

SURF
NET

Open Source DRAC

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Announcement

- **Dynamic Resource Allocation Controller**
by Nortel
 - Used in SURFnet6 since the end of 2008
- **Becomes Free Software (Open Source)**
 - April 2010

The Nortel logo is displayed in a bold, blue, sans-serif font. The letter 'O' is stylized with a circular arrow or ring passing through it.



SURFnet and DRAC

- Dynamic services: part of SURFnet6 2004 tender
 - "CO2" was proposed
 - Nortel developed this into DRAC
- Target: dynamic network services, available before the end of the SURFnet6 project time
- SURFnet service launched at the end of 2008
 - Operational procedures in place
 - DRAC reliable enough for a SURFnet service
- Dynamic Network Services remain core part of the future developments

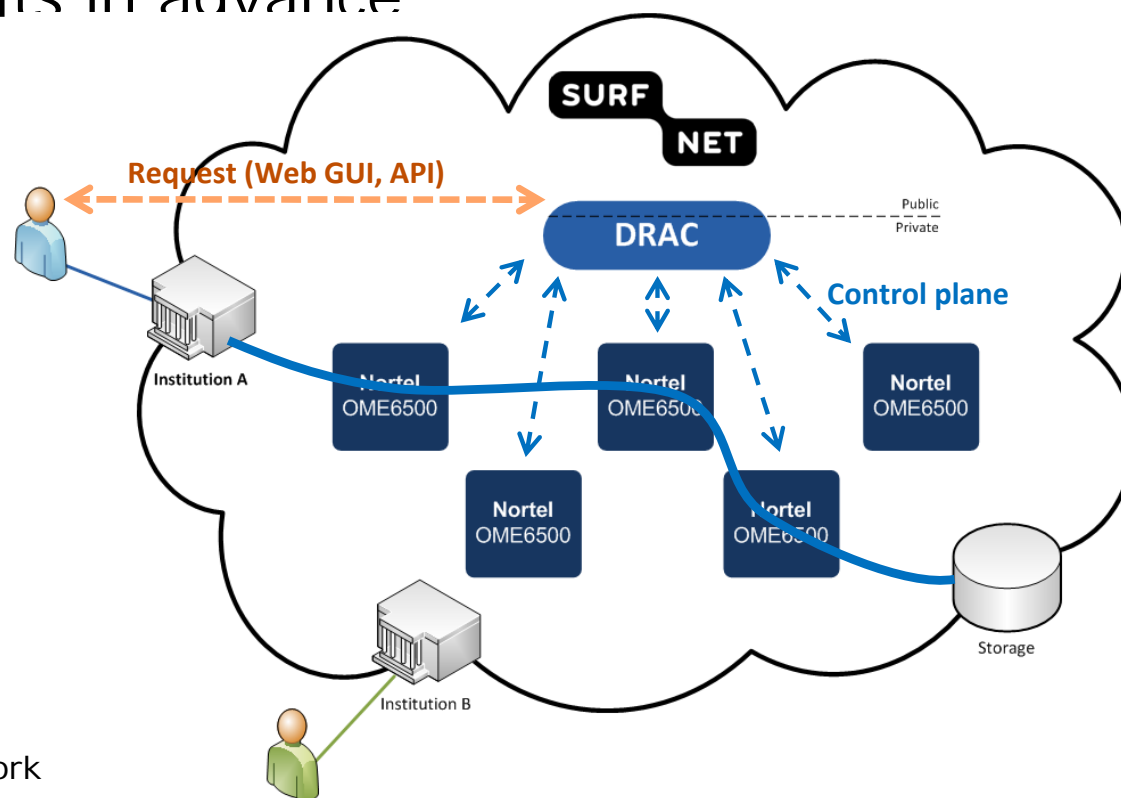


What does DRAC do

- “Dynamic Resource Allocation Controller”
 - Abstracts network for the user
 - Abstracts network for the application
- Allocates (network) resources
 - Provides generic interface for resources
 - Manage resources: access control, group management, bandwidth policies
- Has provisions for:
 - Multi-layer provisioning
 - Multi-technology provisioning
 - Multi-domain provisioning

DRAC

- Provides guaranteed bandwidth to end users
- Offers allocation through web GUI and web services
- Comes with an Administration Client supporting network maps
- Schedules circuits in advance

