Nework Challenges Workshop (ONT-4) Objectives and Agenda Overview

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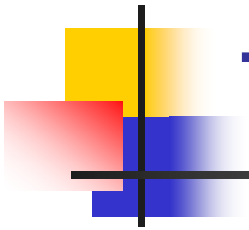
8th Annual Global LambdaGrid Workshop (GLIF 2008)
October 1-2, 2008



Topics

- Overview
- Workshop Objectives
- Agenda Structure
- Future Activities

Optical Services and Technology Research

- General Research Issues Relate To:
  - Investigative Topics and Activities
  - Future Research Plans (5-15 Year Horizon)
  - Basic Research and Experimentation (3-5 Year Horizon)
  - Early Prototypes (2-3 Year Horizon)
  - Early Pre-Production Implementations (1-2 Year Horizon)
  - Production Implementations (Current)
- International Research Issues Relate To:
  - Services
  - Facilities
  - Exchange Points
  - Technologies
  - Interoperability
  - Etc.

NRC Workshop Background

- Event Was Organized To Build On Prior Workshops: 2006 Workshop on Optical Network Testbeds (ONT-3), 2005 (ONT-2) and 2004 ONT-1
- ONT-1 Provided An Overview of Directions in Optical Communications, and Recommendations for Future Optical Network Development
- ONT-2 Was Designed As a Forum That Could Assist In Creating the Means to Transition the Community and Its Networking Infrastructure To Allow the Use Of Foundation of Leading Edge, Next Generation Optical Networks
- ONT-2 Developed Specific Frameworks for Community Actions In the Context of 5 Year Roadmaps Within Categories of Development, From Basic Research Testbeds to Early Implementations to Initial Production
- ONT-2 Also Introduced the Theme of International Interconnection and Interoperability
- ONT-3 Was Designed To Continue These Efforts, to Further Enhance the Theme of International Optical Networking, and To Advance Concepts of Next Generation Designs and Experimental Testbeds
- ONT-3 Focused On Optical Comm. & Technologies L1, Lightpath Based (Wavelength-Based) Services As Key Enabler of New Capabilities
- ONT-3 Co-Sponsored By NICT (Co-Chaired By Tomonori Aoyama, J. Mambretti)

