 macro package.

- Day-to-day management issues, including alias and forward files, “special” recipients (files, programs, and include files), mailing lists, command line flags, tuning, and security.
- How sendmail interacts with the Domain Name System.



Instructor:

Eric Allman is the original author of sendmail. He was the chief programmer on the INGRES database management project and an early contributor to the UNIX effort at Berkeley, authoring syslog, tset, the -me troff macros, and trek. He designed database user and application interfaces at

Britton Lee (later Sharebase), and contributed to the Ring Array Processor project for neural-network-based speech recognition at the International Computer Science Institute. He is a former member of the Board of Directors of the USENIX Association.

M3

Perl for System Administration – The Power and the Praxis

Who should attend:

People with system administration duties, advanced-beginner to intermediate Perl experience, and a desire to make their jobs easier and less stressful in times of sysadmin crises.

Perl was originally created to help with system administration, so it is a wonder that there isn’t more instructional material devoted to helping people use Perl for this purpose. This tutorial hopes to begin to remedy this situation by giving you six solid hours of instruction geared towards putting your existing Perl knowledge to practice in the system administration realm.

The morning section will concentrate on the power of Perl in this context. Based on David Blank-Edelman’s O’Reilly book of the subject, we’ll take a multi-platform look at using Perl in cutting-edge and old standby system administration domains. This jam-packed survey will include:

- secure Perl scripting
- dealing with files and filesystems (including source control, XML, databases, log files)
- dealing with SQL databases via DBI and ODBC
- email as a system administration tool (including spam analysis)
- network directory services (including NIS, DNS, LDAP, ADSI)
- network management (including SNMP and WBEM)

In the afternoon, we look at putting our Perl knowledge to work for us to solve time-critical system administration problems using short Perl programs. Centered on a set of “battle stories” and the Perl source code used to deal with them, we’ll discuss different approaches to dealing with crises using Perl.

At the end of the day, you’ll walk away from this class with Perl approaches and techniques that can help you solve your daily system administration problems. You’ll have new ideas in hand for writing small Perl programs to get you out of big sysadmin pinches. And on top of all this, you are also likely to deepen your Perl knowledge.



Instructor:

Daniel Klein has been teaching a wide variety of Unix-related subjects since 1984, and has been involved with Unix since 1976. His experience covers a broad range of disciplines, including the Internals of almost every Unix kernel released in the past 23 years, real-time process control, web-related

systems and servers, compilers and interpreters, medical diagnostic systems, system security and administration, graphical user interface management systems, and a racetrack betting system. He contributes regularly to the proceedings and invited talks of the USENIX Association, and is also their tutorial coordinator. He holds a Masters of Applied Mathematics from Carnegie-Mellon University in Pittsburgh, and in his free time is a member of an a-cappella choir and an improvisational comedy troupe.

MT4

UNIX Kernel Internals: Data Structures and Algorithms, Part I

Who should attend:

This course provides a broad overview of how the UNIX kernel implements its basic services. It will be most useful to those who need to learn how these services are provided. Individuals involved in technical and sales support can learn the capabilities and limitations of the system; applications developers can learn how to effectively and efficiently interface to the system; systems programmers without direct experience with the UNIX kernel can learn how to maintain, tune, and interface to such systems. This course is directed to users who have had at least a year of experience using the UNIX system and the C programming language. They should have an understanding of fundamental algorithms (searching, sorting, and hashing) and data structures (lists, queues, and arrays). Students will not need to prove relationship with a source license holder, as source code examples will be taken from the freely distributable FreeBSD system.

Content:

This course will provide a firm background in the UNIX kernel. The course includes coverage of most BSD-derived kernels including the FreeBSD system, BSDI’s BSD/OS, and Sun’s Solaris. The POSIX kernel interfaces will be used as examples where they are defined. Where they are not defined, the BSD interfaces will be described and then related to other vendors’ interfaces. The course will cover basic kernel services, process structure, virtual and physical memory management, scheduling, paging and swapping. The kernel I/O structure will be described showing how I/O is multiplexed, special

devices are handled, character processing is done, and the buffer pool is managed. The implementation of the filesystem and its capabilities will be described. The filesystem interface will then be generalized to show how to support multiple filesystem types such as Sun Microsystem's Network File System (NFS). Due to time limitations there will be no coverage of the networking subsystem. The presentations will emphasize code organization, data structure navigation, and algorithms. It will not cover the machine specific parts of the system such as device drivers.

Day 1 morning – Kernel Overview

- Kernel terminology
- Basic kernel services
- Process structure

Day 1 afternoon – Kernel Resource Management

- Virtual memory management
- Paging and swapping
- Scheduling
- Signals

Day 2 morning – Kernel I/O structure

- Special files
- Terminal handling
- Multiplexing I/O
- Autoconfiguration strategy
- Structure of a disk device driver

Day 2 afternoon – Filesystems

- Filesystem services
- Block I/O system (buffer cache)
- Filesystem implementation
- Support for multiple filesystems
- Network File System (NFS)



Instructor:

Dr. Marshall Kirk McKusick writes books and articles, consults, and teaches classes on UNIX- and BSD-related subjects. While at the University of California at Berkeley, he implemented the 4.2BSD fast file system, and was the Research Computer Scientist at the Berkeley

Computer Systems Research Group (CSRG) overseeing the development and release of 4.3BSD and 4.4BSD. His particular areas of interest are the virtual-memory system and the file-system. He earned his undergraduate degree in Electrical Engineering from Cornell University, and did his graduate work at the University of California at Berkeley, where he received Masters degrees in Computer Science and Business Administration, and a doctoral degree in Computer Science. He is a past president of the Usenix Association, and is a member of ACM and IEEE.

Tuesday, February 19, 09.⁰⁰–17.⁰⁰

T1

Advanced Topics in DNS Administration

This one day course is intended for DNS administrators who wish to extend their understanding of how to configure and manage name servers running BIND9. They should have some experience of running a name server and be familiar with DNS jargon, resource records as well as the syntax of zone files and named.conf. "I've set up master (primary) and slave (secondary) name servers. What else can I do with the name server?"

Outline:

- The BIND9 Logging Subsystem getting the most from the name server's logs
- Managing the name server with rndc
- How to Configure Split DNS: internal and external versions of a domain using the view mechanism of BIND9 to implement split DNS
- Setting up an internal root server
- Securing the Name Server
 - running it chroot(ed)
 - using access control lists
 - preventing unwanted access

- Dynamic DNS (DDNS)
 - dynamic updates with nsupdate
- IPv6
 - resolving and answering queries with IPv6
 - setting up A6/DNAME chains and AAAA records to resolve IPv6 addresses
- The Lightweight Resolver Daemon, lwresd
- Secure DNS (DNSSEC)
 - using Transaction Signatures (TSIG)
 - how to sign zones with dnssec-keygen and dnssec-signzone



Instructor:

Jim Reid started using a PDP11/45 running V7 Unix 21 years ago and has been working with Unix systems ever since. He worked for three years at Origin on behalf of Philips Electronics where he wrote a DNS management system and designed, built and ran the DNS infrastructure for the corporate network, one

of the biggest in the world. He has over a decade's experience in writing and teaching training courses ranging from kernel internals to system administration and network security to DNS administration. He's a frequent speaker at conferences and workshops in Europe and the US. His book on DNS Administration with BIND9 will be published in late 2001 or early 2002.

Issues in Unix Infrastructure Design

Who should attend:

Anyone who is designing, implementing or maintaining a heterogeneous (or homogeneous) Unix environment with 2 to 20,000+ hosts. Systems administrators, architects and managers who need to maintain multiple hosts with few admins.

Content:

This intermediate class will examine many of the background issues that need to be considered during the design and implementation of a mixed-architecture (or single-architecture) Unix environment. It will cover issues from authentication (single-signon) to the Holy Grail of Single System Images.

