

The Eighth IEEE Workshop on Hot Topics in Operating Systems

# HotOS-VIII



May 20-23, 2001  
Schoss Elmau, Germany

*Sponsored by*  
IBM Research  
HP Labs  
Microsoft Research

This page is intentionally almost blank.

# Table of Contents

## The Eighth Workshop on Hot Topics in Operating Systems - HotOS-VIII

### Core OS

Beyond Address Spaces - Flexibility, Performance, Protection, and Resource Management in the Type-Safe JX Operating System .....	1
<i>Michael Golm, Jürgen Kleinöder, Frank Bellosa</i>	
Design Issues in System Support for Programmable Routers .....	7
<i>Prashant Pradhan, Kartik Gopalan, Tzi-cker Chiueh</i>	
Lazy Process Switching .....	13
<i>Jochen Liedtke, Horst Wenske</i>	

### Fault Tolerance

Robustness in Complex Systems .....	17
<i>Steven D. Gribble</i>	
Using Abstraction To Improve Fault Tolerance .....	23
<i>Miguel Castro, Rodrigo Rodrigues, Barbara Liskov</i>	
Fail-Stutter Fault Tolerance .....	29
<i>Remzi H. Arpaci-Dusseau, Andrea C. Arpaci-Dusseau</i>	

### Frameworks for Mobility

Reconsidering Internet Mobility .....	35
<i>Alex C. Snoeren, Hari Balakrishnan, M. Frans Kaashoek</i>	
Protium, an Infrastructure for Partitioned Applications .....	41
<i>Cliff Young, Y. N. Lakshman, Tom Szymanski, John Reppy, David Presotto, Rob Pike, Girija Narlikar, Sape Mullender, Eric Grosse</i>	

### Modelling and (Self-)Tuning

Probabilistic Modelling of Replica Divergence .....	47
<i>Antony I. T. Rowstron, Neil Lawrence, Christopher M Bishop</i>	
Self-Tuned Remote Execution for Pervasive Computing .....	53
<i>Jason Flinn, Dushyanth Narayanan, M. Satyanarayanan</i>	
Energy is just another resource: Energy accounting and energy pricing in the Nemesis OS .....	59
<i>Rolf Neugebauer, Derek McAuley</i>	

### Peer-to-Peer Computing

PAST: A large-scale, persistent peer-to-peer storage utility .....	65
<i>Peter Druschel, Antony Rowstron</i>	
Building Peer-to-Peer Systems With Chord, a Distributed Lookup Service .....	71
<i>Frank Dabek, Emma Brunskill, M. Frans Kaashoek, David Karger, Robert Morris, Ion Stoica, and Hari Balakrishnan</i>	
Herald: Achieving a Global Event Notification Service .....	77
<i>Luis Felipe Cabrera, Michael B. Jones, Marvin Theimer</i>	

## New Devices

HeRMES: High-Performance Reliable MRAM-Enabled Storage .....	83
<i>Ethan L. Miller, Scott A. Brandt, Darrell D. E. Long</i>	
Better Security via Smarter Devices .....	88
<i>Gregory R. Ganger, David F. Nagle</i>	
Research Issues in No-Futz Computing .....	94
<i>David A. Holland, William Josephson, Kostas Magoutis, Margo I. Seltzer, Christopher A. Stein, Ada Lim</i>	

## Security & FT

Don't Trust your File Server .....	99
<i>David Mazières, Dennis Shasha</i>	
Active Protocols for Agile, Censor-Resistant Networks .....	105
<i>Robert Ricci, Jay Lepreau</i>	
Recursive Restartability: Turning the Reboot Sledgehammer into a Scalpel .....	110
<i>George Candea, Armando Fox</i>	

## Virtualisation

When Virtual is Better than Real .....	116
<i>Peter M. Chen, Brian D. Noble</i>	
Virtualization Considered Harmful: OS Design Directions for Well-Conditioned Services .....	122
<i>Matt Welsh, David Culler</i>	

## Networking and OS

Systems Directions for Pervasive Computing .....	128
<i>Robert Grimm, Janet Davis, Ben Hendrickson, Eric Lemar, Adam MacBeth, Steven Swanson, Tom Anderson, Brian Berhsad, Gaetano Borriello, Steven Gribble, David Wetherall</i>	
The Case for Resilient Overlay Networks .....	133
<i>David G. Andersen, Hari Balakrishnan, M. Frans Kaashoek, Robert Morris</i>	

