NDGF and the distributed Tier-I Center

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dCahce Tutorial

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NDGF
NORDIC DATAGRID FACILITY

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Nordic DataGrid Facility

Overview

- NDGF Background
- The Distributed Nordic Tier-1
- Practical info

Background

- Nordic Countries constitute together 25Mio People
- No country is bigger than 10Mio People

- Nordic Tier-1 needs to utilize hardware at bigger Nordic compute sites

- Strong Nordic grid tradition: NorduGrid / ARC
  - Deployed at all Nordic compute centers
  - Used heavily also by non-HEP users (>75%)

- Need for a pan-Nordic organization for Tier-1 and possibly other huge inter/Nordic e-Science projects

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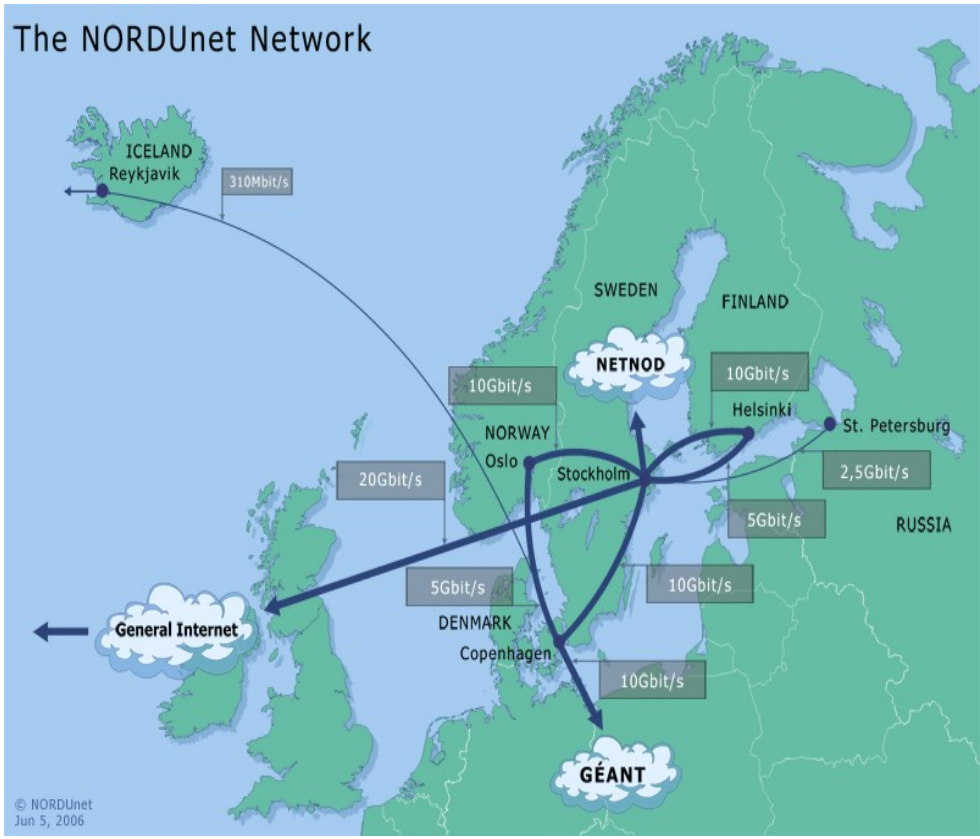
NORDUnet A/S

- The Nordic Regional Research and Educational Network (RREN)
- Owned by the 5 Nordic National RENs
- 25 Years of Nordic network collaboration
- Leverage National Initiatives
- Participates in major international efforts
- Represents Nordic NRENS internationally, gateway to the Nordic area



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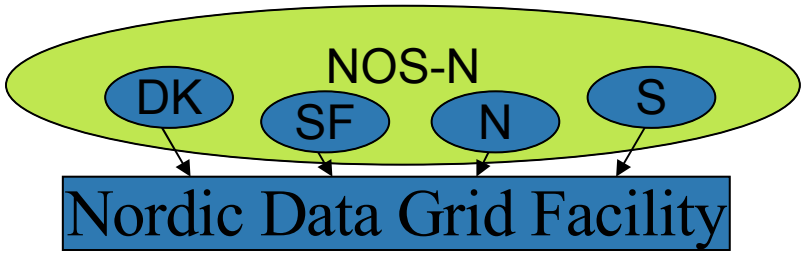
What is the NDGF?

