

SANE
2006

System
Administration
Network
Engineering

CONFERENCE DIRECTORY

MAY 15-19, 2006

DELFT, THE NETHERLANDS

www.sane.nl/sane2006/

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A conference organized by Stichting SANE. Co-sponsored by:



Content

SANE 2006	3
Activities	4
Services	5
Wireless Network	
Internet Access Room	
CAcert.org Certificate Assurance	6
Tutorial Program	7
Conference Program	17
Invited (May 18, 2006)	17
Refereed (May 18, 2006)	18
Invited (May 19, 2006)	19
Refereed (May 19, 2006)	21
Speakers	23
Poster Sessions	32
Free Software Bazaar	32
Exhibition	32
Sponsoring	34
Hotels	35
Location	37
About Delft	38
Nice to Know	38
SANE 2006 Conference Organizers	38
SANE 2006 Sponsors	39

SANE 2006

5th System Administration and Network Engineering Conference
May 15-19, 2006, Aula Congress Centre, Delft, The Netherlands

We're pleased to invite you to attend the SANE 2006 conference. This time we're offering 3 days of training, followed by a 2-day conference program filled with the latest developments in system administration, network engineering, security and open source software, and practical approaches to the puzzles and problems you wrestle with.

You'll also have many opportunities to meet other system administrators and network (security) professionals and chat with peers who share your concerns and interests.

The venue for SANE 2006 will be the Aula Congress Centre, located on the campus of the University of Technology in Delft: the city of Delft Blue, the world-famous painter Johannes Vermeer and its historical ties to the Royal House of Orange. But also a lively modern city for funshopping, going out for a great dinner or wandering around to experience its special atmosphere.

Get Involved!

Activities

Training / Tutorials

(May 15-17, 2006)

Monday, Tuesday and Wednesday are your true opportunity for in-depth study! For three days, choose among five tracks of tutorials, covering topics like DNSSEC, IPSEC, VoIP, MySQL, wireless authentication, firewalls, DNS, IPv6, Linux kernel and general UNIX systems administration, led by experienced and respected instructors like Iljitsch van Beijnum, Walter Belgers, Joost van Dijk, Rudi van Drunen, Arjen Lentz, Radia Perlman and Ted Ts'o.

3rd Dutch Perl Workshop

(May 17, 2006)

The Perl community organizes regular international YAPC's, national Workshops, and local Mongers meetings. The workshops are mini-conferences, where people tell about their experiences with Perl. More important: they are the place to meet Perl mongers and study Perl a little more, without having to travel too far.

The "Dutch Perl Workshop" focuses on The Netherlands and Belgium, although everyone is more than welcome to join in. In previous years, the conference language was Dutch, however - -because of the combination of the Workshop with the international SANE conference-- this time most presentations will be in English.

The "Dutch Perl Workshop" has two tracks, of which the program is not yet known. Send an email to the organizers if you would like to contribute a presentation of 5, 20, 45, or even 90 minutes.

If you wish to participate during most of the day, you need to register at the workshop's website. The fee is €95 for the whole day, lunch included. You can mix your day with SANE tutorials, for which you have to register separately.

Organizers: Stichting Perl Promotie Nederland (<http://www.sppn.nl>).

Web site: <http://workshop.perlpromo.nl>

Technical Conference

(May 18-19, 2006)

Thursday and Friday you will, after the keynote, be able to choose from two tracks of interesting presentations: the top-notch invited talks or the groundbreaking refereed papers track. Hear about system administration, network engineering, wireless networks, security, cryptography, honeynets, computer forensics,

biometrics, TCP/IP internals, leading edge developments, the use of open source software, OpenSolaris and so on. You will find a remarkable line-up of invited talks speakers, including Bill Cheswick, kc claffy, Steve Crocker, Casper Dik, Bart Jacobs, Sam Leffler, Radia Perlman, Lance Spitzner and many more.

Guru Is In and Birds-of-a-Feather

(May 18-19, 2006)

In parallel to the two main conference tracks you will find the expert-led "Guru Is In" sessions and the attendee BoFs.

Hallway Track

(All days)

The hallway track is the small (and sometimes not so small) groups of people in the hallways during the conference. They're the informal sessions of interpersonal networking. You'll get a lot out of the conference if you just start up a conversation with other folks you run into. If you are taking tutorials, make it a point to mix with others at the lunch tables. Exchange business cards, phone numbers, email, etc. This is a tremendous opportunity to find out what others are doing with similar challenges in completely different organizations.

Poster Sessions

(May 18-19, 2006)

The Posters provide an excellent forum for authors to present their work in an informal and interactive setting. Posters display speculative, late-breaking results or give an introduction to interesting, innovative work. Posters provide authors and participants with the ability to connect with each other and to engage in discussions about the work.

The posters will be set up on Thursday morning, May 18, 2006 and will remain present during both conference days (May 18-19, 2006)

Free Software Bazaar

(May 17, 2006)

The Free Software Bazaar is a unique opportunity to meet other software developers, to get involved in the creation of Free Software. Meet the people you only know from email, discuss the latest developments, and have heated discussions about the future. The Free Software Bazaar during SANE 2006 has even a broader focus: the freedom of cooperation on Internet. Freedom not only limited to software development, but also freedom of speech and organization, free software use, and privacy. PGP and CAcert key-signing, short "lightning"-talks, and BoF sessions will be on the program as well.

WWW.SANE.NL/SANE2006/

Services

Network Connectivity

Internet Access:

Wireless Network and Terminal Room

Thanks to the network folks at TU Delft, SANE 2006 will have a 100 Mbps link to the Internet. Traffic will be routed through SURFnet. A DHCP server will assign you a transparent, fully routable, public IP address.

Bring Your Laptop!

Internet Access/Wireless Network

We're pleased to offer Internet connectivity at SANE 2006 via an open, unsecured 802.11b/g WiFi network with SSID "SANE2006". Those not wishing to use wireless can plug in and charge up in the Terminal Room. No laptop? No problem. The Terminal Room will offer a few *NIX terminals with a Web browser and your favorite shell.

The Conference LAN

The SANE 2006 conference network is provided to facilitate the exchange of ideas with other attendees and colleagues unable to attend. It is expected that attendees will respect each other's ability to do so and not intentionally disrupt the network.

- **Usage Guidelines**

The wired and wireless networks provided by SANE and TU Delft at this conference are for the use of conference attendees only, subject to the following conditions:

- You need to comply with our Acceptable Use Policy (AUP) and those of the connection provider(s) TU Delft and SURFnet. A summary of the applicable AUP's will be handed out at the conference.
- SANE and/or TU Delft may monitor these networks.
- Any illicit or intrusive use of the network, including packet sniffing, is expressly forbidden.
- The wireless network is open and insecure. SANE strongly recommends that all users encrypt their transmissions. Users are solely responsible for the security of their passwords and data.

- **Filtering Policy**

The conference network employs minimal filtering to ensure that the broadest range of applications have their requisite ports available. Outbound traffic to TCP/UDP ports [25, 445, 137-139] will be filtered. Packets with originating IPs different from our inside network are denied egress (this includes non-routable network addresses).

- **Security**

The conference network is not secure. Use of encryption is highly recommended.

- **Network Range and Services**

IPv4 network block : ...
DNS servers : ...
NTP server : ...
(E)SMTP relay : ...

No liability is accepted for damages resulting from the use of these facilities.

Internet Access Room

Internet Access Facilities and Terminal Room

SANE 2006 will offer Internet access facilities to its attendees. A UNIX machine with a link to the Internet will let you send and read email and log in on your own machine using telnet, rlogin or ssh. For increased security, we advise you to use ssh only.

The Internet Access Room will offer a number of X-terminals, UTP and wireless ethernet connection facilities, so both people with and without notebook computers will be able to use the facility.

Make sure your notebook uses DHCP for IP-address allocation, or be sure you know how to install a fixed IP address on your notebook.

Wireless connectivity through the 802.11-range of protocols will also be available.

No liability is accepted for damages resulting from the use of this facility.

The Internet access terminal room facilities are kindly provided to you by AT Computing.

CAcert.org Certificate Assurance

CAcert.org is a community driven Certificate Authority that issues certificates to the public at large for free. CAcert's goal is to promote awareness and education on computer security through the use of encryption, specifically with the X.509 family of standards. Everyone should have the right to security and to protect their privacy, not just those looking to run ecommerce sites.

It is easy to obtain certificates you can use with your email program. You can use these not only to encrypt, but to prove that your email really does originate from you. For administrators looking to protect the services they offer, CAcert provides host and wild card certificates which you can issue almost immediately. Not only can you use these to protect websites, but also POP3, SMTP and IMAP connections, to list but a few.

If you're extremely serious about encryption, you can join CAcert's Assurance Programme and Web of Trust. This allows you to have your identity verified to obtain added benefits, including longer length certificates and the ability to include your name on email certificates.

To participate in the CAcert certificate assurance at SANE 2006, you need to show up somewhat prepared:

- Join CAcert to establish your personal account (login account).
- Bring **at least one** official identification

document, like passport, drivers license or official ID-card to the SANE 2006 conference. Multiple formal ID's will collect more *trust points* in an assurance session. At least one ID should contain your recent photo.

The CAcert Certificate Assurance Procedure

At the SANE 2006 conference visit the CAcert booth (easily recognized by their large poster) and ask CAcert assurers to verify your identity and assure "trust points" to you. CAcert assurers will be available during the Free Software Bazaar and both conference days, and most likely during the tutorial sessions too.

CAcert assurers will assign *assurance points* or *trust points*. The amount depends on the type of ID you present (i.e. an official passport is of higher value than a university ID card) and the grade" of the assurer you happen to talk to.

If you manage to collect **50 points** you can request CAcert certificates bearing your own name, since your identity has now been established. Collecting 50 points at SANE 2006 is a walk in the park.

If you collect **100 points** or more, you can act as CAcert assurer yourself. Collecting 100+ points at SANE 2006 shouldn't be much of a problem either, since there are many assurers around.

Tutorial Program

Tutorial M1
Monday 15 May 2006
Time: 09:00 - 17:30
Location: Senaatszaal

Black Hats Session V
News from the Security Front
Walter Belgers

The attendees of the SANE 2006 conference will probably all be White Hats, or simply 'the good guys'. As at previous SANE conferences, the Black Hats Session will give the Black Hats viewpoint, i.e. that of the intruders (people who are trying to break into your computers).

Somebody once said: "the amount of clue on the Internet is a fixed constant". Indeed, the percentage of people on the Internet that are really hacking is decreasing. The problem is, however, that there are a lot of full-disclosure mailing lists that are read by people with too much spare time. Using standard exploit scripts and detailed descriptions they can easily attack thousands of systems with only minimal effort.

Contrary to earlier Black Hats Sessions, this time the topics will be limited so they can be explored in more detail. The topics for BHS V are:

- Footprinting, gathering information (maybe even from YOUR systems)
- Wireless technology (WiFi, WiMAX, Bluetooth, RFID, etc)
- Covert channels, hacking your network from the inside
- Stories from the trenches, a security consultants' experience with real companies, networks and systems

This Black Hats Session will highlight the problems that exist in Unix and Windows operating systems, application software and how administrators set up and work with those. Thus our intended audience will be these system and network administrators.

The Black Hats Session tries to give the audience an insight in how new technologies can be used and abused. Not by giving recipes for breaking in but by showing the technology and using the 'hacker mindset'.

Attendees are expected to have basic knowledge of UNIX and IP networks.

Tutorial M2
Monday 15 May 2006
Time: 09:00 - 17:30
Location: Collegezaal A

Linux Systems Administration
Joshua Jensen

From a single server to a network of workstations, the Linux environment can be a daunting task for administrators knowledgeable in other platforms. Starting with a single server and finishing with a multi-server 1000+ user environment, this tutorial will provide practical information for using Linux in the real world. The following areas will be covered with a special emphasis on security:

- Installation Issues
- Boot Loaders and System Startup
- Disk Partitioning and LVM
- Software RAID
- The RPM Package System
- Networking
- User management
- Automated System Installation
- Network-based Authentication
- User Accounts and Management
- Network Services and xinetd
- SSH: port tunneling, keys, tricks
- New Developments

At the completion of the course attendees should feel confident in their ability to setup and maintain a secure Linux server and services. The tutorial will be conducted in an open manner that allows for question and answer interruption.

This tutorial is directed at System Administrators that are planning on implementing a Linux solution in a production environment. Course attendees should be familiar with the basics of systems administration in a UNIX(tm)/Linux(tm) environment: user level commands and TCP/IP networking. Novice Administrators and Gurus alike should leave the tutorial having learned something.

Tutorial M3AM
Monday 15 May 2006
Time: 09:00 - 12:30
Location: Collegezaal C

Wireless Authentication / Authorisation / Encryption
What is next after WEP
Rudi van Drunen

Wireless Networks are becoming ready for the enterprise. Serious flaws in the encryption are

being solved with new protocols on top of 802.11.

