

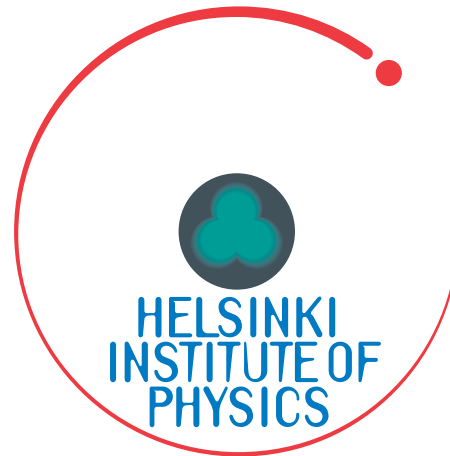


# HIP Computing Resources for LHC-startup

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*Finnish CMS meeting in Kumpula*

03.10. 2007



Kumpula, Helsinki

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## 1. Finnish Tier-1/2 computing in 2007 and 2008

- **800 kEUR** annually for Finnish LHC computing 2008, 2009 and 2010
- HIP CSC MoU in preparation to cover collaboration in the LHC project
- HIP CSC responsibility split defined in the Appendix Project Plan
- CSC supports the hardware resources and is working on **dCache**
- CSC will help with the acquisitions
- The HIP Technology programme supports the LHC computing project

## 2. Hardware resources in 2007 and 2008

### Ametisti upgrade with 128 CPUs from sepeli

- The compute-2-x 2,2 GHz sepeli nodes run stably in the Kumpula machine room
- Only a broken switch and one node needed to be replaced
- Cabling the networks between the new racks took some effort
- Remote management firmware was updated for temperature readout and automated shutdown
- Temperature monitoring (J. Koivumäki, E. Kesälä, T. Lindén) shows no thermal issues after upgrade
- The new queues on the new nodes are recommended since they are faster (*small\_serial*, *medium\_serial* and *big\_serial*)
- NFS-problems on ametisti are beeing looked into

The **CPU resources** for 2007-2008 will be **existing shared** (M-grid) resources:

- **CPU:** ametisti (260 CPUs) , mill (64 CPUs), and opaali (88 CPUs), and **existing dedicated** (M-grid) resources:

- **CPU:** sepeli (256 cores 10/2007, 384 cores 12/2007, 448 cores 04/2008, 512 cores 07/2008)

**Disk** for 2008 will be purchased during autumn 2007.

- **CMS disk 2007:** 7 TB silo2 + 12 TB CSC
- **ALICE disk 2007:** 4 TB opaali + 12 TB CSC
- **ALICE, CMS and TOTEM disk 2008:** about 150 TB disk

## 3. Manpower

- Antti Pirinen, HIP, project leader
- Dan Still, CSC, project leader
- Tomas Lindén, HIP, grid coordinator
- Jukka Klem, HIP, PhEDEx, Frontier
- Jonas Dahlbom, HIP, dCache support
- Chris Hanke, CSC, dCache support
- Vera Hansper, NDGF/CSC, Finnish Node coordinator, ROOT runtime
- Erik Edelmann, NDGF/CSC, CMS ProdAgent plugin, CMSSW runtime
- Jesper Koivumäki, HIP, CMS support
- Mikko Närjänen, HIP, Alice support
- DongJo Kim, JYFL, ALICE computing
- Kalle Happonen, HIP, middleware support
- Eero Kesälä, Physics department, cluster administration in Kumpula
- Pekko Metsä, HIP, cluster administration in Kumpula
- Francisco Garcia, HIP, ROOT and GEANT4 on Kumpula clusters

## 4. Operations

- The major part of the hardware will be in the CSC machine room
- Hardware, operating system and grid middleware is planned to be supported by CSC
- HIP will support application level software
- Resources part of *Nordic Data Grid Facility*
- CMS Tier-1 support in terms of data sets and CMS software from RAL or CERN, still open for discussion
- NORDUNET Point Of Presence (POP) at CSC
- Do we need a dedicated network link to Kumpula?

## 5. CMS software

Works now

- CMSSW jobs locally on ametisti, kivi, mill and sepeli
  - Python thread memory management and SGE virtual memory queue limits requires limiting the stack size with *limit stacksize 512M*
- CMSSW grid jobs using ARC between sepeli, kivi (soon mill and ametisti)

To be investigated

- CMSSW jobs submitted with Ganga from the ARDA project

Needs further development

- CMS organized Monte Carlo Production (ProdAgent plugin developed)
- ASAP/CRAB jobs from ARC/gLite/OSG sites

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	sepeli	ametisti	mill	kivi	opaali
CPU cores	256*	260	64	8	88
Rocks version	4.1	4.1	4.3	4.1	4.1
CMSSW v.	1.6.0	1.6.4	1.5.4	1.4.3	-
CMSSW RE	ok			ok	
ROOT RE	ok	ok	ok	ok	ok

- CMSSW 1.3.0 onwards support building 32-binaries on 64-bit hosts
- Starting with CMSSW 1.6.0 no dependency on root installed packages. Simplifies grid installation jobs and opportunistic use cases.
- silo2 7,5 TB dCache pool problem with Ganglia fixed
- waiting for NDGF to reconnect our dCache pool

## 6. CSA 07

- CSA07 is running now
- Once we get PhEDEx running we can participate