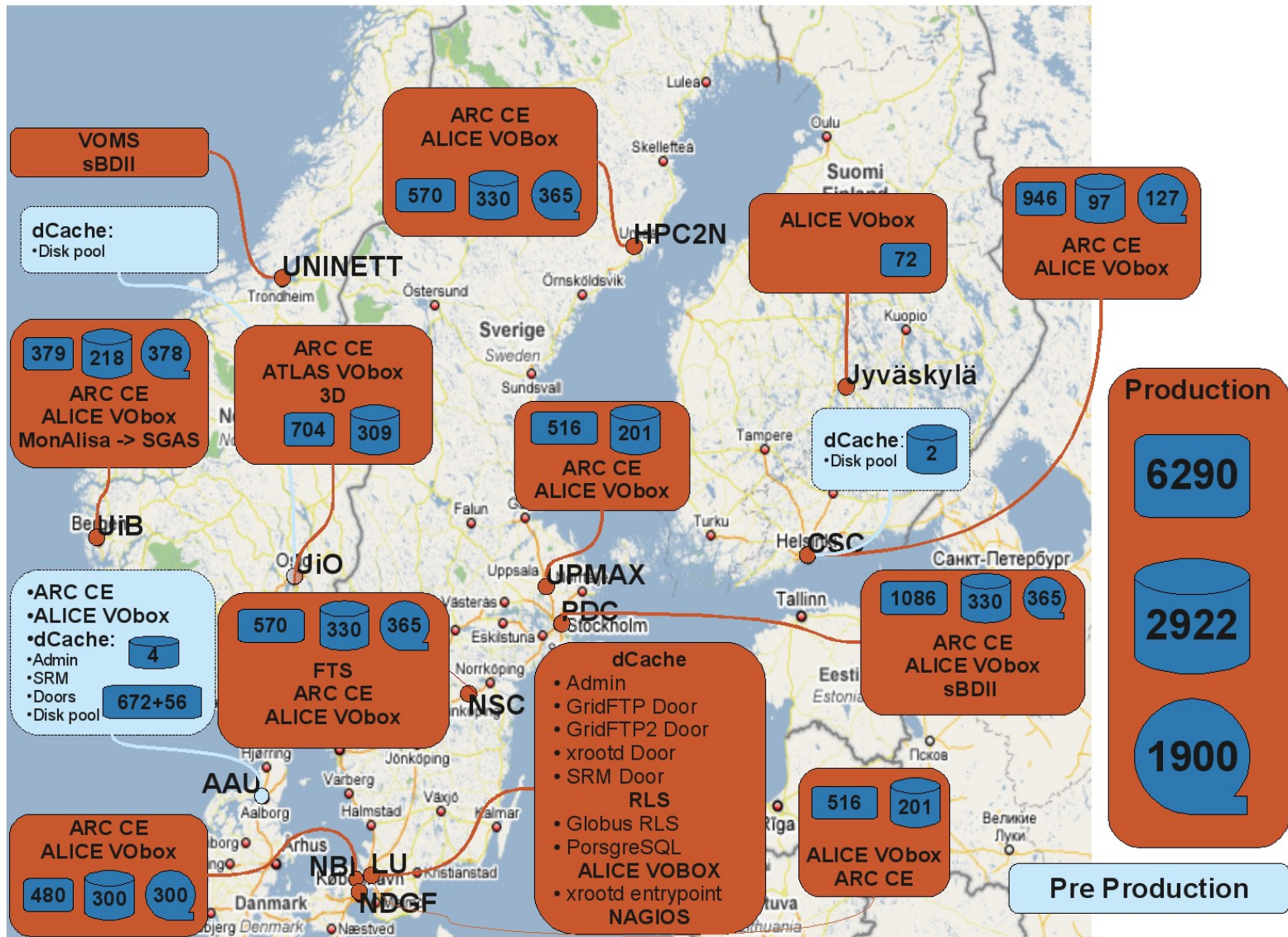


Analysis of internal NDGF Tier-1/2 network requirements

