FTS Administration and Troubleshooting

Paolo Tedesco (paolo.tedesco@cern.ch)
White Area Lecture
10 October 2008
Outline

- Deployment
- Installation and configuration
- Troubleshooting
- FAQ
Deployment guidelines

Production-scale system

- Web service (FTS): nodes in DNS load balancing
- Database: Oracle RAC cluster
- VO Agents: separate node
- Agents (FTA)
  - All VO agents on one node
  - Channel agents over multiple nodes
- Monitoring system (FTM): separate node, optional

Test system

- FTS, FTA and FTM on the same machine
- Oracle Express Edition (XE) database
Channel definition guidelines

- FTS is installed at T0 and T1s
- An FTS server is responsible for
  - Transfers where the installation site is the destination
  - Transfers to and from the related T2s
  - Exception: T0 service is responsible for all transfers involving CERN
Outline

• Deployment
• Installation and configuration
• Troubleshooting
• FAQ
Installation prerequisites

- Scientific Linux 4 machines
- Valid hostcert, hostkey in /etc/grid-security
- Java JDK
- Oracle InstantClient
- Web service:
  - firewall open for incoming on port tcp/8443
- FTA agents: outgoing firewall must allow access to
  - MyProxy server
  - Database
  - All source/destination SRM/gridFTP clusters
Installation

- Check the version-specific installation guide
  - https://twiki.cern.ch/twiki/bin/view/LCG/FtsServerInstall21

- Install the metapackages and run the YAIM configuration scripts

```
~# yum install glite-FTS_oracle
~# /opt/glite/yaim/bin/yaim -c -s site-info.def -n FTS2
```

```
~# yum install glite-FTA_oracle
~# /opt/glite/yaim/bin/yaim -c -s site-info.def -n FTA2
```
Configuration - FTS

- **FTS_DBURL**: sets the JDBC Oracle connection string
  - user/password for web service can be overridden if necessary
  - taken from agents configuration in YAIM otherwise

- **FTS_HOST_ALIAS**: if you’re using multiple web-services with DNS load-balancing
  - publish the DNS alias specified rather than the current hostname in the information system
Configuration – FTA

1. Which agents are on which hosts
2. Type of each named agent
3. Global parameters, applied to all agents
   - Logging
   - DB connection details
4. Type specific parameters, applied to all agents of a given type
   - e.g. all 3rd party copy agents
5. Specific parameters for individual agents
Sections 1 & 2

1. Which agents are on which hosts
   - What machines are there:
     \[ \text{FTA\_MACHINES=\"ONE TWO\"} \]
   - What agents goes where:
     • The hostname is need to match for the YAIM script
     \[ \text{FTA\_AGENTS\_ONE\_HOSTNAME=\"fts101.cern.ch\"} \]
     \[ \text{FTA\_AGENTS\_ONE=\"CERN-CERN DTEAM\"} \]

2. Type of each named agent
   - URLCOPY: 3rd party copy
   - SRMCOPY: SRM copy
   - VOAGENT: VO agent
   \[ \text{FTA\_CERN\_CERN=\"URLCOPY\"} \]
   \[ \text{FTA\_DTEAM=\"VOAGENT\"} \]

Note: “-” in “CERN-CERN” changed to “_” to have a valid shell variable name
Parameter model

- (most) parameters may be specified at
  - GLOBAL level
  - TYPE level
  - INSTANCE level

- Agents come with reasonable defaults
  - DB connection parameters have no defaults
  - For the vast majority of possible parameters the default is fine

- GLOBAL parameters are applied to all agents and override the defaults
Parameter model

- Type-specific parameters are applied to all agents of a given type
  - e.g. all URLCOPY agents

- These parameters override the default and global ones
  - Most parameters that need to be varied from default are changed here
Parameter model

