StårPlane

StarPlane & DAS-3

Status update & Food for thought

Li Xu, JP Velders

SNE group, UvA

13-04-2007

Outline

- Points from UvA
  - Testbed
  - Management Plane
  - Dynamicity in StarPlane
  - NDL for StarPlane
  - AAA in StarPlane
- Food for thoughts
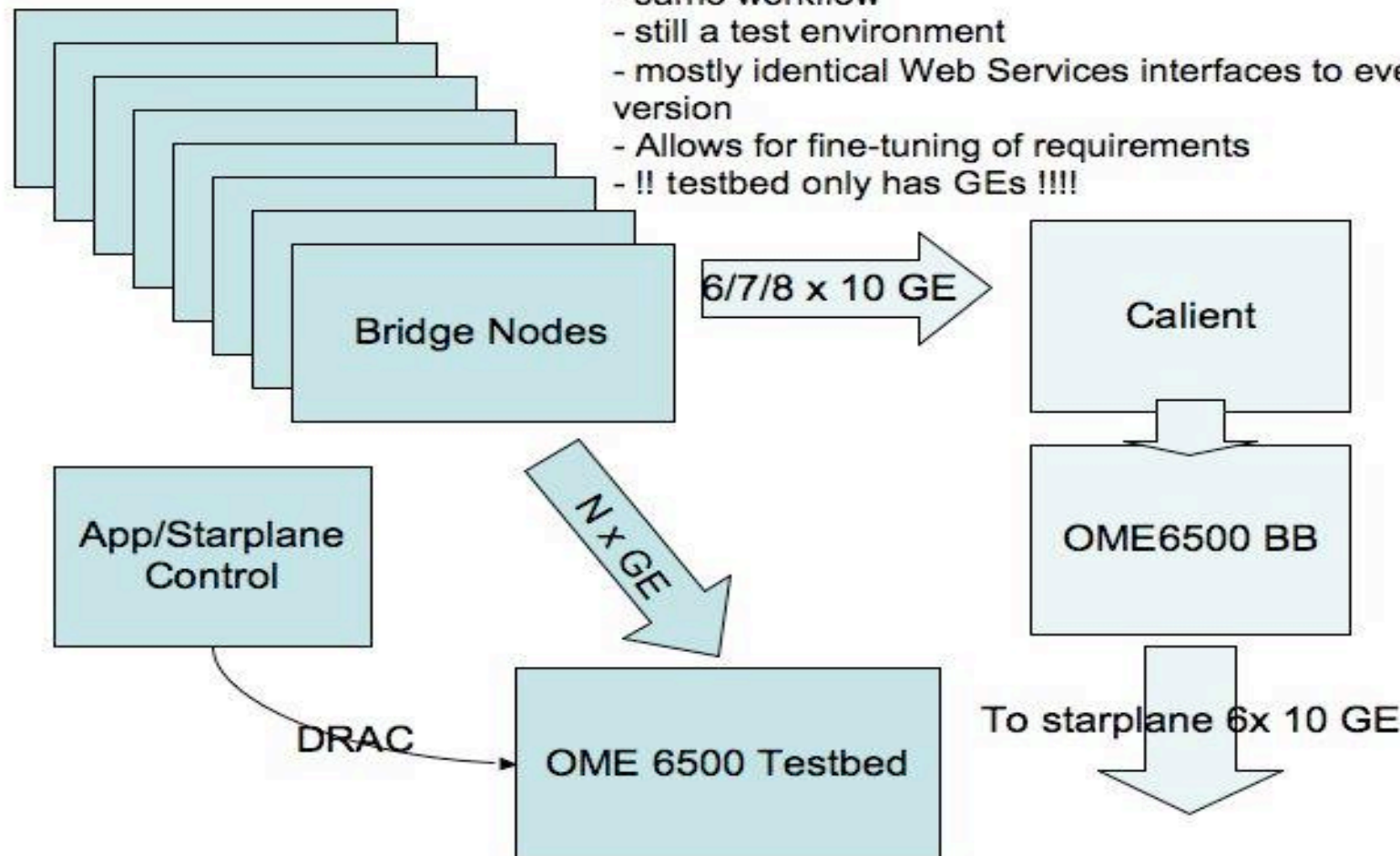- DAS-3 updates
- SC|07 StarPlane demo

