

Invitation program



**NordU2000/
USENIX Conference
February 8 - 11, 2000
Malmö, Sweden**

Welcome to NordU2000!

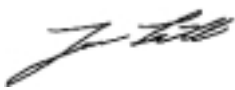
Time for a new conference! After last year's great success with the NordU99 conference we decided to continue the conference, and also try to move it around a bit so that we could see more of the nice countries in the Nordic Area. This will also give more people the possibility to participate in the conference and we can all meet with people from different countries. The first attempt will be NordU2000 in Malmö, Sweden. The reason for holding the conference in Malmö is that we have a good and strong support and help from the Danish group (DKUUG) and the Skåne Sjælland Linux User Group (SSLUG).

So this year we (I hope) have improved the conference since last year. We have expanded the tutorial program and as a very interesting part we have the two days tutorial on "UNIX Kernel Internals". A major event in the UNIX area as Dr. Marshall Kirk McKusick will hold this tutorial.

The conference program is also very good and strong. We will have a number of interesting keynote speakers and a line-up of good papers and excellent presenters of different topics during the days.

But what is a conference without a good environment and nice social events? You will be sorry if you miss these! As usually we will have a nice Welcome Reception where you have the possibility to meet your friends and colleagues.

So from the chairman for the conference and from the program committee we all hope that you will have a nice time, and that we will see you all in Malmö.



Jan Säll



Program at a Glance

Monday 7	Tuesday 8	Wednesday 9	Thursday 10	Friday 11		
<p>Installation party 14.00–19.00</p>	<p>09.00–17.00 Tu01 – Sendmail Configuration and Operation Eric Allman</p> <p>09.00–17.00 Tu02 – Highlights of the C++ Standard Library Bjarne Stroustrup</p> <p>09.00–17.00 TU03 – Apache: The World's Most Popular Web Server Simon Kenyon</p> <p>09.00–17.00 TW04 Part 1 – An Introduction to UNIX Kernel Internals Dr. Marshall Kirk McKusick</p> <p>09.00–17.00 Tu05 – Network Security Profiles Brad C. Johnson</p>	<p>09.00–17.00 W01 – Administering Windows NT: A Course for UNIX People Aeleen Frisch</p> <p>09.00–17.00 W02 – Advanced Topics in DNS and BIND Paul Vixie</p> <p>09.00–17.00 W03 – Hot Topics in Modern System Administration Evi Nemeth</p> <p>09.00–17.00 TW04 Part 2 Introduction to UNIX Kernel Internals Dr. Marshall Kirk McKusick</p> <p>09.00–17.00 W05 – Intrusion Detection and Network Forensics Marcus J. Ranum</p> <p>18.00 Welcome Reception, Scandic Hotel, Triangeln</p>	<p>08.30–09.30 Keynote in Plenum The Role of IT in Building a Sustainable Society Bernt Ericson</p>	<p>08.30–09.30 Keynote in Plenum The Free Software Movement and the GNU/Linux Operating Systems Richard Stallman</p>		
			09.30–10.10 Coffee	09.30–10.10 Coffee		
			<p>Session 1 Theme: Security</p> <p>10.10–10.55 Th11: Where do Security Bugs Come From? Theo de Raadt</p> <p>10.55–11.35 Th12: Burglar Alarms for Intrusion Detection Marcus J. Ranum</p> <p>11.35–12.15 Th13: Network Security Profiles Brad C. Johnson</p>	<p>Session 2 Theme: Interoperability</p> <p>10.10–10.55 Th21: System and Network Monitoring with RRDtool Tobias Oetiker</p> <p>10.55–11.35 Th22: Samba Internationalization Jeremy Allison</p> <p>11.35–12.15 Th23: How to Make Applications Highly Available on TruCluster Per Gullfeldt</p>	<p>Session 1 Theme: Free UNIX</p> <p>10.10–10.55 F11: FreeBSD Status and Direction Poul-Henning Kamp</p> <p>10.55–11.35 F12: FreeS/WAN: Why Network Security? Richard Guy Briggs</p> <p>11.35–12.15 F13: Linux Network Traffic Control Werner Almesberger</p>	<p>Session 2 Theme: Misc</p> <p>10.10–10.40 F21: Linux on the Psion S5 Werner Almesberger</p> <p>10.40–11.10 F22: High Availability Solutions on Linux Anders Karlsson</p> <p>11.10–11.40 F23: Internationalization in UNIX and Linux Keld Simonsen</p> <p>11.40–12.15 F24: Using UNIX to Avoid Programming under Windows Lars Hamrén</p>
			12.15–13.30 Lunch	12.15–13.15 Lunch		
			<p>Theme: Program Development</p> <p>13.30–14.10 Th14: New about C++ Bjarne Stroustrup</p> <p>14.10–14.50 Th15: Software Package Management in a Distributed Environment Tobias Oetiker</p>	<p>Theme: Misc.</p> <p>13.30–14.10 Th24: Management in Open Software Projects Poul-Henning Kamp</p> <p>14.10–14.50 Th25: Software Useright Jean-Paul Smets-Solanes</p>	<p>13.15–14.15 Keynote in Plenum EyeTap: Tapping the Mind's Eye to an Open and Connected Future Steve Mann</p> <p>Theme: Closing Ceremony</p> <p>14.15–15.00 Plenum Internet Distributed Computing for SETI (SETI@home) Dr. David P. Anderson</p>	
			14.50–15.10 Coffee	14.50–15.10 Coffee		
			<p>Theme: OS & System Administration</p> <p>15.10–15.50 Th16: News in Solaris 8 from a Technical View Kjell Högström</p> <p>15.50–16.30 Th17: Soft Update Dr. Marshall Kirk McKusick</p> <p>16.30–17.10 Th18: AIX/Monterey Futures Bill Sandve</p>	<p>Theme: Papers</p> <p>15.10–15.40 Th26: The rsync Algorithm Andrew Tridgell</p> <p>15.40–16.10 Th27: Applying Linux from the Perspective of a Finnish University Gustaf Selén</p> <p>16.10–16.40 Th28: Developing Distributed Applications on Linux with CORBA Matthias Kalle Dalheimer</p> <p>16.40–17.10 Th29: "LINUX, Another World" or "LINUX, Different from the Commercial World" Brian Eberhardt</p>		
				19.30 The Slagthouse (the Slaughterhouse) Viking Dinner		

Tutorials Tuesday February 8, 09.⁰⁰-17.⁰⁰

TuO1 - Sendmail

Configuration and Operation

Eric Allman, Sendmail, Inc.

