Networking Research

www.science.uva.nl/~delaat

www.science.uva.nl/research/air

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- WP7
  - http://www.gridpp.ac.uk/wp7/index.html
- FUTURE
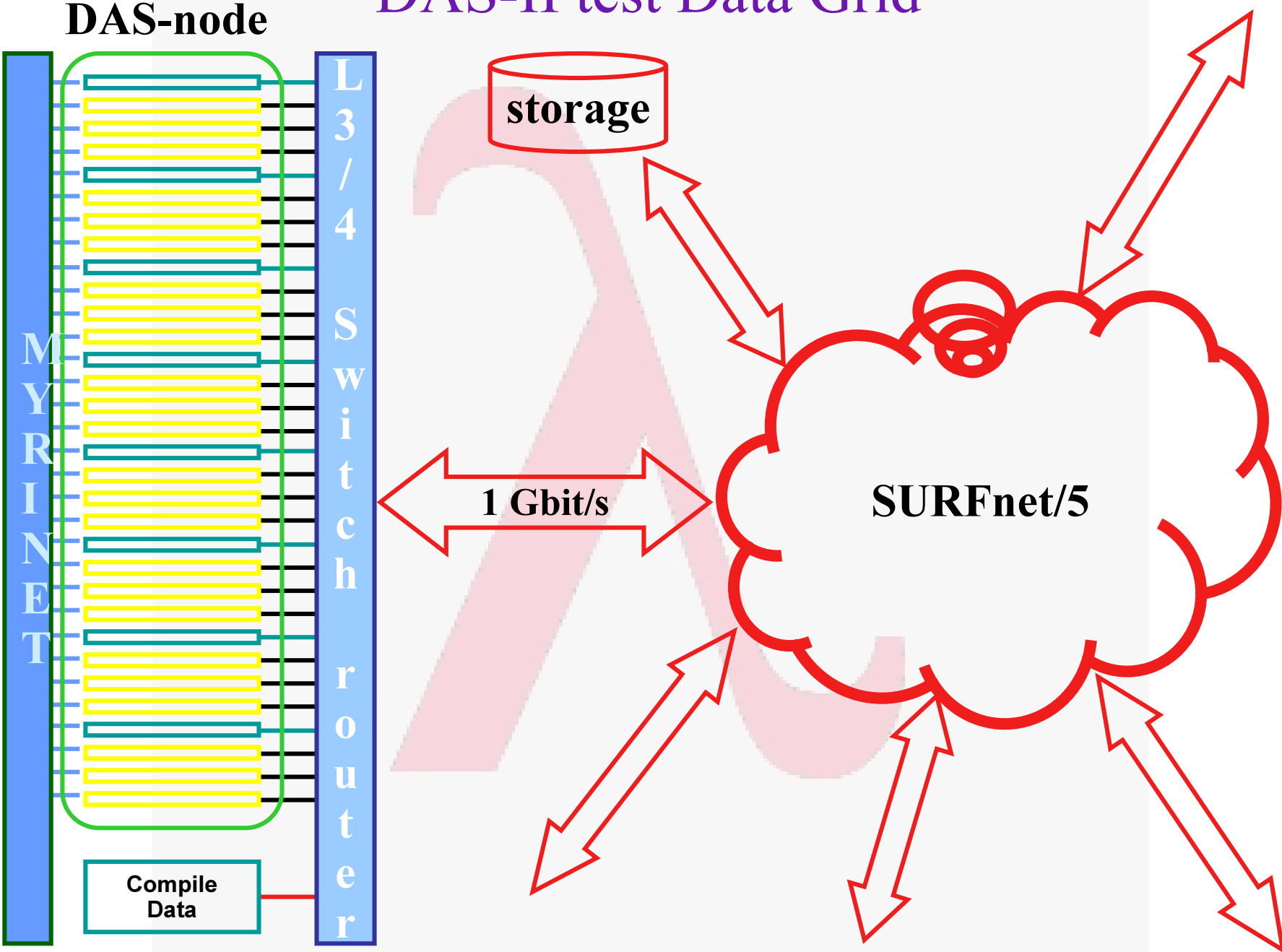 - http://science.uva.nl/~delaat/home.html#Recent_talks

DAS - II

- ASCI-onderzoeksschool
- Leiden, Delft, UVA, VU, (Utrecht)
- Utrecht in DAS-I voor Netwerken (ATM), nu volwaardig
- DAS-II NWO subsidie
  - (project totaal 2 Mfl, 75%)
- 5 clusters of computers

Configuratie

- IBM, Rack based, basic 32 nodes xSeries 330
- Server
- Pentium - III
  - Dual processor
  - 1 Gigahertz
  - 2 PCI slots, 33 Mhz, 64 bits slots, full + half size
- Myrinet-II
- 100 Mbit Ethernet
- Extreme 48-I switch/router
  - 48 * 100 + 2 * 1000 Gbit/s

DAS-II test Data Grid

DAS-node

MYRINET

L3/4 Switch router

storage

1 Gbit/s

SURFnet/5

Compile Data

Data Grid Test facility

- Features
  - 1 Gbit/s uplinks to national backbone
  - Non blocking access to other DAS nodes
  - Computing and networking speed same order of magnitude
  - Location of data visualization and computing independent
  - 4 layers of inter-process communication
    - Shared memory
    - Myrilink (2 Gbit/s) in user space
    - 100 Mbit/s and Gbit/s locally switched Ethernet (kernel space)
    - 1 Gbit/s routed Internet connectivity (kernel space)
- Many unique research degrees of freedom
- Infrastructure requirements
  - Heavy switches/routers for 1 Gbit/s uplink capability
  - 1 Gbit/s Ethernet interface for uplink
  - Private fibers to NRN backbone ?

WP7

- Network services for Dutch/Data-Grid/Tag
  - Metering
  - Monitoring
  - Security (David, Leon)

Monitoring

- What?
  - Ping times
  - Routes
  - Available bandwidth
- Why?
  - Keep those nerds from the street
  - Route flaps
  - What to expect when starting a job
  - Optimization of resources

Tools

- Pinger
  - http://gridmon.sara.nl/
- RTPL
  - http://grid.sara.nl/~hblom/rtpl/wp7/Table/net_data.html
- Ripe boxes
  - http://www.ripe.net/cgi-bin/gttm/pod
- Forecasting
  - http://ccwp7.in2p3.fr/cgi-bin/pageQueryChoose.cgi?ns=ccwp7.in2p3.fr:8090

Metering

- Why
  - Resource tracking
  - Billing
    - ai, ai, ai
- How
  - In applications
    - Adapt apps
  - In network
    - Intelligent switches, networks

Security

- Integrity
- Confidentiality
- Authentication, Authorization, Accounting
- CAS server Grid Forum Architecture
- IRTF AAAARCH research
  - (http://www.aaaarch.org)