

# LISA'05

19TH LARGE INSTALLATION SYSTEM ADMINISTRATION CONFERENCE

DEC. 4-9, 2005  
SAN DIEGO, CA

[www.usenix.org/lisa2005](http://www.usenix.org/lisa2005)

## FIND THE MISSING PIECES TO YOUR TOUGHEST PUZZLES.

### 6 DAYS OF TRAINING

by industry experts, including:

- Gerald Carter on Ethereal and the Art of Debugging Networks
- Tina Darmohray and John Nicholson on Surviving IT Compliance
- Deryck Hodge on Google-Driven Web Development
- Richard Bejtlich on Network Forensics and Network Incident Response



**LISA '05 offers the most in-depth, real-world system administration training available!**

### 3-DAY TECHNICAL PROGRAM

**KEYNOTE ADDRESS:** Qi Lu, Vice President of Engineering, Yahoo! Inc., on "Scaling Search Beyond the Public Web"

**PLENARY SESSION:** Matt Blaze, University of Pennsylvania: "Picking Locks with Cryptology"

**2 TRACKS OF INVITED TALKS:** Industry leaders discuss important and timely topics

**NEW!** Hit the Ground Running Track

**VENDOR EXHIBITION:** A showcase of the latest commercial innovations

Workshops, Refereed Papers, Guru Is In Sessions, Enhanced Birds-of-a-Feather Sessions, Work-in-Progress Reports, and more!

# Real World

System Administration

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**USENIX**  
THE ADVANCED COMPUTING SYSTEMS ASSOCIATION

**SAGE**  
The People Who Make IT Work

Register by November 18 and save!  
[www.usenix.org/lisa2005](http://www.usenix.org/lisa2005)



Photo by Andrew Brown

# Real World System Administration

## LISA '05 AT A GLANCE

### SATURDAY, DECEMBER 3

5:00 p.m.–8:00 p.m. On-Site Registration  
6:00 p.m.–8:00 p.m. Welcome Reception  
7:30 p.m.–8:00 p.m. Conference Orientation

### SUNDAY, DECEMBER 4

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

### MONDAY, DECEMBER 5

7:30 a.m.–5:00 p.m. On-Site Registration  
9:00 a.m.–5:00 p.m. Training Program  
9:00 a.m.–5:00 p.m. Workshops  
7:00 p.m.–11:00 p.m. Evening Program

### TUESDAY, DECEMBER 6

7:30 a.m.–5:00 p.m. On-Site Registration  
9:00 a.m.–5:00 p.m. Training Program  
9:00 a.m.–5:00 p.m. Workshops  
7:00 p.m.–11:00 p.m. Birds-of-a-Feather Sessions

### WEDNESDAY, DECEMBER 7

7:30 a.m.–5:00 p.m. On-Site Registration  
8:45 a.m.–10:30 a.m. Opening Remarks, Awards, Keynote  
9:00 a.m.–5:00 p.m. Training Program  
11:00 a.m.–5:30 p.m. Technical Program  
12:00 p.m.–7:00 p.m. Vendor Exhibition  
5:30 p.m.–6:30 p.m. Exhibit Hall Mexican Fiesta  
7:00 p.m.–11:00 p.m. Birds-of-a-Feather Sessions

### THURSDAY, DECEMBER 8

7:30 a.m.–5:00 p.m. On-Site Registration  
9:00 a.m.–5:00 p.m. Training Program  
9:00 a.m.–5:30 p.m. Technical Program  
10:00 a.m.–2:00 p.m. Vendor Exhibition  
6:00 p.m.–8:00 p.m. Conference Reception  
8:00 p.m.–11:00 p.m. Birds-of-a-Feather Sessions

### FRIDAY, DECEMBER 9

8:00 a.m.–12:00 noon On-Site Registration  
9:00 a.m.–5:00 p.m. Training Program  
9:00 a.m.–3:30 p.m. Technical Program  
2:00 p.m.–3:30 p.m. Work-in-Progress Reports (WiPs)  
4:00 p.m.–5:30 p.m. LISA Game Show

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### WHY ATTEND LISA '05?

“There is always one thing that I learn that makes me want to shout, ‘That just paid for the entire conference!’ Also, there have been many times when I learned about a new sysadmin tool at LISA years before it was popular: that’s really helped me stay ahead of the pack.”

Tom Limoncelli, *Cibernet Corp.*

Register today at [www.usenix.org/lisa2005](http://www.usenix.org/lisa2005)

# JOIN US!



## Dear Colleague,

On behalf of all of the LISA '05 organizers, I'd like to invite you to join us in San Diego for the 19th Large Installation System Administration Conference.

For the past 18 years LISA has been the focal point for the global community of system and network administrators. This year LISA continues that tradition, featuring innovative tools and techniques essential to your professional and technical development.

**Back by popular demand:** 6 days of training. Select from over 50 tutorials taught by highly expert instructors, including:

- Rik Farrow on Hands-on Linux Security
- Dan Bailey on 802.11 Wireless Network Penetration Testing
- Richard Bejtlich on Network Incidence Response
- Jacob Farmer on Disk-to-Disk Backup

In addition to the training, 3 days of technical sessions include top-notch refereed papers, informative invited talks and panels, and expert Guru Is In sessions.

- Our invited talks feature our most impressive slate of speakers to date. They include:
  - Keynote Speaker Qi Lu, *Vice President of Engineering, Yahoo! Inc.*, on "Scaling Search Beyond the Public Web"
  - Plenary Speaker Matt Blaze, *University of Pennsylvania*, on "Picking Locks with Cryptology"
  - Dan Kaminsky, *DoxPara Research*, on "Network Black Ops: Extracting Unexpected Functionality from Existing Networks"
  - Andrew Cowie, *Operational Dynamics*, on "Modern Trends in UNIX and Linux Infrastructure Management"
  - Terry Slattery, *Netcordia, Inc.*, on "Silly Network Management Tricks"
- LISA is the premier forum for presenting new research in system administration. We selected papers from over 50 submissions, showcasing state-of-the-art work on spam/email, intrusion and vulnerability detection, security, system integrity, and more.
- **NEW!** Hit the Ground Running Track: Get a head start on key technologies with 15-minute talks in the new Hit the Ground Running Track. Imagine someone coming up to you and saying, "OK, here are the top 5 things you have to know to get started with topic x. Here are the acronyms you'll encounter, here are the two basic concepts, and here are some good Web sites and books you'll want to look at to get deeper into this topic." You'll get that and more from this new track.
- Bring your perplexing technical questions to experts at LISA's unique Guru Is In sessions.
- And much more . . .

Explore the latest commercial innovations at the Vendor Exhibition.

Benefit from new opportunities for peer interaction around the topics that mean the most to you.

For a behind-the-scenes look at LISA '05 and a sneak preview of some of the cool new things happening this year, visit the LISA '05 blog at <http://blog.lisaconference.org>.

**Early registration discounts** for LISA '05, taking place December 4-9, 2005, in San Diego, CA, are now available. Register by Friday, November 18, and save up to \$300!

We're pleased to bring LISA back to San Diego and look forward to seeing you there.

David N. Blank-Edelman, *Northeastern University CCIS*  
LISA '05 Program Chair

## CONFERENCE ORGANIZERS

### Program Chair

David N. Blank-Edelman,  
*Northeastern University*  
CCIS

### Program Committee

Gerald Carter, *Samba Team/Hewlett-Packard*

Strata Rose Chalup,  
*VirtualNet Consulting*

Lee Damon,  
*University of Washington*

Rudi van Drunen,  
*Leiden Cytology and Pathology Labs*

Joe Gross,  
*Independent Consultant*

Jason Heiss,  
*Overture, a Yahoo! company*

Tom Limoncelli,  
*Cibernet Corp.*

John "Rowan" Littell,  
*Earlham College*

Tom Perrine, *Sony Computer Entertainment America*

Yi-Min Wang,  
*Microsoft Research*

David Williamson,  
*Tellme Networks*

Elizabeth Zwicky, *Acuitus*

### Invited Talk Coordinators

Adam Moskowitz,  
*Menlo Computing*

William LeFebvre,  
*Independent Consultant*

### Guru Is In Coordinator

Philip Kizer,  
*Texas A&M University*

### Workshops Coordinator

Luke Kanies,  
*Reductive Consulting*

### The USENIX Association Staff



# ABOUT USENIX & SAGE

## USENIX: THE ADVANCED COMPUTING SYSTEMS ASSOCIATION

Since 1975, USENIX has brought together the community of system administrators, innovators, engineers, scientists, and technicians working on the cutting edge of computing. Our mission is to support research and technical training for this dynamic community and our over 6,000 active members. USENIX created the LISA conference 20 years ago, and it has become the forum for real-world, in-depth system administration training. Including a dedicated system administration section of *login.*, the bi-monthly USENIX magazine; the sys admin-focused training and practical information found at the USENIX Annual Technical Conference and USENIX Security Symposium; and the USENIX Jobs Board, a USENIX membership offers you all you need to stay ahead of the game in the ever-changing world of IT.

A complimentary USENIX membership is part of every non-USENIX-member technical sessions registration. The benefits of this membership include:

- Free subscription to *login.*, the highly regarded magazine of USENIX, both in print and online
- Online access to all conference Proceedings from 1993 to the present
- The right to vote in USENIX Association elections
- Discounts on technical registration fees for all USENIX-sponsored and co-sponsored events, including the largest LISA discount available
- Discounts on purchasing printed Proceedings, CD-ROMs, and other Association publications
- Discounts on industry-related publications such as *Sys Admin*, *Linux Journal*, and O'Reilly and No Starch Press books

## SAGE: THE PEOPLE WHO MAKE IT WORK

SAGE is organized to advance the status of computer system administration as a profession, establish standards of professional excellence and recognize those who attain them, develop guidelines for improving the technical and managerial capabilities of members of the profession, and promote activities that advance the state of the art or the community. Please visit the SAGE booth at LISA '05 to find out more about SAGE's plans for the future.

A complimentary SAGE membership is part of every non-SAGE-member technical sessions registration. The benefits of this membership include:

- Discount on registration for LISA, the annual Large Installation System Administration conference
- SAGE Short Topics in System Administration booklet series
- The option to join the highly responsive sage-members list, an electronic mailing list for peer discussions and advice
- Access to the results of the comprehensive salary survey
- Access to members-only areas of the SAGE Web site
- A Code of Ethics for System Administrators
- Discounts on publications such as *Sys Admin*

2 • Register today at <http://www.usenix.org/lisa2005>.



Photo by Andrew Brown

## TOP 5 REASONS TO ATTEND LISA'05

### #1 Top-notch training

Highly respected experts provide you with new information and skills you can take back to work tomorrow.

### #2 Invited talks

that feature industry luminaries discussing timely and important topics

### #3 You'll see it here first

The latest developments in cutting-edge practices and new or ongoing work in the refereed papers track and Work-in-Progress Reports (WiPs)

### #4 Answers

to your toughest questions in the form of Guru Is In sessions, Solve My Problem Boards, and expanded Birds-of-a-Feather (BoF) sessions

### #5 Mingle with industry leaders

The "hallway track" and evening events offer additional opportunities to network with peers to gain that all-important "inside" IT knowledge.

For complete program information and to register, see [www.usenix.org/lisa2005](http://www.usenix.org/lisa2005)