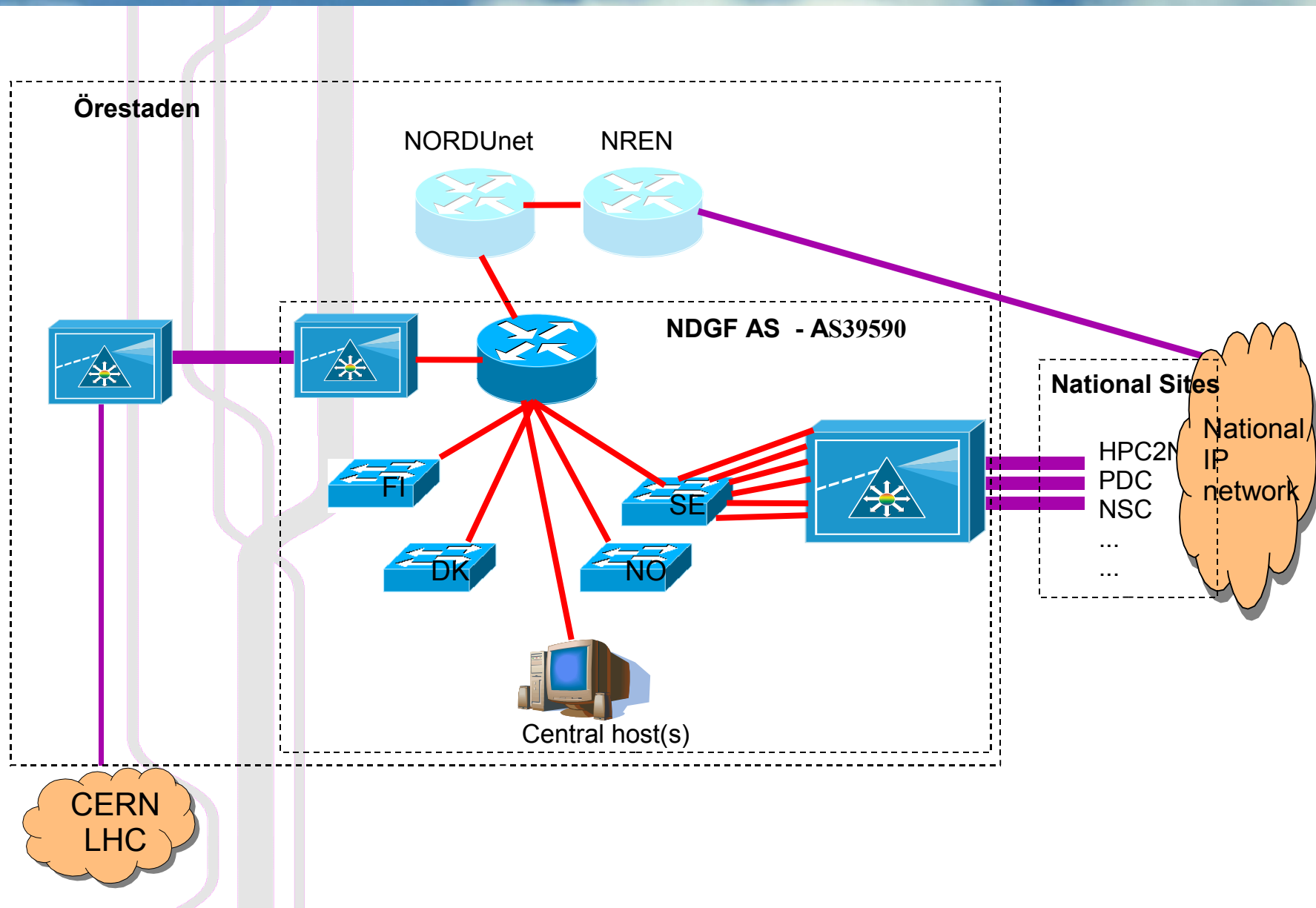
Josva Kleist, Ph.D.
Software Coordinator, NDGF
CHEP 2009
Prague, March^{24th}, 2009

