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Sites: Finland

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Operations in NDGF-T1 (and SE-SNIC-T2)

Erik Edelman

April 17 2018

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- Nordic DataGrid Facility (NDGF) was founded 2002 to coordinate the cooperation between Finland, Sweden, Norway and Denmark to create a Tier-1 for ATLAS and ALICE.
- A few years ago, NDGF was reorganized into NeIC (Nordic e-Infrastructure Collaboration)
 - ◆ Maintaining NDGF-T1 is a project within NeIC
- In addition to the NDGF-T1, there's a few T2:s in the Nordics
 - ◆ FI-HIP-T2 for CMS
 - ◆ SE-SNIC-T2 for ALICE and ATLAS
 - ◆ Sometimes hard to distinguish from NDGF-T1.

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ALICE sites in NDGF

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- HIP
 - ◆ Run by Helsinki Institute of Physics (HIP)
 - ◆ Virtual cluster, running on CSC's Cloud system cPouta

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- ◆ Run by Helsinki Institute of Physics (HIP)
- ◆ Virtual cluster, running on CSC's Cloud system cPouta
- ◆ Currently 232 cores. Should grow to 296 in not too distant future.

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- ◆ Run by Helsinki Institute of Physics (HIP)
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- ◆ HEPSPEC06: 19.54

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■ HIP

- ◆ Run by Helsinki Institute of Physics (HIP)
- ◆ Virtual cluster, running on CSC's Cloud system cPouta
- ◆ Currently 232 cores. Should grow to 296 in not too distant future.
- ◆ HEPSPEC06: 19.54
- ◆ A "quick-and-dirty" setup (read: an embarrassingly ugly mess of ansible and python scripts), but at least it's operational

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- SNIC
 - ◆ National Supercomputer Center, Linköping, Sweden

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■ SNIC

- ◆ National Supercomputer Center, Linköping, Sweden
- ◆ Backend: Slurm
- ◆ Big cluster, used for lots of non-WLCG related stuff too
- ◆ ~~144~~ ~ 200 cores for ALICE

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- ◆ HEPSPEC06: 15.925

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- ◆ ~~144~~ ~ 200 cores for ALICE
- ◆ HEPSPEC06: 15.925
- ◆ Also takes care of the SE-SNIC-T2 storage.

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- ◆ ~~144~~ ~ 200 cores for ALICE
- ◆ HEPSPEC06: 15.925
- ◆ Also takes care of the SE-SNIC-T2 storage.
- ◆ Future: The cluster will be replaced, but the VOBox will remain the same.

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■ LUNARC

- ◆ Center for scientific and technical computing for research at Lund University, Lund, Sweden

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■ LUNARC

- ◆ Center for scientific and technical computing for research at Lund University, Lund, Sweden
- ◆ Backend: Slurm
- ◆ Big cluster, used for lots of non-WLCG related stuff too
- ◆ ~ 378 cores shared by ALICE and ATLAS.
- ◆ HEPSPEC06: 20.87

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- ◆ ~ 378 cores shared by ALICE and ATLAS.
- ◆ HEPSPEC06: 20.87
- ◆ SE-SNIC-T2 computing.
- ◆ Suffers from scheduler oddities, providing very uneven amount of resources for ALICE.

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- DCSC/KU
 - ◆ Københavns Universitet

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■ DCSC/KU

- ◆ Københavns Universitet
- ◆ Backend: ARC / Slurm
- ◆ ~ 1054 cores shared with ATLAS.
- ◆ Heterogeneous cluster; oldest node > 10 years old.
- ◆ Average HEPSPEC06: 14.43

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- ◆ No expansion of the cluster currently planned; will use their money to replace old nodes as they die.

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- ◆ Heterogeneous cluster; oldest node > 10 years old.
- ◆ Average HEPSPEC06: 14.43
- ◆ No expansion of the cluster currently planned; will use their money to replace old nodes as they die.
- ◆ Some scheduling-adjustments to give more resources to ALICE have been made (helped a bit)
 - Mix of single core and multicore jobs seems to cause trouble

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Questions?

- UiB (Bergen)
 - ◆ Backend: Slurm
 - ◆ ~ 750 cores
 - ◆ HEPSPEC06: 12.12

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- UiB (Bergen)
 - ◆ Backend: Slurm
 - ◆ ~ 750 cores
 - ◆ HEPSPEC06: 12.12
 - ◆ Future: New hardware acoming!

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Questions?

- UiB (Bergen)
 - ◆ Backend: Slurm
 - ◆ ~ 750 cores
 - ◆ HEPSPEC06: 12.12
 - ◆ Future: New hardware acoming!