## Training at a Glance

<b>SUNDAY, DECEMBER 4, FULL DAY: 9:00 A.M.–5:00 P.M.</b>		<b>TUESDAY, DECEMBER 6</b>		<b>HALF DAY MORNING: 9:00 A.M.–12:30 P.M. (continued)</b>		
S1	Rik Farrow	Hands-on Linux Security Class: Learn How to Defend Linux/UNIX Systems by Learning to Think Like a Hacker ( <i>Day 1 of 2</i> )	T9	Jacob Farmer	<b>NEW!</b> Disk-to-Disk Backup and Eliminating Backup System Bottlenecks	
S2	James Mauro and Richard McDougall	Solaris 10 Performance, Observability, and Debugging	T10	Strata Rose Chalup	<b>NEW!</b> Taming the Wild Project	
S3	Tina Darmohray and John Nicholson	<b>NEW!</b> Surviving IT Compliance	T11	John Sellens	<b>HALF DAY AFTERNOON: 1:30 P.M.–5:00 P.M. NEW!</b> Databases: What You Need to Know	
S4	Abe Singer	<b>NEW!</b> Building a Logging Infrastructure and Log Analysis for Security	T12	Peter Baer Galvin	Solaris 10 Security Features Workshop	
S5	John Sellens	System and Network Monitoring	T13	David Rhoades	<b>NEW!</b> In-depth Topics for Web Application Security	
S6	Don Bailey	<b>NEW!</b> 802.11 Wireless Network Penetration Testing	T14	Strata Rose Chalup	<b>NEW!</b> RSS vs. Information Overload	
S7	Joshua Jensen	<b>NEW!</b> Linux Systems Administration	<b>WEDNESDAY, DECEMBER 7 FULL DAY: 9:00 A.M.–5:00 P.M.</b>			
S8	Lee Damon	Issues in UNIX Infrastructure Design	W1	Richard Bejtlich	<b>NEW!</b> Network Incident Response	
S9	David Rhoades	Network Security Assessments	W2	Marc Staveley	System and Network Performance Tuning	
<b>MONDAY, DECEMBER 5 FULL DAY: 9:00 A.M.–5:00 P.M.</b>		<b>W3</b>		<b>HALF DAY MORNING: 9:00 A.M.–12:30 P.M.</b>		
M1	Rik Farrow	Hands-on Linux Security Class: Learn How to Defend Linux/UNIX Systems by Learning to Think Like a Hacker ( <i>Day 2 of 2</i> )	W3	Gerald Carter	Kerberos 5: Revenge of the Three-Headed Dog	
M2	Peter Baer Galvin	Advanced Solaris System Administration Topics	W4	Evan Marcus	<b>NEW!</b> Sure, You Can Archive Data, But Will You Be Able to Retrieve It in Ten Years?	
M3	Aleen Frisch	Administering Linux in Production Environments	W5	Strata Rose Chalup	<b>NEW!</b> Practical Project Management for Sysadmins and IT Professionals	
M4	John Gannon and John Arrasjid	<b>NEW!</b> Introduction to VMware ESX Server	W6	Mike Ciavarella	<b>HALF DAY AFTERNOON: 1:30 P.M.–5:00 P.M.</b>	
M5	John Sellens	System and Network Monitoring: Tools in Depth	W7	Evan Marcus	Advanced Shell Programming	
M6	David K.Z. Harris	<b>NEW!</b> Designing and Implementing a Remote Console Access Server	W8	Gerald Carter	<b>NEW!</b> Disaster Planning (and Recovery): How to Keep Your Company (and Your Job) Alive	
		<b>HALF DAY MORNING: 9:00 A.M.–12:30 P.M.</b>		<b>NEW!</b> Ethereal and the Art of Debugging Networks		
M7	Abe Singer	Security Without Firewalls	<b>THURSDAY, DECEMBER 8 FULL DAY: 9:00 A.M.–5:00 P.M.</b>			
M8	Dan Appelman	<b>NEW!</b> Intellectual Property Protection and the System Administrator	R1	Richard Bejtlich	<b>NEW!</b> Network Forensics	
M9	Mark Jason Dominus	Regular Expression Mastery	R2	Tom Christiansen	Advanced Perl Programming	
M10	W. Curtis Preston	<b>NEW!</b> Backup on a Budget	<b>HALF DAY MORNING: 9:00 A.M.–12:30 P.M. NEW!</b> Pretty and Effective: Fast Wins with Graphical Monitoring			
M11	Deryck Hodge	<b>NEW!</b> Google-Driven Web Development	R3	Mike Ciavarella	Recovering from Linux Hard Drive Disasters	
M12	Mark Burgess	Introduction to Host Configuration and Maintenance with Cfengine	R4	Theodore Ts'o	Time Management for System Administrators:	
M13	Mark Jason Dominus	<b>NEW!</b> Welcome to My ~/bin	R5	Tom Limoncelli	Getting It All Done and Not Going (More) Crazy!	
M14	David Rhoades	<b>NEW!</b> The Latest Hacking Tools and Defenses	<b>HALF DAY AFTERNOON: 1:30 P.M.–5:00 P.M.</b>			
<b>TUESDAY, DECEMBER 6 FULL DAY: 9:00 A.M.–5:00 P.M.</b>		<b>R6</b>		<b>Documentation Techniques for Sysadmins</b>		
T1	Richard Bejtlich	<b>NEW!</b> Network Security Monitoring with Open Source Tools	R7	Andrew Cowie	<b>NEW!</b> Mastering Massive Changes and Upgrades to Mission-Critical Systems	
T2	Joshua Jensen	Linux Network Service Administration	R8	Mark Burgess	<b>NEW!</b> Understanding Configuration Management	
T3	Trent Hein and Ned McClain	<b>NEW!</b> Advanced Topics in System Administration	<b>FRIDAY, DECEMBER 9 FULL DAY: 9:00 A.M.–5:00 P.M.</b>			
T4	David Segleau	<b>NEW!</b> Reliable, Fast, Lightweight Data Storage: A Berkeley DB Tutorial	F1	Gerald Carter	Managing Samba 3.0	
T5	Tom Limoncelli	Help! Everyone Hates Our IT Department!	F2	Eric Allman	Advanced Technology in Sendmail	
T6	Gerald Carter	Implementing LDAP Directories	F3	Mike Ciavarella and Lee Damon	Seven Habits of the Highly Effective System Administrator: Hints, Tricks, Techniques, & Tools of the Trade	
		<b>HALF DAY MORNING: 9:00 A.M.–12:30 P.M. NEW!</b> Over the Edge System Administration, Vol. 1		F4	Geoff Halprin	<b>NEW!</b> Production Change Management: To Each, His or Her Own
T7	David N. Blank-Edelman	Advanced Topics in Host Configuration and Maintenance with Cfengine				
T8	Mark Burgess	Advanced Topics in Host Configuration and Maintenance with Cfengine				

**FULL DAYS** 9:00 A.M.–5:00 P.M.

## **S1 HANDS-ON LINUX SECURITY CLASS: LEARN HOW TO DEFEND LINUX/UNIX SYSTEMS BY LEARNING TO THINK LIKE A HACKER (DAY 1 OF 2)** *Rik Farrow, Security Consultant*

**Who should attend:** System administrators of Linux and other UNIX systems; anyone who runs a public UNIX server.

**Please note:** Class exercises will require that you have an x86-based laptop computer that can be booted from a KNOPPIX CD. Macintosh owners interested in taking this class should contact the instructor, as a bootable KNOPPIX CD for the PPC may be provided as well if there is sufficient interest.

### **Exercises include (for Day 1):**

- Finding hidden files and evidence of intrusion
- TCP/IP and its abuses
- hping2 probes while using ethereal
- nmap while watching with ethereal or tcpdump (connect and SYN scans)
- Working with buffer-overflow exploit examples
- Apache servers and finding bugs in scripts

## **S2 SOLARIS 10 PERFORMANCE, OBSERVABILITY, & DEBUGGING**

*James Mauro and Richard McDougall, Sun Microsystems*

**Who should attend:** Anyone who supports or may support Solaris 10 machines.

### **Topics include:**

- Solaris 10 features overview
- Solaris 10 tools and utilities
- Understanding memory use and performance
- Understanding thread execution flow and profiling
- Understanding I/O flow and performance
- Looking at network traffic and performance
- Application and kernel interaction
- Putting it all together

## **S3 SURVIVING IT COMPLIANCE *NEW!*** *Tina Darmohray, Stanford University, and John Nicholson, Shaw Pittman, LLP*

**Who should attend:** IT managers, system and network administrators, corporate counsel, and information security officers who will implement or maintain IT security and privacy policies and site compliance.

### **Topics include:**

- The basics of regulation
  - Laws vs. regulations
  - State vs. federal
  - Domestic vs. international
- Privacy regulations
  - HIPAA
  - GLBA
  - COPPA
  - EU data protection and safe harbor
  - FERPA
  - Privacy policies and FTC enforcement
  - California privacy laws
  - Sarbanes-Oxley
- Managing compliance
  - Policies and procedures and mandates
  - Applied best practices
  - Audits
  - Training

## **S4 BUILDING A LOGGING INFRASTRUCTURE AND LOG ANALYSIS FOR SECURITY *NEW!*** *Abe Singer, San Diego Supercomputer Center*

**Who should attend:** System, network, and security administrators who want to be able to separate the wheat of warning information from the chaff of normal activity in their log files.

### **Topics include:**

- Problems, issues, and scale of handling log information
- Generating useful log information
- Collecting log information
  - syslog and friends
  - Building a log host
  - Integrating MS Windows into a UNIX log architecture
- Storing log information
  - Centralized log architectures
  - Log file archiving
- Log analysis
  - Log file parsing tools
  - Data analysis of logfiles
  - Attack signatures
- Legal issues

## **S5 SYSTEM AND NETWORK MONITORING** *John Sellens, SYONEX*

**Who should attend:** Network and system administrators interested in real-life, practical, host- and network-based monitoring of their systems and networks. Participants should have an understanding of the fundamentals of networking, basic familiarity with computing and network components, and some familiarity with UNIX and scripting languages.

### **Topics include:**

- Monitoring
- SNMP
- Introduction to SNMP MIBs
- SNMP tools and libraries
- Other (non-SNMP) tools
- Security concerns when using SNMP and other tools on the network
- Monitoring applications
- Special situations
- Monitoring implementation roadmap

## **S6 802.11 WIRELESS NETWORK PENETRATION TESTING *NEW!***

*Don Bailey, Information Security Engineer*

**Who should attend:** Security and IT professionals involved or interested in the security assessment of 802.11 wireless networks or the practical threats facing wireless networks. Participants should be familiar with 802.11 wireless network technology and network penetration testing techniques and tools.

### **Topics include:**

- Wireless network security and architecture issues
- Wireless network penetration testing methodology
- Practical hardware and software setups for wireless security assessments
- Passive wireless network discovery and monitoring
- Wireless network traffic capture and analysis
- IP and MAC spoofing, client device attacks, access point attacks
- Cracking WEP, LEAP, and WPA-PSK-protected networks
- Rogue AP (access point) trickery and man-in-the-middle exploits
- Vulnerable VPN and EAP implementations and attacks
- Denial of service and jamming attacks

## FULL DAYS 9:00 A.M.–5:00 P.M.

### **S7** LINUX SYSTEM ADMINISTRATION

*Joshua Jensen, Cisco Systems Inc.*

**Who should attend:** System administrators who plan to implement Linux in a production environment. Attendees should understand the basics of system administration in a UNIX/Linux environment, i.e., user-level commands and TCP/IP networking. Both novice admins and gurus should leave the tutorial having learned something.

**Topics include (with an 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

### **S8** ISSUES IN UNIX

#### INFRASTRUCTURE DESIGN

*Lee Damon, University of Washington*

**Who should attend:** Anyone who is designing, implementing, or maintaining a UNIX environment with 2 to 20,000+ hosts. System administrators, architects, and managers who need to maintain multiple hosts with few admins.

**Topics include:**

- Administrative domains
- Desktop services vs. farming
- Disk layout
- Free vs. purchased solutions
- Homogeneous vs. heterogeneous
- The essential master database
- Policies to make life easier
- Push vs. pull
- Getting the user back online in 5 minutes
- Remote administration
- Scaling and sizing
- Security vs. sharing
- Single sign-on
- Single system images
- Tools

### **S9** NETWORK SECURITY

#### ASSESSMENTS

*David Rhoades, Maven Security Consulting, Inc.*

**Who should attend:** Anyone who needs to understand how to perform an effective and safe network assessment.

**Topics include:**

- Preparation: What you need before you get started
- Safety measures: Important, practical steps to minimize, if not eliminate, adverse effects on critical networks and systems
- Architecture considerations: Where you scan from affects how you perform the assessment
- Inventory: How to take an accurate inventory of active systems and protocols
- Tools of the trade: Effective use of security tools (commercial and freeware) and how to avoid common pitfalls
- Automated scanning: Best-of-class tools, with valuable tips on proper use which can be applied to any automated scanning tool
- Research and development: Overview of what to do when you encounter unknown services or existing tools do not suffice
- Documentation and audit trail: How to record your actions simply and effectively
- Reporting: How to compile your results into a format that's useful for taking corrective action and tracking security over time

### ATTENTION MANAGERS: WHY YOU SHOULD SEND YOUR EMPLOYEES TO LISA '05

Technology continues to evolve. Truly to stay ahead of the game, your employees must continue to enhance their skills.

The training program at LISA '05 offers a cost-effective, one-stop shop for training current IT and development employees. Over 50 full- and half-day tutorials taught by the most respected leaders in the field provide an unparalleled opportunity to learn from the best. Tutorials cover a multitude of system administration topics, including open source technologies, security, and configuration management.

Combining full days of training with days of technical sessions on groundbreaking research related to system and network administration makes the LISA '05 experience even more valuable. Additionally, the evening receptions and Birds-of-a-Feather sessions provide your staff with a chance to network with peers and industry leaders to gain that all-important "insider" IT knowledge that will keep your company current and running smoothly.

Keeping up with technology can be costly and time-consuming in this unforgiving economy: take full advantage of this opportunity to have your staff learn from the top researchers, practitioners, and authors all in one place, at one time.

**"What I liked best about LISA was getting value out of nearly every tutorial that I can take home and immediately apply."**

*A LISA '04 Attendee*

**Need more information? See [www.usenix.org/lisa05/training](http://www.usenix.org/lisa05/training) for full tutorial descriptions.**



**FULL DAYS** 9:00 A.M.–5:00 P.M.

## **M1 HANDS-ON LINUX SECURITY CLASS: LEARN HOW TO DEFEND LINUX/UNIX SYSTEMS BY LEARNING TO THINK LIKE A HACKER (DAY 2 OF 2)**

*Rik Farrow, Security Consultant*

See S1, page 4, for the description of the first day of this tutorial.

**Please note:** Class exercises will require that you have an x86-based laptop computer that can be booted from a KNOPPIX CD. Macintosh owners interested in taking this class should contact the instructor, as a bootable KNOPPIX CD for the PPC may be provided as well if there is sufficient interest.

### **Exercises include (for Day 2):**

- John the Ripper, password cracking
- Using and modifying KNOPPIX Linux boot CD
- Elevation of privilege and suid shells
- Rootkits, and finding rootkits (chkrootkit)
- Sleuth Kit (looking at intrusion timelines)
- iptables and netfilter
- cfengine configuration

## **M2 ADVANCED SOLARIS SYSTEM ADMINISTRATION TOPICS**

*Peter Baer Galvin, Corporate Technologies, Inc.*

**Who should attend:** UNIX administrators who need more knowledge of Solaris administration, especially the next-generation features of Solaris 10.

### **Topics include:**

- Installing and upgrading
  - Planning your installation, filesystem layout, post-installation steps
  - Installing patches and packages
- Advanced features of Solaris
  - Filesystems and their uses
  - The /proc filesystem and commands
  - ZFS
- The kernel
  - Kernel and performance tuning
  - DTrace
- Enhancing Solaris
  - Virtual IP
  - Performance
  - Tools
  - Security
  - Resource management
  - Resources and references

## **M3 ADMINISTERING LINUX IN PRODUCTION ENVIRONMENTS**

*Aleen Frisch, Exponential Consulting*

**Who should attend:** Both current Linux system administrators and administrators from sites considering converting to Linux or adding Linux systems to their current computing resources. We will be focusing on the administrative issues that arise when Linux systems are deployed to address a variety of real-world tasks and problems arising from both commercial and research-and-development contexts.

### **Topics include:**

- Recent kernel developments
- High-performance I/O
- Advanced compute-server environments
- High availability Linux: fault-tolerance options
- Enterprise-wide authentication
- Fixing the security problems you didn't know you had (or, what's good enough for the researcher/hobbyist won't do for you)
- Automating installations and other mass operations
- Linux in the office environment

## **M4 INTRODUCTION TO VMWARE ESX SERVER *NEW!***

*John Gannon and John Arrasjid, VMware*

**Who should attend:** x86 sysadmins who want to dramatically improve the way they manage systems.

### **Topics include:**

- Virtual infrastructure and ESX Server overview
- ESX Server installation and configuration
- Virtual machine (VM) creation and operation
- Operations and administration
- Enabling disaster recovery and business continuity with ESX Server
- Migration strategies and the P2V process (Physical-to-Virtual)
- Advanced configuration

## **M5 SYSTEM AND NETWORK MONITORING: TOOLS IN DEPTH**

*John Sellens, SYONEX*

**Who should attend:** Network and system administrators ready to implement comprehensive monitoring of their systems and networks using the best of the freely available tools. Participants should have an understanding of the fundamentals of networking, familiarity with computing and network components, UNIX system administration experience, and some understanding of UNIX programming and scripting languages.

