ACM SIGCOMM 2005

August 22 - 26, 2005, Philadelphia, PA

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The first Society in Computing

ACM SIGCOMM2005

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WELCOME

Welcome to the ACM SIGCOMM 2005 Conference!

We hope you will be joining us in Philadelphia, PA, during the week of August 22nd, 2005, to celebrate a particularly remarkable vintage of the ACM SIGCOMM conference, the premier conference in computer communications. This year, you will not only be treated to an outstanding technical program, three enticing tutorials, and four workshops on exciting emerging topics, but we are also fortunate to welcome Vint Cerf and Bob Kahn, the recipients of the 2004 Turing Award for their pioneering work on internetworking and leadership in the field of networking, who will be giving their Turing Award lecture at SIGCOMM. The lecture will be held on Monday late afternoon after our first full day of technical festivities consisting of two half-day tutorials and two workshops.

Our Monday tutorials target two critical aspects of IP networks, namely, how to defend them against attacks and how to manage them efficiently. In parallel, the workshops held on Monday explore two areas of growing importance. The MineNet workshop is concerned with the problem of extracting useful information from the wealth of data that is nowadays being routinely collected in modern networks, while the E-WIND workshop targets bringing together researchers from diverse backgrounds to help develop a better understanding of the needs and available approaches in support of experimental research in wireless networks. Wireless research is also the theme behind the third tutorial held on Friday morning, the last day of the conference, which will be devoted to the fast-paced and groundbreaking developments taking place in the area of broadband wireless and its applications. Friday will also see two exciting workshops, which should provide more than enough incentives to all for staying until Friday evening, and even possibly enjoying one more week-end in Philadelphia. The WDTN workshop investigates the problem of designing and operating net works in environments where connectivity exhibits significant variations, and seeks to understand how to allow applications to operate in such environments. The P2PECON workshop targets the already popular topic of peer-to-peer networks, but brings to it a unique perspective by focusing on the economic characteristics of those systems and the possible applications of economic theories in shaping their design. Please visit the conference web page for more details.

ACM Turing Award Lecture

Monday, August 22, 2005

SIGCOMM is honored that ACM Turing Award winners **Vinton Cerf** and **Robert Kahn** have chosen to give their Award Lecture Monday Aug. 22nd, the first day of the SIGCOMM 2005 Data Communications Festival. The lecture will be presented in the historic yet state-of-the-art Irvine Auditorium on the Penn Campus, a 30-minute combined walk/subway ride from the SIGCOMM 2005 venue. We encourage you to reserve a seat as you register for SIGCOMM 2005, and your badge will be your ticket to the event. The general public is invited to reserve tickets as well (see the conference website for details). SIGCOMM will host a celebratory reception for all lecture attendees. The lecture will also be streamed live on the Internet.

4:30-5:30 Reception - Wynn Commons (outside Irvine Auditorium)
5:30-6:00 Seating - accompanied by music played on the auditorium's 1926 Curtis pipe organ
6:00-7:15 Lecture

Welcome to Philadelphia

SIGCOMM 2005 will take place in Philadelphia, the first capital of the United States and the birthplace of the Declaration of Independence. The conference site is located within America's most historic square mile admist lush landscaping and cobblestone streets. It is just four blocks from Independence Hall and a few steps from the countless national treasures and historical sites.

Contents

Important Dates

July 21 Advance Registration deadline
July 21 Hotel Reservation deadline

Conference Location

Sheraton Society Hill Hotel
1 Dock Street (2nd and Walnut), Philadelphia, PA
Phone 215-238-6000
http://www.acm.org/sigcomm/sigcomm2005/

TUTORIALS

AUGUST 22 & 26, 2005

August 22 | Monday | 8:30 - 12:00

Infrastructure Attack Detection and Mitigation Methodologies

Craig Labovitz, Arbor Networks
Danny McPherson, Arbor Networks
Farnam Jahanian, Univ. of Michigan

Audience: Security and network engineers, as well as researchers who want to understand attack detection and mitigation methodologies employed by Internet network operators and large enterprises today. Attendees will be introduced to a six phased incident response methodology derived from the collective best practices of the Internet community. This tutorial helps bridge the gap between the theoretical foundations of network security and the real-world practical limitations network providers face. Basic familiarity with IP routing and routed protocols and Internet architecture is assumed, though not required.

Craig Labovitz has served as Director of Network Architecture at Arbor Networks since 2001. Prior to joining Arbor Networks, he worked on the design and engineering of the NSFNet backbone and the Routing Arbiter project. He received his PhD from the University of Michigan.

