CNSM 2012
2012 8th International Conference on
Network and Service Management

Keynote Talks

Title	**End-to-End Service Management in Wireless Networks**
Date/Time	Monday, 22 October 2012 / 09:00AM
Room	Bermuda A & B
Speaker	Charles R. Kalmanek, *AT&T Labs, USA*

Abstract

Subscribers are increasingly accessing application layer services over wireless networks, both cellular and Wi-Fi. Perhaps surprisingly, managing the end-to-end service experience in these networks introduces significant new challenges. Cellular networks are complex, utilizing a plethora of technologies and protocols at many different layers. End-to-end service quality is a function of complex, dynamic interactions between these layers and protocols. Wi-Fi, while widely used, consists of a patchwork of access points that does not provide a consistent service experience. This talk discusses recent advances in managing large-scale cellular networks, and poses some challenges that need to be addressed to provide a more consistent end-to-end service experience across cellular and Wi-Fi networks.

Biography

Charles R. Kalmanek is Vice President-Research in AT&T Labs. He is responsible for research in AT&T on algorithms, communications technologies, large-scale networks, speech and language understanding, machine learning, multimedia technologies, human-computer interfaces, mobile applications, converged services, and software and information systems.Chuck joined AT&T Bell Laboratories in 1980. He has extensive experience in network architecture, protocols and distributed systems. His research spans IP network management, access network architectures, wireless networks, voice over IP (VoIP), multimedia streaming, content distribution networks and storage networks, as well as packet-switch and host-interface design.

Chuck received a B.S. degree from Cornell University in Applied and Engineering Physics and M.S. degrees in Electrical Engineering and Computer Science from Columbia University and New York University, respectively. He is a recipient of AT&T's Strategic Patent and Strategic Standards awards. Chuck is an IEEE Fellow, and co-edited Guide to Reliable Internet Services and Applications, published by Springer in 2010. Chuck is a member of the FCC's Open Internet Advisory Committee.

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Title	Software-Defined Network Management
Date/Time	Monday, 22 October 2012 / 10:45AM
Room	Bermuda A & B
Speaker	Nick Feamster, *University of Maryland and Georgia Institute of Technology, USA*

Abstract

Despite the fact that billions of people around the world increasingly rely on Internet connectivity for a wide array of applications, communications networks remain incredibly difficult to manage, troubleshoot, and secure. Network management challenges exist in all kinds of networks; they are particularly acute in homes, where we understand very little about home network performance, let alone network management or security. The perennial challenges in network management are now coming to a head; to solve them, we must think differently about networking: a discipline that has focused almost exclusively on performance must begin thinking more about pragmatism and people. In this talk, I will first discuss the problem of troubleshooting and predicting network performance a priori (i.e., before configuration is deployed "in the wild" on a running network) and describe tools that I developed to address these problems that were used by hundreds of Internet service providers to debug their network configurations. I will then argue that, in future networks, the tools I developed wouldn't be necessary at all. Specifically, I will describe how an emerging paradigm called software-defined networking, which decouples network control from the underlying network infrastructure, can simplify many network management tasks in different types of networks and may ultimately provide a means by which network operators (and home users) can make their networks more predictable, manageable, and secure. I will present a new framework for software-defined network control that we have developed, implemented, and deployed (in both home networks and on a large campus network) and describe how it allows network operators to express and implement complex policies in a simple and high-level control framework. I will then explore how software-defined network control may ultimately help us solve other longstanding network management problems in both security and network troubleshooting.

Biography

Nick Feamster is the Darnell-Kanal Associate Professor of Computer Science in the Department of Computer Science at University of Maryland, and an associate professor at Georgia Tech, where he leads the Network Operations and Internet Security Group. He received his Ph.D. in Computer science from MIT in 2005, and his S.B. and M.Eng. degrees in Electrical Engineering and Computer Science from MIT in 2000 and 2001, respectively. His research focuses on many aspects of computer networking and networked systems, including the design, measurement, and analysis of network routing protocols, network operations and security, and anonymous communication systems. In December 2008, he received the Presidential Early Career Award for Scientists and Engineers (PECASE) for his contributions to cybersecurity, notably spam filtering. His honors include the Technology Review 35 "Top Young Innovators Under 35" award, a Sloan Research Fellowship, the NSF

CAREER award, the IBM Faculty Fellowship, and award papers at SIGCOMM 2006 (network-level behavior of spammers), the NSDI 2005 conference (fault detection in router configuration), Usenix Security 2002 (circumventing web censorship using Infranet), and Usenix Security 2001 (web cookie analysis).