- A Co-operative Nordic Data and Computing Grid facility
  - Nordic production grid, leveraging national grid resources
  - Common policy framework for Nordic production grid
  - Joint Nordic planning and coordination
  - Operate Nordic storage facility for major projects
  - Co-ordinate & host major e-Science projects (i.e., Nordic WLCG Tier-1)
  - Develop grid middleware and services
- NDGF 2006-2010
  - Funded (2 M.EUR/year) by National Research Councils of the Nordic countries
  - Builds on a history of Nordic grid collaboration
  - Strategic planning ongoing.



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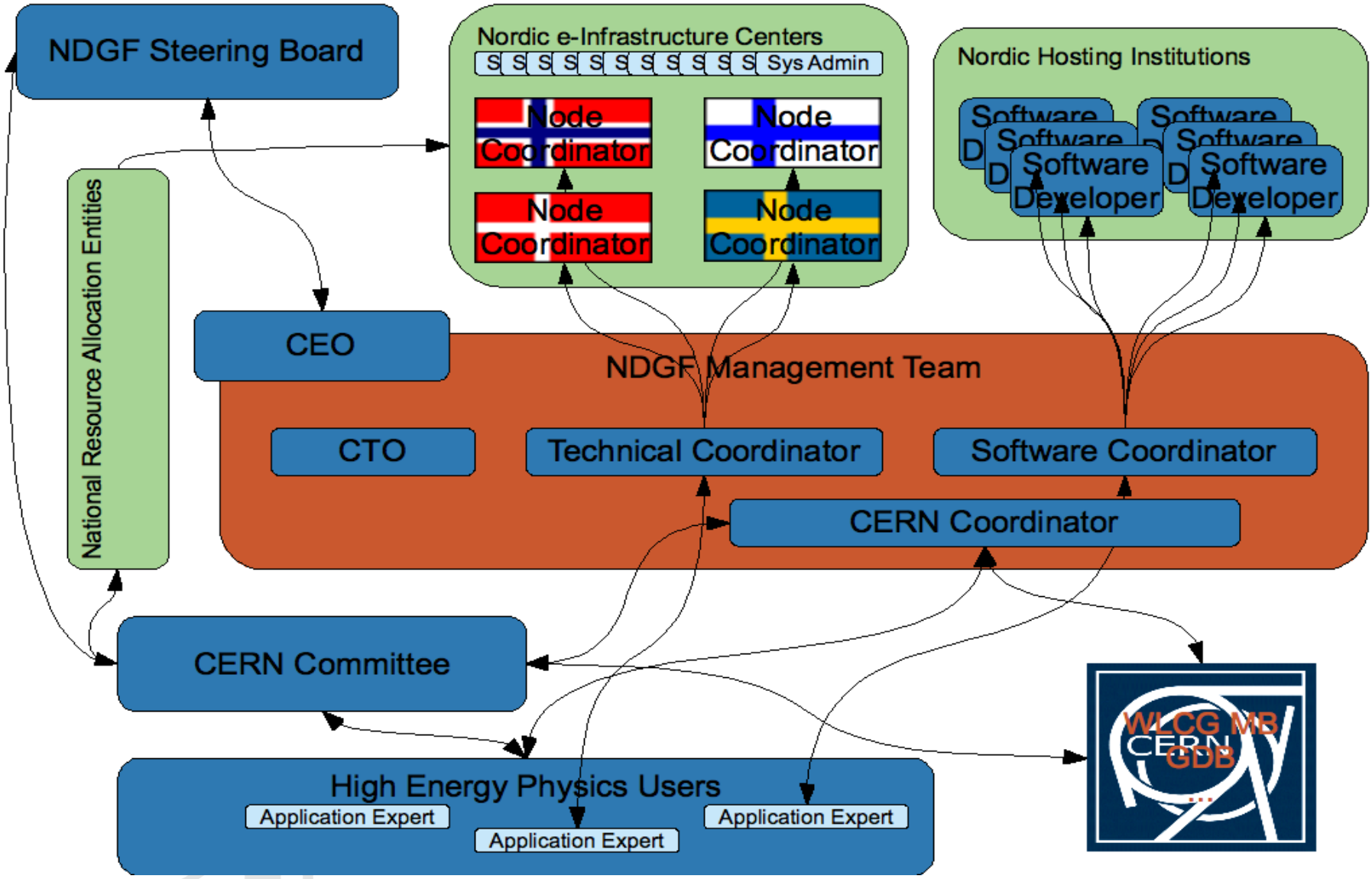
Organization – CERN related



