

NOVEMBER 3-8, 2013 • WASHINGTON, D.C.

Lucky LISA '13

27th Large Installation System Administration Conference



Keynote Address: “Modern Infrastructure: The Convergence of Network, Compute, and Data” by Jason Hoffman, *CTO, Joyent*

Join us for 6 days of practical training on topics including:

- ▶ **SRE University: Non-Abstract Large System Design for Sysadmins** by John Looney, *Google*
- ▶ **Root Cause Analysis** by Stuart Kendrick, *Fred Hutchinson Cancer Research Center*
- ▶ **PowerShell Fundamentals** by Steven Murawski, *Stack Exchange*
- ▶ **Introduction to Chef** by Nathen Harvey, *Opscode*

The 3-day Technical Program includes:

- ▶ Plenaries by Hilary Mason, *bitly*, and Todd Underwood, *Google*
- ▶ Invited Talks by industry leaders such as Ariel Tseitlin, *Netflix*; Jeff Darcy, *Red Hat*; Theo Schlossnagle, *Circonus*; Matt Provost, *Weta Digital*; and Jennifer Davis, *Yahoo!*
- ▶ Paper presentations, workshops, vendor exhibition, posters, Guru Is In sessions, BoFs, and more!

New for 2013: The LISA Lab Hack Space!

Register by October 15 and save. Additional discounts are available!

www.usenix.org/lisa2013

Sponsored by  **usenix** ASSOCIATION in cooperation with LOPSA

Top Five Reasons to attend LISA '13

- 1 FACE TIME WITH INDUSTRY LEADERS**
Network with peers and luminaries in the “Hallway Track” and evening activities.
- 2 TOP-NOTCH TRAINING**
Highly respected experts uncover new information and skills you can take back to work tomorrow.
- 3 INVITED TALKS**
Key members of the community discuss timely and important topics.
- 4 YOU'LL HEAR IT HERE FIRST**
Check out the latest research in the paper presentations, workshops, poster session, and Vendor Exhibition.
- 5 GET ANSWERS**
Bring your questions to the experts in the Guru Is In sessions and Practice and Experience Reports and unravel your greatest technical mysteries.

Can't make it to LISA '13?

- Participate remotely by purchasing the live stream! Get the details at www.usenix.org/lisa13/streaming
- Purchase the video box set, containing mp4 files from the technical sessions. Learn more at www.usenix.org/lisa13/boxset

Attention Managers:

Why you should send your employees to LISA '13

Help your employees become more effective! Geared towards system and network administrators at all career levels, LISA '13 will give them the knowledge to keep your organization current and secure, as well as limit downtime.

The training program at LISA '13 offers a cost-effective, one-stop shop for training new and established IT and development employees. With 40 full- and half-day tutorials, LISA '13 provides an unparalleled opportunity to gain access to, and learn from, the most respected leaders and researchers in the field.

Tutorials cover a multitude of topics, including cloud computing, devops, data management and storage, and Linux security and administration.

Combining full days of training with days of technical sessions on the latest research, Practice and Experience Reports, and informative Invited Talks provides attendees with introductions to the newest tools to keep your company running efficiently. Additionally, the poster session, Thursday evening reception, and Birds-of-a-Feather sessions provide your staff with a chance to network and collaborate with peers and industry leaders to gain that all-important “insider” IT knowledge. Keeping up with technology can be costly and time-consuming in this challenging economy: take full advantage of this opportunity to have your staff learn from the top researchers, practitioners, and authors.



Bowl Over Your Manager with the Skills You Learn at LISA '13!

The 27th Large Installation System Administration Conference will bring together practitioners and researchers to present the most innovative strategies, tools, and techniques in network and system administration.

LISA '13 opens with in-person **training** from the industry's top instructors, such as John Looney, Thomas A. Limoncelli, and Theodore Ts'o. Sessions on building good habits, increasing effectiveness in the first 100 days with a new company, and learning how to navigate the business world will instill (or refresh) useful soft skills training that will stay with you for the duration of your career. A full day of PowerShell training—from learning the fundamentals to building a toolkit—will be taught by Microsoft MVP Steven Murawski. Focused sessions on Jenkins, Chef, and Puppet will give you a firm grounding in DevOps best practices.

Take anywhere from one to six days of training and create the curriculum that meets your needs.

The **technical program** offers practical information on a variety of key topics, including Jason Hoffman's Keynote Address, "Modern Infrastructure: The Convergence of Network, Compute, and Data;" Hilary Mason's Plenary, "Data Engineering for Complex Systems;" and the Closing Session, "PostOps: A Non-Surgical Tale of Software, Fragility, and Reliability," by Todd Underwood.

The latest real-world implementation experiences and **research** are showcased in the **Practice and Experience Reports** and paper presentations, covering topics such as storage and data, monitoring, tools, and building and infrastructure. The **Guru Is In sessions**, led by experts such as Daniel J Walsh on SELinux, Adele Shakal on project management, and Charles Wimmer on Hadoop, allow you to pose your toughest questions and get answers, while **workshops** provide in-depth technical discussions in small groups.

The **Vendor Exhibition** provides insight into new products and services.

Finally, the **"Hallway Track"** offers ample opportunity to meet and mingle with colleagues and industry leaders during breaks, BoFs, and other social activities, while the **LISA Lab Hack Space** allows attendees to investigate new technologies, apply what they have learned, and interact with other attendees in a participatory technical setting.

LISA '13 continues to be the meeting place of choice for system, network, database, and other computer administrators and engineers from all over the globe. Don't miss the chance to be a part of this unique career-building journey.

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Training Program

SUNDAY, NOVEMBER 3

Full Day: 9:00 a.m.-5:00 p.m.

- S1 Securing Linux Servers (*Farrow*)
- S2 **NEW!** SRE University: Non-Abstract Large System Design for Sysadmins (*Looney*)

Half Day Morning: 9:00 a.m.-12:30 p.m.

- S3 **UPDATED!** PowerShell Fundamentals (*Murawski*)
- S4 **NEW!** The Raspberry Pi: More Than a Toy? (*Frisch*)
- S5 **NEW!** DNSSEC: DNS Security Extensions (*Huque*)
- S6 Nagios: Advanced Topics (*Sellens*)

Half Day Afternoon: 1:30 p.m.-5:00 p.m.

- S7 **NEW!** Building Your PowerShell Toolkit (*Murawski*)
- S8 **NEW!** File Systems: Top to Bottom and Back (*Frisch*)
- S9 **NEW!** A New Model: Advancing Organizational Security Through Peacebuilding (*Chubirka and Weston*)
- S10 **NEW!** Build a Sysadmin Sandbox (*Blank-Edelman*)

MONDAY, NOVEMBER 4

Full Day: 9:00 a.m.-5:00 p.m.

- M1 **UPDATED!** Using and Migrating to IPv6 (*Huque*)
- M2 **NEW!** Hands-on Security for System Administrators (*Matheson*)

Half Day Morning: 9:00 a.m.-12:30 p.m.

- M3 Core Skills: Scripting for Automation (*Ciavarella*)
- M4 Building a Big IaaS Cloud: Building a Massively Scalable, Geographically Disparate, IaaS Cloud Using Apache CloudStack (*Nalley*)
- M5 **UPDATED!** How to Interview a System Administrator (*Moskowitz*)

- M6 **NEW!** Navigating the Business World for Sysadmins: The Trusted Adviser (*Forsgren Velasquez and Rowland*)

Half Day Afternoon: 1:30 p.m.-5:00 p.m.

- M7 Advanced Shell Programming (*Ciavarella*)
- M8 Networking in the Cloud Age (*Nalley and Vittal*)
- M9 **NEW!** Getting to Senior: Sysadmin Level IV and Beyond (*Moskowitz*)
- M10 **NEW!** Navigating the Business World for Sysadmins: Methods (*Forsgren Velasquez and Rowland*)

TUESDAY, NOVEMBER 5

Full Day: 9:00 a.m.-5:00 p.m.

- T1 **UPDATED!** Ganeti: Your Private Virtualization Cloud "the Way Google Does It" (*Trotter and Velroyen*)

Half Day Morning: 9:00 a.m.-12:30 p.m.

- T2 The First Hundred Days (*Halprin*)
- T3 Next-Generation Storage Networking: Beyond Conventional SAN and NAS (*Farmer*)
- T4 Recovering from Linux Hard Drive Disasters (*Ts'o*)
- T5 Advanced Time Management: Team Efficiency (*Limoncelli*)
- T6 **NEW!** Continuous Integration with Jenkins (*Jensen*)

Half Day Afternoon: 1:30 p.m.-5:00 p.m.

- T7 **NEW!** Disaster Recovery Plans: Design, Implementation and Maintenance Using the ITIL Framework (*Schock*)
- T8 Backups, Archiving, and Life Cycle Management: Riding the Wave of Data Proliferation (*Farmer*)
- T9 Documentation Techniques for Sysadmins (*Ciavarella*)
- T10 **NEW!** Evil Genius 101 (*Limoncelli*)
- T11 High-Availability Linux Clustering (*Jensen*)

WEDNESDAY, NOVEMBER 6

Full Day: 9:00 a.m.–5:00 p.m.

- W1** Linux Performance Tuning (*Ts'o*)
- W2** **UPDATED!** Root Cause Analysis—Beginner (*Kendrick*)
- W3** **NEW!** Introduction to Chef (*Harvey*)

THURSDAY, NOVEMBER 7

Full Day: 9:00 a.m.–5:00 p.m.

- R1** The Python Programming Language (*Beazley*)
- R2** **UPDATED!** Root Cause Analysis—Intermediate (*Kendrick*)
- R3** Seven Habits of the Highly Effective System Administrator: Hints, Tricks, Techniques, and Tools of the Trade (*Damon and Ciavarella*)

FRIDAY, NOVEMBER 8

Full Day: 9:00 a.m.–5:00 p.m.

- F1** **NEW!** Introduction to Puppet Enterprise (*Smith*)
- F2** **NEW!** Hands-on Introduction to Common Hacking Tools (*Rhoades and Pinkham*)
- F3** **NEW!** Combined MGMT-101/ MGMT-201: Effective Communication and Team Leadership for Sysadmins (*Halprin*)

TRAINING PROGRAM REGISTRATION INCLUDES:

- Admission to the tutorials you select
- Lunch on the days of your tutorials
- Training program materials and Conference Proceedings loaded on an 8GB USB drive
- Admission to the Vendor Exhibition
- Admission to the Conference Reception
- Admission to the evening activities on the days for which you're registered
- Conference t-shirt
- Wireless connectivity in the conference session area

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 immediately change you to any other available tutorial.

WANT MORE INFO?

Please see www.usenix.org/lisa2013 for comprehensive tutorial descriptions, including full topics lists, prerequisites, and laptop/system requirements.



Training Program

S1 Securing Linux Servers Rik Farrow, *Security Consultant*

Who should attend: ● Full Day

Linux system administrators and security managers familiar with Linux system administration, whether you manage a handful or clusters of Linux systems.

Take back to work:

Techniques for securing and maintaining Linux servers.

Topics include:

- Minimizing risk with appropriate restrictions
- Managing and tracking application vulnerabilities
- Sandboxing to prevent attacks
- Monitoring logfiles
- Updates and configuration management

S2 SRE University: Non-Abstract Large System Design for Sysadmins **NEW!** John Looney, *Google*

Who should attend: ● Full Day

System administrators, SREs, and DevOps who have some familiarity with distributed systems, server hardware, and systems programming, especially those who would like to work with, procure, or build large distributed systems.

Take back to work:

The ability to design large distributed systems, to evaluate design proposals, and to explain such designs to third parties.

