



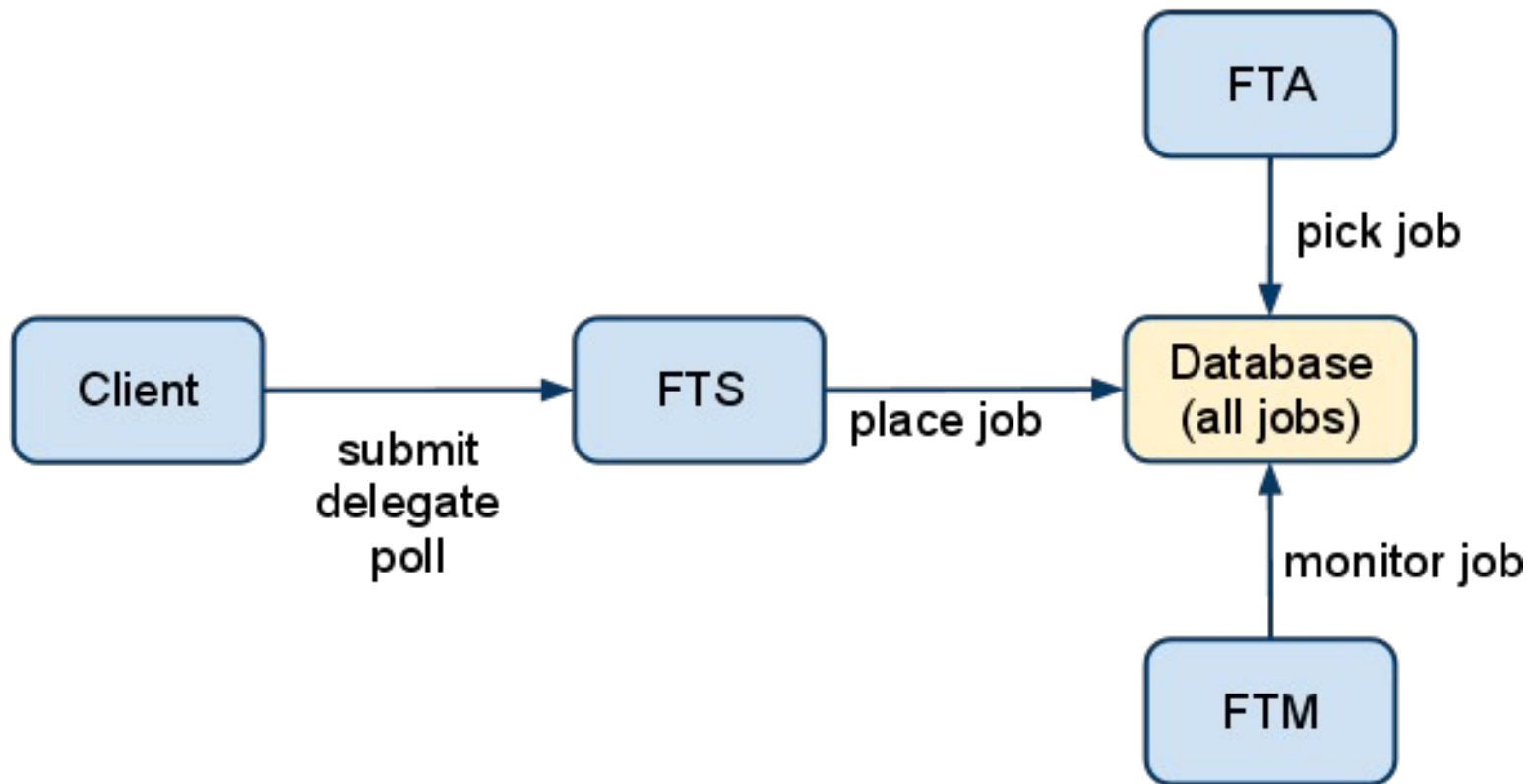
# **gLite File Transfer service in the EMI Data Area**