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). 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 8.9.

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

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.

TuO2 - Highlights of the C++ Standard Library

Bjarne Stroustrup, AT & T Labs.

This talk is aimed at someone who knows C++ but is not an expert on the new standard library. The emphasis is on the structure of the library, principles, and fundamental uses; I do not attempt to cover every facility and every detail or to demonstrate every technique. Newer C++ language features are presented as needed to explain the library.

This talk is mostly based on part III of Stroustrup: "The C++ Programming Language (3rd Edition)".

Overview

- 1: The significance of the standard library
 - standardization
 - the design of the standard library
 - library overview
- 2: Container design
 - iterators, based-containers, STL
 - standard containers
- 3: Algorithms and function objects
 - function objects
 - standard algorithms
- 4: Strings, I/O streams, and Locales

Leader: Bjarne Stroustrup, <http://www.research.att.com/~bs>

TuO3 - Apache: The World's most Popular Web Server

Simon Kenyon, Irial Limited

Perhaps one of the worst puns in the computer industry (a patchy server) Apache is one of the leading lights in the open source movement. According to the Apache Foundation:

"Apache has been the most popular web server on the Internet since April of 1996. The May 1999 WWW server site survey by Netcraft found that over 57% of the web sites on the Internet are using Apache (over 60% if Apache derivatives are included), thus making it more widely used than all other web servers combined."

The Apache web server is a robust, commercial-grade, featureful, and freely-available source code implementation of an HTTP (Web) server. The fact that the source is available means that Apache is continuously updated and maintained. The source code is fully modularized and there are a large number of modules available adding such functionality as proxy services, language support (Java/Perl) and SSL encryption.

The Apache tutorial will give you information about how to download, build and install the server. It will also cover the configuration of the server and some of the more commonly used modules. The tutorial will mainly deal with Apache running on UNIX (Linux) but will also give information about running Apache on Microsoft Windows.

Simon Kenyon recently founded Irial Ltd with Jan Säll. Simon is an expert in UNIX and Internet related technologies. Simon has held a leading technical role in a number of development projects. These include: various banking applications, a system for analyzing criminal intelligence data and numerous web and Internet based systems. Simon was a founder member of the UK Unix User Group.

TWO4 Two days tutorial. Part 1

- An introduction to UNIX Kernel Internals: Data Structures and Algorithms

Dr. Marshall Kirk McKusick, Author and Consultant

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. 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).

Description: This course will provide a firm background in the UNIX kernel. The course includes coverage of most BSD-derived kernels. 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. The course will also cover the 4.4BSD socket-based network architecture, layering and implementation. The socket communications primitives and internal layering will be discussed, with emphasis on the interfaces between the layers; the TCP/IP implementation will be used as an example. A discussion of routing issues will be included. 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.

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 filesystem. 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.

TuO5 - Network Security profiles: A Small Collection (Hodgepodge) of What Stuff Hackers Know About You

*Brad C. Johnson, Vice President of Consulting
- SystemExperts Corporation*

Who should attend: Network, system, and firewall administrators; security auditors or those that are audited; people involved with responding to intrusions or responsible for network-based applications or systems which might be targets for hackers. Participants should understand the basics of TCP/IP networking. Examples will use actual tools and will also include small amounts of HTML, JavaScript, and TCL languages.

This course will be useful for anyone with any type of TCP/IP-based system, whether it is a UNIX, Windows, NT, or mainframe operating system or a router, firewall, or gateway network host.

Whether network-based host intrusions come from the Internet, an Extranet, or an Intranet, they typically follow a common methodology: reconnaissance, vulnerability research, and exploitation. This tutorial will review the tools and techniques hackers (determined intruders) use to perform these activities. You will learn what types of protocols and tools to be aware of and you will become familiar with a number of current methods and exploits. The course will focus on how you can generate vulnerability profiles of your own systems. Additionally, it will review some of the important management policy and issues that are related to these network based probes.

The course will focus primarily on tools that exploit many of the common TCP/IP based protocols (such as WWW, SSL, DNS, and SNMP) which underlie virtually all of the Internet applications, including Web technologies, network management, and remote filesystems. Some

topics will be addressed at a detailed technical level. This course will concentrate on examples drawn from public domain tools because these tools are widely available and commonly used by hackers (and are available for you to use for free!).

Topics include:

Profiles: what can an intruder determine about your site remotely? Review of profiling methodologies: different "viewpoints" generate different types of profiling information. Techniques: scanning, on-line research, TCP/IP protocol "mis"uses, denial of service, and

hacking clubs. Important intrusion areas: discovery techniques, SSL, SNMP, WWW, DNS Tools: including scotty, strobe, netcat, SATAN, SAINT/SARA, ISS, mscan, sscan, queso, curl, and Nmap. Management issues: defining policies and requirements to minimize intrusion risk.

Topics NOT covered:

Social engineering, buffer overflow exploits, browser (frame) exploits, host based vulnerabilities or inside jobs (e.g., shell privilege escalation), operating system or device specific problems.

Tutorials Wednesday February 9, 09.⁰⁰-17.⁰⁰

WO1 - Administering Windows NT: A Course for UNIX People

Aleen Frisch, Exponential Consulting

Who should attend: UNIX system administrators who are also responsible for Windows NT systems (or who may become responsible for them at some point in the future). Students attending this class should be comfortable with general system administration concepts (filesystems, processes, user accounts, backups, and the like) as well as the major tools and procedures used to manage them on UNIX systems. A sense of humor will also be beneficial when initially approaching Windows NT.

The primary goal of this course is to help you apply what you already know about system administration under UNIX to the tasks and challenges of the Windows NT environment, in an effort to make the UNIX and NT environment co-exist as smoothly as possible. The course will include a variety of real-world examples and will focus on practical techniques and strategies for NT system administration. You can expect a very fast-paced, information-rich course.

Topics covered:

A Walking Tour of a Windows NT Server. Tools to Aid in NT System Administration. Booting under Windows NT. Managing User Accounts. Disks and Filesystems on Windows NT systems. Networking under NT: Connecting to UNIX and Other Systems. Printing on and from Windows NT Systems. Overview of Windows NT Security.

Aleen Frisch has been a system administrator for over 15 years. She currently looks after a very heterogene-

ous network of UNIX and Windows NT systems. She is the author of several books, including Essential Windows NT System Administration.