Topics include:

- Design patterns for large distributed systems
- Monitoring large-scale systems
- Large-scale design workshop and presentations
- Non-abstract design; taking a design and producing a “bill of materials”
- Designing for failure; how to work around rack, networking, and datacenter failures

S3 PowerShell Fundamentals **UPDATED!** Steven Murawski, *Stack Exchange*

Who should attend: ● Half Day AM

System administrators and anyone else who wants to be more productive on the Microsoft Windows platform.

Take back to work:

Usable commands and patterns to make attendees more effective in working with the Windows platform, along with familiarity with the discovery patterns in PowerShell, so that they can continue to develop their skills.

Topics include:

- Introduction to PowerShell
- Finding the commands you need
- What’s in the help files
- Discovering hidden gems in command output
- Working from the shell
- Navigating the file system, registry, and more
- Working with objects (everything in PowerShell is an object)
- Working with servers and workstations
- Discovering WMI/CIM
- Working with text
- Dealing with remote machines via WMI/CIM and PowerShell Remoting
- PowerShell Versions 2, 3, and the upcoming release of Version 4

S4 The Raspberry Pi: More Than a Toy? **NEW!** Eleen Frisch, *Exponential Consulting*

Who should attend: ● Half Day AM

Anyone curious about the Raspberry Pi and what can be done with it. Attendees are assumed to have little or no knowledge of the Pi. Current Pi aficionados will probably find the level of the course to be too introductory.

Take back to work:

An overview and understanding of the Raspberry Pi and what it can and cannot do,




as well as ideas for potential use within your organization.

Topics include:

- What is the Raspberry Pi
- Getting started: what to buy
- Uses:
 - Ultra-cheap computer for education
 - Ultra-mobile HPC
 - Device controller
 - Monitoring uses
 - Secretary or butler
 - Secondary servers

S5 DNSSEC: DNS Security Extensions *NEW!*
Shumon Huque, University of Pennsylvania

Who should attend:

 Half Day AM

System administrators and engineers who are tasked with providing DNS services, as well as anyone interested in knowing more about how DNS and DNSSEC works.

Take back to work:


A detailed understanding of DNSSEC with the basic knowledge to configure and deploy it.

Topics include:

- DNS protocol basics
- DNSSEC extensions and how they work
- Configuring, deploying, and troubleshooting DNSSEC
- Application uses of DNSSEC

S6 Nagios: Advanced Topics
John Sellens, SYONEX

Who should attend:

 Half Day AM

Network and system administrators ready to implement or extend their use of the Nagios system and network monitoring tool.

Take back to work:

The information you need to immediately implement and use the advanced features of Nagios and related tools for monitoring systems and devices on your networks.

Topics include:

- Theory of operation
- Configuration for more complex environments
- Plug-ins: Their creation, use, and abuse
- Extensions: NRPE, NSCA, NDOutils
- Add-ons: Graphing, integration with other tools
- Abuse: Unexpected uses and abuses of Nagios

S7 Building Your PowerShell Toolkit
NEW!
Steven Murawski, Stack Exchange

Who should attend:

 Half Day PM

System administrators or anyone with basic PowerShell experience who needs to take it to the next level and create reusable, production-ready commands.

Take back to work:

A pattern for taking your basic scripts and functions and turning them into professional, pipeline-ready, production-oriented commands; the ability to assemble modules, which are the method for organizing and distributing PowerShell commands.

Topics include:

- Using basic commands
- Developing scripts and functions
- Packaging scripts and functions as a solution that is reusable, redistributable, and usable with the maximum variety of input data
- Error handling
- Creating help files
- Working with the pipeline (for receiving input and processing data)
- A variety of tips and tricks to make your functions robust and practical
- The ins and outs of packaging your commands as modules, creating module manifests, and things to consider with module development

S8 File Systems: Top to Bottom and Back **NEW!** Eleen Frisch, *Exponential Consulting*

Who should attend:  Half Day PM

System administrators who wish to understand the structure and performance of modern file systems, from an in-use point of view. This is not a course for kernel hackers, though; people wanting an in-depth look at the VFS code will not have their needs met.

Take back to work:

An understanding of the benefits of and differences between the three file systems under a variety of realistic scenarios.

Topics include:

- Virtual file system (VFS) overview
- Ext4 structure and goals
- Btrfs structure and goals
- ZFS structure and goals
- Performance results

S9 A New Model: Advancing Organizational Security Through Peacebuilding **NEW!** Michele Chubirka aka "Mrs. Y," *Packetpushers*; Joe Weston, *Consultant and founder of Respectful Confrontation method*

Who should attend:  Half Day PM

Sysadmins and security professionals who need tools to improve user security compliance in their organizations.

Take back to work:

Critical mind hacks for improving your professional lives as well as your relationships with others, achieved through "hacking the human," not by software or hardware.

Topics include:

- The affective neuroscience behind risky behavior
- Collaborative communication methods and conflict resolution skills to crowdsource the goal of organizational security

S10 Build a Sysadmin Sandbox **NEW!** David N. Blank-Edelman, *Northeastern University College of Computer and Information Science*

Who should attend:  Half Day PM

Sysadmins who want to test technologies safely and efficiently.

Take back to work:

The ability to build your own sysadmin sandboxes.

Topics include:

- Using software and services like git, Vagrant, and Amazon EC2 to make sandbox construction easy and free/inexpensive
- When a sandbox approach is and is not appropriate
- Migrating your work in and out of sandboxes
- How to share the work you've done in a sandbox with others





M1 Using and Migrating to IPv6
Shumon Huque, *University of Pennsylvania* **UPDATED!**

Who should attend: ● Full Day

System administrators, network administrators, and application developers who need to prepare for migration to IPv6, and anyone who wants a general introduction to IPv6 and what is involved in deploying it.

Take back to work:

An understanding of IPv6, with the basic knowledge to begin designing and deploying IPv6 networks, systems, and applications.

Topics include:

- The current IP address landscape and the motivation for IPv6
- IPv6 addresses and protocol details
- DHCPv6
- DNS
- Tunneling
- Configuring hosts and application services
- IPv6-related security topics

M2 Hands-on Security for System Administrators **NEW!**
Branson Matheson, *NASA*

Who should attend: ● Full Day

Beginning to mid-level system administrators of any stripe with an interest in IT security and a desire to improve their security. It is suggested that participants have experience with the *nix command line.

Take back to work:

Documentation, tips, tricks, and tools tailored to your environment that can be implemented to improve security posture, processes, and operations in your organization.

Topics include:

- The relationship between system administration and IT security
- Security theories, standards and risk mitigation as applied by SA's

- Information management using trac and subversion
- Good system administration practices that directly improve IT security
- Basic configuration driven system management using Puppet
- Host and network auditing, hardening, and monitoring
- Developing an effective security awareness program

M3 Core Skills: Scripting for Automation
Mike Ciavarella, *Coffee Bean Software Pty Ltd*

Who should attend: ● Half Day AM

Junior and intermediate sysadmins who are new to scripting or would like to create scripts to reliably automate sysadmin tasks.

Take back to work:

An understanding of how to apply standard utilities in your scripts, along with recipes for automating typical administration tasks.

Topics include:

- Controlling programs and processes
- Script building blocks
- Searching
- Working with data
- Pipes and performance
- Tying them all together to write effective scripts
- When scripts might not be the best choice

DON'T FORGET YOUR LAPTOP

Training materials will be provided to you on an 8GB USB drive. If you'd like to access them during your class, please remember to bring a laptop. There will be print stations in the registration area, should you prefer to print your materials prior to your class.

M4 Building a Big IaaS Cloud: Building a Massively Scalable, Geographically Disparate, IaaS Cloud Using Apache CloudStack

David Nalley, *Apache CloudStack*

Who should attend:  Half Day AM

Intermediate to advanced sysadmins or enterprise architects wanting to deploy a production Infrastructure as a Service cloud. Experience with virtualization platforms and a deep understanding of L2/L3 networking are preferred but not required.

Take back to work:

What you need to deploy an IaaS cloud, based on Apache CloudStack, in an enterprise environment.

Topics include:

- Deploying Apache CloudStack
- Next-generation network topologies, including SDN
- Scaling storage without becoming indentured to SAN vendors
- Making CloudStack scale to tens of thousands of physical nodes
- Maintaining availability in a “failure is assured” environment

M5 How to Interview a System Administrator **UPDATED!**

Adam Moskowitz

Who should attend:  Half Day AM

System administrators of all levels of experience, as well as managers of system administrators.

Take back to work:

Increased confidence in your ability to weed out the posers and hire really great sysadmins.

Topics include:

- Purposes of an interview
- Basic questions to bear in mind
- Preparatory questions:
 - What are you really trying to learn about the candidate's skills, and why?

- How can you turn bad questions into good ones?
- When is it appropriate to ask a trick question, and why?
- What questions can't or shouldn't you ask?

M6 Navigating the Business World for Sysadmins: The Trusted Adviser **NEW!**

Nicole Forsgren Velasquez, *Utah State University*; Carolyn Rowland

Who should attend:  Half Day AM

Sysadmins who want to learn specific skills that allow them to work more effectively with senior management within the organization.

Take back to work:

The ability to identify the management team relevant to IT in your organization; to plan branding; to compose effective emails that get results; to improve communication within the IT group; to translate business goals into IT priorities; to plan and conduct effective and efficient meetings; to return to work and start building that trusted IT adviser relationship.

Topics include:

- Examining the divide between management and IT
- Defining “management” within your organization
- How to communicate effectively between management and IT operations
- Demonstrating the value of your work in a way that management will understand
- Ways to communicate the benefits of supporting a strong IT presence
- Knowledge and information management
- How to develop a collaborative relationship with your management that enables both sides to be successful



M7 Advanced Shell Programming Mike Ciavarella, *Coffee Bean Software Pty Ltd*

Who should attend:

🕒 Half Day PM

Intermediate system administrators or anyone with a solid knowledge of programming and with some experience in Bourne/Korn shells or their derivatives.

Take back to work:

An understanding of how to use the “lowly” shell to achieve lofty goals.

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

M8 Networking in the Cloud Age David Nalley, *Apache CloudStack*; Chiradeep Vittal, *Citrix Systems*

Who should attend:

🕒 Half Day PM

Advanced system or network admins with a deep understanding of L2/L3 networking who want to learn about new networking technologies that are enabling scaling networks.

Take back to work:

Knowledge of emerging networking standards and where they are best used.

Topics include:

- How massive public and private clouds build their networks to ensure scalability
- How software defined networks work
- Technologies worth looking at: VXLAN, NVGRE, GRE

M9 Getting to Senior: Sysadmin Level IV and Beyond **NEW!** Adam Moskowitz

Who should attend:

🕒 Half Day PM

Junior and mid-level sysadmins who want advice and direction on how to advance their careers.

Take back to work:

The skills you need to learn, why you need to learn them, and why many of those skills have more to do with business and management than system administration; ideas for how to go about learning what you need beyond this course.

Topics include:

- “Hard” skills
- “Soft” skills
- The Sysadmin Job Description Levels
- Standards
- Going beyond Sysadmin Level IV

M10 Navigating the Business World for Sysadmins: Methods **NEW!** Nicole Forsgren Velasquez, *Utah State University*; Carolyn Rowland

Who should attend:

🕒 Half Day PM

Sysadmins who want to learn specific skills that allow them to work more effectively with senior management within the organization.

Take back to work:

The skills that are associated with senior IT staff.

Topics include:

- Navigating the capital expenditure process
- Budgeting 101
- How to sell an IT concept to non-IT people (e.g., agile development, DevOps, cloud computing)
- Positioning IT as a valuable asset to the organization
- Untangling IT metrics
- Managing resources

Training Program

T1 Ganeti: Your Private Virtualization Cloud “the Way Google Does It” **UPDATED!** Guido Trotter and Helga Velroyen, Google

Who should attend:

● Full Day

System engineers interested in using virtualization and cloud technologies efficiently to consolidate systems and decouple physical hardware resources from virtual systems.