Danny McPherson is currently with Arbor Networks. He has more than 10 years experience as a network architect for global Internet Service Providers and authored a number of Internet protocol standards, books and other documents related to Internet routing protocols, network security, Internet addressing and network operations.

Farnam Jahanian is Professor at the University of Michigan and co-founder of Arbor Networks, Inc. His work on detecting, backtracing and resolving network-wide anomalies, such as DDoS attacks has been deployed by more than 100 service providers. Farnam received a Ph.D. in Computer Science from the University of Texas at Austin.

August 22 | Monday | 1:00 - 4:30

Operations and Management of IP Networks: What Researchers Should Know

Aman Shaikh, AT&T Labs Research
Albert Greenberg, AT&T Labs Research

Audience: Anyone interested in real world, IP network operations and management: from people who actually operate IP networks to researchers and academics interested and/or working in networking, security, performance, statistics, protocols, automation, fault and anomaly detection. Basic knowledge of IP networks is expected.

Aman Shaikh is a Technical Specialist at AT&T Labs (Research). He has been responsible for design, development and implementation of an OSPF monitor which is deployed in enterprise and service provider networks, and has closely interacted with the operations group at AT&T Network Operations Center (NOC).

Albert Greenberg heads the Network Measurement and Engineering Dept. at AT&T Labs Research. His research interests include Internet traffic measurement, modeling and engineering, network management, and optical networking. He is developing a unified toolkit to manage IP networks. He had had his hands in AT&T's operational IP networks since their birth.

August 26 | Friday | 9:00 - 12:30

Broadband Wireless Access and High-Speed Wireless Data Applications

Sanjoy Paul, Whenu Inc.

Audience: Researchers and engineers who want to understand the complete range of broadband wireless technologies optimized for data applications and spanning local area, metro area and wide area networks. Attendees will learn the fundamental differences between different wireless access technologies, and be able to appreciate why some of the technologies do and do not work in certain environments and how best to make them interoperate. Familiarity with basic protocols and IP networks is assumed, but not required.

Sanjoy Paul is currently the CTO of Whenu Inc. He was previously the Director of Wireless Networking Research at Bell Labs. He has over fifteen years of technology expertise, in mobile wireless networking, multicasting, media streaming, intelligent caching, and secure commerce. He holds a Ph.D. degree from the University of Maryland, College Park.

WORKSHOPS

AUGUST 22 & 26, 2005

August 22 | Monday | 8:30 - 4:30

E-WIND: Workshop on Experimental Approaches to Wireless Network Design and Analysis

Co-Chairs **Edward W. Knightly**, Rice Univ.
Christophe Diot, Intel Research

Research in wireless networking is rapidly becoming more experimental. Research prototypes are being developed for systems ranging from large-scale sensor networks to high-speed wireless access networks. Moreover experimentation and measurement studies are being performed with off-the-shelf hardware and operational testbeds. The goal of this workshop is to bring together experimentalist researchers from diverse backgrounds including wireless hardware platforms, wireless communications, wireless testbeds, and measurement of deployed wireless systems. The workshop will provide a forum for exchange of ideas, challenges, and work-in-progress discussions between both the wireless and wireline measurement communities. The workshop will leave a large space for discussion and possible coordination.

August 22 | Monday | 8:30 - 4:30

P2P-Econ: The Third Workshop on the Economics of Peer-to-Peer Systems

Co-Chairs **Eric Friedman**, Cornell Univ.
Emin Gun Sirer, Cornell Univ.

From file-sharing to distributed computation, from application layer overlays to mobile ad hoc networking, the ultimate success of a peer-to-peer system rests on the twin pillars of scalable and robust system design and alignment of economic interests among the participating peers. Following success of the first two workshops, the Third Workshop on Economics of Peer-to-Peer Systems will again bring together researchers and practitioners from multiple disciplines to discuss the economic characteristics of P2P systems, application of economic theories to P2P system design, and future directions and challenges in this area.

August 26 | Friday | 9:00 - 5:00

MineNet-05: Mining Network Data

Co-Chairs **Subhabrata Sen**, AT&T Labs Research
Chuanyi Ji, Georgia Tech
Debanjan Saha, IBM Research
Joe McCloskey, Dept. of Defense

Today's IP networks are extensively instrumented for collecting a wealth of information including traffic traces (e.g., packet or flow level traces), control (e.g., router forwarding tables, BGP and OSPF updates), and management (e.g., alarms, SNMP traps) data. The real challenge is to process and analyze this vast amount of primarily unstructured information and extract structures, relationships, and higher level knowledge embedded in it and use it to aid network management and operations. The goal of this one day workshop is to explore new directions in network data collection, storage, and analysis techniques, and their application to network monitoring, management, and remediation. The workshop will provide a venue for researchers and practitioners from different backgrounds, including networking, data mining, machine learning, and statistics, to get together and collaboratively approach this problem from their respective vantage points.