WO2 - Advanced Topics in DNS and BIND

Paul Vixie, Internet Software Consortium

Who should attend: Name server administrators and software developers who need a deeper understanding of the DNS protocol and of the internals of BIND. Participants should already be responsible for the operation of at least one name server, should be familiar with Internet protocols such as TCP and UDP, and should be able to recognize C source code when they see it.

This tutorial will survey the DNS protocol and describe upcoming extensions to it, as well as implementation considerations in BIND. Topics will include:

- DNS message format
- DNS resource record format
- Zone file format, and zone transfers
- Incremental zone transfer
- Dynamic update and deferred update
- Real time change notification
- DHCP interaction
- BIND current status
- DNS security
- DNS politics
- BIND Version 8

After completing this tutorial, participants will know what the IETF has been up to lately, and what to expect in upcoming BIND releases. For attendees who have

taken Paul's tutorials in the past, this tutorial will not be a rehearsal of prior material - new subjects will be covered.

Paul Vixie is the current maintainer of the BIND software system. BIND is the Berkeley Internet Name Domain, and it includes the name server named, used everywhere on the Internet. Paul is also a coauthor of Sendmail: Theory and Practice, and the moderator of the "comp.sources.unix" newsgroup.

WO3 - Hot topics in Modern System Administration

Evi Nemeth, University of Colorado, Boulder

Who should attend: System and network administrators who want to learn about real-life solutions to everyday problems.

Topics include: wreq: Managing user requests and trouble tickets is an everyday task. We will discuss the freely available Web-based tool wreq, together with procedures that you can use to make your SA group serve the needs of its internal customers. LPRng: Tired of those nasty printing problems? This next-generation print spooler can ease many cross-platform printing hassles, as well as reduce time spent maintaining the printing system at your site. Optimizing Web server performance: Learn tricks of the trade to make your hot UNIX Web server even hotter. We will cover measuring UNIX Web server performance and how to tune your server for optimum throughput and response.

What is hot on the UNIX security battlefield: It has been a long year in UNIX security, and now is a great time to brush up on happenings in this area. We will talk about the most important holes you need to address and suggest approaches to general UNIX security.

Modern UNIX filesharing: NFS has a bunch of new features, but do you know what they do or how to use them? Learn how to maximize the benefits of NFS 3.0 at your site.

A new world, split by OS: Are you suffering from UNIX in the machine room with PCs on the desktop? This syndrome is affecting system administrators everywhere, but there are some cures. We will talk about strategies to handle this situation and tools to make it seamless.

Evi Nemeth (M2, T2), a faculty member in computer science at the University of Colorado, has managed UNIX systems for the past 20 years, both from the front lines and from the ivory tower. She is co-author of the UNIX System Administration Handbook.

TWO4 Two days tutorial. Part 2

WO5 - Intrusion Detection and Network Forensics

Marcus J. Ranum, Network Flight Recorder, Inc

Who should attend: Network and system managers, security managers, and auditors. This tutorial will assume some knowledge of TCP/IP networking and client/server computing.

What can intrusion detection do for you? Intrusion detection systems are designed to alert network managers to the presence of unusual or possibly hostile events within the network. Once you have found traces of a hacker, what should you do? What kinds of tools can you deploy to determine what happened, how they got in, and how to keep them out? This tutorial provides a highly technical overview of the state of intrusion detection software and the types of products that are available, as well as basic principles to apply to building your own intrusion detection alarms. Methods of recording events during an intrusion are also covered.

Topics include:

- What is IDS: Principles, Prior art
- Can IDS help: What IDS can and can not do for you, IDS and the WWW, IDS and firewalls, IDS and VPNs
- Types and trends in IDS design: anomaly detection, misuse detection, traps, future avenues of research
- Concepts for building your IDS: What you need to know first, performance issues
- Tools for building your IDS: Sniffers and suckers, Host logging tools, Log recorders
- Reporting and recording: Managing alerts, what to throw away, What to keep
- Network Forensics: So you have been hacked, forensic tools, brief overview of evidence handling, who can help you
- Resources and references

Marcus J. Ranum is CEO and founder of Network Flight Recorder, Inc. He is the principal author of several major Internet firewall products, including the DEC SEAL, the TIS Gauntlet, and the TIS Internet Firewall Toolkit. Marcus has been managing UNIX systems and network security for over 13 years, including configuring and managing whitehouse.gov. Marcus is a frequent lecturer and conference speaker on computer security topics.

Thursday, February 10 - Session 1

08.30-09.30



Keynote in Plenum

The Role of IT in Building a Sustainable Society

Speaker: Bernt Ericson, Vice President, Research and Innovations, Telefonaktiebolaget L M Ericsson.

We are at a growing rate experiencing changes in the environment. The population is increasing and in the developed part of the world there is an increasing number of elderly people. At the same time the technological possibilities is growing exponentially according to Morse's law. The number of mobile telephony users and Internet users are soon 1 Billion. This will provide enormous possibilities and the challenge is to push for an evolution that helps to solve the basic needs of the individual human being.

09.30-10.10

Coffee

Theme: Security

10.10-10.55

Th11: Where do Security Bugs Come From?

Speaker: Theo de Raadt has been involved with free UNIX operating systems since 1990. Early developments included porting Minix to the sun3/50 and amiga, and PDP-11 BSD 2.9 to a 68030 computer. As one of the founders of the NetBSD project, Theo worked on maintaining and improving many system components including the sparc port and a free YP implementation that is now in use by most free systems. In 1995 Theo created the OpenBSD project, which places focus on security, integrated cryptography, and code correctness. Theo works full time on advancing OpenBSD.

Infrastructure software (more commonly known by the mundane names "system software" or "the operating system") is relied on to run applications or layer other service-providing software on. Increasingly, the UNIX user community is becoming concerned less with the nitty-gritty characteristics of this software, but more about simple reliability, robustness, security, and correct operation while running their applications.

Over the last three years the OpenBSD team did a comprehensive security audit of a complete UNIX system. Hundreds of security problems were repaired and whole new classes of problems were discovered. More importantly, thousands of non-security related bugs were fixed as a side effect of the procedures which the developers followed.

UNIX based systems are relied on by all of us, every day. Yet the software is full of bugs. Hopefully a few abstract lessons can be gleaned from what our auditors learned during the code audit, to explain where the bugs come from, why they keep being created, and some have persisted for so long. And perhaps avoid them in the future.