NDGF Partners

- NorduGrid / ARC
  - Responsible for the stable branch
- KnowARC EU Project
  - Development
- EGEE-II/EGEE-III/EGI Projects
  - Operation
- dCache/DESY
  - Part of the development team (1-2FTEs)
- GIN

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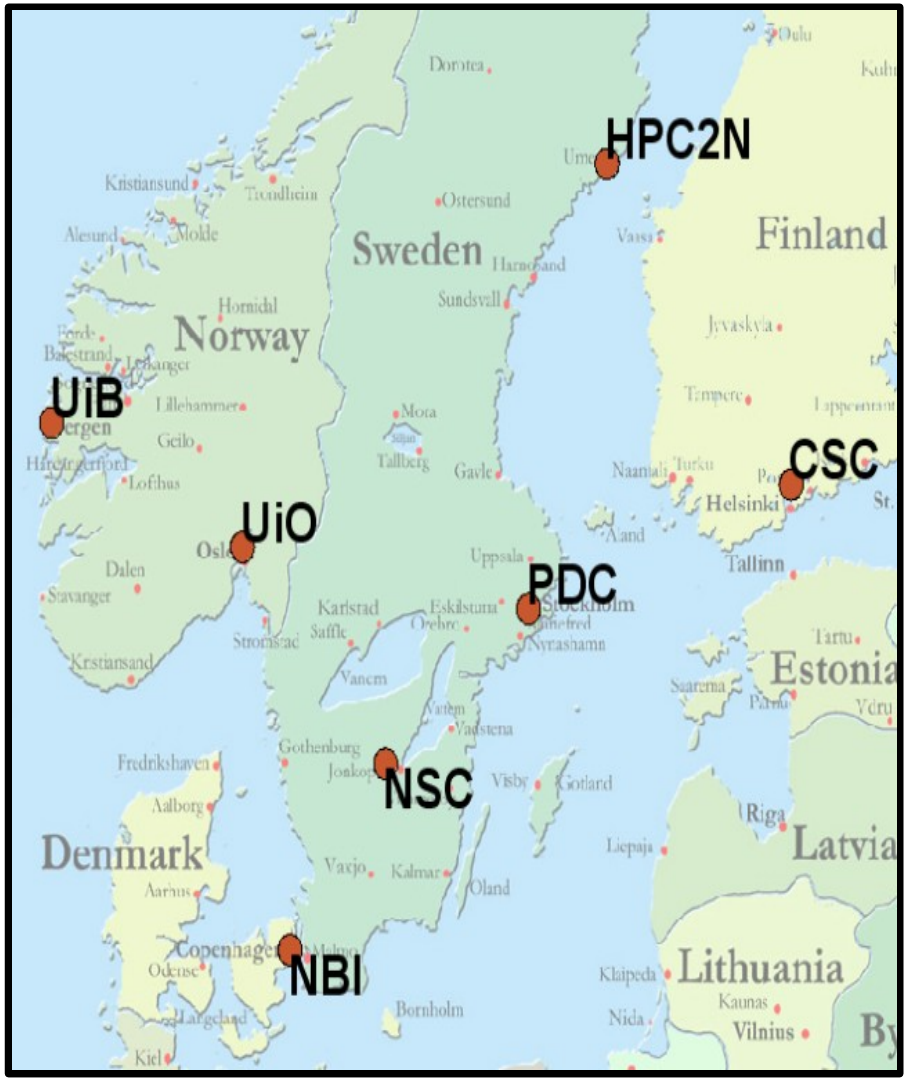
NDGF Tier-1 Resource Centers