August 26 | Friday | 9:00 - 5:00

WDTN-05: Workshop on Delay Tolerant Networking and Related Networks

Co-Chairs **Kevin Fall**, Intel Research
S. Keshav, Univ. of Waterloo

Today, the most successful network architecture is that of the Internet. It has scaled well beyond the original plan of its designers, and the Internet Protocol has been carried on a great number of underlying protocols, including itself. However, the Internet's protocol architecture suffers some problems when implemented on classes of networks for which it was not originally designed. For example, when disconnection and reconnection is common, or link performance is highly variable or extreme, one or more of the traditional Internet protocols do not work well. In this workshop, we wish to explore physical networks that operate significantly differently from wired, connected networks and the protocol architectures and algorithms used to deal with such situations. Techniques for making applications tolerant to disruptions and/or high delays will also be investigated.

PROGRAM

TUESDAY, AUGUST 23, 2005

9:00 - 9:15 Opening Remarks

9:15 - 10:15 SIGCOMM Award Winner Keynote - Paul V. Mockapetris

10:45 - 12:15 Session 1: Routing

MetaRouting
Timothy G. Griffin (Univ. of Cambridge), **Joao Luis Sobrinho** (Telecommunications Institute, Lisbon)

HLP: A Next-generation Interdomain Routing Protocol
Lakshminarayanan Subramanian (UC Berkeley), **Matthew Caesar** (UC Berkeley), **Cheng Tien Ee** (UC Berkeley), **Mark Handley** (UCL London), **Morley Mao** (Univ. of Michigan), **Scott Shenker** (ICSI/UC Berkeley), **Ion Stoica** (UC Berkeley)

Stable Policy Routing with Provider Independence
Nick Feamster (MIT), **Hari Balakrishnan** (MIT), **Ramesh Johari** (Stanford)

1:45 - 3:15 Session 2: Transport

One More Bit Is Enough
Yong Xia (RPI), **Lakshminarayanan Subramanian** (UC Berkeley), **Ion Stoica** (UC Berkeley), **Shivkumar Kalyanaraman** (RPI)

Limitations of Equation-based Congestion Control
Injong Rhee (North Carolina State Univ.), **Lisong Xu** (Univ. of Nebraska, Lincoln)

The Power of Explicit Congestion Notification
Aleksandar Kuzmanovic (Northwestern Univ.)

3:45 - 5:15 Session 3: DHT

OpenDHT: A Public DHT Service and Its Uses
Sean Rhea (UC Berkeley), **Brighten Godfrey** (UC Berkeley), **Brad Karp** (Intel Research, Pittsburgh and CMU), **John Kubiatowicz** (UC Berkeley), **Sylvia Ratnasamy** (Intel Research, Berkeley), **Scott Shenker** (ICSI/UC Berkeley), **Ion Stoica** (UC Berkeley), **Harlan Yu** (Princeton)

Meridian: A Lightweight Framework for Network Positioning without Virtual Coordinates
Bernard Wong (Cornell Univ.), **Aleksandrs Slivkins** (Cornell Univ.), **Emin Gun Sirer** (Cornell Univ.)

A Case Study in Building Layered DHT Applications
Yatin Chawathe (Intel Research, Seattle), **Sriram Ramabhadran** (UCSD), **Sylvia Ratnasamy** (Intel Research, Berkeley), **Anthony LaMarca** (Intel Research, Seattle), **Scott Shenker** (ICSI/UC Berkeley), **Joseph Hellerstein** (Intel Research, Berkeley)

5:30 SIGCOMM Business Meeting - Open to all

PROGRAM

WEDNESDAY, AUGUST 24, 2005

9:00 - 10:30 Session 4: Wireless

Using Redundancy to cope with failures in a Delay Tolerant Network
Sushant Jain (Univ. of Washington), **Mike Demmer** (UC Berkeley), **Rabin Patra** (UC Berkeley), **Kevin Fall** (Intel Research, Berkeley)

Idle Sense: An Optimal Access Method for High Throughput and Fairness in Rate Diverse Wireless LANs
Martin Heusse (LSR-IMAG), **Franck Rousseau** (LSR-IMAG), **Andrzej Duda** (LSR-IMAG)

