



The Frontier System for ATLAS

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LCG T1 meeting– CCIN2P3

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dapnia

cea

saclay



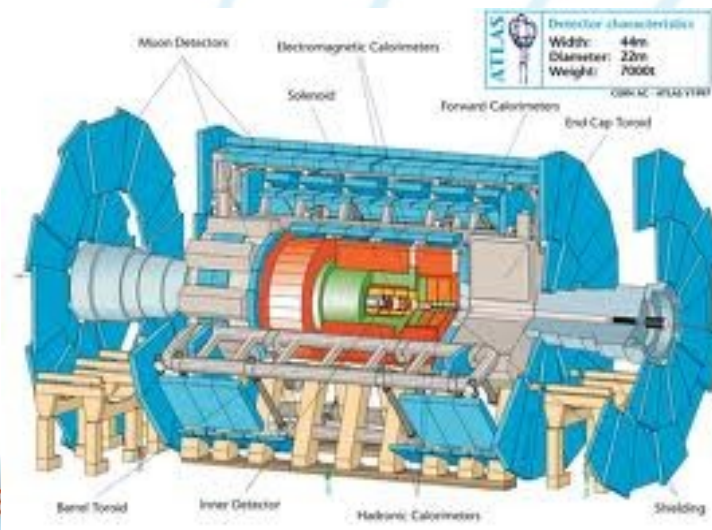
CENTRE NATIONAL
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SCIENTIFIQUE

Transfer metadata across Frontiers



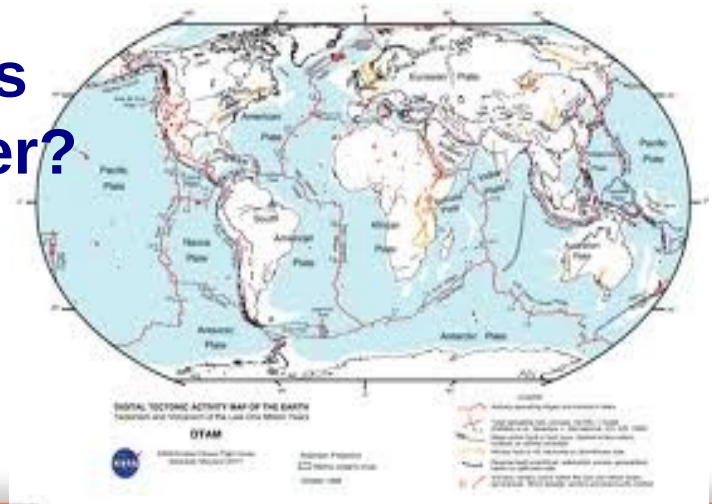
Conditions data refers to nearly all the non-event data produced during the operation of the ATLAS detector, together with that required to perform reconstruction and analysis¹.

Atlas Detector at CERN



Hundreds GRID site beyond the Frontiers

**How
Conditions
Data transfer?**



Transfer metadata across ... Frontiers



In the case of Condition Data from *ATLR* are transferring down to the Atlas payload (jobs) by :

a distrusted network of read-only replicas of the central *ATLR DB* (CERN) on selective

Tier1 sites (FR, UK, DE, US, CA)

