LHCb and the Grid

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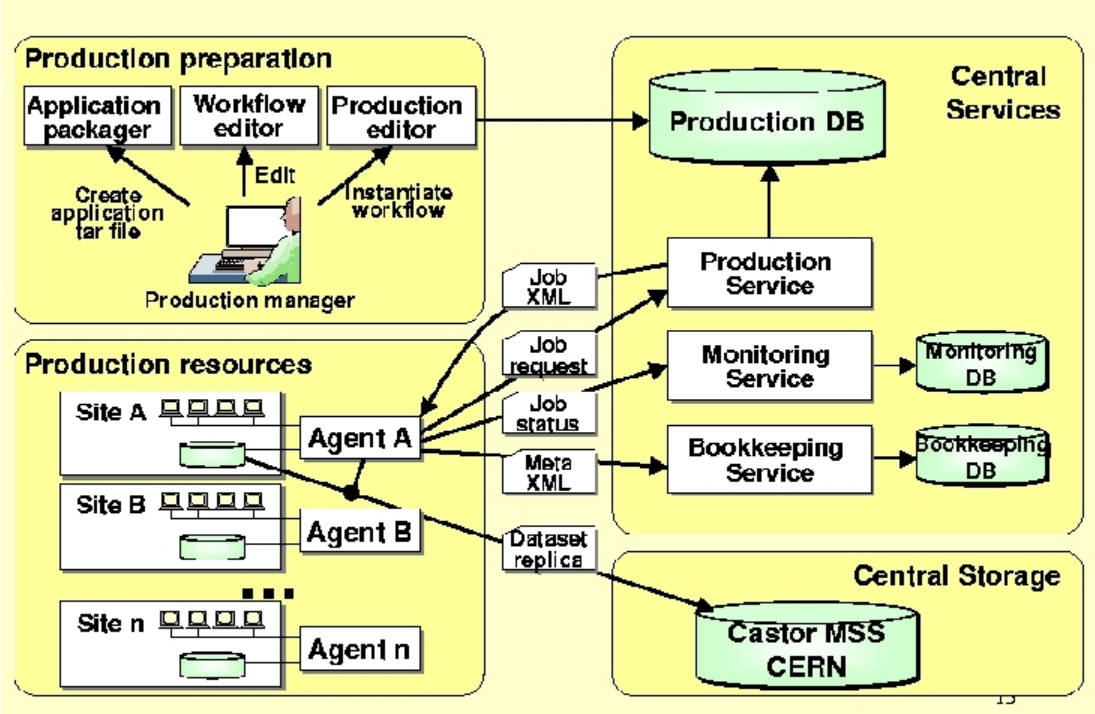
SC3 Results and Current Status

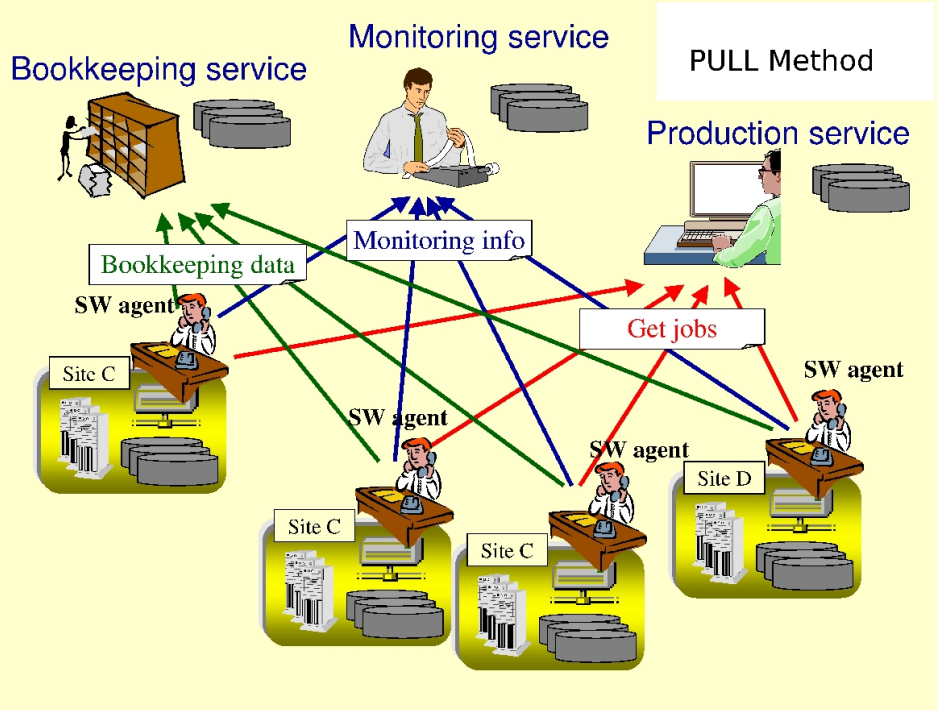
- Intro: a little about DIRAC
- SC3 for LHCb
- Current Status
- Conclusions