- UiO (Oslo)
 - ◆ Backend: Slurm
 - ◆ 10 cores for ALICE
 - ◆ HEPSPEC06: 17.63

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■ UiB (Bergen)

◆ Backend: Slurm

◆ ~ 750 cores

◆ HEPSPEC06: 12.12

◆ Future: New hardware acoming!

■ UiO (Oslo)

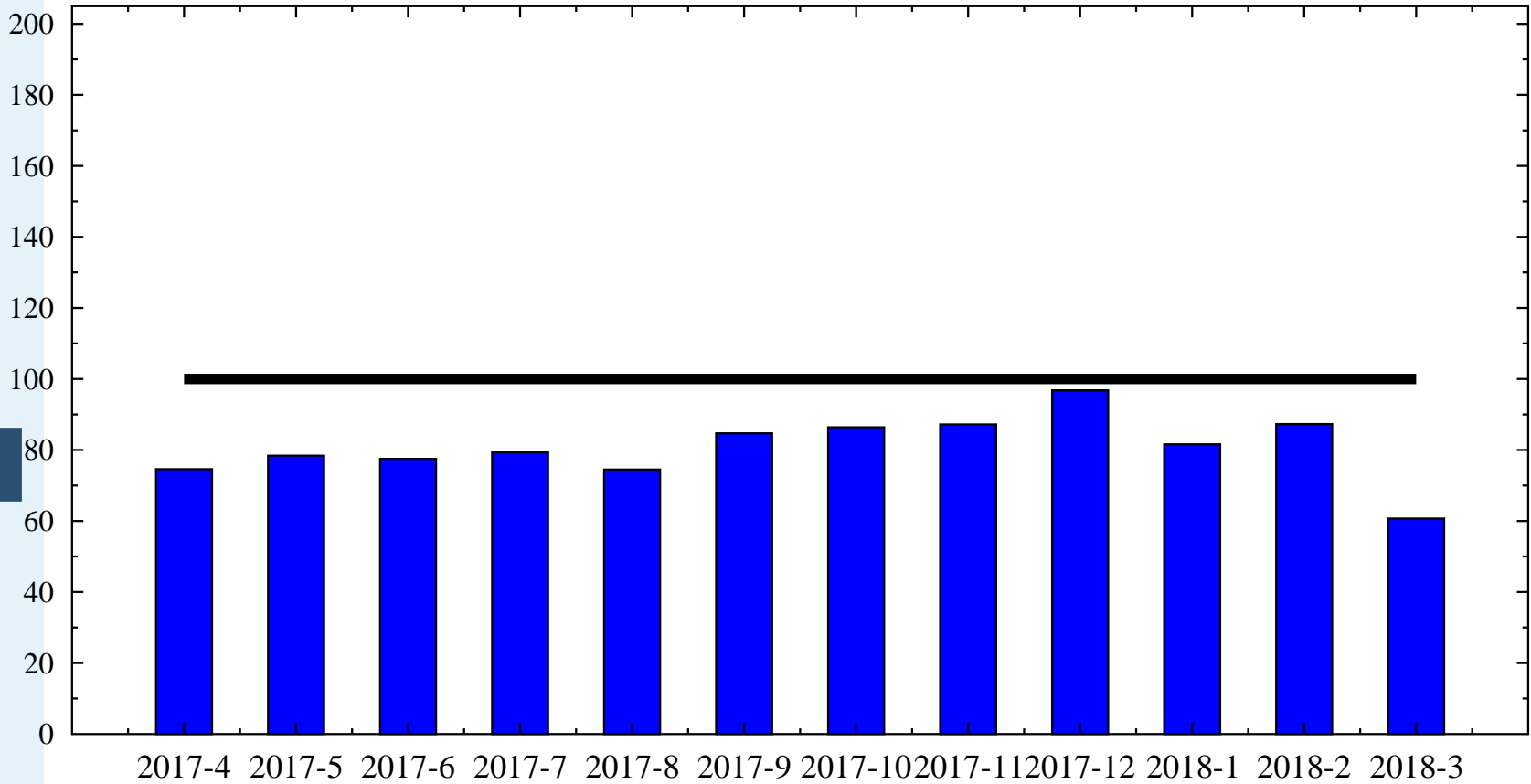
◆ Backend: Slurm

◆ 10 cores for ALICE

◆ HEPSPEC06: 17.63

◆ Future: Won't grow, may disappear ("we can of course shut it down if it's just noise for monitoring")