Take back to work:

The knowledge needed to create and maintain your own Ganeti cluster, to provide an IaaS cloud or virtualized services.

Topics include:

- Setting up and managing a Ganeti cluster
- Ganeti internals: how to make changes
- Monitoring your cluster and dealing with failure
- Ganeti as a back end
- Typical and atypical use cases

T2 The First Hundred Days Geoff Halprin, The SysAdmin Group

Who should attend:

🕒 Half Day AM

Anyone starting or contemplating a new position, including making an in-house move that enables you to start over; anyone with a new boss who wants to understand and help that boss; anyone about to apply for a senior position who wants to take control of the interview process.

Take back to work:

A set of tools and perspectives that will help you evaluate an environment, from company structure and pain points to IT systems and team skills, and help you engage a team in improvements to the department.

Topics include:

Part 1: A topical view

- Organizational awareness: The boss, the company
- The team: Assessing the team; first repairs
- Building the work pipeline; second repairs

- Systems and processes: Workflow management, change management, event management
 - Round 1: Cauterizing the wound
 - Round 2: Some early wins
 - Round 3: The Big Three
 - Systemic improvement programs
- Part 2: A temporal view
- The first day, week, month, and hundred days

T3 Next-Generation Storage Networking: Beyond Conventional SAN and NAS Jacob Farmer, Cambridge Computer Services

Who should attend:

🕒 Half Day AM

System administrators running day-to-day operations, enterprise architects, storage administrators.

Take back to work:

A better understanding of modern storage architectures, various approaches to scaling in both performance and capacity, and a framework for comparing and contrasting various types of storage solutions.

Topics include:

- The storage I/O path and the fundamentals of storage virtualization
- Application acceleration with solid state storage devices (SSDs)
- Automated tiered storage and information life cycle management (ILM)
- Deduplication of primary storage
- Object storage models and content-addressable storage
- Leveraging the cloud for primary storage



T4 Recovering from Linux Hard Drive Disasters

Theodore Ts'o, Google

Who should attend:

Half Day AM

Linux system administrators and users.

Take back to work:

How to recover from storage disasters caused by failures somewhere in the hardware or software stack.

Topics include:

- How data is stored on hard drives
- Recovering from a corrupted partition table
- Recovering from failed software RAID systems
- Low-level techniques to recover data from a corrupted ext2/3/4 filesystem when backups aren't available
- Using e2image to back up critical ext2/3/4 filesystem metadata
- Using e2fsck and debugfs to sift through a corrupted filesystem
- Preventive measures to avoid needing to use heroic measures

T5 Advanced Time Management: Team Efficiency

Thomas A. Limoncelli, Stack Exchange

Who should attend:

Half Day AM

All sysadmins who want to collaborate efficiently within their team and with others (even solo sysadmins will benefit!).

Take back to work:

Techniques to help your IT team work better, faster, and more transparently.

Topics include:

- Meetings and email
- Handling meetings that can't be fixed
- Stopping incoming email overload
- Making sure your email gets read
- How to get your co-workers to go along with your awesome ideas
- Working better together using collaborative documents

- Buy vs. build: How to get a team to agree
- Common sysadmin uses of collaborative documents
- Uncommon sysadmin uses of collaborative documents
- Communicating a new design before you build it
- Tracking loaner resources
- Doing surveys
- Assuring consistent results no matter who does the task
- Making sure everyone on the team can share the work
- Quick and easy way to document each service (and why you should)
- Quick and easy way to document procedures (so others can do them for you)
- Pager-duty tips for creating a feedback loop to assure constant improvement
- Template for a simple IT department home page

T6 Continuous Integration with Jenkins **NEW!**

Joshua Jensen, Cisco Systems

Who should attend:

Half Day AM

Junior and intermediate DevOps administrators in need of sanity when testing and deploying software.

Take back to work:

Real-world usage of Jenkins for better automation of testing and deployment with your team's software project.

Topics include:

- Continuous Integration concepts and best practices
- Jenkins introduction and configuration
- Jobs, job history, and build artifacts
- SCM integration and job triggering
- Jenkins cluster farming: multi-node management made easy
- Authentication considerations
- Jenkins plugins
- Distributed builds for heterogeneous architectures
- Build/test/deploy pipelines

T7 Disaster Recovery Plans: Design, Implementation and Maintenance Using the ITIL Framework **NEW!** Jeanne Schock, *Afilias*

Who should attend:

🕒 Half Day PM

System administrators and managers who are responsible for disaster planning and ensuring that the plan is ready when disaster strikes, whether you have a current strategy in place or are starting from scratch.

Take back to work:

A step-by-step framework for designing and implementing your DR strategy, and for making sure that your plan is ready when you need it.

Topics include:

- Service Continuity Management: introduction
 - What's a process
 - What are the benefits for DR
 - What you need to start and how it fits into actually implementing DR
- Lifecycle approach to IT Service Continuity Management
 - Initiation
 - Requirements and strategy
 - Implementation
 - Ongoing operation and maintenance
- Ensuring ongoing support as well as continual improvement
 - Embed an element of continual improvement
 - Process considerations
 - Service Continuity and related processes

T8 Backups, Archiving, and Life Cycle Management: Riding the Wave of Data Proliferation Jacob Farmer, *Cambridge Computer Services*

Who should attend:

🕒 Half Day PM

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

Take back to work:

Ideas for immediate, effective, inexpensive improvements to your backup systems and a vision for how you might deploy a lifecycle management system that fits your organization.

Topics include:

- Formulating strategies for data protection and lifecycle management
- Identifying and addressing backup system bottlenecks
- Managing fixed content
- Hierarchical storage management and data migration
- In-band versus out-of-band approaches to file lifecycle management
- Breathing new life into tape storage
- Deduplication: separating hype from reality
- Object-based storage models for backup and archiving
- Self-healing and self-protecting storage systems
- Leveraging the cloud for backup and archiving

T9 Documentation Techniques for Sysadmins Mike Ciavarella, *Coffee Bean Software Pty Ltd*

Who should attend:

🕒 Half Day PM

System administrators who need to produce documentation for the systems they manage.

Take back to work:

The ability to make immediate, practical use of these documentation techniques.

Topics include:

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



T10 Evil Genius 101 **NEW!** Thomas A. Limoncelli, *Stack Exchange*

Who should attend:  Half Day PM

Anyone who wants to improve processes and learn about managing change.

Take back to work:

The communication, analysis, and persuasion skills you need to make your workplace better.

Topics include:

- Helping your coworkers understand and agree to your awesome ideas
- Convincing your manager about anything—really
- Turning the most stubborn user into your biggest fan
- Getting others to trust you so they are more easily convinced
- Deciding which projects to do when you have more projects than time
- Making decisions based on data and evidence
- Driving improvements based on a methodology and planning instead of guessing and luck

T11 High-Availability Linux Clustering Joshua Jensen, *Cisco Systems*

Who should attend:  Half Day PM

Linux administrators who are planning on implementing a multi-service fail-over cluster implementation in a production environment. Course attendees should be familiar with the basics of system administration in a Linux environment. At no point will the word “cloud” be used, although novice administrators and gurus alike should leave the tutorial having learned something.

Take back to work:

The knowledge and ability to create and administer highly available services and filesystems on a Linux cluster.

Topics include:

- Linux HA Cluster technology: Corosync, OpenAIS, rgmanager, Conga

- Data management with shared disk implementations: SAN, iSCSI, AoE, FCoE
- Node fencing with STONITH
- Network power switches and IPMI
- Clustered logical volume management
- GFS2 filesystems with Distributed Lock Manager (DLM)
- Service management with failover domains
- Virtual machines as a cluster service
- Cluster administration with luci
- Working with cluster-unaware services



CONTINUING EDUCATION UNITS

USENIX provides Continuing Education Units (CEUs) 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.

Training Program

W1 Linux Performance Tuning Theodore Ts'o, Google

Who should attend: ● Full Day

Intermediate and advanced Linux system administrators who want to understand their systems better and get the most out of them.

Take back to work:

The ability to hone your Linux systems for the specific tasks they need to perform.

Topics include:

- Strategies for performance tuning
- Characterizing your workload's requirements
- Finding bottlenecks
- Tools for measuring system performance
- Memory usage tuning
- Filesystem and storage tuning
- NFS performance tuning
- Network tuning
- Latency vs. throughput
- Capacity planning
- Profiling
- Memory cache and TLB tuning
- Application tuning strategies

W2 Root Cause Analysis—Beginner **UPDATED!**

Stuart Kendrick, Fred Hutchinson
Cancer Research Center

Who should attend: ● Full Day

System administrators and network engineers tasked with troubleshooting multi-disciplinary problems; problem managers and problem analysts wanting experience coordinating teams.

Take back to work:

Practice in employing a structured approach to analyzing problems that span multiple technology spaces.

Topics include:

Case studies:

- Remote Office Bumps: A remote office ties back to the campus via a 10MB circuit.

Intermittently, opening documents on the campus-based file-server is slow, printing is slow, Exchange appointments vanish...

- Many Applications Crash: Outlook crashes, Word documents fail to save, Windows Explorer hangs: The office automation applications servicing ~1500 users intermittently report a range of error messages; users reboot their machines. Some days are fine, other days are terrible, and the symptoms are worsening...

W3 Introduction to Chef **NEW!** Nathen Harvey, Opscode

Who should attend: ● Full Day

Sysadmins interested in using Chef to meet their configuration management needs.

Take back to work:

Hands-on experience configuring Chef and writing Chef cookbooks. The mixture of tutorial and hands-on teaching in this course gives attendees real exposure to Chef concepts, software, and configuration. The material in this course is intended to bootstrap the attendees' knowledge and provide them with the ability to immediately work with Chef outside of the course.

Topics include:

- Set up a local workstation with Chef and connect to a Chef server
- Write your first Chef cookbook
- Use Chef to automate installation of a Nagios server as a real world example
- Automate some common system tasks with Chef

BACK BY POPULAR DEMAND: GOLDEN PASSPORT

Do you want to take advantage of absolutely everything LISA has to offer? Then the popular Golden Passport registration is for you. Go to any session you like on any day—the possibilities are endless! Plus, get additional exclusive benefits to make your LISA experience the best yet.



R1 The Python Programming Language

Dave Beazley, Dabeaz LLC

Who should attend: ● Full Day

Programmers who want to know what the Python programming language is all about and how it can be applied to a variety of practical problems in data analysis, systems administration, systems programming, and networking.

Take back to work:

A better understanding of what makes Python tick and an increased awareness of how it can be successfully applied to real-world problems.

Topics include:

- The Python Language
- Major library modules
- Practical Programming Examples

R2 Root Cause Analysis—Intermediate **NEW!**

Stuart Kendrick, Fred Hutchinson Cancer Research Center

Who should attend: ● Full Day

Sysadmins and network engineers involved in trouble-shooting multidisciplinary problems; problem managers and problem analysts wanting experience coordinating teams.

Take back to work:

Practice in employing a structured approach to analyzing problems which span multiple technology spaces.

Topics include:

- Case studies:
 - HPC Cluster Woes: Intermittently, interactive performance on a high-performance computing cluster grinds to a halt, nodes hang, jobs vanish from the queue...
 - Storage Stumbles: Most of the company relies on an 800TB wide-striped storage system, with a multi-protocol (SMB, NFS, iSCSI) front-end from one

manufacturer plugged into a Fibre-Channel attached back-end from another manufacturer. Intermittently, the back-end fries a disk, IO latency spikes, clients crash...