This class won't implement a "perfect solution", as each site has different needs. It will try to raise all of the questions you should ask (and answer) while designing the right solution to meet your needs. We will look at some free-ware and some commercial solutions, as well as many of the tools that exist to make a workable environment possible.

The discussion topics will include:

- Administrative Domains (Who is responsible for what, and what can users do for themselves?)
- Desktop services vs. Farming (Do you do serious computation on the desktop, or do you build a compute farm?)
- Disk Layout (How to plan for an upgrade, where do things go?)
- Free Vs. Purchased solutions (Write your own, or hire a consultant/company?)
- Homogeneous Vs. Heterogeneous (homogeneous is easier, but might not do what your users need)
- Master Database is a Must (keeping track of what you have, and what it does/can do)
- Policies to make life easier
- Push Vs. Pull (Do you force it to each host, or does a system ask for it?)
- Quick Replacement techniques (get the user back online in 5 minutes)
- Remote Install/Upgrade/Patching (lights out operation, remote user sites, keeping up with vendor patches...)
- Scaling and Sizing (2 hosts don't need the same degree of infrastructure investment 200 do. 200 don't need the same degree 2000 do, and so on. How do you plan on scaling?)
- Security vs. Sharing (your users want access to everything. So do the crackers...)
- Single Signon (One password everywhere? How can you do it securely?)
- Single System Images (the Holy Grail. Users see one environment, no matter how many different types of OSs there are)
- Tools (free, purchased, things you can write yourself)



Instructor:

Lee Damon, Senior System Administrator, University of Washington Electrical Engineering Department. Lee Damon has a B.S. in Speech Communication from Oregon State University. He has been a Unix System Administrator since 1985, and has been active in SAGE US since its

inception. He assisted in developing a mixed AIX/SunOS environment at IBM Watson Research, and has developed mixed environments for UW/EE, Gulfstream Aerospace and QUALCOMM. He is a member of the SAGE Ethics Working Group, and was one of the commentators on the SAGE Ethics document. He has championed awareness of Ethics in the Systems Administration community, including writing it into policy documents.

To BGP or not to BGP: Making the Internet Connection

Who should attend:

System and network designers and administrators responsible for the availability, performance and cost-effectiveness of their organization's Internet access. Familiarity with basic network terminology and concepts is assumed, however experience with BGP is not required.

Content:

Connectivity to the Internet is now a critical communications requirement for many organizations. Adding a second ISP connection can dramatically improve the availability of Internet access, but that improvement is dependent upon correct implementation and determining what constitutes correct can be a daunting challenge.

There are many alternative ways to provide redundant ISP connectivity and just as many conflicting requirements driving that selection. Making the correct choice requires making tradeoffs, and those tradeoffs require not only an understanding of what your requirements are, but also an understanding of the available alternatives and their strengths and weaknesses.

This tutorial starts with a brief overview of some of the diverse requirements which drive Internet connectivity, ranging from simple web access to e-commerce providers, highlighting the unique demands that each makes on Internet connectivity. We then explore a wide range of solutions. For each, we discuss how it works and which demands are optimally supported, which are merely satisfied and which fall by the wayside.

Along the way, we will explore many different ways the Border Gateway Protocol (BGP) can be adapted and used to meet unique organizational and communications requirements. We will also explore techniques for getting the advantages of BGP routing to the Internet without the overhead and cost associated with learning 80,000+ Internet routes. Among the tradeoffs explored are:

- Multiple connections versus multiple sites, what changes?
- Single ISP versus multiple ISPs, is it worth the extra cost?
- Static routes versus BGP routing, when is there a choice?
- Default route, indicator routes, and local routes, how much is enough?
- Running defaultless, when is more better and when is it not?
- Load sharing versus backup routes, what is reasonable?

The goal is to help you understand how your current design works and what alternatives exist to let you move closer to an optimal solution for meeting your requirements in your environment.



Instructor:

Vincent C Jones is the founder and principal consultant of Networking Unlimited, Inc., a network design consulting firm specializing in network performance and reliability enhancement. Vince has been applying the theory of networking to the solution of real world problems for almost three

decades and is the author of the Addison-Wesley book High Availability Networking with Cisco.

MT4

UNIX Kernel Internals: Data Structures and Algorithms, Part II, Continues from Monday

Wednesday, February 20, 09.⁰⁰–17.⁰⁰

W1

Inside the Linux Kernel

Who should attend:

Application programmers and kernel developers. You should be reasonably familiar with C programming in the UNIX environment, but no prior experience with the UNIX or Linux kernel code is assumed.

Content:

This tutorial will give you an introduction to the structure of the Linux kernel, the basic features it provides (scheduling, virtual memory, filesystems, and networking), and the most important algorithms it employs.

Although the material will focus on the release version of the Linux kernel, it will also address aspects of the development kernel codebase where its substance differs. It will not contain any detailed examination of the source code but will, rather, offer an overview and roadmap of the kernel's design and functionality.



Instructor:

Theodore Ts'o has been a Linux kernel developer since almost the very beginnings of Linux – he implemented POSIX job control in the 0.10 Linux kernel. He is the maintainer and author for the Linux COM serial port driver and the Control Rocketport driver. He architected and implemented Linux'

tty layer. Outside of the kernel, he is the maintainer of the e2fsck filesystem consistency checker.

W2

High Availability Network Design

Who should attend:

System and network designers and administrators who want to improve the availability of their network infrastructure and Internet access; anyone looking for a survey of how IP networks can fail and techniques for keeping critical network services available despite failures. Familiarity is assumed with basic network terminology and concepts, TCP/IP protocols, and the role of routers and switches.

Content:

No matter how the price is measured, downtime impacts the bottom line. As businesses and other organizations become ever more dependent upon computers and their support networks for their ongoing operations, it becomes even more critical that hardware and software failures not be permitted to interfere with those operations. As a result, availability is now a key network performance metric commensurate with throughput and delay.

This practical guide to maximizing network availability discusses how to select and configure appropriate redundancy for common production network needs. The emphasis is on how to take advantage of standard capabilities to make the network more reliable and minimize the need for emergency manual intervention. Proven solutions based on open standards and protocols are provided for a wide range of application requirements including:

- Providing bulletproof network access to servers
- Forcing dial backup calls on soft as well as hard link failures
- Tuning popular routing protocols to speed up failure recovery
- Building very large hub and spokes networks with small spoke routers
- Routing around firewall failures without sacrificing security
- Internet connectivity immune to the loss of a router, link or ISP
- Continuing to provide services despite loss of an entire facility

Instructor:

Vincent C Jones, Networking Unlimited, Inc. (see page 8)

W3am 09.00–12.30

Apache – A Secure Server

Who should attend:

System administrators and developers that want to learn more about the apache program, particularly details of configuration and operational issues of running a secure server. We will look at a number of good security practices. This will be an intense, fast-paced, half-day tutorial for people who have already been exposed to apache. Participants should have prior knowledge of the Apache 1.3 server, its operation and some knowledge of the Modules and Module APIs.

This tutorial will give you a good knowledge of the security concerns and a lot of reminders about how you should go about and configure your server so that it is as secure as possible.

Topics include:

- The Apache's Servers Security Precautions
- Common configuration mistakes and solutions
- The all used cgi and how to avoid problems
- Use of the suEXEC program to allow secure :-) execution of scripts
- Extra modules that can make your life easier
- Using the rewrite module together with chrooted access with ftp to allow user to maintain their system on a larger scale



Instructor:

Jan Säll is a leading UNIX consultant operating both in Sweden and internationally. He is currently running his own company – Irial – based in Kumla in the center of Sweden and London, United Kingdom and Seattle, USA. Irial provides advanced UNIX and network consultancy. He is the chairman of

EurOpen.SE. Mr. Säll has been working in the UNIX environment since 1983. Prior to starting the company Irial he started the company Yask. Before that, he was employed by Ekonomistyrning Data AB, a company specialized in advanced accounting systems.