## Position Summaries

Position Summary: Toward a Rigorous Data Type Model for HTTP .....	139
<i>Jeffrey C Mogul</i>	
Position Summary: The Conquest File System: Life after Disks .....	140
<i>An-IA Wang, Geoffrey H Kuenning, Peter Reiher, Gerald J Popek</i>	
Position Summary: Supporting Coordinated Adaption in Networked Systems .....	141
<i>Patrick G Bridges, Wen-Ke Chen, Matti A Hiltunen, Richard D Schlichting</i>	
Position Summary: Middleware for Mobile Computing: Awareness vs Transparency .....	142
<i>Licia Capra, Wolfgang Emmerich, Cecilia Mascola</i>	
Position Summary: Separating Mobility from Mobile Agents .....	143
<i>Kåre J Lauvset, Dag Johansen, Keith Marzullo</i>	
Position Summary: The Importance of Good Plumbing - Reconsidering Infrastructure in Distributed Systems .....	144
<i>Andrew Warfield, Norm Hutchinson</i>	
Position Summary: Towards Global Storage Management and Data Placement .....	145
<i>Alistair Veitch, Erik Riedel, Simon Towers, John Wilkes</i>	

Position Summary: Towards Zero-Code Software Composition .....	146
<i>Emre Kiciman, Laurence Melloul, Armando Fox</i>	
Position Summary: Aspect-Oriented System Structure .....	147
<i>Yvonne Coady, Gregor Kiczales, Michael Feeley, Norman Hutchinson, Joon Suan Ong</i>	
Position Summary: A Streaming Interface for Real-Time Interprocess Communication .....	148
<i>Jork Löser, Hermann Härtig, Lars Reuther</i>	
Position Summary: Eos - the dawn of the resource economy .....	149
<i>John Wilkes, G. (John) Janakiramn, Patrick Goldsack, Lance Russel, Sharad Singhal, Andrew Thomas</i>	
Position Summary: Transport Layer Support for Highly-Available Network Services .....	150
<i>Florin Sultan, Kiran Srinivasan, Liviu Iftode</i>	
Position Summary: MANSION: A Room-based Multi-Agent Middleware .....	151
<i>Guido J. van't Noordende, Frances M.T. Brazier, Andrew S. Tanenbaum, Maarten R. van Steen</i>	
Position Summary: Active Streams: An Approach to Adaptive Distributed Systems .....	152
<i>Fabián E. Bustamante, Greg Eisenhauer, Patrick Widener, Karsten Schwan</i>	
Position Summary: Smart Messages: A system Architecture for Large Networks of Embedded Systems .....	153
<i>Phillip Stanley-Marbell, Cristian Borcea, Kiran Nagaraja, Liviu Iftode</i>	
Position Summary: Supporting Hot-Swappable Components for System Software .....	154
<i>Kevin Hui, Jonathan Appavoo, Robert Wisniewski, Marc Auslander, David Edelsohn, Ben Gamsa, Orran Krieger, Bryan Rosenberg, Michael Stumm</i>	
Position Summary: Applying the VVM Kernel to Flexible Web Caches .....	155
<i>Ian Piumarta, Frederic Ogel, Bertil Folliot, Carine Baillarguet</i>	
Position Summary: Hinting for goodness' sake .....	156
<i>David Petro, Dushyanth Narayanan, Gregory R. Ganger, Garth A. Gibson, Elizabeth Shriver</i>	
Position Summary: Censorship Resistant Publishing Through Document Entanglements .....	157
<i>Marc Waldman, David Mazieres</i>	
Position Summary: Architectures For Adaption .....	158
<i>Eyal de Lara, Dan S Wallach, Willy Zwaenepoel</i>	
Position Summary: Anypoint Communication Protocol .....	159
<i>Ken Yocum, Darrell Anderson, Jeff Chase, Amin Vahdat</i>	
Position Summary: Secure OS Extensibility That Doesn't Cost an Arm and a Leg .....	160
<i>Antony Edwards, Gernot Heiser</i>	
Position Summary: The Lana Approach to Wireless Computing .....	161
<i>Chrislain Razafimahefa, Ciaran Bryce, Michel Pawlak</i>	
Position Summary: A Backup Appliance Composed of High-capacity Disk Drives .....	162
<i>Kimberley Keeton, Eric Anderson</i>	
Position Summary: Balance of Power: Energy Management for Server Clusters .....	163
<i>Jeffrey S Chase, Ron Doyle</i>	
Position Summary: Bossa: a DSL framework for Application-Specific Scheduling Policies .....	164
<i>Luciano Porto Barreto, Gilles Muller</i>	
Position Summary: Authentication Confidences .....	165
<i>Gregory R Granger</i>	

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.