- The 7 biggest Nordic compute centers, dTier-1s, form the NDGF Tier-1
- Resources (Storage and Computing) are scattered
- Services can be centralized
- Advantages in redundancy
- Especially for 24x7 data taking



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NDGF Facility

Storage

- dCache Installation
- Admin and Door nodes at GEANT endpoint
- Pools at sites
- Very close collaboration with DESY to ensure dCache is suited also for distributed use

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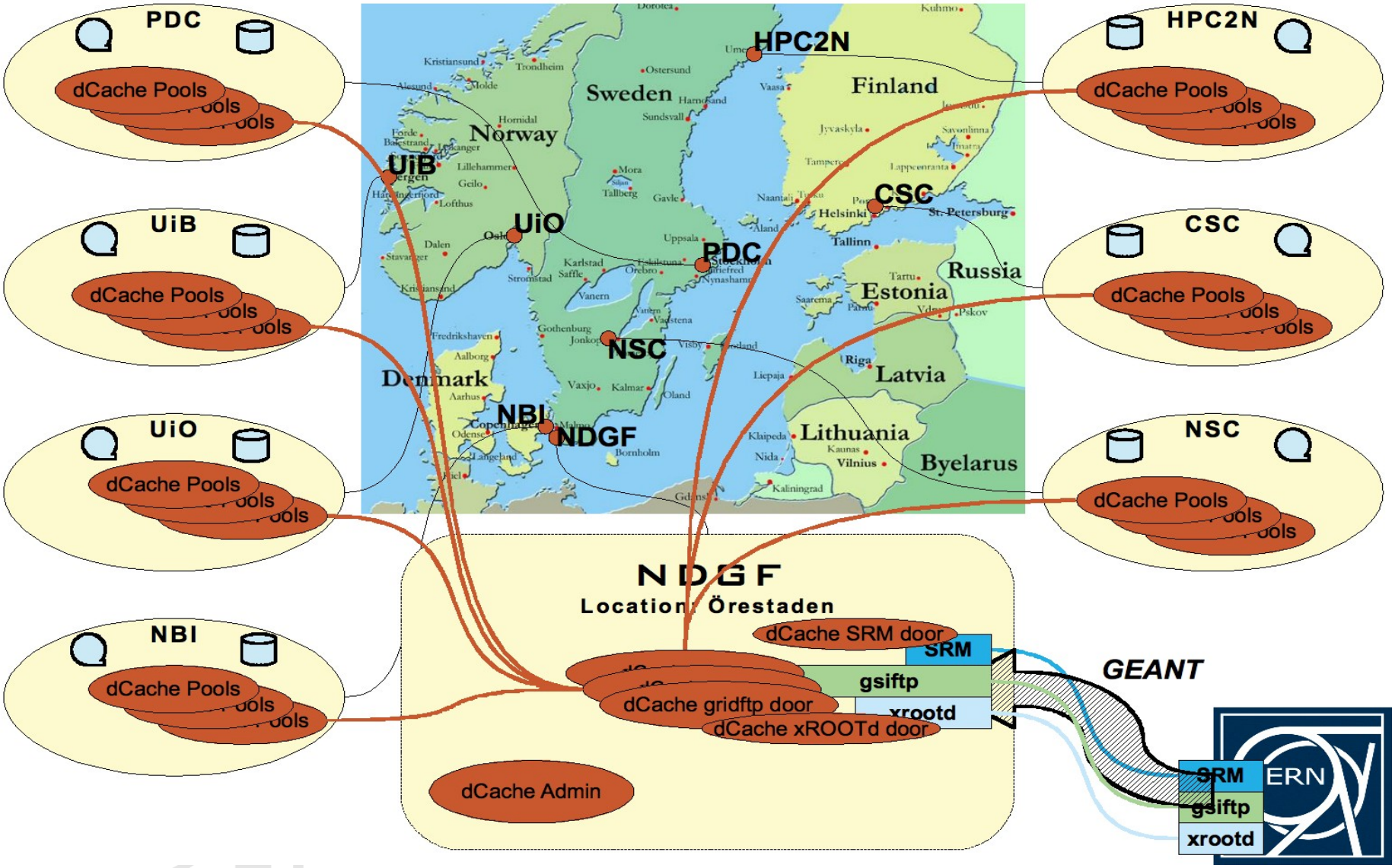
NDGF Storage