Reference links

- StarPlane: http://www.starplane.org
- DAS-3: http://www.cs.vu.nl/das3/
- NDL: http://www.science.uva.nl/research/sne/ndl
- AAA: http://www.science.uva.nl/research/air/projects/aaa/
- DRAC/Nortel: 🙂

StarPlane

Phase1 Testbed Setup

Phase 1: DRAC on production server, but not on production network (available in weeks)

DRAC controls OME6500 testbed
- same workflow
- still a test environment
- mostly identical Web Services interfaces to eventual version
- Allows for fine-tuning of requirements
- !! testbed only has GEs !!!!

Bridge Nodes

6/7/8 x 10 GE → Calient

N x GE

App/Starplane Control

DRAC → OME 6500 Testbed

OME6500 BB

To starplane 6x 10 GE

Management Plane

- Development of Mgmt Plane
  - Web Services
  - Interfacing to both application and control plane (DRAC)
  - Aware of entire network topology
  - Own reservation system
- Talking to DRAC
  - Translate 'topology' to a herd of lightpaths
  - Work with DRAC WS instead of GUI (1)
  - Workflow manager? (2)

Dynamicity in StarPlane

- Dynamic lightpath provisioning
  - 3 types: user-controlled / scheduled / dynamic
    (ref: Paul Brand and presented by Erik-Jan)
  - A fast initial setup time (sub-second!)
  - A fast service change time (sub-second!!)
- Dynamic behavior in DRAC/CPL ? (3)
- *lightpath portfolios*
- Dynamic services
  - Optimize the lightpath reservations
  - Seamlessly shifts applications over lightpaths for optimizing the 'global' network utilization

NDL for StarPlane

Network
Description
Language

NDL for StarPlane

- Modality of network topology exchange
- Intra domain case for StarPlane
  - The 'whole picture'
  - Available resources (presented in form of topology)
  - Reserved topology
- Question to DRAC?
 - Who should be 'smarter' ? (4)

AAA in StarPlane

- The AAA mechanism in DRAC? (5)
  - User / User group
  - Policy decision
- Embed AAA into the mgmt plane
- Bridging to other projects: DRAGON, Phosphorus

Food for thought

1. Fast communication between mgmt plane and DRAC to reduce the overhead of lightpath setup time
2. Vision of the workflow manager in DRAC
3. Dynamic lightpath provisioning
4. Network utilization optimization in StarPlane
5. AAA issue in StarPlane

To be continued...