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# File Transfer Service

- Schedule transfer jobs between SE-s
- Submit → store in DB → start when optimal
- Monitoring
- CLI, no API
- FTS web service + transfer agents

# File Transfer Service



# LCG\_Util

- Data replication tool
- Multiple access protocols, SRM
- Register in file catalog
- Local ↔ remote node as well
- Python, C API, CLI
- Client side tool

# Why new FTS?

- Architectural limits reached
- Difficult to maintain and improve
- Based on static channel model
- Uses Oracle backend
- Overlaps with other projects
- Requires complex configuration
- Could handle resources better

# Schedule + new features

- Three steps
- Step 1: end of 2011
  - Remove channel model
    - Resource handling: heuristics based on performance of last transfers
  - More transfer protocols
  - Support other backends than Oracle
  - Replace Java web service
  - New FTS configuration
  - Added values already

# Schedule + new features

- Step 2: end of 2012
  - Messaging-based job submission
  - Transfer optimization
  - LHC shutdown starts
- Step 3: middle of 2013
  - Merge FTS and LCG\_Util

# Channel model

- Core of FTS architecture
- Abstraction of a transfer link
- Solution for optimizing network and storage resources
- Reflects hierarchical Tier model
  - changing...
- Static properties set by admin
  - channel-by-channel



# Channel model - problems

- Not scalable in Tier2 domain
- Channel groups, star channel
  - Still not optimal
- Configuration for SE pairs
  - Mutual agreement required
- SE and network load not taken into account
- Dropping channel model → dropping FTS architecture

# Channel model - solution

- Take SE into account
  - Need to discuss it with SE providers
- Take network load into account
  - Collaboration with OSG
  - With DYNES?
- Step 1: no channels
  - SE-s are configured on FTS side
  - Network utilization measured by FTS
- Step 2: using the new interfaces

# Persistency required:

- Store job state
- Job queue
- FTS and FTA communication
- Monitoring
- Using Oracle only
  - Tier2 sites: no license, etc.
- Expensive

# Persistency - problems

- Using Oracle only
  - Tier2 sites: no license, etc.
- Expensive
- DB is not the only persistency
  - Configuration data, etc.

# Persistency - Solution

- Step 1: FTS on top of generic DB access
- Database access plugins
- MySQL, Oracle
  - ProgreSQL later
- Simpler schema (no channels)
- Configuration to database
- Step 2: Job queue based on messaging

# Web Service

- C++ client ↔ Java web service (FTS)
- Duplicates
- Knowledge of Tomcat, etc. needed
- Solution: everything in C/C++
- Step 1: FTS in C++, based on new generic components
- Step 2: No web service (TBD)

# New transfer protocols

- Currently, SRM + gridFTP
  - LCG\_Util supports more
- Step 1: Transfer plugins
  - SRM, gridFTP
- Step 2: HTTP, XRDCP

