Dynamic Lightpaths - in SURFnet and Beyond
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Terena E2E workshop on establishing lightpaths
Amsterdam - 2nd of December 2008
Contents

- Dynamic Lightpaths, return to the basics
- Developments in SURFnet
- And then on to Beyond...
Fixed lightpaths

- Solid, fixed, static, ...
- Successful product within SURFnet6.
  - Always from A to B
  - Always on, always same bandwidth
  - Really good for OPNs!
- But you’ll never get to C...
Dynamic Lightpaths

- From A to ‘everywhere’ ...
- Flexible destination, time, bandwidth
- Efficient, where applicable

- Provisioning time: seconds! (once you have your port)
- Own resources
  - 1 port → access to the whole network
  - Multiple ports possible
  - User controls access

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Applications
Implementation

- **Dynamic Lightpaths =&gt; software: DRAC**
  - Automated provisioning
  - User and policy management
  - Software ➔ logging easy
  - Integrates in applications
  - Merges with other applications?

- **However - still requires human interaction**
  - User and policy management
  - Resource allocation
  - Incident, change management

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The DRAC concept

- Originated from Nortel/SURFnet interaction
- Web GUI for humans / Web service for applications
- Separate admin client for resource management
  - Allocating resources to DRAC control...

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Web GUI

- “Create schedule”
  
  **Name**

  **Start- and end times**

  **Source**

  **Destination**

  **BW**

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Service introduction

- 4th of December 2008:
  Dynamic Lightpaths as a service in SURFnet
  - Available to all connectors!
  - http://drac.surfnet.nl/

- 2009: stimulation of usage
  - Tariffs “reasonable”
  - Close collaboration with early users

- Enlighten Your Research II
  - 5 dynamic ports per winner

- Update at TNC2009 (if paper gets accepted!)
2008: Creating a service

- Software: acceptance testing
- Redundant servers
- Processes
- Training
- Helpdesk
- SLA

- Promotion
  - Flyer
  - Direct contacts
  - Pilot
  - Launch event
  - EYR II
  - SURFnet’s Kate

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2009: Improve Service

- Internationalize: GLIF => Integrate SURFnet service in available interdomain approaches
  - NetherLight already under DRAC-control

- Use Cases: Storage, Grids, Science
- Better understand building networks for DLPs

- Security: advise end-users
  - Potential conversation killer ;-)
- User experience => feature requests
- Finalising cost approach based on early usage patterns
And beyond:

eScience

- Enabling access to scientific instruments
- Last mile “simple”
  - but first mile problem instead?

- Mostly about access to instrument
- Well-known edge-port topology
  - resource is the instrument
  - limited number of users
  - policy

- Low-level integration sufficient?
  - scripting?

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And beyond:
Grids

- The network as just another resource in the chain
  - For specific applications

- Complex environment
  - Resource identification?
  - Coschedulers
  - Brokers, and brokers of brokers
  - Access and usage policies

- Can the network become a transparent, generic resource?

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And beyond: International

- International usage is most “experimental”
  - but held back by static nature!
  - eventually (inevitably?) cost will come into play

Dynamic Lightpaths are THE enabler for large-scale global circuit-based networking

- Global approach to policies
  - access
  - costing / billing / alternative approach?

- Needs to move from current state to proper service
  - running code and growing consensus not enough..
  - needs STANDARDISATION

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The Future

- More users => more users
- More possibilities...
- More applications!

- Less network?
Thanks!

Questions, Remarks, Brilliant Plans?