and the employment of the Frontier system

► *Frontier System :*



A System for Data Distribution from a Central DB to Many Client System²

Frontier uses HTTP based Protocol (Rest Arch)³

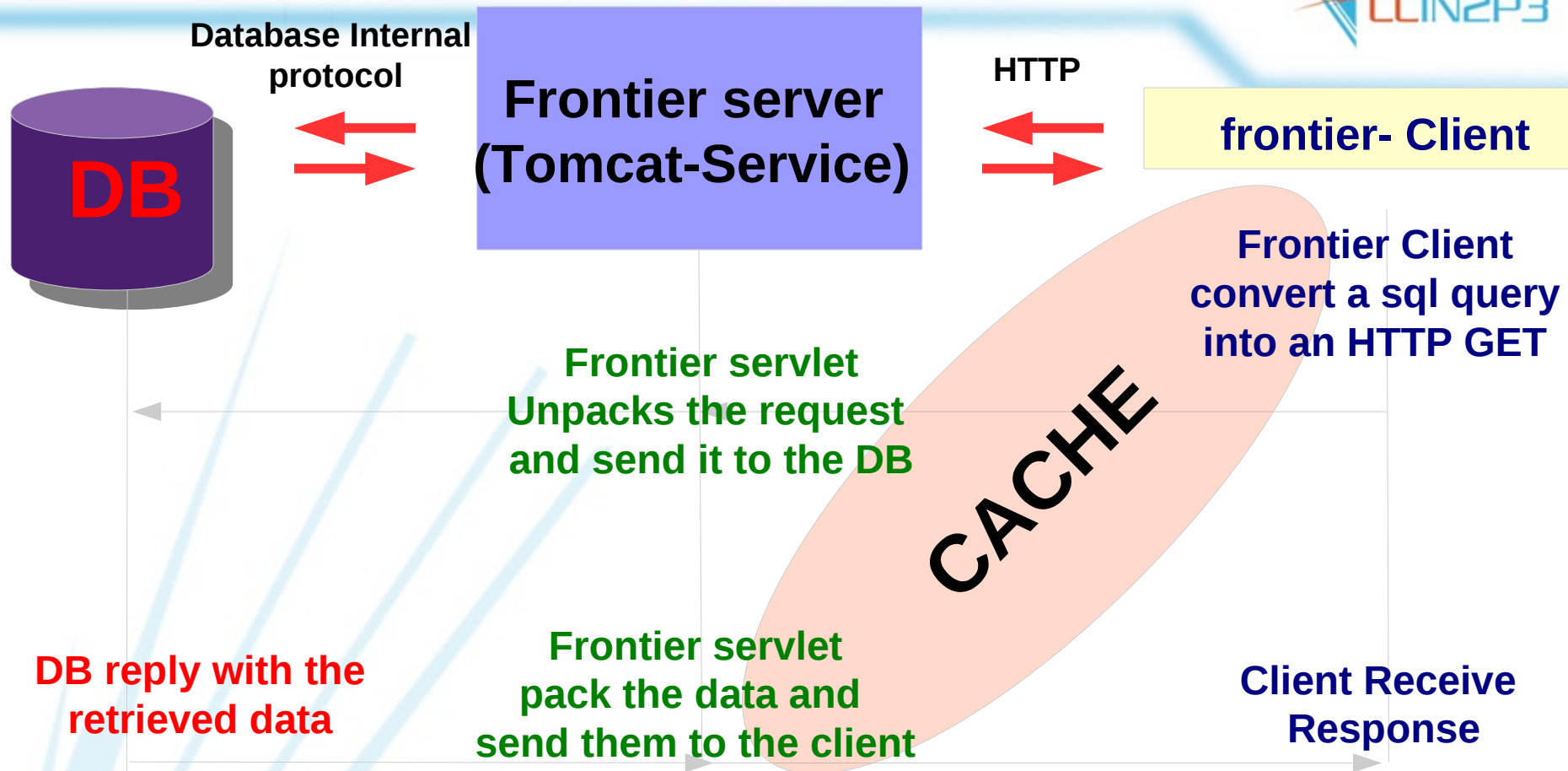
Developed at FermiLab

Adapted from LHC experiments at CERN: CMS, ATLAS and now LHCb to access "*conditions data*" at all their sites worldwide.