### **Topics include, for each of Nagios, Cricket, MRTG, and Orca:**

- Installation
- Configuration, setup options, and how to manage larger and non-trivial configurations
- Reporting and notifications
- Special cases
- Extending the tools
- Dealing effectively with network boundaries and remote sites
- Security concerns and access control
- Ongoing operation

## **M6 DESIGNING AND IMPLEMENTING A REMOTE CONSOLE ACCESS SERVICE *NEW!***

*David K.Z. Harris, BigBand Networks*

**Who should attend:** System and network administrators who want better control of (and secure remote access to) the serial consoles of the devices they administer; any administrator who has implemented a basic serial console service and wants to get more from it; technical leads and supervisors looking for help evaluating console server hardware and justifying the costs for remote console access service deployment.

### **Topics include:**

- Terminal servers vs. console servers
- Connectivity and troubleshooting
- Avoiding pitfalls
- Mitigating security risks
- Best practices and favorite techniques
- Evaluating console management services



**HALF DAYS** AM: 9:00 A.M.–12:30 P.M. PM: 1:30 P.M.–5:00 P.M.

## M7 (AM) SECURITY WITHOUT FIREWALLS *NEW!*

*Abe Singer, San Diego Supercomputer Center*

**Who should attend:** Administrators who want or need to explore strong, low-cost, scalable security without firewalls.

### Topics include:

- The threat perspective from a data-centric point of view
- How to implement and maintain centralized configuration management using cfengine
- Secure configuration and management of core network services
- Good system administration practices
- Implementing strong authentication and eliminating use of plaintext passwords for services such as POP/IMAP
- A sound patching strategy
- An overview of last year's compromise

## M8 (AM) INTELLECTUAL PROPERTY PROTECTION AND THE SYSTEM ADMINISTRATOR *NEW!*

*Daniel L. Appelman, Heller Ehrman LLP*

**Who should attend:** System administrators of every level of experience and seniority, as well as their employers.

### Topics include:

- Fundamentals of intellectual property law for the system administrator
- Copyright term extension and the expanding rights of copyright owners
- The DMCA
- The Grokster case
- File sharing after Grokster
- Trends in intellectual property protection abroad
- What should a sysadmin do or not do?

## M9 (AM) REGULAR EXPRESSION MASTERY

*Mark Jason Dominus, Consultant and Author*

**Who should attend:** System administrators and users who use Perl, grep, sed, awk, procmail, vi, or emacs.

### Topics include:

- Inside the regex engine
- Disasters and optimizations

## M10 (AM) BACKUP ON A BUDGET *NEW!*

*W. Curtis Preston, Glasshouse*

**Who should attend:** Administrators who need to back up their systems reliably but are on a limited budget.

### Topics include:

- The use of disk in a low-budget backup system
- Open source backup packages
- Backing up Windows, NetWare, and Macintosh systems with open source tools
- Bare metal recovery techniques
- Database backup and recovery basics

## M11 (PM) GOOGLE-DRIVEN WEB DEVELOPMENT *NEW!*

*Deryck Hodge, Samba Team/Auburn University*

**Who should attend:** System administrators and Webmasters who are called upon to build and manage Web applications.

### Topics include:

- Google search syntax and services
- XHTML, Javascript, CSS, and DOM use in Google
- Gmail's Javascript UI Engine
- XMLHttpRequest/XSLTProcessor use in Google Maps
- Google APIs, SOAP, and WSDL

## M12 (PM) INTRODUCTION TO HOST CONFIGURATION AND MAINTENANCE WITH CFENGINE

*Mark Burgess, Oslo University College*

**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.

### 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

## M13 (PM) WELCOME TO MY ~/BIN *NEW!*

*Mark Jason Dominus, Consultant and Author*

**Who should attend:** System administrators and Perl jockeys who want to learn by example and think in Perl.

### Topics may include:

- attach: send email with MIME attachments
- f: replacement for awk
- forge: forge email messages
- googles: what google searches are leading people to my Web site?
- localtime: process log file timestamps
- locate: locate any file on the system
- mailhold: challenge-response for incoming email
- makethumbnails: build image thumbnail pages
- mark: manage collections of email messages
- mypsmerge, mypstrim, mypsup2: PostScript formatting and conversion
- pgrep: replacement for grep
- printd: replacement printer daemon
- psgrep: ps | grep
- sortby: sort the contents of a mail folder
- sw: 21st-century way to run a job in the background
- tail and ftail: replacements for the standard tail utility
- ticker: watch files grow
- unrecv: make email archive directories smaller
- watcher: watch a collection of Web pages and report whenever one changes

## M14 (PM) THE LATEST HACKING TOOLS AND DEFENSES *NEW!*

*David Rhoades, Maven Security Consulting, Inc.*

**Who should attend:** Anyone who's interested in how hackers work these days, and what system and network administrators can do to defend themselves.

### Topics may include:

- VoIP security
- Phishing
- Reverse engineering
- Anti-forensics
- Wi-Fi and Bluetooth
- Web application attacks
- Spyware and malware
- Network tools
- Denial of service attacks

**FULL DAYS** 9:00 A.M.–5:00 P.M.

## **T1 NETWORK SECURITY MONITORING WITH OPEN SOURCE TOOLS** *NEW!*

*Richard Bejtlich, TaoSecurity.com*

**Who should attend:** Engineers and analysts who detect and respond to security incidents. Participants should be familiar with TCP/IP. Command-line knowledge of BSD, Linux, or another UNIX-like operating system is a plus. A general knowledge of offensive and defensive security principles is helpful.

### **Topics include:**

- NSM theory
- Building and deploying NSM sensors
- Accessing wired and wireless traffic
- Full content tools: Tcpcap, Ethereal/Tethereal, Snort as packet logger
- Additional data analysis tools: Tcpreplay, Tcpcap, Ngrep, Netdude
- Session data tools: Cisco NetFlow, Fprobe, Flow-tools, Argus, SANCP
- Statistical data tools: Ipcad, Trafshow, Tcpcap, Cisco accounting records
- Sguil (sguil.sf.net)
- Case studies, personal war stories, and attendee participation

## **T2 LINUX NETWORK SERVICE ADMINISTRATION**

*Joshua Jensen, Cisco Systems Inc.*

**Who should attend:** 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.

### **Topics include (with a special emphasis on security):**

- Overview
- Network services
- Host-based security with TCP wrappers and xinetd
- Linux packet filtering
- Network monitoring and logging
- Network utilities you should be using

## **T3 ADVANCED TOPICS IN SYSTEM ADMINISTRATION** *NEW!*

*Trent R. Hein and Ned McClain, Applied Trust Engineering*

**Who should attend:** System and network administrators who are interested in picking up several new technologies in an accelerated manner. The six main topics are all focused on performance and availability.

### **Topics include:**

- Web Server Performance Management
- Security Crisis Case Studies #3
- Revision Control for SysAdmins
- Linux box == VOIP Phone Switch
- Crash Course in Database Administration
- Packet Trace Analysis

## **T4 RELIABLE, FAST, LIGHTWEIGHT DATA STORAGE: A BERKELEY DB TUTORIAL** *NEW!*

*David Segleau, Sleepycat Software*

**Who should attend:** Application architects and developers involved in the design and implementation of data storage solutions for real-world applications. Software development and program managers who are interested in understanding the services provided by Berkeley DB will also benefit from this tutorial. Engineers familiar with Berkeley DB, as well as those who have not yet used this product, will come away from this tutorial with useful, practical information, sample code, and Berkeley DB performance tuning tips.

### **Topics include:**

- Databases and access methods
- Managing key/data pairs
- Using cursors
- Using secondary indices
- Database environments
- Application design
- Backup and recovery
- Berkeley DB database administration
- Application tuning
- Replication overview
- Berkeley DB XML overview
- Berkeley DB Java Edition overview
- Berkeley DB access methods
- Berkeley DB subsystems
- Performance tuning

## **T5 HELP! EVERYONE HATES OUR IT DEPARTMENT!** *NEW!*

*Tom Limoncelli, Cibernet Corp.*

**Who should attend:** Managers and system administrators who feel “the users hate us” and want to improve the situation quickly; sysadmins with large user populations, especially those with large desktop user communities; anyone who wants to manage the help desk, desktop deployment, and PC refresh cycles better.

### **Topics include:**

- Looking good: improving your IT department’s visibility
- Getting love: the secret to making users feel they are the center of the universe
- Giving love: communicating to users effectively
- Making that great first impression on your users
- Help desks (both real and virtual)
- Customer care: a 9-step troubleshooting process
- Knowing what’s wrong before they do

## **T6 IMPLEMENTING LDAP DIRECTORIES**

*Gerald Carter, Samba Team/Hewlett-Packard*

**Who should attend:** Both LDAP directory administrators and architects. The focus is on integrating standard network services with LDAP directories. The examples are based on UNIX hosts and the OpenLDAP directory server and will include actual working demonstrations throughout the course.

### **Topics include:**

- Replacing NIS domains
- Integration with Samba file and print servers
- Integrating MTAs such as Sendmail and Postfix
- Creating address books for mail clients
- Managing user access to HTTP and FTP services
- Integrating with DHCP and DNS servers
- Scripting with the Net::LDAP Perl module
- Defining custom attributes and object classes

**HALF DAYS** AM: 9:00 A.M.–12:30 P.M. PM: 1:30 P.M.–5:00 P.M.

## T7 (AM) OVER THE EDGE SYSTEM ADMINISTRATION, VOL. 1 *NEW!*

*David N. Blank-Edelman, Northeastern University*

**Who should attend:** Old-timers who think they've already seen it all, and those who want to develop inventive thinking early in their career.

### Topics include:

- How to (ab)use perfectly good network transports by using them for purposes never dreamed of by their authors
- How to increase user satisfaction during downtimes with 6 lines of Perl
- How to improve your network services by intentionally throwing away data
- How to drive annoying Web-only applications that don't have a command line interface—without lifting a finger
- How to use ordinary objects you have lying around the house, such as Silly Putty, to make your life easier (seriously!)

## T8 (AM) ADVANCED TOPICS IN HOST CONFIGURATION AND MAINTENANCE WITH CFENGINE

*Mark Burgess, Oslo University College*

**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.

### Topics include:

- Review of some basics
- Automating deployment of software throughout your infrastructure
- Structure and organization of config
- Special functions and variables
- Searching, matching, and wildcards
- How does cfagent evaluate things?
- Services and security
- Host monitoring
- Future developments and discussion

## T9 (AM) DISK-TO-DISK BACKUP AND ELIMINATING BACKUP SYSTEM BOTTLENECKS *NEW!*

*Jacob Farmer, Cambridge Computer Corp.*

**Who should attend:** System administrators involved in the design and management of backup systems and policymakers responsible for protecting their organization's data.

### Topics include:

- Identifying and eliminating bottlenecks
- Conventional disk staging
- Virtual tape libraries
- Incremental forever and synthetic full backup strategies
- Information lifecycle management
- Data replication
- Continuous backup
- Snapshots
- Current and future tape drives
- Zero duplication file systems
- iSCSI

## T10 (AM) TAMING THE WILD PROJECT *NEW!*

*Strata Rose Chalup, Project Management Consultant*

**Who should attend:** Anyone with an existing project that isn't going well, and they're not sure why, or with a big initiative at work that they'd like to turn into a project but can't seem to get beyond a certain point with it. If you've been thinking, "Hey, if we had a little more structure, we could get a lot more accomplished," this tutorial is for you.

## T11 (PM) DATABASES: WHAT YOU NEED TO KNOW *NEW!*

*John Sellens, SYONEX*

**Who should attend:** System and application administrators who need to support databases and database-backed applications.

### Topics include:

- An introduction to database concepts
- The basics of SQL
- Common applications of databases
- Berkeley DB and its applications
- MySQL and PostgreSQL installation, configuration, and management
- Security, user management, and access controls
- Ad-hoc queries with standard interfaces
- ODBC and other access methods
- Database access from other tools

## T12 (PM) SOLARIS 10 SECURITY FEATURES WORKSHOP

*Peter Baer Galvin, Corporate Technologies, Inc.*

**Who should attend:** Solaris systems managers and administrators.

### Topics include:

- Solaris cryptographic framework
- NFSv4
- Solaris privileges
- Solaris Flash archives and live upgrade
- Moving from NIS to LDAP
- Dtrace
- WBEM
- Smartcard interfaces and APIs
- Kerberos enhancements
- Zones
- FTP client and server enhancements
- PAM enhancements
- Auditing enhancements
- Password history checking
- ipfilters

## T13 (PM) IN-DEPTH TOPICS FOR WEB APPLICATION SECURITY *NEW!*

*David Rhoades, Maven Security Consulting, Inc.*

**Who should attend:** People who are designing and/or developing Web applications, or managing the deployment of a Web application. Participants should have working knowledge of HTTP v1.1.

### Topics include:

- Securing database access
- Identifying attacks by analyzing web logs
- Implementing open source application firewalls, including Apache's mod\_security

## T14 (PM) RSS VS. INFORMATION OVERLOAD *NEW!*

*Strata Rose Chalup, Project Management Consultant*

**Who should attend:** People who want to manage incoming information streams and go "on beyond Slashdot."

### Topics include:

- RSS basics
- RSS in context
- Weed 'n' feed
- Getting the goodies
- If I had a hammer . . .
- Applied RSS
- Next generation
- Malice aforethought

**FULL DAYS** 9:00 A.M.–5:00 P.M.

## W1 NETWORK INCIDENT RESPONSE

**NEW!**

*Richard Bejtlich, TaoSecurity.com*

**Who should attend:** Security staff and sysadmins who detect and respond to intrusions. Participants should be familiar with TCP/IP. Command-line knowledge of BSD, Linux, or a UNIX-like operating system is a plus. A general knowledge of offensive and defensive security principles is helpful. The author's course "Network Security Monitoring with Open Source Tools" (T1) and his book *The Tao of Network Security Monitoring: Beyond Intrusion Detection* are very helpful prerequisites, but they are not mandatory.

