nsdi '12

9th USENIX Symposium on Networked Systems Design and Implementation

APRIL 25–27, 2012 • SAN JOSE, CA

Sponsored by USENIX in cooperation with ACM SIGCOMM and ACM SIGOPS

NSDI '12 will focus on the design principles, implementation, and practical evaluation of large-scale networked and distributed systems in a 3-day technical program including topics such as:

- **Big Data**
- **Cloud Performance**
- **Data Center Networking**
- **Privacy**
- **Security**
- **And More!**

Take advantage of this opportunity to join researchers from across the networking and systems community in fostering a broad approach to addressing common research challenges.

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Don't Miss the Co-located Workshops!

Both workshops will take place on April 24, 2012.

- 5th USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '12)
  www.usenix.org/leet12

- 2nd USENIX Workshop on Hot Topics in Management of Internet, Cloud, and Enterprise Networks and Services (Hot-ICE '12)
  www.usenix.org/hotice12

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Wednesday, April 25

8:45 a.m.–9:00 a.m. — Wednesday

Opening Remarks and Awards Presentations
NSDI '12 Program Co-Chairs: Steve Gribble, *University of Washington;* Dina Katabi, *Massachusetts Institute of Technology*

9:00 a.m.–10:30 a.m. — Wednesday

Big Data
Corfu: A Shared Log Design for Flash Clusters
Mahesh Balakrishnan, Dahlia Malkhi, Vijayan Prabhakaran, and Ted Wobber, *Microsoft Research Silicon Valley;* Michael Wei, *University of California, San Diego;* John Davis, *Microsoft Research Silicon Valley*

Resilient Distributed Datasets: A Fault-Tolerant Abstraction for In-Memory Cluster Computing
Matei Zaharia, Mosharaf Chowdhury, Tathagata Das, Ankur Dave, Justin Ma, Murphy McCauley, Michael J Franklin, Scott Shenker, and Ion Stoica, *University of California, Berkeley*

Camdoop: Exploiting In-network Aggregation for Big Data Applications
Paolo Costa, Austin Donnelly, Antony Rowstron, and Greg O'Shea, *Microsoft Research Cambridge*

10:30 a.m.–11:00 a.m. — Break

11:00 a.m.–Noon — Wednesday

Wireless
WiFi-NC: WiFi Over Narrow Channels
Krishna Kant Chintalapudi, *Microsoft Research India;* Bozidar Radunovic, *Microsoft Research Cambridge;* Michael Buettner, *University of Washington, Seattle;* Srinivas Yerramalli and Vlad Balan, *University of Southern California;* Vishnu Navda and Ramachandran Ramjee, *Microsoft Research India*

Catching Whales and Minnows Using WiFiNet: Deconstructing Non-WiFi Interference Using WiFi Hardware
Shravan Rayanchu, Ashish Patro, and Suman Banerjee, *University of Wisconsin–Madison*

Noon–1:30 p.m. — Symposium Luncheon

1:30 p.m.–3:00 p.m. — Wednesday

Content and Service-Oriented Networking
RPT: Re-architecting Loss Protection for Content-Aware Networks
Dongsu Han, *Carnegie Mellon University;* Ashok Anand and Aditya Akella, *University of Wisconsin–Madison;* Srinivasan Seshan, *Carnegie Mellon University*

Serval: An End-Host Stack for Service-Centric Networking
Erik Nordström, David Shue, Prem Gopalan, Rob Kiefer, and Matvey Arye, *Princeton University;* Steven Ko, *University of Buffalo;* Jennifer Rexford and Michael J. Freedman, *Princeton University*

Reliable Client Accounting for Hybrid Content-Distribution Networks
Paarijaat Aditya, *MPI-SWS;* Mingchen Zhao, *University of Pennsylvania;* Yin Lin, *Duke University;* Andreas Haeberlen, *University of Pennsylvania;* Peter Druschel, *MPI-SWS;* Bruce Maggs, *Duke University;* Bill Wishon, *Akamai*