W3pm 13.30–17.00

The Veritas SANPOINT Cluster with the Global Filesystem

– OK. So now you have a Storage Area Network. What do you do with it? When you were deciding to implement storage networking technology in your data center, you expected to realize benefits like lower capital cost through consolidation and sharing of devices, better availability and manageability through common accessibility, and advanced application capabilities through sharing of actual data objects. Now that you have your SAN, it's time to make these things happen.

This seminar will begin with a discussion of the technical issues that arise when all of your storage is connected to all of your servers, and the software techniques used to resolve them. Data sharing and clustering will be discussed at length. Building on that foundation, the seminar will discuss some of the advanced techniques that are being used to virtualize storage in cluster environments, relating back to the Storage Networking Industry Association's Shared Storage Model, released in 2001. The seminar will close with a discussion of a new class of Storage Appliances enabled by a combination of SAN technology and the various software techniques discussed earlier in the seminar.



Instructor:

Paul Massiglia, Veritas Software Corporation

Mr. Massiglia has been in the storage industry for over 20 years. He has held engineering and marketing positions with major storage suppliers, including, Digital, Adaptec, and Quantum. He is currently employed with VERITAS

Software Corporation, where he acts as the company's representative to storage industry associations, including the SNIA. He also writes and presents technology white papers on subjects of importance to VERITAS, and is a frequent participant in industry conferences.

Mr. Massiglia is former Vice-Chairman of the RAID Advisory Board and author of The RAIDbook, The Digital Large System Mass Storage Handbook, and Managing Online Volumes in Windows Operating Systems. He has also written two new books Storage Networking Essentials (with Richard Barker as a co writer) and Managing Online Storage for Windows Storage

W4am 09.00–12.30

Upgrading from BIND8 to BIND9

Who should attend:

This half-day course is designed for domain administrators currently running a version of BIND 8 on their systems who wish to upgrade to the most recent version of BIND. The architecture model for BIND 9 is quite different from that of BIND 8. This course will explain the differences between the

two versions. Features that are new to BIND 9 will be highlighted, and explanations provided regarding how best to take advantage of them.

Attendees should already have a basic understanding of the Internet and Unix operating systems, and be comfortable with editing files and installing software on their systems. It is expected that attendees can create zone files for domains and subdomains and the in-addr.arpa domain, create BIND 8 configuration files with zone and option statements, set up resolvers, handle common tasks and problems with name servers, and use various tools for name server management and troubleshooting.

Course outline:

- Overview
- New protocol features
- IPv6
- Secure DNS – DNSSEC
- Migration from BIND 8 to BIND 9
- Changed configuration syntax
- Added/deleted keywords
- Syntax gotchas
- New IPv6 Protocol
- A6 chains
- Reverse lookups
- New DNSSEC Protocol
- Securing zones
- Trusted keys
- Authentication of data
- Summary

Instructor:

Jim Reid, Nominum (see page 6)

W4pm

13.30–17.00

Sendmail and Security

This fast-paced half day tutorial is intended for UNIX administrators who are already familiar with configuring and administering sendmail and who want to learn how to convert to sendmail 8.11 or 8.12, or who want to understand sendmail security better, particularly on firewalls and other similar systems.

Sendmail is a powerful Mail Transport Agent that can be configured for many different environments, from firewalls through workstation mail servers. These environments have different security requirements. Sendmail can also be used to secure the e-mail infrastructure at your site using SMTP authentication and TLS authentication and encryption.

Topics include:

- How to configure sendmail on systems that have special security requirements, such as firewalls
- Securing e-mail infrastructure using SMTP authentication and TLS authentication and encryption
- Running sendmail without set-user-ID permissions
- Running sendmail in a “chroot”ed jail
- How and when to relax sendmail’s file security checks

Instructor:

Eric Allman, Sendmail Inc (see page 5)

Conference Technical Sessions

Thursday, February 21, Session 1

Keynote in Plenum

08.30–10.00

Building Secure Software How to Avoid Security Problems the Right Way

What do wireless devices, cell phones, PDA's, browsers, operating systems, network services, public key infrastructure, and firewalls have in common? The answer is "software". Software is everywhere, and it is not usually built to be secure. This talk explains why the key to proactive computer security is making software behave. With software complexity growing alarmingly – the source code base for Windows XP is 40 million lines – we have our work cut out for us. Clearly, the penetrate-and-patch approach is non-optimal. Even worse is bolting security mechanisms on as an afterthought. Building software properly, both at the design and implementation level, is a much better approach. This talk covers some common software security risks, including buffer overflows, race conditions, and random number generation, and goes on to discuss essential guidelines for building secure software. Applying a risk-driven approach to software security that integrates analysis and risk management throughout the software lifecycle is the key to better computer security.



Keynote speaker:
Gary McGraw, Cigital's Chief Technology Officer (see page 4).

Theme: Refereed Papers

10.30–11.15

Q² ADPZ An Open system for distributed computing

The recent growth of computational power of desktop computers calls for their efficient use in larger organizations, especially those, which need to run computationally intensive tasks, such as universities and research centers. Q²ADPZ ['kwod "pi: 'si:] is a modular C++ implementation of a free, open, multi-user, multi-platform system with limited security for idle distributed computing in a TCP/IP network. The users of the system can submit, monitor, and control computing tasks (grouped into jobs) to be executed by computers participating in the Q²ADPZ system in form of dynamic shared libraries, executables, or interpreted programs (including Java applications). Users can provide software, hardware, and platform requirements for each task and the proper computer is automatically selected. The system automatically delivers the input and output data files. Computers executing tasks detect users logging in, and the tasks are terminated or moved to other computers to minimize the disturbance of regular computer users. Q²ADPZ can operate both in conditions of an open Internet environment and closed local TCP/IP network. Internal communication protocol is based on optionally encrypted XML messages. The system provides basic statistics information on usage accounting; several user modes are supported: from novice users submitting simple executable tasks to advanced users who can alter the communication interfaces for their needs. We are currently using the system for research tasks in the areas of large-scale scientific visualization, evolutionary computation, and simulation of complex neural network models.



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Internet Security Management System for IPSec

This paper presents the design and implementation of Internet Security Management System for IPSec. System collects SAs Information between host and gateway or end hosts. It also monitors AH and ESP security traffics, and notifies the problem of IPSec by auditable event. This paper implements using Java and Web technology. There are various benefits such as platform independence and scalability.



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User-Centered Security Engineering

Current approaches to security engineering mainly focus on attacker models, secure mechanisms, and code testing to ensure a high-level security standard. However, these approaches do not emphasize the usability of system sufficiently and the risk arises that the implemented mechanisms create overheads for users or require unworkable user behavior. In addition, end users will not use security products they cannot understand or which are difficult to apply. Therefore, we propose the new concept on integrated user-centered security engineering to bridge the gap between security and usability. This method has been pursued for the development and implementation of these security tool “Identity Manager”. The Major findings complete this paper.



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Trust Management in Mobile IPv6

In this paper we present a solution for handling trust management in Mobile IPv6. We first define a trust model suitable for mobile nodes, and then establish trust relationships between the various entities in the network based on this model. We are especially interested in the relationship between the Mobile Node (MN) and the Corresponding Node (CN). Trust is expressed using authorization certificates. Our model primarily relies on Simple Public Key Infrastructure (SPKI) certificates, although other authorization certificates could be used as well. The main advantage of our approach is that it is simple, flexible, and scalable, which will be shown in the paper.



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JAMUS: Java Accommodation of Mobile Untrusted Software

Security is a major issue for mobile components (programs, applets, mobile agents...) that roam the Internet. When downloading a software component from the Internet, it is often impossible to decide in advance if this piece of code should be considered as safe or potentially dangerous for the local system. A malicious – or simply buggy – component might put the whole system in jeopardy, as it might destroy crucial data files, or consume too much CPU time, memory, or network bandwidth. Another important issue when hosting mobile components is resource management. Some components can do very well with sparse resources, while others require predictable or guaranteed levels of quality of service regarding resource availability.