R3 Seven Habits of the Highly Effective System Administrator: Hints, Tricks, Techniques, and Tools of the Trade

Lee Damon, University of Washington; Mike Ciavarella, Coffee Bean Software Pty Ltd

Who should attend: ● Full Day

Junior system administrators with anywhere from little to 3+ years of experience in computer system administration.

Take back to work:

Ideas about how to improve and to streamline your systems and your workload, and, just as important, where to look to find more answers.

Topics include:

- The five things every site should know
- 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 file system on every computer is not always a good idea
- Policies—where you want them and where you might want to avoid them
- Ethical issues
- Growth and success as a solo-sysadmin as well as in small, medium, and large teams
- Training, mentoring, and personal growth planning
- Site planning and roadmaps
- Logistics
- Books that can help you and your users

F1 Introduction to Puppet Enterprise Zack Smith, *Puppet Labs* **NEW!**

Who should attend: ● Full Day

System administrators, IT managers, and others who are new to Puppet Enterprise and need a better understanding of the concepts of Puppet combined with hands-on experience with basic Puppet coding and implementation.

Take back to work:

The ability to discuss the benefits of Puppet Enterprise and to practice basic system administrator competencies in using the IT automation software to manage their infrastructure effectively.

Topics include:

- About Puppet technology
- Why Puppet?
- Modules and classes
- Puppet Agent and Puppet Master
- Additional Puppet concepts
- Puppet Forge
- Puppet Enterprise
- Puppet Labs technical curriculum and certification

F2 Hands-on Introduction to Common Hacking Tools **NEW!** David Rhoades and Steve Pinkham, *Maven Security Consulting Inc.*

Who should attend: ● Full Day

Auditors who want to understand better the methodologies, tools, and techniques used by attackers against their network and who need help developing better policy.

Take back to work:

The ability to perform basic assessment tasks and a strong foundation for future studies in host and network security assessment.

Topics include:

- Current and emerging attacker methods, techniques, concepts, and tools

- Setting up and using Kali Linux, a collection of security tools
- Tools for network mapping and analysis
- Configuring and using the OpenVAS vulnerability scanner to audit network and host security
- Setting up and using Metasploit exploit framework to exploit found flaws
- Understanding password cracking
- An overview of building client-side exploits and basic anti-virus evasion techniques
- The common Web flaws of SQL injection and Cross Site Scripting (XSS)
- References to remediate or implement compensating controls

F3 MGMT-101/MGMT-201: Effective Communication and Team Leadership for Sysadmins **NEW!** Geoff Halprin, *The SysAdmin Group*

Who should attend: ● Full Day

System administrators who wish to learn tools and tips that will assist them to communicate more effectively with their managers, users, and other important constituents; system administrators who have found themselves (or are hoping, or anticipating with apprehension) being given responsibilities for other people.

Take back to work:

A bag full of tools to help you be more effective in your people-facing activities.

Topics include:

- Oral communication
- Written communication (progress reporting, technical documentation, writing proposals, buy-vs.-build evaluations, cost-risk evaluations, audit reports)
- Understanding others (understanding various communities, conflict resolution, personality types)
- Time management
- Risk management
- Project management



Dave Beazley
R1

David Beazley is the author of the *Python Essential Reference* and has been an active member of the Python community since 1996. He is most widely known for creating several Python-related open-source packages, including SWIG and PLY. In the 1990s, while working at Los Alamos National Laboratory, he helped pioneer the use of Python on massively parallel supercomputers. From 1998 to 2005, he was an assistant professor at the University of Chicago. Dave is currently the owner of Dabeaz LLC, a company specializing in Python software development and training courses.



David N. Blank-Edelman
S10

David is the Director of Technology at the Northeastern University College of Computer and Information Science and the author of the O'Reilly book *Automating System Administration with Perl*. He has spent the last 27+ years as a system/network administrator in large multi-platform environments. He was the program chair of the LISA '05 conference and one of the LISA '06 Invited Talks co-chairs. David is also the recipient of the 2009 SAGE Outstanding Achievement award and is honored to serve on the USENIX Board of Directors.



Michele Chubirka
a/k/a "Mrs. Y"
S9

Michele Chubirka, aka "Mrs. Y.," is a recovering UNIX engineer working in network security. She is also the host of the Healthy Paranoia podcast, the security feed of Packtpushers, and official nerd hunter. She likes long walks in hubsites, traveling to security conferences, and spending time in the Bat Cave. When not blogging or podcasting, she can be found using up her 15 minutes in the Twittersphere or Google+ as @MrsYisWhy.



Mike Ciavarella
M3, M7, T9, R3

Mike Ciavarella has been producing and editing technical documentation since he naively agreed to write application manuals for his first employer in the early 1980s. Since 1991, Mike has made a point of actively promoting documentation and security as fundamental aspects of system administration. He has been a technical editor for Macmillan Press, has lectured on software engineering at the University of Melbourne (his alma mater), and has provided expert testimony in a number of computer security cases.



Lee Damon
R3

Lee Damon has a B.S. in Speech Communication from Oregon State University. He has been a UNIX system administrator since 1985 and has been active in LISA (formerly SAGE) (US) & LOPSA since their inception. He is currently leading the development effort for the Nikola project at the University of Washington. He is a charter member of LOPSA and SAGE and past chair of the SAGE Ethics and Policies working groups. He chaired LISA '04 and CasITconf '11, '13, and '14.



Jacob Farmer
T3, T8

Jacob Farmer has authored numerous papers and is a regular speaker at major industry events. Jacob's non-nonsense, fast-paced presentation style has won him many accolades. Jacob is a regular lecturer at many of the nation's leading colleges and universities. Inside the data storage industry, Jacob is best known for having authored best practices for designing and optimizing enterprise backup systems and for his expertise in the marketplace for emerging storage networking technologies. Follow him on Twitter @JacobAFarmer.

Training Instructors



Rik Farrow
S1

Rik Farrow began working with UNIX system security in 1984. He taught his first security class in 1987. He

has been a consultant since 1980 and has advised both firewall and intrusion detection companies in the design of their products. Rik has published two books, one on UNIX security and the other on system administration. He wrote the "Network Defense" column for *Network Magazine* for over six years and is currently the editor of *login;*, the USENIX magazine.



Aileen Frisch
S4, S8

Aileen Frisch has been working as a system administrator for over 30 years. She currently looks after a patho-

logically heterogeneous network of UNIX and Windows systems. She is the author of several books, including *Essential System Administration* (now in its 3rd edition from O'Reilly). Aileen was the program committee chair for USENIX's 2003 Large Installation System Administration conference, and is a frequent presenter at both USENIX and LISA events, as well as presenting classes for universities and corporations worldwide.



Geoff Halprin
T2, F3

Geoff Halprin has spent over 30 years as a software developer, system administrator, consultant, and

troubleshooter. He is the author of the System Administration Body of Knowledge (SA-BOK) and the USENIX Short Topics in System Administration book *A System Administrator's Guide to Auditing*. He was the recipient of the 2002 SAGE-AU award for outstanding contribution to the system administration profession. Geoff has served on the boards of SAGE, SAGE-AU, USENIX, and LOPSA.



Nathen Harvey
W3

Nathen Harvey is a Technical Community Manager at Opscode, the company behind Chef. Nathen is the

co-organizer of DevOps DC and the Washington DC MongoDB Users' Group, and co-host of the Food Fight Show, a podcast about Chef and DevOps. Like many others who blog, Nathen updates his blog on a very irregular basis. When not working or hosting meetups, Nathen enjoys going to concerts, drinking craft beer, and over-sharing on sites like Twitter, untappd, and Foursquare.



Shumon Huque
S5, M1

Shumon Huque is the Director of Engineering, Research, and Development for the University of Pennsylvania's Net-

working and Telecommunications division and also serves as the Lead Engineer for the MAGPI GigaPoP. He is involved in network engineering, systems engineering, and the design and operation of key infrastructure services at Penn. In addition to his day job, Shumon teaches a lab course on advanced network protocols at Penn's Engineering School. He is the principal IPv6 architect at Penn and has been running production IPv6 networks and services for almost a decade.



Joshua Jensen
T6, T11

Joshua Jensen has been working with Linux for 15 years, and is a Senior Open Source Architect for Sirius Computer

Solutions. He has worked in the past as the Lead Linux IT Architect for Cisco Systems, and was Red Hat's first instructor, examiner, and RHCE. At Red Hat 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.



Stuart Kendrick W2, R2

Stuart Kendrick is an IT Architect at the Fred Hutchinson Cancer Research Center, specializing in troubleshooting, device monitoring, and transport. He started his career in 1984, writing in FORTRAN on Crays for Science Applications International Corporation; he worked in help desk, desktop support, system administration, and network support for Cornell University in Ithaca and later Manhattan. He has been in his multi-disciplinary role at FHCRC in Seattle since 1993, where he functions as ITIL problem manager/problem analyst and leads root cause analysis efforts.



Thomas A. Limoncelli T5, T10

Thomas A. Limoncelli is an internationally recognized author, speaker, and system administrator. His best-known books include *Time Management for System Administrators* (O'Reilly) and *The Practice of System and Network Administration* (Addison-Wesley). He received the SAGE 2005 Outstanding Achievement Award. He works at Stack Exchange in NYC.



John Looney S2

John Looney graduated from Computer Applications at Dublin City University. He set up the Irish Linux User Group to provide a community and free open source training sessions to over 400 Irish engineers. He ran LinuxWorld Dublin in 2000. While at Hosting365 he built Ireland's largest shared hosting infrastructure for 30,000 customers on a shoestring budget. Today, he's a Site Reliability Engineer responsible for Google's cluster infrastructure. He has built a graduate program to take junior engineers and retrain them to take the pager for Google. He is on the Computing Committee for Engineers Ireland.



Branson Matheson M2

Branson is a 25-year veteran of system administration and security. He started as a cryptologist for the US Navy and has since worked on NASA shuttle projects, TSA security and monitoring systems, and Internet search engines, while continuing to support open source projects. He founded sandSecurity to provide policy and technical audits, plus support and training for IT security, sysadmins, and developers. He currently is a systems architect for NASA; has his CEH, GSEC, and GCIAH credentials; and generally likes to spend time responding to the statement "I bet you can't."



Adam Moskowitz M5, M9

When he's not teaching LISA attendees how to conduct interviews or become a senior system administrator, Adam works as a software developer and senior system administrator, but only to support his hobby of judging barbecue contests and to keep food in his puppy's bowl.



Steven Murawski S3, S7

Steven is a sysadmin on the Site Reliability Engineering team for Stack Exchange (operators of great Q&A sites such as Server Fault and Stack Overflow) and a Microsoft MVP in PowerShell. Steven also leads two local user groups, the Greater Milwaukee IT Pro User Community and the Greater Milwaukee Script Club. He speaks regularly to local user groups and can be found at various conferences.

Training Instructors



David Nalley
M4, M8

David Nalley is a recovering systems administrator of 10 years. David is a member of the Apache Software Foundation, and a Project Management Committee Member for Apache CloudStack. David is a frequent author for development, sysadmin, and Linux magazines and speaks at numerous IT conferences.



Steve Pinkham
F2

Steve Pinkham is a security researcher for Maven Security Consulting Inc. He has spent time in systems administration, programming, security research, and consulting. He dabbles in electronics and philosophy, and enjoys cheese and fine tea. If you're unlucky you might run into him wearing a backpack in some remote corner of the world. He holds a B.S. in Computer Science from Virginia Commonwealth University.



David Rhoades
F2

David Rhoades is a senior consultant with Maven Security Consulting Inc., which provides information security assessments and training to a global clientele. His expertise includes Web application security, network security architectures, and vulnerability assessments. He has been active in information security consulting since 1996, when he began his career at Bell Communications Research. David has a B.S. degree in Computer Engineering from the Pennsylvania State University.



