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- Free Vendor Exhibition: see page 5**
- FREENIX Presentations: see page 20**
- Parties, Quiz Show, & Get-Togethers: see page 25**
- Peer-Reviewed Research Presentations: see page 20**

INVITED TALKS

by Research and Industry Leaders



KEYNOTE SPEAKER

DANIEL D. FRYE, *Director of IBM Linux Technology Center*

Linux: A Strategic Disruptive Force



LORRIE FAITH CRANOR
AT&T Labs—Research

**Online Privacy:
Promise or Peril?**



STEPHEN R. WALLI
Microsoft Corp.

**Strangely Enough, It All Turns
Out Well (Adventures in
Venture-Backed Startups and
Microsoft Acquisitions)**



SANDEEP SINGHAL
ReefEdge Inc.

**Making the Internet Mobile:
Lessons from the Wireless
Application Protocol (WAP)**



JIM REID
Nominum, Inc.

**Getting to Grips with
Secure DNS**



RADIA PERLMAN
Sun Microsystems Laboratories

**Myths, Missteps, and Folklore in
Protocol Design**



ED BUGNION
VMware, Inc.

**The Future of Virtual Machines:
A VMware Perspective**



STEVEN M. BELOVINE
AT&T Labs—Research

**Security Aspects of
Napster and Gnutella**



CHARLIE KAUFMAN
Iris Associates

**Active Content: Really Neat
Technology or Impending
Disaster?**



**JIM BOUND &
CHARLES PERKINS**
Nokia

**Evolution of the
Internet Core and
Edge: IP Wireless
Networking**



AVI RUBIN
AT&T Labs—Research

**Security for E-Voting
in Public Elections**

Important Dates to Remember

**Pre-Registration Discount Deadline:
Friday, May 25, 2001**

**Hotel Discount Deadline:
Friday, June 1, 2001**

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An Invitation from the Program Chairs



YOONHO PARK



CLEM COLE

Conference Organizers

Program Chair

Yoonho Park, *ReefEdge Inc.*

Program Committee

Mohit Aron, *Zambeel Inc.*

Carla Ellis, *Duke University*

Wuchi Feng, *Ohio State University*

Greg Ganger, *Carnegie Mellon University*

Sheila Harnett, *IBM Linux Technology Center*

Peter Honeyman, *University of Michigan*

Jochen Liedtke, *University of Karlsruhe*

Robert Miller, *Carnegie Mellon University*

Vern Paxson, *ACIRI*

Doug Schmidt, *UC-Irvine*

Margo Seltzer, *Harvard University*

Dan Wallach, *Rice University*

Invited Talks Coordinators

Matt Blaze, *AT&T Labs—Research*

John T. Kohl, *Rational Software*

FREENIX Program Chair

Clem Cole, *Paceline Systems Corp.*

FREENIX Program Committee

Ken Coar, *Apache*

Chris Demetriou, *Broadcom Corp.*

Ted Faber, *ISI*

Drew Gallatin, *Duke/FreeBSD*

Alan Nemeth, *Compaq*

Simon Patience, *Zambeel Inc.*

Garry Paxinos, *XFree86/Metro-X*

Stephen Tweedie, *RH/Linux*

The Guru is in Chair

Lee Damon, *University of Washington*

Dear Colleague,

The USENIX Annual Technical Conference has always been the gathering place for like minds in the computer industry, a place to meet peers and experts and share solutions to common problems.

Our **tutorials** feature top-of-the-line instructors offering techniques and technologies that you can put to immediate use. Choose from 30 full-day classes, 17 new this year. Topics? Security, from crackers to cryptography; systems administration, from Perl to performance tuning; networking, from wireless to WAN design; management of people as well as machines; and much more. Our tutorials fill up fast, so register early.

High-quality **refereed papers** are the cornerstone of this conference's reputation for ground-breaking research. Presentations will include new work on operating systems, security, storage, networking, Web servers, and scheduling.

The very popular refereed **FREENIX** track is devoted to Linux, *BSD, X11-based graphical user interfaces, and the full range of freely redistributable software. Anyone interested in open-source software will appreciate the technical quality and relevance of the FREENIX track.

The **invited talks** speakers are featured on the facing page. For descriptions of each of the talks, see pages 20–23.

Newcomers and past attendees will find that our Annual Technical Conference offers a wealth of knowledge and insight. Join us in Boston on June 25–30, 2001, to learn, to connect with people in your field, and to party!

For the USENIX 2001 Program Committees,

Yoonho Park, *ReefEdge Inc.*

Clem Cole, *Paceline Systems Corp.*

Program Chairs

NEW SCHEDULE FORMAT FOR 2001

The tutorial program runs Monday through Wednesday.