Title	SDN in Windows Azure Cloud
Date/Time	Tuesday, 23 October 2012 / 09:00AM
Room	Bermuda A & B
Speaker	Deepak Bansal, *Microsoft, USA*

Abstract

Software Defined Networking (SDN) is a much hyped term without clear definition or agreement on scope or meaning. In this talk, we present the "real world" problems in networks in a large cloud like Windows Azure. We then describe how software is being used in Windows Azure to solve these problems. By software control of the physical network hardware, one can achieve reliability and scale of operations for a large public cloud. We describe an approach to software control of the physical network. In addition, by delivering virtualized networks and network functions like load balancing realized and managed in software, one can achieve the needs for multi-tenancy and virtualization in the cloud.

Biography

Deepak Bansal is a Principal Development Manager at Microsoft responsible for the development of software stack used to allocate and manage Windows Azure network resources. He has been in Windows Azure for 4 years working on realizing the software controlled network vision by delivering critical network functions in Cloud via software running on servers and by eliminating human errors in network mis-configuration by driving configuration of network devices in software. Managing the network like we manage servers and eliminating complexity in physical networks are two key tenets to enabling resilient networks needed for the Cloud.

Prior to Windows Azure, Deepak led the development of TCP/IP network stack in Windows including IPv6 support. Deepak has done Masters in Computer Science from MIT, Cambridge where he won Masterworks award for his thesis on new TCP congestion control algorithms. He has done bachelors from IIT Delhi, India where he topped the Computer Science department. Deepak's areas of interest are Cloud, core networking protocols (TCP/IP, IPsec, HTTP etc), load balancing, new network abstractions, wireless networks, QoS etc. Deepak is currently chairing the configuration working group in ONF. Deepak has 8 patents issued and over 20 patents filed in the area of networking and has numerous publications in leading conferences.

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Title	**Managing a PetaByte Scale Data Warehousing Service**
Date/Time	Wednesday, 24 October 2012 / 09:00AM
Room	Bermuda A & B
Speaker	Dhruba Borthakur, *Facebook, USA*

Abstract

At Facebook, we use Apache Hadoop for data mining at petabyte scale. This is a fault-tolerant cloud-based storage and compute system. In this talk, I'll describe the size and scale of this analytics warehouse that runs hundreds of jobs scanning about 2 PB of data per day. I'll also describe the top management challenges of this warehouse and discuss the novel solutions we have instituted to address these challenges. Some of the crowd-sourcing management techniques that we use for data management will be discussed. Finally, I'll touch upon our software release management process and how software development techniques have evolved to help us manage the testing of new software on these 24*7 systems.

Biography

Dhruba Borthakur is an engineer in the Database Engineering Team at Facebook. He has been one of the lead contributors for the Apache Hadoop Distributed File System. He has been associated with Hadoop since its inception while working for Yahoo. He is instrumental in scaling Facebook's Hadoop cluster to multiples of petabytes. Dhruba also is a contributor to the open source Apache HBase project. Dhruba's current focus is to develop alternative database technologies that can harness the power of Solid State Devices and can scale linearly with the number of CPUs.

Prior to Faceook and Yahoo, he was a Senior Lead Engineer at Veritas Software (since acquired by Symantec) and was responsible for the development of the Veritas SanPointDirect Storage System. Prior to Veritas, he was the Chief Architect at Oreceipt.com, an e-commerce startup based in Sunnyvale. Before that, he was a Senior Engineer at IBM-Transarc Labs where he contributed to the development of Andrew File System (AFS), a part of IBM's e-commerce initiative, WebSphere. Dhruba has an M.S. in Computer Science from the University of Wisconsin, Madison and a B.S. in Computer Science BITS, Pilani, India. He has 20 issued patents. He is the co-author of multiple academic papers in SIGMOD, NSDI and EuroSys. He hosts a [Hadoop blog](.).