[2] <http://frontier.cern.ch/>

[3] <http://www.ics.uci.edu/~fielding/pubs/dissertation/top.htm>

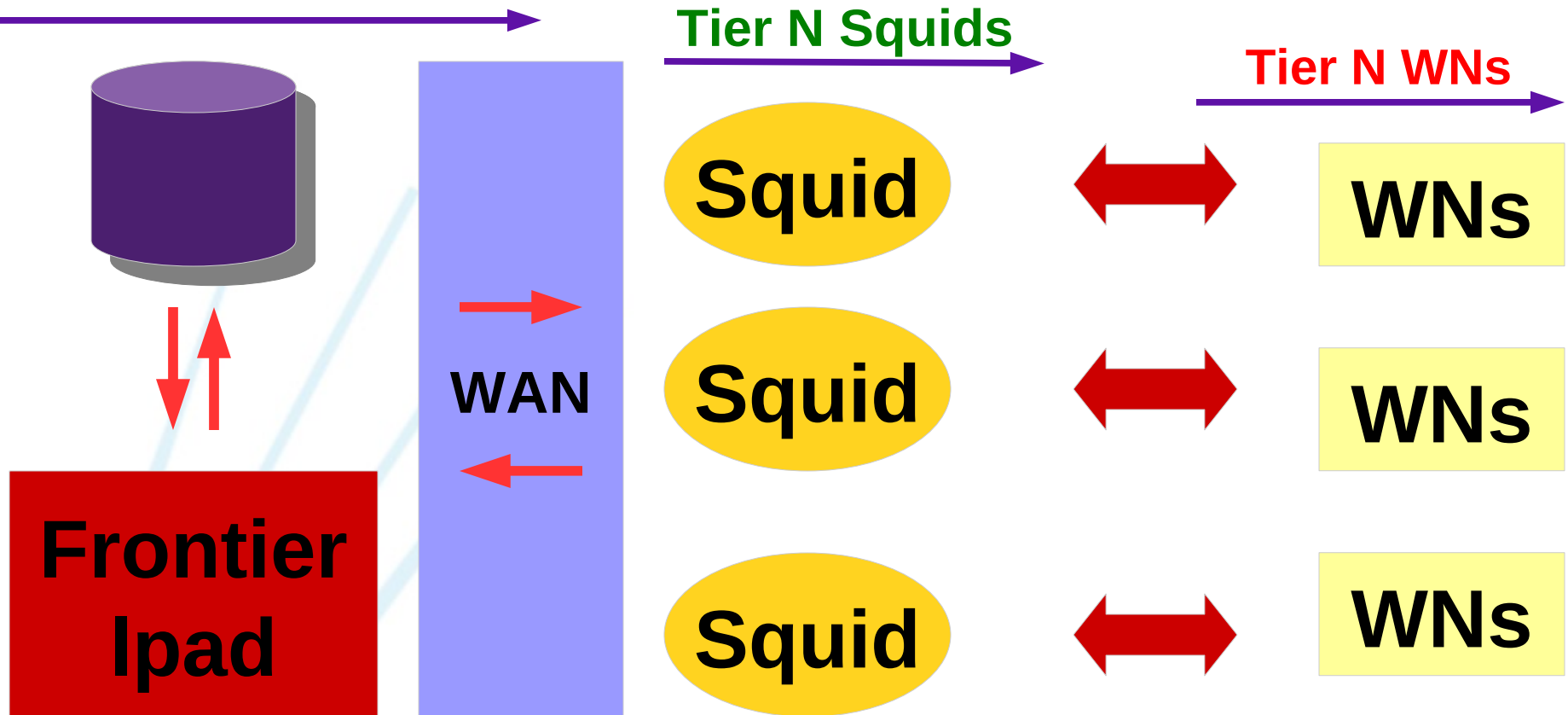
▶ *Frontier System⁴*:



Atlas Frontier System



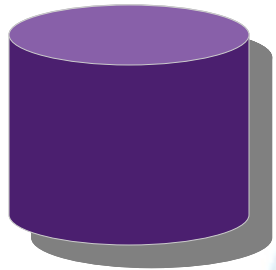
RO Replica of the
ATLR Database



Frontier Launchpad

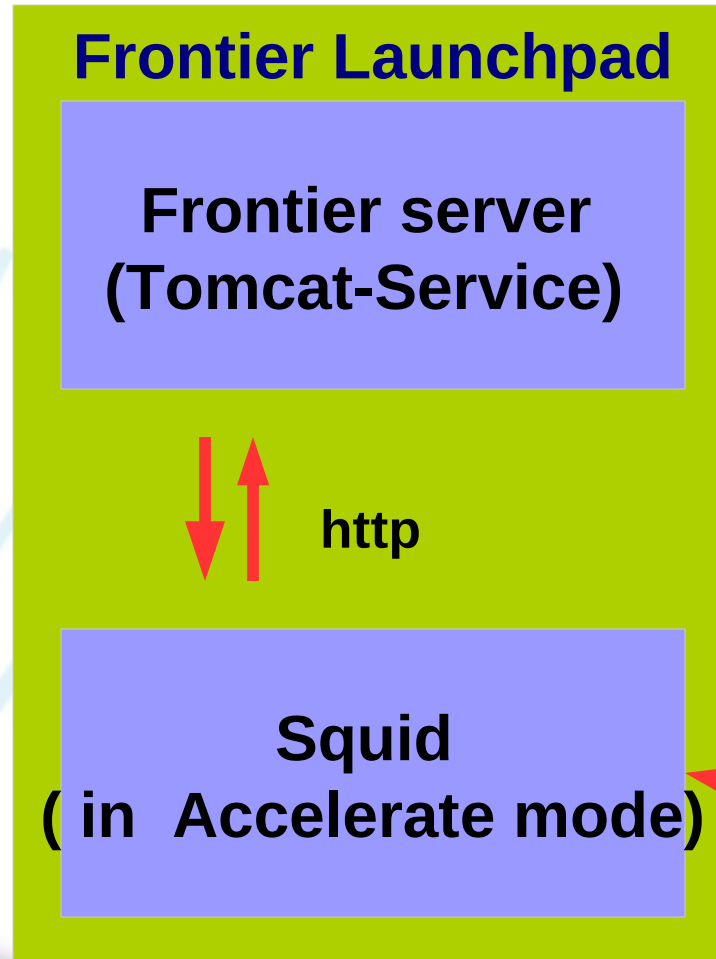


ATLR REPLICA



Database Internal
protocol

Squid in Accelerate
mode: this squid can
cache only one site
(frontier-Tomcat
Service) and can't be
use as a general cache
squid



frontier- Client

■ *Two Frontier-lpad*

- under DNS load balancing
- Alias: **ccfrontier.in2p3.fr**

■ *Two site squids*

- only for the Frontier dedicated usage (acl on destination)
 - under DNS load balancing
 - Alias: **ccaltassquid.in2p3.fr**
- Site squid serve also different sites (**CPPM, LPC, LPSC**)

French Cloud

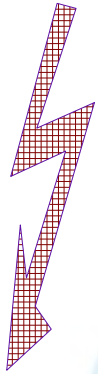


FRONTIERs	SITE SQUID	SITE
IN2P3-CC: PRIMARY RAL: FAILOVER	IN2P3-CC	CPPM/LPC/LPSC
	LAPP	
	GRIF (LAL)	LHNPE
		SACLAY
		LAL
	IRFU	
	BEIJING-TOKYO	
	RO-02-NIPNE	RO-14-ITIM
	RO-16-UAIC	
	RO-07-NIPNE	
	ES CLOUD	

First Service configure via AGIS



AGIS



***Atlas installation
machinery***

SITE

*add to the local setup of the site a
environmental variable with a specific
format ...*

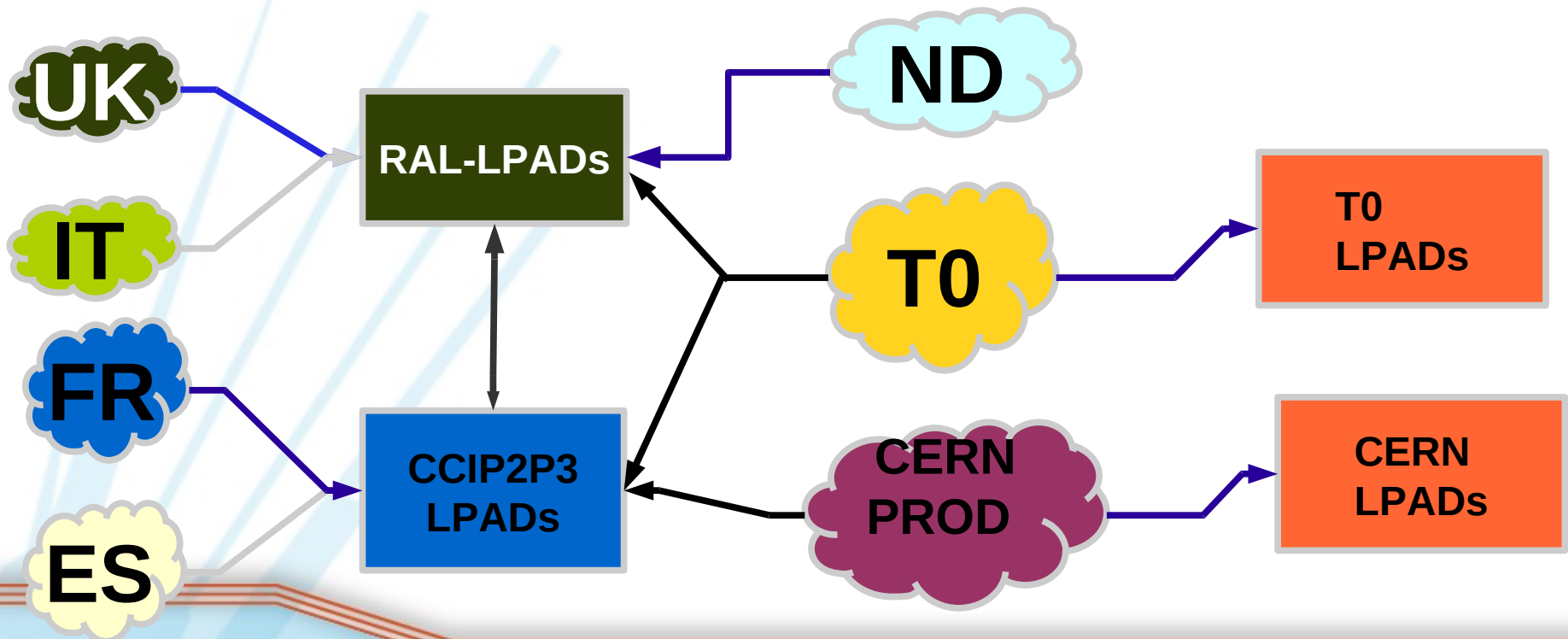
```
...  
FRONTIER_SERVER="(serverurl=http://ccfrontier.in2p3.fr:23128/ccin2p3-AtlasFrontier)  
                  (serverurl=http://lcgft-atlas.gridpp.rl.ac.uk:3128/frontierATLAS)  
                  (proxyurl=http://ccsqfatlasli03.in2p3.fr:3128)"  
....
```