The technical sessions run Thursday through Saturday.

Conference at a Glance

Sunday, June 24

4:00 p.m.–9:00 p.m.	On-Site Registration
6:00 p.m.–7:00 p.m.	Welcome Get-Together
7:00 p.m.–8:00 p.m.	Conference Orientation

Monday, June 25

7:30 a.m.–5:00 p.m.	On-Site Registration
9:00 a.m.–5:00 p.m.	Tutorial Program

Tuesday, June 26

7:30 a.m.–5:00 p.m.	On-Site Registration
9:00 a.m.–5:00 p.m.	Tutorial Program

Wednesday, June 27

7:30 a.m.–5:00 p.m.	On-Site Registration
9:00 a.m.–5:00 p.m.	Tutorial Program
6:00 p.m.–10:00 p.m.	Birds-of-a-Feather Sessions

Thursday, June 28

7:30 a.m.–6:00 p.m.	On-Site Registration
9:00 a.m.–10:30 a.m.	Keynote Address
11:00 a.m.–5:30 p.m.	Technical Program
12:00 p.m.–7:00 p.m.	Vendor Exhibition
Evening	Party
6:00 p.m.–10:00 p.m.	Birds-of-a-Feather Sessions

Friday, June 29

7:30 a.m.–5:00 p.m.	On-Site Registration
9:00 a.m.–5:30 p.m.	Technical Program
10:00 a.m.–4:00 p.m.	Vendor Exhibition
12:30 p.m.–2:00 p.m.	Lunch in the Exhibition
Evening	Party
9:00 p.m.–11:00 p.m.	Birds-of-a-Feather Sessions

Saturday, June 30

9:00 a.m.–3:30 p.m.	Technical Program
4:00 p.m.–5:30 p.m.	Joint Closing Session

USENIX & SAGE Membership Info & Upcoming Events

About USENIX

<http://www.usenix.org/>

USENIX is the Advanced Computing Systems Association. Since 1975, USENIX has brought together the community of system administrators, engineers, scientists, and technicians working on the cutting edge of the computing world. USENIX and its members are engaged in problem-solving, in innovation, and in research that works.

About SAGE

<http://www.sage.org/>

SAGE, the System Administrators Guild, is a special technical group within USENIX. SAGE is dedicated to the recognition and advancement of the system administration profession.

UPCOMING USENIX EVENTS

THE SYSTEMS & NETWORK ADMINISTRATION CONFERENCE (SNAC)

Sponsored by USENIX and SAGE, the System Administrators Guild

July 30–August 3, 2001

Hotel Inter-Continental, Dallas, TX, USA

www.usenix.org/events/snac

10TH USENIX SECURITY SYMPOSIUM

August 13–17, 2001

JW Marriott Hotel, Washington D.C., USA

<http://www.usenix.org/events/sec01>

5TH ANNUAL LINUX SHOWCASE AND CONFERENCE

November 6–10, 2001

Oakland Convention Center, Oakland, California, USA

<http://www.linuxshowcase.org>

15TH SYSTEMS ADMINISTRATION CONFERENCE (LISA 2001)

Sponsored by USENIX and SAGE, the System Administrators Guild

December 2–7, 2001

Town & Country Resort Hotel, San Diego, California, USA

<http://www.usenix.org/events/lisa2001>

FIRST CONFERENCE ON FILE & STORAGE TECHNOLOGIES (FAST)

Sponsored by USENIX in cooperation with ACM SIGOPS and IEEE TCOS

January 28–29, 2002

Monterey, California, USA

<http://www.usenix.org/events/fast/>

USENIX AND SAGE THANK THEIR SUPPORTING MEMBERS

USENIX Supporting Members

- ❖ Addison-Wesley ❖ Kit Cospser ❖ Earthlink Network ❖ Edgix ❖ Interhack Corporation ❖ Interliant
- ❖ Linux Security, Inc. ❖ Lucent Technologies ❖ Microsoft Research ❖ Motorola Australia Software Centre
- ❖ New Riders Press ❖ Nimrod AS ❖ O'Reilly & Associates Inc. ❖ Raytheon Company
- ❖ Sams Publishing ❖ Sendmail, Inc. ❖ Smart Storage, Inc. ❖ Sun Microsystems, Inc. ❖ Sybase, Inc.
- ❖ Syntax, Inc. ❖ Taos: The Sys Admin Company ❖ UUNET Technologies, Inc.