# FTS configuration

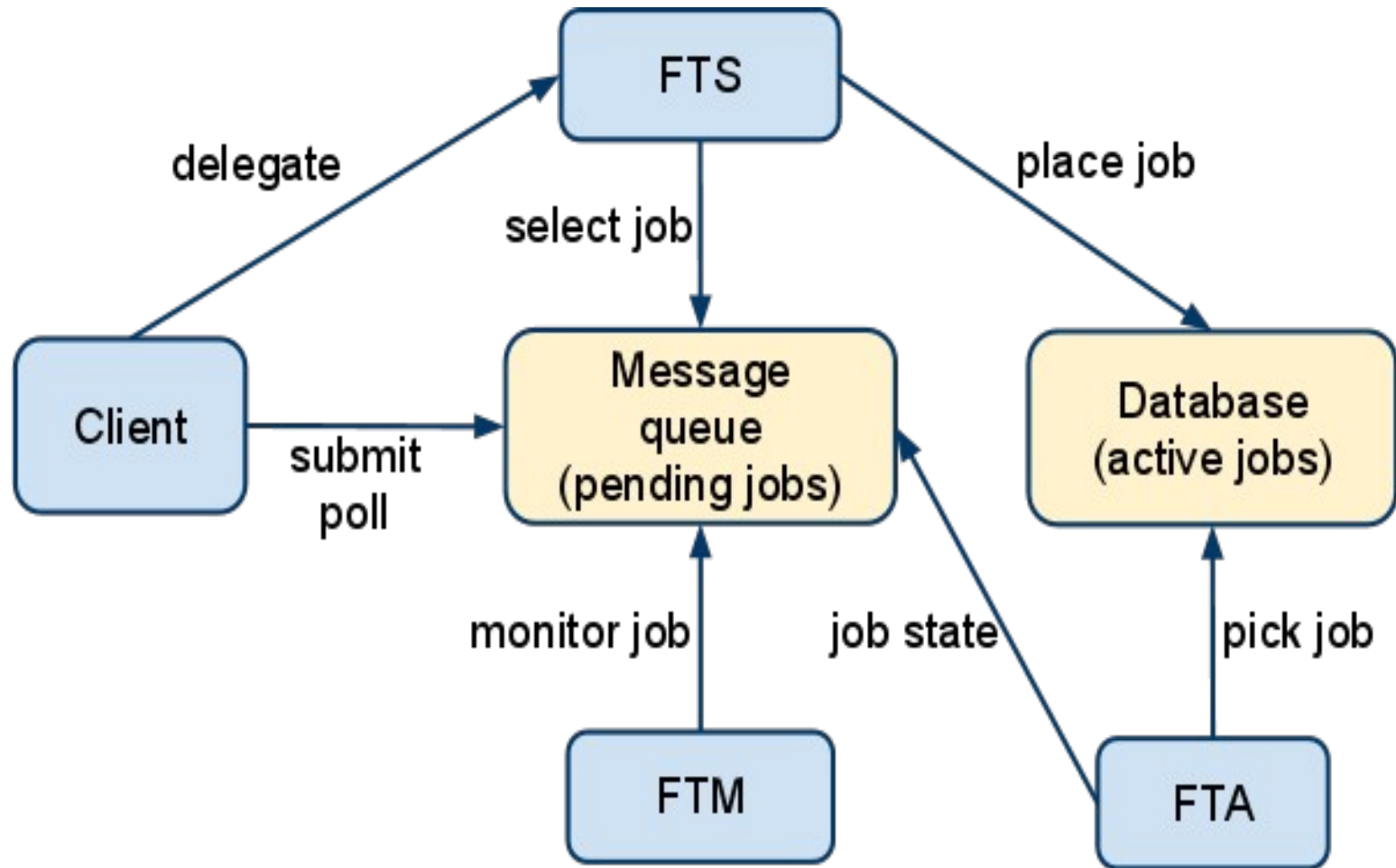
- Complicated (YAIM, XML, etc.)
- No real default config
- No channels → much simpler
- Config in the database
- (Re)configuration remotely
  - Config service port
  - Simple CLI
- In Step 1



# Messaging in FTS

- In Step 2
- Pull model
- No need to know the FTS endpoint
- FTS load balancing
  - No submission to overloaded, drained FTS
- “Best” FTS executes a job
- Delegation problem

# New FTS



# LCG\_Util and FTS

- Overlap in functionalities
- Competing for the same resources
- LCG\_Util works with file catalogs
- Step 3: merge the projects
- Single piece of code to maintain
- LCG\_Util could use FTS
  - better resource utilization
- Simpler CLI

## New FTS:

- Works for Tier2-s as well
- More autonomous
- Requires less configuration
- Simpler to maintain and deploy
- Uses standard building blocks
- Is in production in 2013
- But provides values already in one year

# Resources

<https://svnweb.cern.ch/trac/glitefts>

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