With the JAMUS (Java Accommodation of Mobile Untrusted Software) platform we propose solutions to such problems, based on a contractual approach of resource management and access control. JAMUS can accommodate mobile Java components, provided that these components can specify their requirements regarding resource usage in both a qualitative way (e.g., access rights to parts of the file system) and a quantitative way (e.g., read and write quotas). The requirements of a candidate component are used by a resource broker in order to decide if this component can be admitted on the platform. Admission control is based on a resource reservation scheme: a component is admissible only if the resources it requires are available in sufficient quality and quantity. Moreover, when a component is admitted by the resource broker, the resources it required are reserved for this component.

Once a component has been accepted by the resource broker, it can start running on the platform. However, this component is still considered as a potential threat to the local system. Its execution is submitted to a constant monitoring, so that resource access violations can be readily detected and dealt with. A major consequence of this approach is that no component can access or monopolize resources to the detriment of other components.



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Theme: WWW and Scripting

15.45–16.30

The Synergy of Open Commercialism

Openness in software can be represented as a spectrum, with completely closed/zero-source packages at one end and enforced openness at the other. However, there *is* a middle ground, where the idealists of the open development world can work in harmony with the developers on the we-sell-software world. The zealots at either end of the spectrum sometimes miss this middle ground, so I'll talk about how it *can* be.



Speaker:

Ken Coar is a director and Vice President of the Apache Software Foundation, and a Senior Software Engineer with IBM. He has over two decades of experience with network software and applications, system administration, system programming, process analysis, and computer security. Ken has worked

with the WorldWide Web since 1992, is a member of The Apache Group, the Association for Computing Machinery, an at-large member of ICANN, and is heading the project to develop Internet RFCs for CGI. He is the author of 'Apache Server for Dummies,' co-author of 'Apache Server Unleashed,' and is currently working on two new books, 'Apache Cookbook' (O'Reilly) and 'Apache Module Development in C' (Addison-Wesley-Longman). [For inclusion when appropriate] IBM is the leader in creating, developing and manufacturing the world's most advanced information technologies, including computer systems, software, networking systems, storage devices and microelectronics. IBM translates these advanced technologies into value for its customers through its professional solutions and services businesses worldwide.

Theme: MISC

16.30–17.15

Samba 2.2 –You don't believe it's not Windows

The samba talk will be a demonstration of major new features in the latest stable Samba release. Notable new features are:

- Automatic printer driver download for Windows NT
- Support for editing Posix ACLs from the Windows Explorer
- Winbindd, a way to completely integrate a Linux system as a Network Attached Storage box into a Windows Domain

As development proceeds quite fast these days, expect more to come.



Speaker:

Volker Lendecke is a Samba Team member since about 1994. His major contribution is the Linux SMB file system. Currently he works at the Service Network GmbH in Göttingen, Germany. There he does Samba Consulting and Samba/Linux Training.

Thursday, February 21, Session 2

Theme: New Trends

10.30-11.15

Mac OS X: Darwin with BSD Features

Mac OS X is a super-modern operating system that delivers the power of UNIX with the simplicity and elegance of the Macintosh.

The Macintosh with Mac OS X is built on industry-wide standards so it can interoperate with all leading networks, data file formats, applications, and peripherals. And since Mac OS X's core is open source UNIX, the Macintosh will continue to be interoperable and will also offer time-tested stability and security.

Mac OS X moves Macintosh from Proprietary to Standards-Based Architecture and opens new opportunities for development since the Mac OS X Developer Tools CD ships with every retail copy of Mac OS X.

The objective of this presentation is to review the Unix part of Mac OS X, the Darwin Core OS with details of the BSD components. Apple is investing in great tools to create the next generation of Mac OS X applications and to help Unix developers to port their applications or utilities onto Mac OS X.

Project Builder is Apple's integrated development environment (IDE) for Mac OS X. It is designed to fully support all of the major platform initiatives of Mac OS X, such as the Carbon and Cocoa frameworks, Java, and the new application packaging mechanisms. Project Builder provides project editing, search, and navigation, file editing, project building, and debugging facilities for all types of Mac OS X software projects, including applications, tools, frameworks, libraries, plug-in bundles, and kernel extensions and device drivers. It supports the use of C, C++, Objective-C, and Java.

Interface Builder is Apple's graphical editor for designing user interface components for both Carbon and Cocoa applications. Interface Builder makes creating an application's user interface easier by allowing developers to use its graphical editing environment to manage virtually every aspect of creating a well designed user interface that adheres to the Aqua user interface guidelines.

During the conference, we demonstrate the port of a Unix application, step by step, with Project Builder, Interface Builder, Terminal mode with Unix Command Lines, tutorials with documentation provided with the Mac OS X Developer Tools CD.



Speaker:

Serge Robe is Software Product Line Manager at Apple Europe. From '88-'97 he worked for Digital Equipment, Technical Service & Support Division as a Senior Consultant specialized on servers solutions with OpenVMS (clusters), OSF/1 and Digital Unix, then PATHWORKS for Macintosh. Serge was also involved in European projects with Cray Research as the Director of the European Cray/Digital Technical Support Center for the Y-MP-EL supercomputers. From '97-'99 he joined Apple Computer France where he was a Server solutions evangelist and since February 2000, Serge works for Apple Computer Europe.

11.15-12.00

Sizing the Dinosaur: Workload Migration and Hardware Estimation for Linux in Virtual Machines

This session is intended to outline the techniques and workload assessment techniques used to evaluate an existing workload and provide a preliminary estimate of resources required in a virtual machine environment such as the one provided by running Linux on IBM mainframe systems or in large scale discrete systems providing virtual machines such as VMWare-GSX. The session will include a discussion of workload evaluation techniques, some of the unique features of the IBM and VMWare virtual machine systems and of virtual machines in general that are generally counterintuitive in terms of Unix performance and capacity analysis, and to explore several test cases from production system environments that illustrate how to estimate system resource requirements for system migration to a virtual machine environment. Some familiarity with workload sizing and capacity planning techniques will be helpful for this session, but is not required.



Speaker:

David Boyes is CTO and President of Sine Nomine Associates, and has participated in operating systems and networking research for more than 20 years, working on design and deployment of systems and voice/data networks worldwide. David has designed scenarios and economic models for Linux on many platforms, and is currently involved in design and worldwide deployment of scalable system infrastructure for several Global 1000 companies.

Theme: Security

13.00–13.45

SSH Traffic Analysis

This presentation covers several weaknesses in common implementations of “secure” (encrypted) remote login protocols, with SSH (Secure Shell) protocols as the particular example. When exploited, these weaknesses allow an attacker to obtain sensitive information by passively monitoring encrypted remote login sessions. Such information may later be used to speed up brute-force attacks on passwords, including the initial login password and other passwords appearing in interactive login sessions. The traffic analysis attacks will be demonstrated. Countermeasures to reduce the impact of traffic analysis are proposed.



Speaker:

Solar Designer is the author of several popular security tools for Unix-like operating systems. He is better known for his password security tool set which includes John the Ripper password cracker, and for the Linux kernel “hardening” patches, although those aren’t necessarily the most interesting

things he’s done. ;-) Solar is currently the team leader for Openwall GNU/*/Linux.

13.45–14.30

IP-filtering

This talk will talk about various ways of filtering IP packets. It will begin by explaining shortly what TCP/IP packets look like. Using this, the talk will continue with explaining:

1. Why is packet filtering useful.
2. In what ways the various headers field in TCP/IP packet headers can be used to filter.
3. Stateless versus stateful filtering. As the author is involved in the development of IP-filter, also its special TCP filtering method will be covered.
4. What other methods are used (e.g. Firewall-1 stateful inspection)

The talk will be aimed towards network administrators that like to know more about the inner workings of packet filtering.