SAGE Supporting Members

- ❖ Certainty Solutions ❖ Collective Technologies ❖ Electric Lightwave, Inc. ❖ ESM Services, Inc.
- ❖ Linux Security, Inc. ❖ Mentor Graphics Corp ❖ Microsoft Research ❖ Motorola Australia Software Centre
- ❖ New Riders Press ❖ O'Reilly & Associates Inc. ❖ Raytheon Company ❖ Remedy Corporation ❖ RIPE NCC
- ❖ Sams Publishing ❖ SysAdmin Magazine ❖ Taos: The Sys Admin Company ❖ Unix Guru Universe (UGU)

Conference Activities and Services

CONFERENCE ACTIVITIES

Birds-of-a-Feather Sessions (BoFs)

Wednesday, Thursday, and Friday evenings, June 27–29

Lead or attend a BoF! Meet with your peers! Present new work! Don't miss these special activities designed to maximize the value of your time at the conference. The always-popular evening Birds-of-a-Feather sessions are very informal gatherings of persons interested in a particular topic. BoFs may be scheduled during the conference at the registration desk or in advance by contacting the USENIX Conference Office, either by phone (1.510.528.8649) or by email (conference@usenix.org). BoFs are open to all attendees. Topics are announced at the conference.

Work-in-Progress Reports (WiPs)

Friday, June 29, 4:00 pm–5:30 pm

Short, pithy, and fun, Work-in-Progress reports introduce interesting new or ongoing work. If you have work you would like to share or a cool idea that's not quite ready for publication, send a one- or two-paragraph summary to usenix01wips@usenix.org. We are particularly interested in presenting students' work. A schedule of presentations will be posted at the conference, and the speakers will be notified in advance. Work-in-Progress reports are five-minute presentations; the time limit will be strictly enforced.

Conference Proceedings and CD-ROMs

One copy of the Proceedings is included with your technical sessions registration fee. Additional copies may be purchased at the conference. To order additional copies after the conference, see <http://www.usenix.org/publications/ordering/>, telephone the USENIX Office at 1.510.528.8649, or send email to office@usenix.org.

CONFERENCE SERVICES

Internet Connectivity

USENIX is pleased to offer Internet connectivity and a terminal room at the Annual Technical Conference. The terminal room itself will be furnished with PCs running OpenBSD, drops for you to connect your laptop to our switches, and 802.11b wireless connectivity

During the tutorials there will be limited hours of operation covering peak times. On Thursday and Friday we will be open from 7 a.m. until 2 a.m., except for all-inclusive conference functions such as the Opening Session and the Conference Reception. We will close on Saturday by 2 p.m.

If you are interested in being a terminal room volunteer in exchange for a free Technical Session registration, please contact Lynda McGinley (mcinley@usenix.org).

Attendee Message Service

Stay in touch with your home and office!

An email message service will be available Monday, June 25, through Saturday, June 30. Email to conference attendees should be addressed: first_lastname@conference.usenix.org.

Telephone messages may be left at the USENIX Message Center Desk, 1.617.236.5800. The Message Center will be open Sunday, June 24, through Friday, June 29, from 7:30 a.m. until 5:00 p.m., and Saturday, June 30, until 3:00 p.m.

Your telephone and email messages will be posted on the message board in the Registration area.

SOCIAL ACTIVITIES

There will be many opportunities for conference attendees to socialize and get to know one another!

fun! fun! fun!
**Be sure to take a break and enjoy the "hallway track";
eat, drink, and talk shop in the evenings at the special receptions;
play along with Rob Kolstad and Dan Klein at the infamous USENIX Quiz Show;
win free goodies at vendor hospitality parties;
and much much more!**

Registration, Hotel, and Travel Information

REGISTRATION INFORMATION

**Early registration deadline:
Friday, May 25, 2001**

TUTORIAL FEES (JUNE 25-27)

Tutorial registration fees include:

- Admission to the tutorials you select
- Lunch
- Tutorial CD-ROM
- Printed tutorial materials for your courses
- Admission to the Vendor Exhibition

Select one only full-day tutorial per day.

Members/Nonmembers

One day	\$465
Two days	\$780
Three days	\$1095
CEU credit (optional)	\$15/day

After May 25, add \$100 to the tutorial fee.

Students

One day	\$70
Two days	\$140
Three days	\$210
CEU credit (optional)	\$15/day

TECHNICAL SESSIONS FEES (JUNE 28-30)

Technical sessions registration fees include:

- Admission to all technical sessions
- Free USENIX T-shirt
- Copy of Conference Proceedings
- Admission to the Conference Receptions
- Admission to the Vendor Exhibition

Early Registration Fees (before May 25)

Member*	\$495
Nonmember**	\$590
Student	\$75

After May 25, members and nonmembers add \$100 to the technical sessions fee.

