

# Tier-2 Update Hamburg

**since April 06**

DESY

# Plan vs. Reality

## Tier1/2 Summary Table (from Q1/06)



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| Tier-1 Planning for 2008 |                  | ALICE | ATLAS | CMS  | LHCb | SUM 2008 |
|--------------------------|------------------|-------|-------|------|------|----------|
| <b>CPU - MS12K</b>       | Offered          | 6.7   | 22.7  | 12.5 | 4.4  | 46.3     |
|                          | TDR Requirements | 12.3  | 24.0  | 15.2 | 4.4  | 55.9     |
|                          | Balance          | -46%  | -5%   | -18% | -0%  | -17%     |
| <b>Disk - PBytes</b>     | Offered          | 2.8   | 12.5  | 5.7  | 2.2  | 23.2     |
|                          | TDR Requirements | 7.4   | 14.4  | 7.0  | 2.4  | 31.2     |
|                          | Balance          | -62%  | -13%  | -18% | -10% | -25%     |
| <b>Tape - PBytes</b>     | Offered          | 3.2   | 9.1   | 8.1  | 1.9  | 22.3     |
|                          | TDR Requirements | 6.9   | 9.0   | 16.7 | 2.1  | 34.7     |
|                          | Balance          | -54%  | 1%    | -51% | -9%  | -36%     |

Includes current planning for all Tier-1 centres

| Tier-2 Planning for 2008                  |                  | ALICE   | ATLAS   | CMS     | LHCb    | SUM 2008 |
|-------------------------------------------|------------------|---------|---------|---------|---------|----------|
| <b>CPU - MS12K</b>                        | Offered          | 5.0     | 19.5    | 17.4    | 4.4     | 46.3     |
|                                           | TDR Requirements | 14.4    | 19.9    | 19.3    | 7.7     | 61.3     |
|                                           | Balance          | -65%    | -2%     | -10%    | -42%    | -24%     |
| <b>Disk - PBytes</b>                      | Offered          | 1.4     | 5.9     | 4.5     | 0.8     | 12.6     |
|                                           | TDR Requirements | 3.5     | 8.7     | 4.9     | 0.023   | 17.1     |
|                                           | Balance          | -59%    | -33%    | -8%     | n/a     | -26%     |
| # Tier-2 federations - included(expected) |                  | 12 (13) | 20 (28) | 17 (19) | 11 (12) | 28 (37)  |



# Changes in Requirements

Atlas T2-requirements change  
incl. Heavy Ion



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|                                 | 2007        | 2008         | 2009         | 2010         | 2011         | 2012         |
|---------------------------------|-------------|--------------|--------------|--------------|--------------|--------------|
| <b>CPU<br/>(kSI2k)<br/>CTDR</b> | <b>3653</b> | <b>18672</b> | <b>29497</b> | <b>49739</b> | <b>66842</b> | <b>83944</b> |
| <b>CPU<br/>(kSI2k)<br/>new</b>  | <b>2776</b> | <b>18923</b> | <b>27956</b> | <b>60612</b> | <b>75573</b> | <b>90534</b> |
| <b>Disk (TB)<br/>CTDR</b>       | <b>1387</b> | <b>8287</b>  | <b>15164</b> | <b>24795</b> | <b>34426</b> | <b>44072</b> |
| <b>Disk (TB)<br/>New</b>        | <b>868</b>  | <b>5735</b>  | <b>10373</b> | <b>27011</b> | <b>43590</b> | <b>51218</b> |



# Changes in Requirements



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Proposed resources (total, C=CTDR, N=New)

for an average Atlas Tier 2 (Ass.: 30 Tier 2's)

|                                | 2007                                      | 2008                                       | 2009                                       | 2010                           | 2011                           | 2012                           |
|--------------------------------|-------------------------------------------|--------------------------------------------|--------------------------------------------|--------------------------------|--------------------------------|--------------------------------|
| <b>CPU [kSI2k]</b>             | <b>93 N</b><br><b>700 C</b><br>(Quast 05) | <b>630 N</b><br><b>900 C</b><br>(Quast 05) | <b>930 N</b><br><b>900 C</b><br>(Quast 05) | <b>2020 N</b><br><b>1670 C</b> | <b>2530 N</b><br><b>2200 C</b> | <b>3020 N</b><br><b>2800 C</b> |
| <b>Disk [TB]</b>               | <b>30 N</b><br><b>340 C</b><br>(Quast 05) | <b>200 N</b><br><b>340 C</b><br>(Quast 05) | <b>350 N</b><br><b>570 C</b><br>(Quast 05) | <b>900 N</b><br><b>800 C</b>   | <b>1450 N</b><br><b>1140 C</b> | <b>1710 N</b><br><b>1470 C</b> |
| <b>Tape [TB]</b><br><b>(?)</b> |                                           |                                            |                                            |                                |                                |                                |