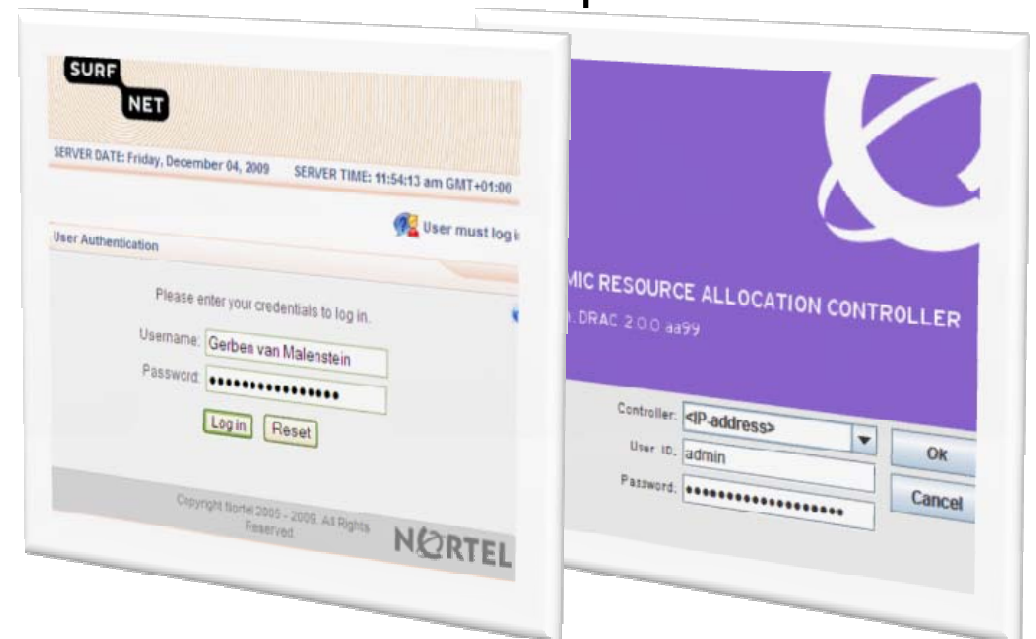




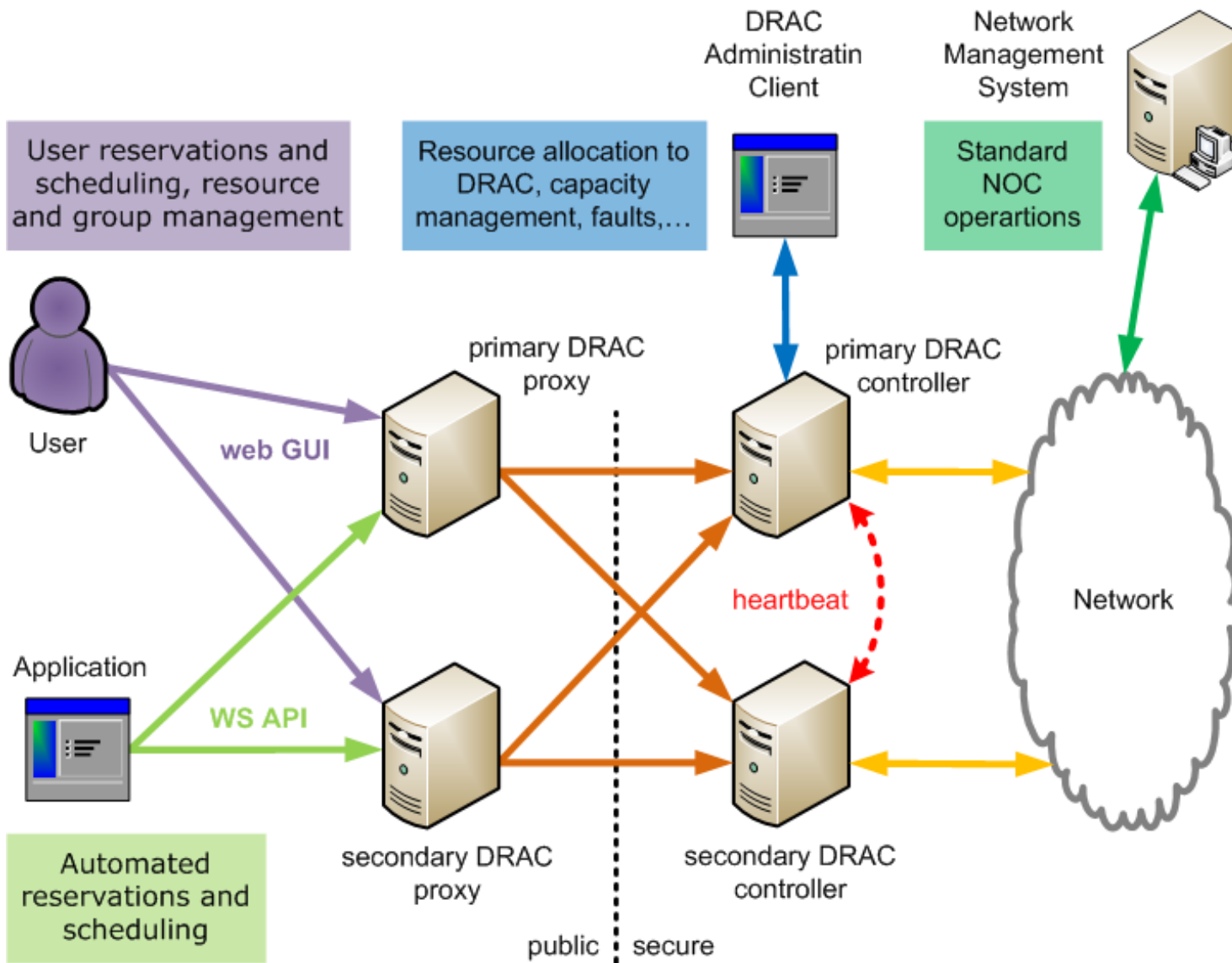
DRAC Setup



- Server-based control plane
 - No need for additional network hardware
 - Clear user-network interface
 - Simple upgrades, monitoring, bug fixing
 - Server provisions network using TL1 or SNMP
 - Added security by user access through proxy
 - Redundant proxy and controller setup



DRAC Tools and Interfaces





Web GUI



- "Create schedule"

Name

Start and end time

Source port

Dest Port

Bandwidth

Schedule Information

Schedule Name:

Activation Type:

Billing Group:

Start Time: Start now

End Time: ∞ No end date

Service Duration: minutes

Note: The current provisioning overhead time is 30.0s, which will be reserved at the start and end of each service

Lightpath Connectivity

Source Endpoint

User Group:

Resource Group:

Site Filter:

Endpoint: Channel:

Destination Endpoint

User Group:

Resource Group:

Site Filter:

Endpoint: Channel:

Rate: Mb/s Protection Type:



Services supported

- Provisioning unprotected or protected paths
 - Scheduled, repeatable, finds first timeslot (OSPF),...
 - Between transparent GE (L2) ports, SDH, or combinations
- Clear administrative separation from other service
 - User, group, and policy management
- On Nortel OME6500, HDX, and CPL (DWDM) control
- Has interworked in Phosphorus, with IDC,...
- Using L2SS: VLAN to GE, VLAN to STM64
 - Incorporates handles for all VLAN management

Principle: NO limitation on vendor, equipment



Initial operational design constraints?



SURF/net

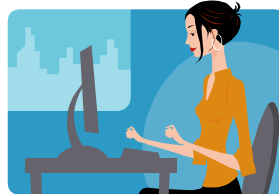
GigaPort →

Creating a manageable service Finding the right place for management functions



Service users

- Get registered with group(s)
- Log on
- Schedule services within group
- Use service
- Verify service



Group manager

- Add users to group
- Manage selected user rights
- Get the accounting of service usage
- Request more ports!



Service manager

- Add network resources to DRAC
- Create groups
- Assign port resources and policy to group
- Allocate to group manager



Network operators

- Know about the service
- Manage network incidents
- Don't provision on DRAC resource!