- Instance-specific parameters change one instance only

- Override the default, GLOBAL and type-specific ones

- Should (ideally) be used rarely
YAIM Format

- General format is of YAIM variable is:
  - FTA_%SCOPE%_PARAMNAME
  - Scope is either GLOBAL, TYPEDEFAULT_%type, or the specific named agent

- Example:
  - FTA_GLOBAL_LOG_PRIORITY
    - all agents
  - FTA_TYPEDEFAULT_URLCOPY_LOG_PRIORITY
    - URL copy agents
  - FTA_CERN_RAL_LOG_PRIORITY
    - the named CERN-RAL agent (note the “-” goes to a “_”)

- More details here:
  - https://twiki.cern.ch/twiki/bin/view/EGEE/DMFtsSupport#YaimConfig
  - https://twiki.cern.ch/twiki/bin/view/LCG/FtsYaimValues21
FTS 2.1 specific note

- FTS 2.1: many channel agent configuration parameters moved to the database
  - see [https://twiki.cern.ch/twiki/bin/view/LCG/FtsYaimValues21](https://twiki.cern.ch/twiki/bin/view/LCG/FtsYaimValues21) for the complete list
- CLI has not (yet) been updated accordingly
- These parameters are written to the database by the YAIM configuration script
- If you are not using YAIM:
  - modify the agent(s) configuration file(s)
  - re-run the update_channels.py script, that will migrate the settings to the database
- If you modify one of these parameters:
  - you do not need to restart the related agents
  - the agent will re-read it from the database after a while
Adding a Channel Agent

- **Create the new channel**
  
  ```
  ~# glite-transfer-channel-add CERN-RAL CERN-PROD RAL-LCG2 -f 20 -T 1 -s Active
  ```

- **Edit the site-info.def**
  
  ```
  FTA_AGENTS_ONE="CERN-CERN DTEAM CERN-RAL"
  FTA_CERN_RAL="URLCOPY"
  ```

- **Re-run the yaim configuration**
  
  ```
  ~# yaim -c -s site-info.def -n FTA2
  ```

- **Start the new agent**
  
  ```
  ~# service transfer-agents --instance glite-transfer-channel-agent-srmcopy-CERN-RAL start
  ```
Outline

• Deployment
• Installation and configuration
• Troubleshooting
• FAQ
FTS web-service

- FTS web-service runs inside the tomcat container
- Logs are in /var/log/tomcat5/
- Tomcat logs into catalina.out
- Web service logs into:
  - `org.glite.data.transfer.fts-calls` – one call per line, with client DN and IP and call information for standard FTS operations
  - `org.glite.data.transfer.channeladmin-calls` – one call per line, client DN and IP and call information for channel control operations
  - `org.glite.data` – debug information
    - Oracle errors, problems with DB or connection
    - FATAL errors, web service not starting
w/s: things to monitor

- The tomcat5 daemon is running
- It’s listening on
  - *:tcp/8443
  - localhost:tcp/8005
- The application running inside is not stuck
  - Does a test command answer?
- There are ESTABLISHED connections to the database nodes
- Check log file for “ORA-xxxxx” errors (and associated stack trace)
w/s problems

- Web service is not responding
  - can happen if it runs out of memory
  - restarting the tomcat daemon “fixes” the problem
    - service tomcat5 restart
- Web service doesn’t start
  - usually a DB connection problem
  - scan org.glite.data for FATAL errors
- Tomcat doesn’t start
  - seen on development play boxes…
  - …clean re-install of Tomcat solves the problem
Agents and transfers logging

• Default logging level is “INFO”

• Agents log level:
  – FTA_GLOBAL_LOG_PRIORITY=“DEBUG”
  – Restart the agents
    • Logging configuration is written in the separate “.log-properties” file

• Transfers log level
  – FTA_GLOBAL_GUC_LOGLEVEL=“DEBUG”
    • No actual need to restart the agents with FTS 2.1, since the parameter is actually read from the database, but you still need to run the YAIM configuration or the update_channels script
Agents logs