10.55-11.35



Th12: Burglar Alarms for Intrusion Detection

Speaker: Marcus J. Ranum is CEO of Network Flight Recorder, Inc a software company specializing in network monitoring and intrusion detection.

This talk provides an overview of some techniques system and network managers can use to build their own trivial but effective intrusion detection capabilities.

11.35-12.15

Th13: Network Security Profiles: A Small Collection (Hodgepodge) of What Stuff Hackers Know About You

Speaker: Brad C. Johnson, Vice President of Consulting SystemExperts Corporation

This session will be useful for anyone with any type of TCP/IP-based system, whether it is a UNIX, Windows, NT, or mainframe operating system.

Whether network-based host intrusions come from the Internet, an Extranet, or an Intranet, they typically follow a common methodology: reconnaissance, vulnerability research, and exploitation. This session will review a few of the tools and techniques hackers (determined intruders) use to perform these activities.

The session will focus primarily on tools that exploit many of the common TCP/IP based protocols (such as TCP, WWW, SSL, DNS, and SNMP) which underlie virtually all of the Internet applications. This course will concentrate on examples drawn from public domain tools because these tools are widely available and commonly used (and are available for you to use for free!).

12.15-13.30

Lunch

Theme: Program Development

13.30-14.10



Th14: New About C++

Speaker: Bjarne Stroustrup is the designer and original implementor of C++. He is an AT&T Fellow and the head of AT&T Labs' Large-scale Programming Research department. Recipient of the 1993 ACM Grace Murray Hopper award. ACM fellow.

To get the most out of Standard C++ we must rethink the way we write C++ programs. An approach to such a "rethink" is to consider how C++ can be learned (and taught). What design and programming techniques do we want to emphasize? What subsets of the language do we want to learn first? What subsets of the language do we want to emphasize in real code?

I compare a few examples of simple C++ programs written in a modern style using the standard library to traditional C-style solutions. I argue briefly that lessons from these simple examples are relevant to large programs.

More generally, I argue for a use of C++ as a higher-level language that relies on abstraction to provide elegance without loss of efficiency compared to lower-level styles.

14.10-14.50



Th15: Software Package Management in a Distributed Environment

Speaker: Tobias Oetiker, Timelord & SysMgr @ EE-Dept ETH-Zurich
Tobias Oetiker has been working as a UNIX Systems Manager and Toolsmith since 1994. First in England and then at the Swiss Federal Institute of Technology. One of his hobbies is writing Network Monitoring software.

Keeping the software installation up to date in a large, distributed and potentially heterogeneous environment is one of the major challenges in the area of system management. At the same time, solving this problem is one of the most rewarding tasks, as the availability of a wide range of well maintained software packages is one of the prime triggers for a happy user base.

14.50-15.10

Coffee

Theme: OS & System Administration

15.10-15.50

Th16: News in Solaris 8 from a Technical View

Speaker: Kjell Högström works as Solaris product specialist at Sun Microsystems AB. He has worked with UNIX for about ten years.

The first part of this talk will give a brief technical overview of new features in Solaris 8. There are many new features and improvements, e.g. IPv6, LDAP as a name service, faster booting of large systems, better debugging and new security features. In the second part of the talk a few of these will be described in more detail.

15.50-16.30



Th17: Soft Updates: A Technique for Eliminating Most Synchronous Writes in the Fast Filesystem

Speaker: 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 filesystem. He is a past president of the Usenix Association and is a member of ACM and IEEE.

Traditionally, filesystem consistency has been maintained across system failures either by using synchronous writes to sequence dependent metadata updates or by using write-ahead logging to atomically group them. Soft updates, an alternative to these approaches, is an implementation mechanism that tracks and enforces metadata update dependencies to ensure that the disk image is always kept consistent. The use of soft updates obviates the need for a separate log or for most synchronous writes. Indeed, the ability of soft

updates to aggregate many operations previously done individually and synchronously reduces the number of disk writes by 40 to 70% for file-intensive environments. In addition to performance enhancement, soft updates can also maintain better disk consistency. By ensuring that the only inconsistencies are unclaimed blocks or inodes, soft updates can eliminate the need to run a filesystem check program after every system crash. Instead, the system is brought up immediately. When it is convenient, a background task can be run on the active filesystem to reclaim any lost blocks and inodes.

16.30-17.10

Th18: AIX/Monterey Futures

Speaker: Bill Sandve, Director, UNIX Product Management

Exciting things are happening with UNIX. AIX/Monterey is reaching new heights of Scalability & Performance, far reaching Robustness & Manageability, and leading Software Technology Enablers. Bill Sandve of IBM Austin goes beyond the high level views and marketing polish into the 'why's and 'how's of creating an enterprise class UNIX for the 21st century.

Some Keywords: AIX, Monterey, PowerPC, IA-64, LPAR, NUMA, Multipath I/O, Dynamic Reconfiguration, System self-diagnostics, Distributed Web-based System Management, Workload Management, Flexible Cluster Management, Java, IPv6, LDAP Directory.

Thursday, February 10 - Session 2

08.30-09.30

Keynote in Plenum

The Role of IT in Building a Sustainable Society

Speaker: Bernt Ericson (see page 8)

09.30-10.10

Coffee

Theme: Interoperability

10.10-10.55

Th21: System and Network Monitoring with RRDtool

Speaker: Tobias Oetiker (see Th15)

Many network devices provide a wide array of counters and gauges, telling about their operational status. Getting this information from the devices is fairly simple using SNMP, netflow or any other data acquisition method.

The problems start when it comes to storing and analyzing this data. RRDtool can help in this area by providing functions for the storage, processing and presentation of time-series numerical data. RRDtool does also build the basis for MRTG-3 which is currently under development. In this talk you will learn how RRDtool works and how you can use it to solve your monitoring problems.

10.55-11.35

Th22: Samba Internationalization

Speaker: Jeremy Allison is one of the lead developers on the Samba Team, a group of programmers developing an Open Source Windows(tm) compatible file and print server product for UNIX systems. Developed over the Internet in a distributed manner similar to the Linux system, Samba is used by Multinational corporations and Educational establishments worldwide. Jeremy handles the release engineering and the co-ordination of Samba development efforts worldwide and acts as a corporate liason to companies using the Samba code commercially. With a wide background in UNIX and Windows NT systems, Jeremy has been working on Samba since its origin in 1993.

