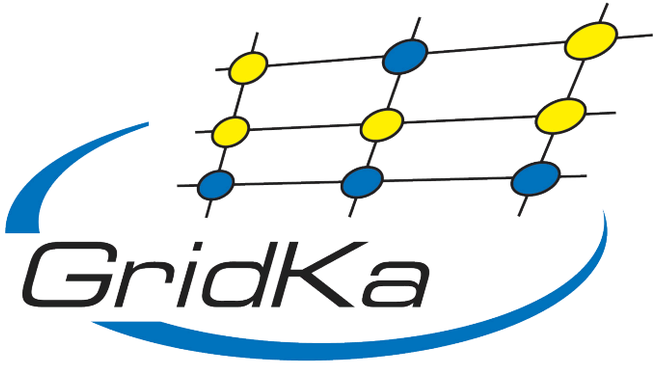
Forschungszentrum Karlsruhe
in der Helmholtz-Gemeinschaft



Site Report

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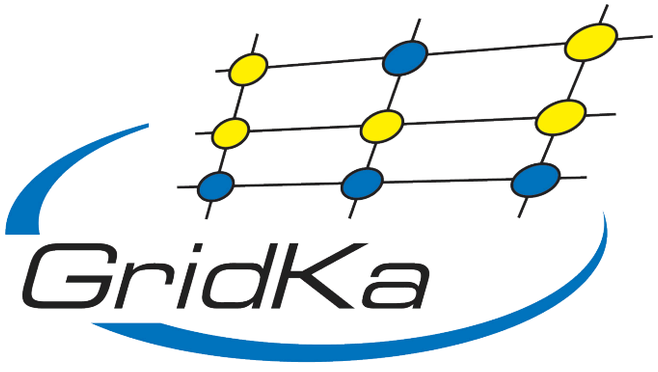
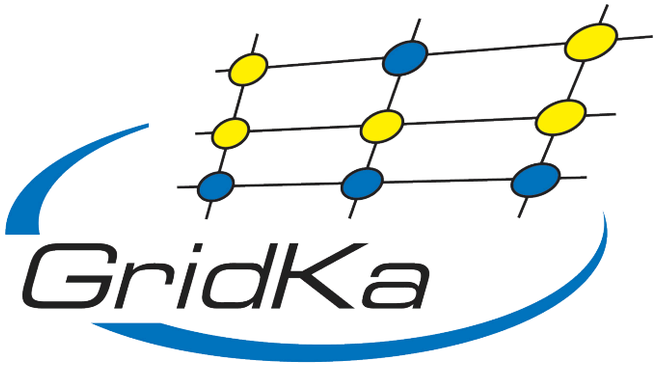
Oct 10-14 HEPiX 2005



➔ German LHC tier-1 centre,
located at the Institute for Scientific Computing (Institut für wissenschaftliches Rechnen, IWR) of Forschungszentrum Karlsruhe.



- German LHC tier-1 centre
- 4 additional HEP experiments couple to the tier-1 centre:
  - \+ BaBar (SLAC)
  - \+ CDF (Fermilab)
  - \+ D0 (Fermilab)
  - \+ Compass (CERN)

GridKa Hardware (Milestone October 2005)

GridKa Hardware (Milestone October 2005):

➔ 1,560 CPUs:

89	*2	Intel Pentium 3, 1.266 GHz
65	*2	Intel Xeon, 2.2 GHz
72	*2	Intel Xeon, 2.66 GHz
278	*2	Intel Xeon, 3.06 GHz
277	*2	AMD Opteron 246 (2 GHz)

1 ... 2 GB memory,
40 ... 120 GB disk per system

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AMD Opteron 270 (2x2 Ghz) test/benchmarks *
Intel Pentium M 760 (2 Ghz) test/benchmarks *

(* → special talk)

GridKa Hardware (Milestone October 2005):

➔ 1,560 CPUs (SL 3 + LCG 2.6)

GridKa Hardware (Milestone October 2005):

➔ 350 TB (gross) disk storage:

30 TB IDE RAIDs (3Ware 7850)

280 TB FC RAIDs
- 14 IBM FAStT700 storage controllers
- 146 GB FC disks 10 RPM

40 TB SATA/FC RAIDs
- DataDirect Networks 2SA8500
- 400 GB SATA disks

(Storage info prepared by Jos van Wezel, GridKa)

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Load balanced NFS exported file systems on 13 GPFS servers allow aggregrate throughput of over 1 GB/s.

GridKa Hardware (Milestone October 2005):

- ➔ Disk cache software (dCache) for LCG integration.
- ➔ Uses GPFS file systems to overcome terrible write performance problem on EXT3.
- ➔ dCache disk pool of ca 40 TB.
- ➔ Interfaced to Tivoli Storage Manager (TSM) with LANless access for high throughput.