USER COMMUNITY

SURFNET

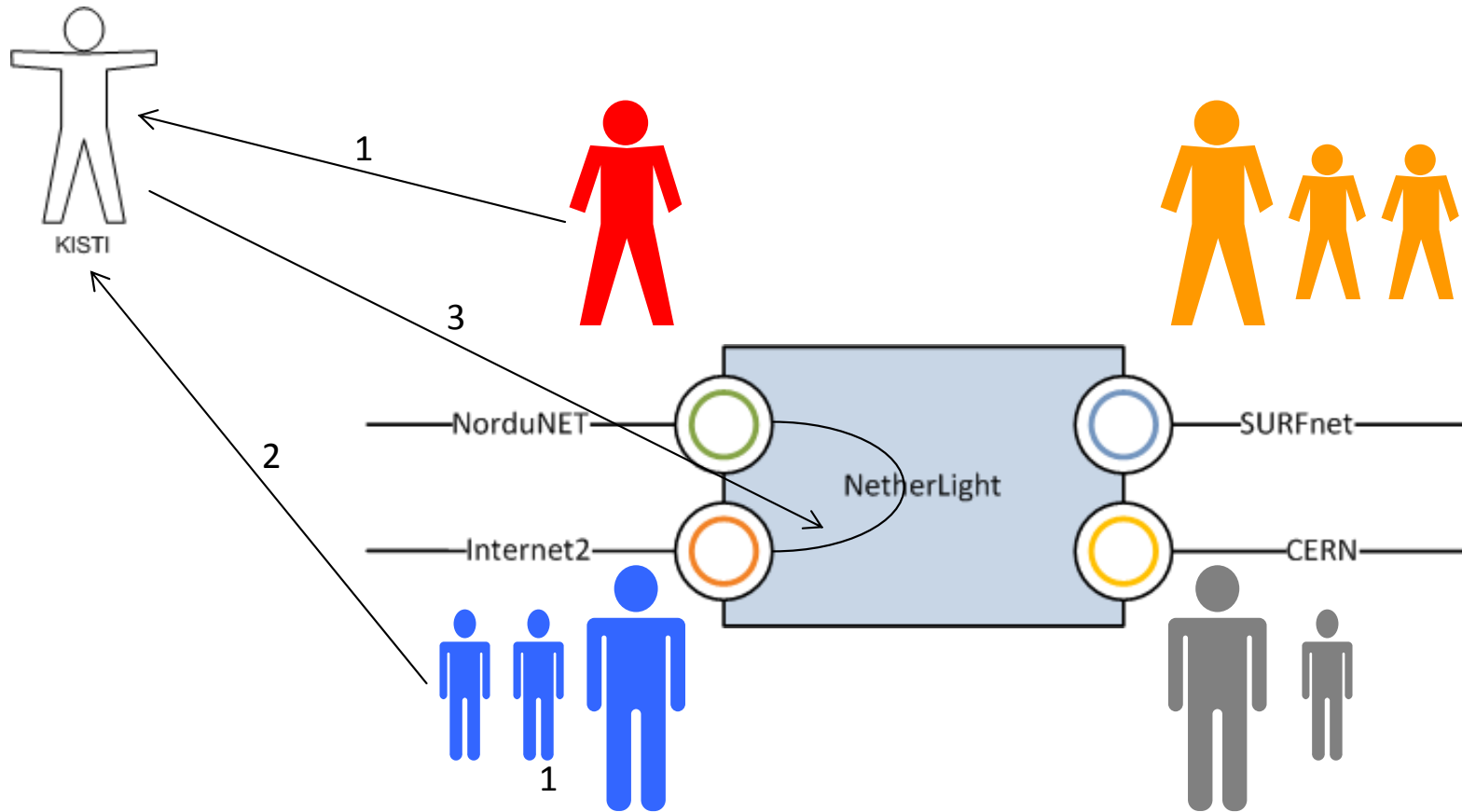


Group management

- Resource management essential for these services
 - What ports “belong” to whom
 - Who can connect, and for how long/much
 - “Ownership” has to be delegatable/transferable
- Network operator defines top level groups
 - Total ports allocated, bandwidth policies, and overall agreement level.
- Owner of groups can allow any kind of use
 - Subgroups
 - And Subgroups of subgroups...