Carolyn Rowland
M6, M10

Carolyn Rowland began working with UNIX in 1986; her professional career as a UNIX system administrator took off in 1991. She currently leads a team of

sysadmins at the National Institute of Standards and Technology (NIST). She is also Secretary of the USENIX Board of Directors and the LISA '12 Program Chair. In 2012 she co-chaired the first-ever USENIX Women in Advanced Computing (WiAC) Summit. She continued as co-chair of WiAC in 2013.



Jeanne Schock
T7

Jeanne has a background in system administration, working with FreeBSD, Solaris, Linux, and Windows. She has worked at a number of companies in the Internet industry. In her current role of Service Delivery Manager at Afilias, she is owner and manager for key ITIL processes. She also manages projects geared toward site reliability and disaster recovery. She got her BA from Vassar College and did graduate work at the University of Toronto in Medieval European studies.



John Sellens
S6

John Sellens has been involved in system and network administration since 1986 and is the author of USENIX papers, *login*: articles, and the USENIX Short Topics book #7, *System and Network Administration for Higher Reliability*. He holds an M.Math. in computer science from the University of Waterloo. He is the proprietor of SYONEX and is a member of the systems team at Magna International. Previously he was the General Manager for Certainty Solutions, the Director of Network Engineering at UUNET Canada, and an IT staff member at the University of Waterloo.



Zack Smith
F1

Zack Smith has been working as a consultant for 10 years doing DevOps-style consulting on Linux and Mac OS X. Most recently he joined Puppet Labs in the



professional services department. He currently travels to on-site engagements with Puppet Enterprise clients, and teaches and assists in development of the Puppet certification classes such as Puppet Fundamentals and Puppet Advanced.



Guido Trotter T1

Guido Trotter, a Senior Systems Engineer at Google, has worked as a core Ganeti developer and designer since 2007. He is also a regular conference speaker, having presented at LISA, FOSDEM, Linuxcon, Debconf, and other open source and community gatherings. He mostly speaks about Ganeti, virtualization in the open source world, and Linux networking features for virtualized environments.



Theodore Ts'o T4, W1

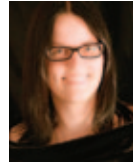
Theodore Ts'o has been a Linux kernel developer since almost the very beginnings of Linux: he implemented POSIX job control in the 0.10 Linux kernel. He is the maintainer and author of the Linux COM serial port driver and the Comtrol Rocketport driver, and he architected and implemented Linux's tty layer.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



Nicole Forsgren Velasquez M6, M10

Nicole is considered an expert in the work, tools, knowledge sharing, and communication of technical professionals and has served as co-chair of WiAC '12, WiAC '13, and CHIMIT '10, as well as on LISA program committees. Her background spans user experience, enterprise storage, cost allocation, and systems design and development. She holds a Ph.D. in Management Information

Systems from the University of Arizona. She is a member of USENIX, ACM, AIS, AAA, LOPSA, and CSST. She is now an Assistant Professor at Utah State University.



Helga Velroyen T1

Helga has been a Google Software Engineer since 2011 and a member of the Ganeti core team since 2012. Inside Ganeti she implemented better network support, enhancements of storage handling, and bug fixes. Previously she worked in biotech, bringing medical analysis robots to life. She is a member of the German Chaos Computer Club and has given talks at its conferences, including at 28c3 about hearing aid technology and at the OpenChaos Cologne about C#/.Net. At university her focus was on data-mining and pattern recognition.



Chiradeep Vittal M8

Chiradeep Vittal is Principal Architect in the Cloud Platforms Group at Citrix Systems. He is a maintainer in the Apache CloudStack project where he contributes to networking and storage parts of the Infrastructure-as-a-Service (IaaS) management system. He was a founding engineer at Cloud.com whose product CloudStack is now incubating at the Apache Software Foundation. CloudStack is deployed in more than 100 public and private clouds and powers some of the largest clouds in the world today.



Joe Weston S9

Joe Weston is a workshop facilitator, consultant, and author of the book *Mastering Respectful Confrontation*. He is also the founder of the Heartwalker Peace Project, which creates opportunities for connection, discussion, and creative collaboration.

Are you looking for in-depth technical discussions? If so, the LISA '13 workshops are the place for you.

Workshops are half-day or full-day sessions for senior sysadmins to share ideas and tactics in a technical area. Attendance is limited for each workshop, which ensures a seminar-like atmosphere. These sessions are facilitated by a moderator but the specific discussions are led by attendees. Workshops are intended to be participatory, not instructional, and familiarity with the specific topic/area is expected of the attendees.

SUNDAY, NOVEMBER 3

Workshop 1: Real-World Configuration Management Full Day

Chris St. Pierre, Amplify; Cory Lueninghoener, Los Alamos National Laboratory

This workshop will cover configuration management processes in real-world settings, focusing on practical tactics that attendees can apply directly. Attendees will discuss the issues they face in their deployments and will compare their experiences and tactics with each other.

The workshop will include discussions on current topics of interest and presentations by attendees of their configuration management environments, highlighting useful techniques and potential problem areas.

This workshop is a tool-agnostic discussion of practical issues. Attendees should be sysadmins with a deployed configuration management system in place who want to talk with and learn from others on the subject.


Workshop 2: Women in Advanced Computing (WiAC): Recognizing and Overcoming Bias—Ways to Make Your Workplace More Successful and Welcoming Half Day AM

Leslie Hawthorn, Red Hat; Sheeri Cabral, Mozilla

This workshop will explore the common biases that appear in the technology industry—and in our wider societal conversations. Participants will engage in activities that will leave them with concrete knowledge of how to handle everyday situations, such as ensuring that we are treating our colleagues and bosses fairly—and vice versa. How can we level up personally and professionally? Our discussion may range from societal

expectations of gender, race, and sexual orientation; through social class and education levels; to experience and family life differences. The workshop will include the basics of Negotiation Theory and 1:1 role-playing exercises.

Workshop 3: The Practical Gamemaster: Hands-On Design and Execution of IT Emergency Operations Drills

 Half Day PM

Adele Shakal, Director, Project & Knowledge Management, Metacloud, Inc.

Within a broad context of emergency response/operations, business continuity planning/resiliency, disaster recovery, and IT architecture, this workshop will provide participants with hands-on experience to design and execute IT emergency drills.

Participants will identify critical business functions and continuity/resiliency objectives for a fictional organization, and catalog IT services involved in supporting them. We will then design a fictional emergency operations center. Along the way, we will discuss methods of introducing such concepts to participants' real organizations.

Finally, participants will split into groups to accomplish a basic life-safety and IT emergency operations drill followed by an advanced IT emergency operations drill.

MONDAY, NOVEMBER 4

Workshop 4: Cloud Full Day

Lorin Hochstein, Nimbis Services; Scott Devoid, Argonne National Laboratory

Clouds have become a popular architecture for system design and resource consumption by applications. This workshop is intended for attendees who design and support private clouds, or support the use



of clouds for services in their organizations. The goal is to share experiences and best practices in this quickly changing space. We will have discussions on a range of topics, from open source cloud software stacks, through deployment strategies, to tools that help in the design and operation of cloud-hosted services. Anyone who cares about cloud technologies is welcome to attend.

Workshop 5: Security ● Full Day

Piotr T Zbiegiew and Alex Malin, Los Alamos National Laboratory

Join us for a discussion of the latest issues surrounding how systems management and security intersect in your organization and exchange those ideas with your peers. We will focus on topics determined by the organizers and the participants, such as:

- BYOD: How are user-owned devices affecting your organization's risk profile, security policies, support procedures, etc.?
- Cloud-based services: How have they been integrated into security and IT operations practices and procedures?
- Advanced Persistent Threat (APT): How do you detect and mitigate it? Has your organization been compromised by an APT? Would you know if an APT entity has a presence in your infrastructure?

Workshop 6: Government and Military Computer System Administration

● Half Day AM

Andrew Seely, Science Applications International Corporation

This workshop is for sysadmins who manage computing systems owned by government or military agencies, who work in secure environments, deal with classified data, provide GOTS support, or administer systems at remote locations in support of government and military requirements. Contractors, government civilians, vendors, suppliers, uniformed members, and anyone who has a direct hands-on IT support role in government and military sectors are welcome to attend. Discussions will include topics such as lessons learned from implementation of cloud technologies, data analytics in the government sector, and responding

to policy and regulation requirements for IT and information security. This workshop is a great opportunity for sysadmins to compare notes between diverse agencies like DoD, DoE, DoC, NASA, and local governments. All workshop discussions will be strictly unclassified.

Workshop 7: HPC Compute Cluster

● Half Day PM

Clay England, Oak Ridge National Laboratory

This workshop will provide a forum for HPC compute cluster admins, and those interested in this topic, to meet and discuss the challenges of administering this particular class of machine. Though this workshop will also be applicable to general *NIX admins, there are many specific topics related to management, customer usage, and special software (such as schedulers and resource managers) to warrant a half-day workshop for the benefit of this niche community. Potential topics include cluster setup, day-to-day management strategies, common problems and possible solutions, user issues, and topics of interest to the attendees.

TUESDAY, NOVEMBER 5

Workshop 8: Advanced Topics

● Full Day

Adam Moskowitz

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. A more complete description of the workshop and information about position papers is available at atw.menlo.com. Position papers should be sent to lisa13ws-atw@usenix.org. Attendees are required to bring a laptop computer.

Workshops

Workshop 9: Metrics ● Full Day

Brendan Gregg, Joyent; Narayan Desai, Argonne National Laboratory; Kent Skaar, VMware, Inc.

This workshop focuses on advanced topics in the area of metrics and related areas such as instrumentation, visualization, and analytics. The complexity and scale of computing infrastructure has reached a point where intuitive analytical processes and conventional wisdom breaks down. Failure and variability are becoming the rule in modern systems, not the exception. This complexity has an impact on our ability to analyze these systems, their stability, and our daily management of them. The use of guesswork can have dire consequences for stability and performance; metrics and what we do with them are at the heart of coping with this.

Workshop 10: Systems Workflow

● Full Day

Jennifer Davis, Yahoo! Senior Grid Service Engineer, SE Tech Leads

System, network, and security senior engineers manage intricate relationships ensuring that everything from simple tasks to complex projects get completed in a timely manner. We will talk about using agile processes to identify, visualize, and improve work. Topics covered could include current use within the group, agile adoption process, tools, metrics, and cross-team interactions. The outcome will be to establish a set of common problems, potential solutions, recommended tools, and best practices for establishing and visualizing a systems workflow that can be shared with the broader community.

While current use of agile methodologies is not required, basic knowledge of kanban and agile in systems is recommended.

Co-Located Events

Puppet Camp DC

Sponsored by Puppet Labs

Puppet Camp DC is a community-oriented, regional gathering of Puppet users and developers. You'll have the opportunity to talk to a diverse group of Puppet users, benefit from presentations delivered by prominent community members, and share experiences and discuss potential implementations of Puppet with your peers.

**Tuesday, November 5,
9:00 a.m.-5:00 p.m.**

Data Storage Day

Sponsored by Cambridge Computer

Data Storage Day is a one-day event which explains the latest trends and developments in the storage industry in the language spoken by hands-on IT professionals.

**Wednesday, November 6,
9:00 a.m.-5:00 p.m.**

Build a Cloud Day

Sponsored by Citrix

Build a Cloud Day will teach users how to build and manage a cloud computing environment using free and open source software. The program will expose attendees to the concepts and best practices around deploying cloud computing infrastructure. Attendees should expect to learn how to deploy a cloud computing environment using CloudStack and other cloud infrastructure tools including those from Xen, Apache CloudStack, Ceph, Puppet Labs and Zenoss that automate server and network configuration for building highly available cloud computing environments.