This tutorial is an introduction in the world of the newer protocols, such wpa, wpa2 leap etc. What are the strong points, weak points, how to implement an enterprise structure using a RADIUS backend and how to manage this are the key questions on which this tutorial will provide answers.

Topics included: Design of an authentication and authorisation infrastructure for wireless networks. WPA, WPA2, LEAP, EAP, RADIUS. Set up of hard and software (incl. clients) for a secure wireless infrastructure.

Topics not included: Basic wireless network design, antennas, basic set-up of accesspoints.

Audience: Network professionals and system administrators deploying and managing wireless networks in an enterprise setting and want to use the new encryption / authentication and authorisation protocols.

Tutorial M3PM
Monday 15 May 2006
Time: 14:00 - 17:30
Location: Collegezaal C

Practical Subversion – an Activist Primer
Adriaan de Groot

Included: Version control basics; installing Subversion; access methods; access security; repository administration; repository backups; fancy commit tricks; Subversion as a CMS.

This tutorial will get you up and running as a Subversion activist. We will focus on practical setup and configuration issues that need to be dealt with to use Subversion as a practical tool for a distributed project. We will round up with Subversion setups tuned for various applications. Examples will be done with the FreeBSD operating system, but are not system specific.

This tutorial is about `_setting up Subversion_`, not about using it.

Not included: SSH, SSL and Apache configuration. Subversion from a users perspective.

Who should attend: admins who need to set up Subversion repositories for local or distributed projects.

Tutorial M4
Monday 15 May 2006
Time: 09:00 - 17:30
Location: Collegezaal D

What the heck is IPsec?
Joost van Dijk

IPsec is a technology that can be used to secure communication across IP networks. Popular applications are Remote Access facilities for accessing an organisation's resources from a potentially hostile network or securely connecting networks across a public network such as the Internet using Virtual Private Networks (VPN).

This tutorial aims to expose participants to just enough theory to understand and sensibly apply IPsec technology, and enough practice to get started experimenting with it. Bring a laptop running a decent operating system to play along or just listen and enjoy watching others trying to bridge the theory/practice gap.

Topics included:

- Introduction:
 - What is a VPN?
 - What is IPSEC?
 - Applications of IPSEC: VPN, Remote Access
- IPSEC mumbo-jumbo:
 - Transport versus Tunnel Mode
 - Authentication Header
 - Encapsulating Security Payload
 - Security Policies
 - Security Associations
 - The SA and SP Databases
 - Key Management
 - ISAKMP and IKE
 - Main mode versus aggressive mode
- IPSEC Tools and Configuration
 - racoon
 - IPsec-tools
 - Examples using UNIX/Linux/Mac OS X/MS Windows/Cisco PIX

Topics not covered:

- FreeS/WAN

This tutorial is intended for anyone with an interest in network security. It is targeted at both network administrators and consultants, providing hands-on demos as well as a thorough treatment of IPsec concepts.

Tutorial M5
Monday 15 May 2006
Time: 09:00 - 17:30
Location: Commissiekamer 3 / IAR

Building and Maintaining RPM Packages
Jos Vos

In this tutorial attendees will learn how to create, modify and use RPM packages. The RPM Package Management system (RPM) is used for package management on most Linux distributions. It can also be used for package management on other UNIX systems and for packaging non-free (binary) software.

The tutorial will focus on creating RPM packages for Fedora and Red Hat Enterprise Linux systems, but the theory will also apply to package software for other distributions.

Contents: General software packaging theory will be provided as a start, followed by the history and basics of the RPM packaging system.

The headers and sections of an RPM spec file will be discussed. Hints and tricks will be given for each section to enhance the quality of the target package, including the use of macros, adapting software for installing it in an alternative root directory, ensuring correct file ownerships and attributes, the proper use of pre/post (un)installation and "trigger" scripts, and how to deal with package-specific users and init scripts.

Package dependencies and conflicts will be covered, as well as some ways to tweak the automatically generated dependencies, if needed.

Installing files in the proper place requires knowledge of the Filesystem Hierarchy Standard (FHS), hence the basics of the FHS will be discussed.

The tutorial will also show how to properly package binary software, often done for internal system management purposes, and shed light on some of the issues involved, including some legal aspects related to packaging non-free software.

Package repositories and dependency resolution. Complementary to RPM, software exists for solving dependencies, such as up2date, yum, and apt-rpm. This software and the corresponding package repositories will be discussed.

Using RPM on non-Linux systems. Although primarily used on Linux systems, RPM can also be used to package software for other (free or commercial) UNIX-like systems. Some aspects

of using RPM on non-RPM systems will be discussed.

Besides the theory, several issues will be illustrated with live demonstrations.

Target audience:

The tutorial is targeted toward system administrators and software developers that want to create or modify RPM packages or get a detailed insight in the way RPM packages are built and can best be used. The attendees need no prior knowledge of RPM, although some basic knowledge of using software packages (as a system administrator using RPM, apt/dpkg, etc.) would be helpful.

Tutorial T1 [REPETITION OF M1]
Tuesday 16 May 2006
Time: 09:00 - 17:30
Location: Senaatszaal

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Tutorial T2
Tuesday 16 May 2006
Time: 09:00 - 17:30
Location: Collegezaal A

VoIP Principle & Practice
Heison Chak

This tutorial will cover VoIP principles, their interaction and interface with the PSTN and IP networks. While CODECs, protocols, quality and some IETF standards are being discussed, this tutorial is also filled with practical examples.

An open source PBX software - Asterisk, is chosen to demonstrate some of the unique features VoIP can bring to various deployments, including:

- Toll by-pass
- Interactive Voice Response System
- Text to Speech applications
- Analog Telephone Adapter provisioning
- Call detail record and blacklisting
- Echo training

Through examples, attendees will discover the capability and potential of VoIP which may leverage their abilities on choosing the right products and avoiding pitfalls.

Intended Audience: Managers and systems administrators involved in the evaluation, design, implementation, and deployment of VoIP infrastructures. Participants do not need prior exposure to VoIP but should be familiar with network principles. Attendees will come away from this tutorial with a foundation in VoIP enabling strategic and cost effective VoIP deployments in a variety of environments.

Tutorial T3
Tuesday 16 May 2006
Time: 09:00 - 17:30
Location: Collegezaal C

IPv6 in the Real World
Ilijtsch van Beijnum

If you attended the IPv6 tutorials at SANE 2002 and/or SANE 2004, you already know how IPv6 can solve the address shortage problem that has been developing slowly in the current

(IPv4) internet. This means that at some point in the future, IPv6 has to replace IPv4. We're not quite there yet, but now is a good time to start moving IPv6 out of the lab into the real world. This tutorial will tell you how to do that by focussing on:

- enabling IPv6 in popular OSes
- 6to4 and manual tunnels
- setting up an IPv6 router (software based and Cisco/Juniper)
- routing protocols: OSPF and BGP
- where to get IPv6 address space
- IPv6 in the DNS
- some example applications and daemons
- dealing with IPv4-IPv6 interaction and coexistence
- how IPv6 security differs from IPv4 security

Audience participation is encouraged, so bring a laptop with an IPv6-capable OS and 802.11 if you can. These OSes include: FreeBSD, Linux (depending on the distribution), MacOS 10.2 and up, Windows XP.

Topics not covered: Don't expect too much information about the inner workings of IPv6: there will be very few header format and protocol interaction schematics.

Who should attend: Anyone who does system or network administration and is interested in what life will look like with IPv6 enabled should attend. Only intermediate level knowledge of IPv4 is assumed, previous experience with IPv6 is not required.

Tutorial T4
Tuesday 16 May 2006
Time: 09:00 - 17:30
Location: Collegezaal D

Bridging/Routing/Switching Protocols
Radia Perlman

This tutorial focuses on understanding the algorithms and protocols necessary to move data through a network. Its focus is on understanding the conceptual problems and solutions, rather than every deployed feature.

It also describes a range of potential solutions, to foster critical thinking about protocols, rather than just memorizing the exact details of a particular standard. After a problem is studied generically, the specifics of protocols such as IPv4, IPv6, ATM, MPLS, OSPF, BGP, IS-IS, bridges, and the spanning tree algorithm are covered. Understanding the range of solutions possible and the tradeoffs of comparative approaches is particularly useful for evaluating or designing future standards.

The concepts of IP addresses, masks, MAC addresses, routing algorithms, domains, switches, bridges, are pervasive when dealing with networks. We all use these terms, and configure these things, but what is really going on? What are the implications of choosing a switch vs a router? What kinds of things can go wrong in a protocol that is misdesigned, misimplemented, or mismanaged? This tutorial describes the major protocols involved in the network infrastructure. It describes conceptually what goes on in the packet switches (both layer 2/bridges and layer 3/routers), as well as the implications on endnodes. It contrasts connection-oriented approaches such as ATM and MPLS with connectionless approaches such as IPv4 and IPv6. It covers the endnode-visible pieces of layer 3, such as neighbor-discovery and address autoconfiguration. It covers intradomain routing algorithms (distance vector such as RIP and link state such as OSPF or IS-IS) and interdomain (BGP). It describes the spanning tree algorithm used by bridges/switches.

Topics include:

- Layer 2 (MAC) addresses
 - Why 6 bytes?
 - Relation to layer 3 addresses (IP)
- Bridges
 - Basic idea
 - Why it's more powerful than a repeater
 - Station address learning and forwarding
 - Spanning tree
- What are switches? "switched Ethernet"
- Connection-oriented networks: ATM, MPLS
- Connectionless protocols: IPv4, IPv6, and comparison with others
- Neighbor discovery (ARP, DHCP)
- Routing (distance vector vs link state, interdomain vs intradomain)
- IP Multicast
- NAT

Who should attend: Anyone who might need to design a protocol, implement a protocol, write network-based applications, or plan or manage a network. Anyone who is just curious about what is really going on under the covers in a network, and how things got the way they are. Anyone with the courage to see things from different angles, and not just parrot orthodoxy. Paradoxically, this tutorial is good as an introduction to people who are incredibly confused by all the terms and don't know where to start, as well as people who have been using this stuff for years, assumed they understood it, and want to see how all the pieces fit.

Tutorial T5AM

Tuesday 16 May 2006

Time: 09:00 - 12:30

Location: Commissiekamer 3 / IAR

Firewalling with OpenBSD's PF packet filter

Peter N.M. Hansteen

The objective of the tutorial is to show you the tools and methods for taking control of your network traffic - keeping some of it safely inside or outside your network, directing traffic to specific hosts or services, flexible resource allocation and protection against cracking, DOSing and spamming.

Topics included:

- Background and history
- Packet filter? Firewall? Demystifying some common terms.
- NAT - why NAT was needed, how it works
- PF today - features
- BSD vs Linux - Configuration (for the BSD-curious Linuxer)
- Basic setup on OpenBSD, FreeBSD and NetBSD
- Exploring the basics of rule sets
- Lists and macros and why they are good for you
- A few information gathering techniques
- Simple gateway with NAT - a common setup explained
- Handling that sad old FTP thing
- Making your firewall troubleshooting friendly
- Hygiene: block-policy, scrub and antispoof
- Adapting to changing needs, easily
- The practical sides of logging
- Keeping an eye on things with pftop
- Invisible gateway - bridge (you can filter even if you're invisible)
- Directing traffic with altq
- CARP and pfsync: redundancy and failover - a taste of what is possible
- Wireless networks and how to stop worrying about them
- Giving bruteforcers and spammers a hard time - stopping stupidity at \$ext_if, greylisting and tarpitting

Topics not covered:

- Getting BSD to run on your hardware
- The intricacies of Microsoft networking
- Social engineering

Who should attend: Seasoned and aspiring network administrators looking for ways to make their environment more efficient and secure. Basic to intermediate familiarity with TCP/IP and unices required.

Tutorial T5PM
Tuesday 16 May 2006
Time: 14:00 - 17:30
Location: Commissiekamer 3 / IAR

The Solaris Service Management Facility
Liane Praza

This tutorial will cover the Service Management Facility (SMF), which is new in Solaris 10 and OpenSolaris. We'll give an overview of the SMF model and how to use it to manage services on Solaris. We'll talk about enhanced security and resource management features that SMF incorporates, and finally talk about creating SMF descriptions so you can include your own services in SMF.

Topics not covered: We will not cover management of individual application services in Solaris, but focus on common tools available for all services.

Who should attend: Any Solaris administrator or developer interested delivering services on Solaris and OpenSolaris systems will benefit from this session.

Tutorial W1AM
Wednesday 17 May 2006
Time: 09:00 - 12:30
Location: Senaatszaal

Optimising MySQL Applications Using the Pluggable Storage Engine Architecture
Arjen Lentz

In this tutorial, we will take an in-depth look at MySQL's "Pluggable Storage Engine" architecture. Understanding the features and trade-offs in each engine allows developers to optimise their applications by making appropriate choices and tuning the MySQL server appropriately for their needs.

