Previously Held: NDM 2011

The International Workshop on Network-aware Data Management held on Nov 14th, 2011, in conjunction with the International Conference for High Performance Computing, Networking, Storage and Analysis (SC 2011), in Seattle, WA, USA.

The one-day workshop on Network-aware Data Management attracted more than 80 attendees during the SC 2011 conference. The call for papers received submissions from Asia, Europe, and the United States.

The workshop program consisted of a keynote speech, presentations of peer-reviewed papers, and a panel discussion. The review process involved at least 3 reviews for each submission. We ranked the review scores and selected high-quality papers that best fit into the workshop program. Based on the review results, we accepted 8 papers. Among them, 4 were full papers with 30-minute presentations, and 4 were short papers with 20-minute presentations in the workshop program.

One Best-Paper award and one Best-Paper Honorable Mention were selected as outstanding paper contributions. The paper titled "**dFtree - A Fat-tree Routing Algorithm using Dynamic Allocation of Virtual Lanes to Alleviate Congestion in InfiniBand Networks**" presented by Wei Lin Guay (Simula Research Laboratory, Norway) received the Best Paper award, and the paper titled "Predicting Network Throughput for Grid Applications on Network Virtualization Areas" presented by Chunghan Lee (Toyohashi University of Technology, Japan) received the Best Paper Honorable Mention. We announced the awards during the closing remarks, and presented certificates to the speakers at the end of the workshop program.

The program included a panel on "**Data Management in Exa-scale Computing and Terabit Networking Era**", and a keynote speech titled "**Accelerating Data-Driven Discovery by Outsourcing the Mundan**e" by Ian Foster (Argonne National Laboratory & University of Chicago). We invited 5 panelists from different specialties who are well-known in the field of networking and data-intensive computing. Panel members include Richard Carlson (DoE Office of Advanced Scientific Computing Research), Ann Chervenak (USC Information Sciences Institute), Daniel S. Katz (University of Chicago and Argonne National Laboratory), Dhabaleswar Panda (Ohio State University), and Brian Tierney (ESnet/Lawrence Berkeley National Laboratory).

We posted the presentation slides from paper presentations, panel talks, and keynote speech online at http://sdm.lbl.gov/ndm/2011

Workshop Website: http://sdm.lbl.gov/ndm/2011

ACM proceedings: http://dl.acm.org/citation.cfm?id=2110217

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NDM 2011 Workshop Program

9:00 - 9:15   Opening Remarks

9:15 - 10:15   Keynote Speech
               Title: "*Accelerating Data-driven Discovery by Outsourcing the Mundane*"
               Speaker: Ian Foster, Argonne National Laboratory & University of Chicago

10:15 – 10:30 Break

10:30 - 11:00 dFtree - A Fat-tree Routing Algorithm using Dynamic Allocation of Virtual
               Lanes to Alleviate Congestion in InfiniBand Networks
                Presenter: Wei Lin Guay, Simula Research Laboratory, Norway

11:00 - 11:30 Predicting Network Throughput for Grid Applications on Network
               Virtualization Areas
                Presenter: Chunghan Lee , Toyohashi University of Technology, Japan

11:30 - 12:00 Network-Aware End-to-End Data Throughput Optimization
                Presenter: Tevfik Kosar, State University of New York at Buffalo.

12:00 – 13:00 Lunch Break

13:00 - 13:30 Network-aware Data Movement Advisor (NADMA)
                Presenter: Patrick Brown, Southern Illinois University

13:30 - 13:50 Scientific Data Movement enabled by the DYNES Instrument
                Presenter: Jason Zurawski, Internet 2

13:50 - 14:10 CernVM-FS: Delivering Scientific Software to Globally Distributed
               Computing Resources
               Presenter: Jakob Blomer, CERN, Switzerland

14:10 - 14:30 A Peer-to-Peer Architecture for Data-Intensive Cycle Sharing
               Presenter: Ian Kelley, Cardiff University, UK

14:30 – 14:50 An Architecture for a Data-Intensive Computer
               Presenter: Edward Givelberg, Johns Hopkins University

14:50 – 15:15 Break

15:15 – 16:30 Panel Discussion
               Title: Data Management in Exa-scale Computing and Terabit Networking Era

16:30 – 17:00 Closing Remarks

NDM 2011 Panel

Topic: **Data management in exa-scale computing and terabit networking era**

Panel members:
> *Richard Carlson, DoE Office of Advanced Scientific Computing Research*
> > Predictable or Guaranteed Behavior: What do Scientists Need?

> *Ann Chervenak, USC Information Sciences Institute*
> > The Impact of Terabit Networking on Data Management

> Daniel S. *Katz, University of Chicago and Argonne National Laboratory*
> > Application Challanges in Terabit Networks

> *Dhabaleswar Panda, Ohio State University*
> > High Performance Networks with RDMA

> *Brian Tierney, ESnet/Lawrence Berkeley National Laboratory*
> > Science Trends and Network Issues

Suggested questions:

What has been the impact of recent advances on science discoveries and industry? Which of them were successful and which of them were simply a hype?

What research challenges do you expect in exa-scale data management on terabit networks? If possible, please mention the challenges that require more than re-engineering existing tools?

What applications need exa-scale computing and terabit networks? Please give a few examples. What is the scope of data management research on faster network?

What are the performance problems in next-generation high-bandwidth networks? How do you think such problems will affect the applications performance?

How do applications accommodate next generation networks? What are the challenges for middleware developers to adapt exa-scale data management on terabit networks?

What are the major challenges in network management in terms of provisioning capacity and path, performance monitoring and diagnosis tools?

Summary:

Mehmet Balman and Surendra Byna. 2011. **Open Problems in Network-aware Data Management in Exa-scale Computing and Terabit Networking Era**. In *Proceedings of the first international workshop on Network-aware data management* (NDM '11). ACM, New York, NY, USA, 73-78. DOI=10.1145/2110217.2110229 http://doi.acm.org/10.1145/2110217.2110229

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