* *The member fee applies to current members of USENIX and EurOpen.SE.*

** *The nonmember fee includes a free one-year membership in the USENIX Association.*

Payment by check or credit card must accompany the registration form. Purchase orders, vouchers, or telephone or email registrations cannot be accepted.

STUDENT DISCOUNTS & STIPENDS

TUTORIALS

A limited number of tutorial seats are reserved for full-time students at the very special rate of \$70 for a full-day tutorial. You must telephone the Conference Dept. to confirm availability and make a reservation. You will be given a code number, which you must use when you register. The Conference Dept. must receive your registration form, with the code number, full payment, and a photocopy of your current student I.D. card, within 14 days from the date you make your reservation, or your reservation will be canceled. This special fee is not transferable.

TECHNICAL SESSIONS

USENIX offers full-time students a special discount rate of \$75 for its technical sessions. You must include a copy of your current student I.D. card with your registration. This special fee is not transferable.

STUDENT STIPENDS

The USENIX student stipend program covers travel, hotel, and registration fees to enable full-time students to attend USENIX meetings. Application information is posted on comp.org.usenix 6-8 weeks before the conference, and is also available at <http://www.usenix.org/students/stipend.html>.

STUDENT MEMBERSHIP

USENIX offers full-time students a special membership rate of \$25 a year. Students must provide a copy of current student ID. To join SAGE, the System Administrators Guild, you must be a member of USENIX. Student SAGE membership is an additional \$15. Students receive the same member benefits as individual members. Join when you register by filling out the appropriate line on the print or on-line registration form.

HOTEL AND TRAVEL INFORMATION

**Hotel discount reservation deadline:
Friday, June 1, 2001**

USENIX has negotiated special rates for conference attendees at the Boston Marriott Copley Place. Contact the hotel directly to make your reservation as soon as possible. You must mention USENIX to get the special rate. A one-night room deposit must be guaranteed to a major credit card. To cancel your reservation, you must notify the hotel by 6:00 p.m. on the day of your scheduled arrival.

Boston Marriott Copley Place

110 Huntington Avenue
Boston, MA 02116
Toll-free: 1.800.228.9290
Local telephone: 1.617.236.5800
Reservation fax: 1.617.937.5685

Room Rates (single/double occupancy)

\$169.00
(plus local and state taxes, currently at 12.45%)

Note: All requests for hotel reservations made after the June 1 deadline (or after the room block is sold out) will be handled on a space-available basis at the hotel's standard rate. You are encouraged to make your reservations as soon as possible in order to get the special discount rate.

Need a Roommate?

Usenet facilitates room-sharing. If you wish to share a room, post to and check comp.org.usenix.roomshare.

TRANSPORTATION

Boston's Logan International Airport is approximately 5 miles from the hotel. Taxi service to the hotel is approximately \$20-25. Several shuttle services are also available for approximately \$9 per person, one way. Check with the Ground Transportation Desk on the lower level of each airport terminal for further information.

PARKING

Parking at the Marriott costs \$29/day for valet parking and \$27/day for self-parking, which has no in/out privileges.

Refund & Cancellation Policy

All refund requests must be in writing, postmarked no later than Friday, June 15, 2001. You may fax or email your cancellation, but telephone cancellations cannot be accepted. You may substitute another in your place.

Registration Questions?

RCS Registration Control Systems
2368 Eastman Avenue, Suite 11
Ventura, CA 93003-7797
Phone: 1.800.235.3332.
Fax: 1.805.654.1676
Email: usenix@rcsreg.com

Other Questions?

USENIX Conference Department
2560 Ninth St., Suite 215
Berkeley, CA 94710
Phone: 1.510.528.8649
Fax: 1.510.548.5738
Email: conference@usenix.org

Registration Form

USENIX '01

June 25-30, 2001

Copy this form as needed. Type or print clearly.

This address will be used for all USENIX mailings unless you notify us in writing.