For example, logging of page clicks on a web site places completely different requirements on a database from say tracking customers and sales. Functionally, either can be done using generic solutions. But by utilising specific features available in specialised storage engines, extraordinary performance improvements can be attained.

This becomes particularly relevant when there are specific speed and scalability requirements for an application. Yahoo! uses the ARCHIVE storage engine to deal efficiently with the massive amounts of user traffic information that is continually generated. A general purpose storage system would simply not do.

In MySQL, the storage engine can be selected on a per-table basis. This means that different

engines can be used from within a single application, as appropriate for the application's needs. In many cases, the application need not even be aware which engine is used.

In this tutorial, the different available storage engines will be compared. Also, the fundamentals of adding new storage engines will be discussed.

Overview of the MySQL Pluggable Storage Engine Architecture:

The MySQL pluggable storage engine architecture allows a database professional to select a specialized storage engine for a particular application need while being completely shielded from the need to manage any specific application coding requirements. The MySQL server architecture encapsulates the application programmer and DBA from all of the low-level implementation details at the storage level providing a consistent and easy application model and API. So while there are different capabilities across different storage engines, the application is shielded from these.

The pluggable storage engine architecture provides a standard set of management and support services that are common among all underlying storage engines. The storage engines themselves are the components of the database server that actually perform actions on the underlying data that is maintained at the physical server level.

This efficient and modular architecture provides huge benefits for those wishing to specifically target a particular application need -- such as data warehousing, transaction processing, high availability situations, etc. -- while enjoying the advantage of utilizing a set of interfaces and services that are independent of any one storage engine.

The application programmer and DBA interact with the MySQL database through Connector APIs and service layers that are above the storage engines. If application changes bring about requirements that demand the underlying storage engine change, or that one or more additional storage engines be added to support new needs, no significant coding or process changes are required to make things work. The MySQL server architecture shields the application from the underlying complexity of the storage engine by presenting a consistent and easy to use API that applies across storage engines.

Currently Available Storage Engines:

- MyISAM - the storage engine that is used the most in Web, data

- warehousing, and other application environments.
- InnoDB - used for transaction processing applications, and sports a number of features including ACID transaction support.
- BDB - an alternative transaction engine to InnoDB that supports COMMIT, ROLLBACK, and other transactional features.
- Memory - stores all data in RAM for extremely fast access in environments that require quick look ups of reference and other like data.
- Merge - allows a MySQL DBA or developer to logically group together a series of identical MyISAM tables and reference them as one object. Good for VLDB environments like data warehousing.
- Archive - provides the perfect solution for storing and retrieving large amounts of seldom-referenced historical, archived, or security audit information.
- Federated - offers the ability to link together separate MySQL servers to create one logical database from many physical servers. Very good for distributed or data mart environments.
- Cluster/NDB - the Clustered database engine of MySQL that is particularly suited for applications with high performance lookup needs that also require the highest possible degree of uptime and availability.
- Other - other storage engines include CSV (references comma-separated files as database tables), Blackhole (for temporarily disabling application input to the database) and an Example engine that helps jump start the process of creating custom pluggable storage engines.

While the above brief descriptions will give you a general idea of what type of application might benefit from a particular storage engine, a more detailed look at various common database tasks and needs across the various engines may help delineate the differences a little more.

Of course, you can use multiple storage engines in a single application; you are not limited to using only one storage engine in a particular database. So, you can easily mix and match storage engines for the given application need. This is often the best way to achieve optimal performance for truly demanding applications: use the right storage engine for the right job.

Tutorial W1PM
Wednesday 17 May 2006
Time: 14:00 - 17:30
Location: Senaatszaal

New Features of MySQL 5.0 and 5.1 In-depth (*Partitioning, Update-able Views, Triggers, Stored Procedures*)
 Arjen Lentz

Updateable Views, SQL standard stored procedures, and triggers have long been considered a basic requirement of an enterprise-ready DBMS. Now, MySQL 5.0 introduces support for these flagship features, as well as for a standard SQL-compliant INFORMATION_SCHEMA data dictionary, bringing the popular open-source DBMS several steps closer to matching all the capabilities of the competition.

MySQL 5.1 also introduces support for table partitioning.

In this tutorial, each of these features are discussed in-depth for syntax and functionality, with examples. Interesting for all users at intermediate and advanced levels, but particularly useful for existing MySQL users who may not be familiar with these features from other databases.

Topics not covered:

- Other 5.0/5.1 features in depth, there is simply not enough time.

Who should attend:

- Existing MySQL users who want to use the new MySQL 5.0/5.1 features.
- Users of other RDBMS who are evaluating MySQL 5.0/5.1 for new projects.

Tutorial W2AM
Wednesday 17 May 2006
Time: 09:00 - 12:30
Location: Collegezaal A

Advanced Topics in DNS Administration with BIND
 Jim Reid

This tutorial is intended for DNS administrators looking to broaden and deepen their understanding of how to configure and operate name servers. Topics include name server management with rndc and configuring BIND9's logging facilities. DNS for IPv6 devices and its deployment issues will be explained. The tutorial will show how to use Dynamic Updates to update zone contents instead of editing zone files. A short explanation of the interoperability issues between DNS and Active Directory will also be covered.

Topics included:

- Using the Logging subsystem:
 - Getting the most from the name server's logging capabilities
- Managing the name server with rndc
- Configuring split DNS:
 - Internal and external versions of a domain
 - Using the views mechanism of BIND9 to implement split DNS
- IPv6 Deployment considerations for DNS
- Dynamic DNS (DDNS):
 - Dynamic updates with nsupdate
 - DDNS and Active Directory
- Using TSIG & SIG(0)
- Secure DNS (DNSSEC)
 - RRSIG, NSEC, DS & DNSKEY Resource Records
 - How to sign zones with dnssec-keygen and dnssec-signzone
 - Deployment considerations
 - Last mile issues

Who should attend? DNS administrators who wish to extend their understanding of how to configure and manage name servers running BIND9. Attendees should have some experience of running a BIND8 or BIND9 name server and be familiar with DNS jargon for resource records, as well as the syntax of zone files and named.conf. This tutorial will answer the question, "I've set up master (primary) and slave (secondary) name servers. What else can I do with the name server?"

Tutorial W2PM
Wednesday 17 May 2006
Time: 14:00 - 17:30
Location: Collegezaal A

DNS Security
Jim Reid

Name servers are often misconfigured in ways that expose them and the applications or services that depend on them to a variety of attacks: denial of service, spoofing, traffic amplification and so on. The tutorial explains how to restrict and control access to name servers. It also discusses the application of the principle of least privilege to DNS administration. Techniques for authenticating DNS transactions -- queries, zone transfers and dynamic updates -- are described. The DNS Security protocol extensions, DNSSEC are explained: the new resource records, how to sign a zone, what DNSSEC does and doesn't do, an overview of deployment and on-going development issues.

Topics included:

- Setting up an internal root server
- Securing the name server
 - Setting up a chroot()'ed environment
 - Using BIND9's access control lists
 - Preventing unwanted access
- Transaction Signatures

Who should attend: DNS administrators who wish to extend their understanding of how to configure and manage name servers running BIND9. Attendees should have some experience of running a BIND8 or BIND9 name server and be familiar with DNS jargon for resource records, as well as the syntax of zone files and named.conf. This tutorial will answer the question, "I've set up master (primary) and slave (secondary) name servers. What else can I do with the name server?"

Tutorial W3AM
Wednesday 17 May 2006
Time: 09:00 - 12:30
Location: Collegezaal C

VoIP Security
Heison Chak

This tutorial will cover VoIP security and some counteract measures to address security concerns.

VoIP and PSTN vulnerabilities will be discussed and compared to better understand both technologies. The tutorial also features VoIP security best practices in terms of encryption, firewalling and indentifying threats such as:

- Wire tapping / eavesdropping
- DoS attacks
- Spam over IP telephony
- Theft of service

Through examples, attendees will leverage their ability to discover potential danger of an existing system and to impose security on VoIP systems.

Who should attend? Managers, systems administrators who are responsible for security measures of VoIP systems. Participants should have basic knowledge of the operations VoIP and be familiar with network protocols. Attendees will come away from this tutorial with exposure to common vulnerabilities, counter measures and some of their drawbacks.

Tutorial W3PM
Wednesday 17 May 2006
Time: 14:00 - 17:30
Location: Collegezaal C

Linux Network Services and Security
Joshua Jensen

From a stand-alone client attached to the Internet to a distributed network of web servers, Systems Administrators are being tasked with bring their office environments on-line. The Network Services that need to be configured in order to do this can be daunting to Administrators who aren't familiar with the required applications. Configuration examples as well as overviews of the underlying protocols will give the usable examples that work after the conference. The following areas will be covered with a special emphasis on security:

- Networking for Linux Overview
- Network Services including:
 - SSH - Secure Shell with OpenSSH
 - FTP - Explore vsftpd
 - HTTP - Apache and Tux and Squid
 - SMTP - Postfix MTA
 - NFS - Network File Systems
 - LDAP - Global authentication with OpenLDAP
 - DHCP - DHCPD and PXE
 - DNS - ISC's BIND
 - NTP - Network Time
 - LPD - Printing with cups
- Host based Security with TCP Wrappers and Xinetd
- Overview of Linux Packet Filtering
- Network Monitoring and Logging
- Network Utilities you should be using

At the completion of the course attendees should feel confident in their ability to setup and maintain secure network services. The tutorial will be conducted in an open manner that encourages question and answer interruption.

This tutorial is directed at System Administrators who are implementing Network Services and are looking for a background in the configuration of those services as well as basics of the protocols. Attendees should have some network client/server experience and have a basic knowledge of Unix Administration, but do not need to be experienced Network Administrators. Both new and intermediate Network Administrators will leave the tutorial having learned something.

Tutorial W4AM
Wednesday 17 May 2006
Time: 09:00 - 12:30
Location: Collegezaal D

Introduction to Host Configuration and Maintenance with Cfengine
Mark Burgess

Cfengine is a tool for setting up and maintaining a configuration across a network of hosts. It is sometimes called a tool for "Computer Immunology" -- your computer's own immune system. You can think of cfengine as a very high level language, much higher-level than Perl or shell, together with a smart agent. The idea behind cfengine is to create a single "policy" or set of configuration files that describes the setup of every host on your network, without sacrificing their autonomy.

Cfengine runs on every host and makes sure that it is in a policy-conformant state; if necessary, any deviations from policy rules are fixed automatically. Unlike tools such as rdist, cfengine does not require hosts to open themselves to any central authority, nor to subscribe to a fixed image of files. It is a modern tool, supporting state-of-the-art encryption and IPv6 transport, that can handle distribution and customization of system resources in huge networks (tens of thousands of hosts). Cfengine runs on hundreds of thousands of computers all over the world.

Topics include:

- The components of cfengine and how they are used
- How to get the system running
- How to develop a suitable policy, step by step
- Security
- Examples
- How to customize cfengine for special tasks

Who should attend: System administrators with a minimal knowledge of a scripting language who wish to start using cfengine to automate the maintenance and security of their systems. UNIX administrators will be most at home in this tutorial, but cfengine can also be used on Windows 2000 and above.

Tutorial W4PM
Wednesday 17 May 2006
Time: 14:00 - 17:30
Location: Collegezaal D

Advanced Topics in Host Configuration and Maintenance with Cfengine
Mark Burgess

Cfengine contains many features and facilities that make it a powerful tool for system

administration, but it has a large manual that is difficult to absorb without training. In this tutorial we assume that attendees have a basic understanding of how cfengine works and would like to develop a number of "best practices" and examples to maximize their returns.

Topics include:

- Review of some basics
- Automating deployment of software throughout your infrastructure
 - UNIX/Mac/Windows
 - update.conf
 - cron and cfexecd
 - When to run
 - Integrating data from information sources
- Structure and organization of config
 - The overlapping-set model
 - Import
 - Modules
 - Methods
 - When to use these tools
- Special functions and variables
 - Variables, scalars, arrays
 - Associative arrays and their limitations
 - ExecResult, ReturnsZero, etc.
 - ReadArray, ReadList, etc.
 - IsNewerThan, IsDir, etc.
- Searching, matching, and wildcards
 - Search filters
 - Regular expressions
 - Wildcard expansions
- How does cfagent evaluate things?
 - Thinking declaratively
 - Ordering: When does it matter?
 - Locks; What are they, and why are they there?
 - Iteration over lists
 - Control, actionsequence, alerts
- Services and security
 - PP keys and exchange (trust model)
 - Authentication stages
 - Rule orderings
 - IPv6 issues
 - Peer-to-peer services
 - Example: Backing up laptops
- Host monitoring
 - cfenvd
 - Interfacing to tcpdump
 - Understanding cfenvgraph output
 - PeerCheck neighborhood watch
 - FriendStatus function
- Future developments and discussion

Who should attend: System administrators with a working knowledge of cfengine (or who have attended the introductory course) and who wish to extend their understanding of cfengine with examples and usage patterns. UNIX and Mac OS X administrators will be most at home in this tutorial, but cfengine can also be used on Windows 2000 and above.