Speaker:

Guido van Rooij is married and has 3 children. He co-runs Madison Gurkha BV, a Dutch Security and Open Source consulting firm. He graduated in Discrete Mathematics at Eindhoven University of Technology and started working as software developer on medical systems, OCR equipment and

numerical controls. In 1995 he joined Philips Electronics to work on Internet security. Among others, he has been in charge with development and operations of the Philips

firewalls. He is co-founder of the Eindhoven Digital City and Internet Access Eindhoven. Furthermore, he was security officer of FreeBSD and part of the FreeBSD core team. In his precious spare time he tries to play the piano and recently he has discovered sports climbing.

15.00–15.45

What to do after being hacked

The idea is to get evidence of the crime or to get information of excluding possible crime. The main thing is to prove what has happened. Some times margin between criminal act and non-criminal is vague. One of the main problem is that the victim has no plans what to do in case of a computer break-in.



Speaker:

Jukka Mäkynen is a Detective Sergeant working in the IT-Crime Squad of the National Bureau of Investigation Head Quarters, Vantaa, Finland. He has been a policeman for 15 years. He has been working with computer related crime investigation since 1991. At the moment he is involved in tactical and

technical investigations, training Finnish and European policemen to investigate computer related crime and he is a Member of the Board of the Interpol’s European Working Party on Information Technology Crime.

15.45–16.30

Jail, a Virtual Machine Facility for Risk Management in FreeBSD

The “jail” facility in FreeBSD was developed for giving multiple untrusted customers root access to their own virtual machines on the same physical machine. Experience has shown that it has many other security enhancing uses as well. This talk will introduce the audience to the jail facility, show examples of how to use it and talk about the implementation and the limitations.



Speaker:

Poul-Henning Kamp believes that UNIX is the best OS ever made so far. Despite this he has been improving on it ever since he first ran MINIX on his laptop in the early eighties. These days he improves FreeBSD for fun&profit. He lives in Slagelse/ Denmark, with his Greek girl, two kids, a handful of

atomic frequency standards, a dozen computers and far too little time.

16.30–17.15

Trusted Solaris

This talk will introduce Trusted Solaris by addressing differences between Trusted Solaris and standard Solaris such as process privileges, mandatory access control and multi-level security. Role based access control will also be discussed even though it was recently added into standard Solaris. Some examples of how the features in Trusted Solaris could increase security will be given.



Speaker:

Kjell Högström, Sun Microsystems AB, Sweden. He has been with Sun for four years and since three years ago he holds the position as product specialist for Solaris. Before joining Sun he worked at Uppsala University. He has twelve years of Unix experience.

Thursday, February 21, Session 3

Theme: Sponsor's Presentations

10.30–11.15

Information Centered Infrastructure

Traditionally, IT HW acquisition almost always was about buying servers. It was often expected that the Server vendor "bundled" some storage together with the server offering. Today most IT organizations realize that the most critical asset is not the servers, not even the storage, but the data that is on the storage. Today's issue is how to access this data from different server types and over various distances.



Speaker:

Anders Olsson is working as Product Manager for SAN products at Hitachi Data systems in Sweden. He has been active in the IT industry for more than 20 years.

11.15–12.00

VERITAS Volume Manager and File System for Linux

VERITAS Volume Manager and File System are powerful tools for managing data online. They are widely used on the Unix platforms, and the Linux versions will be released at NordU2002. The presentation will focus on the features available in VERITAS Volume Manager and File System for Linux.



Speaker:

Erik Möller, VERITAS Software AB is Product Marketing Manager in the Nordic Countries. Erik Möller has earlier working as a product specialist at VERITAS Software AB. He has been working with support and installation of company critical systems in five years

13.00–13.45

HP-UX on ITANIUM

Speaker:

HP-labs

13.45–14.30

15.00–15.45

Theme: Work in Progress/Analysis

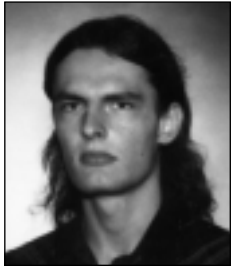
15.45–16.30

Openwall GNU/*/Linux – a Security-enhanced OS

Openwall GNU/*/Linux (Owl) is a security-enhanced operating system with Linux and GNU software as its core, compatible with other major distributions of GNU/*/Linux. It is intended as a server platform. This presentation will focus on concepts behind Owl, especially our approach to security, and the features offered by Owl.

As opposed to most Linux distributions, in case of Owl security and correctness have the highest priority. Owl combines several approaches to reduce the number and/or impact of flaws in its software components and impact of flaws in third-party software that one might install on the system. Notably, the proactive audit of critical system components resulted in discovery and patching of many potential vulnerabilities.

One of Owl-specific solutions is the tcb suite, which is a replacement for the traditional password-shadowing scheme. Thanks to its careful design, the tcb scheme allows many system utilities to operate with lowest possible privilege. A functional overview of the tcb suite will be given.



Speakers:

Solar Designer (see page 14) and Rafal Wojtczuk (photo).

Rafal Wojtczuk is the author of libnids, the low-level library designed as a component of Network Intrusion Detection Systems. He has also published a few articles describing original exploit techniques, among others the non-

executable stack evasion and the new method of TCP blind spoofing against Linux. Since March 2001 he has been participating in Openwall GNU/*/Linux development.

16.30-17.15

150/5,000 Years of (E-)Commerce: History Repeats Itself Again

Commerce has been around for at least 5,000 years, and e-commerce has arguably existed for nearly 150 years. Amazingly, the evolution of e-commerce has closely paralleled the evolution of “real” commerce. But it’s in Internet time: 5,000 years of mistakes, failures, and successes in commerce have been repeated in less than 1% of the time.

This talk will look at that parallel evolution, with numerous amusing examples. Then we’ll see how people actually make money on the Net. We’ll wind up with some speculations on the future (you should bring your own grains of salt).

Speaker:

Daniel V Klein (see page 5)

Friday, February 22, Session 1

Keynote in Plenum

09.00-10.00

Open Source, Standards, and Networks: Tools of Liberty and Democracy

While Open Source has been successful as software, its most important role is as a tool to empower the individual and to facilitate communications, free thought, education, and peace. The greatest threats to Open Source come not from competing proprietary software, but from national law and international treaty. Europe has become the “land of the free” for Digital Rights. Bruce Perens will discuss the success of Open source, standards, and networks, the challenges that they face, and the crucial role of NordU2002 attendees in maintaining Digital Rights.



Keynote speaker:

Bruce Perens is the primary author of the Open Source Definition, founder of the Linux Standard Base, former Debian project leader, and a major Linux developer since 1994. His “busy-box” software is a part of most commercial embedded Linux systems. He is credited for his technical work on

the films “A Bug’s Life” and “Toy Story II”, and is featured in the documentary film “Revolution OS”.

Theme: Storage and Clustering

10.30-11.15

Data Around the World

The SAN has made it possible to manage storage and the data stored on it on a data center-wide basis, independently of servers. But for distributed enterprises, that isn’t enough. Even within the data center, multiple servers often need access to the same data. Remote offices need access to up-to-date operational data for performance, availability, and disaster recovery purposes. Not only does data need to be available around the world, but also applications’ access to it must be coordinated, so that the right data center can process any given set of data at any time. This talk will survey VERITAS capabilities for meeting these needs. Starting from data sharing within the data center, the talk will proceed to the special needs of long-distance data replication and sharing, and for extending application and data clustering techniques for use around the world.

Speaker:

Paul Massiglia, Veritas Software Inc (see page 9)

Sun Cluster 3

This talk will give an introduction to new features in Sun Cluster 3.0. Many things have changed from Sun Cluster 2.2. The core cluster services have moved into the Solaris kernel. New in Sun Cluster 3.0 is also global devices, global file system and scalable services.