Topology & Fail-over



Failover in the level of the client :

if a Frontier server fails then the client (frontier lib) will try other Frontier in order to get their data



Central Monitoring of Frontier-Lpad and Squid



- **Service Level Status of ATLAS launchpad servers(SLS)**
 - <https://sls.cern.ch/sls/service.php?id=ATLAS-Frontier>

- **Awtats monitoring for Frontier-launchpad** (A nice open source tool that generates advanced squid-proxy,web, ftp ,mail server statistics: (Domains/countries, Host, Number of visits, TCP_HIT, TCP_MISS))
 - <http://frontier.cern.ch/awstatsatlas.html>

- **MRTG Monitoring :** (Request/Fetch – in/out Traffic- Count object)
 - <http://frontier.cern.ch/squidstats/indexatlas.html>

▶ Operational issues (!)



■ Service Criticality:

- *Frontier Criticality: **High** Allowed downtime: **Less than 1 day***
- *Frontier_squid Criticality: **Moderate** Allowed downtime: **Less than 2 days***

■ Guideline ADCos (24/7) :

- *“... Shifters should check the Frontier monitoring once per shift and if problems are observed non-urgent GGUS tickets can be submitted.. “*

■ Definition of the Frontier-LPad + **Frontier_Squid** in GOCdb ?

- *Frontier-pad: The Shifter can track overlapping down times (via AGIS)*
- *Frontier_squid: Complicated the definition of DT as there services is Particular for one VO ?*

CC Frontier-Lpads are under the “eyes” of Astreinte

Further Steps



- **Finalized the test of the second site squid**
 - Put service in production
- **Define secondary squid (GRIF)**
- **The configuration for the T0**
 - Starting second servlet (on existing Lpads) with cache expire time 15'
- **Introduce local mrtg monitoring for all involved squid servers**
- **Define the Frontier-lpad in the GOCDB according with guideline of Operation Team and GridAdmins**
 - Request from Atlas

► *Further Information*



ATLAS Frontier Project

<https://twiki.cern.ch/twiki/bin/viewauth/Atlas/FroNTier>

by **Alastair Dewhurst (RAL)** (cord.)

Meetings are held bi-weekly on Wednesdays at 16:30 pm local time.

***!!SPECIAL THANKS!! TO CC-IN2P3
COLLEAGUES FOR THEIR CONTRIBUTION
TO THE OPERATION OF THE FRONTIER
SERVICE FOR THE ATLAS VO***

***!!SPECIAL THANKS!! TO ATLAS FRONTIER
GROUP FOR THE FRUITFULL DISCUSSION
AND FOR THE HELP***

Thank you for Your Attention



BACKUP

► Atlas Frontier System Anatomy



Site requirements:

ATLAS requests that selected T1 sites install both **Frontier (launchpad)** and **Local Squid servers**

and that each Tier 2 site install **one local Squid instance per 500 user analysis batch queue slots hosted at their site**

(ref: ATLAS Trigger and Offline Board [TOB], September 16, 2009).