DAS-3 updates: the good, the bad, and the ugly...
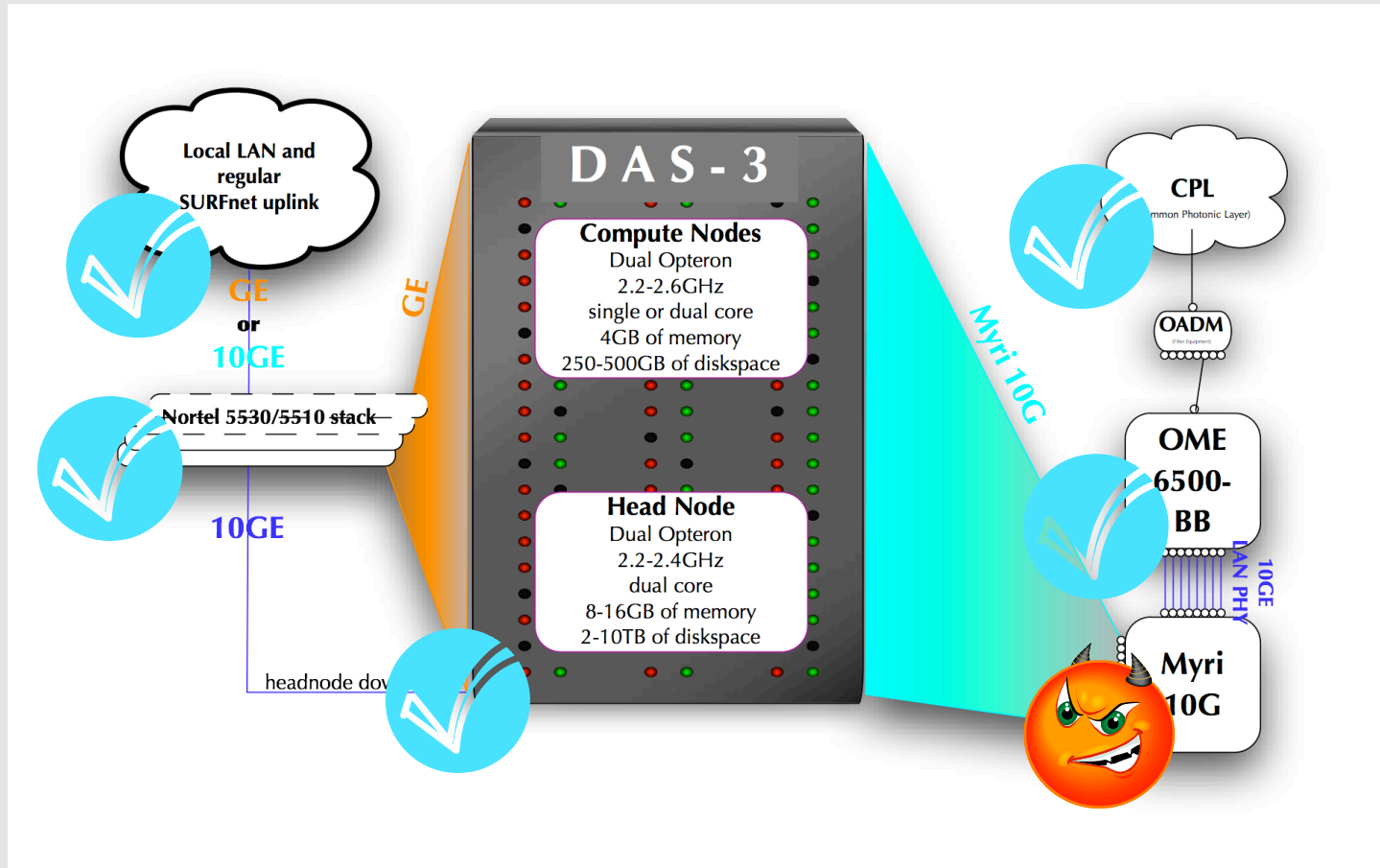
Site status

- Myrinet sites:
  - UvA: "bridge nodes" available
  - VU: "bridge nodes" being installed
  - Leiden: "bridge nodes" being installed
  - 6x10G + 2x10GE LineCards to be installed
  - tests show NIC's perform well after tweaking

- 5530 site:
  - Delft: fibers in place, switch access difficult

Herding LightPaths

- How to add dynamicity to static SURFnet Phase 1 StarPlane network ?

- Myrinet bridges MX over Myrinet to MX over Ethernet: 802.1ah possibilities ?

- Sub-second still is a long way out…

- Move all smarts and degrees of freedom into StarPlane's span of control ?

13

Things to ponder

- Could/would StarPlane benefit from PBT ?

- Decreasing CPL circuit realization times ?

- Closing the actual StarPlane ring ?

- Extending StarPlane beyond the sandbox ?

- Interconnecting with/through Phosphorus, DRAGON, UCLP et al.

SC|07 StarPlane demo

- StarPlane network lightpath provisioning and monitoring demonstration with SARA

- Goal: have something that runs on the REAL StarPlane CPL infrastructure (not in the testbed).

- Timeframe: Nov 2007