The Open Source Samba Windows file and print server has to cope with converting between Windows code pages and UNIX character set representations of names of files and users. This talk will explain how this is achieved within Samba, and how a single Samba binary can be used in any worldwide setting. In addition, this talk will cover the future I18N extension of Samba, including the move to UNICODE in the wire SMB/CIFS protocol and the addition of different languages to SWAT, the Samba Web Administration Tool.

11.35-12.15

Th23: How to Make Applications Highly Available on TruCluster

Speaker: Per Gullfeldt, Senior Systems Engineer. Per Gullfeldt has been working with UNIX since 1983. He joined Digital/Compaq 1989 and has been working as product manager and presales. Mainly in the UNIX arena.

Users have mission-critical applications that need to be available at all times. TruCluster V5 provides for an entire computing environment with high levels of availability. This session describes the features of TruCluster V5 that directly support the high availability of applications. The session introduces the idea of categorizing applications that run in the cluster and then suggests an appropriate mechanism for providing high availability to them. The primary mechanisms, Cluster Application Availability (CAA) and Cluster Alias (CA) are defined. Instructions and examples of CAA and CA usage are provided. Of special interest to users of earlier TruCluster versions, the session will describe the steps needed to migrate ASE services to TruClusters V5.0.

12.15-13.30

Lunch

Theme: Misc

13.30-14.10

Th24: Management in Open Software Projects

Speaker: Poul-Henning Kamp has been a member of the FreeBSD core team since FreeBSD version 1.1.5. Despite 15+ years with UNIX, he still think we can improve it.

Management has never been easy, just ask Dilberts pointy-haired boss. It is not any easier if you are managing a bunch of geeks who do what they do on their own dime and for their own obscure reasons. Some insight into how the FreeBSD Core team keeps things on track and the behavioural patterns we have to deal with in people.

14.10-14.50



Th25: Software Useright: Solving Inconsistencies of Software Patents

Speaker: Jean-Paul Smets-Solanes is member of the French Speaking Linux Association (AFUL) and webmaster of the freepatents.org web site. He is also working at the Lorraine regional branch of the French Ministry of Economy, Finance and Industry as advisor on Information Technology.

This paper gives an overview of the principles, the economic impact and the potential juridical contradictions of patents and especially software related patents. It is structured in five parts, namely: History, Law, Economy, Justice and Solutions. The first part (History) shows that the historical legitimacy of patents is to "encourage people to share technology". The second part (Law) gives an overview of what is considered to be an invention and what is not. The third part (Economy) introduces a model to determine which patents are useful and which are not. The fourth part (Justice) analyses which patents are fair and which are not from a citizen point of view. The fifth part (Solutions) introduces the concept of Software Useright, an integrated set of

legal approaches which make software related patents useful and fair. Well implemented patent law based on Software Useright may even lead to an increase of safety and consumer protection in the software industry.

14.50-15.10

Coffee

Theme: Papers

15.10-15.40

Th26: The rsync Algorithm

Speaker: Andrew Tridgell, Samba Team

Rsync is a very efficient algorithm for remote data update. This paper will present the basic algorithm which arose from his PhD research and its applications for file transfer and mirroring in an Internet environment. He will also present some work that he is doing to embed the rsync algorithm into the HTTP protocol which provides an efficient mechanism for making dynamic web traffic completely cacheable. He will give results for experiments in this area on a prototype rsync enable web proxy called rproxy.

15.40-16.10

Th27: Applying Linux from the Perspective of a Finnish University

Speaker: MSc Gustaf Selén, laboratory engineer at the Department of computer science and project manager for the Pro Linux project at Åbo Akademi University.

University computer networks have traditionally been open for all kinds of use, but the need for an organized manner for using Linux at Åbo Akademi is evident. A project named Pro Linux was started, with the aim to use Linux for education, research and also as a common desktop operating system within the university. The concepts and guidelines developed for a pilot Linux computer class will serve as the base for organized Linux usage at Åbo Akademi. One of the most important goal of the project is to facilitate a system automatic or semi-automatic installation and maintenance of Linux computers at the university.

16.10-16.40

Th28: Developing Distributed Applications on Linux with CORBA

Speaker: Matthias Kalle Dalheimer has a consulting company in Hagfors, (Värmland). He is a member of the KDE development team and has the responsibility for the libraries.



This programming language and execution environment independence is achieved by two means: First, services are specified in a abstract language called IDL which looks syntactically familiar to C struct declarations but provides no means whatsoever for specifying actual execution. Second, all communication is done via so-called ORB.

Linux is a very good platform for implementing CORBA Software, because one of the best ORBs called Mico is available for Linux as well as for other UNIX derivatives and Windows NT.



Th29: "LINUX, Another World" or "LINUX, Different From the Commercial World"

Speaker: Brian Eberhardt is founder and president of SuperUsers. Brian's background for working with LINUX is, that he was one of the first people working with UNIX and Internet back in the late seventies.

The LINUX-world is different from the commercial IT-world. Brian has followed LINUX from the very early beginning, and will give away some of his experiences. He will try to answer the questions: What is LINUX versions and distributions? How about prices and rights? Which platforms support LINUX? How is the reaction on LINUX from the IT-vendors? Who uses LINUX and for what? Brian will during his speech make comparisons to Windows NT. The speech is technical and market analyzing and can be followed by IT-people without any preknowledge about LINUX.

Friday, February 11 - Session 1

08.30-09.30



Keynote in Plenum

The Free Software Movement and the GNU/Linux Operating Systems

Speaker: Richard Stallman is the founder of the GNU project, launched in 1984 to develop the free operating system GNU (an acronym for "GNU's Not Unix"), and thereby give computer users the freedom that most of them have lost. GNU is free software: everyone is free to copy it and redistribute it, as well as to make changes either large or small. Richard Stallman is the principal author of the GNU C Compiler, a portable optimizing compiler which was designed to support diverse architectures and multiple languages. The compiler now supports over 30 different architectures and 7 programming languages.

Stallman also wrote the GNU symbolic debugger (GDB), GNU Emacs, and various other GNU programs.

Stallman received the Grace Hopper Award from the Association for Computing Machinery for 1991 for his development of the first Emacs editor in the 1970s. In 1990 he was awarded a MacArthur Foundation fellowship, and in 1996 an honorary doctorate from the Royal Institute of Technology in Sweden. In 1998 he received the Electronic Frontier Foundation's Pioneer award along with Linus Torvalds; in 1999 he received the Yuri Rubinski memorial award.