### Topics include:

- Simple steps to take now that make incident response easier later
- Characteristics of intruders, such as their motivation, skill levels, and techniques
- Common ways intruders are detected, and reasons they are often initially missed
- Improved ways to detect intruders based on network security monitoring principles
- First response actions and related best practices
- Secure communications among IR team members, and consequences of negligence
- Approaches to remediation when facing a high-end attacker
- Short, medium, and long-term verification of the remediation plan to keep the intruder out

## W2 SYSTEM AND NETWORK PERFORMANCE TUNING

*Marc Staveley, Soma Networks*

**Who should attend:** Novice and advanced UNIX system and network administrators, and UNIX developers concerned about network performance impacts. A basic understanding of UNIX system facilities and network environments is assumed.

### Topics include:

- Performance tuning strategies
- Server tuning
- Network performance, design, and capacity planning
- Application tuning

**HALF DAYS** AM: 9:00 A.M.–12:30 P.M.

PM: 1:30 P.M.–5:00 P.M.

## W3 (AM) KERBEROS 5: REVENGE OF THE THREE-HEADED DOG

*Gerald Carter, Samba Team/Hewlett-Packard*

**Who should attend:** Administrators who want to understand Kerberos 5 implementations on both UNIX/Linux and Windows clients and servers.

### Topics include:

- Key concepts of the Kerberos 5 protocol
- Related authentication interfaces such as SASL and GSSAPI
- The specifics of implementing Krb5 realms
- Implementations of Krb5 cross-realm trusts
- Integration of Windows and UNIX/Linux clients into Krb5 realms
- Possible pitfalls of using popular Krb5 implementations such as those of MIT and Windows 200x

## W4 (AM) SURE, YOU CAN ARCHIVE DATA, BUT WILL YOU BE ABLE TO RETRIEVE IT IN TEN YEARS? **NEW!**

*Evan Marcus, Archivias Software*

**Who should attend:** Anyone who will be held responsible for recovering files from backup.

### Topics include:

- Media for storage (tape, optical disks, NAS, SAN, DAS, CAS, etc.)
- The emerging technology of fixed-content archiving
- Compliance issues

## W5 (AM) PRACTICAL PROJECT MANAGEMENT FOR SYSADMINS AND IT PROFESSIONALS **NEW!**

*Strata Rose Chalup, Project Management Consultant*

**Who should attend:** System administrators who want to stay hands-on as team leads or system architects and need a new set of skills with which to tackle bigger, more complex challenges. No previous experience with project management is required.

### Topics include:

- Quick basics of project management
- Skill sets
- Problem areas
- Project management tools

## W6 (PM) ADVANCED SHELL PROGRAMMING

*Mike Ciavarella, University of Melbourne*

**Who should attend:** Junior or intermediate system administrators or anyone with a basic knowledge of programming.

### Topics include:

- Common mistakes and unsafe practices
- Modular shell script programming
- Building blocks: awk, sed, etc.
- Writing secure shell scripts
- Performance tuning
- Choosing the right utilities for the job
- Addressing portability at the design stage
- When *not* to use shell scripts

## W7 (PM) DISASTER PLANNING (AND RECOVERY): HOW TO KEEP YOUR COMPANY (AND YOUR JOB) ALIVE **NEW!**

*Evan Marcus, Archivias Software*

**Who should attend:** System administrators and managers who want to know what they need to think about, what they need to plan for, and how to carry out the plan if disaster ever strikes.

### Topics include:

- What a DR plan should contain
- Four methods for testing your plan
- Downtime and data loss
- Methods and technologies for protecting data through a disaster
- How a disaster may affect the people responsible for recovery
- Case study of a company that survived 9/11

## W8 (PM) ETHEREAL AND THE ART OF DEBUGGING NETWORKS **NEW!**

*Gerald Carter, Samba Team/Hewlett-Packard*

**Who should attend:** System and network administrators interested in learning more about the TCP/IP protocol and how network traffic monitoring and analysis can be used as a debugging, auditing, and security tool.

### Topics include:

- Introduction to Ethereal for local and remote network tracing
- TCP/IP protocol basics
- Analysis of popular application protocols
- Security
- How some kinds of network attacks can be recognized



## FULL DAYS 9:00 A.M.–5:00 P.M.

### R1 NETWORK FORENSICS *NEW!*

*Richard Bejtlich, TaoSecurity.com*

**Who should attend:** Security staff and system administrators who detect and respond to intrusions. Participants should be familiar with TCP/IP. Command-line knowledge of BSD, Linux, or a UNIX-like operating system is a plus. A general knowledge of offensive and defensive security principles is helpful. The author's course "Network Security Monitoring with Open Source Tools" (T1) and his book *The Tao of Network Security Monitoring: Beyond Intrusion Detection* are very helpful prerequisites, but they are not mandatory.

#### Topics include:

- Collecting network traffic as evidence on wired and wireless networks
- Protecting and preserving traffic from tampering, either by careless helpers or the intruder himself
- Analyzing network evidence
- Presenting findings to laypeople, such as management, juries, judges
- Defending your conclusions in the face of adversarial defense attorneys or skeptical business leaders

### R2 ADVANCED PERL PROGRAMMING

*Tom Christiansen, Consultant*

**Who should attend:** Anyone with a journeyman-level knowledge of Perl programming who wants to hone Perl skills. This class will cover a wide variety of advanced topics in Perl, including many insights and tricks for using these features effectively. After completing this class, attendees will have a much richer understanding of Perl and will be better able to make it part of their daily routine.

#### Topics include:

- Symbol tables and typeglobs
- Modules
- References
- Fancy object-oriented programming
- Managing exceptions and warnings
- Regular expressions
- Programming with multiple processes or threads
- Unicode and I/O layers

## HALF DAYS AM: 9:00 A.M.–12:30 P.M.

### R3 (AM) PRETTY AND EFFECTIVE:

#### FAST WINS WITH GRAPHICAL MONITORING *NEW!*

*Mike Ciavarella, University of Melbourne*

**Who should attend:** System administrators who want to make effective use of graphical monitoring with a minimum of effort.

#### Topics include:

- Introduction to visualisation and data interpretation
- Planning your monitoring
- When to use graphical monitoring tools and when to avoid them
- MRTG, RRDTOOL, and friends
- Working with SNMP and other common data sources
- Internode nodemap

### R4 (AM) RECOVERING FROM LINUX HARD DRIVE DISASTERS

*Theodore Ts'o, IBM Linux Technology Center*

**Who should attend:** Linux system administrators and users.

#### Topics include:

- Low-level techniques to recover data from a corrupted ext2/ext3 filesystem when backups aren't available
- Recovering from a corrupted partition table
- Using e2image to back up critical ext2/3 filesystem metadata
- Using e2fsck and debugfs to sift through a corrupted filesystem
- Some measures to avoid needing to use heroic measures

### R5 (AM) TIME MANAGEMENT FOR SYSTEM ADMINISTRATORS: GETTING IT ALL DONE AND NOT GOING (MORE) CRAZY!

*Tom Limoncelli, Cibernet Corp.*

**Who should attend:** Sysadmins who want to improve their time-management skills, who want to have more control over their time and better follow-through on assignments.

#### Topics include:

- Why typical "time management" books don't work for sysadmins
- How to delegate tasks effectively
- How to never forget a user's request
- Why "to do" lists fail
- Prioritizing tasks
- Getting more out of your Palm Pilot

## PM: 1:30 P.M.–5:00 P.M.

### R6 (PM) DOCUMENTATION TECHNIQUES FOR SYSADMINS

*Mike Ciavarella, University of Melbourne*

**Who should attend:** System administrators who need to produce documentation for the systems they manage or who want to improve their documentation skills.

#### Topics include:

- Why sysadmins need to document
- The document life cycle
- Targeting your audience
- An adaptable document framework
- Common mistakes
- Tools to assist the documentation process

### R7 (PM) MASTERING MASSIVE CHANGES AND UPGRADES TO MISSION-CRITICAL SYSTEMS *NEW!*

*Andrew Cowie, Operational Dynamics*

**Who should attend:** Anyone involved in operations and keeping production systems running: system administrators, database people, application developers, and IT management.

#### Topics include:

- Know your enemy
- The best defense is a good offense
- Beta tests for people
- Make it happen
- Afterglow

### R8 (PM) UNDERSTANDING CONFIGURATION MANAGEMENT *NEW!*

*Mark Burgess, Oslo University College*

**Who should attend:** Anyone with a basic knowledge of computing.

#### Topics include:

- What is a configuration?
- States, sequences, metrics, databases
- Case study: network change management
- The meaning of policy
- Data types
- Languages and the Chomsky hierarchy
- Regular expressions
- Syntax versus semantics
- Computation versus constraint
- Declarative and imperative languages
- Constraints and promise
- Scalability, workflow, and efficiency
- Event-Condition-Action systems
- Scheduled maintenance
- Optimization and control theory
- CIM and DEN-ng information models
- Standards and de facto standards

**FULL DAYS** 9:00 A.M.—5:00 P.M.

## F1 MANAGING SAMBA 3.0

*Gerald Carter, Samba Team/Hewlett-Packard*

**Who should attend:** System administrators who are currently managing Samba servers or are planning to deploy new servers this year. This course will outline the new features of Samba 3.0, including working demonstrations throughout the course session.

**Topics include:**

- Providing basic file and print services
- Centrally managing printer drivers for Windows clients
- Configuring Samba's support for Access Control Lists and the Microsoft Distributed File System
- Making use of Samba VFS modules for features such as virus scanning and a network recycle bin
- Integrating with Windows NT 4.0 and Active Directory authentication services
- Implementing a Samba primary domain controller along with Samba backup domain controllers
- Migrating from a Windows NT 4.0 domain to a Samba domain
- Utilizing account storage alternatives to smbpasswd such as LDAP

## F2 ADVANCED TECHNOLOGY IN SENDMAIL

*Eric Allman, Sendmail, Inc.*

**Who should attend:** System administrators who want to learn more about the Sendmail program, particularly details of configuration and operational issues. This tutorial assumes that you are already familiar with Sendmail, including installation, configuration, and operation. This will be an intense, fast-paced tutorial. It is strongly recommended that you have read or are familiar with the materials in the Sendmail book published by O'Reilly and Associates, preferably the 3rd edition (but at least the 2nd edition).

**Topics include:**

- SMTP authentication
- TLS encryption
- The Milter (mail filter interface)
- Many of the newer policy control interfaces

## F3 SEVEN HABITS OF THE HIGHLY EFFECTIVE SYSTEM ADMINISTRATOR

*Mike Ciavarella, University of Melbourne, and Lee Damon, University of Washington*

**Who should attend:** Junior system administrators with anywhere from little to 3+ years of experience in computer system administration. We will focus on enabling the junior system administrator to "do it right the first time." Some topics will use UNIX-specific tools as examples, but the class is applicable to any sysadmin and any OS. Most of the material covered is "the other 90%" of system administration—things every sysadmin needs to do and to know, but which aren't details of specific technical implementation.

We will talk about issues such as why your computers should all agree on what time it is, why root passwords should not be the same on every computer, why backing up every filesystem on every computer is not always a good idea, policies—where you want them and where you might want to avoid them—ethical issues, and growth and success as a solo-sysadmin as well as in small, medium, and large teams. We will discuss training, mentoring, and personal growth planning, as well as site planning, budgeting, and logistics. We will discuss books that can help you and your users.

## F4 PRODUCTION CHANGE MANAGEMENT: TO EACH, HIS OR HER OWN *NEW!*

*Geoff Halprin, The Sysadmin Group*

**Who should attend:** System administrators who wish to learn how to manage change and risk better and to become more professional in their system management practices, and system administrators who are responsible for developing or managing their organization's change management process or who are hoping to influence and improve their organization's process.

This tutorial looks at change management from principles to implementation. We look at what should be in a CM process, and how to tune the process to meet your business's requirements.

### OUR GUARANTEE

If you're not happy, we're not happy. If you feel a tutorial does not meet the high standards you have come to expect from USENIX, let us know by the first break and we will change you to any other available tutorial immediately.

### CONTINUING EDUCATION UNITS (CEUS)

USENIX provides Continuing Education Units for a small additional administrative fee. The CEU is a nationally recognized standard unit of measure for continuing education and training and is used by thousands of organizations.

Each full-day tutorial qualifies for 0.6 CEUs. You can request CEU credit by completing the CEU section on the registration form. USENIX provides a certificate for each attendee taking a tutorial for CEU credit and maintains transcripts for all CEU students. CEUs are not the same as college credits. Consult your employer or school to determine their applicability.

**"What I liked best about LISA was hearing from so many people who have worked in such a wide range of environments. The experience is incredible."**

**Nathan Medbery**  
*State of Wisconsin—DHFS*



**ERIC ALLMAN**  
F2

Eric Allman is the original author of Sendmail, co-founder and CTO of Sendmail, Inc., and co-author of Sendmail, published by O'Reilly. At U.C. Berkeley,

he was the chief programmer on the INGRES database management project, leader of the Mammoth project, and an early contributor to BSD, authoring syslog, tset, the -me troff macros, and trek. Eric designed database user and application interfaces at Britton Lee (later Sharebase) and contributed to the Ring Array Processor project for neural-network-based speech recognition at the International Computer Science Institute. Eric is on the Editorial Review Board of ACM *Queue* magazine and is a former member of the Board of Directors of the USENIX Association.



**JOHN ARRASJID**  
M4

John Arrasjid has 20 years experience in the Computer Science field. His experience includes work with companies such as AT&T, Amdahl,

3Dfx Interactive, Kubota Graphics, Roxio, and his own company, WebNexus Communications, where he developed consulting practices and built a cross-platform IT team. John is currently a senior member of the VMware Professional Services Organization as a Consulting Architect. John has developed a number of PSO engagements including Performance, Security, and Disaster Recovery and Backup.



**RICHARD BEJTLICH**  
T1, W1, R1

Richard Bejtlich is founder of TaoSecurity (<http://www.taosecurity.com>), a company that helps clients detect, contain, and remediate intrusions using network security monitoring (NSM) principles. Richard was previously a principal consultant at Foundstone, performing incident response, emergency NSM, and security research and training. He has created NSM operations for ManTech International Corporation and Ball Aerospace & Technologies Corporation. From 1998 to 2001 then-Captain Bejtlich defended global American information assets in the Air Force Computer Emergency Response Team (AFCERT), performing and supervising the real-time intrusion detection mission.