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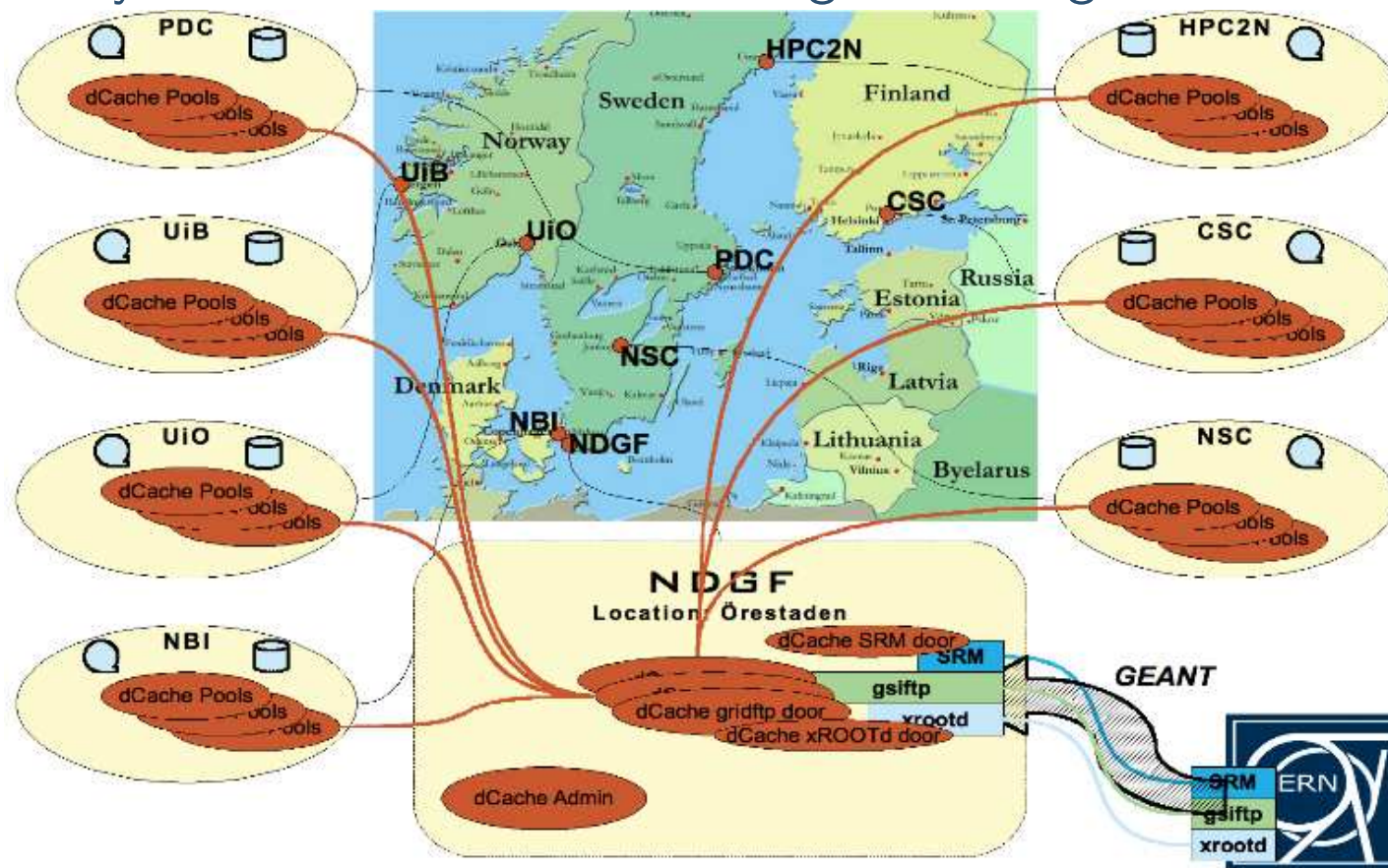
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- Many small sites looks like one big site, using dCache



- Lets us hide problems on one site by keeping data on other sites.

◆ (at least, almost ...)

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NDGF-T1

- Disk:
 - ◆ Pledge: 2510 TB (2020 TB last year)

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NDGF-T1

■ Disk:

- ◆ Pledge: 2510 TB (2020 TB last year)
- ◆ Currently available: 2586 TiB

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NDGF-T1

■ Disk:

- ◆ Pledge: 2510 TB (2020 TB last year)
- ◆ Currently available: 2586 TiB

■ Tape:

- ◆ Pledge: 1.86 PB (1.32 PB last year)

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■ Disk:

- ◆ Pledge: 2510 TB (2020 TB last year)
- ◆ Currently available: 2586 TiB

■ Tape:

- ◆ Pledge: 1.86 PB (1.32 PB last year)
- ◆ Currently available: 1.645 PB (- 1.87 PB)

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SE-SNIC-T2

- Disk:
 - ◆ Pledge: 400 TB
 - ◆ Currently available: 407 TiB

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SE-SNIC-T2

- Disk:
 - ◆ Pledge: 400 TB
 - ◆ Currently available: 407 TiB
 - ◆ Future: Disks may be replaced, but capacity will (probably) stay the same

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