Speaker:

Kjell Högström, Sun Microsystems AB (see page 16)

Object Oriented Programming for Multiprocessor Performance

Object Oriented Programming (OOP) increases modularity, improves reuse and encourages better software engineering practices. But it is rarely claimed that OOP leads to higher performance. To the contrary, the use of OOP in systems software is seen as trading off performance for an increase in flexibility and manageability, where modularity and information hiding reduce performance and are barriers to optimization.

Counter to this intuition, we argue that for parallel systems, OOP can be used to improve performance dramatically. In this talk, we describe how OOP is used to improve performance and scalability, and allow for customizability (which is critical for good performance) in K42, a Linux compatible research system designed for shared memory multiprocessors. OO design and an OO structure called Clustered Objects are key to achieving high performance in K42 on both small scale Uniform Memory Access (UMA) and large scale Non-Uniform Memory Access (NUMA) multiprocessors. We present performance results, which illustrate and motivate our approach.



Speaker:

Jonathan Appavoo, has a Master of Computer Science from the University of Toronto where he is currently enrolled in the Ph.D. program. He has spent the last four years working on K42 and its predecessor Tornado. Jonathan works closely with the K42 team at IBM's T.J. Watson Lab where

he has interned. His research has focused on multiprocessor operating system performance.

Strategies for large-scale Computing

This talk will give an update on the current status of high performance computing (HPC) in Sweden. The fast development of clusters built of commodity components is affecting the planning for future supercomputer systems and is opening up new possibilities for collaboration between centers for HPC. Interconnected meta-centers for HPC will enable optimal use of hardware and competence resources as well as provide a basis for development of GRID computing strategies.



Speaker:

Professor Anders Ynnerman received a Ph.D. in physics from Chalmers University of Technology. During the early 90s he was doing research on large-scale simulations of many body interactions in atomic systems at Oxford University, UK, and Vanderbilt University, USA. Since 1995 he has

been involved in the build-up of national resources for high performance computing in Sweden. His current research-interest lie in the area of analysis of large scale data sets using visualization and he professor of scientific visualization at Linköping University. He is currently directing the National Supercomputer Centre (NSC) and the Norrköping Visualization and Interaction Studio.

Friday, February 22, Session 2

Theme: FreeNIX

10.30-11.15

KDE and Qt Programming World

A lot of things happen in the KDE and Qt programming world. October 2001, KDE started to prepare for what will eventually become KDE 3.0. This third major version of the desktop is based on the new Qt release 3.0., which in itself opens many new possibilities. In my talk, I'm going to give an overview on what is going on and what we might be able to expect in the nearer future.



Speaker:

Matthias Ettrich, original creator of LyX, a what-you-see-is-what-you-mean document processor for the LaTeX typesetting system. Later he got more interested in the usability of not only LaTeX but also the desktop itself and founded the KDE project. Here he was and partially still is responsible for

various things including but not limited to the window manager itself. After finishing his studies in computer science he eventually got hired by Trolltech and moved to Oslo, where he now is the technically responsible lead developer for the Qt toolkit.

11.15-12.00

Running Fsk in the Background

Traditionally, recovery of the BSD fast filesystem after an uncontrolled system crash such as power failure or system panic required the use of the filesystem checking program, fsck. Because the filesystem cannot be modified during the time that it is being checked by fsck, a large server may experience unacceptably long periods of downtime after a crash. To create an apparently quiescent filesystem, snapshots of a filesystem partition were added. To reduce the number and types of corruption, soft updates were added to ensure that the only filesystem inconsistencies are lost resources. With these two additions it is now possible to run fsck on an active filesystem. Background fsck runs by taking a snapshot then running its traditional first four passes to calculate the correct bitmaps for the allocations in the filesystem snapshot. From these bitmaps, it determines the lost resources and does a set of system calls to release them back into the bitmaps for the underlying active filesystem.

Speaker:

Marshall Kirk McKusick (see page 6)

13.00-13.45

Cleopatra and her New Guard

The GNU Privacy Guard is nowadays a well-known tool for encrypting and signing data. GnuPG is based on the OpenPGP protocol, which is rightfully favored over S/MIME. However, S/MIME is getting more in use and so we have worked on an extension to support this protocol too. I will talk about the new architecture we have chosen to accomplish this task; it is modular design which will closely integrate both protocols and allow for hardware tokens.



Speaker:

Werner Koch was born 1961; he is married and living in Düsseldorf. After school, alternative service and apprenticeship as an electrician he started to work as software developer in 1985 while also studying computer science at the FH Dortmund. For several years he has been with a Düsseldorf based software firm as principal architect of their software framework. After working for 10 years as a freelancer he is now founder and CEO of the Free Software Company g10 Code.

13.45-14.30

Gnome - status and future

After an extremely protracted development effort, Gnome 2.0 is approaching stability, while at the same time, a host of exciting things is still happening on top Gnome 1.4. This talk will present the compelling advantages of the Gnome environment and community.

A presentation of the new features in Gnome 2.0, particularly from a porting, and programming perspective. GObject, a new ORB, Gtk+ 2.0, pango and accessibility support. A glimpse into the future of Gnome: 2.2 and beyond, and some demonstrations of the latest, and greatest bits from both Gnome 1.4 and 2.0, running side by side.



Speaker:

Michael Meeks is a Christian and enthusiastic believer in Free software. He very much enjoys working for Ximian Inc. where as a member of the Research Labs he gets paid to develop Gnome 2.0 infrastructure, particularly ORBit2 and Bonobo, and play with interesting things. Prior to this he worked for Quantel gaining expertise in real time AV editing and playback achieved with high performance focused hardware / software solutions.

Keynote in Plenum

14.30–16.00

Unix and its Children

The immediate ancestor of Unix was Multics. The lineage of C can be traced from BCPL through B. Both troff/groff and EMACS stem from TECO. All of these lie 25–33 years in the past.

Today we have BSDI, HPUX, AIX, IRIX, FreeBSD NetBSD, OpenBSD, and a variety of Linuxes. We have C++.

The intricate route by which simple Unix in 1969–71 gave rise to today's offspring will be detailed in this talk.



Keynote speaker:

Peter H Salus is Chief Knowledge Officer of Matrix.Net. He has been Executive Director of the USENIX Association, the Sun User Group, and the Tcl/Tk Consortium, and Vice President of the FSF over the past 16 years. He is the author of a number of books including A Quarter Century of

UNIX (1994) and Casting the Net (1995).

NordU2003 – The fifth NordU/USENIX Conference February 10–14, 2003

Aros Congress Center, Västerås, Sweden

Scientific Information

Program

Please note that the program outlined in this announcement is preliminary and may be subject to change.

Language

The official language of the conference is English. No simultaneous translation will be provided.

BoFs

A BoF (Birds-of-a-Feather session) is an opportunity for the conference delegates to chair a discussion of their own choice. The program committee encourages any conference attendee wanting to chair a BoF to mail a short description of the subject to pgm02@nordu.org.

Scheduled BoFs will be displayed on the conference board.

We need your help in writing a conference report. If you feel up to the task of writing (in English) a summary of one of the sessions that you attend please contact anita@europen.se

Commercial Exhibition

A commercial exhibition will be arranged in conjunction with the conference. Please contact Congrex if you are interested in participating at the exhibition (see address inside back cover).

The exhibition will be open during the following hours:

February 20, 12.00–20.00

February 21, 09.00–17.00

February 22, 09.00–15.00

Registration Guidelines

Registration on line

Address: <http://www.nordu.org/NordU2002/>

Advance Registration

Please register on line or on the enclosed registration form when registering for the Conference, Social Events, and for hotel reservations during the conference. In order to receive a confirmation of registration on e-mail please make sure to indicate the e-mail address on the registration form! Please use block letters.

Confirmation will be sent upon receipt of payment. Registration for events that are included in the registration fee must also be marked on the form, in order to obtain a ticket.

The registration fee for the Tutorial Sessions, February 18–20, includes admission to the marked sessions and handouts, the exhibition (February 20), daily tea/coffee and lunches.