LHCb Interface to LCG

- Services Oriented Architecture
- Support rapid development cycle
- Accomodate evolving grid opportunities
- Easy to deploy on various platforms
- Updates are easy and transparent



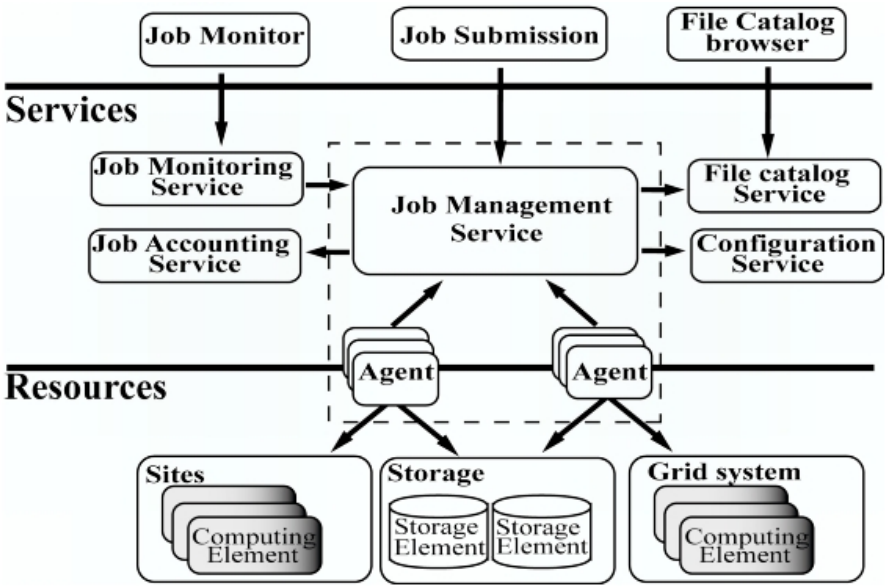
DIRAC



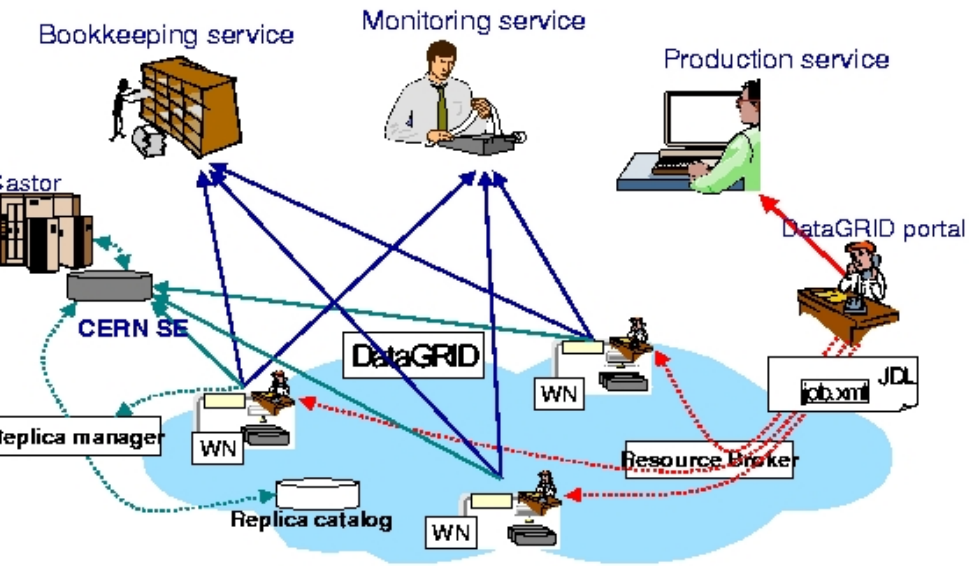
- Using the “PULL” mechanism rather than “PUSH”
- Deploy ’DIRAC’ agents on worker nodes
- Agents investigate CE resources
- Agents install LHCb, job specific software