Tutorial W5

Wednesday 17 May 2006

Time: 09:00 - 17:30

Location: Commissiekamer 3 / IAR

Inside the Linux Kernel

Ted Ts'o

Topics included:

- How the kernel is organized (scheduler, virtual memory system, filesystem layers, device driver layers, networking stacks)
 - The interface between each module and the rest of the kernel
 - Kernel support functions and algorithms used by each module
 - How modules provide for multiple implementations of similar functionality
- Ground rules of kernel programming (races, deadlock conditions)
- Implementation and properties of the most important algorithms
 - Portability
 - Performance
 - Functionality
- Comparison between Linux and UNIX kernels, with emphasis on differences in algorithms
- Details of the Linux scheduler
 - Its VM system
 - The ext2fs filesystem
- The requirements for portability between architectures

Topics not covered: This class will not contain a detailed examination of the kernel source, but will rather offer an overview and roap of Linux's design and functionality, as the ground work for future exploration.

Who should attend: Application programmers and beginning 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.

Conference Program

Invited talks

Thursday 18 May, 2006

Opening

Thursday 18 May 2006

Time: 09:30 - 09:45

Location: Auditorium

Opening Remarks

Alexios Zavras

Program Chair Technical Sessions

Welcome at SANE 2006 !

Keynote Address

Thursday 18 May 2006

Time: 09:45 - 10:45

Location: Auditorium

"Freedom to Tinker"

Ed Felten

Still a surprise... We're aiming at a timely topic, that will be along the lines of professor Ed Felten's current activities with his Freedom to Tinker blog.

Invited Talk

Thursday 18 May 2006

Time: 11:15 - 12:00

Location: Collegezaal A

Unix On My Mind

Bill Cheswick

Unix and the corresponding philosophy continue to support a vibrant community of software, network, and scientific researchers, and is a powerful force in the commercial world. But in the area of security, despite numerous experiments, widespread deployment of better security has all but stopped.

Invited Talk

Thursday 18 May 2006

Time: 12:00 - 12:45

Location: Collegezaal A

DNSSEC Deployment - *The path forward*

Steve Crocker

Spoofing of domain names and poisoning of caches continues to be a favored mode of attack in both local nets and across the global Internet. The DNS Security protocol (DNSSEC) is intended to improve protection against these attacks. The protocol was published a year ago (RFCs 4033, 4034, 4035) and deployment is in the early stages. The deployment process is rather more interesting than most deployments because its intertwined with both chicken-and-egg issues and a few political issues.

In this talk I will outline the main pieces of the

road map for deployment of DNSSEC and offer an assessment of both the bottlenecks and opportunities for early deployment. One of the most important indicators of progress is the signing of the root zone and the signing of the top level domains. Sweden signed its top-level domain a few months ago. .COM, .NET and .ORG are running test beds. Signing of the root zone is getting considerable attention and I will give an update on the progress there. And tools are beginning to emerge...

Invited Talk

Thursday 18 May 2006

Time: 14:00 - 14:45

Location: Collegezaal A

Wireless Networking in the Open Source Community: The Good, The Bad, and The Ugly

Sam Leffler

For the past four years (or more) I've been working on improving the state of wireless networking support in the open source community. These efforts have affected all the groups, either directly--by providing new software, or indirectly--by enabling access to new wireless technology. Along the way there have been twists and turns as some groups have leveraged this work while others have not. This talk will describe the efforts to bring state of the art wireless networking support to the open source community and review the good, the bad, and the ugly that have happened along the way.

Invited Talk

Thursday 18 May 2006

Time: 14:45 - 15:30

Location: Collegezaal A

Linux Kernel - *How is it being developed and what's coming next?*

Ted Ts'o

The Linux kernel development model is unique compared to other Open source Projects. This talk will explore how it has changed over the years, why those changes were made, and the strengths and weaknesses of our current approach. In addition, this talk will also give a broad-eyed view of recent changes to the kernel and the general direction of future development in the Linux kernel.

Invited Talk
Thursday 18 May 2006
Time: 16:00 - 16:45
Location: Collegezaal A

A security review of the biometric passport
Bart Jacobs

Many countries are currently developing a biometric passport with a chip that contains fingerprints and a facial scan of the passport holder. The regulations and technology involved will be discussed and reviewed in this talk, including the relevant protocols for authentication and secure transmission. The speaker is member of an expert panel on biometry of the ministry of internal affairs of the Netherlands. In that context his research group at Nijmegen has received a test version of the new passport and has developed terminal-side software to communicate with the chipcard.

For general audience, no required skills.

Invited Talk
Thursday 18 May 2006
Time: 16:45 - 17:30
Location: Collegezaal A

The \$100 laptop
why it can and should be done
Michail Bletsas

This talk will provide a current overview and status of the \$100 laptop project. Its context, history, motivations, goals and challenges will provide a framework for better understanding the various management and engineering decisions up to the talk's point in time along with a general high level description of the laptop's technology. Although to its principals the \$100 laptop is mainly an educational project, deploying millions of those will also have far reaching implications for the computing and communications industries. An attempt will be made to identify and discuss them.

This talk assumes an audience with general background - no special skills required.

Refereed talks **Thursday 18 May, 2006**

Refereed Paper
Thursday 18 May 2006
Time: 11:15 - 12:00
Location: Senaatszaal

Non-stop Provision of Internet Services via a Reflectively Load-Sharing Architecture
Kostas Zorbadelos, Christos KK Loverdos, Alex Delis

We present the design, implementation and evaluation of a fully open-source, production-quality load-sharing and highly available system,

to address the problem of offering continuously available and reliable Internet services. The proposed architecture is built on top of established open-source technologies, like the FreeBSD Operating System, the Packet Filter (PF), the Common Address Redundancy Protocol (CARP) and Python. Our solution is complemented with a comprehensive and highly configurable administration shell that coordinates the function of the underlying system.

Refereed Paper
Thursday 18 May 2006
Time: 12:00 - 12:45
Location: Senaatszaal

PEGASUS: Competitive load balancing using inetd
George Oikonomou, Vassilios Karakoidas, Giorgos Gousios, Theodoros Apostolopoulos

As it is proven by practice, load balancing techniques are the only tool that network service provider have, in order to support and handle scalable network load. This paper presents PEGASUS, a novel framework that provides load balancing in network services transparently, using a competitive scheduling algorithm. PEGASUS is designed upon the inetd superserver, thus providing a easy to configure, yet efficient infrastructure. Our proposed architecture is based on well known user space tools. The prototype implementation is using inetd as the basis application. Using inetd we provide a simple scheme for service categorization, using tcp/ip network ports. The scheduling algorithm that our system proposes is competitive. The paper concludes with a comparison of PEGASUS and other well known similar infrastructures.

Refereed Paper
Thursday 18 May 2006
Time: 14:00 - 14:45
Location: Senaatszaal

Soft-phones and hard security
Tim Panton

Westhawk has designed and implemented a Java based web-applet that acts as a soft-phone for the Asterisk Open-Source PBX. This paper describes the difficulties (many) and compromises (few) that were encountered in the development process. Most of these problems related to the security, networking or threading requirements of hosting the application in a browser.

Our aim in presenting this paper at SANE is to assist systems and network professionals in their discussions with developers about what is possible vs what is acceptable in a secure, portable, low maintenance but compelling web based application.

Refereed Paper
Thursday 18 May 2006
Time: 14:45 - 15:30
Location: Senaatszaal

Universal Plug and Play: Dead simple or simply deadly?
Armijn Hemel

Universal Plug and Play (UPnP) is becoming an omnipresent technology and support for it is being added to more and more routers, gateways and DSL modems. Chat clients (MSN Messenger), networked games and gaming networks (X-Box Live and others) depend on UPnP to work correctly. Up until now, there haven't been any real problems with UPnP, except for the occasional buffer overflow. UPnP seems to be working just fine. But it's not! The protocol is unclear and flawed by design and many implementations have security holes you can drive a truck through, leaving your network open to a variety of interesting attacks. After this lecture you will understand what's wrong with UPnP and why you want to turn it off on your networked devices.

Refereed Paper
Thursday 18 May 2006
Time: 16:00 - 16:45
Location: Senaatszaal

Open Source VoIP Traffic Monitoring
Luca Deri

These days voice over IP (VoIP) is quite popular as it is a cost effective way to reduce telephony costs using the Internet. Although many projects are focusing on developing tools and solutions for building the voice infrastructure, there is very little available in terms of tools and metrics for measuring the impact of VoIP on a network. This paper describes the design and implementation of open source tools for detecting and measuring VoIP traffic based on both standard and proprietary protocols.

Refereed Paper
Thursday 18 May 2006
Time: 16:45 - 17:30
Location: Senaatszaal

Efficient real-time Linux interface for PCI devices
A study on hardening a Network Intrusion Detection System against high bandwidth attacks
Purnendu Sinha, Amitava Biswas

Efficient real-time drivers for PCI devices has many applications ranging from real-time data acquisition to increasing the reliability of a network intrusion detection system. In a PC based Network Intrusion Detection System (NIDS), the packet capturing component is a key

bottleneck which reduces the effectiveness of the system. Completion of intrusion detection task in bounded time at the sensors is also important to detect complex and co-ordinated attack patterns. NIDS deployment on multiprocessor or distributed systems that circumvents this bottleneck do not address the operating system and network device driver performance limitations which are the causal factors behind this bottleneck. We propose to improve the effectiveness of a NIDS by improving its packet capturing capacity. We achieve this by using an efficient real-time software interface for the PCI network card. We have implemented this novel interface to capture packets under high network load on a modest commodity platform. This mechanism outperforms existing packet capturing solutions - NAPI, PFRING and Linux kernel under heavy network load in terms of higher load bearing capacity, packet capturing capacity and superior real-time behavior. In this paper we describe the details of this mechanism under two Linux kernel options Redhat 8 (2.4.18 custom kernel) and vanilla 2.4.x with RTAI real-time co-kernel, and its operation. We hope that this will encourage developers of adopt this solution in their Linux based network monitoring/ security or real-time data acquisition projects.

Invited talks
Friday 19 May, 2006

Opening
Friday 19 May 2006
Time: 09:00 - 09:30
Location: Collegezaal A

Awards
Alexios Zavras
Program Chair Technical Sessions

Invited Talk
Friday 19 May 2006
Time: 09:30 - 10:15
Location: Collegezaal A

Honeypots: The latest trends, findings, and technologies
Lance Spitzner

Information security threats are constantly advancing, adapting, and evolving, so to are honeypots. This technical presentation will cover the latest tools in the world of honeypots, including honeynets, client honeypots, and distributed deployments. We will not only discuss the value and concepts of these tools, but how they work at a technical level. In addition, we will cover what we have learned about threats, including trends over the past several years, some of the latest threats we have captured, and where we think the future lies.

Invited Talk
Friday 19 May 2006
Time: 10:15 - 11:00
Location: Collegezaal A

Internet measurement: what have we learned in the last ten years?
kc claffy

Drawing on 15 years of investment in analyzing various types of Internet data (workload, topology, routing, and performance), Dr. Claffy describes what we have learned, and what we have failed to learn from Internet measurement. She will discuss how to best apply both (the learnings and the failures) to future cyberinfrastructure research and development, and outline some assumptions about the current architecture that we still need to investigate with more rigorous underpinnings. She will cover background on the historical context of funding for Internet research and development, and articulate the set of most paramount and pervasive weaknesses in the current infrastructure. She will also argue that technological and political forces will inevitably demand a re-evaluation of the fundamental aspects of Internet architecture, engineering, and governance.

Invited Talk
Friday 19 May 2006
Time: 11:30 - 12:15
Location: Collegezaal A

Open Source:
A Software Survival Strategy
Casper Dik

After working in a corporate environment for many years, the one deciding factor in the survivability of text processing software appears to be whether the tool used was free open source or a closed source, binary only, commercial only product. Stuck with presentations and other documents in now unreadable or unconvertible formats, we need to look for ways to escape the trap of "closed" solutions as open solutions from the same era didn't suffer the same faith. We show how Open Source offers more than just "free software"; it offers better continuity and increased data preservation. If Darwinist evolution could be applied to software, open source software would be considered fitter and more likely to survive.

Invited Talk
Friday 19 May 2006
Time: 13:45 - 14:30
Location: Collegezaal A

Data: How to keep it when you want it and lose it when you want it gone
Radia Perlman

This talk describes a design that provides data storage with high availability, protection against unauthorized disclosure, and the ability to expunge the data in a way that makes it unrecoverable. The obvious approach, of course, is to encrypt the data on nonvolatile storage, and then destroy keys at the appropriate times. But then there is the difficulty of managing the keys. This design minimizes that difficulty, and allows minimal trust in stable storage and key management, so that these functions can be outsourced. Although parts of the talk are technically deep, anyone should be able to understand the characteristics of this system. The target audience is anyone who might use or implement such a system.