The registration fee for the Conference includes admission to the Conference Sessions, the Exhibition (February 21–22), daily tea/coffee, lunches, Welcome Reception and Conference Dinner.

Registration Fees*

Tutorial Registration Fees

Tutorial Half day	400 EUR
Tutorial 1 Day	750 EUR
Tutorial 2 Days	1050 EUR
Tutorial 3 Days	1450 EUR

Conference Registration Fees

	Paid before January 18, 2002	Paid after January 18, 2002
1 Day Member	600 EUR	700 EUR
2 Days Member	700 EUR	800 EUR
1 Day Non-member	750 EUR	850 EUR
2 Days Non-member	850 EUR	1050 EUR
Student 2 Days**	150 EUR	

* Finnish VAT 22 % included.

** In order to pay student fee, students are required to present a copy of their student ID-card, and to register before January 18, 2002.

Hotel Information

A number of hotel rooms have been booked at Scandic Hotel Grand Marina and Eurohostal in Helsinki at a preferential rate for the Conference.

Accommodation	Single room/night	Double room/night	Deposit/room
Scandic Hotel Grand Marina (breakfast, VAT and services included)	134 EUR	168 EUR	First night's payment
Eurohostal (VAT and services included, breakfast 5.50 EUR)	35 EUR	42 EUR	First night's payment

Hotel accommodation will be reserved when Congrex has received the registration form, together with the hotel deposit. The deposit will be deducted from the hotel bill upon presentation of the participant's personal voucher, which will be issued upon registration in Helsinki. Hotel reservations

should be made on the registration form. Congrex reserves the right to book another hotel if the desired accommodation should be fully booked. After the deadline for hotel reservation, January 18, 2002, Congrex cannot guarantee hotel rooms at preferential rates.

Flight Information

Members of EurOpen.SE, Usenix, DKUUG, GUUG, NUUG, NLUUG, UKUUG, Linux User Groups and Swenug are offered a unique possibility to travel from Stockholm or Copenhagen to Helsinki at a very favorable rate. Please note that the number of tickets is limited!

Route	Date	Departure	Price for at two day ticket
Stockholm-Helsinki	February 17	14.15	2 500 SEK
Stockholm-Helsinki	February 20	14.20	2 500 SEK
Copenhagen-Helsinki	February 17	16.25	2 500 DKK
Helsinki-Stockholm	February 22	18.10	
Helsinki-Copenhagen	February 22	17.45	

The prices do not include airport taxes, and are subject to changes. Please note that changes of times and dates are not permitted. The prices include a two-way ticket and bus transfer from Helsinki Airport to Scandic Marina Congress Center and back. The flight reservation must be made by e-mail to Congrex (nordu2002@congrex.se) not later than January 11, 2002. Please note that the registration will be confirmed upon payment on a first come, first serve basis. The tickets will be issued one month before departure, and after that date we regret that no refunds can be made. Please contact Congrex for more information!

Official Airline

Finnair has been appointed official airline for this event and offers a special fare in connection with participation. If you travel from the US and are interested in this special offer, please contact:

Carl Costa, Finnair Airlines, USA
phone: +1-800-950-4768 ext. 1448
e-mail: carl.costa@finnair.com

For delegates travelling from other countries, please contact the nearest Finnair Office.

Social Events

Welcome Reception, Wednesday February 20, 18.00

The Welcome Reception will take place in the exhibition area at Scandic Marina Congress Service. Snacks and beverages will be served. The reception is included in the registration only if marked on the registration form!

Conference Dinner, Thursday February 21, 19.00

The Conference Dinner will be held at Restaurant Sipuli, situated near the beautiful Uspenski Cathedral, at a walking distance from the congress venue. A 3-course menu will be offered (sit-down dinner). The dinner is included in the registration fee only if marked on the registration form!

Tourist Information

The conference secretariat will be available to give you more information about Helsinki, book tour tickets, make restaurant reservations, or assist you in any other way during your stay in Helsinki. You can also contact:

Helsinki City Tourist Office
Pohjoisesplanadi 19, 00100 Helsinki
tel. +358 (0)9 169 3757, fax +358 (0)9 169 3839
<http://www.hel.fi/tourism/>

Payment

Payment should be made in advance by one of the following methods:

- Banker's draft, which should be sent together with the registration form by ordinary mail. The Banker's draft should be purchased at your bank and made out in EUR to Congrex Sweden AB, Attn: NordU2002. Please cross the draft. We are not able to accept personal checks, company checks or Eurocheques.
- Transfer to SEB (Skandinaviska Enskilda Banken), SE-106 40 STOCKHOLM, Sweden, SWIFT-code: ESSESESS, Account no. 5901-82 291 21, in EUR to Congrex Sweden AB, Attn: NordU2002, PO Box 5619, SE-114 86 STOCKHOLM, Sweden.
- American Express, Visa or Eurocard/Mastercard may be used for all charges. Please indicate card number and expiry date on the registration form.

Please complete the enclosed registration form and send it along with your payment to:

Congrex Sweden AB

Attn: NordU2002

PO Box 5619

SE-114 86 STOCKHOLM

Fax: +46 8 661 91 25

Please do not forget to indicate the payment reference number **0213**. Tours, events and hotel reservations will be confirmed when Congrex has received payment.

Admission to the conference is granted only if Congrex have received the registration fee. Delegates who have made late payments, should bring a copy of their receipt to the conference. Failure to produce this receipt on request gives Congrex the right to charge the amount to your credit card.

General Information

Badges

Each participant will receive a name badge upon registration. For security reasons all participants are requested to wear their badge during all the tutorial and conference activities, and social events. (The cost for replacing a lost badge is EUR 50.)

Banks and Post Offices

Banks and Post Offices are open Monday to Friday, 09.00–16.00.

Climate and Dress

The weather in Helsinki at this time of the year is usually cold with temperature approximately -10 degrees Celsius; and it may snow.

Currency

The official currency is Euro (EUR).

Disclaimer

The Organizing Committee and Congrex Sweden AB accept no liability for any injuries/losses incurred by participants and/or accompanying persons, nor loss of, or damage to, any luggage and/or personal belongings.

Electricity

Electrical current in Finland is 220 V/50 Hz. Round, European-style two-pin plugs are used. Appliances designed to operate on 110/120 Volts need a voltage converter and a plug adapter.

How to get to Scandic Marina Congress Center

Scandic Marina Congress Center is situated on Katajanokanlaituri 6, in the heart of Helsinki, only a short walk from downtown Helsinki.

Please visit <http://www.scandichotels.se/> for more information.

Registration in Helsinki

On-site registration will start on February 18 at 07.30. The registration desk and conference Secretariat is located at Scandic Marina Congress Center will be open during the following hours:

February 18, 07.30–18.00

February 19, 08.00–18.00

February 20, 08.00–20.00

February 21, 08.00–18.00

February 22, 08.00–15.00

Terminal Room

A terminal room will be situated within the conference venue. Opening hours:

February 18–21, 08.00–18.00

February 22, 08.00–16.00

Meals

Coffee and lunch is included in the registration fee and will be served daily.

Official Conference Organizer



Congrex Sweden AB has been appointed the official conference organizer for this event. The Congrex Group works internationally with subsidiaries in the Netherlands, the United States and Sweden as well as licensed partners throughout Europe and Latin America.

Time Zone

The time zone in Helsinki is GMT + 2 hour.

Upon arrival at Vantaa Airport, Helsinki: Local Transportation

From Vantaa Airport you can take the Finnish shuttlebus (FIM 27), the local bus (FIM 17) or a taxi (FIM 120–150) to get to the center of Helsinki.

Important Addresses

Venue

NordU2002 – the fourth NordU/USENIX Conference will be held at Scandic Marina Congress Center Helsinki, February 18–22, 2002. Tutorial sessions February 18–20 and Conference February 21–22. The commercial exhibition will be held February 20–22.

All matters regarding registration, hotel booking, social events, abstract handling and general information are managed by Congrex Sweden AB. Please contact the Scientific Secretariat for questions regarding the program.