 First name Last name

 Name for Badge Member Number

 Company/Institution

 Mail Stop Mail Address

 City State Zip Country

 Telephone No. Fax

 Email Address (one only, please)

Attendee Profile

Would you like to receive email about USENIX activities? Yes No

Would you like us to provide your name to carefully selected partners? USENIX does not sell its mailing lists. Yes No

Would you like to be included on the Attendee list? Yes No

What is your affiliation (check one):

academic commercial gov't R&D

What is your role in the purchase decision (check one):

1. final 2. specify 3. recommend 4. influence 5. no role

What is your primary job function (check one):

1. system/network administrator 2. consultant
 3. academic/researcher 4. developer/programmer/architect
 5. system engineer 6. technical manager 7. student
 8. security 9. Webmaster

How did you first hear about this meeting (check one):

1. Referral from colleague 2. Postal mail 3. The Web
 4. Email 5. Magazine 6. Newsgroup

What publications or Web sites do you read related to the topics of this conference? _____

Payment Must Accompany This Form

Payment (U.S. dollars only) must accompany this form. Purchase orders, vouchers, email, or telephone registrations cannot be accepted.

MAIL THIS FORM TO:

RCS, 2368 Eastman Avenue, Suite 11, Ventura, CA 93003-7797.

Payment enclosed. Make check payable to **USENIX Conference**.

Charge to my: VISA MasterCard American Express Discover

Account No. Exp. Date

Print Cardholder's Name

Cardholder's Signature

You may fax your registration form to 1.805.654.1676 if paying by credit card. To avoid duplicate billing, please do not mail an additional copy.

Tutorial Program (Monday-Wednesday, June 25-27)

Select only one full-day tutorial per day (9:00 a.m.-5:00 p.m.)

Monday, June 25

- M1 Network Security Profiles
- M2 Building Linux Applications
- M3 Advanced Perl Programming
- M4 Topics for SysAdmins, 1
- M5 Sendmail Config. & Operation
- M6 Blueprints for High Availability
- M7 Exploring LDAP
- M8 Large Heterogeneous Networks
- M9 Communicating
- M10 Wireless Net Fundamentals

Tuesday, June 26

- T1 Internet Security, UNIX & Linux
- T2 Perl for SysAdmin
- T3 Advanced CGI Using Perl
- T4 UNIX Network Programming
- T5 Cryptography Decrypted
- T6 Network Design, High Availability
- T7 Advanced Solaris SysAdmin
- T8 Forensic Computer Investigations
- T9 Basic Management Techniques
- T10 Wireless IP Security

Wednesday, June 27

- W1 Running Web Servers Securely
- W2 Hacking Exposed: LIVE!
- W3 Inside the Linux Kernel
- W4 Network Programming w/Perl
- W5 Cryptographic Algorithms
- W6 System & Network Tuning
- W7 Samba Servers
- W8 Computer Crime
- W9 Solaris Internals
- W10 Panning for Gold: Syslogs

EARLY BIRD TUTORIAL FEES (until May 25)

One-day, \$465.00 / Two-day, \$780.00 / Three-day, \$1095.00 \$ _____

CEU fee (optional).....\$15.00 per day \$ _____

STANDARD TUTORIAL FEES (after May 25)

One-day, \$565.00 / Two-day, \$880.00 / Three-day, \$1195.00 \$ _____

CEU fee (optional).....\$15.00 per day \$ _____

STUDENT TUTORIAL FEES (special rate)

CODE NO. _____ \$70.00 \$ _____

CODE NO. _____ \$70.00 \$ _____

CODE NO. _____ \$70.00 \$ _____

*Students: Attach a photocopy of current student I.D.

Technical Program (Thursday-Saturday, June 28-30)

EARLY BIRD REGISTRATION (until May 25)

Current member fee.....\$495.00 \$ _____

(applies to individual members of USENIX or EurOpen.SE)

Non-member fee (includes FREE one-year membership) \$590.00 \$ _____

I do **NOT** wish to join USENIX at this time (check here):

STANDARD REGISTRATION (after May 25)

Current member fee.....\$595.00 \$ _____

(applies to individual members of USENIX and EurOpen.SE)

Non-member fee (includes FREE one-year membership) \$690.00 \$ _____

I do **NOT** wish to join USENIX at this time (check here):

STUDENT REGISTRATION (special rate) \$75.00 \$ _____

*Students: Attach a photocopy of current student I.D.

Membership Renewal

Renew your USENIX membership \$95.00 \$ _____

Join or renew your SAGE membership \$30.00 \$ _____

(You must be a current member of USENIX to join SAGE)

STUDENTS:

Join USENIX or renew your student membership \$25.00 \$ _____

Join SAGE or renew your student SAGE membership \$15.00 \$ _____

(You must be a current member of USENIX to join SAGE)

*Students: Attach a photocopy of current student I.D.

TOTAL DUE \$ _____

PLEASE COMPLETE THIS FORM AND RETURN IT, ALONG WITH FULL PAYMENT, TO:

RCS
 2368 EASTMAN AVENUE, SUITE 11
 VENTURA, CA 93003-7797