Dirac Architecture

- Workload Management System
- deploys jobs in form of agents
- agents request production jobs when resources match requirements

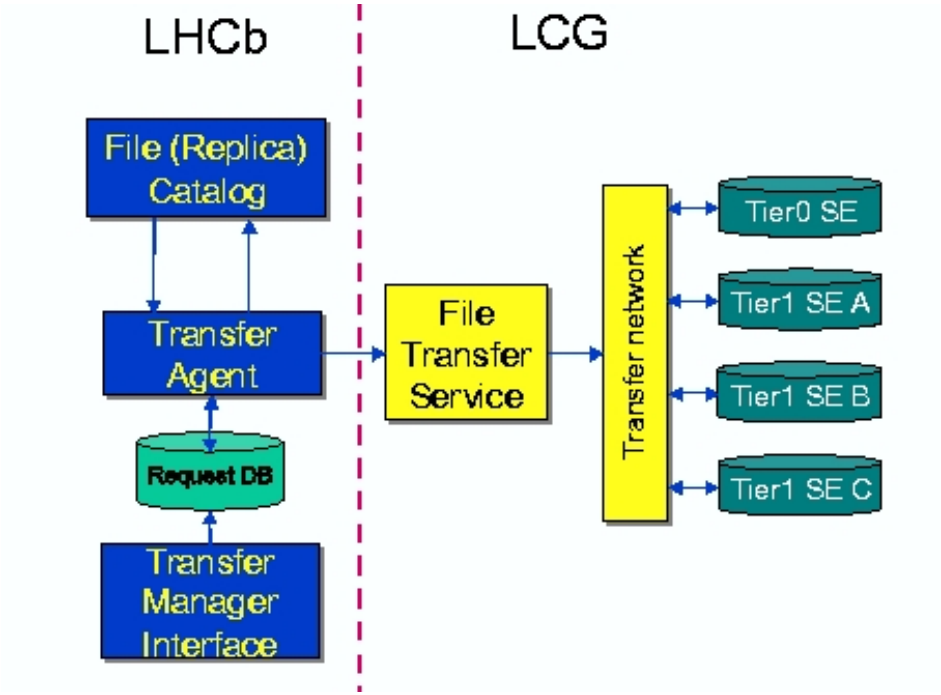


Dirac on LCG



- Deploy Pilot agents through LCG-RB
- When resources match requirements
- request job (MC, Stripping, Analysis) from WMS
- “reserve” WN as CE for WMS
- release WN when no match found