Invited Talk
Friday 19 May 2006
Time: 14:30 - 15:15
Location: Collegezaal A

Is Entropy Winning?
Drowning in The Data Tsunami
Lee Damon

We're drowning under a wave of data and don't even know it yet. With large disks being so much cheaper than time it is very tempting to buy more disk instead of cleaning up and sorting old data. As data space expands we will start losing track of - and thus losing - our data. Archival backups add complexity to this already confusing situation then toss in security and availability for some spice. Where is this going and how can we handle it in the face of millions of gigabytes of 'old cruft'?

We need to pay attention as data is generated, collected, collated and organized to make sure we can find it again. Librarians have been dealing with data classification and organization for thousands of years. We can learn a few things from them.

Invited Talk
Friday 19 May 2006
Time: 16:00 - 16:45
Location: Collegezaal A

VFX (Visual Effects), Systems and Software Development
Tiers, Magnitudes, and Pixels
Wook

Visual Effects production requires a significant magnitude of resources, both at the human and computational levels. How the carbon-based automatons drive the silicon-based systems, towards what ends, and using what methods. Pretty pictures will be provided, some of which should be indistinguishable from real life.

Invited Talk
Friday 19 May 2006
Time: 16:45 - 17:30
Location: Collegezaal A

A BCP for spam filtering
Maurice Wessling

E-mail spam filtering is a necessity for both system administrators and end-users. But spam filtering can have a serious impact on freedom of speech. By using careless implementations of spam technology or unclear policies the system administrator can unintentionally prevent the delivery of legitimate and wanted e-mail. Many system administrators do not work with a clear spam policy and do not provide transparency towards the end-user. Confusion over the definition of spam contributes to the lack of common, shared policies. Legal, technical and end-user definitions of spam can be very different. In this presentation the first steps towards a Best Common Practise for spam filtering by system administrators will be discussed. The BCP is based on research by the Dutch organisation Bits of Freedom on the use of spam filtering by admins in both small and large Dutch organisations. The BCP focusses on definitions, policy development and transparency.

Invited Talk
Friday 19 May 2006
Time: 16:45 - 17:30
Location: Senaatszaal

Update of the constitution: introduction to GPLv3
Georg C. F. Greve

The GNU General Public License (GPL) invented the concept of Copyleft and is the most popular Free Software license today. After many highly successful years for version 2, the GPL is currently being overhauled to meet the needs of the next decade. The presentation will give an introduction to version 3, the changes made, their reasoning and how to participate in the process to make sure GPLv3 will be the best GPL we can collectively create.

Refereed talks **Friday 19 May, 2006**

Refereed Paper
Friday 19 May 2006
Time: 09:30 - 10:15
Location: Senaatszaal

Naming, Migration and Replication for NFSv4
Jiaying Zhang

In this paper, we discuss a global name space for NFSv4 and mechanisms for transparent

migration and replication. By convention, any file or directory name beginning with /nfs on an NFS client is part of this shared global name space. Our system supports file system migration and replication through DNS resolution, provides directory migration and replication using built-in NFSv4 mechanisms, and supports read/write replication with precise consistency guarantees, small performance penalty, and good scaling. We implement these features with small extensions to the published NFSv4 protocol, and demonstrate a practical way to enhance network transparency and administerability of NFSv4 in wide area networks.

Refereed Paper
Friday 19 May 2006
Time: 10:15 - 11:00
Location: Senaatszaal

An Introduction to MySQL Cluster Architecture and Use
Arjen Lentz

An overview of the MySQL Cluster architecture, what's different about it and what problems it can be used to solve. We'll be looking at how High Availability is achieved as well as setup considerations regarding performance. Basic use will also be covered, from setup (including schema considerations) to new (and exciting!) features in the 5.0 and 5.1 releases.

Refereed Paper
Friday 19 May 2006
Time: 11:30 - 12:15
Location: Senaatszaal

Configuration Management with Subversion, YAML and Perl Template Toolkit
Ray Miller

In this paper we discuss the methods and tools used by the Systems Development and Support team at Oxford University Computing Services to manage the installation and configuration of more than 60 Debian GNU/Linux servers, ensuring that these systems are in a consistent and reproducible state. We also give a brief overview of some of the existing software for configuration management and discuss the rationale and evolution of the system currently in use at Oxford. This consists of three tiers, treating generation, distribution, and installation of configuration files as independent processes. Our toolkit is built from familiar free software components: Template Toolkit for configuration file generation; Subversion for revision control; rsync for file distribution; Perl for scripting; YAML for data serialisation. We introduce each of these technologies and describe how they fit together to provide a modular and flexible system for managing configuration files.

Refereed Paper
Friday 19 May 2006
Time: 13:45 - 14:30
Location: Senaatszaal

Tuning Java's memory manager for high performance server applications
Giorgos Gousios, Vassilios Karakoidas, Diomidis Spinellis

Java is a strong player in the application server market and thus the performance of its virtual machine is an important aspect of a server's performance. One of the components that affect performance of a JVM is the memory manager, which also includes the garbage collector. Modern virtual machines offer a multitude of options for tuning the memory manager, which can have a significant impact on server application performance. This paper examines the structure and performance of garbage collector implementations for the most popular JVMs. We first provide a brief overview of how memory management works in Java and then proceed to present timing options based on the results of benchmarks, both readily available and tailor made, executed using open source server applications. We employ server-class dual-processor 64-bit hardware configured with 8GB of RAM and a switching network of workstations to perform the tests. We study the effect of garbage collection tuning and present the best configurations for common workload patterns.

Refereed Paper
Friday 19 May 2006
Time: 14:30 - 15:15
Location: Senaatszaal

Analyzing and improving GNOME startup time
Lorenzo Colitti

Despite constant advances in hardware performance, the time it takes to log in to GNOME has not improved much in recent years. This work examines the causes of slow startup time using a combination of existing and ad-hoc tools and evaluates possible solutions. The analysis shows that GNOME startup time is I/O bound and dominated by disk seeks, and that there is much room for improvement: proof-of-concept modifications made to GNOME code and to system code resulted in a more than 30% reduction in startup time. The work also shows how trivial modifications to the dynamic linker to load libraries from disk sequentially instead of faulting them into memory can bring a relatively large benefit in application startup time.

Refereed Paper
Friday 19 May 2006
Time: 16:00 - 16:45
Location: Senaatszaal

Cryptographic Hash Functions: Recent Results on Cryptanalysis and their Implications on System Security
Ruediger Weis, Stefan Lucks

A spectre is haunting IT-security -- the spectre of hash function cryptanalysis. A lot of actual results show that all widely used hash functions (MD4,MD5,SHA,SHA-1) are broken in a cryptographic sense. Even worse because of some internal design properties even practical attacks against MD*-based hash functions security systems could be shown. In this paper we discuss the cryptographic status and some first-aid workarounds. We also show the impossibility to establish a "Trusted" infrastructure based on a untrustable cryptographic function.

Speakers



Ed Felten
Princeton
University

Keynote Address

Edward W. Felten is a professor of computer science and public affairs at Princeton University.

Felten has done a variety of computer security research, including groundbreaking work on proof-carrying authentication but he is perhaps best known for his paper on the Secure Digital Music Initiative (SDMI) challenge.

Today, Felten is an active voice in the area of technology policy, having started the Freedom to Tinker weblog.



**Theodoros
Apostolopoulos**
Athens University
of Economics and
Business
(Co-author)

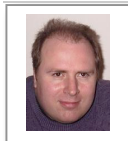
Theodoros Apostolopoulos is a professor at the department of Informatics of Athens University of Economics and business. He will participate as the scientific coordinator of the team from Athens University of Economics and business. He is also, the director of the Computer and Communication Systems Laboratory. His research interests concern the following areas: telecommunications and computer networks, telematics services (protocols for multimedia and cooperative work), distributed systems (distributed databases, distributed algorithms for the solution of engineering problems). He has participated as a researcher or scientific manager in various projects (within the above mentioned scientific areas) funded by the European Union, the industry and government agencies.



Walter Belgers
Madison Gurkha

Mr. Walter Belgers lives in Eindhoven, the technological centre of the Netherlands. His interest for internet and UNIX started in 1988 when he started his studies on Computing Science. He has worked with many different operating systems, and currently uses Mac OS X, FreeBSD and Solaris the most. He has given lectures and tutorials at conferences such as all previous SANE conferences, FIRST99, HAL2001 and MegaBIT, was co-organiser and program chair for the 2nd European BSD Conference and head of IT at WTH2005.

Walter's professional career started as firewall developer. He then taught UNIX and security for a few years and in 2002 he became partner and principal security consultant at Madison Gurkha where he does security consultancy of all sorts, writes articles and columns and teaches security. Apart from his interest in physical and computer security in the broadest sense (including e.g. lockpicking), Walter also enjoys listening to music, riding his motorcycle and sailing.



**Iljitsch van
Beijnum**

Iljitsch van Beijnum is a network consultant in The Hague, Netherlands. He first got interested in unusual network protocols in the early 1990s when, working in a technical support job for the Dutch PTT, he discovered he could connect to a DECserver in the office basement that provided services with intriguing names such as LAT and MOP. A few years later, Iljitsch found himself in the emerging ISP business where he learned about system administration, IP networking, and especially routing. He became a freelance consultant in 2000 and has written two books: "BGP" (O'Reilly, 2002) and "Running IPv6" (Apress, 2005).



**Amitava
Biswas**
Concordia
University
(Co-author)

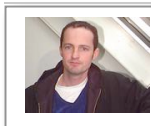
Amitava Biswas, has completed MASc in computer engineering from Concordia University. He received his MBA from Indian Institute of Management, Ahmedabad and Bachelors in Electronics and Electrical Engineering from Indian Institute of Technology, Kharagpur. He is a certified Information System Professional in Canada. He had been working in industrial automation, information systems and telecom software development domain for last 8 years as an engineer and project manager. At present he is associated with Hexagram, a

multi-disciplinary (art and technology) research organization in Montreal. He is a member of IEEE, Canadian Information Processing Society and Society for Research Administrators. His interest lies in networking, performance engineering, real-time applications, distributed systems, system software, embedded systems, sensors, research and engineering management.



Michail Bletsas
MIT Media Lab

Michail Bletsas, a research scientist and director of computing at the MIT Media Laboratory, designed and deployed most of the Internet network infrastructure systems at the Lab. Currently, he is experimenting with wireless networks that are implemented using off-the-shelf, low-cost components to provide broadband Internet access to underserved areas. Before joining the Media Lab, he was a systems engineer at Aware, Inc., where he designed and wrote high-performance software libraries for Intel's distributed-memory parallel supercomputers, and was involved in the development of one of the first ADSL Internet-access test beds. He holds a diploma in electrical engineering from Aristotle University of Thessaloniki, Greece and an MS in computer engineering from Boston University.



Mark Burgess
Oslo University College

Mark Burgess is Professor of Network and System Administration at Oslo University College, Norway. He is the author of the configuration management system cfengine and of several books and many papers on the topic.



Heison Chak
SOMA Networks

Heison Chak is a systems and network administrator who works for SOMA Networks, focusing on network management and performance analysis of data and voice networks. Heison has been an active member of the Asterisk community. He started delivering tutorials and contributing articles for USENIX in 2004.



Bill Cheswick
Lumeta

Ches started using Unix extensively about 20 years ago. He subsequently had the privilege of working in the Unix room at Bell Labs with many of the people who invented Unix, C, and most of the related philosophy. Subsequently, he has coauthored very Unix-based software that's been used by Lumeta to map intranets and the Internet.



kc claffy
CAIDA
(Cooperative Association for Internet Data Analysis)

kc claffy is founder and director of the Cooperative Association for Internet Data Analysis (CAIDA), based at the University of California's San Diego Supercomputer Center, and Associate Adjunct Professor in the Computer Science and Engineering Department at UCSD. kc's research interests include measurement, analysis, and visualization of Internet workload, routing, topology and performance data. CAIDA seeks, through the collection and curation of strategic Internet data sets and freely available tools and analysis methodologies, to improve the scientific integrity of network research and to promote more informed engineering, business, and policy decisions regarding the Internet infrastructure. kc received her Ph.D. in Computer Science from UCSD in 1994.



Lorenzo Colitti

Lorenzo Colitti obtained a master's degree in Electronic Engineering in 2002 and is currently a Ph.D student at Roma Tre University and a network engineer and researcher at the RIPE NCC in Amsterdam. His research interests include network topology and visualization, IPv6, routing protocols and their effects on network performance, and system performance. System and network administration tools he has worked on include BGPlay, a system for visualizing routing changes in the Internet, and MRTG, to which he contributed IPv6 support.



Steve Crocker
Shinkuro, Inc.

