CineGrid
Global Experimental Facility for very high quality digital Cinema

CineGrid R&D in Holland

Cees de Laat
CineGrid.org founding member

University of Amsterdam
CineGrid Mission

To build an interdisciplinary community that is focused on the research, development, and demonstration of networked collaborative tools to enable the production, use and exchange of very-high-quality digital media over photonic networks.

http://www.cinegrid.org/
What is it about

• CineGrid is about forming a community
• The CineGrid vision is about a worldwide collaboration
• It evolves around content
• It stretched current technology
  – [storage, networking, vizualisation, grid computing]
In The Netherlands SURFnet connects between 180:
- universities;
- academic hospitals;
- most polytechnics;
- research centers.
with an indirect ~750K user base

~ 6000 km
scale comparable to railway system
Very constant and predictable!
DAS-3 Cluster Architecture

- 85 (40+45) compute nodes
- Fast interconnect
- 10 Gb/s Ethernet lanphy
- 1 Gb/s Ethernet
- Local interconnect
- UvA-node
- To local University
- To SURFnet
- 8 * 10 Gb/s from bridgenodes

Head node (2)

NORTEL - Myrinet

10 Gb/s Ethernet lanphy

10 Gb/s Ethernet lanphy

8 * 10 Gb/s from bridgenodes

Advanced School for Computing and Imaging
**CineGrid**

**DAS-3 - 4U set**

@UvA

Rembrandt Cluster

total 22 TByte disk space

@ LightHouse

NetherLight, StarPlane

the cp testbeds and beyond

10 Gbit/s

DP AMD processor nodes

head node (?)

Glimmer-Glass mems switch

10 Gbit/s

comp node

comp node

comp node

comp node

comp node

comp node

NORTEL 8600 L2/3 switch

Glimmer-Glass mems switch

10 Gbit/s

comp node

comp node

comp node

comp node

comp node

comp node

F10 L2/3 switch

10 Gbit/s

comp node

comp node

comp node

comp node

comp node

comp node

streaming node

8 TByte
Semantic Web RDF describing Infrastructure and Content

Application: find video containing x, then trans-code to it view on Tiled Display

Paola Grosso
Current research & Engineering

• **Formats:**
  - uncompressed unreadable (UMF) 3/4 GBytes/sec
  - compressed unreadable (jpeg2000) 300 - 700 Mbit/s
  - uncompressed readable (eg TIFF) 1.2 GB/s, 4.3 TB/h
  - compressed readable (eg DXT) 300 - 800 Mbit/s

• **Do not compress away the science!**

• **Storage**
  - one disk about 40-80 MByte/s ~ 300-600 Mbit
  - raid 200-350 MByte in raid5
  - parallel file systems
  - getting it from disk on the network, $10^2 - 10^6$!
  - Holland festival taking uncompressed about 12 TByte

• **Rights, access and DRM!**
Role of UvA

• Linking communities (CALIT(2), EVL, NTT, Keio) to local organizations(SURFnet, SARA, de Waag, you!)

• System and Network Engineering
  – optical photonic networks
  – store & forward (terabyte email)
  – drm & AAA & security
  – grid for processing

• Metadata and make it searchable (MM)
The “Dead Cat” demo
SC2004 & iGrid2005

Produced by:
Michael Scarpa
Robert Belleman
Peter Sloot

Many thanks to:
AMC
SARA
GigaPort
UvA/AIR
Silicon Graphics, Inc.
Zoölogisch Museum
Major Problems

• This is very specialized stuff!
• At every site there is about one engineer or phd that knows to operate the networks, storage, camera’s, projectors!
• Do not underestimate complexity of sound!
  – twice as much racks for sound @ Cal(IT)2
• So we need to educate!
• Do not forget GAMING! (I have kids too!)
• Sequel: “The return of the Titanic”
Questions?

www.cinegrid.org
www.cinegrid.nl
www.science.uva.nl/~delaat

@WaagSociety

StårPlane

DAS-3

SURFNET

sara