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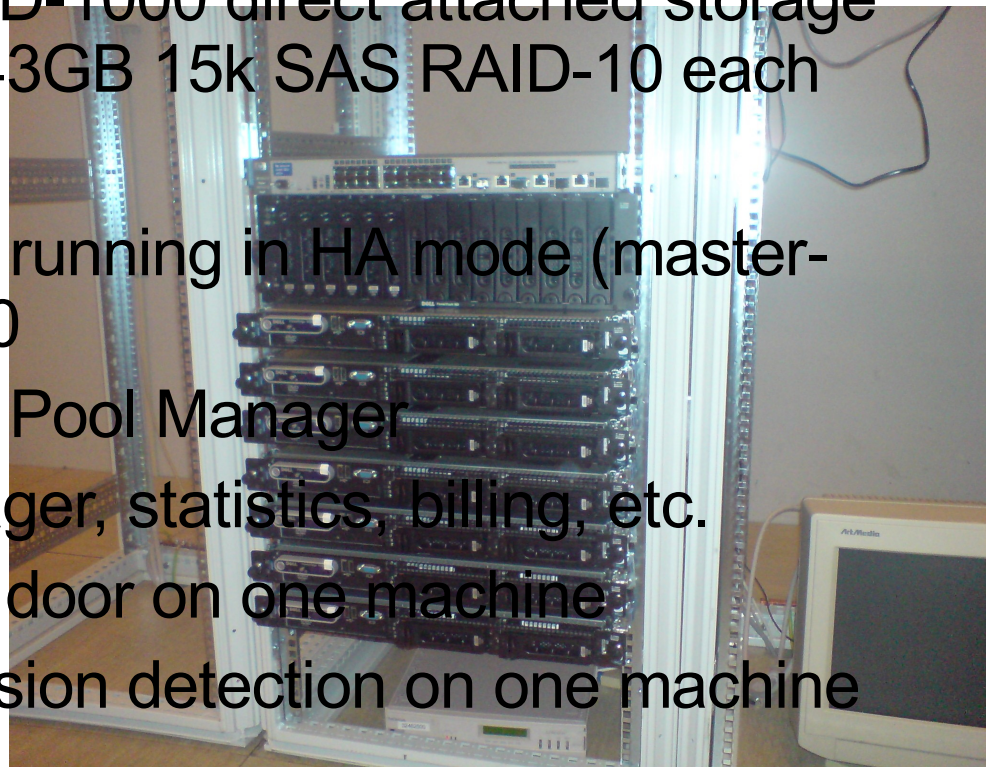
Storage

- Central Installation:
  - 7 Dell 1950 2xDual Core 2GHz Xeon, 4GB RAM, 2 x 73GB 15k SAS disks (mirrored) (one forspare)
  - 2 x Dell PowerVault MD-1000 direct attached storage enclosures with 7 x 143GB 15k SAS RAID-10 each
- Running:
  - 2 Postgress for PNFS running in HA mode (master-slave) DB on MD-1000
  - 1 PNFS Manager and Pool Manager
  - 1 SRM, location manager, statistics, billing, etc.
  - 1 GridFTP and xrootd door on one machine
  - 1 Monitoring and intrusion detection on one machine



Storage

- Resources:
  - Copenhagen:
    - Disk: IBMDS4100, 130TB, 2Gbit SAN
    - Tape: IBM 3484, 4 LTO 3 drives, Tivoli (on p520AIX)
  - Norway:
    - Disk: 75TB
    - Tape: 60TB
  - Sweden and Helsinki follows later this year...

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Pratical info

- Dinner arranged tonight at 20.00 at:
  - "Rex Republic" opposite to NBI
  - Please tell me if you want to join
- Coffee served next door
- Lunch again tomorrow – before you leave