**Friday, November 8,
9:00 a.m.-5:00 p.m.**





LISA Lab Hack Space

Sponsored by Google and Microsoft Research

New for 2013! LISA '13 will offer a “hack space,” available for informal mini-presentations by seasoned professionals, participation in live experiments, tutoring, and mentoring. Attendees can investigate and test new technologies, and interact with other attendees in a participatory technical setting.

The LISA Lab Hack Space will feature:

- Extension of “hallway track” conversations into real demos
- Informal continuations of invited talks and refereed paper presentations
- Work-in-progress demos
- Mentoring by on-site lab guru
- Technology demos



New for
2013

Interested in sponsoring or donating equipment?

Please contact sponsorship@usenix.org

Attend the 2013 USENIX Summit for Educators in System Administration (SESA '13)

Tuesday, November 5, 2013

Co-located with LISA '13, the summit will bring together university educators to share best practices and support the creation and advancement of high-quality system administration degree programs and curricula. We will discuss topics important to educators who teach system administration-related courses at universities and colleges, develop courses, and build curricula. We hope to engage all attendees to share

ideas and best practices and together create a community of sysadmin educators. System administrators who have taught courses at their university or college are also invited to join and share their experiences.

For more information, see www.usenix.org/sesa13



Technical Sessions

The three-day technical program at LISA '13 offers in-depth information that both uncovers practical skills you can take back to work and provides a peek at what is coming next. From the informative Keynote Address, Invited Talks, and Paper Presentations, through Plenaries, Practice and Experience Reports, and expert-led Guru Is In sessions, to that all-important "Hallway Track," the LISA '13 technical program gives you the know-how to face your day with greater skills and information.

WEDNESDAY: Keynote Address

8: 45 A.M.–10:30 A.M.

Modern Infrastructure: The Convergence of Network, Compute, and Data

Jason Hoffman, *CTO, Joyent*

The three pillars of our industry are network, compute, and data. All trends come down to the convergence of these. The convergence of network and compute resulted in the "the network is the computer;" the convergence of network and data spawned the entire networked storage industry and now we believe we're in the technology push where we are converging compute and data. At Joyent, we were able to take a fresh look at the idea of building a datacenter as if it were a single appliance, we took a storage-centric and "software defined everything but always offload to hardware when you can" approach, and we're intending to do everything in the open. In this talk, we'll cover the philosophical basis, the overall architecture, and the deep details of a holistic datacenter implementation.

WEDNESDAY: Invited Talks

11:00 A.M.–12:30 P.M.

INVITED TALKS 1

Sysadmins Unleashed! Building Autonomous Systems Teams at Walt Disney Animation Studios

Jonathan Geibel and Ronald Johnson, *Walt Disney Animation Studios*

How do you instill the agility and effectiveness of a startup company within the walls of one of the most storied animation studios in the world? This question guided our design of a new systems organization at Walt Disney Animation Studios. Our goals were simple: break down traditional top-down management silos, empower staff to make autonomous decisions, and remove bureaucracy. We used scientific method experimentation with different structures and ideas, discussing the impact of each change with our staff along the way. We'll discuss the methods we used to empower Sysadmins, and how we've evolved into an organization that's designed for and by technical staff.

Becoming a Gamemaster: Designing IT Emergency Operations and Drills

Adele Shakal, *Director, Project & Knowledge Management, Metacloud, Inc.;* Formerly *Technical Project Manager at USC ITS, ITS Great Shakeout 2011, IT Emergency Operations, and Drill Designer*

Bring emergency response and operations, business continuity, disaster recovery, and IT architecture together into practical drill design... and prepare your organization for whatever zombie apocalypse it may face. Learn key concepts in emergency operations center and incident headquarters design, methods of introducing such concepts to your organization, and a sequence of basic-to-advanced drill designs. Keeping IT folks engaged in a drill simulation can be very challenging. Become a gamemaster worthy of designing and executing drills on likely emergency scenarios and realistic function failures for your organization. Hard-hats and D10s not included.

INVITED TALKS 2

A Working Theory-of-Monitoring

Caskey L. Dickson, *Site Reliability Engineer, Google Inc.*

At Google we have discovered many common pitfalls and false simplifications that cause frustration and blind-spots with monitoring systems. To move beyond the hit-and-miss approach to monitoring we have developed a formal model for such systems. The model is used as a framework for developing, evaluating, and evolving monitoring systems at Google that are suitable for operating at scale. We will present our model, show how existing open source solutions fit (and don't fit!) into it, and invite attendees to contrast it with their experiences. The goal is to encourage a discussion into the theory of monitoring and how current solutions can be evolved into more effective tools for operators of large systems.



Effective Configuration Management

N.J. Thomas, Amplify Education

The state of configuration management is arguably still in its infancy, and detailed info on how to effectively integrate these tools onto an existing site is scarce. Our aim is to describe the current best practices when installing a CM system. We will go over code review tools for version control backends and continuous integration systems in front. While we will cover real-world examples, we are agnostic as to the choice of particular tools and CM systems, so all are welcome. The lessons learned are useful when building or maintaining an effective infrastructure that is orchestrated by configuration management.

INVITED TALKS 3

Our Jobs Are Evolving: Can We Keep Up?

Mandi Walls, Senior Consultant, Opscode Inc.

This talk will discuss the current shortage of skilled system administration professionals, the evolving skill set demanded by the changing global economy, and how we, as practitioners, can move our industry forward. We will look at baseline skill sets, professional development opportunities, attracting the next generation of system administrators, and providing strategic value to the organizations who rely on sysadmins, even when they don't realize it.

2:00 P.M.-3:30 P.M.

INVITED TALKS 1

User Space

Noah Zoschke, Sr. Platform Engineer, Heroku

When running your app "in the cloud" there is a dizzying layer of software controlling your trivially deployed code. In practice, it is your code → language VM → LXC Container → Linux OS → Xen Hypervisor → Linux OS → CPU. Here we can look at each layer as a "user space," an expressive place that you are empowered to use, and a "kernel," the black box system that imposes strict constraints through an API. By studying each layer in this way, we see self-similar properties, which offers insight for how to best participate in the ecosystem. We also understand why the cloud is built this way with the huge benefits in power and efficiency this offers to application developers.

INVITED TALKS 2

Building a Networked Appliance

John Sellens, SYONEX

This talk tells the tale of designing and building a small networked computing appliance into a product, and the decisions, trial(s) and error(s), and false starts that it entailed. It will primarily cover the technical challenges, and the infrastructure and support tools that were required. The device is intended to be deployed unattended and in remote locations, which meant that the device and the supporting infrastructure had to be built such that it could be remotely managed and would be unlikely to fail. What could possibly go wrong?

How Netflix Embraces Failure to Improve Resilience and Maximize Availability

Ariel Tseitlin, Director, Cloud Solutions, Netflix

Netflix created a suite of tools, collectively called the Simian Army, to improve resiliency and maintain the cloud environment. In the typical case, failure modes are corner cases, which are poorly, if at all, tested. It is only by failing often that we can ensure that we are resilient to failure. We look for ways to induce failure in our production environment to better prepare us for the inevitable failures that will occur. This presentation will cover the motivation for inducing failure in production and the mechanics of how Netflix achieves it.

Poster Session

Posters are a good way to get feedback on research that may not be "ready for prime time." Student posters, practitioners sharing their experiences, and submitters from open source communities are particularly welcome. To submit your work, please email a 1-page abstract to lisa13posters@usenix.org by September 24, 2013.

Technical Sessions

WEDNESDAY: Invited Talks (continued)

4:00 P.M.-5:30 P.M.

INVITED TALKS 1

Storage Performance Testing in the Cloud

Jeff Darcy, Red Hat

Based on experience testing distributed storage systems in several public clouds, this talk will consist of two parts. The first will cover approaches for characterizing and measuring storage workloads generally. The second will cover the additional challenges posed by testing in public clouds. Contrary to popular belief, no two cloud servers are alike. Even the same server can exhibit wild and unpredictable performance swings over time, so new ways of analyzing performance are critical in these environments.

Observing and Understanding Behavior in Complex Systems

Theo Schlossnagle, CEO, Circonus

Complex systems have difficult-to-understand emergent behaviors. When distributed they lack a canonical source of truth. We don't have the technology today to truly understand these systems, but that isn't an excuse for not improving the observability to improve the clarity of what is there. In this talk I will discuss techniques to instrument and observe complex systems.

INVITED TALKS 2

Leveraging In-Memory Key Value Stores for Large-Scale Operations

Mike Svoboda, Staff Systems and Automation Engineer, LinkedIn; Eystein Måløy Stenberg, Product Manager, CFEngine

Memcache, Redis, and most other in-memory key-value systems have traditionally been used to offload (scale) queries against backend databases. At LinkedIn we leverage in-memory caches to solve operational questions. By standing up Redis Caches on each of our CFEngine policy servers, every client populates Redis caches on every execution of CFEngine. This approach allows us to answer any question about our infrastructure and have results delivered in under five seconds from thousands of machines; to find machines that could have been exploited; to understand where services have been deployed; and to build our inventory database system and modify our CMDB in real time.

What We Learned at Spotify, Navigating the Clouds

Noa Resare and Ramon van Alteren, Spotify

We would like to share some lessons we have learned building a hybrid cloud system at Spotify. The Spotify backend, being very service-oriented, presents some interesting challenges when it comes to setting up development and test environments. Our solution has been to provide a virtualized self-service environment that lets you spawn machines. This environment has evolved over time into a hybrid solution using both Apache Cloudstack and Amazon's public cloud. There are many pieces to this puzzle touching on topics such as authentication, configuration management, and service discovery.

THURSDAY: Plenary Session

9:00 A.M.-10:30 A.M.

Data Engineering for Complex Systems

Hilary Mason, bitly

Data engineering is when the architecture of your system is dependent on characteristics of the data flowing through that system. This kind of engineering requires a different process than typical systems engineering, because you have to do some work upfront to understand the nature of the data before you can effectively begin to design the infrastructure, and the systems will continue to evolve as the underlying data changes. I'll discuss data engineering as a discipline, using examples of processing large streams of social media data as an example application.



THURSDAY: Invited Talks

11:00 A.M.–12:30 P.M.

INVITED TALKS 1

Panel: Women in Advanced Computing (WiAC)

Panelists include: Amy Rich, *Mozilla Corporation*; Deanna McNeil, *Learning Tree International*;

Amy Forinash; Moderator: Rikki Endsley, *USENIX*

See www.usenix.org/lisa2013 for more information.

INVITED TALKS 2

Hyperscale Computing with ARM Servers

Jon Masters, *Red Hat*

See www.usenix.org/lisa2013 for more information.

LEAN Operations: Applying 100 Years of Manufacturing Knowledge to Modern IT

Ben Rockwood, *Joyent*

IT has evolved from an internal back-office services support team to an operations group that is responsible for service delivery to the end customer. Modern education hasn't prepared sysadmins with the skills and knowledge to meet these new challenges. Strikingly similar challenges were encountered in the manufacturing sector 100 years ago, many of which can and should be applied today in IT Operations to avoid reinventing the proverbial wheel. We will explore the problems, solutions, and applications that can give you a jump on the problems facing sysadmins today and in the decade to come.

2:00 P.M.–3:30 P.M.