# Atlas CPU Usage (Hamburg 2006)



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- **grid-ce0 (first inst. Opterons, dual CPU)**
  - Atlas: 1580 days, being 16.4%
  - CMS: 4272 days, being 44.3%
- **grid-ce1 (Sun Opterons, dual Core/CPU)**
  - Atlas: 1087 days, being 14.4%
  - CMS: 5006 days, being 66.5%
- **grid-ce2 (oldest - Xeon based, dual CPU)**
  - Atlas: 981 days, being 23.9%
  - CMS: 1915 days, being 46.6%



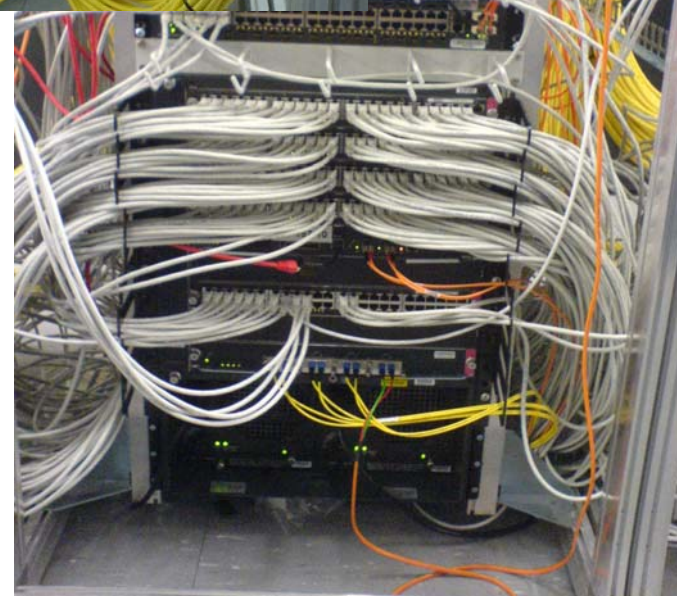
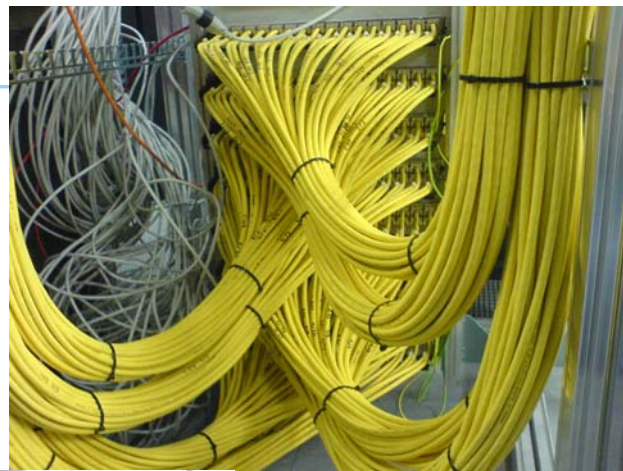
- **srm-dcache (connect to main Storage Sys)**
  - **~10 GB !**
    - used for: csc11, users, sc4, dq2
  - **~ 3 TB space configured (disk only pool)**
    - more possible
- **grid-se3 (default SE)**
  - **76 GB**
    - used for 'generated'
  - **~280 GB configured (disk only pool)**

- **Hardware movement into new Room completed**
- **new Worker Nodes (Suns) installed (June)**
  - CE0: 166 cores
  - CE1: 160 cores
  - CE3: 88 cores
- **prepared for next chunk**
- **Transition to gLite 3 completed**

# what you see is what you get ;-)



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# Next to come...

- **Transition to SL 4**
- **64 Bit OS ?????**
- **another chunk of Worker Nodes**
  - not clear if its really needed
- **Storage expansion by ~40 TB**
- **Restructuring of the Storage Infrastructure**
  - close the ‘learning curve’ - first round
    - scalable, stable, fast configuration (HW + SW)

in any case ...



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<http://grid.desy.de>