NetherLight DGOLE Policy Concept of User Groups



Current Approach



Open Source Concept

- Nortel is committed to making DRAC open source
- Time frame currently – officially - April
 - Need to finalize legal details (IPR etc)
 - Will be a GPL v3 licence
 - Review to ensure
 - Proper front door security of web GUI and WS API
 - Correct implementation of proxy-server security setup
 - Final check on potential license conflicts in source components



Open Source Community

DRAC will be “opened up”, what next?

- Collaboration platform with
 - Source code repository
 - Bug tracking system
 - Documentation Wiki
- Create a structure round it
 - Legal organisation?
 - NEW NAME for DRAC
 - Managing contributions
 - Making it easy to contribute
 - Making it easy to implement
 - Managing roadmap for the community
 - Managing roadmap for the technology



Activities to precede going Open Source



- Review, approval of Nortel Business Administrators
- Code preparation in accordance with license requirements
- Security audit to ensure safe and controlled user access to the network resource.
- Documentation
 - Tutorial/Instructional Material
 - Architecture/Philosophy documentation
 - overall architecture & philosophy & history/vision
 - document/list of items to fix or improve
 - e.g. RMI vs socket messaging (currently we use a mix of both), OME control plane support, Limitations
- Define the (collaborative environment) organization of the first year



Main technology roadmap items (could be...)

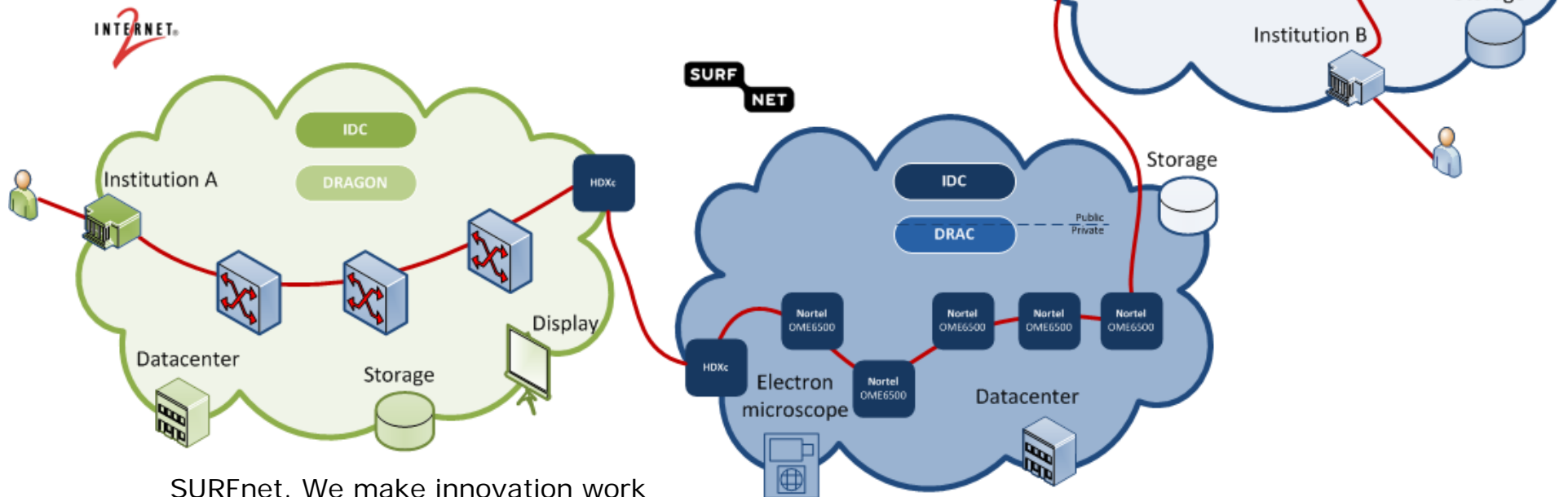


- Other vendors!
- Layer 2 support
 - *VLAN support being built in at the moment*
 - Generic switch support / SNMP adapter?
 - Carrier Ethernet support? PBB-TE, MPLS-TP, MPLS,...?
- Interdomain features
 - Abstracted networks, Fenius, NSI?
- "Features"
 - Planned network maintenance management?
 - Network incidents, service monitoring?
 - Group management => federative approach
 - ...



Challenges

- True multi-layer capabilities
- Multi-domain lightpaths
- Federated access to dynamic resources
- Supporting more NE types
- Topology description languages
- ...



Thank you!