- 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

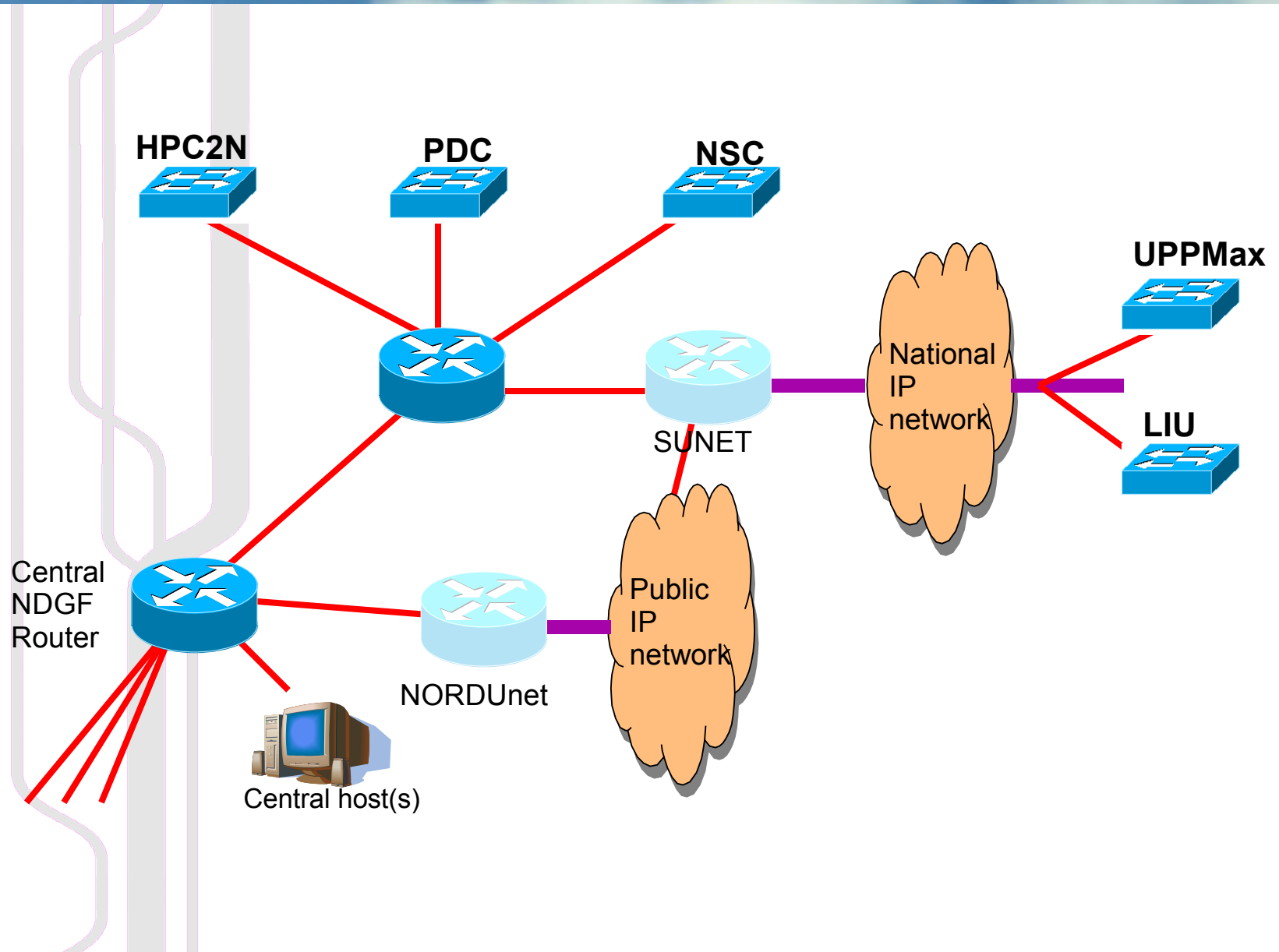




- Today NDGF is connected directly with GEANT 10Gbit fiber to CERN
- Inter-Nordic shared 10Gbit network from NORDUnet
- A Dedicated 10Gbit LAN covering all dTier-1 centers



Tier-1/2 structure: Sweden



- All worker nodes are occupied up to their efficiency.
- Characteristics of jobs (input/output/cpu consumptions) known.
- Random distribution of all data.
- Random placement of all data.
- ARC caching not taken into account.

What is the traffice in and out of a site?



- External tape read and writes (non NDGF).
- NDGF (non local) reads.

What is the traffice in and out of a d-Tier1/2 site?



- NDGF (non local) reads and writes.
-

What is the traffice in and out of a d-Tier1/2 site?

- NDGF (non local) read and writes.
- Local read and writes from NDGF (non local) storage.



- Jobmix: Tier1/2



- Jobmix: Tier1/2
- Input/output decided by size of cluster



- Jobmix: Tier1/2
- Input/output decided by size of cluster
- Amount of local storage in relation to total storage capacity



FileEditViewInsertFormatToolsDataWindowHelp

<

- NDGF – Denmark: 1.5 Gbps
- NDGF – Finland: 0.9 Gbps
- NDGF – Norway: 2.5 Gbps
- NDGF – Slovenia: 1.2 Gbps
- NDGF – Sweden: **7.2 Gbps**

- Cache does matter
 - Talk by Björn Samset now
- Input output characteristics of jobs know
 - Measure actual job characteristics
- Uniform distribution of data
 - Not actually true
 - Replicate hot data



Questions?