**DANIEL L. APPELMAN**  
M8

Daniel L. Appelman is a lawyer in the Silicon Valley office of a major international law firm. He has been practicing in the areas of cyberspace and

software law for many years. He was the lawyer for Berkeley Software Design in the BSDi/UNIX System Laboratories (AT&T) case. Dan is the attorney for the USENIX Association and for many tech companies. He is also founding chair of his firm's Information Technology practice group, is the former chair of the California Bar's Standing Committee on Cyberspace Law, and is a current member of the California Bar Business Law Section's Executive Committee, the Computer Law Association, and the American Bar Association's Cyberspace Committee.



**DON BAILEY**  
S6

Don Bailey is a D.C.-area computer security engineer with nearly six years of professional experience in the computer security industry. He has

performed numerous vulnerability assessments and penetration tests, as well as exploit and virus evaluation, and has developed new secure laboratory technologies and architectures to support computer network attack-related experimentation and training. He holds a B.S. in computer science from James Madison University, and he is commonly referred to as "Beetle," as a member of the Shmoo Group, a well-respected, international collection of security professionals who regularly present at premier security conferences.



**DAVID N. BLANK-  
EDELMAN**  
T7

David N. Blank-Edelman is the Director of Technology at the Northeastern University College of Computer and Information

Science and the author of the O'Reilly book *Perl for System Administration*. He has spent the last 19 years as a system/network administrator in large multi-platform environments, including Brandeis University, Cambridge Technology Group, and the MIT Media Laboratory. He has given several successful invited talks off the beaten path at LISA and is the chair of this year's conference.

For more information, please visit [www.usenix.org/lisa05/training](http://www.usenix.org/lisa05/training).



**MARK BURGESS**  
M12, T8, R8

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



**TOM CHRISTIANSEN**  
R2

Tom Christiansen has been involved with Perl since day zero of its initial public release in 1987. Author of several books on Perl, including *The Perl Cookbook* and *Programming Perl* from O'Reilly, Tom is also a major contributor to Perl's online documentation. He holds undergraduate degrees in computer science and Spanish and a Master's in computer science. He now lives in Boulder, Colorado.



**LEE DAMON**  
S8, F3

Lee Damon 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. He is past chair of the SAGE Ethics and Policies working groups and he chaired LISA '04.



**GERALD CARTER**  
T6, W3, W8, F1

Gerald Carter has been a member of the Samba Development Team since 1998. He has published articles with various Web-based magazines and teaches courses as a consultant for several companies. Currently employed by Hewlett-Packard as a Samba developer, Gerald has written books for SAMS Publishing and is the author of the recent *LDAP System Administration* for O'Reilly Publishing.



**MIKE CIAVARELLA**  
W6, R3, R6, F3

Mike Ciavarella has been producing and editing technical documentation since the early 1980s. He has been a technical editor for MacMillan Press and has been teaching system administrators about documentation for the past eight years. After a number of years working as Senior Partner and head of the Security Practice for Cybersource Pty Ltd, Mike returned to his alma mater, the University of Melbourne. He now divides his time between teaching software engineering and providing expert testimony in computer security matters.



**TINA DARMOHRAY**  
S3

Tina Darmohray is the Stanford Information Security Officer. Previously she spent a decade as a consultant specializing in the area of computer and network security. Prior to that she was the lead for the UNIX support team at Lawrence Livermore National Laboratory. Darmohray was a founding board member of the System Administrators Guild, SAGE. She is the author of the popular SAGE *Job Descriptions* booklet. She holds B.S. and M.S. degrees from the University of California, Berkeley.



**STRATA ROSE CHALUP**  
T10, T14, W5

Strata Rose Chalup began as a sysadmin in 1983 and has been managing complex IT projects for many years, serving in roles ranging from Project Manager to Director of Network Operations. She has written many articles on management and working with teams and has applied her skills on various volunteer boards, including BayLISA and SAGE. Strata has a keen interest in network information systems and new publishing technologies and built a successful consulting practice around being an avid early adopter of new tools. Strata founded VirtualNet Consulting in 1993.



**ANDREW COWIE**  
R7

Andrew Cowie is a management consultant working in the operations and infrastructure space. Andrew is a longtime UNIX and Linux user, and was an infantry officer in the Canadian army, having graduated from Royal Military College with a degree in engineering physics. He saw service across North America and a peace-keeping tour in Bosnia. He later ran operations for an Internet startup in Manhattan building communities via SMS and was a part of recovering the company after the September 11 attacks. Andrew is now based in Sydney, Australia, and works with clients worldwide.



**MARK JASON DOMINUS**  
M9, M13

Mark Jason Dominus has been programming in Perl since 1992. He is a moderator of the comp.lang.perl.moderated newsgroup, the author of the Text::Template, Tie::File, and Memoize modules, a contributor to the Perl core, and author of the perlrefut man page. His work on the Rx regular expression debugger won the 2001 Larry Wall Award for Practical Utility. He lives in Philadelphia with his wife, his daughter, and several plush octopuses.





**JACOB FARMER**  
T9

Jacob Farmer is the CTO of Cambridge Computer Services, a specialized integrator of backup systems and storage networks. He has over 15 years of experience with storage technologies and writes an expert advice column for *Info Stor* magazine. He is currently writing a book on storage networking.



**PETER BAER GALVIN**  
M2, T12

Peter Baer Galvin is the Chief Technologist for Corporate Technologies, Inc., a systems integrator and VAR, and was the Systems Manager for Brown University's Computer Science Department. He has written articles for *Byte* and other magazines. He is co-author of the *Operating Systems Concepts* and *Applied Operating Systems Concepts* textbooks. He has taught tutorials on security and system administration and has given talks at conferences and institutions on such topics as Web services, performance tuning, and high availability.



**DAVID K.Z. HARRIS**  
M6

David K.Z. Harris is the co-founder of Console-Team and has designed remote console access solutions for over a decade. He has written on the topics for *login:* and for *Sys Admin* magazine, and he is the co-author of *Mastering Network Management*. He's been a network plumber and is a strong advocate for documentation efforts. He maintains a Web site for console information at <http://www.conserver.com/consoles/>.



**RIK FARROW**  
S1, M1

Rik Farrow provides UNIX and Internet security consulting and training. He has been working with UNIX system security since 1984 and with TCP/IP networks since 1988. He has taught at the IRS, Department of Justice, NSA, NASA, US West, Canadian RCMP, Swedish Navy, and for many U.S. and European user groups. He is the author of *UNIX System Security* and *System Administrator's Guide to System V*. Farrow is the editor of *login:* and a network security columnist for *Network* magazine.



**JOHN GANNON**  
M4

John Gannon has over ten years of experience architecting and implementing UNIX, Linux, and Windows infrastructures. John has worked in network engineering, operations, and professional services roles with various companies including Sun Microsystems, University of Pennsylvania, Scient Corporation, and FOX Sports. John's current work at VMware involves delivering server consolidation, disaster recovery, and virtual infrastructure solutions to FORTUNE 500 clients.



**TRENT R. HEIN**  
T3

Trent R. Hein is co-founder of Applied Trust Engineering, a leader in holistic infrastructure and security. Trent worked on the 4.4 BSD port to the MIPS architecture at Berkeley, is co-author of both the *UNIX Systems Administration Handbook* and the *Linux Administration Handbook*, and holds a B.S. in Computer Science from the University of Colorado.



**AILEEN FRISCH**  
M3

Aileen Frisch has been a system administrator for over 20 years. She currently looks after a pathologically heterogeneous network of UNIX and Windows systems. She is the author of several books, including *Essential System Administration* (now in its 3rd edition).



**GEOFF HALPRIN**  
F4

Geoff Halprin has spent over 25 years as a software developer, system administrator, consultant, and troubleshooter. He has written software from system management tools to mission-critical billing systems, has built and run networks for enterprises of all sizes, and has been called upon to diagnose problems in every aspect of computing infrastructure and software. He has spent more years troubleshooting other people's systems and programs than he cares to remember. Geoff is on the board of the System Administrators Guild (SAGE) and is a member of the USENIX board of directors.



**DERYCK HODGE**  
M11

Deryck Hodge is the current Webmaster for <http://www.samba.org/> and <http://news.samba.org>. He has been instrumental in redesigning Samba's Web site to adhere to Web standards and follows similar pursuits while working for the Auburn University Libraries IT department.



**JOSHUA JENSEN**  
S7, T2

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 four and a half 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 having come full circle: he 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.



**EVAN MARCUS**  
W4, W7

Evan Marcus joined Archivas, Inc., in 2005 as a Senior Systems Engineer in the Office of the CTO. He has more than 15 years of experience in UNIX systems. Before joining Archivas, he spent 8 years at VERITAS Software, as a systems engineer, speaker, and author. He also spent 5 years at Sun Microsystems, and 2+ years at Fusion Systems, where he worked to bring the first high availability software applications for SunOS and Solaris to market. He also spent 2 years as a system administrator on the equities trading floor of a multinational trading institution. He is the co-author of *Blueprints for High Availability* from John Wiley & Sons and co-author and co-editor of *The Resilient Enterprise* from VERITAS Publications. He is a well-regarded and popular speaker on the design of highly available and disaster resilient systems, and on fixed-content storage archives.



**NED MCCLAIN**  
T3

Ned McClain, co-founder and CTO of Applied Trust Engineering, lectures around the globe on applying cutting-edge technology in production computing environments. Ned holds a B.S. in Computer Science from Cornell University and is a contributing author of both the *UNIX Systems Administration Handbook* and the *Linux Administration Handbook*.



**TOM LIMONCELLI**  
T5, R5

Tom Limoncelli, author of O'Reilly's *Time Management for System Administrators* and co-author of *The Practice of System and Network Administration* from Addison-Wesley, is Director of IT Services at Cibernet Corp. A sysadmin and network wonk since 1987, he has worked at Dean for America, Lumeta, Bell Labs/Lucent, Mentor Graphics, and Drew University. He is a frequent presenter at LISA conferences.



**JAMES MAURO**  
S2

James Mauro is a Senior Staff Engineer in the Performance and Availability Engineering group at Sun Microsystems. Jim's current interests and activities are centered on benchmarking Solaris 10 performance, workload analysis, and tool development. This work includes Sun's new Opteron-based systems and multicore performance on Sun's Chip Multithreading (CMT) Niagara processor. Jim resides in Green Brook, New Jersey, with his wife and two sons. He spent most of his spare time in the past year working on the second edition of *Solaris Internals*. Jim co-authored the first edition of *Solaris Internals* with Richard McDougall and has been writing about Solaris in various forums for the past eight years.



**RICHARD MCDUGALL**  
S2

Richard McDougall, had he lived 100 years ago, would have had the hood open on the first four-stroke internal combustion gasoline-powered vehicle, exploring new techniques for making improvements. He would be looking for simple ways to solve complex problems and helping pioneering owners understand how the technology works to get the most from their new experience. These days, McDougall uses technology to satisfy his curiosity. He is a Distinguished Engineer at Sun Microsystems, specializing in operating systems technology and system performance. He is co-author of *Solaris Internals* (Prentice Hall PTR, 2000) and *Resource Management* (Sun Microsystems Press, 1999).

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**JOHN NICHOLSON**  
S3

John Nicholson is an attorney with the firm Shaw Pittman, LLP. He assists clients in structuring and negotiating technology deals, including software licensing, technology services, and outsourcing. Before joining Shaw Pittman, he was the acting IT director for a mid-size company and was the project manager for the company's Oracle implementation. He is a regular contributor to *login*: and holds a J.D./M.B.A. from Vanderbilt University and a B.A. from Williams College.



**DAVID SEGLEAU**  
T4

David Segleau has been working with database technology for over 20 years. He has managed engineering and engineering services for several technology companies, including Teradata, Illustra, Informix, and Sleepycat, and has provided technical consulting and training assistance to customers around the globe. He is currently the vice president of engineering for Sleepycat Software, makers of Berkeley DB.



**MARC STAVELEY**  
W2

Marc Staveley works with Soma Networks, where he is applying his many years of experience with UNIX development and administration in leading their IT group. Previously Marc had been an independent consultant and also held positions at Sun Microsystems, NCR, Princeton University, and the University of Waterloo. He is a frequent speaker on the topics of standards-based development, multi-threaded programming, system administration, and performance tuning.



**W. CURTIS PRESTON**  
M10

W. Curtis Preston is VP of Data Protection for Glasshouse, a storage consulting firm. He has twelve years of experience in designing storage systems for many environments. He is the administrator of the NetBackup and NetWorker FAQs and answers the "Ask The Experts" backup forum on SearchStorage.com. He is also the author of *UNIX Backup & Recovery* and *Using SANs & NAS*, the co-author of the SAGE Short Topics booklet *Backups and Recovery*, and a contributing editor to *Storage Magazine*.



**JOHN SELLENS**  
S5, M5, T11

John Sellens has been involved in system and network administration since 1986 and is the author of several related USENIX papers, a number of *login*: articles, and the SAGE Short Topics booklet *System and Network Administration for Higher Reliability*. He is the proprietor of SYONEX, a systems and networks consultancy. From 1999 to 2004, he was the General Manager for Certainty Solutions in Toronto. Prior to joining Certainty, John was the Director of Network Engineering at UUNET Canada.



**THEODORE TS'O**  
R4

Theodore Ts'o has been a Linux kernel developer since almost the very beginnings of Linux: he implemented POSIX job control in the 0.10 Linux kernel. He is the maintainer and author of the Linux COM serial port driver and the Control Rocketport driver, and he architected and implemented Linux's tty layer. Outside of the kernel, he is the maintainer of the e2fsck filesystem consistency checker. Ted is currently employed by IBM Linux Technology Center.



**DAVID RHOADES**  
S9, M14, T13

David Rhoades is a principal consultant with Maven Security Consulting, Inc. Since 1996, David has provided information protection services for various FORTUNE 500 customers. His work has taken him across the U.S. and abroad to Europe and Asia, where he has lectured and consulted in various areas of information security. David has a B.S. in computer engineering from the Pennsylvania State University and has taught for the SANS Institute, the MIS Training Institute, and ISACA.



**ABE SINGER**  
S4, M7

Abe Singer is a Computer Security Researcher in the Security Technologies Group at the San Diego Supercomputer Center. In his operational security responsibilities, he participates in incident response and forensics and in improving the SDSC logging infrastructure. His research is in pattern analysis of syslog data for data mining. He is co-author of the SAGE booklet *Building a Logging Infrastructure* and author of a forthcoming O'Reilly book on log analysis.