- **Under /var/log/glite**
  - Compressed and log-rotated

- **VO Agents**
  - Allocation problems
    - Channel not found or closed for VO
    - Host resolution to site failed
  - Retry strategy details

- **Channel Agents**
  - Transfer related events
    - Fetch, start, check state…
  - Cancelation of running transfers
Transfer logs

- Under `/var/tmp/glite-url-copy-edguser`
  - Archived under `/var/logs-archive`
- Folder contains `.log` and `.mem` files
  - Running transfers
  - `<Channel-Name>completed/failed/lost`
- Log files contain details on the transfer
  - SRM interaction problems
  - Gridftp errors
FTA: things to monitor

- Check configured agents are running
  - `service transfer-agents status`
- For every busy channel there are transfer processes running
- None of the `.log` and `.mem` files in `/var/tmp/glite-url-copy-edguser/` is too old (stuck transfer?)
- Check for presence of “lost” transfers
- Check for “ORA-xxxxx” errors in agents logs
- Check for “ALERT” logs in agents logs
Agents do not start

- Check the log file for details
- Check for DB connection errors
- Check `/tmp/<svc-name>-svc-conf-debug.log` or `/tmp/glite-data-config-service-svc-conf-debug.log`
  - Useful to determine the reason of a start failure if the standard logger was not yet initialized.
- Check there is no other agents for the given channel or VO running
  - on this node and all other agent nodes
  - particularly important if you’ve just changed an agent from “urlcopy” to “srmcopy” or vice-versa, or moved an agent (check the procedures…)
Agents do not stop

- If this command fails:
  - service transfer-agents stop --instance glite-transfer-channel-agent-urlcopy-CERN-TEST

- The agent may be busy…
  - It won’t stop until it finishes its current task
  - Wait a while and try again

- It may be stuck
  - service transfer-agents kill --instance glite-transfer-channel-agent-urlcopy-CERN-TEST
Outline

• Deployment
• Installation and configuration
• Troubleshooting
• FAQ
• All VO jobs are stuck in ‘Submitted’ state
  – The associated VO agent is down

• All jobs are stuck in the ‘Pending’ state on channel X
  – The associated channel agent is down
  – The channel is simply busy (check for active URLCOPY jobs in the process) – i.e. be patient
  – The VO share is too low for the given VO
FAQ - 2

• Jobs failed with “No channel found or VO not authorized”
  – No channel setup to serve these sites
  – No VO share defined on the channel for your VO

• Jobs failed with “No site found for host …”
  – Rerun sd2cache (restart the agents if necessary)
  – DO NOT add resources by hand into the file
• Cannot contact web-service
  – Various TCP connect messages, e.g.
    • Failed to determine the interface version of the service: getInterfaceVersion: SOAP fault: SOAP-ENV:Client - CGSI-gSOAP: Could not open connection ! (TCP get host by name failed in tcp_connect())
  – Web-service is down
  – Bad host in connection or bad endpoint
    • run CLI with –v option to check

• FTS has “correctly failed”™ the job
  – Chase the problem with the SRMs (either your SRM or the other site’s SRM)
“Failed to start a new transfer: error creating file for memmap /var/tmp/glite-url-copy-edguser/xxx.mem: No such file or directory”

- Check that the folder exists
- Check that user edguser has write access to the folder
FAQ - 5

• “None of my files transfer”
  – Can you submit a job?
  – Can you query a job?
  – Do you mean your job (after submission) doesn’t process (i.e. is stuck in one state?)
    • Which state is it stuck in?
  – Do you mean the jobs “correctly fail”™?
    • i.e. an SRM isn’t working somewhere
References

- All release information and guides:
  - https://twiki.cern.ch/twiki/bin/view/LCG/FtsRelease21

- FTS procedures (upgrading, moving, cleaning)
  - https://twiki.cern.ch/twiki/bin/view/LCG/FtsProcedures20

- FTS FAQ
  - https://twiki.cern.ch/twiki/bin/view/EGEE/DMFtsSupport