Internet2 Update

Gary R. Bachula
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Internet2 Update

Gary R. Bachula
VP for External Relations
Internet2
Internet2 Community

212 University Members
52 Corporate Members
51 Affiliate Members
31 R&E Network Members
37 State Education Networks
50 International Partners

October 2008
Internet2 Corporate Partners
Internet2 International Partners

For further information regarding the international programs of Internet2, visit http://international.internet2.edu/ or contact Heather Boyles, International Relations Director, heather@internet2.edu.
A listing of networks reachable via the Internet2 Network is found on the back of this page.
### Internet2 K20 Initiative
### SEGP Connectivity Survey

<table>
<thead>
<tr>
<th>Organization Type</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>K12 Schools/Orgs</td>
<td>41,494</td>
</tr>
<tr>
<td>Community Colleges</td>
<td>584</td>
</tr>
<tr>
<td>Four Year Colleges and Universities</td>
<td>811</td>
</tr>
<tr>
<td>Public Libraries</td>
<td>4503</td>
</tr>
<tr>
<td>Museums, Zoos, Aquariums, and Science Centers</td>
<td>198</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>47,590</strong></td>
</tr>
</tbody>
</table>
Internet2 Health Network Initiative

Supporting the FCC Rural Health Care Pilot Program intended to:

“...facilitate the creation of a nationwide broadband network dedicated to health care, connecting public and private non-profit health care providers in rural and urban locations.”

• Working with Internet2 Connectors to facilitate awardee access to the Internet2 Network
• Community-led weekly calls
• In-person Workshop
• Dedicated online information resources
New Governance

- Community-driven review begun in 2006
- Governance and Nominations Committee developed recommendations
- New Advisory Councils
- New Board membership and election process
- Fully implemented in 2008
Strategic Planning Process

• Part of the GNC recommendations
• Begun in December 2007
• Community-led and community-driven Strategic Planning Steering Committee
• Board-approved plan in July 2008
• Working on implementation currently

www.internet2.edu/reinvent
[Quick] Strategic Plan Implementation Update

- Strategic plan accepted by Board June 2008
- Implementation/oversight working draft distributed 10 September 2008
- Mid-course correction based on community input 25 September 2008
- Additional input at the Fall 2008 Internet2 Member Meeting 14-16 October 2008

Now Moving to Implementation
Cyberinfrastructure: Defined

• Instrumentation
• Data Storage
• Networking
• Computation
• User support
• Policy and Funding
• Management
• Security and Access
Cyberinfrastructure: Visualized
Integrated Systems Approach

Motivate

Applications

Middleware

Protocols

Networks

E2E Performance

Network Security

Enable
Internet2 Dynamic Circuit Network (DCN)

• 11 Internet2 Connectors are DCN-Enabled
  – Pending requests from 4 more
  – Several others in early discussion

• Applications using DCN
  – LambdaStation
  – TeraPaths
  – Phoebus

• Number of circuits
  – 1 Jan – 30 April: 2322 circuits created, only 4.6% failed
Middleware: Beyond Big Pipes

InCommon®

Shibboleth®

Grouper™
With InCommon

- Users have **single sign-on point** for different resources
- Fewer user accounts to manage
- Access based on attributes, not identity or location
- Fine-grained control over user identity or information
- Standards-based and open source
- New resource providers and users can be integrated quickly
111 organizations representing more than 2 million end users:

- 75 higher education institutions
- Government Labs and Agencies: including NIH and TeraGrid
- Commercial adoption: including Microsoft, Apple iTunes, WebAssign, ProQuest, Elsevier, EBSCO
- Other organizations: OCLC, Kuali Foundation, OhioLink
• Lead universities: Brown, Ohio State, Univ of Washington, Duke, USC

• Adoption: more than 10,000 deployed sites; national federating software for more than 20 countries

• Commercial adoption: Microsoft, Google, Elsevier, OCLC, etc...

• Current uses: content acquisition, collaboration tools, access to federal applications, access to administrative applications
• Group management tool
• Lead institution – Univ of Chicago; other key players include Duke, Brown, Georgia Tech, Univ of Penn, Univ of Memphis, Univ of Newcastle
• Adoption accelerating (~15 operational deployments now) as versions add capabilities, refine GUI, improve performance
• Under consideration in some key commercial services
COmanage

- Collaboration management platform – externalize identity management from collaboration applications
- Supports collaborations, virtual organizations, enterprises, VO service centers, etc
- Lead institution Stanford, with MIT support
- Leverages Shibboleth and Grouper
- Early versions, but adoption rapid – LIGO, OOI, campuses
perfSONAR

- A collaboration
  - Network operators focused on designing and building tools to provide monitoring and diagnostic capabilities
- An architecture & a set of protocols
  - Web Services Architecture
  - Protocols based on the Open Grid Forum Network Measurement Working Group Schemas
- Several interoperable software implementations
  - Java, Perl, Python…
- A Deployed Measurement infrastructure
  - Internet2 Observatory…

internet2.edu/performance
Internet2 Update

Timothy Lance
President and Chairman
NYSERNet
Images from CERN
Uncompressed HD Videoconferencing
1.5 gigabits per second HD

Photo by Steven S. Wallace
Tele-health

- Medical instruction
- Clinical practice
- Research
Acknowledgment: today’s Peta-op/s machines

$10^{12}$ neurons @ 1 KHz = 1 PetaOp/s