Richard Stallman will explain the goals, philosophy, history, methods, status and future plans of the GNU Project, which set out 15 years ago to develop a complete free-software operating system to make possible a cooperating community of computer users.

Today, Linux-based variants of the GNU system, based on the kernel Linux developed by Linus Torvalds, are in widespread use. There are estimated to be over 10 million users of GNU/Linux systems today.

09.30-10.10

Coffee

Theme: Free UNIX

10.10-10.55

F11: FreeBSD Status and Direction

Speaker: Poul-Henning Kamp has been a member of the FreeBSD core team since FreeBSD version 1.1.5. Despite 15+ years with UNIX, he still think we can improve it.

After a brief introduction to FreeBSD Poul-Henning Kamp will tell about where FreeBSD is today where it is heading and why a lot of people prefer FreeBSD to Linux.

F12: FreeS/WAN: Why Network Security?

*Speaker: Richard Guy Briggs got his taste of UNIX-like systems in 1990 while at Corel Systems Corporation, testing interoperability issues with SCO ODT 1.0 on 80386, Solaris on a Sparc IPX and the 16-bit version of Coherent on a 80286 and at the University of Ottawa on DEC Ultrix and IBM AIX systems. The *_Jargon File_* was a significant influence. He has been working with Linux since version 0.13 when he saw Internet announcements about it on comp.os.minix. He subsequently used it to train the artificial neural network temporal integrator for his 4th year undergraduate speech recognition project in September 1992.*

Why be concerned with network security? The Internet was created as a government research network where it was assumed that no one was hostile. Since then, it has exploded in use because the public started to gain access to its resources: databases, bandwidth, connectivity. Because of this, Internet security has become much more prominent, comprising of machine and network security. Many are familiar with machine security, limiting access via passwords.

Network security is a more recent urgency, because packet sniffers are now much more accessible to the public. This is why network-layer encryption has become more important. IPsec is a suite of RFCs that define a set of protocols for packet-layer encryption.

Why use Linux? Linux is inexpensive, popular, and runs on a wide variety of hardware and processor families. Proprietary kernels are not always documented correctly. Open-source kernels have the advantage that if something does not exist or does not work as (not) documented, you can read the source to find out how to use it, or send a patch to fix it. What problems did I (we) have and how did we get around them? I will touch on that after giving an overview of IPSEC and FreeS/WAN.

**F13: Linux Network Traffic Control**

Speaker: Werner Almesberger, master's in Computer Science from ETH Zuerich in autumn 1992, developed ATM switch control software 1993-1994 at the IBM Zurich Research Lab. Since autumn 1994 research assistant at LRC (Laboratoire de Reseaux de Communication), now ICA (Institute for computer Communications and Applications), at EPFL (Ecole Polytechnique Federale de Lausanne). Participated in design and realization of a site information system (ezInfo) while at ETH. Also involved in kernel work (file systems, device drivers, etc.) on Linux since 1992. On-going Linux activities: the LILO boot loader, the psmisc tools, ATM and Differentiated Services on Linux, and recently a bit of hacking in the linux-7110 project, and work on the Canon PowerShot A50 driver of gPhoto.

Recent Linux kernels offer a wide variety of traffic control functions, covering packet classification, policing, and different queuing algorithms. Traffic control elements can be combined in a modular way. The presentation gives an overview of the design and structure of the respective kernel code. Recently, support for Differentiated Services was added to the existing traffic control infrastructure. Also this implementation will be described.

12.15-13.15

Lunch

13.15-14.15



Keynote in Plenum

EyeTap: Tapping the Mind's Eye to an Open and Connected Future

Speaker: Steve Mann, inventor of the so-called "wearable computer" (WearComp) and of the EyeTap video camera and reality mediator (WearCam), is currently a faculty member at University of Toronto, Department of Electrical and Computer Engineering.

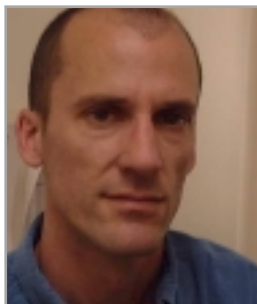
Dr. Mann has been working on his WearComp invention for more than 20 years. He built the world's first covert fully functional WearComp with display and camera concealed in ordinary eyeglasses in 1995, for the creation of his award winning documentary ShootingBack. He received his PhD degree from Massachusetts Institute of Technology in 1997 in the new field he had initiated. He is also the inventor of the chirplet transform, a new mathematical framework for signal processing. Mann was both the founder and the Publications Chair of the first IEEE International Symposium on Wearable Computing (ISWC97), and chaired the first Special Issue on Wearable Computing in Personal Technologies Journal. He has given numerous Keynote Addresses on the subject.

Just as the wheel is an extension of the leg, and radio is an extension of the voice, so too, is the EyeTap is an extension of the eye, the computer an extension of the brain, and wiring, circuits, and the Internet an extension of the nervous system.

The EyeTap camera causes the eye itself to, in effect, function as the camera, display, and Personal Cybernetics device. An experiment of the 1970s and early 1980s has evolved toward making McLuhan's metaphor a reality, transforming the body into not just a camera, but also a networked cyber entity. See <http://eyetap.org> <http://engwear.org> and <http://wearcomp.org> for more information.

Theme: Closing Ceremony

14.15-15.00



Plenum

Internet Distributed Computing for SETI (SETI@home)

Speaker: Dr. David P. Anderson, Director, SETI@home Space Science Laboratory UC, Berkeley

SETI@home is a radio SETI (Search for Extraterrestrial Intelligence) project that takes a novel approach to supercomputing. Instead of placing a dedicated supercomputer at the telescope, SETI@home distributes data over the Internet to computers in the homes and offices of volunteers.

In the first four months of operation of SETI@home, over a million people have participated, and have contributed 70,000 years of computer time.

Friday, February 11 - Session 2

08.30-09.30

Keynote in Plenum

The Free Software Movement and the GNU/Linux Operating Systems

Speaker: Richard Stallman (see page 16)

09.30-10.10

Coffee

Theme: Misc

10.10-10.40

F21: Linux on the Psion S5

Speaker: Werner Almesberger (see F13)

Linux has now also reached the world of palmtop devices. The Linux-7k project is one of several projects to port Linux to some of the smallest member of the computer zoo. The projects started in spring '98. The first usable kernels for the Psion S5 and the Geofox One were available one year later. Today, Linux is suitable for everyday use on the Psion S5. The presentation will give a brief overview of the Psion S5 hardware, the project history and its status, typical considerations when porting Linux to this type of machine, and an outlook of future work in this area.

