Optical Networking / Experiences @ iGrid2002

www.science.uva.nl/~delaat

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Amsterdam Science and Technology Centre (WTCW)
The Netherlands

• A showcase of applications that are “early adopters” of very-high-bandwidth national and international networks
  – What can you do with a 10Gbps network?
  – What applications have insatiable bandwidth appetites?
• Scientists and technologists to optimally utilize 10Gbps experimental networks, with special emphasis on e-Science, Grid and Virtual Laboratory applications
• Call for Participation (we may still accept good proposals despite deadline passed)
• iGrid is not just a conference/demonstration event, it is also a testbed!!
• Contact
  – maxine@startap.net or deLaat@science.uva.nl
iGrid2002

- www.igrid2002.org
- 26 demonstrations
- 16 countries (at least)
- Level3, Tyco, IEEAF Lambda’s
- CISCO, Hp equipment sponsoring
- Shipping nightmare, debugging literally (Asian beetles)
- ~30 Gbit/s International connectivity
- Huge networking collaboration
- Smelly NOC in the iGrid preparation weekend
International networking in full operation

The network for iGrid2002

- 10 Gbit/s Tyco
- 2.5 Gbit/s SURFnet
- 10 Gbit/s Level3
- 2.5 Gbit/s CERN
- 2.5 Gbit/s SURFnet
- 2.5 Gbit/s CERN
- 2.5 Gbit/s SURFnet
- 2.5 Gbit/s
- 10 Gbit/s

- Chicago StarLight
- New York
- Amsterdam NetherLight
- Dwingeloo ASTRON/JIVE
- CERN

www.igrid2002.org
www.startup.net/igrid2002
Real Lambda’s
eVLBI
Some impressions
GridFTP
testcluster
Lessons learned

• Most applications could not cope with the network!!!
• No bottleneck whatsoever in the network
• Many got about 50 - 100 Mbit/s singlestream tcp
• On Sunday evening my laptop had the highest single stream to Chicago (~ 340 Mbit/s)
• NIC’s, Linux implementation and timing problem
• Gridftp for example severely hit
• Classical networking protocols which work well on national scale tend to break transatlantic
Conclusions

• Even more bandwidth now at NetherLight
• SuperComputing 2002
• TransLight project
• Providing solutions for e-Science projects
• Rich networking research area
• 22 papers published in FGCS June 2003 issue
NetherLight UvA Setup

SURFnet backbone

Lambda's to:
- Chicago
- Geneva
- Prague
- Stockholm
- NYC
- London

Dark fiber to Dwingeloo

DAS: 32*2cpu's IBM Myrinet

1 Gbs

FOR
CE
1
0

Myrinet

100 Mbs

EXTREM

server

Fat pc

4 HP servers

AAA

SURFnet backbone
The END

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