

# Grid (data) access

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- The SERVICE- based T3: T3gs
  - Looks like a T2 but with unpledged resources
    - Runs a Storage and a Computing element
    - Is known by the WLCG information system
    - Is known by the ATLAS DDM system and served by DDM Site Services
- The CLIENT-based T3: T3g
  - Needs a minimal installation of the Grid middleware
  - Needs a minimal installation of DDM clients
- This presentation will focus on the T3g

- Since this is a client based T3:
  1. There is no service for automatic data distribution
    - It is up to the site to trigger data download
    - It is up to the site to monitor the process and handle the failures
  2. Data are not catalogued
    - Nor in DDM Central Catalogs nor in LFC
- So, less functionality in respect of T3gs but a definite gain in manpower
  - Point (1) involves a bit of work but no expertise
  - Point (2) reduces a lot the amount of work
  - ... and you do not have to run Grid services
- I believe 10% of a PhD student can cope with this

- You need to install Grid clients
  - You do not need the full WLCG UI
    - Only Data Management and Security
  - I believe there is a recipe from OSG or even USATLAS
- You need to install DDM clients
  - <https://twiki.cern.ch/twiki/bin/view/Atlas/DQ2ClientsHowTo>
- You need a Grid certificate and to be part of the ATLAS VO
  - <https://www.racf.bnl.gov/docs/howto/grid/voatlas>
- See next talk “Support in setting up a T3g” for more details

- To “discover” datasets you can
  - Use the ATLAS Metadata Interface (AMI)
    - <http://ami.in2p3.fr/opencms/opencms/AMI/www/>
  - Use the Panda Dataset Browser
    - <http://voatlas48.cern.ch:23080/browser/>
  - Use the DQ2 clients directly
    - <https://twiki.cern.ch/twiki/bin/view/Atlas/DQ2ClientsHowTo#Querying>
- To download a dataset at your site you can use dq2-get

- dq2-get downloads files from a dataset into a local filesystem
  - If you need to store data into a storage system (like xroot) it is up to you to put the data there
    - DDM to LOCAL to XROOT
    - DDM to XROOT via FUSE
- dq2-get offer various features
  - Download a full dataset, one file, N files, a random sample
  - Choose the source automatically or manually
  - Documentation and examples in
    - [https://twiki.cern.ch/twiki/bin/view/Atlas/DQ2ClientsHowTo#Retrieving\\_data](https://twiki.cern.ch/twiki/bin/view/Atlas/DQ2ClientsHowTo#Retrieving_data)

- dq2-get needs to know the name of your site in DDM
  - If you are a T3g (and therefore you are not in DDM) use “ROAMING”
- dq2-get might fail to download a few (or all) files
  - Happens when the storage is unavailable
  - It is up to the user to retry the failed files
- dq2-get is not allowed to retrieve files from some given location
  - For example TAPE systems
- If you select a specific source (-s option) dq2-get might refuse to use it
  - The source might be blacklisted in DDM because is not working

From Hiro

```
dq2-get -L site -T=1,10000 DSN
```

```
list=Array.new(
`dq2-list -f DSN`.split("\n").each do |line|
  line=line.split(" ")
  if line.size>3
    list.push(Thread.new { `dq2-get -L site -f #{line[0]}
DSN" ` })
  end
end
list.each { |t| t.join }
```

**Easy!  
But, don't do this,  
please!**



- Heavy usage of dq2-get is discouraged
  - Could cause a lot of load to production sites
  - And then we are forced to apply restrictive measures
  - Heavy usage = more than 0.5TB/day
- For sites which need more than this we invented dq2-get-on-Steroids
  - Special option of dq2-get using FTS as transfer mechanism
  - FTS throttles the access to storage and offers a more reliable transfer service

- Modifications in dq2 code done in current Release Candidate
  - Usage of FTS implemented as plugin
- The plugin itself has been implemented by Hiro
- It is basically ready to test, get in touch with Hiro if you are willing to try it out
  - May be we should start from some expert user
- The release candidate will become production based on the feedback

- Bad News: you need to setup a storage element
  - A simple gridFTP server on top of a filesystem would do
    - Fairly simple with VDT
  - If you plan to have a storage larger than i.e. 10TB, you should be considering a real pool manager + SRM
    - For example dCache or BestMan
- You need to inform your US cloud contact about your storage
  - He needs to setup a FTS channel
- You need to be careful about which source you use
  - Most likely BNL is always the best choice
- In other words, the “operator” at the T3g needs to be a bit more advanced

- **Example:**

```
dq2-get
```

```
-q FTS
```

```
-o
```

```
-S
```

```
-L
```

- This will return a FTS job id which you can use to see the status of your transfer
  - Via the glite-transfer-status command
  - In the FTS monitor



- dq2-get + FTS needs some testing and cleaning.
- Despite dq2-get + FTS is more automated and gentle than dq2-get, you should not foresee a heavy usage
  - If you are thinking about downloading more than 1TB/day you should consider becoming a T3gs

- You might need to upload data INTO DDM
  - for other people to look at them
  - Because they become of general interest for a group or the all VO
- In this case you can use dq2-put
  - Uploads data from local file system into DDM
    - Same logic of dq2-get but the other way around
  - [https://twiki.cern.ch/twiki/bin/view/Atlas/DQ2ClientsHowTo#Creating\\_data](https://twiki.cern.ch/twiki/bin/view/Atlas/DQ2ClientsHowTo#Creating_data)
- You need to know the DDM endpoint (scratchdisk) where to upload your data
  - Any SCRATCHDISK endpoint would do, but better negotiate this with your cloud
  - REMEMBER: data in SCRATCHDISK have limited (few weeks) lifetime

- You should consider how to approach the “obtaining ATLAS data” problem depending on your needs
  - How big is your site
  - How much data per day you need
  - How many people you have
- There are basically three solutions
  - T3gs
  - T3g
  - T3g + some “s” (using FTS)
- Many details are specific to your cloud, so in any case get in touch with the cloud support