WISDOM: Welcome!
(Spring ’14)

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Outline

Who
What
Collaborations
Accolades
Springboard
Workshop
Who
Who

WISDOM =
Professors + Students + Collaborators
Professors

Professors (original)

• Aditya Akella*, Andrea Arpaci-Dusseau, Remzi Arpac-Dusseau, Paul Barford, Somesh Jha, Tom Ristenpart, Mike Swift*
(expertise in networking, systems, security)

Professors (new)

• Suman Banerjee
(expertise in mobility and wireless)
Students and Post-Docs

Collaborators
What
What We Do

WISDOM is a research coalition

• Many interesting paths (not one single system)
• Carve out deep and interesting research topics (not just building infrastructure)
• Impromptu sub-collaborations internally (not everyone works on everything)
• Work with industry/national labs (not just limited to within Wisconsin)
Focus: Software in the DC

Common theme: **Software in the Datacenter**

- New levels of **programmability** in networks, storage layers, security systems
- Examples: software-defined network functions, split-level I/O scheduling and isolation, etc.
- General approach
  - What are the key problems?
  - What are the necessary solutions?
- But also, reaching beyond the SDC
Collaborations
How We Work with Industry and Labs

Short answer: Closely
- We’re here to **build new bridges**
  (hopefully, so are you)

Many examples
- **Facebook** messages storage system
- **Microsoft** datacenter scheduling
- Next-generation **Fusion-io** FTLs for SSDs
- etc.
Accolades
Awards and Honors

Students

• Samer Al-Kiswany - NSERC Postdoctoral fellowship
• Ashok Anand - SIGCOMM Dissertation Award (runner up)
• Vijay Chidambaran - Microsoft Graduate Fellowship
• Aaron Gember - IBM PhD Fellowship
• Lanyue Lu - VMware Graduate Fellowship
• Wenfei Wu - Landweber Fellowship in Distributed Systems
• Tan Zang - First prize SIGMOBILE student research competition

Professors

• Suman Banerjee - ACM SIGMOBILE Rock Star Researcher
• Paul Barford - Carolyn Rosner Educator of the Year
• Mike Swift - Tenure!

Best paper awards

• SIGKDD, HotPlanet, CoNEXT, SOCC ’13, FAST ’13, EuroSys ’14,…
Springboard
Three foci:

- **Re-envisioning trust management** via a new authorization and audit framework

- **Uncovering new opportunities for monitoring and diagnosis** of a range of behaviors, using the provider to facilitate the aggregation of relevant data across the broad tenant base

- **Realize all this with an agile security platform** that enables fluid, automated insertion of security monitors into appropriate loci within the cloud infrastructure
CloudLab

A large-scale, **distributed scientific infrastructure** on top of which many different clouds can be built
CDSET

Professors (many)

Bringing together the Department of Statistics, Computer Sciences, and Computer Engineering to enable the next generation of cloud-based data science and engineering

Traineeship: Students work across the “data science software stack”, learning both @ high level (e.g., machine learning) and @ low (e.g., how systems work and scale)

“Bridge” classes: Mixing stats and CS students to work on joint projects

Data science consulting lab: Open hours to help on-campus researchers with data science needs
Workshop
General Organization

Goals

• Have both student and faculty talks
• Represent the diversity of research
• Pack as much stuff into 1.5 days as possible
Day 1

Morning
• Opening: Faculty talk by Remzi Arpaci-Dusseau
• Session 1: Cloud security, storage, networking
• Session 2: Virtualized data center

Lunch: Faculty talk by Aditya Akella on “OpenNF”

Afternoon
• Session 3: Software-defined networks
• Session 4: Layering in storage systems
• Faculty talk by Paul Barford on “Online Ads”

Evening
• Poster session (and buffet dinner)
• Session 5: Open mic for your crazy ideas/suggestions
Day 2

Morning

• Faculty talk: Tom Ristenpart on “Rethinking Security”
• Session 6: Working with Industry
• Session 7: New storage technologies

Lunch*: Faculty talk by Suman Banerjee on “Wireless Interference (an SDN-centric approach)”

Afternoon

• Session 8: Security
• Session 9: Wireless, debugging, beyond
• Open time
One More Thing
Bathrooms

Out the door, past the WID front desk, near the elevators
Thank you