



Operating grid activities at IN2P3-CC

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Deployment state



- Site tier-1:
 - 4 LCG CEs (SL4/32 bits): 3.1.15
 - 2 for ALICE, ATLAS, + EGEE VOs
 - 2 for CMS, LHCb, + EGEE VOs
 - WNs (SL4/64bits, ~8300 cores): 3.1.19-0
 - middleware SL4/32bits
 - ⇒ **~1700 grid jobs (38% of jobs at CC), 21 VO supported (13 really active)**
 - UIs (SL4/32 and SL4/64 bits): 3.1.22-0
 - TopBDII (SL4/32 bits):
 - 2 machines load-balanced
 - Site BDII (SL4/32 bits):
 - 2 machines load-balanced
 - both publish the 2 sites (T1 and T2)
 - Local LFC (SL4/64bits + Oracle): ATLAS

Deployment state



- Site tier-1:
 - FTS server (SL3 + Oracle): 4 LHC VOs
 - 74 channels on 2 nodes
 - **manages transfers T1s->T1-CC + T1-CC<->T2s**
 - ~4000 transfer jobs per day
 - 2 SRM servers (dCache 1.9.0-4 SL4/64bits):
 - ~85 disk servers (Thumpers): ~20M files and directories, 1.2 PB disk
 - read: 1GB/s (3GB/s pic)
 - write: 500 MB/s
 - interfaced with HPSS
 - 6 VOBOXes for LHC VOs
 - 1 MONBOX for 10 sites

Deployment state

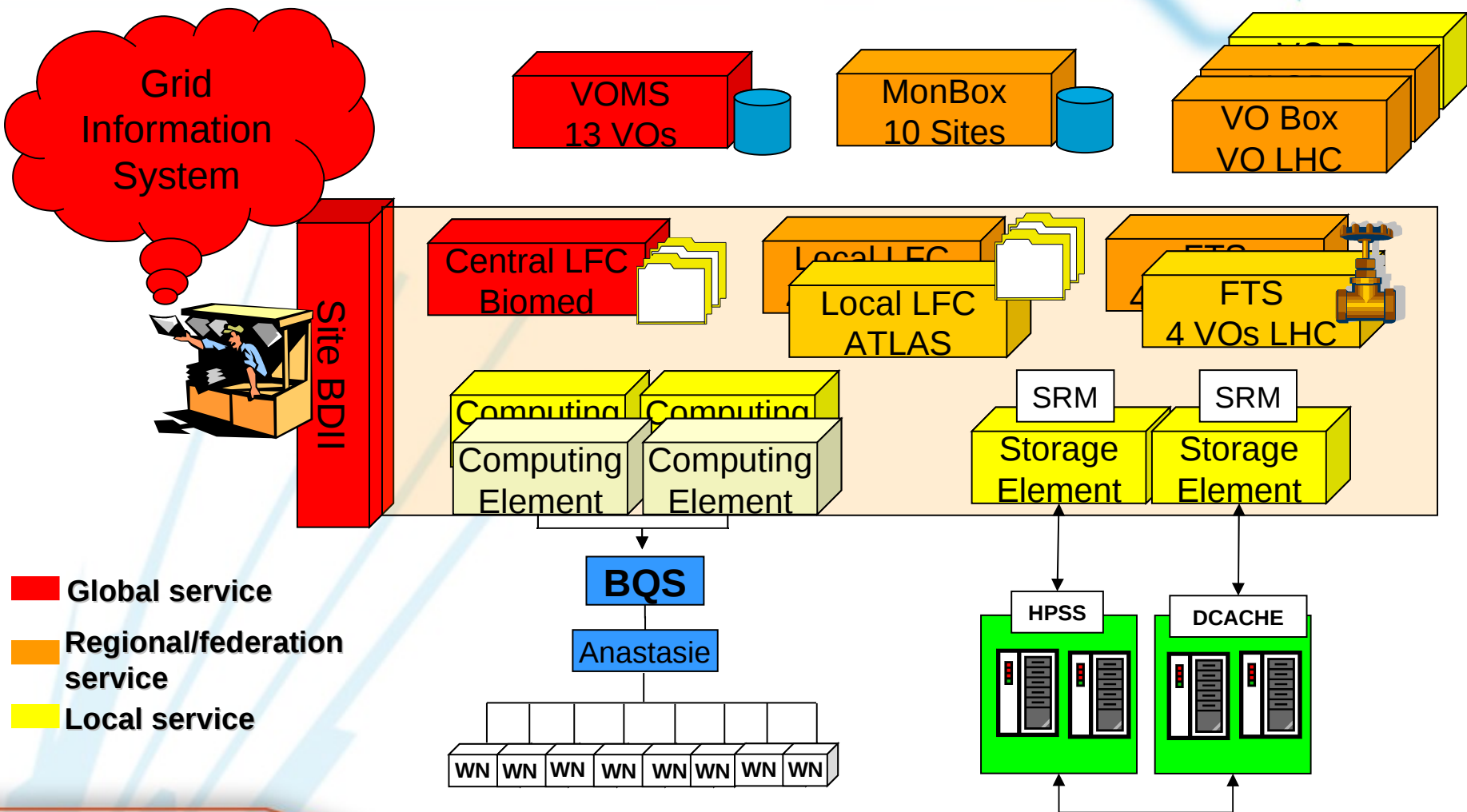


- Site tier-2:
 - 2 LCG CEs (SL4/32bits): 3.1.15
 - 4 LHC VOs

- Core services:
 - VOMS server (SL3 + MySQL): Biomed, 12 EGEE/regional VOs
 - to be upgraded to SL4/32bits + Oracle