Steve is CEO and co-founder of Shinkuro, Inc., a start up company building tools for cooperation and collaboration across the Internet. One of Shinkuro's projects is facilitation of the deployment of the DNSSEC protocol. Steve has been involved in the

Internet since its inception. In the late 1960's and early 1970's, while he was a graduate student at UCLA, he was part of the team that developed the protocols for the Arpanet and laid the foundation for today's Internet. He organized the Network Working Group, which was the forerunner of the modern Internet Engineering Task Force, initiated the Request for Comment (RFC) series of notes through which protocol designs are documented and shared, and laid the foundation for the open architectural structure of the Internet Protocols. For this work, he was awarded the 2002 IEEE Internet Award. He remained active in the Internet standards work through the IETF and IAB and served as the first security area director on the Internet Engineering Steering Group from 1989 to 1994.

Steve's experience includes research management at DARPA, USC/ISI and The Aerospace Corporation, vice president of Trusted Information Systems, and co-founder of CyberCash, Inc. and Longitude Systems, Inc.

He is on the board of the Internet Society and chair of ICANN's Security and Stability Advisory Committee, and he is an advisor to a number of start-up Internet companies. Steve earned his BA in math and PhD in computer science at UCLA, and he studied artificial intelligence at MIT.



Lee Damon
University of Washington

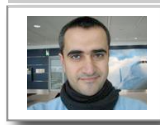
Lee Damon has a B.S. in Speech Communication from Oregon State University. He has been a UNIX system administrator since 1985 and has been active in SAGE since its inception. He assisted in developing a mixed AIX/SunOS environment at IBM Watson Research and has developed mixed environments for Gulfstream Aerospace and QUALCOMM.

He is currently leading the development effort for the Nikola project at the University of Washington Electrical Engineering department. Among other professional activities he is a charter member of LOPSA and SAGE, past chair of the SAGE Ethics and Policies working groups, and chaired LISA '04.



Alex Delis
University of Athens
(Co-author)

Alex Delis is a faculty member at the University of Athens, in Athens, Greece. His research interests are in the areas of distributed computing, real-time systems, networked databases, and evaluation of computer systems. He holds a PhD and an MS in Computer Science from the University of Maryland at College Park, MD and a diploma in Computer Engineering from the University of Patras, in Patras, Greece. He is a member of IEEE Computer Society, ACM, and the Technical Chamber of Greece.



Luca Deri
ntop.org

Luca Deri is the leader of the ntop project (www.ntop.org) aimed at developing an open source monitoring platform for high speed traffic analysis. He currently shares his time between NETikos S.p.A. and the University of Pisa where he has been appointed as lecturer at the CS department. His home page is luca.ntop.org



Joost van Dijk
TUNIX Internet Security & Training)

Joost van Dijk works as a consultant and instructor at TUNIX Internet Security & Training in Nijmegen, the Netherlands. Previous incarnations of him by the same name include: a part-time lecturer at the Leiden Institute of Advanced Computer Science, a consultant for the Software Engineering Research Centre (SERC) in Utrecht, and a flunked Ph.D. student at the Computer Science Department at Utrecht University, all in the Netherlands.



Casper Dik
Sun Microsystems, Inc.

Casper Dik is a Senior Staff Engineer at Sun Microsystems, Inc.; his job focusses on improving the security of the Solaris operating system. Part of his responsibilities included the design and implementation of Solaris 10 privileges. As part of the OpenSolaris Community Advisory Board and the Sun engineering community, he is involved in guiding Solaris from a closed development model to an open development model.



Rudi van Drunen
XlexiT Technology
BV

After his graduation as electronics design engineer, Rudi van Drunen met UNIX about 20 years ago at the University of Groningen (NL). After having served as a systems administrator and research programmer for about 7 years, he worked for an engineering firm doing low-level system software and hardware design.

Nowadays he is employed as head of information technology of the Leiden Cytology and Pathology labs, where he does UNIX system administration and applied research in image analysis and neural networks. Besides that he is one of the tech gurus at Wireless Leiden, the leading wireless community in the Netherlands and he has his own consultancy company: Xlexit.



Georg C. F. Greve
Free Software
Foundation
Europe

Born 10. March 1973, Dipl.-Physicist Georg Greve has a classic scientific background with an interdisciplinary diploma thesis in nanotechnology at the University of Hamburg.

A software developer since he was 12 years old, Georg Greve came in touch with GNU/Linux and Free Software around 1993 and was appointed European Speaker for the GNU Project in 1998. Since then he has been writing the "Brave GNU World", a monthly column about Free Software, which is published in several magazines as well as on the Internet in up to ten languages.

In early 2001 Georg Greve initiated the founding of the Free Software Foundation Europe (FSFE, FSF Europe), the construction and coordination of which has kept him busy on European and global level in past years.

Within these activities between technology, politics, society, and economy, Georg Greve was for instance invited as an expert to the "Commission on Intellectual Property Rights" of the UK government and participated to the first phase of the United Nations (UN) World Summit on the Information Society (WSIS) on behalf of the German coordination circle of Civil Society within the German governmental delegation.



Giorgos Gousios
Athens University
of Economics and
Business

Giorgos Gousios is a PhD candidate at the Athens University of Economics and Business. He holds a Diploma in Information and Communication Systems Engineering from the University of the Aegean and an MSc (with distinction) in Advanced Computer Science from the University of Manchester. He has contributed code in various open source projects. He is the recipient of the 2002 SANE best paper award. His research interests include programming languages implementation, virtual machines, memory management and operating system architectures.



Adriaan de Groot

Adriaan de Groot is a longtime Open Source hacker in the KDE project; he was introduced to Subversion when the KDE project migrated from CVS to SVN, creating the world's biggest SVN repository in one go. In his daily work he administers a few dozen SVN repositories for high-school students as part of the CodeYard project.



Peter N.M. Hansteen

Peter N. M. Hansteen (born 1963) is Senior Consultant at Datadokumentasjon A/S in Bergen, Norway. A freenix user since the mid 1990s, he tends to networks in between documentation related tasks. Advocates freenix via the local BLUG and national NUUG user groups, where he is a member of the core group and board member respectively. A member of the original RFC1149 implementation team.



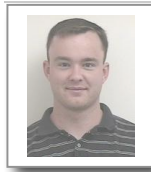
Armijn Hemel

Armijn Hemel is currently finishing his MSc degree in computer science at Utrecht University in the Netherlands, hopefully before SANE. Apart from being a student he is also a freelance journalist for Linux Magazine NL and various other IT magazines. His free software activities include adding packages to the [Nix deployment](#) system and tracing violations of the GNU (L)GPL licenses for the [GPL Violations project](#). Much of his free time is devoted to visiting concerts and festivals (mostly metal and hardcore punk). Armijn is also a disk jockey at [Real Classic Rock](#), where he has a weekly show dedicated to the band Queen.



Bart Jacobs
Radboud
Universiteit
Nijmegen

Bart Jacobs holds professorships at the Radboud University Nijmegen and at the Technical University Eindhoven in the area of Computer Security. He combines theoretical interests with practical involvement in security-related projects for the general public, such as electronic voting and biometric passports. Jacobs contributes regularly to public debates on such issues.



Joshua Jensen

Joshua Jensen has worked for IBM and Cisco Systems, and was Red Hat's first instructor, examiner, and RHCE. He worked with Red Hat for 4 1/2 years during which he wrote and maintained large parts of the Red Hat curriculum: Networking Services and Security, System Administration, Apache and Secure Web Server Administration, and the Red Hat Certified Engineer course and exam.

Joshua has been working with Linux since 1996, and finds himself full circle having recently left IBM to work with Red Hat Linux for Cisco Systems. In his spare time he dabbles in cats, fish, boats, and frequent flyer miles.



Vassilios Karakoidas
Athens University
of Economics and
Business
(Co-author)

Vassilios Karakoidas is a PhD candidate in Athens University of Economics and Business at the Department of Management Science and Technology. He holds an BSc in Computer Science (University of Piraeus) and an MSc in Information Systems (Athens University of Economics and Business). He is former member of the Health Informatics laboratory at University of Piraeus. He is now a member of ELTRUN/SENSE and has been involved in various research projects. His research interests include Software Engineering, Programming Languages, Operating Systems and Computer Networks.



Sam Leffler
Erno Consulting,
PLC

Sam Leffler has been actively working with UNIX since 1975 when he first encountered it at Case Western Reserve University. While working for the Computer Systems Research Group (CSRG) at the University of California at Berkeley he

helped with the 4.1BSD release and was responsible for the release of 4.2BSD. He has contributed to almost every aspect of BSD systems; most recently working (again) on the networking subsystem. For the past five years he has been an independent consultant, doing everything from system design to expert witness work.



Arjen Lentz
MySQL AB

Arjen Lentz (36) is originally from Amsterdam, The Netherlands. Together with his wife, baby daughter and black cat he resides in Kenmore (Brisbane), Australia.

Arjen initially started with programming, but has since branched out to blends initial geekness with more human interaction - like writing and training. He still dabbles with PHP and C in his abundant spare time. He has been working for MySQL AB since 2001, primarily as technical writer (docs) and trainer.

Arjen is currently MySQL AB's Community Relations Manager, a job which involves cool stuff like jet-lag, hanging out with MySQL users everywhere and drinking assorted beverages on company time. He is also the program chair for the MySQL Users Conference.



Christos KK Loverdos
(Co-author)
Otenet

Christos KK Loverdos is a Software Engineer, currently with Otenet SA. His professional and research interests range from Digital Typesetting to Programming Languages and Service-Oriented Computing. He likes building flexible software and seeking ways to do so. He was a member of the core team that lead the design and implementation of the Athens 2004 Olympic Portal infrastructure (www.athens2004.com). He holds an MSc and a BS in Computer Science from the University of Athens, Greece, Department of Informatics and Telecommunications. One can view his homepage at <http://www.di.uoa.gr/~loverdos>



Stefan Lucks
(Co-author)

Stefan Lucks' fields of research are cryptology and communication security. He obtained a diploma in Computer Science in 1993 at the University of Dortmund. In 1997, he finished his Ph.D. at the University of Göttingen. Since 1997, he works at the

University of Mannheim, where he obtained his postdoctoral lecture qualification ("Habilitation") in 2003 and became a lecturer ("Oberassistent") in 2004. He leads the security research team for the Mobile Business Research Group at the University of Mannheim. He has published about forty peer-reviewed papers about cryptology and served on numerous international program committees, such as AES, SAC, FSE, and Eurocrypt.



Ray Miller
University of
Oxford

Ray Miller works as a Unix Systems Programmer at the University of Oxford, where he manages the Systems Development and Support team in the University's Computing Services. This small team manages more than 60 Debian GNU/Linux servers providing email, web, and other network services to more than 30,000 users across the University. Ray holds a PhD in pure mathematics from the University of Exeter. He moved into the IT field in 1997, where he worked for two consultancies providing development and support services to major financial institutions. He returned to the academic world in 1999 when he took up a job in the Unix Systems team at the University of Oxford, giving up COBOL for Perl and OS/390 for Linux. He is a director of UKUUG, the UK's Unix and Open Systems User Group, and Chairman of UKUUG Council. His interests outside of computing include cycle touring and real ales.



George Oikonomou
Athens University
of Economics and
Business

George Oikonomou holds a degree in Statistics from the University of Piraeus and an MSc in Information Systems from the Athens University of Economics and Business. He is a PhD candidate in the Department of Informatics of the Athens University of Economics and Business. He is also a member of the Computer and Communication Systems Laboratory. His interests lie in Computer Networks, Grid Computing, Wireless LANs and Operating Systems.



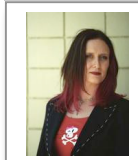
Tim Panton
Westhawk Ltd

Tim Panton has been a software developer for some 30 years. Most of his recent work is in Java or XSL with some SQL. Tim is a contributor to open-source projects, especially GJTAPI - a framework for implementing JTAPI (The Java Telephony API) and Westhawk's Java SNMP stack. He also spent some years working in the area of network security. This current project unites themes from all 3 areas. Tim lived in the Netherlands for 5 years, but now his Dutch is getting rusty.



Radia Perlman
Sun
Microsystems,
Inc.

Radia Perlman is a Distinguished Engineer at Sun Microsystems Laboratories. She is well known for her work in routing and security protocols. She invented the spanning tree algorithm used by switches, and a lot of the key algorithms that make today's routing protocols scalable, manageable, and robust. She also has made significant contributions to network security protocols. She is the author of "Interconnections" and coauthor of "Network Security", both of which are widely used as textbooks in universities, as well as by engineers for reference and learning the field. Holding 80 patents, she was named 2004 Inventor of the Year by SVIPLA (Silicon Valley Intellectual Property Law Association). She has a PhD in computer science from MIT and an honorary doctorate from KTH, the Royal Institute of Technology in Sweden.



Liane Praza
Sun
Microsystems,
Inc.