GridKa Hardware (Milestone October 2005):

- ➔ Tape currently 620 TB
  on LTO1 (8 drives) and LTO2 (8 drives)
  in IBM 3584 Library with 10 frames.
- ➔ 160 TB on LTO2 (8 drives)
  in IBM 3584 library with 2 frames.
- ➔ Expansion with LTO3 is started.
- ➔ Tests are being done with Sony PetaSite on 3 S-AIT1 drives.

Next procurements (Milestone 2006):

- ➔ EU-wide invitation for tenders for CPUs started – systems with an arithmetic performance of at least 540.000 SPECint_base2000.
- ➔ Vendors have to prove the compute power by benchmarks (we don't specify # of boxes this time!)
- ➔ Aspects of economy will be considered with the decision (# of rack units, # of boxes/network connections, electric power consumption)

Next procurements (Milestone 2006):

➔ Preparing EU-wide invitation for tenders for disks.

SC3 at GridKa:

(SC3 slides prepared by Andreas Heiss, GridKa)

SC3 at GridKa:

Data transfers – throughput phase (July):

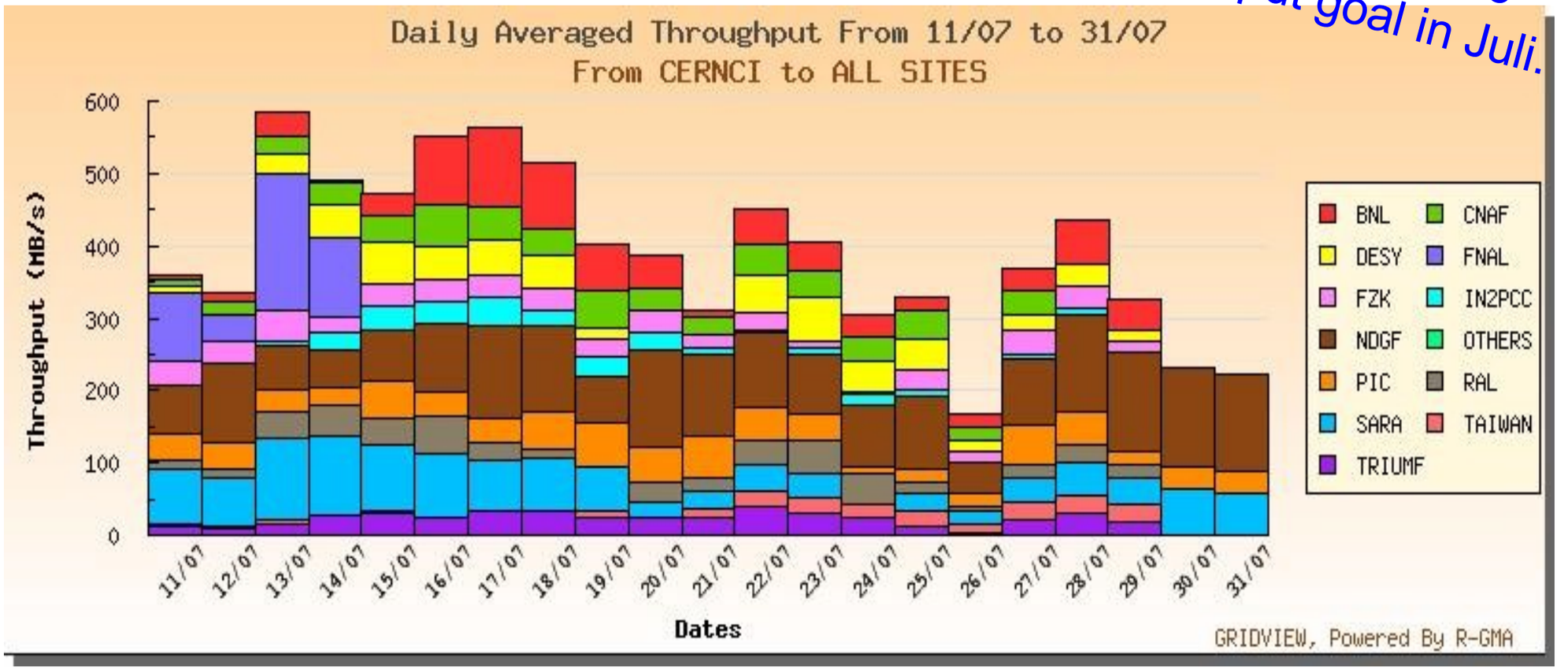
➔ FTS transfers from CERN to GridKa with approx. 50 MB/s average / 100 MB/s peak to dCache disk.
(SC3 goal: 150 MB/s)

- FTS / Castor problems at CERN
- dCache disk file system (ext3) problem at GridKa

SC3 at GridKa:

Data transfers – throughput phase (July):

Most T1 centers did not achieve the SC3 throughput goal in Juli.