INVITED TALKS 1

Blazing Performance with Flame Graphs

Brendan Gregg, *Joyent*

"How did we ever analyze performance before Flame Graphs?" This new visualization invented by Brendan can help you understand application and kernel performance, especially CPU usage, where stacks (call graphs) can be sampled and then visualized as an interactive Flame Graph. Flame Graphs are now used for a growing variety of targets: for applications and kernels on Linux, SmartOS, Mac OS X, and Windows; for languages including C, C++, node.js, ruby, and Lua; and in WebKit Web Inspector. This talk will explain them and provide use cases and new visualizations for other event types.

INVITED TALKS 2

The Efficacy of Cybersecurity Regulation: Examining the Impact of Law on Security Practices

David Thaw, *Visiting Assistant Professor of Law, University of Connecticut; Affiliated Fellow, Information Society Project, Yale Law School*

Cybersecurity regulation presents a quandary because private entities possess the best information about threats and defenses. Yet leaving the responsibility for setting standards to individual actors bears risk—there always will be some organizations with deficient security, thus creating "weak links in the chain." Lawmakers and regulators, seeking to preserve trust in the overall information economy, create legal obligations designed to protect both individual consumers and organizations so that they may reasonably trust one another. My research explores the wisdom of those choices. I present data from interviews with CISOs at leading corporations, detailing the effects of how regulation drives their security practices, as well as data detailing the efficacy of these regulations at preventing data breaches.

The Intersection of Cyber Security, Critical Infrastructure, and Control Systems

Sandra Bittner, *CISSP, Arizona Public Service, Palo Verde Nuclear Generating Station*

The intersection of cyber security, critical infrastructure, and control systems is on the minds of people around the world: particularly, those designing, integrating, managing, modifying, regulating, defending, and using the systems; and most notably, those daring to exploit weaknesses in the systems. Thus a race is on to apply cyber security controls prized for information systems to leading—and sometimes archaic—control systems and processes to stem the results of cyber attack. Hear about one approach and the results of foundation cross-sector efforts in the U.S.A.

Technical Sessions

THURSDAY: Invited Talks (continued)

4:00 P.M.–5:30 P.M.

INVITED TALKS 1

A Guide to SDN: Building DevOps for Networks

Rob Sherwood, Bigswitch

The networking community is making an increasing amount of noise about software-defined networking (SDN). This talk makes the case that software-defined networking simply applies sorely needed, well-known principles of good software design to the network. So, by asking “what would a programmer do?” to solve network problems, we can derive and make concrete all of SDN’s real-world value propositions including improved automation through documented well-structured APIs, higher uptime with automated testing, and increased modularity of network functions.

The Emergence of the Cloud Computer

Chris C. Kemp, Founder and CEO, Nebula

With the arrival of the Apple II, Apple made personal computing easy and accessible to everyone. Consider the parallels to the cloud computing market circa 2013: Application services are increasingly being consumed on mobile devices, in browsers, and on tablets. The computer systems powering these application services are some of the largest and most powerful ever created. Chris will talk about the emergence of the cloud computer, the new generation of software that runs on cloud computers, and the competing ecosystems racing to establish themselves as a standard in this new era of computing.

INVITED TALKS 2

Enterprise Architecture Beyond the Perimeter

Cian Synnott, Systems Engineer, Site Reliability Engineering; and Jan Monsch, Security Engineer, Google Security Team, Google

An increasingly mobile workforce and the ubiquity of attacks on client platforms limit the effectiveness of the traditional corporate network perimeter-security model. Beyond Corp is a broad effort to re-architect the delivery of Google corporate computing services, removing privileges granted solely on the basis of network address. The Overcast architecture blueprint is key to this, presenting a model of machine identity, authentication, and inventory-aware authorization. We discuss the background of our work, our general approach, challenges encountered, and future directions.

Drifting into Fragility

Matt Provost, Weta Digital

This talk will look at complex systems failure analysis and how to apply it to system administration through the books *Drift into Failure* by Sidney Dekker and *Antifragile* by Nassim Taleb. There will be a focus on using postmortems to gain a better understanding of how complex systems fail and then coming up with strategies based on real-world examples to change the way that we run systems so that they are more understandable, less prone to failure, and easier to repair when outages do occur.

FRIDAY: Invited Talks

9:00 A.M.–10:30 A.M.

INVITED TALKS 1

Speaker: Dan Kaminsky

See www.usenix.org/lisa2013 for more information.

INVITED TALKS 2

ZFS for Everyone

George Wilson, Delphix

ZFS was originally released into the open source community as part of OpenSolaris in November 2005. After Oracle acquired Sun Microsystems, the focus on maintaining an open source community quickly diminished and in August 2010, the public releases of ZFS source code silently stopped. At the same time, a new community was emerging and Open ZFS was born. The Open ZFS community is now flourishing with new features being developed across a variety of platforms. This talk will go into the technical details of some of the features in Open ZFS and how administrators can utilize each of them.



Manta Storage System Internals

Mark Cavage, Joyent

Manta is a system we have developed that applies the UNIX philosophy—small, well-defined tools and simple ways to combine them—to distributed computing on a multi-tenant object store. This new model of general-purpose compute not only unifies such disparate big data applications as indexing, log analysis, image processing, and video transcoding, but also carries with it a new set of design and implementation challenges. In this talk, I'll discuss the architectural choices and implementation details, along with lessons learned as we created, deployed, and scaled the system.

11:00 A.M.–12:30 P.M.

INVITED TALKS 1

Panel: Futures

See www.usenix.org/lisa2013 for more information.

INVITED TALKS 2

Apache Hadoop for System Administrators

Allen Wittenauer, LinkedIn, Inc.

Knowledge is power! As a result, the adoption of Apache Hadoop to help mine data as a way to increase knowledge is taking the world by storm. For system administrators, however, it is a large, complicated system that isn't well understood. In this talk, Allen will cover some Hadoop basics from an operations perspective: what it is, how it works, key data points to monitor, metrics that are important to gather, and the secrets to making it work securely and reliably.

Optimizing VM Images for OpenStack with KVM/QEMU Fall 2013

Chet Burgess, Senior Director, Engineering, and Brian Wellman, Director, Operations, Metacloud, Inc.

OpenStack and KVM/QEMU support a cornucopia of image and disk formats. We will explore the more common image formats and disk formats and their trade-offs, tips and tricks for converting image formats, and working with these images directly. We will dive into how nova, libvirt, and KVM interact with these when performing operations such as image resizing; and best practices for configuring the guest OSes such as login credentials, network configuration, and device/performance optimization.

INVITED TALKS 3

Managing Macs at Google Scale

Clay Caviness and Edward Eigerman, Google Inc.

Google has one of the largest managed fleets of Macintosh computers in the world. With tens of thousands of assets to manage and an ever-changing security landscape, Google has had to develop its own tools to effectively maintain its fleet and keep its end-users safe and productive. Macintosh Operations is the internal team tasked with developing these tools and managing these machines globally.

OS X Hardening: Securing a Large Global Mac Fleet

Greg Castle, Security Engineer, Google Inc.

OS X security is evolving: defenses are improving with each OS release but the days of "Macs don't get malware" are gone. Recent attacks against the Java Web plugin have kindled a lot of interest in hardening and managing Macs. So how does Google go about defending a large global Mac fleet? Greg will discuss various hardening tweaks and a range of OS X defensive technologies including XProtect, Gatekeeper, Filevault 2, sandboxing, auditd, and mitigations for Java and Flash vulns.

2:00 P.M.–3:30 P.M.

INVITED TALKS 1

Cloud/IaaS Platforms: I/O Virtualization and Scheduling

Dave Cohen, Office of the CTO, EMC

Cloud-based, Infrastructure-as-a-Service (IaaS) platforms present a simple data center resource model to their end-users. The end-user provisions logical resource units of compute, network, and block storage. They then attach a compute unit to one or more network and block storage units. This "attach" and subsequent "detach" of emulated network and storage devices embodies what is referred to as I/O virtualization. We will outline this concept and then dig deeper into how cloud/IaaS platforms leverage it for both local and global/data-center-wide scheduling.

Technical Sessions

FRIDAY: Invited Talks, 2:00 p.m.–3:30 p.m. (continued)

Cluster Management at Google

John Wilkes, Google

Cluster management is the term that Google uses to describe how we control the computing infrastructure in our datacenters that supports most of our external services. It includes allocating resources to different applications on our fleet of computers, looking after software installations and hardware, monitoring, and more. I'll discuss these systems and introduce Omega, our new cluster-manager tool. I'll describe the exciting challenges that we're facing, driven by the scale at which we operate, an acute awareness of failures, and the drive to provide ever-better service-levels while curbing complexity.

INVITED TALKS 2

Scaling User Security: Lessons Learned from Shipping Security Features at Etsy

Zane Lackey, Director of Security Engineering, and Kyle Barry, Security Engineering Manager, Etsy

Recently, the Etsy Security Engineering Team has been primarily focused on building out new user-facing features to provide proactive protections to our members. On the surface, these features appeared straightforward to implement and roll out, but we encountered a number of interesting challenges along the way. This talk will provide actionable advice for organizations seeking to ship and support modern security features including full site SSL, two-factor authentication, and account takeover detection.

Building Large Scale Services

Jennifer Davis, Yahoo! Senior Grid Service Engineer, SE Tech Leads

Yahoo! Service Engineers (SE) specialize in bridging the gap between system administration and development. SEs are tasked with delivering a reliable, consistent quality service through the use of best practices. They must understand network, OS, hardware, and customer use cases; and dive deep into the application internals. Jennifer will describe her journey with the Sherpa service at Yahoo! and lessons learned about building a reliable, consistent, and high-quality service from scratch. The key takeaway will be to educate practitioners on successful strategies and pitfalls when building out a service.

INVITED TALKS 3

Managing Access Using SSH Keys

Tatu Ylönen, SSH Communications Security, and Inventor of SSH

SSH user keys are ubiquitously used for accessing information systems by automated processes and sysadmins. Many large organizations have hundreds of thousands of keys granting access, with many keys providing privileged access without auditing or controls. The talk discusses risks arising from unmanaged access using SSH keys; discusses what is required by compliance mandates; outlines how to establish effective operational processes for provisioning, terminating, and monitoring SSH user key based access; and outlines how to understand and remediate SSH user keys in an existing environment.

Secure Linux Containers

Daniel J Walsh, Red Hat

Linux container technology allows a customer to carve a system out into isolated containers and run applications securely within the confines of the containers. It facilitates multi-tenancy, which allows IT organizations to take better advantage of the large servers available in their datacenters. While multi-tenancy provides flexibility for server resource management, it introduces additional complexity, especially related to the security of applications and data that reside on the same server. Daniel will discuss resource management, namespacing, and the use of SELinux to tighten the security of Linux containers.

FRIDAY: Closing Plenary Session

4:00 P.M.–5:30 P.M.

PostOps: A Non-Surgical Tale of Software, Fragility, and Reliability

Todd Underwood, Google

Widespread availability of distributed computing creates the fertile foundation for DevOps, a more collaborative approach to deploying and managing systems. Now it is time to take advantage of the inherent malleability of software and move beyond operations entirely. PostOps is a realistic call to end toil, to stop feeding the machine with human blood (and time and effort).



WEDNESDAY: Papers and Reports

2:00 P.M.-3:30 P.M.

Building Software Environments for Research Computing Clusters

Mark Howison, Aaron Shen, and Andrew Loomis, *Brown University*

Fixing Nagios, or How to Sleep Through the Night

Matt Provost, *Weta Digital*

4:00 P.M.-5:30 P.M.

Live Upgrading Thousands of Servers from an Ancient Red Hat Distribution to a Recent Debian Based One

Marc Merlin, *Google*

Managing Smartphone Testbeds with SmartLab

Georgios Larkou, Constantinos Costa, Panayiotis G. Andreou, Andreas Konstantinidis, and Demetrios Zeinalipour-Yazti, *University of Cyprus*

YinzCam: Experiences with In-Stadium Mobile Video and Replays

Nathan D. Mickulicz, Priya Narasimhan, and Rajeev Gandhi, *YinzCam, Inc. and Carnegie Mellon University*

THURSDAY: Papers and Reports

2:00 P.M.-3:30 P.M.