Web Site

For the latest information about the conference, please visit the conference Web Site:
<http://www.nordU.org/NordU2002/>

Important Dates

Last date for guaranteed early registration fee:
January 18, 2002

Last date for guaranteed hotel reservation:
January 18, 2002

Cancellations

Cancellation of Registration

Notification of cancellation must be made in writing and sent to Congrex. Registration cancellations will be accepted until January 18, up to which date the total amount will be refunded less EUR 60 for administrative expenses. For cancellations made after January 18 we regret that no refunds can be made.

Change of Name

Should you be unable to attend, you will be given the opportunity to send a colleague in your place. An administration fee of EUR 50 will then be charged.

Cancellation of Hotel Reservation

Notification of cancellation must be made in writing and sent to Congrex. Cancellation of any hotel reservation will be accepted until January 7, up to which date the hotel deposit will be refunded. We regret that the hotel deposit cannot be refunded after January 7.

Cancellation on Flight Reservation

Cancellation of the flight booking is possible until the ticket is issued, January 18, 2002, up to which date the total amount will be refunded. For cancellations made after January 18, 2002, we regret that no refunds can be made.

Additional copies of this announcement can be ordered through Congrex.



Registration on-line <http://www.nordu.org/NordU2002>

NordU2002 – the fourth NordU/USENIX Conference February 18–22, 2002

Please return this form and
payment to:



Congrex Sweden AB
Attn: NordU2002
Box 5619
SE-114 86 STOCKHOLM
Sweden
Fax: +46 8 661 91 25
Phone: +46 8 459 66 00

REGISTRATION FORM

PLEASE WRITE IN BLOCK LETTERS

Family name _____

First name _____

Organization/Company _____

Mailing address _____

Country _____

Phone _____ Fax _____

E-mail _____

Membership in the following affiliation:

- | | | | |
|------------|--------------------------|---|--------------------------|
| EurOpen.SE | <input type="checkbox"/> | GUUG | <input type="checkbox"/> |
| USENIX | <input type="checkbox"/> | Finnish Linux User Group | <input type="checkbox"/> |
| FUUG | <input type="checkbox"/> | Linux User Groups (other countries) | <input type="checkbox"/> |
| DKUUG | <input type="checkbox"/> | Finug (Finnish HP User Group) | <input type="checkbox"/> |
| NUUG | <input type="checkbox"/> | Swenug (Swedish HP User Group) | <input type="checkbox"/> |
| NLUUG | <input type="checkbox"/> | FISA (Finnish Information Security Association) | <input type="checkbox"/> |
| UKUUG | <input type="checkbox"/> | Fimug (Mac User Group) | <input type="checkbox"/> |

Membership no. _____

Cancellation of registration
will be accepted before
January 18, 2002, up to
which date the total amount
will be refunded, less 60 EUR
for administrative costs. No
refunds can be made after
January 18, 2002.

REGISTRATION FEES*

Price/pers	Total	Internal Code
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TUTORIALS FEBRUARY 18–20, 2002

Half Day Tutorial Fee	400 EUR	_____	2
1 Day Tutorial Fee	750 EUR	_____	4
2 Days Tutorial Fee	1050 EUR	_____	6
3 Days Tutorial Fee	1450 EUR	_____	8

Please mark which tutorial/s you wish to attend

- Tutorials Monday, February 18 M1 ☐ M2 ☐ M3 ☐ MT4 ☐
- Tutorials Tuesday, February 19 T1 ☐ T2 ☐ T3 ☐ MT4 ☐
- Tutorials Wednesday, February 20 W1 ☐ W2 ☐ W3am ☐ W3pm ☐ W4am ☐ W4pm ☐

(Please see pages 4–10 for information about tutorials)

CONFERENCE FEBRUARY 21–22, 2002

If only attending one day, please mark which day Thursday ☐ Friday ☐

Paid before January 18, 2002

1 Day conference Fee, Member	600 EUR	_____	10
2 Days conference Fee, Member	700 EUR	_____	12
1 Day conference Fee, Non-member	750 EUR	_____	14
2 Days conference Fee, Non-member	850 EUR	_____	16
2 Days conference Student Fee**	150 EUR	_____	18

Paid after January 18, 2002

1 Day Fee, Member	700 EUR	_____	20
2 Days Fee, Member	800 EUR	_____	22
1 Day Fee, Non-member	850 EUR	_____	24
2 Days Fee, Non-member	1050 EUR	_____	26

TOTAL REGISTRATION, EUR

* Finnish VAT 22 % included.

** In order to pay student fee, students are required to present a copy of their student ID-card, and to register before January 18, 2002.



Name: _____

Tick in order to obtain a ticket!

SOCIAL PROGRAM

Internal Code

Welcome Reception, February 20, 18.00

☐ YES

☐ NO

60/61

Conference Dinner, February 21, 19.00

☐ YES

☐ NO

62/63

ACCOMMODATION

Arrival in Helsinki, February _____

Departure from Helsinki, February _____

Cancellation of hotel reservation will be accepted until January 7, 2002 up to which date the deposit will be refunded. No rooms can be confirmed until Congrex has received your hotel deposit.

	Single room night	No. of rooms	Double room night	No. of rooms	Deposit EUR
Scandic Hotel Grand Marina (breakfast, VAT and services included)	134 EUR	_____	168 EUR	_____	First night's payment
Eurohostal (VAT and services included, breakfast 5.50 EUR)	35 EUR	_____	42 EUR	_____	First night's payment

HOTEL DEPOSIT, EUR

TOTAL AMOUNT DUE, EUR

Make sure to indicate Congrex Sweden AB Att: NordU2002 and your name and **payment reference No 0213** on all money transfers.

PAYMENT INSTRUCTIONS

Please indicate below which means of payment you are using and payment reference number 0213.

☐ Banker's Draft

☐ Bank Address: S E B, SE-106 40 Stockholm, account No: 5901-82 291 21

☐ American Express

☐ VISA

☐ Eurocard/Mastercard

Credit Card No _____

with expiry date _____

Having signed below, I confirm that I have read and am fully aware of the cancellation conditions stipulated in the announcement. I authorize Congrex to debit this credit card account for the total amount due. I also consent to Congrex debiting or crediting my credit card account of any subsequent changes to the item(s) booked.

Date _____ Signature _____



Committees

Program Chair

Martin Wahlén, Sound Foundation, Sweden

Program Committee

Lars Tunkrans, ICL Nordic, Sweden

Lasse Sundström, Nixu OY, Finland

Kristen Nielsen, Tele Denmark Utvikling, Denmark

Tutorial Coordinator

Ulla Sandberg, CR&T, Sweden

Local Organizing Committee

Jan Säll, Irial

Anita Nilsson-Röjning, Uniforum Marknadskonsult

Lasse Sundström, Nixu Oy

Jukka Ukkonen, Mawit Ltd

Scientific Secretariat

EurOpen.SE

Attn: Jan Säll

E-mail: jan@irial.se

Local Organizing Committee

EurOpen.SE

Attn: Anita Nilsson-Röjning

E-mail: anita@europen.se

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Helsinki University of Technology

pasi.eronen@nixu.fi

Important Addresses

Venue

Scandic Marina Congress Center

Katajanokanlaituri 7

FI-00160 Helsinki

Tel: +358 9 16 661

Fax: +358 9 664 764

E-mail: grandmarina@scandic-hotels.com

Conference Administration

Congrex Sweden AB

Attn: NordU2002

Linnégatan 89A

PO Box 5619

SE-114 86 STOCKHOLM

Sweden

Telephone: +46 8 459 66 00

Fax: +46 8 661 91 25

E-mail: nordu2002@congrex.se

<http://www.nordu.org/NordU2002/>

Return address:
Congrex Sweden AB
P.O. Box 5619
SE-114 86 Stockholm
Sweden

B

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<http://www.nordu.org/NordU2002/>