Liane Praza has been with Sun Microsystems for eight years and holds the position of staff engineer in the Solaris kernel group. She inflicts most of her changes on the Solaris OS under the auspices of resource and service management. Liane is the lead engineer for the Solaris Service Management Facility (smf(5)), helping to modernize Solaris system administration and architect Self-Healing software services. Liane joined Sun in 1997, to participate in the testing and development of clustered devices and file systems. She is a recipient of the Sun Microsystems, Inc. 2005 Chairman's Award for Innovation. Prior to her life at Sun, she earned a BS in

Computer Science at Purdue University.
On the Net:
<http://blogs.sun.com/ianep>



Jim Reid

Jim Reid started using a PDP11/45 running V7 UNIX over 20 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 operated the DNS infrastructure for the corporate network, one of the biggest in the world.

He has written and presented training courses ranging from kernel internals, through system administration and network security, to DNS administration since Marco van Basten played for Ajax. He's a frequent speaker and tutorial presenter at conferences and workshops in Europe, Asia and the USA. Jim chairs the DNS Working Group at RIPE and is active in ENUM, serving as Chair and Technical Manager of the UK ENUM Trial Group.



Purnendu Sinha
Philips Research

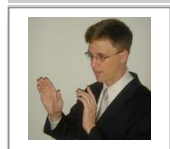
Purnendu Sinha is currently with Philips Research India, Bangalore. Until recently he was teaching at Electrical and Computer Engineering Department at Concordia University, Montreal. He obtained his Ph.D. in Computer Engineering from Boston University, Boston, MA. He received his M.S. degree in Computer Science from the New Jersey Institute of Technology, Newark, NJ. He also received the M.E. degree in Electrical Engineering from the Stevens Institute of Technology, Hoboken, NJ, and the B.E. degree (with Distinction) in Electrical Engineering from University of Mangalore, India. He holds a professional engineering license in the state of Ontario, Canada. Dr. Sinha previously worked as a research assistant at Boston University and at the New Jersey Institute of Technology on various projects sponsored by DARPA, NSF and ONR. He also worked as a Consultant on a project sponsored by Canon, USA on morphological image processing. Dr. Sinha is a member of IEEE Computer Society, IASTED, and Alpha Epsilon Lambda Honor Society. He is an associate member of Regroupment Strategique en

Microelectronique du Quebec. He has served as a Managing Editor of Journal of Real-Time Imaging, Academic Press, UK. His research interests include design and analysis of distributed dependable and real-time algorithms, embedded systems, formal methods based verification and validation (V&V) of fault-tolerant and real-time protocols, fault-injection based validation, and real-time imaging. His research activities were supported by research funds from NSERC, FCAR, and FRDP-Concordia University.



Diomidis Spinellis
(Co-author)

Diomidis Spinellis is an Associate Professor at the Department of Management Science and Technology at the Athens University of Economics and Business, Greece. His research interests include software engineering tools, programming languages, and computer security. He holds an MEng in Software Engineering and a PhD in Computer Science both from Imperial College London. He has contributed to more than 100 technical papers in the areas of software engineering, information security, and ubiquitous computing. He has also written the two Open Source Perspective books: "Code Reading" (Software Development Productivity Award 2004), and "Code Quality". He is a member of the IEEE Software editorial board, authoring the regular "Tools of the Trade" column. Dr. Spinellis is a FreeBSD committer and the author of a number of open-source software packages, libraries, and tools. Dr. Spinellis is a member of the ACM, the IEEE, and the Usenix Association.



Lance Spitzner
The Honeynet Project

Founder and President, The Honeynet Project. Lance Spitzner is a geek who loves information security. It is a constantly changing battle, your job is to defend against the bad guys. This love for tactics first began in the Army, where he served for seven years, four as an Armor officer in the Army's Rapid Deployment Force. Following the military he received his M.B.A and became involved in the world of information security. Now he defends organizations with IP packets as opposed to 120mm SABOT rounds. His passion is researching

honeypot technologies and using them to learn more about threats. He is founder of the HoneyNet Project, moderator of the honeypot maillist, author of "Honeypots: Tracking Hackers", co-author of "Know Your Enemy" and author of numerous whitepapers. He has also spoken at various conferences and organizations, including SANS, Blackhat, FIRST, the Pentagon, the FBI Academy, the President's Advisory Board, the Army War College, Department of Justice, and Navy War College.



Ted Ts'o
Massachusetts
Institute of
Technology (MIT)

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 and was the original author of the serial driver. He is the maintainer and author of ext2/ext3 filesystem utilities package, and he architected and implemented Linux's tty layer. Theodore is currently employed by IBM Linux Technology Center.



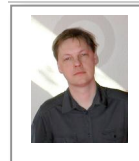
Jos Vos
X/OS Experts in
Open Systems BV

Jos Vos is CEO and co-founder of X/OS Experts in Open Systems BV. He has 20+ years of experience in research, development and consulting -- mostly relating to UNIX systems software, Internet, and security. His operating system of choice since 1994 is Linux. In the Linux community he is best known for writing ipfwadm and part of the firewall code in the 2.0 kernel. Using RPM since 1996, he is known to nearly never install software with "RPM-ifying" it. He also participated in the design of RPM's trigger-sripts, later implemented by Red Hat. His company X/OS delivers open, standards-based solutions and services. Products include support services for X/OS Linux -- an enterprise-class Linux distribution, custom-built firewall/VPN appliances with embedded Linux and high-availability cluster solutions.



Ruediger Weis
Technical
University of
Applied Sciences
Berlin

Ruediger Weis obtained a diploma in Mathematics and a PhD in Computer Science from the University of Mannheim. After this he has worked as researcher in the group of Andy Tanenbaum at the Vrije Universiteit Amsterdam and as chief cryptographer of cryptolabs Amsterdam. Since october 2005 Ruediger Weis is teaching as professor for systemprogramming at the Technical University of Applied Science in Berlin. Ruediger is also a long-time member of the Chaos Computer Club.



Maurice Wessling
Bits Of Freedom

Maurice Wessling is co-director of Bits of Freedom, a privacy and civil rights organisation for the information society in the Netherlands. From 1996 until 2000 he worked for the internet service provider XS4ALL as a public affairs officer and media spokesperson. During this work he was responsible for court cases promoting free speech (against Scientology) and challenging internet interception requirements for ISPs. In 2002 Maurice Wessling was one of the founders of European Digital Rights, an association of European civil rights organisation in Europe.

Wook
Consultant

Wook was born on a small island off the east coast of the United States. He was raised by domesticated dogs until he discovered computers, at which point he had his life completely disrupted. Eventually, he landed in Los Angeles, which doomed him to a life of film.



Jiaying Zhang
Center for
Information
Technology
Integration,
University of
Michigan

Jiaying Zhang is a Ph.D. candidate in the EECS department at the University of Michigan. She received her BS from Tsinghua University in 2001 and her MS in Computer Science from the University of Michigan in 2003. She is currently working on exploring how to improve Network File System (NFS) performance and scalability in WAN environment. Her research interests include distributed systems, storage systems, and performance study of large-scale applications.



**Kostas
Zorbadelos**
Otenet

Kostas Zorbadelos is a Systems Developer. He is currently with Otenet SA, the leading ISP in Greece, in its Systems and Services Section. He is a UNIX and open source advocate. His scientific and professional interests include systems administration, systems evaluation and design of highly available and scalable internet services. He holds a MSc and a BS in Computer Science from the University of Athens, Greece, Department of Informatics and Telecommunications.

Poster Sessions

18 and 19 May 2006,
10h45 – 16h00
Aula Congress Centre, Delft

The Posters provide an excellent forum for authors to present their work in an informal and interactive setting. Posters display speculative, late-breaking results or give an introduction to interesting, innovative work. Posters provide authors and participants with the ability to connect with each other and to engage in discussions about the work.

The posters will be set up on Thursday morning, May 18, 2006 and will remain present during both conference days (May 18-19, 2006).

Poster Committee:
Ivana Belgers, Joost van Dijk, Jack Jansen
[<sane2006-poster@sane.nl>](mailto:sane2006-poster@sane.nl)

Free Software Bazaar

17 May 2006, 18h30 - 22h00
Aula Congress Centre, Delft

In 1997, Eric S. Raymond wrote his article "[The Cathedral & The Bazaar](#)", which changed the view on software development dramatically. It sets the image of a large number of unorganized people gathering at a *bazaar*, creating powerful software together. No-one is telling them what they must do, progress in true freedom.

The *Free Software Bazaar* is a unique opportunity to meet other software developers, to get involved in the creation of *Free Software*. Meet the people you only know from email, discuss the latest developments, and have heated discussions about the future.

The *Free Software Bazaar* during SANE 2006 has a little broader focus: the freedom of cooperation on Internet. Freedom not only limited to software development, but also freedom of speech and organization, free software use, and privacy. PGP and CAcert keysigning, short "lightning"-talks, and BoF sessions will be on the program as well.

Bazaar coordination: Mark Overmeer and Bas de Lange,
[<sane2006-bazaar@sane.nl>](mailto:sane2006-bazaar@sane.nl)

Exhibition

18 and 19 May 2006
Foyer Aula Congress Centre, Delft

On Thursday and Friday (May 18 and 19, 2006), the fourth and fifth day of SANE 2006, attendees will stroll along the exhibition area, where vendors will demonstrate their latest hardware and software products.

The opening hours of the exhibition are: Thursday, May 18th, 10:30 am - 5:30 pm and Friday, May 19th, 9:00 am - 4:00 pm

Target Audience

The target audience is the technically oriented professional, ranging from programmers to system administrators and network experts, as well as project leaders and IT managers. The program we offer is of high quality with a range of well-known speakers. The conference language is English. We expect somewhere around 450 participants from several countries, but mostly Europe and US/Canada. However, the Benelux will probably cover 50-60% of all visitors.

Costs

Exhibition space costs

€ 120 per m2 (with a minimum booth space of 12 m2) till April 10, 2006. After this date one m2 will cost € 140. Each booth consist of space only, with 1 electrical outlet for power consumption (220/230V). Tables nor chairs are provided, you need to bring your own booth equipment. All prices are excluding 19% VAT.

Registration

If your company is interested in exhibiting, please fill out the online registration form. Registration is possible till May 1, 2006.

Registration of exhibit representatives

Each exhibiting organization is entitled to two exhibitor floor passes per 12 m² exhibit space assigned. Admission to the conference, social event, coffee, tea and lunch on both days are included. The floor passes, conference information and an attendee list will be given to you on Thursday morning, at the registration desk.

Additional exhibitor representatives must register and pay the regular registration fee.

Set up

Booths can be set up on Thursday morning, May 18, from 7:00 am - 10:00 am. All exhibits must be finished by 10:00 am. The organization of SANE 2006 will be in the Foyer during set up time and available for any questions you might have.

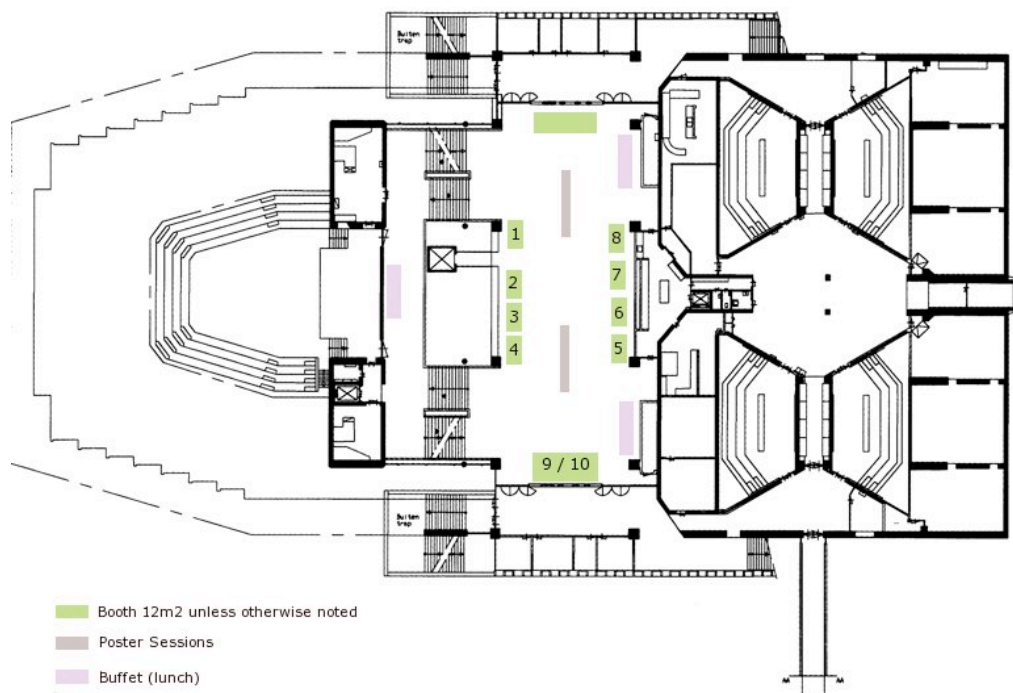
Dismantling

Dismantling hours of the booth: Friday, May 19, 4:00 pm - 5:30 pm. All exhibit material must be cleared by 5:30 pm, Friday, May 19, 2006.