SC3 at GridKa:

Data transfers – throughput phase (July):

- ➔ No tape connection available
- ➔ CMS PhEDEx transfers to dCache disk with up to 100 MB/s peak

SC3 at GridKa:

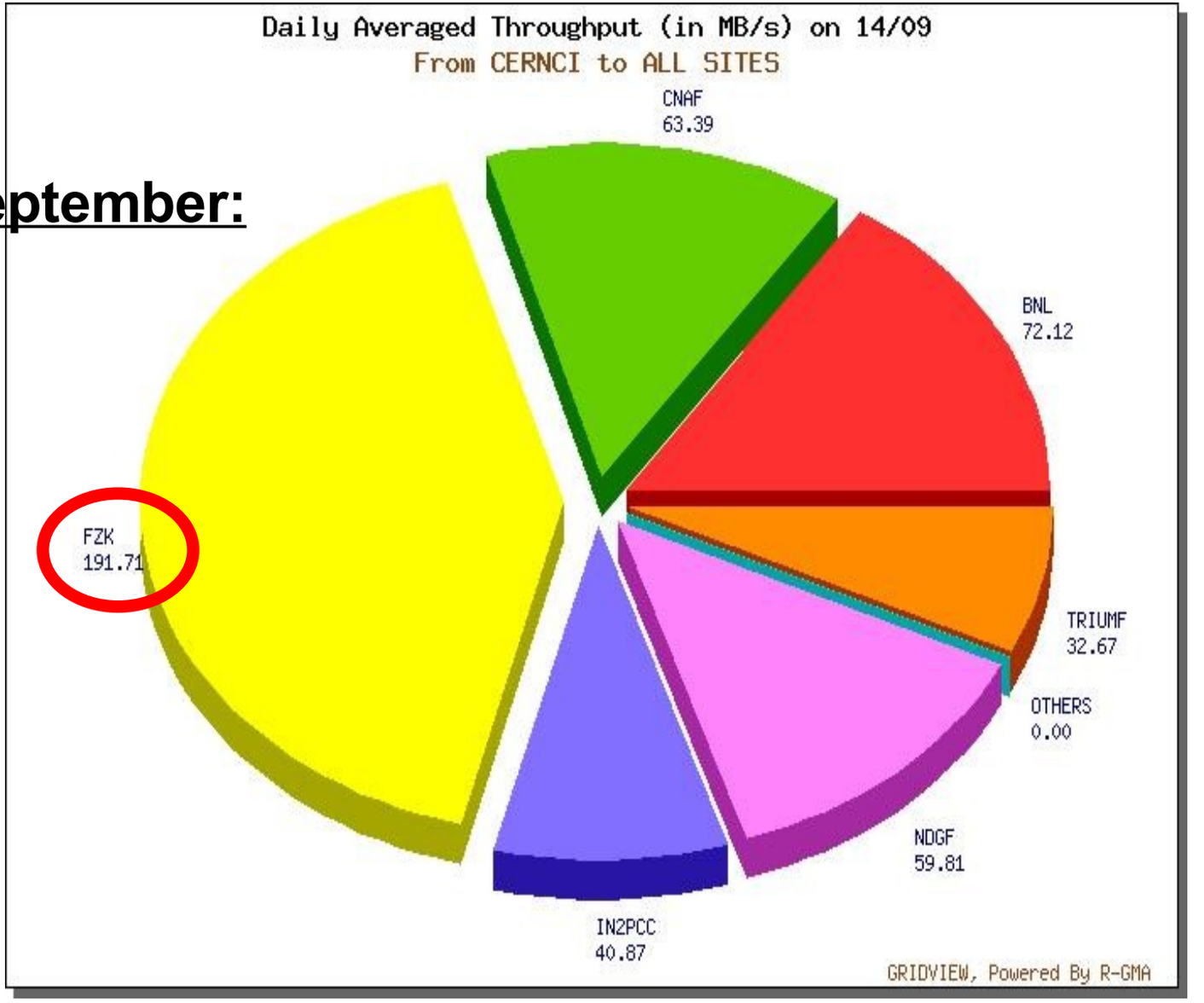
Data transfers – September:

- ➔ GridKa SC3 dCache pool nodes got SAN disks with GPFS file system
  → approx. 40 TB disk attached to 8 dCache pool machines.
- ➔ dCache tape connection installed.