ONT3 Sept. 7-8, 2006, Tokyo, Japan

Report of the Interagency

Optical Networking Testbed 3 Workshop

September 7 – 8, 2006
Tokyo, Japan

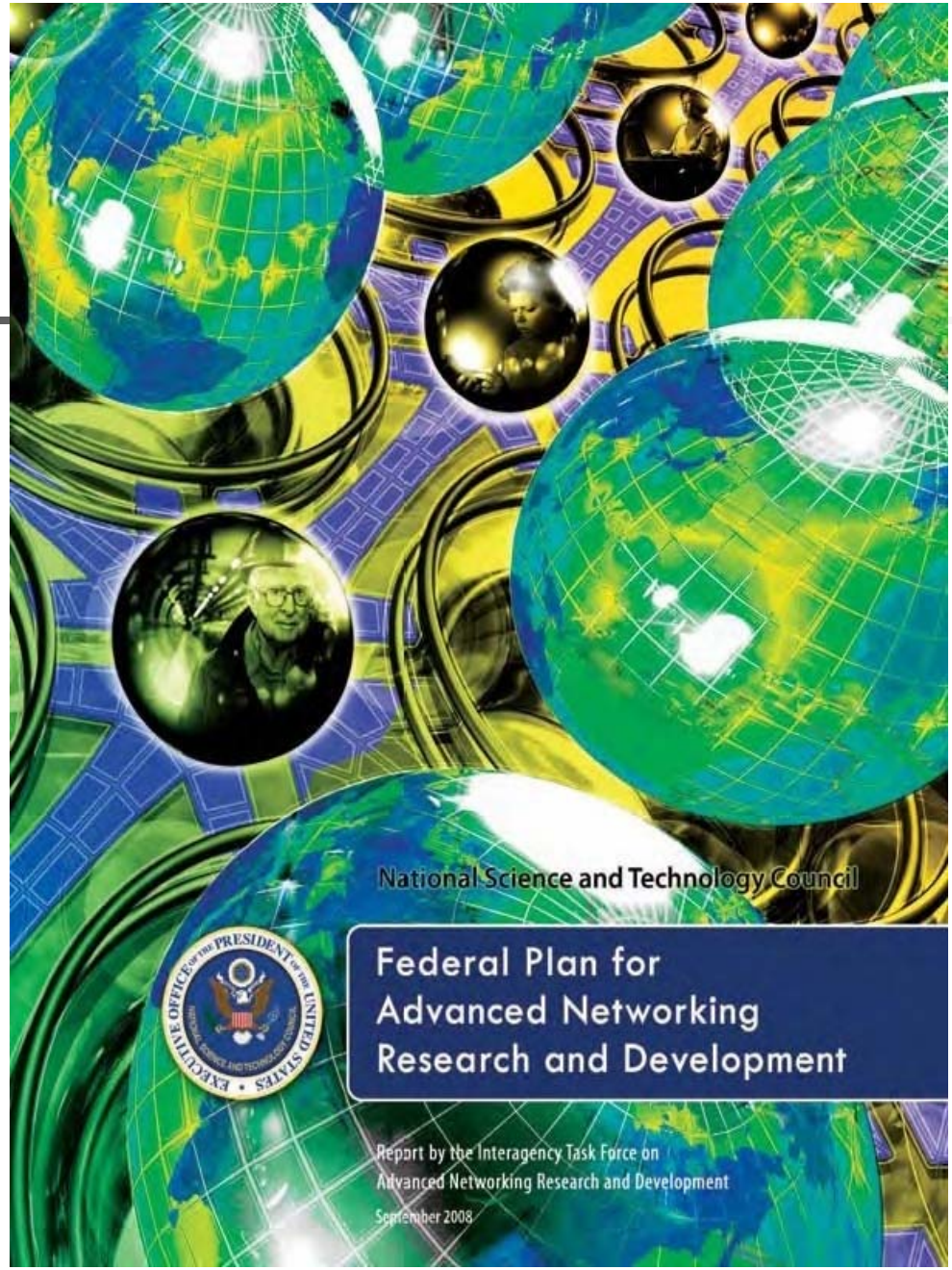
Jointly Sponsored by the

Department of Energy Office of Science
National Science Foundation
National Institute of Information and Communications Technology

Joint Engineering Team
of the Networking and Information Technology
R&D Program's
Large Scale Networking Coordination Group

Federal Report on Networking Research

- On January 30, 2007, the Interagency Task Force on Advanced Networking (ITFAN) Was Established and Tasked by the Director of the White House Office of Science and Technology Policy (OSTP) to:
  - Provide a strategic vision of future networked environments;
  - Identify the challenges in supporting such environments with existing and developing technologies;
  - Provide recommendations on a roadmap for research and research infrastructure to enable those future environments.
- A Recently Published Report Presents a Summary of a Federal Plan for Federal Advanced Networking R&D.
- The Task Force Proposed an Ambitious Program of Prioritized R&D to Achieve Fundamental Advances that Will Meet Future Federal Needs and Help Sustain the Nation's Leadership in Networking Technologies In Context of Growing International Competition.
- The Report Is Intended to Guide Internal Prioritization of Agencies' Networking Investments.
- The Task Force Included Representatives of 11 Federal Organizations


National Science and Technology Council
Federal Plan for
Advanced Networking
Research and Development
Report by the Interagency Task Force on
Advanced Networking Research and Development
September 2008

Network Research Challenges Workshop (ONT-4) Objectives

- For 2008, the Workshop Expanded the Topics To Include Consideration of a Wider Range of Network Research Areas, In Addition To Optical Networking
- Key Areas of Research Investigation Are Related to Activities That Are Fundamental Reconceptualizing Basic Network Theory, Design, Experimentation, Development, Prototype Implementation, and Research Processes and Facilities
- The Workshop Attempted To Begin Creating a Framework For Setting a Network Research Agenda for US Federal Agencies Involved in Network Research For the Next 5-15 Years
- The Workshop Will Result In a Report That Will be Published Soon

Sponsorship

Co-Sponsored by the DOE Office of Science, National Science Foundation

Organized in cooperation with the Federal Large Scale Networking Coordination Group (LSN)

Network Research Challenges Workshop (ONT-4) & GLIF 2008

- The Network Research Challenges Workshop Was Held In Conjunction/Partnership with the 8th Annual Global LambdaGrid Workshop Because of the Increasing Importance of International Research Cooperation
- This Cooperative Scheduling Recognizes That GLIF Has Provided Many Major Contributions To International Network Cooperation
- Scheduling Allows for Participation From Both Communities In Both Forums

Agenda Day 1

- Welcome: Joe Mambretti
- Vision for Future of Networking: Chris Greer, Director of the National Coordination Office
- Keynote speech: Vision for high-end heterogeneous networking: Kees Neggers
- Network Convergence, Looking Forward: Tom Lehman
- Vision of Network Science: Ty Znati
- Network security research: Karl Levitt
- Breakout Groups and Facilitators:
  - **Heterogeneous Networking:** Bill Wing
  - **Networking Security:** Joe St Sauver
  - **Federated Optical Networking:** Joe Mambretti
  - **Network Science and Engineering:** Ty Znati

Agenda Day 2

- Welcome, introduction, logistics: Keren Bergman
- Panel: International Networking Research: Dimitra Simeonedu, Chair
- Green Networking: Bill St Arnaud
- Dynamic, secure, mobile wireless internetworking research: Suman Banerjee,
- Chip Elliot (GENI)
- Lightning-round presentations (Industry)

Breakout Area 3. Federated Optical Networking Goals (1)

- Identify visions for what federated optical networking will be able to accomplish in 5-15 years, and applications that will be enabled, based on advances in the capabilities of this breakout area.
- What basic research is needed to enable seamless, transparent, secure federated optical networking including:
- - Basic networking theory
- - Development of new protocols and architectures
- - Integration with dynamic wireless networking, sensornets, cell phone access,...
- - Anytime, anywhere, anybody, secure access to data, computational, and other resources
- - Identifying potentially high payoff but higher-risk research
- - All layers of the protocol stack or new protocols
- - Inter-domain control and signaling including dynamic circuit networking and across heterogeneous technologies

Breakout Area 3. Federated Optical Networking Goals (2)

- What is the role of virtualization in federated optical networking and how can it be accomplished?
- What research is needed for storage systems and I/O to support full capacity of the optical networks?
- How can we provide performance measurement, network management, and security in a federated optical networking environment?
- What testbeds are needed to support development of federated optical networking?
- What are the priorities for research in federated optical networking?

Future Activities

- Draft Report Will Be Developed and Reviewed
- A Final Report Will Be Produced and Widely Distributed
- An Update on Progress Will Be Provided To the GLIF On This Initiative At 9th Annual Global LambdaGrid Workshop
- Ref: www.nitrd.gov