**"The tutorials had great instructors with an astounding command of their subject and good teaching skills. Also a very good set of training subjects—it was hard to choose amongst them."**

**A LISA Attendee**



8:45 A.M.–10:30 A.M.

Opening Remarks, Awards, Keynote

Keynote Address

## SCALING SEARCH BEYOND THE PUBLIC WEB

Qi Lu, Vice President of Engineering, Yahoo! Inc.



What's next in "search?" Scaling, fault tolerance, and storage management become a lot more exciting when we go from the colossal scale of Yahoo! to the challenges of searching not just the public Web, but your desktop, email, bookmarks, and other repositories of information such as your online communities. This talk introduces Yahoo!'s personal and social search initiative, and focuses on technology infrastructure that can store, index, and search user and community content on a massive scale. Specific topics also include storage management, fault tolerance, metrics, and real-time monitoring.

Dr. Qi Lu is a VP of Engineering of Yahoo! Inc., responsible for the technology development of Yahoo!'s Search and Marketplace businesses unit, which includes the company's search, e-commerce, and local listings of businesses and products. Prior to joining Yahoo! in 1998, Dr. Lu was a Research Staff Member at IBM Almaden Research Center. Before that, Dr. Lu worked at Carnegie Mellon University as a Research Associate, and at Fudan University in China as a faculty member. He holds 20 U.S. patents, and received his B.S. and M.S. in computer science from Fudan University and his Ph.D. in computer science from Carnegie Mellon University.

11:00 A.M.–12:30 P.M.

## REFEREED PAPERS

### Vulnerabilities

**GULP: A Unified Logging Architecture for Authentication Data**  
Matt Selsky and Daniel Medina, *Columbia University*

**Toward an Automated Vulnerability Comparison of Open Source IMAP Servers**  
Chaos Golubitsky, *Carnegie Mellon University*

**Fast User-Mode Rootkit Scanner for the Enterprise**  
Yi-Min Wang and Doug Beck, *Microsoft Research*

## INVITED TALKS I

### Computing on Amateur Satellites

Bdale Garbee, *HP Open Source & Linux CTO*

Less than five years after the launch of Sputnik, the first satellite built entirely by amateur radio operators was in orbit. Since then, more than fifty amateur satellites of increasing sophistication have been delivered to Earth orbit. The environment of space and an all-volunteer ground station network impose interesting constraints. This talk will discuss the evolution of computing systems aboard amateur satellites from OSCAR 1 to the future, including a satellite intended for Mars orbit.

## INVITED TALKS II

### Network Black Ops: Extracting Unexpected Functionality from Existing Networks

Dan Kaminsky, *DoxPara Research*

There is the set of functionality we expect from our network. There's the set of functionality your network is capable of. These two sets are not identical. This talk will explore security risks you may not even be aware your network is exposed to and will demonstrate new techniques for managing those risks.

## GURU IS IN SESSION

### Backups

W. Curtis Preston, *Glasshouse*

Curtis is the VP of Data Protection for Glasshouse, a storage consulting firm. He has twelve years of experience in designing storage systems for many environments. As a recognized expert in the field, he has advised the major product vendors regarding product features and implementation methods. He is the administrator of the NetBackup and NetWorker FAQs and answers the "Ask The Experts" backup forum on SearchStorage.com. He is also the author of O'Reilly's *UNIX Backup & Recovery* and *Using SANs & NAS*, the co-author of the SAGE Short Topics booklet *Backups and Recovery*, and a contributing editor to *Storage Magazine*.

Want the latest scoop and a behind-the-scenes look at LISA '05?  
<http://blog.lisaconference.org>



2:00 P.M.–3:30 P.M.

## REFEREED PAPERS

### Configuration Management Theory

#### Configuration Tools: Working Together

Paul Anderson and Ed Smith, *University of Edinburgh*

### A Case Study in Configuration Management Tool Deployment

Narayan Desai, Rick Bradshaw, Scott Matott, Sandra Bittner, Susan Coghlan, Rémy Evard, Cory Leunighoener, Ti Leggett, J.P. Navarro, Gene Rackow, Craig Stacey, and Tisha Stacey, *Argonne National Laboratory*

### Reducing Downtime Due to System Maintenance and Upgrades

Shaya Potter and Jason Nieh, *Columbia University*

4:00 P.M.–5:30 P.M.

## REFEREED PAPERS

### Configuration Management Practice

#### About the Integration of Mac OS X Devices into a Centrally Managed UNIX Environment

Anton Schultschik, *Swiss Federal Institute of Technology*

### RegColl: Centralized Registry Framework for Infrastructure System Management

Vikram Sharma and Pratik Thanki, *University of North Carolina at Charlotte*

### Herding Cats: Managing a Mobile UNIX Platform

Wout Mertens and Maarten Thibaut, *Cisco Systems, Inc.*

## INVITED TALKS I

### What Big Sites Can Learn from Little Sites

Tom Limoncelli, *Cibernet Corp.*

Tom used to focus on IT at big sites. These past 4 years he's been at a lot of small sites. The problems weren't any easier and often were more interesting. What can we learn from small sites? First, the fundamentals become much more important at small sites. And what "the fundamentals" are becomes a lot clearer. Second, we learn that "we are all small sites." Join Tom on a tour of what he's been doing for the past 4 years, what beasts he's battled, and his thoughts on where we, as an industry, could be going.

## INVITED TALKS II

### Building MIT's Stata Center: An IT Perspective

Garrett Wollman, *Infrastructure Group, MIT CSAIL*

Much has been written about doing large IT relocations in the context of growing commercial businesses. Making such a major move in a university research lab involves challenges typically not faced in the business world. This talk describes the context, challenges, and lessons from MIT CSAIL's move from its 40-year-old home in commercial office space to the \$300 million Stata Center. We hope to offer advice for other institutional IT groups facing the challenge of relocating hundreds of scientists.

## GURU IS IN SESSION

### LDAP

Howard Chu, *Chief Architect, Symas Corp.*

Howard started supporting students at the U. of Michigan in 1986. From there he moved on to CalTech and then joined a start-up doing technology development for early computer telephony integration. He joined Locus Computing in 1995 and remained there until he joined Symas in 1999 as a Founder. He started working with OpenLDAP in 1998 and has been one of the leading developers on the OpenLDAP core team since 1999.

## INVITED TALKS I

### Under 200: Applying Best Practices to Small Companies

Strata Rose Chalup, *Virtual.Net Inc.*

A small company which evolved, rather than planned, its IT infrastructure presents an environment that can be greatly refined by application of time-honored LISA best practices, but that also presents some distinct challenges: overloaded and under-staffed IT departments, grossly heterogeneous computing platforms, startup deadline pressure (zero downtime!), and the biggie, "We're too small to waste time on stuff like that!"

Please join us for a discussion of the challenges, and rewards, of applying best practices in the chaotic world of the small company.

## INVITED TALKS II

### What's a PKI, Why Would I Want One, and How Should It Be Designed?

Radia Perlman, *Sun Microsystems Laboratories*

This talk explains what a PKI-based system is, and how it compares in functionality with a system like Kerberos. It also covers some crypto, to demystify the notions of public key and secret key cryptography and allow you to impress a date. Then it describes various ways people think of deploying a PKI that have issues in terms of building in monopolies, being insecure, and/or being unmanageable, and proposes a method that will avoid all these problems. It describes the issues involved in all the pieces, such as how to get securely certified, how to do revocation, how to know the public key of the certifying authority, and how a human might know its own public key.

9:00 A.M.–10:30 A.M.

## REFEREED PAPERS

### Networking

#### Open Network Administrator (ONA): A Web-based Network Management Tool

Bruce Campbell and Robyn Landers, *University of Waterloo*

#### An Open Source Solution for Testing NAT'd and Nested iptables Firewalls

Robert Marmorstein and Phil Kearns, *The College of William and Mary*

#### Towards Network Awareness

Evan Hughes and Anil Somayaji, *Carleton University*

## INVITED TALKS I

### Modern Trends in UNIX and Linux Infrastructure Management

Andrew Cowie, *Operational Dynamics*

One of the biggest trends in the industry today is a divergence in the approaches to deploying and managing complex infrastructure: horizontal vs. vertical scaling, server consolidation vs. increasing complexity, and blade servers vs. virtualization. Everyone claims that their solution is the best, but for which problem? We'll also talk about the proliferation of Web interfaces, architecture alternatives to the conventional e-commerce platform, and the debate between congruent and convergent configuration management.

## INVITED TALKS II

### Incident Command for IT: What We Can Learn from the Fire Department

Brent Chapman, *Great Circle Associates, Inc.*

Have you ever wondered how fire departments organize themselves on the fly to deal with major incidents? They accomplish this and more by using the Incident Command System (ICS), a standardized organizational structure and set of operating principles adopted by most emergency agencies nationwide. In this talk, Brent will introduce the concepts and principles of ICS, and discuss how these can be applied to IT events, such as security incidents and service outages.

## GURU IS IN SESSION

### Spam

Doug Hughes, *Global Crossing*

Doug Hughes takes care of the ISP and relay mail servers for an international telecommunications provider and spends far too much time figuring out how to stop the servers from being overwhelmed with spam. He talked about some of the techniques used at last year's spam mini-symposium at LISA.

11:00 A.M.–12:30 P.M.

## REFEREED PAPERS

### Theory

#### Toward a Cost Model for System Administration

Alva L. Couch, *Tufts University*

#### Voluntary Cooperation in Pervasive Computing Services

Mark Burgess, *Oslo University College*

#### Network Configuration Management via Model Finding

Sanjai Narain, *Telcordia Technologies, Inc.*

## INVITED TALKS I

### Automatic PC Desktop Management with Virtualization Technology

Monica Lam, *Stanford University/SkyBlue Technologies*

Virtualization technology allows IT departments to regain control of distributed PC desktops. Software configurations are managed centrally by system administrators. The latest versions of these configurations are automatically cached and executed locally on the PCs. By using virtualization technology, the OS-independent, networked management layer is isolated from the vulnerabilities of PC software and the same software configuration can be run on a variety of kinds of hardware.

## INVITED TALKS II

### What's the Worst That Could Happen?

Peyton Engel, *Berbee Information Networks Corporation*

Understanding the potential impact of a security incident is crucial. Using real-world examples of password trust relationships, we'll identify ways that diligent security efforts are often undermined, explain how to spot some potentially critical problems on our own networks, and better understand the practical application of concepts that often seem too abstract to be useful.

## GURU IS IN SESSION

### Samba 11:00 A.M.–11:45 A.M.

Gerald Carter, *Samba Team/Hewlett-Packard*

Gerald has been a member of the Samba Development Team since 1998. He has published articles in Web-based magazines and teaches courses at conferences and in organizations. Employed by Hewlett-Packard as a Samba developer, Gerald has published books with SAMS Publishing and with O'Reilly.

### VoIP 11:45 A.M.–12:30 P.M.

Robert Sparks, *VP, Research and Development, Estacado*

Robert is responsible for managing Estacado's research activities and development of products and components for new markets. He has over 20 years' experience in the computer and communications industries. In the past five years, he has focused on designing and developing SIP-based IP communications systems.

2:00 P.M.–3:30 P.M.

## REFEREED PAPERS

### Network Visualization

**Visualizing NetFlows for Security at Line Speed: The SIFT Tool Suite**

William Yurcik, *NCSA*; Kiran Lakkaraju, Xiaoxin Yin, and Yifan Li, *NCSA and University of Illinois at Urbana-Champaign*; Ratna Bearavolu and Adam Slagell, *NCSA*; Ramona Su, *NCSA and University of Illinois at Urbana-Champaign*

**Interactive Traffic Analysis and Visualization with Wisconsin Netpy**

Cristian Estan and Garret Magin, *University of Wisconsin, Madison*

**NetViewer: A Network Traffic Visualization and Analysis Tool**

Seong Soo Kim and A.L. Narasimha Reddy, *Texas A&M University*

## INVITED TALKS I

### Internet Counter-Intelligence: Offense and Defense

Lance Cottrell, *Anonymizer, Inc.*

As Internet technology advances, online threats such as IP-based blocking, IP-based cloaking, and information leakage grow exponentially. An exposed IP address can put companies at risk of countless privacy and security breaches. Learn how to mitigate these threats, ensure data integrity, and safeguard your confidential information.

## INVITED TALKS II

### Preventing Child Neglect in DNSSECbis Using Lookaside Validation (DLV)

Paul Vixie, *Internet Systems Consortium, Inc.*

The DNSSECbis data model has key introduction follow the delegation chain, thus requiring a zone's parent to become secure before a zone itself can be secured. This leads to non-deployability, since the root zone might not be secured anytime soon. We describe an early deployment aid for DNSSECbis whereby key introduction can be done via cooperating third parties.

## GURU IS IN SESSION

### Project Management 2:00 P.M.–2:45 P.M.

Strata Rose Chalup, *Virtual.Net Inc.*

Strata has led and managed IT projects for many years, serving in roles ranging from Project Manager to Director of Network Operations. The author of many articles on management and working with teams, she founded Virtual.Net Inc. in 1993.

### Time Management 2:45 P.M.–3:30 P.M.

Tom Limoncelli, *Cibernet Corp.*

Tom, author of O'Reilly's *Time Management for System Administrators* and co-author of *The Practice of System and Network Administration* from Addison-Wesley, is Director of IT Services at Cibernet Corp.

4:00 P.M.–5:30 P.M.

## Plenary Session

### PICKING LOCKS WITH CRYPTOLOGY

Matt Blaze, *University of Pennsylvania*



Computer security and cryptology take much of their basic philosophy and language from the world of mechanical locks, and yet we often ignore the possibility that physical security systems might suffer from the same kinds of attacks that plague computers and networks. This talk examines mechanical locks from a computer scientist's viewpoint. We describe attacks for amplifying rights in mechanical pin tumbler locks that are at least as serious as those that can occur in computing systems. We end with future directions for research in this area and the suggestion that mechanical locks are worthy objects of our attention and scrutiny.

## NEW! HIT THE GROUND RUNNING TRACK

Staying ahead of the game in this dynamic industry is always a challenge. New technologies mean spending hours researching what they do and how best to use them.