Floor plan

The exhibition will be held in the Foyer of the Aula Congress Centre. You can choose a location on the floor plan below.

Booth 1	Sun Microsystems Nederland
Booth 2	Company
Booth 3	Company
Booth 4	Company
Booth 5	Aptitune Corporation
Booth 6	Company
Booth 7	Company
Booth 8	Infoblox EMEA
Booth 9	Roodveldt Import
Booth 10	Pearson Education



Sponsoring

SANE 2006 gives your company an excellent opportunity to present itself to the UNIX and Open Source community in Europe. Five days in a row, (inter)national experts present talks and papers. There will also be more than 400 professionals from all over the world to attend the two day conference and the preceding three tutorial-days in Delft, The Netherlands.

If you are willing to sponsor multiple items from the list below, you can qualify as a GOLD, SILVER or BRONZE sponsor of SANE 2006, with appropriate listing on the SANE 2006 website and program.

- A total sponsor value of € 4.500 or more makes you a **GOLD** sponsor.
- A total sponsor value between € 3.000 and € 4.500 makes you a **SILVER** sponsor.
- A total sponsor value between € 1.500 and € 3.000 makes you a **BRONZE** sponsor.

Please fill out the form on the SANE 2006 web site if you want to sponsor SANE 2006. You will soon be contacted by ICONIQ.

Sponsor items SANE 2006:

Conference	
Item	Price (Euro)
Brochure/gimmick in conference bag (max. 4 sponsors)	€ 600 per sponsor + materials
'Early Bird' gimmick with your logo	€ 600 + materials
Conference bags with your logo	sold: Sun Microsystems, Inc.
Conference T-shirts with your logo	€ 600 + materials
Writing materials (pens) with your logo	€ 400 + materials
Noteblocks with your logo	€ 400 + materials
Sponsor a tutorial room! Senaatszaal Collegezaal A Collegezaal C Collegezaal D Exposure: sponsor sign with your logo in the tutorial room	€ 1.500 3 days tutorials € 1.500 3 days tutorials € 1.500 3 days tutorials € 1.500 3 days tutorials
Sponsor a conference room! Senaatszaal Collegezaal A Exposure: sponsor sign with your logo	sold: Sun Microsystems, Inc. sold: Sun Microsystems, Inc.
Best Paper Award	US\$ 150 worth of O'Reilly books sponsored by: O'Reilly
Best Poster Award	One-year subscription on "Make Magazine" sponsored by: O'Reilly
Best Free Software Bazaar Contribution	Complimentary entrance to the EuroOSCON conference sponsored by: O'Reilly
Free Software Bazaar	
Item	Price (Euro)
Sponsor the Foyer! Exposure: sponsor sign with your logo	€ 750
Sponsor Food and Drinks Exposure: sponsor sign with your logo	€ 500 per sponsor
Internet	
Item	Price (Euro)
Internet Access Room Exposure: sponsor sign with your logo	Cost price sold: AT Computing
Social event	
Item	Price (Euro)
Music/Entertainment at Social Event Exposure: sponsor sign with your logo	Cost price
Catering (dinner/buffet) at Social Event (max. 4 sponsors) Exposure: sponsor sign with your logo	€ 1.200 per sponsor
Transport to Social Event Exposure: sponsor sign with your logo	€ 1.500 per sponsor

All prices are excl. 19% VAT

Hotels

Overview and Information Regarding Hotels in Delft

The SANE organization has reserved hotel room options for conference attendees with many hotels in Delft (see the list below). **We advise you to make your reservation as soon as possible** by contacting your hotel of choice directly, as there is a large demand for hotel rooms in Delft in the spring. You must mention **SANE 2006** to get access to the pre-allocated room options. There is no official assigned headquarters conference hotel this time.

Hotel	Email Address	Price range single-room	Price range double- room	Distance Congress Centre
Hotel de Ark **** Koormarkt 65 2611 EC Delft	hotel@deark.nl	€ 105 incl. breakfast	€ 132 incl. breakfast	1,8 km
Best Western Museumhotels Delft **** Phoenixstraat 50A 2611 AM Delft	info@museumhotel.nl	€ 110 excl. breakfast	€ 130-165 excl. breakfast	3,1 km
Hotel Coen *** Coenderstraat 47 2613 SN Delft	info@hotelcoendelft.nl	€ 55-75 excl. breakfast	€ 95 excl. breakfast	2,1 km
Herberg de Emauspoort *** Vrouwenregt 9 2611 KK Delft	emauspoort@emauspoort.nl	€ 80 incl. breakfast	€ 90 incl. breakfast	1,8 km
Hotel Juliana *** M. Trompstraat 33 2628 RC Delft	info@hoteljuliana.nl	€ 70-80 incl. breakfast	€ 80-95 incl. breakfast	0,7 km
Hotel Restaurant Johannes Vermeer *** Molslaan 18-22 2611 RM Delft	info@hotelvermeer.nl	€ 99 incl. breakfast	€ 112 incl. breakfast	1,4 km
Hotel De Koophandel *** Beestenmarkt 30 2611 GC Delft	hotel@hoteldekoophandel.nl	€ 78 incl. breakfast	€ 91 incl. breakfast	2,0 km
Hotel De Plataan *** Doelenplein 10 2611 BP Delft	info@hoteldeplataan.nl	€ 88 incl. breakfast	€ 99 incl. breakfast	2,1 km
Hotel De Vlaming *** Vlamingstraat 52 2611 KZ Delft	info@hoteldevlaming.nl	€ 65-105 incl. breakfast	€ 100-110 incl. breakfast	1,9 km
't Raedthuys * Markt 38-42 2611 GV Delft	info@raadhuisdelft.nl	€ 59	€ 69	1,9 km
Buitengoed De Uylenburg Noordeindseweg 70 2645 BC Delfgauw	herberg@uylenburg.nl	€ 51.50	€ 68.00	3,2 km
NH Hoteles **** Prinses Margrietplantsoen 100 2595 BR Den Haag (The Hague) Reservationform (PDF)	nhdenhaag@nh-hotels.com	€ 100 incl. breakfast		10,8 km
NH Hoteles **** Danny Kayelaan 20 2719 EH Zoetermeer Reservationform (PDF)	nhzoetermeer@nh-hotels.com	€ 100 incl. breakfast		15 km

Other alternatives are (mind you, SANE doesn't have arrangements with these hotels):

Hotel	Email Address	Price range single-room	Price range double-room	Distance Congress
Hotel Bridges House Oude Delft 74 2611 CD Delft	info@bridges-house.nl	€ 87.50 - 125 incl. breakfast	€ 107.50 - 175 incl. breakfast	2,1 km
B&B Oosteinde Oosteinde 156 2611 SR Delft	info@bb-oosteinde.nl	€ 55 incl. breakfast	€ 62 incl. breakfast	1,5 km
B&B Soul Inn Willemstraat 55 2613 DS Delft	info@soul-inn.nl		€ 50 incl. breakfast	2,6 km



Location

Aula Congress Centre at the TU Delft campus

The venue for SANE 2006 is the Aula Congress Centre, located on the campus of the University of Technology in Delft. You'll find the information board on the left near the entrance of the building.

The Aula Congress Centre itself is a remarkable building. From various viewpoints it looks like an ancient spaceship that decided to settle on planet Earth.

Address

TU Delft Aula Congress Centre
Mekelweg 5
2628 CC DELFT
The Netherlands

For the GPS savvy, the coordinates are:
N 52° 00.111' ; E 4° 22.338'.

How to get there?

By public transport:

From AMSTERDAM SCHIPHOL AIRPORT (50 km from Delft)

- ☞ Take the Intercity to Delft (direction Leiden/Den Haag HS/Rotterdam), you may have to change at Den Haag HS (journey time train trip Schiphol - Delft: 46 minutes, train fare 2nd class, single trip: about € 8,20)
- ☞ From railway station Delft, take bus 63 or 129 and get off at busstop "Aula"

From ROTTERDAM AIRPORT (8 km from Delft)

- Take bus No. 33 (terminus directly next to terminal) to Rotterdam Central Station (journey time approx. 20 minutes, bus ticket about € 2,70, to be bought directly from the bus driver)
- Take a train to Delft (Journey time train trip Rotterdam CS - Delft: 14 minutes, train fare 2- class, single trip: about € 2,90)
- From railway station Delft, take bus 63 or 129 and get off at busstop "Aula"

From RAILWAY STATION DELFT:

- Take bus 63 or 129 and get off at busstop "Aula"

Website of the Netherlands Railways with Train Planner: <http://www.ns.nl/>

By car:

- Motorway Den Haag/Rotterdam (A13)
- Exit Delft Zuid (TU-Wijk)
- 1st turn right, Schoemakerstraat

- 3rd turn left, Chr. Huygensweg
- Follow parking-signs Aula and Bibliotheek
- Entrance Mekelweg 5, Aula Congress Centre

On the website you will find under the item "Aula Congress Centre" a map of the TU Delft campus. The Aula Congress Centre is **building number 20** on the map.

If you travel by car, there is ample parking place available in various parking lots near the Aula Congress Centre.

The city center of Delft is at walking distance: cross the canal on the left of the map and you're at the edge of town already.

About Delft and its vicinity

The historic city centre of Delft is beautifully preserved, full of old canals spanned by picturesque bridges and lined by ancient buildings.

On the 10th of July 1584 William of Orange was murdered on the stairs of "Het Prinsenhof" (now a [museum](#)) by the Spanish sympathizer Balthazar Gerards. The wall of the stairs shows two bullet holes that bear witness to this event.

Delft is synonymous with ceramics - ceramics have been produced in this city for many centuries. In many Dutch households you will find a bowl or a vase with a hand-painted motif, and these products are also very popular with foreign tourists. If you like this, don't miss the [Porceleynse Fles](#).

The Technical University of Delft, venue for SANE 2006, is the oldest technical university in the Netherlands and still a global centre of academic excellence. Delft is an excellent base-camp for anyone wishing to spend a few days visiting the Netherlands' main tourist attractions. The [Keukenhof](#) tulip fields (stunning in spring!) and the [Kinderdijk](#) (famous for its windmills) are less than a half an hours drive. [Madurodam](#), a miniature village featuring models of many Dutch landmarks, is only twenty minutes away. And, of course, The Hague, Rotterdam and Amsterdam are packed with museums, shops and sightseeing opportunities.

Delft is located between The Hague and Rotterdam, both of which can be reached by train in around fifteen minutes. Frequent rail services link Delft also to Amsterdam central station (60 minutes) and Amsterdam airport [Schiphol](#) (45 minutes).

For more information about Delft, please visit the official city of Delft site (<http://www.delft.com/>).

Nice to Know

Emergency phone number: 112

Places to eat and drink

Delft's historic centre offers a wide variety of cosy restaurants, lunchrooms, cafés and outdoor cafés. In the evenings you can choose from a small café to a restaurant with Michelin stars, from Italian cuisine to Greek, Spanish, French, Thai, Mexican, Indonesian, Chinese, African, Surinam or Dutch cuisine or simple, but tasty daily specials. In short, there is always

something to suit your taste.

Time zone

CEST = GMT + 02:00 (Standard Time)

Currency

Euro (€) For actual rates: currency converter (<http://www.oanda.com/>)

ATM

On walking distance, located in a little kiosk next to the Aula Congress Centre

Weather

Long term average: mean temperature 14 °C / 58 °F (max. temperature 20 °C / 68 °F)

SANE 2006 Conference Organizers

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Technical sessions program chair [<sane2006-program-chair@sane.nl>](mailto:sane2006-program-chair@sane.nl)

Alexios Zavras, *consultant, Athens, GR*

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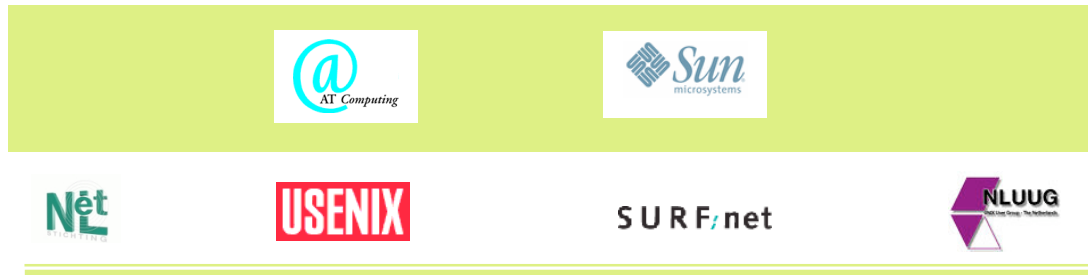
Bas de Lange

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Wytze van der Raay, treasurer, *Stichting NLnet, Amerongen, NL*

Mariëlle Klatten and Sabina Beeke, conference organizers, *ICONIQ, Baarn, NL*

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