3:00 p.m.–3:30 p.m. Break

3:30 p.m.–5:00 p.m. — Wednesday

Network Robustness
Header Space Analysis: Static Checking for Networks
Peyman Kazemian, *Stanford University;* George Varghese, *University of California, San Diego, and Yahoo! Research;* Nick McKeown, *Stanford University*

A NICE Way to Test OpenFlow Applications
Marco Canini, Daniele Venzano, Peter Perešíni, and Dejan Kostic, *EPFL;* Jennifer Rexford, *Princeton University*

Managing Resource Contention in Software-based Networking (Mostly by Ignoring It)
Mihai Dobrescu and Katerina Argyraki, *EPFL;* Syvia Ratnasamy, *University of California, Berkeley*

Thursday, April 26

9:00 a.m.–10:30 a.m. — Thursday

Privacy
Detecting and Defending Against Third-Party Tracking on the Web
Franziska Roesner, Tadayoshi Kohno, and David Wetherall, *University of Washington*

Towards Statistical Queries over Distributed Private User Data
Ruichuan Chen, Alexey Reznichenko, and Paul Francis, *Max Planck Institute for Software Systems;* Johannes Gehrke, *Cornell University*

Koi: A Location-Privacy Platform for Smartphone Apps
Saikat Guha, Mudit Jain, and Venkata N. Padmanabhan, *Microsoft Research India*

10:30 a.m.–11:00 a.m. — Break

11:00 a.m.–Noon — Thursday

Security and Availability
Aiding the Detection of Fake Accounts in Large Scale Social Online Services
Qiang Cao, *Duke University;* Michael Sirivianos, *Telefonica Research and Cyprus University of Technology;* Xiaowei Yang, *Duke University;* Tiago Pregueiro, *Tuenti and Telefonica Digital*

Don't Lose Sleep Over Availability: The GreenUp Decentralized Wakeup Service
Siddhartha Sen, *Princeton University;* Jacob R. Lorch, Richard Hughes, Carlos Garcia Jurado Suarez, Brian Zill, and Jitendra Padhye, *Microsoft Research;* Weverton Cordeiro, *Universidade Federal do Rio Grande do Sul*

Noon–1:30 p.m. — Lunch (on your own)

1:30 p.m.–3:00 p.m. — Thursday

Data Center Networking
Jellyfish: Networking Data Centers Randomly
Ankit Singla and Chi-Yao Hong, *University of Illinois at Urbana-Champaign;* Lucian Popa, *University of Calfornia, Berkeley;* Brighten Godfrey, *University of Illinois at Urbana-Champaign*

OSA: An Optical Switching Architecture for Data Center Networks with Unprecedented Flexibility
Kai Chen, *Northwestern University;* Ankit Singla, *University of Illinois at Urbana-Champaign;* Atul Singh, *Kishore Ramachandran, Lei Xu, and Yueping Zhang, NEC Labs America;* Xitao Wen and Yan Chen, *Northwestern University*

Less Is More: Trading a little Bandwidth for Ultra-Low Latency in the Data Center
Mohammad Alizadeh, *Stanford University;* Abdul Kabbani, *Google;* Tom Edsall, *Cisco Systems;* Balaji Prabhakar, *Stanford University;* Amin Vahdat, *Google and University of California, San Diego;* Masato Yasuda, *NEC Corporation, Japan*

3:00 p.m.–3:30 p.m. — Break

3:30 p.m.–5:00 p.m. — Thursday

Big Data (2)
PACMan: Coordinated Memory Caching for Parallel Jobs
Ganesh Anantharanayanan, Ali Ghodsi, and Andrew Wang, *University of California, Berkeley;* Dhruba Borthakur, *Facebook;* Srikanth Kandula, *Microsoft Research;* Scott Shenker and Ion Stoica, *University of California, Berkeley*

