Swedish National Infrastructure for Computing

SNIC Grid Strategy

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SNIC

- Organized within Vetenskapsrådet (the Swedish Research Council)
- Mission:
  - Provide funding for computing resources for academic research in Sweden
  - Coordinate investments, user support and competence
  - Provide mechanisms for resource allocation
  - Fund and coordinate development projects
  - Manage the Swedish interface to large international collaborations and projects
  - Host the Swedish National Graduate School in Scientific Computing (NGSSC)

SNIC

- Means:
  - Work by the 6 SNIC centers
  - A board and a very small executive organization
  - Strategic plan; “The Swedish Computing Landscape”
    - Current version: 2006-2009
    - New version being produced right now: 2008-2011

SNIC

- Users:
  - All major computational groups in Sweden are SNIC users
    - About 500 active user groups/projects
    - About 150 applications (groups)/year to national resources
    - UPPMAX: 77 local projects
      - 27 Biology, 19 Physics, 9, Chemistry, 4 Comp.Sci, 3 Engineering, 2 Geosciences, 2 Astronomy
    - NSC: 52 national projects
      - 25 Physics, 21 Chemistry, 4 Engineering, 2 Geosciences, 1 Comp.Sci.
  - All major computational resources for academic research in Sweden are hosted by SNIC centers
  - User support/interaction performed at SNIC centers

SNIC 2008?

- Started 2003, but builds on much older computing centers

- Funding: Approx. 9,2 MEUR (significant increase)
- Listed (as the only e-Science infrastructure) for further expansion in Vetenskapsrådet´s Roadmap for Research Infrastructures 2007

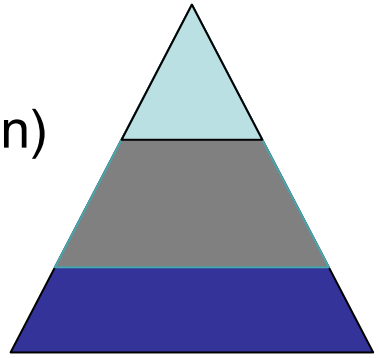
- Almost 100 persons working at the centers
  - Many cofunded by universities/users

- HPC2N (Umeå)
- UPPMAX (Uppsala)
- PDC (Stockholm)
- NSC (Linköping)
- C3SE (Göteborg)
- LUNARC (Lund)

- Computational resources and storage
- Resource allocation procedures
- User support
- Outreach
- Education (e.g. NGSSC)
- Development projects (HPC, Storage, Grid)
- International collaborations/proposals (PRACE-DS, EGI-DS, e-IRG, NDGF (Nordic Tier 1), EGEE-II, EGEE-III, *BalticGrid, OMII, DEISA2*, ...)

SNIC 2008?

- Computational resources:
  - Large-scale national resources
  - Group-specific large-scale resources (KAW collaboration)
  - Foundation level resources (at all centers)
  - Currently: 22 systems, 13490 cores
  - Largest: Neolith at NSC, 6440 cores, 60 Tflop



- Significant new investments for SNIC users coming
  - About 20000 new cores in the coming 8 months
- SweGrid is an integrated part of SNIC (C.f. TeraGrid)
  - Goal: All SNIC systems available via Grid interface
- Project for large-scale storage infrastructure initiated
- Participation in planning stages of EU-level initiatives
  - PRACE
  - EGI
- SNIC proposal for a Swedish e-Science program

SweGrid

- The Swedish production grid system
- The Swedish NGI (MoU signed between SNIC and centers)
- Built in collaboration with the Swedish LHC consortium (LHCK)

- First generation hardware in use spring 2004
  - 6 clusters with in total 600 processors, 410 TB storage
- Use:
  - Grid queues: ARC and gLite
  - 1/3 of SweGrid resources dedicated to LHCK
  - Resource allocation via the national allocations committee (SNAC)
  - National user support
  - 17 non-LHCK groups applied for SweGrid resources during 2007
  - Core resource for Nordic Tier 1
  - Core resource for NE ROC in EGEE-II/III
- Development projects.
  - Middleware components, General and application specific grid portals (Implementing “Science Gateways”), Porting of applications

SweGrid 2008?

- New clusters and storage being installed
  - 10 times increase in computational performance
    - LHCK (33%) and general use (66%)
  - Significant new storage resources
    - Initially mainly for LHCK
  - Long-term plan for further upgrades
- Other SNIC systems (capability clusters, SMP) also available within SweGrid
- New development projects initiated

- National storage project (“SweStore”)
  - Coordination with SweGrid storage
  - Collaboration with Database Infrastructure Committee (DISC)
  - Establishing collaboration with Nordic centers

SNIC Grid Strategy

- Described in the SNIC Landscape Document
- SweGrid/NGI is an integrated part of SNIC
- SweGrid is an essential part of the infrastructure for Swedish e-Science
  - SNIC proposal for a Swedish e-Science program
  - Coordination of SweGrid and HPC, e.g “PRACE-Grid”.
  - Swedish participation in e.g. ESFRI projects
- All SNIC resources should be available via SweGrid
  - Alternative to traditional means of access
  - New applications enabled
- R&D efforts to provide services and components
- SweGrid provides a basis for Swedish participation in major international projects

Issues with Current Nordic Situation

- NDGF Tier 1 – EGEE ROC
  - Better coordination needed
  - Should be percieved as one entity
- Open issues with the current set-up of collaboration need to be solved (Discussed at meeting October 2007)*

*) Vetenskapsrådet/KFI has requested a revision of the NDGF SB Terms of References and the contract with NDGF host organization

Future Nordic Grid Collaboration Strategy

Nordic collaboration provides new/improved oppertunities for Nordic researchers!

At least three modes:

- Coordination of NGI activities
  - Participation in international initiatives like EGEE, EGI
- Collaboration between NGIs
  - Community building
  - Outreach & dissemination
  - Resource provisioning and sharing
- Nordic Core Grid Factory
  - Middleware development (including distributed storage solutions)
  - Coordinate Nordic Tier 1 operations
  - Possibly coordinate operations for other selected Nordic/European user communities