BORP: Opportunistic Multi-Hop Routing for Wireless Networks
Sanjit Biswas (MIT), **Robert Morris** (MIT)

11:00 - 12:30 Poster Session

2:00 - 3:30 Session 5: Measurement

On the Predictability of Large Transfer TCP Throughput
Qi He (Georgia Institute of Technology), **Constantinos Dovrolis** (Georgia Institute of Technology), **Mostafa Ammar** (Georgia Institute of Technology)

Improving Accuracy in End-to-end Packet Loss Measurement
Joel Sommers (Univ. of Wisconsin-Madison), **Paul Barford** (Univ. of Wisconsin-Madison), **Nick Duffield** (AT&T Labs Research), **Amos Ron** (Univ. of Wisconsin-Madison)

Profiling Internet Backbone Traffic: Behavior Models and Applications
Kuai Xu (Univ. of Minnesota), **Zhi-Li Zhang** (Univ. of Minnesota), **Supratik Bhattacharya** (Sprint ATL)

4:00 - 5:30 Session 6: Switching

Fast Hash Table Lookup Using Extended Bloom Filter: An Aid to Network Processing
Haoyu Song (Applied Research Lab, Washington Univ. in St. Louis), **Sarang Dharmapurikar** (Applied Research Lab, Washington Univ. in St. Louis), **Jonathan Turner** (Applied Research Lab, Washington Univ. in St. Louis), **John Lockwood** (Applied Research Lab, Washington Univ. in St. Louis)

Algorithms for Advanced Packet Classification with Ternary CAMS
Karthik Lakshminarayanan (UC Berkeley), **Anand Rangarajan** (Cypress Semiconductors), **Srinivasan Venkatachary** (Cypress Semiconductors)

Dynamic Pipelining: Making IP Lookup Truly Scalable
Jahangir Hasan (Purdue Univ.), **T.N. Vijaykumar** (Purdue Univ.)

6:00 Banquet - Moshulu Restaurant

PROGRAM

THURSDAY, AUGUST 25, 2005

9:00 - 10:30 Session 7: Security

Mining Anomalies Using Traffic Distributions
Anukool Lakhina (Boston Univ.), **Mark Crovella** (Boston Univ.), **Christophe Diot** (Intel Research, Cambridge)

BLINC: Multilevel Traffic Classification in the Dark
Thomas Karagiannis (UC Riverside), **Dina Papagiannaki** (Intel Research, Cambridge), **Michalis Faloutsos** (UC Riverside)

A DoS-limiting Network Architecture
Xiaowei Yang (UC Irvine), **David Wetherall** (Univ. of Washington), **Tom Anderson** (Univ. of Washington)

11:00 - 12:30 Session 8: Transport II

TeXCP: Responsive yet Stable Traffic Engineering
Srikanth Kandula (MIT), **Dina Katabi** (MIT), **Bruce Davie** (Cisco), **Anna Charny** (Cisco)

Rigorous Specifications and Conformance Testing Techniques for Network Protocols, as applied to TCP, UDP, and Sockets
Steve Bishop (Univ. of Cambridge Computer Laboratory), **Matthew Fairbairn** (Univ. of Cambridge Computer Laboratory), **Michael Norrish** (NICTA, Canberra), **Peter Sewell** (Univ. of Cambridge Computer Laboratory), **Michael Smith** (Univ. of Cambridge Computer Laboratory), **Keith Wansbrough** (Univ. of Cambridge Computer Laboratory)

Re-feedback for Policing Congestion Response in an Inter-network
Bob Briscoe (BT Research), **Arnaud Jacquet** (BT Research), **Carla Di Cairano-Gilfedder** (BT Research), **Andrea Soppera** (BT Research)

2:00 - 3:30 Work-in-progress Session

4:00 - 5:30 Session 9: New Directions

Declarative Routing: Extensible Routing with Declarative Queries
Boon Thau Loo (UC Berkeley), **Joseph M. Hellerstein** (UC Berkeley & Intel Research, Berkeley), **Ion Stoica** (ICSI/UC Berkeley), **Raghu Ramakrishnan** (Univ. of Wisconsin, Madison)

Towards a Global IP Anycast Service
Hitesh Ballani (Cornell Univ.), **Paul Francis** (Cornell Univ.)

Towards an Evolvable Internet Architecture
Sylvia Ratnasamy (Intel Research, Berkeley), **Scott Shenker** (ICSI and UC Berkeley), **Steven McCanne** (Riverbed Technology)

6:00 - 7:00 Outrageous Opinions (see web page for details)