10.40-11.10

F22: High Availability Solutions on Linux

Speaker: Anders Karlsson, Consultant, Cendio Systems AB. Cendio Systems is the leading competence center for Linux and Open Source Software in Sweden. They work in the business areas Network Security, Embedded Systems and Systems Integration.

Linux has in the last year taken a number of steps towards enterprise computing. The latest is software support for failover and other techniques for reaching high availability. We will give an overview over the current Open Source software for high availability. We will also present a recent customer case where extremely high availability was required and where Linux was the chosen platform.

11.10-11.40

F23: Internationalization in UNIX and Linux

Speaker: Keld Simonsen, RAP A/S. Keld has been involved with UNIX since 1979 and the Internet since 1983; he is the editor of a number of ISO standards on i18n and has written many locales and charmaps for UNIX uses.

Keld will talk about Internationalization (i18n) in UNIX and Linux, including the standards governing this and recent developments in the standardization area.

11.40-12.15

F24: Using UNIX to Avoid Programming under Windows

Speaker: Lars Hamrén has been a programmer for nearly 25 years. He is currently developing a multi-platform camera surveillance system for the Swedish marine. His academic background includes Electrical Engineering at Lund Institute of Technology and Computer Science at Lund University.

Developing software for Win32 need not mean either developing software on Win32, or developing using Win32-centric tools or libraries. Instead, multi-platform tools and libraries can be used.

With UNIX programmers, the enthusiasm for their platform is often matched only by their dislike for Windows. Forcing them to write Win32 programs will likely lead to job dissatisfaction, low productivity and poor quality. However, platform independence makes it possible to develop software on the preferred platform and then porting to the other with little or no effort.

In this paper, three approaches to platform independence will be examined: platform-independent libraries, self-contained platforms, and compatibility libraries.

12.15-13.15

Lunch

13.15-14.15

Keynote in Plenum

EyeTap: Tapping the Mind's Eye to an Open and Connected Future

Speaker: Steve Mann (see page 18)

Theme: Closing Ceremony

14.15-15.00

Plenum

Internet Distributed Computing for SETI (SETI@home)

Speaker: Dr. David P. Anderson (see page 18)

Social program

Installation party, Monday, February 7, 14.00–19.00

The installation party is an opportunity for people to get assistance in installing Linux or FreeBSD on their own home or office PC. We will offer a hands on experience in installing, and administering a Linux or FreeBSD machine. We will provide the installation media so all you are required to bring is the machine on which you wish to run Linux or FreeBSD.

Price: 60 SEK to be paid upon arrival. To secure a ticket, please mark the relevant box on the registration form.

Welcome Reception, Wednesday, February 9 at 18.00

The Scandic Hotel in Malmö, Hotel Triangeln, was built to be an international hotel, boasting generous rooms and an architectural design that delights both eye and soul. The two conference levels offer 23 modern meeting rooms. The Svansjön Banquet hall offers classic elegance, glittering crystal, large spaces and furnishing that can easily seat as many as 450 guests.

Price: Included in the registration fee. To secure a ticket, please mark the relevant box on the registration form.

Viking Dinner at The Slagthouse (the Slaughterhouse), Thursday, February 10 at 19.30

The Slagthouse in Malmö was inaugurated on 4 September, 1904 as the first official Slaughterhouse in Sweden. The business was prospering during the decade of 1910.

The importance of the Slaughterhouse was gradually reduced, and the business came to an end on 1 June, 1969. By then, there were plans to demolish the building and replace it with a traffic road.

The work by the town architect Salomon Sörens is a mixture of Gothic and Romanesque architecture. The building is well kept and is protected as a relic of culture.

Today, the Slaughterhouse is the most interesting meeting place in the southern part of Sweden, with a theatre, conference facilities, a street of restaurants, bars, and a night club. The surroundings make you think about the famous Convent Garden in London. Welcome!

Price: SEK 400. To secure a ticket, please mark the relevant box on the registration form.

The price includes a Welcome Drink, a special compiled Viking Dinner including beer and entertainment.

IMPORTANT ADDRESSES AND TELEPHONE NUMBERS

Conference Secretariat / Administrative Secretariat

For registration and information you are kindly requested to contact Congrex:

Before and after the Conference

Congrex Sweden AB
Attn. NordU2000
P.O.Box 5619
SE-114 86 STOCKHOLM
Linnégatan 89A, 115 23 STOCKHOLM (courier)
Sweden

Phone: +46 8 459 66 00
Fax: +46 8 661 91 25
E-mail: nordu2000@congrex.se
Internet: www.congrex.com

During the Conference all inquires to:

Scandic Hotel Triangeln
Attn. NordU2000
P.O. Box 17116
SE-200 10 MALMÖ
Triangeln 2, 200 10 MALMÖ (courier)
Sweden

Phone: +46 40 693 4700
Fax: +46 40 693 4711
E-mail: triangeln@scandic-hotels.com

IMPORTANT DATES

Deadline for reduced registration fee	January 14, 2000
Deadline for hotel reservation	January 14, 2000

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. Some lectures may be held in Swedish.

REGISTRATION INFORMATION / DETAILS

Advance registration

The enclosed registration form should be used when registering for the Conference, the Social Program, and for making hotel reservations in Malmö during the Conference. Registration for events included in the registration fee must also be marked on the form, in order to obtain a ticket. A restriction in the number of participants on certain tours and events might be necessary. Please note that registration to the various tours and events will be confirmed upon payment on a "first come-first served" basis.

Please carefully follow the instructions below for payment of all fees involved.

REGISTRATION FEES*	Paid before Jan. 14	Paid after Jan. 14
Conference registration members, two day's fee	SEK 4 200	SEK 4 700
Conference registration, members, one day's fee	SEK 3 375	SEK 3 875
Conference registration, non-members, two day's fee	SEK 5 200	SEK 5 700
Conference registration, non-members, one day's fee	SEK 4 375	SEK 4 875
Conference registration, students, two day's fee	SEK 1 190	SEK 1 190
Tutorial, two day's fee	SEK 6 875	SEK 6 875
Tutorial, one day's fee	SEK 4 250	SEK 4 250

* VAT 25% included

The registration fee for delegates of the conference includes admission to the Conference and documentation, daily tea or coffee, lunch, Opening Ceremony and Welcome Cocktail.