 - 2 Central LFCs (SL4/64bits + Oracle):
 - Biomed
 - fkppl.kisti.re.kr
 - + 4 regional VOs

Deployment state



- Global service
- Regional/federation service
- Local service

Site operation: concerns



- Critical grid service
 - outage of VO services (VOMS, LFC, FTS, ...)
 - ⇒ corresponding VOs cannot use the grid
 - outage of information system (site BDII)
 - ⇒ disappearance of critical services from the global information system

- Data management for the VOs
 - unavailability of the data (SRM, LFC)
 - unavailability/loss of specific data for VO services (space token, VO tags)

- Middleware update + configuration change
 - break due to bad configuration, new bugs, etc...
 - interruption of services
 - interruption/perturbation of local production

Site operation: deployment



■ Use of local expertise for:

- databases gestion ➔ **DB team**
- system installation and network management of grid nodes ➔ **System and network team**
 - a great part of security problems are handle by security experts
 - grid nodes environment is consistent with the other machines
 - grid nodes are monitored with the same tools (hard/software)
- storage/transfert of datas ➔ **Storage team**
- grid jobs exploitation ➔ **Operation team**
- user support ➔ **User support team**

■ Test infrastructure

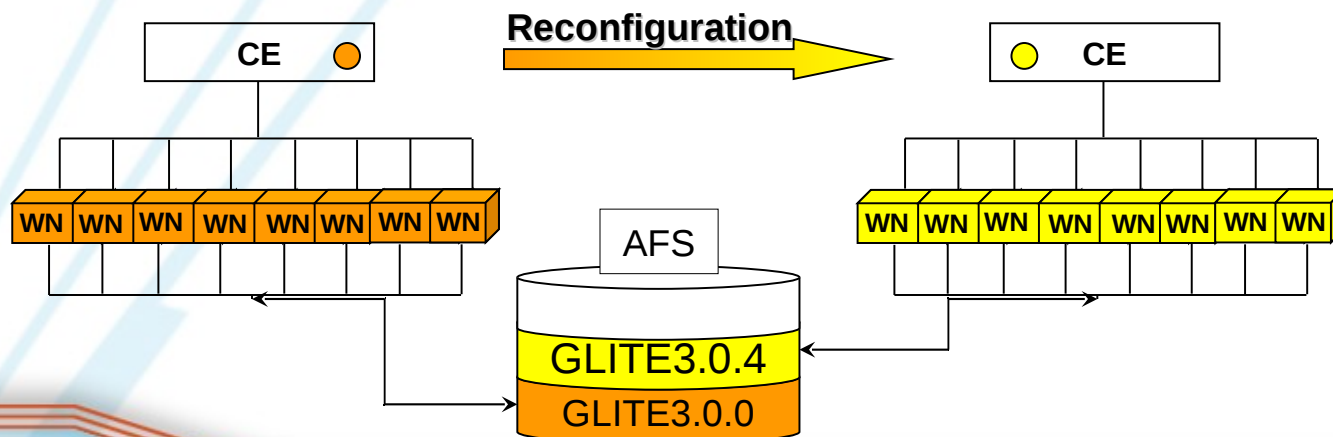
- to test the middleware and its installation
- to better understand it before putting it in production
- ⇒ use of virtual machines (4 VMWare servers with ~20 virtual machines = 80 machines)
 - economic
 - time benefit: you can clone images
 - well adapted to repeated installations
 - no need of system admin for every installation
 - allow to have grid services out of production to test other nodes

Site operation: deployment



■ Shared installation on AFS for WN/UI

- ⇒ installation of the whole farm without modification of each WN
 - it avoids to put the WN out of production during the update
- ⇒ different versions of middleware in parallel
 - change on the fly of the version of the middleware by (re)configuring the CE
 - easy rollback in case of problem with last version



Site operation: consolidation



- Better to use aliases than hostname
 - when the middleware allows to do it (not possible with CEs)
 - when the node name is in other nodes configuration
 - ⇒ **replacement** of machines is **transparent** in case of failure or during a middleware update
- Spare machines allow to update services without interruption (BDII, CE, LFC)
 - node to update can be tested before going to production
 - with load balancing, update can be done without service interruption

Site operation: consolidation



- Use of backup mechanism for
 - logs
 - VO tags (on the CEs)
 - VO softwares
- Active monitoring
 - NAGIOS (CA, CRLs, site BDII, etc.)
 - home made tools (FTS monitor, hardware monitor)
- Keep fast communication when a problem is detected
 - weekly meeting with all the teams concerned by grid activities
- Collaboration with other grid sites for the fail-over for critical services
 - TopBDII (with GRIF or LAPP)
 - LHCb LFC read-only replica of central LFC



Thanks for your attention



Any questions