SC3 at GridKa:

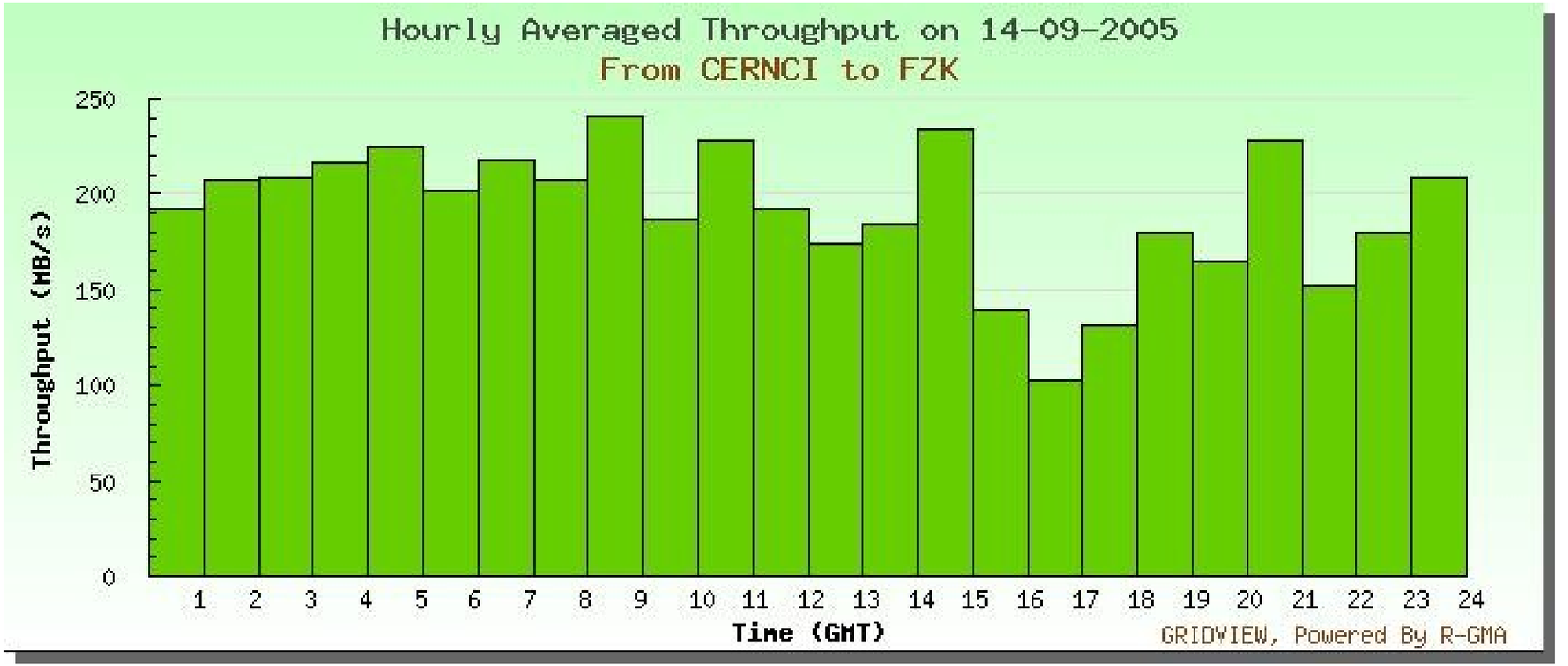
Data transfers – September:

In September – after official throughput phase – the SC3 goal (150 MB/s to disk) was achieved on several days. Peak rate up to 280 MB/s hourly average.



SC3 at GridKa:

Data transfers – September:



SC3 at GridKa:

Tier 1 ↔ Tier 2 transfers:

- ➔ PhEDEx transfers (CMS)
  from CERN to GridKa and GridKa to DESY
  (Jens Rehn)

- ➔ gridftp and srm transfers tested
  to/from DESY, FZU, GSI.

SC3 at GridKa:

LCG 2.6.0 setup for service phase:

- ➔ Experiment's login nodes are used as “VO box“.
- ➔ BDII, RB, PX, MON and SE (classic) used from production system
- ➔ Separate SC3 setup with UI, CE (all GridKa WNs available), LFC.
- ➔ dCache SE is currently being installed.
- ➔ FTS server for T1 ↔ T2 transfers operational.

SC3 at GridKa:

CMS and ALICE started their service phase in September.

➔ No major problems reported –
except for “CERN blockade incident“ on Fri. Sept. 16th

GridKa School:

➔ From 26th to 30th September 2005:

Grid related talks and trainings,
more than 80 participants.

Questions, Comments?