The registration fee for delegates of the tutorials includes admission to the tutorial sessions, daily coffee and tea, lunches and documentation.

Registration on line

<http://www.nordu.org/NordU2000/>

Payment

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

1. 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 SEK to Congrex, Attn. NordU2000. Cross the draft. We regret that we are unable to accept personal, company or Euro checks.
2. Transfer to SE-Banken (Skandinaviska Enskilda Banken), SE-106 40 Stockholm, Sweden, SWIFT-code: ESSESESS, account No. 5267-10 216 90, in SEK to Congrex, Attn. NordU2000, P.O.Box 5619, SE-114 86 Stockholm, Sweden.
3. Holders of American Express, Visa or Eurocard/Mastercard may use their cards for charging all costs. Please indicate card number and expiry date on the registration form.
4. Scandinavian residents may pay by bank or postal giro transfer. Bank giro 224-7021, Postal giro 9052-2.

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

Congrex Sweden AB
Attn. NordU2000
P.O.Box 5619
SE-114 86 STOCKHOLM
SWEDEN
Fax number +46 8 661 91 25

Events and hotel reservations will be confirmed only when payment has been received by Congrex.

Registration in Malmö

On site registration will start on Tuesday, February 8 at 08.00 for tutorials and on Thursday, February 10 for conference delegates. The registration desk and Conference secretariat during the tutorial sessions and the conference is located on the conference floor at of the Scandic Hotel Triangeln and will be open during the following hours:

Tuesday, February 8	08.00 – 17.00
Wednesday, February 9	08.00 – 17.00
Thursday, February 10	08.00 – 17.00
Friday, February 11	08.00 – 15.00

HOTEL INFORMATION

A number of rooms have been booked at Scandic Hotel Triangeln and Hotel Nobel House at preferential rates for the Conference. The prices below include VAT and breakfast.

	single room	double room	deposit
Scandic Hotel Triangeln	SEK 1 224	SEK 1 594	1 224/1 594
Hotel Nobel House	SEK 995	SEK 1 295	995/1 295

Hotel accommodation will be reserved when the registration form, together with the hotel deposit corresponding to the hotel cost for the first night has been received by Congrex. Congrex reserves the right to book another hotel if the desired accommodation should be fully booked. The deposit will be deducted from the hotel bill upon presentation of the participant's personal voucher, which will be issued upon registration in Malmö. Hotel reservations should be made on the registration form. For payment details, see above.

Tourist Information

The Conference Secretariat will be most happy to give you more information about Malmö, book tour tickets, and make restaurant reservations or assist you in any other way during your stay in Malmö. You can also contact the

Malmö Tourist Office
Central Station,
SE-211 20 Malmö, Sweden
Tel: +46-40-30 01 50
Fax: +46-40-611 1834
E-mail: info@tourism.malmo.com

GENERAL INFORMATION

Venue and dates

The NordU2000 conference will take place at the Scandic Hotel Triangeln in Malmö. (Please see page 21 for complete address).

Meals

Coffee and lunches are included in the registration fee for delegates to the tutorial sessions and also for the conference.

Upon arrival at Sturup Airport/ Local transportation

The airport buses are adapted to the incoming flights to the Sturup Airport (Malmö's international airport). The bus ride takes approximately 45 minutes and costs SEK 60 (October 1999). You will also find taxis just outside the Arrival Hall at Sturup. Taxi fares in Sweden are not regulated. This means fares can vary a lot with different kilometre rates, discounts, special offers, etc. The driver is obliged to give you a printed receipt from the taximeter. Many taxi companies offer a fixed price of SEK 250-350 (October 1999) from Sturup Airport to central Malmö. It is strongly recommended to ask for the price before entering a taxi.

An alternative airport is Copenhagen in Denmark connecting to the Malmö City Airport, or bus to Malmö.

Climate and dress

The weather, in February, is usually fairly cold, average at about 0 degrees Celsius. There may be snow or rain so bring proper clothing (that can tolerate water). Do not underestimate the wind chill factor, as it is quite windy at this time of year. Dress will be informal throughout the conference.

Time zone

The time zone in Malmö is GMT + 1 hour.

Banks and Post Offices

Most banks open at 9.30 and close between 15.00 and 16.30. Post Offices are generally open between 9.00 and 18.00.

Currency

The official currency is Swedish Krona (SEK). USD 1 = SEK 8,12 (October 1999).

Disclaimer

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

Professional Conference Organizer

Congrex Sweden AB has been appointed Official Conference Organizer for this event. Congrex works internationally with subsidiaries in Sweden, The Netherlands, Switzerland, Singapore, Malaysia and USA, as well as licensed partners throughout Europe and Latin America.

VAT refund conditions

Swedish VAT, currently from 12% to 25% may be repaid to foreign enterprises, except companies providing health care, education, banks and insurance companies. Information about recovery of VAT will be available at the Symposium Secretariat. Should you require information before the Symposium you are welcome to contact:

Deloitte & Touche Sweden AB
TTS Tax Transfer Service
P.O.Box 10152
SE-121 26 STOCKHOLM-GLOBEN
Sweden

CANCELLATIONS**Cancellation of registration**

Notification of cancellation must be sent in writing to Congrex (see address on page 21). Cancellations of registrations will be accepted until January 14, 2000 up to which date the total amount will be refunded less SEK 500 for administrative expenses. We regret that no refunds can be made for cancellations received after January 14, 2000.

Name change

If you should be prevented from attending, you will be given the opportunity to send a colleague in your place. An administration fee of SEK 400 will then be charged.

Cancellation of hotel reservation

Notification of cancellation must be sent in writing to Congrex. Cancellation of any hotel reservation will be accepted until December 30, 1999, up to which date the hotel deposit will be refunded. We regret that the hotel deposit can not be refunded after December 30, 1999.

Cancellation of social events

Notification of cancellation must be sent in writing to Congrex (see address on page 21). Cancellation of social events will be accepted until January 14, 2000 up to which date the total amount will be refunded. For cancellation received after January 14, 2000 and up to two days before the start of the Conference, the expenses will be refunded less 50%.

ADDITIONAL COPIES OF THIS ANNOUNCEMENT CAN BE ORDERED THROUGH CONGREX