This year, LISA attendees have the opportunity to get a head start on key technologies with 15-minute talks in the new Hit the Ground Running Track. Imagine someone coming up to you and saying, "OK, here are the top 5 things you have to know to get started with topic x. Here are the acronyms you'll encounter, here are the two basic concepts, and here are some good Web sites and books you'll want to look at to get deeper into this topic." You'll get that and more from this new track.

Get a jump start on topics such as:

- LDAP
- SAN
- Dtrace
- AFS
- Identity management
- Cfengine
- Secure remote access and VPN

The Hit the Ground Running Track will take place at the following times:

- Wednesday, December 7, 4:00 p.m.–5:30 p.m.
- Thursday, December 8, 11:00 a.m.–12:30 p.m.
- Friday, December 9, 2:00 p.m.–3:30 p.m.

For more information about the Hit the Ground Running Track, please see <http://www.usenix.org/lisa05/htg>.

9:00 A.M.–10:30 A.M.

## REFEREED PAPERS

### Tools

#### A1: Spreadsheet-based Scripting for Web Tools

Eben M. Haber, Eser Kandogan, Allen Cypher, and Paul P. Maglio, *IBM Almaden Research Center*

#### Hostdb: The Best Damn Host2DNS/DHCP Script Ever Written

Thomas Limoncelli, *Cibernet Corp.*

#### Solaris Service Management Facility: Modern System Startup and Administration

Jonathan Adams, David Bustos, Stephen Hahn, David Powell, and Liane Praza, *Sun Microsystems, Inc.*

## INVITED TALKS I

### How Sysadmins Can Protect Free Speech and Privacy on the Electronic Frontier

Kevin Bankston, *Electronic Frontier Foundation*

How can a sysadmin legally, morally, and technically balance the legitimate needs of law enforcement against the First Amendment right to speak and read anonymously? EFF lawyer Kevin Bankston will fill you in on the latest developments in Internet privacy law and explain how you may be the last best hope for free speech and privacy online.

## INVITED TALKS II

### Wireless Security

Michael H. Warfield, *Internet Security Systems, Inc.*

This session is an overview of the current state of 802.11\* wireless standards, security profiles, developments, and practices. Included will be some recent developments in standards, security incidents, and developments in the field, as well as recommendations on securing wireless infrastructure.

## GURU IS IN SESSION

### Change Management 9:00 A.M.–9:45 A.M.

Gene Kim, *Tripwire, Inc.*

Gene is a co-founder of the IT Process Institute as well as the CTO and co-founder of Tripwire, Inc. Since 1999, his passion has been capturing and codifying how “best in class” organizations have IT operations, security, audit, management, and governance working together to solve common objectives.

### Security/Cryptography 9:45 A.M.–10:30 A.M.

Greg Rose, *VP of Product Security, QUALCOMM Inc.*

Greg is a VP of Product Security for QUALCOMM Inc., where he works on cryptographic security and authentication for third-generation mobile phones and other technologies. He holds a number of patents for cryptographic methods and has successfully cryptanalyzed widely deployed ciphers.

11:00 A.M.–12:30 P.M.

## REFEREED PAPERS

### Access Control

#### Towards a Userspace Packet Filter Toolkit for Securing Legacy Resources

James Deverick and Phil Kearns, *The College of William and Mary*

#### Administering Access Control in Dynamic Coalitions

Rakesh Bobba, *NCSA and University of Illinois at Urbana-Champaign*; Serban Gavrilă, *VDG, Inc.*; Virgil Gligor, *University of Maryland, College Park*; Himanshu Khurana, *NCSA and University of Illinois at Urbana-Champaign*; Radostina Koleva, *University of Maryland, College Park*

#### Management People, Not Userids

Jon Finke, *Rensselaer Polytechnic Institute*

## INVITED TALKS I

### Weblogs, Wikis, and RSS for System Administrators

Chris Dent, *Socialtext, Inc.*

Success and minimum hassle for system administrators is ultimately tied to having and providing timely and accurate information. Recently, Weblogs, wikis, and RSS have matured to become useful additions in the ongoing battle to keep everyone and everything effectively informed and efficiently working.

## INVITED TALKS II

### Using Your Body for Authentication: A Biometrics Guide for System Administrators

Michael R. Crusoe, *Authenti-Corp*

Is a face worth a thousand passwords? Have you ever wanted to add a biometric factor to your user authentication but didn't know where to start? This talk will provide a solid introduction to biometrics (the automated recognition of individuals based on their behavioral and biological characteristics) with a wide-ranging discussion of the popular use cases, the five most common biometric modalities, the current state of the biometrics industry, and practical advice and tools for system administrators.

## GURU IS IN SESSION

### Mac OS X

Jordan Hubbard, *Director of UNIX Technology, CoreOS, Apple Computer*

Jordan has been a software developer since the late 70's and is a long-time contributor to the open source community, from the earliest days of USENET's comp.sources.unix group, through MIT's X11 contributed software collection, to the FreeBSD Project, which he co-founded in 1993. These days, he focuses on the day-to-day development of Mac OS X and, more generally, on Apple's open source strategy and its relationship with traditional UNIX developers and administrators.



## 2:00 P.M.–3:30 P.M.

### WORK-IN-PROGRESS REPORTS (WIPS)

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 [lisa05wips@usenix.org](mailto:lisa05wips@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.

### INVITED TALKS I

#### **Silly Network Management Tricks**

Terry Slattery, *Netcordia, Inc.*

Network management systems have traditionally not delivered on their promise to help administrators improve networks. There are a number of reasons why, most of them silly. I'll discuss specific network management approaches that have contributed to the failure of the tools that use them, point out how to avoid the silliness, and describe what works and why.

### INVITED TALKS II

#### **Thinking Like an Attacker**

Steve Bono, *Independent Security Evaluators*

Is it ethical to train people to break systems? It is certainly necessary. Without being able to think like an attacker it is difficult to design a secure system. Developers and system administrators alike must understand threat models and how their systems may be subverted, before it happens.

### GURU IS IN SESSION

#### **Virtualization 2:00 P.M.–2:45 P.M.**

John Arrasjid and John Gannon, *VMware*

John Arrasjid has 20 years' experience in the computer science field. He is a senior member of the VMware Professional Services Organization as a Consulting Architect. He has developed a number of service offerings focused on performance management, security, and disaster recovery and backup.

John Gannon has over ten years of experience architecting and implementing UNIX, Linux, and Windows infrastructures. He is responsible for delivering server consolidation, disaster recovery, and virtual infrastructure solutions to VMware's 500 clients.

#### **Solaris 10: System/DTrace/Zones/SMF 2:45 P.M.–3:30 P.M.**

Bryan Cantrill, Dan Price, and Liana Praza, *Sun Microsystems, Inc.*

Please see [www.usenix.org/lisa05/tech](http://www.usenix.org/lisa05/tech) for updates.



## 4:00 P.M.–5:30 P.M.

### LISA GAME SHOW

Closing this year's conference, the LISA Game Show will once again pit attendees against each other in a test of technical knowledge and cultural trivia. Host Rob Kolstad and sidekick Dan Klein will provide the questions and color commentary for this always memorable event.

### NEW AND IMPROVED PEER INTERACTION OPPORTUNITIES

Year after year attendees tell us that some of the most valuable time they spend at LISA happens during the "hallway track." By talking to their peers, attendees get the answers to vexing problems, equipment recommendations from people they trust, ways to save money and time in the workplace, and inspiration for new projects.

This year we're working hard to add opportunities for more peer interaction and building in ways to keep this networking alive even after the conference ends. Examples include:

#### **Solve My Problem Boards**

This year LISA will have Solve My Problem Boards distributed throughout the conference site. Attendees will be able to post a problem on an SMP board the way they might on a newsgroup or mailing list. As attendees walk by, they can read the problems and responses posted, compose their own answer, and tack it up. As the conference goes on, attendees may receive more and more answers to their questions. Popular topics on the boards may spin off their own Birds-of-a-Feather sessions for more in-depth discussion.

#### **Enhanced Birds-of-a-Feather (BoF) Sessions**

Resources will be available to help facilitate a great BoF (even if you've never led a BoF before). Instant discussion lists will be provided to all BoFs so that attendees can easily continue their interactions after the session ends and keep the networking going throughout the year. See p. 27 to find out how to lead or participate in a BoF.

SUNDAY, DECEMBER 4

9:00 A.M.–5:00 P.M.

## WORKSHOP 1

### Managing Sysadmins

Tom Limoncelli, *Cibernet Corp.*; Cat Okita, *Hewlett-Packard*

This workshop, intended for managers of system administrators and team leaders, provides an informal roundtable discussion. Attendees will take turns introducing problems they are facing. The group will share their experience in similar situations and give advice. Attendees should manage two or more sysadmins. The workshop will be facilitated by Tom Limoncelli, co-author of *The Practice of System and Network Administration*. Think of it as an Advanced Topics Workshop for people management. To attend the workshop, send email to [lisa05manwshop@usenix.org](mailto:lisa05manwshop@usenix.org).

## WORKSHOP 2

### Clusters

Susan Coghlan and Narayan Desai, *Argonne National Laboratory*

There is similar system administration work going on in three areas: high-performance computing, high-availability computing, and everything else. Each of these areas has developed niche tools to address important issues. For the most part, these tools have remained tied to their niche despite broad applicability. In this workshop, we'll explore these tools and capabilities and how they might be applied to the other areas.

Please send email to [lisa05cluswshop@usenix.org](mailto:lisa05cluswshop@usenix.org) with a position paper that describes your environment and the niche capabilities you believe are not represented globally.

## JOIN YOUR PEERS FOR THREE DAYS OF FOCUSED DISCUSSION

- **Senior system administrators will want to participate in one or more of these all-day workshops.** Attendance is limited for each workshop, which ensures a seminar-like atmosphere.
- **Please note that these workshops are full-day sessions.** Attending a workshop precludes attending any training sessions on that day.
- **To attend a workshop, you must be a registered conference attendee as well as an accepted workshop participant.** See the individual descriptions for information on how to apply to attend a workshop. Accepted applications will be confirmed by the workshop coordinator.
- **There is an additional fee of \$100 to attend a workshop.** Please see <http://www.usenix.org/lisa05/workshops> for information about how to register.

MONDAY, DECEMBER 5

9:00 A.M.–5:00 P.M.

## WORKSHOP 3

### Configuration Management

Paul Anderson, *University of Edinburgh*

Automatic tools are essential for anyone who wants to manage more than a few machines efficiently, and to have confidence in their correctness and security. This workshop will discuss the fundamental problems of current approaches to system configuration, and will look at the requirements and possible solutions for the next generation of configuration languages and tools.

The workshop will be a mixture of presentations and informal discussions; participation is welcome, both from those with experience in the field, and those looking for configuration solutions. To attend, send email to [lisa05confwshop@usenix.org](mailto:lisa05confwshop@usenix.org) with a brief description of your areas of interest/experience, and indicate whether you would be prepared to make a short presentation.

## WORKSHOP 4

### University Issues

David Parter, *University of Wisconsin*; Philip Kizer, *Texas A&M University*; John "Rowan" Littell, *Earlham College*

The focus of this workshop is on issues peculiar to university computing shops. Part of its goal is to communicate what works and what does not work for your institution or your organization within it. Topics may include funding, student/faculty/staff needs, research, security, purchasing, staffing, training, working with research and instructional staff, and even the culture and campus integration of computing facilities and support.

To attend the workshop, send email to [lisa05univwshop@usenix.org](mailto:lisa05univwshop@usenix.org) with a short paragraph describing your site, the biggest issue you face today or something about your institution that works particularly well or that others might want to consider for their own schools.

## WORKSHOP 5

### Using the New Social Technologies to Do Real Work

Strata R. Chalup, *Virtual.Net Inc.*

All kinds of nifty technologies have been springing up over the past few years. The vast majority of these tools are open source or shareware; most are designed from the ground up with minimal overhead, for use on mobile phones, sidekicks, etc.; and they gateway into and out of traditional forms like email, Web, and instant messaging, as well as to each other. We'll compare notes on using tools such as RSS aggregation/publishing, wiki, blogging clients, podcasting, and more in the workplace. Failure stories that we can learn from are as welcome as success stories! We'll also discuss how to choose a tool that is right for your intended use and office environment.

To attend the workshop, send email to [lisa05socwshop@usenix.org](mailto:lisa05socwshop@usenix.org).

TUESDAY, DECEMBER 6

9:00 A.M.–5:00 P.M.

## WORKSHOP 6

### Advanced Topics

Adam Moskowitz, *Menlo Computing*

This workshop, intended for very senior administrators, provides an informal roundtable discussion of the problems facing system administrators today. Attendance is limited and based on acceptance of a position paper (plain ASCII, three paragraphs maximum); a typical paper covers what the author thinks is the most difficult or important issue facing system administrators today, why this is a problem, and why this problem is important. Please send position papers to [lisa05atwshop@usenix.org](mailto:lisa05atwshop@usenix.org).

## WORKSHOP 7

### AFS

Esther Filderman, *The OpenAFS Project*

This workshop for experienced AFS administrators will be a mix of talks presented by willing participants and active discussion about work currently being done, issues in AFS administration, and issues relating to IBM-AFS, OpenAFS, and Arla. Writing or presenting a paper is not required, but a willingness to participate actively in the workshop is essential. For information about the workshop and how to apply to participate, please see the AFS Workshop page at <http://grand.central.org/pages/workshop>.

## WORKSHOP 8

### System Administration Education

Steven Jenkins, *East Tennessee State University*

This workshop is in its sixth year at LISA. It is an opportunity for those teaching system administration or training system administrators in a university setting to get together to work on curriculum and curriculum development.

How do system administration courses work together with other courses? How do those courses fit into degree programs? How do networking and system administration classes connect?

Part of the goal of the workshop will be to review the SAGE Short Topics booklet on *Educating and Training System Administrators* and to continue cross-fertilizing best practices across the universities that offer system administration courses and programs.

To attend, please send an outline of your experience and interest in sysadmin education to [lisa05eduwshop@usenix.org](mailto:lisa05eduwshop@usenix.org).

**For complete workshop descriptions and additional information, see <http://www.usenix.org/lisa05/workshops>**

# THANKS TO OUR SUPPORTING MEMBERS & SPONSORS

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Addison-Wesley/Prentice Hall PTR	Raytheon
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Electronic Frontier Foundation	Oracle
Eli Research	OSDL
Hewlett-Packard	Perfect Order
IBM	Ripe NCC
Intel	Sun Microsystems, Inc.
	UUNET Technologies, Inc.