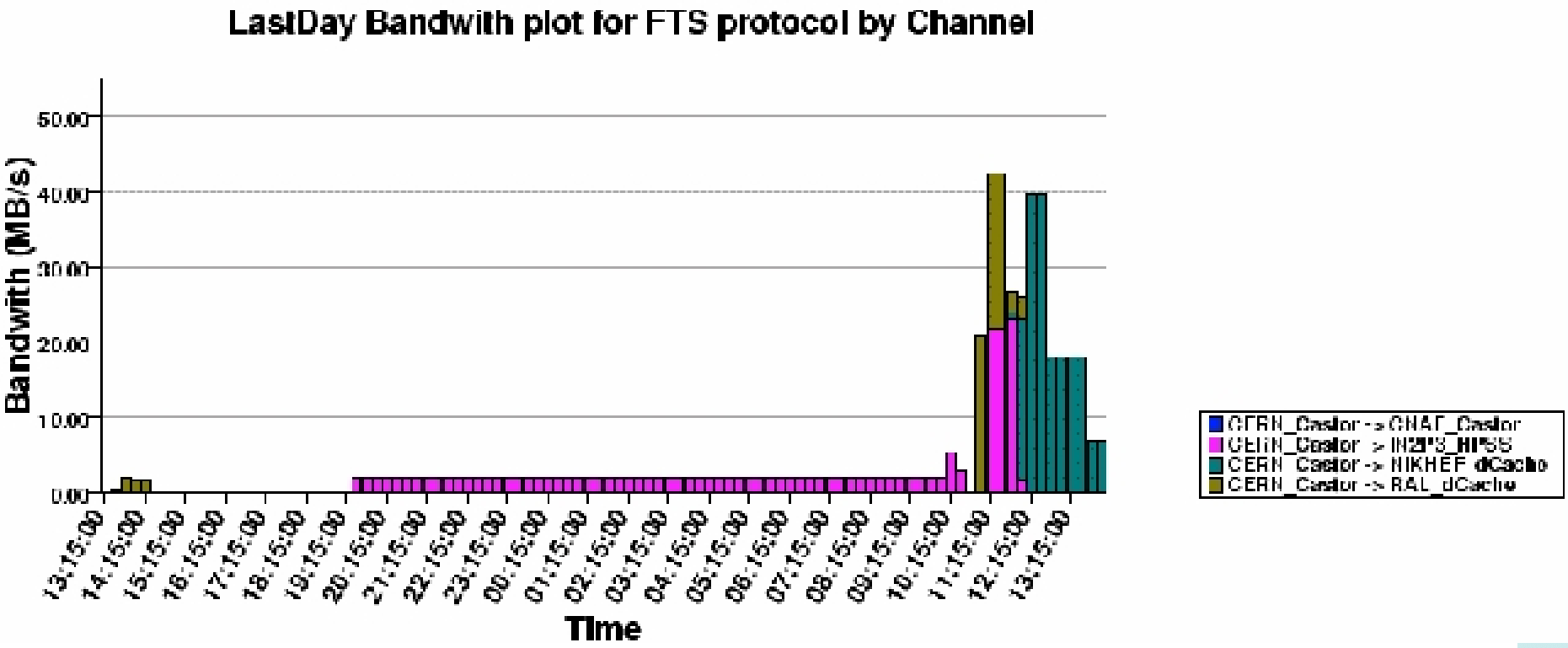
Dirac Transfer Agents



- transfer request from Transfer manager
- Maintain pending transfer queue
- Validate transfer requests
- Submit transfers to FTS
- Checks results, resubmits transfer when needed
- Sends progress report to monitoring system
- Updates replica info in FC
- Interfaced to AliEn FC, LFC, FiReMan

SC3 (I)

- Personel: 10 people from LHCb plus Tier-1 support
- SRM endpoints at: CERN, GridKa, CNAF, IN2P3, PIC,RAL, SARA/NIKHEF
- 2 phased process: data moving, data processing



SC3 (II)

- 606 files submitted to FTS in single job to GridKa
- Transfer Agent truncated job to 450 files
- long submission time due to polling LFC
- remaining files submitted on RAL,SARA & IN2P3 channels
- transfer rate: 90MB/s out of CERN

- Good performance of TA
- Good response from T1 sites

but:

- Final debug of Transfer Agent
- Need to test long term stability

Conclusions & ToDo

- Succesfull proof of principle
- Long term stability not yet confirmed due to problems:
- transfer rates low due to problems at SRM endpoints at CERN(CASTOR)
- discussions on: how to treat SRM end points?
- minimize “abuse” of LCG by sending Pilot Agents

ToDo: Proof of real time

- MC production at T1/T2 centers
- stripping of data at T1 centers
- physics analysis of stripped data