Reoptimizing Data Parallel Computing
Sameer Agarwal, *University of California, Berkeley;* Srikanth Kandula, *Microsoft Research;* Nico Bruno and Ming-Chuan Wu, *Microsoft Bing;* Ion Stoica, *University of California, Berkeley;* Jingren Zhou, *Microsoft Bing*

Optimizing Data Shuffling in Data-Parallel Computation by Understanding User-Defined Functions
Jiaxing Zhang and Hucheng Zhou, *Microsoft Research Asia;* Rishan Chen, *Peking University and Microsoft Research Asia;* Zhenyu Guo and Haoxiang Lin, *Microsoft Research Asia;* Jack Y. Li, *Georgia Institute of Technology and Microsoft Research Asia;* Wei Lin and Jingren Zhou, *Microsoft Bing;* Lidong Zhou, *Microsoft Research Asia*

6:00 p.m.–7:30 p.m. — Thursday

Poster Session and Reception
NSDI will be continuing its tradition of showcasing early research in progress at a poster session during the reception. Check the Web site soon regarding submission instructions.

Friday, April 27

9:00 a.m.–10:30 a.m. — Friday

New Architectures and Platforms
XIA: Efficient Support for Evolvable Internetworking
Dongsu Han, *Carnegie Mellon University;* Ashok Anand, *University of Wisconsin–Madison;* Fahad Dogar, Boyan Li, and Hyeontaek Lim, *Carnegie Mellon University;* Michel Machado, *Boston University;* Arvind Mukundan, *Carnegie Mellon University;* Wenfei Wu and Aditya Akella, *University of Wisconsin–Madison;* David Andersen, *Carnegie Mellon University;* John Byers, *Boston University;* Srinivasan Seshan and Peter Steenkiste, *Carnegie Mellon University*

Design and Implementation of a Consolidated Middlebox Architecture
Vyas Sekar, *Intel Labs;* Norbert Egi, *Huawei;* Sylvia Ratnasamy, *University of California, Berkeley;* Michael K Reiter, *University of North Carolina at Chapel Hill;* Guangyu Shi, *Huawei*

Towards Commodity Smarthomes with HomeOS
Colin Dixon, *University of Washington;* Ratul Mahajan, Sharad Agarwal, A.J. Brush, Bongshin Lee, Stefan Saroiu, and Victor Bahl, *Microsoft Research*

10:30 a.m.–11:00 a.m. — Break

11:00 a.m.–Noon — Friday

Cloud Performance
Structured Comparative Analysis of Systems Logs to Diagnose Performance Problems
Karthik Nagaraj, Charles Killian, and Jennifer Neville, *Purdue University*

Orchestrating the Deployment of Computations in the Cloud with Conductor
Alexander Wieder, Pramod Bhatotia, Ansley Post, and Rodrigo Rodrigues, *MPI-SWS*

Noon–1:30 p.m. — Lunch (on your own)

1:30 p.m.–3:00 p.m. — Friday

Transport
Minion: Unordered Delivery Wire-Compatible with TCP and TLS
Janardhan Iyengar, *Franklin and Marshall College;* Syed Obaid Amin, *Yale University;* Nabin Tiwari, *Franklin and Marshall College;* Michael F. Nowlan and Bryan Ford, *Yale University*

How Hard Can It Be? Designing and Implementing a Deployable Multipath TCP
Costin Raiciu, *Universitatea Politehnica Bucuresti;* Christoph Paasch and Sebastien Barre, *Université Catholique de Louvain;* Alan Ford, *Roke Manor Research;* Michio Honda, *Keio University;* Fabien Duchene and Olivier Bonaventure, *Université Catholique de Louvain;* Mark Handley, *University College London*

The TCP Outcast Problem: Exposing Throughput Un-fairness in Data Center Networks
Pawan Prakash, Advait Dixit, Y. Charlie Hu, and Ramana Rao Kompella, *Purdue University*

See www.usenix.org/nsdi12 for more information and to register.