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## LISA '05 SPONSORS

Cambridge Computer Services, Inc.	Opware, Inc.
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Microsoft Research	Trigence Corp.
Opengear	The Written Word

## LISA '05 MEDIA SPONSORS

Addison-Wesley/Prentice Hall PTR	ITtoolbox
<i>C/C++ Users Journal</i>	<i>Linux Journal</i>
<i>Dr. Dobb's Journal</i>	Linux Professional Institute
<i>DSstar</i>	No Starch Press
<i>GRIDtoday</i>	OSTG
<i>Homeland Defense Journal</i>	SNIA
<i>HPCwire</i>	StorageNetworking.org
IEEE Security and Privacy	<i>Sys Admin</i>
<i>IT*Security</i>	UserFriendly.org



# SEE WHAT'S NEW AT THE LISA '05 VENDOR EXHIBITION

WEDNESDAY, DECEMBER 7, 12:00 NOON–7:00 P.M.  
THURSDAY, DECEMBER 8, 10:00 A.M.–2:00 P.M.

## EVERYONE IS WELCOME!

The exhibition is open to the public. Register for a free pass at <http://www.usenix.org/events/lisa05/exhibition.html>

**Make knowledgeable decisions on products and services for your business needs. Exhibitor demonstrations save you hours of research and let you quickly compare solutions.**

## VENDOR EXHIBITION

- Learn about the latest and greatest technologies and tools from industry leaders, innovative start-ups, and open source projects.
- See demonstrations of innovative products and services that can optimize your systems, network, and Internet management—and simplify your life.
- Get in-depth answers from well-informed company representatives. (LISA exhibitors know to send technical people to this event!)
- Buy books at discounted prices, and get them signed by the authors.

## DON'T MISS THE MEXICAN FIESTA IN THE EXHIBIT HALL!

Exhibition Hall  
Wednesday, December 7  
5:30 p.m.–6:30 p.m.

## EXHIBITORS & SPONSORS AS OF SEPTEMBER 12, 2005

AC&NC  
Avocent  
Barracuda Networks  
Cambridge Computer Services, Inc.  
Carlo Gavazzi Computing Solutions  
Cyclades Corporation  
EAGLE Software, Inc.  
EMC Corporation  
Endeavor Systems, Inc.  
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Server Technology, Inc.  
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Symark Software

## THANKS TO OUR PREMIUM EXHIBITORS

Aptitude Corporation  
Opengear  
Splunk  
Thinklogical  
Trigence Corp.  
The Written Word

**"I got lots of great information and learned about some great solutions."**

*A LISA Attendee*

## LISA '05 SPONSORSHIP & EXHIBITING OPPORTUNITIES

- Get system administrators talking about your products and services.
  - Sell your products and services.
  - Conduct market research and enlist beta testers.
  - Recruit among highly experienced, highly educated system administrators.
  - Enhance your visibility among recognized leaders of the system, network, and security administration communities.
- See [www.usenix.org/lisa05/sponsors](http://www.usenix.org/lisa05/sponsors) for details or contact Cat Allman, USENIX Sales Director: (510) 528-8649 x32 or [sales@usenix.org](mailto:sales@usenix.org).



## CONFERENCE ACTIVITIES

To enhance your LISA experience, events are planned throughout the week. Attend the popular Birds-of-a-Feather sessions (BoFs). Mingle with your peers and industry luminaries during the Exhibit Hall Mexican Fiesta and the Conference Reception. Be sure not to miss the opportunity to vie for bragging rights—and prizes—at the Game Show. Check [www.usenix.org/events/lisa05/activities.html](http://www.usenix.org/events/lisa05/activities.html) for the latest additions to the activities schedule.

### WELCOME RECEPTION

**Saturday, December 3, 6:00 p.m.–8:00 p.m.**

Join fellow attendees at the opening night Welcome Reception. Refreshments and snacks provided.

### CONFERENCE ORIENTATION

**Saturday, December 3, 7:30 p.m.–8:00 p.m.**

Whether this is your first time at LISA or your tenth, stop by the Conference Orientation to learn how to get the most out of the conference. The orientation includes an overview of San Diego, an introduction to USENIX and SAGE, and an added opportunity to meet your peers.

### EXHIBIT HALL MEXICAN FIESTA

**Wednesday, December 7, 5:30 p.m.–6:30 p.m.**

Join us at the Vendor Exhibition for Mexican food and margaritas, and take the opportunity to learn about the latest products and technologies.

### CONFERENCE RECEPTION

**Thursday, December 8, 6:00 p.m.–8:00 p.m.**

Stop by the Conference Reception, yet another opportunity to mingle with colleagues and enjoy warm food and cold drinks.

### BIRDS-OF-A-FEATHER SESSIONS (BOFS)

**Tuesday–Wednesday, December 6–7, 7:00 p.m.–11:00 p.m.**

**Thursday, December 8, 8:00 p.m.–11:00 p.m.**

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 sending email to [bofs@usenix.org](mailto:bofs@usenix.org).

### WORK-IN-PROGRESS REPORTS (WIPS)

**Friday, December 9, 2:00 p.m.–3:30 p.m.**

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 [lisa05wips@usenix.org](mailto:lisa05wips@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.

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## SPECIAL CONFERENCE FEATURES

### CONFERENCE SERVICES

#### Bring Your Laptop!

USENIX is pleased to offer Internet connectivity at LISA '05 via an open, unsecured 802.11b WiFi network. 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. For more information please see <http://www.usenix.org/termroom>.

#### Conference Proceedings

Those registered for the technical sessions will receive a complimentary copy of the Proceedings, either in print or on CD-ROM. Additional copies of the printed Proceedings and the CD-ROM will be available for purchase at the conference.

#### Bulletin Boards/Vendor Literature

Bulletin boards in the registration area hold messages for attendees, the latest BoF schedule, and job opportunities. You can also pick up information on products, services, and special offers.

### STUDENT DISCOUNTS AND STIPENDS

#### Training

A limited number of tutorial seats are reserved for full-time students at the very special rate of \$200 for one full-day tutorial (if you plan to take half-day tutorials, you must take both half-days to qualify for the student rate). You must email the Conference Department, [conference@usenix.org](mailto:conference@usenix.org), to confirm availability and make a reservation. In your email, please specify which tutorials you wish to attend. You will be given a code number to use when you register. The Conference Department 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 nontransferable.

#### Technical Sessions

Full-time students may attend technical sessions for only \$90 per day. Students who are *not* members of USENIX, add \$40 to your technical sessions fees. Students who are *not* members of SAGE, add \$25 to your technical sessions fees. You must fax a copy of your current student I.D. card to the USENIX Conference Dept. when you register. This special fee is not transferable.

#### Student Stipends for Conference Attendance

A limited number of student stipends are available to pay for travel, accommodations, and registration fees to enable full-time students to attend the conference. To apply for a stipend, see [www.usenix.org/students/stipend.html](http://www.usenix.org/students/stipend.html). Sorry, faxes will not be accepted for student stipend applications.

# HOTEL & TRAVEL INFORMATION

## Town & Country Resort and Convention Center

500 Hotel Circle North, San Diego, CA 92108  
Telephone: (800) 77-ATLAS / (619) 291-7131

USENIX has negotiated special rates for conference attendees at the Town & Country Resort and Convention Center. Please make your reservation as soon as possible by contacting the hotel directly. You must mention USENIX or LISA '05 to get the special group rate.

**HOTEL RESERVATION DISCOUNT DEADLINE: Friday, November 18, 2005**

### SPECIAL ATTENDEE ROOM RATES

Garden Rooms: \$119 single, \$134 double  
Regency Tower/Courtyard: \$130 single, \$145 double  
Royal Palm/Deluxe: \$140 single, \$155 double

### ONLINE RESERVATIONS

See <http://www.usenix.org/events/lisa05/hotel.html> for details about how to book online.

### WHY SHOULD YOU STAY IN THE HEADQUARTERS HOTEL?

By contracting rooms for our attendees, we significantly reduce hotel charges for meeting room rental. When those sleeping rooms are not occupied, we face significant financial penalties. Those penalties ultimately force us to raise registration fees.

With costs going higher and higher, we are working hard to negotiate the very best hotel rates for you and to keep other conference expenses down, in order to keep registration fees as low as possible. We appreciate your help in this endeavor.

### TRANSPORTATION

Hotel parking is \$2/day for hotel guests and \$14/day for non-hotel guests. The Town & Country Resort and Convention Center is approximately 10 minutes from the San Diego International Airport, Lindbergh Field. Airport transportation options include taxi (approximately \$20 one way) and XPRESS Shuttle (\$9.50 one way). After claiming your luggage, call XPRESS at 800-900-7433 or use the Transportation Courtesy Phones outside the baggage claim area and dial #50. You will then be directed to an XPRESS van.

The San Diego Trolley is adjacent to the Town & Country. The Trolley is a fun way to get around, whether traveling to the International Border or heading to Centre City's shopping, restaurants, harbor, and historic attractions.



### ABOUT SAN DIEGO

USENIX and SAGE are pleased to bring LISA back to San Diego and the Town & Country Resort and Convention Center. San Diego offers beautiful weather, a wide array of restaurants to suit every taste and budget, and miles of stunning beaches. There are many attractions that will be of interest to LISA attendees. Here are just a few:

- The world-famous San Diego Zoo and Wild Animal Park, featuring thousands of species of rare and endangered animals in one of the world's most renowned facilities
- SeaWorld San Diego, a 150-acre park featuring marine habitats, aquariums, and Shamu the killer whale
- The Reuben H. Fleet Science Center, featuring planetarium shows and more than 100 interactive science exhibits
- The Birch Aquarium at Scripps, where you can explore coral reefs, see sharks feed, and dip into tidepools
- LEGOLAND California, an interactive theme park for LEGO enthusiasts of all ages

More information is available from the San Diego Convention and Visitors Bureau, <http://www.sandiego.org>, as well as the Town and Country, <http://www.towncountry.com>.

# SAN DIEGO

# REGISTRATION INFORMATION & FEES

## Registration Information

Register or make a reservation on the Web today at <http://www.usenix.org/lisa05/registration>.

Pay today with a credit card, or make a reservation online and then pay by check, phone, or fax. Have the best of both worlds: the convenience of online registration without the hassle of hand-written forms, and the ability to pay as you want, when you want!

**EARLY BIRD REGISTRATION DEADLINE: Friday, November 18, 2005**

### TRAINING PROGRAM FEES INCLUDE:

- Admission to the tutorials you select
- Lunch on the day of your tutorials
- Training program CD-ROM, including all available tutorial presentations and materials
- Printed tutorial materials for your courses
- Admission to the Vendor Exhibition
- Admission to the receptions
- Admission to the evening activities on the days for which you're registered
- Conference t-shirt
- Wireless connectivity in conference session area
- One-year subscription to *Sys Admin* (a \$39 value)\*

### TECHNICAL SESSIONS FEES INCLUDE:

- Admission to all technical sessions on the days of your choice
- Copy of the Conference Proceedings (in print or on CD-ROM)
- Admission to the Vendor Exhibition
- Admission to the receptions
- Admission to the evening activities on the days for which you're registered
- Conference t-shirt
- Wireless connectivity in conference session area
- One-year subscription to *Sys Admin* (a \$39 value)\*

\* Offer open only to U.S. residents. This is not an additional expense, and subtraction from conference prices listed is not permissible.

### MULTIPLE EMPLOYEE DISCOUNT

We offer discounts for organizations sending 5 or more employees to LISA '05. Please email [lisa05\\_reg@usenix.org](mailto:lisa05_reg@usenix.org) for more details.

The group discount cannot be used in conjunction with any other discounts, and it cannot be applied retroactively—that is, refunds will not be issued to those meeting the discount requirement after they have already registered.

### REFUND/CANCELLATION DATE: Monday, November 28, 2005

All refund requests must be emailed to [lisa05\\_reg@usenix.org](mailto:lisa05_reg@usenix.org) by Monday, November 28, 2005. You may substitute another in your place.

**QUESTIONS?** Email [lisa05\\_reg@usenix.org](mailto:lisa05_reg@usenix.org)

## Registration Fees

### DAILY RATES

- 1 day of technical sessions: \$250
- 1 day of training: \$625
- 1 half-day of training: \$325 (second half-day only \$300)
- Optional Continuing Education Units (CEUs): \$15 per training day

### SAVE! Choose One of Our Special Discount Packages

A. 3 Days of Technical Sessions	\$650	<i>Save \$100!</i>
B. 2 Days of Training	\$1200	<i>Save \$50!</i>
C. 3 Days of Training	\$1775	<i>Save \$100!</i>
D. 4 Days of Training	\$2300	<i>Save \$200!</i>
E. 5 Days of Training	\$2825	<i>Save \$300!</i>
F. 6 Days of Training	\$3150	<i>Save \$600!</i>
G. Wednesday/Thursday Half-and-Half Tech and Training*	\$875	

*For maximum savings, combine Package A with Package B or C.*

\* Attend any combination of two half-days of training and two half-days of technical sessions on Wednesday and Thursday. Package G is not an option for students.

If you are **not** a member of **USENIX**, **EurOpen.SE**, or **NUUG**, add \$115 to your technical sessions fees.

If you are **not** a member of **SAGE** or **SAGE-AU**, add \$40 to your technical sessions fees.

### LATE FEES

- After November 18, members and nonmembers (not students), add \$150 to your training program fees.
- After November 18, members and nonmembers (not students), add \$150 to your technical sessions fees.

### WORKSHOP FEES

**\$100 per day, payable on-site only.** See p. 24 for details.

### FULL-TIME STUDENTS

A limited number of tutorial seats are reserved for full-time students at the very special rate of \$200 per day. Students must reserve their tutorial seats before registering; see p. 27 for more information.

Full-time students may attend technical sessions for only \$90 per day. Students who are not members of USENIX, add \$40 to your technical sessions fees. Students who are not members of SAGE, add \$25 to your technical sessions fees.

**PLEASE READ:** This is **not** a registration form. Please use our online form to register or make a reservation. If you choose to make a reservation and pay later by check or credit card, you will receive a printable summary of your session selections, the cost breakdown, and the total amount due. Please submit a copy of this summary along with your payment or have it with you when you call. Tutorial bookings cannot be confirmed until payment has been received. Purchase orders, vouchers, and telephone reservations cannot be accepted.

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