HotSnap: A Hot Distributed Snapshot System For Virtual Machine Cluster

Lei Cui, Bo Li, Yangyang Zhang, and Jianxin Li, *Beihang University*

Supporting Undoability in Systems Operations

Ingo Weber and Hiroshi Wada, *NICTA and University of New South Wales*; Alan Fekete, *NICTA and University of Sydney*; Anna Liu and Len Bass, *NICTA and University of New South Wales*

Back to the Future: Fault-tolerant Live Update with Time-traveling State Transfer

Cristiano Giuffrida, Călin Iorgulescu, Anton Kuijsten, and Andrew S. Tanenbaum, *Vrije Universiteit, Amsterdam*

FRIDAY: Papers and Reports

9:00 A.M.-10:30 A.M.

Challenges to Error Diagnosis in Hadoop Ecosystems

Jim (Zhanwen) Li, *NICTA*; Siyuan He, *Citibank, Toronto*; Liming Zhu, *NICTA and University of New South Wales*; Xiwei Xu, *NICTA*; Min Fu, *University of New South Wales*; Len Bass and Anna Liu, *NICTA and University of New South Wales*; An Binh Tran, *University of New South Wales*

Installation of an External Lustre Filesystem Using Cray esMS Management and Lustre 1.86

Patrick Webb, *Cray Inc.*

WEDNESDAY: The Guru Is In

The Guru Is In sessions are informal question-and-answer gatherings that give you a chance to bring your quandaries to experts in the field.

11:00 A.M.-12:30 P.M.

Interviewing and Job Hunting

Adam Moskowitz

2:00 P.M.-3:30 P.M.

IPv6

Owen DeLong, *Hurricane Electric*

4:00 P.M.-5:30 P.M.

Hadoop

Charles Wimmer, *VertiCloud*

THURSDAY: The Guru Is In

11:00 A.M.-12:30 P.M.

Secure Linux Containers

Daniel J Walsh, *Red Hat*

2:00 P.M.-3:30 P.M.

Project Management: Establishing and Fostering the Basics

Adele Shakal, *Metacloud, Inc.*

4:00 P.M.-5:30 P.M.

PostgreSQL

Stephen Frost, *Resonate*

THURSDAY: Lightning Talks

4:00 P.M.-5:30 P.M.

Lightning Talks

Organizer: Lee Damon, *University of Washington*

Lightning talks are fast paced and high energy. These are back-to-back 5-minute presentations on just about anything. Talk about a recent success, energize people about a pressing issue, ask a question, start a conversation!

Lightning talks are an opportunity to get up and talk about what's on your mind. You can give several lightning talks if you have more than one topic. Online registration will open just before the start of the conference.

FRIDAY: The Guru Is In

9:00 A.M.-10:30 A.M.

Time Management for System Administrators

Thomas A. Limoncelli, *Stack Exchange*

11:00 A.M.-12:30 P.M.

*aaS: Building and Maintaining the Cloud

David Nalley, *Apache CloudStack*

2:00 P.M.-3:30 P.M.

ZFS in Depth

George Wilson, *Delphix*

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Thomas A. Limoncelli, *Stack Exchange*
Adam Moskowitiz
Mario Obejas, *Raytheon*
Carolyn Rowland
Rudi van Drunen, *Xlexit Technology, The Netherlands*

Education Director

Daniel V. Klein, *USENIX Association*

Tutorial Coordinator

Matt Simmons, *Northeastern University*



For over 35 years, the USENIX Association has been the leading community for engineers, system administrators, and scientists working on the cutting edge of the computing world. USENIX conferences are the essential meeting ground for discussion of technical advances in all aspects of computing systems. LISA, our SIG for sysadmins, provides unique content designed to further the state of the industry. Our conferences focus on topics such as system administration, file and storage systems, security, and more.



The LISA SIG is a Special Interest Group of the USENIX Association. Member benefits include:

- Discount on registration for LISA
- A free Short Topics in System Administration book every year, discounts on all Short Topics books, and access to the Short Topics online library
- Access to the LISA Jobs Board
- The option to join lisa-members, an electronic mailing list for peer discussion and advice
- Discounts on industry-related publications
- Immediate access to the extensively tabulated results of the LISA Salary Survey



Show Hours

Wednesday, November 6: Noon-7:00 p.m.

Thursday, November 7: 10:00 a.m.-2:00 p.m.

Don't Miss This Opportunity

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

Learn about cutting-edge technologies and tools from industry leaders, provocative startups, 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!)

Looking for work? Many exhibitors come to LISA in search of new talent. Stop by the show floor and find out who's hiring.

Everyone Is Welcome!

The exhibition is open to the public. Register for a free pass at www.usenix.org/lisa2013.

Exhibit Hall Happy Hour

Join us at the Vendor Exhibition on Wednesday evening for snacks and drinks and take the opportunity to learn about the latest products and technologies.

LISA '13 Sponsorship & Exhibiting Opportunities

- Get system administrators talking about your products and services.
- Sell your solutions to a qualified audience.
- Conduct market research and enlist beta testers.
- Recruit among highly experienced, highly educated system administrators.
- Expand your visibility among recognized leaders of the system, network, and security administration communities.

See www.usenix.org/lisa2013 for details or contact **Camille Mulligan, Exhibits Manager**, exhibits@usenix.org.

EXHIBITORS AS OF AUGUST 9, 2013

Premium Exhibitors

Akamai	Teradactyl
Cambridge Computer	VMware
Center for Internet Security	Zenoss
CFEngine	
Cloudera	
CloudStack	
Google	
Linode	
Palantir	
Puppet Labs	

Exhibitors

AC&NC	Nutanix
Avere Systems	Omnibond
Code42	Opengear
Distributed Management Task Force (DMTF)	OpenNMS
FreeBSD	Qualstar
Fujitsu	The Assimilation Project
HavenSec	
Internet System Consortium (ISC)	
iX Systems	

Registration Information

Early Bird Registration Deadline: **Tuesday, October 15, 2013**

Training Program Registration Includes:

- Admission to the tutorials you select
- Lunch and refreshment breaks on the days of your tutorials
- Training program materials loaded on an 8GB USB drive
Note: Training materials will be provided to you on a 8GB USB drive. If you'd like to access them during your class, please remember to bring a laptop. There will not be any formally printed materials, but print-on-demand stations will be available.
- Access to the Conference Proceedings as a downloadable archive
- Admission to the Vendor Exhibition
- Admission to the Conference Reception
- Admission to the evening activities on the days for which you're registered
- Conference t-shirt
- Wireless connectivity in conference session area

Technical Sessions Registration Includes:

- Admission to all technical sessions on the days of your choice
- Refreshment breaks on the days of your technical sessions
- Access to the Conference Proceedings as a downloadable archive
- Admission to the Vendor Exhibition
- Admission to the Conference Reception
- Admission to the evening activities on the days for which you're registered
- Conference t-shirt
- Wireless connectivity in conference session area

Workshop Registration Includes:

- Admission to the workshops of your choice
- Lunch and refreshment breaks on the days of your workshops

GOLDEN PASSPORT REGISTRATION

Do you want to take advantage of absolutely everything LISA has to offer? Then the popular Golden Passport registration is for you. Go to any session you like on any day—the possibilities are endless! Plus, get additional

exclusive benefits to make your LISA experience the best yet.

Golden Passport Registration Includes:

- Admission to all sessions, Sunday–Friday: tutorials, technical sessions, and workshops
- Lunch and refreshment breaks, Sunday–Friday
- Training program materials loaded on an 8GB USB drive
Note: Training materials will be provided to you on a 8GB USB drive. If you'd like to access them during your class, please remember to bring a laptop. There will not be any formally printed materials, but print-on-demand stations will be available.
- Access to the Conference Proceedings as a downloadable archive
- Reserved front-row seating with guaranteed outlet for your laptop at the Keynote Address
- Early admission to the Welcome Get-Together and the Conference Reception
- Complimentary CEUs for any complete tutorials you attend
- Deluxe LISA '13 Golden Passport pouch
- Admission to the Vendor Exhibition
- Admission to all evening activities throughout the week
- Conference t-shirt
- Wireless connectivity in conference session area

Cancellation Deadline: **Monday, October 28, 2013**

Substitutions are always welcome. If you must cancel, please do so by Monday, October 28, to receive a full refund.

Discounts Available!

In order to help you attend LISA '13, we will be offering additional conference discounts and multi-day packages. (*Please note: In order to receive the discounts, you must use discount codes.*) From government and non-profit employees to groups of 5 or more, USENIX has ways for you to save. See www.usenix.org/lisa13 for more information.



Membership Discounts

USENIX and LISA SIG members receive a \$170 discount; see www.usenix.org/member-services/discounts for your discount code. LOPSA members receive a \$45 discount; please contact LOPSA for more information.

USENIX is committed to helping you create the conference that meets your needs. If you are unemployed or need financial assistance to attend LISA '13, please email conference@usenix.org. Please describe your hardship situation and list the sessions for which you'd like to register.

REGISTRATION FEES

USENIX is pleased to offer Early Bird Registration Discounts of up to \$300 to those who register for LISA '13 by October 15, 2013. After October 15, registration fees increase. All member rates are valid for members of USENIX, the LISA SIG, or both.

Early Bird Daily Rates	Member	Non-member
1 day of technical sessions	\$355	\$525
1 day of training	\$660	\$830

Early Bird Discount Packages	Member	Non-member
A. 3 Days of Technical Sessions	\$815 <i>Save \$420!</i>	\$985 <i>Save \$250!</i>
B. 2 Days of Training	\$1295 <i>Save \$195!</i>	\$1465 <i>Save \$25!</i>
C. 3 Days of Training	\$1905 <i>Save \$245!</i>	\$2075 <i>Save \$75!</i>
D. 4 Days of Training	\$2490 <i>Save \$320!</i>	\$2660 <i>Save \$150!</i>
E. 5 Days of Training	\$3050 <i>Save \$420!</i>	\$3220 <i>Save \$250!</i>
F. 6 Days of Training	\$3610 <i>Save \$520!</i>	\$3780 <i>Save \$350!</i>
G. Golden Passport	\$3950	\$4120

For maximum savings, combine Package A with Package C.

Workshop Registration Fees

1 half-day workshop	\$95
1 full-day workshop	\$190

Optional Costs

Continuing Education Units (CEUs): \$15 per full training day

Registration Fees for Full-Time Students

USENIX offers full-time students special low registration fees for LISA '13 that are available at any time.

1 day of technical sessions	\$150
1 day of training*	\$200

* A limited number of tutorial seats are reserved for full-time students at this very special rate. Students must reserve their tutorial seats before registering.

Hotel Reservation Discount Deadline: Tuesday, October 15, 2013

Headquarters Hotel:

Washington Marriott Wardman Park

2660 Woodley Road NW

Washington, D.C. 20008

Phone: (202) 328-2000

Special Attendee Room Rate

\$259 single/double, plus tax, includes complimentary guest room wireless

Mention USENIX or LISA to get the special rate, or book online via www.usenix.org/lisa2013.

Travel Discounts

USENIX has partnered with American Airlines to provide a 5% discount on your trip to Washington, D.C., and with Avis to provide discounted car rentals. Find out more at www.usenix.org/lisa2013.

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27th Large Installation System
Administration Conference

November 3-8, 2013
Washington, D.C.

**Register by October 15
and SAVE!**

Register with the discount code on your mailing label to receive a \$25 discount!