LJSFi

The ATLAS Software Installation System for LCG/EGEE

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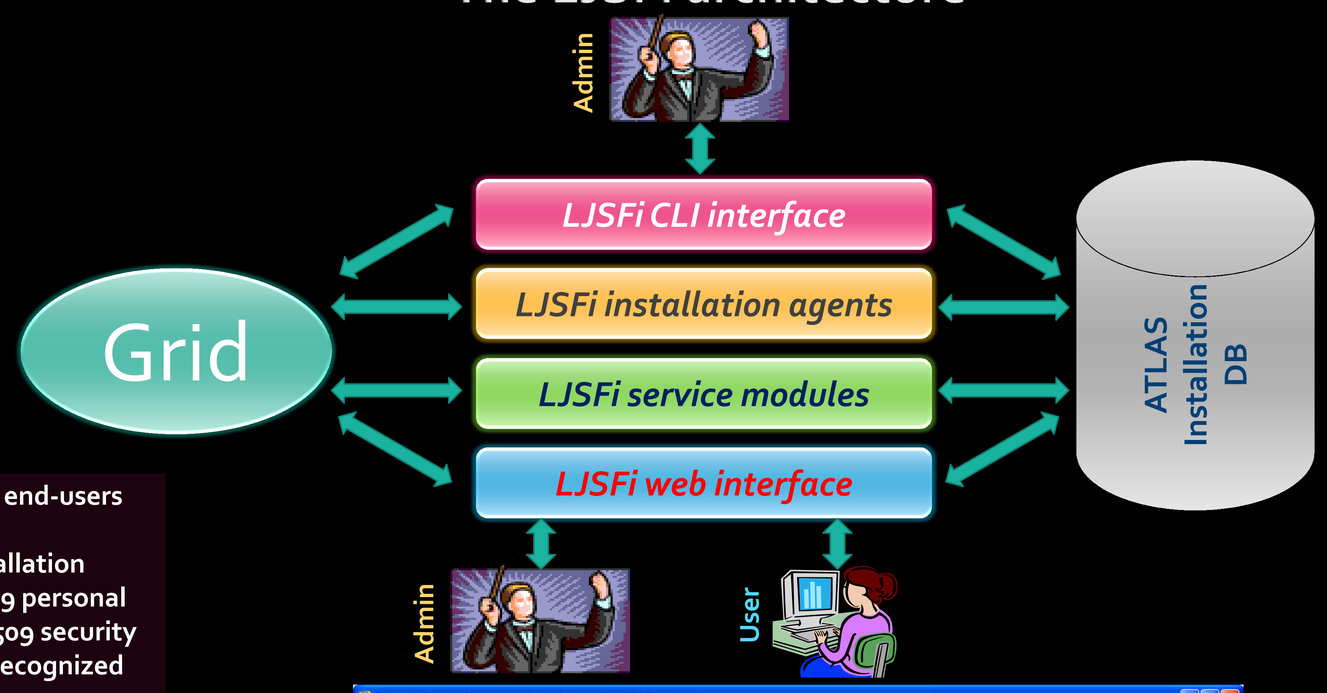
The LJSFi framework

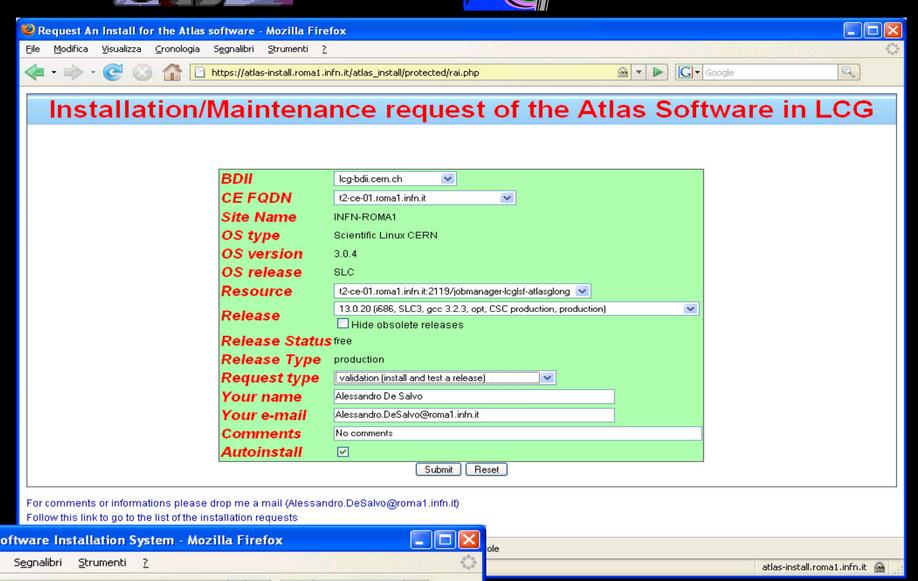
The huge amount of resources available in the Grids, and the necessity to have the most up-to-date experimental software deployed in all the sites within a few hours, have driven the need for an automatic installation system for the LHC experiments. In this work we describe the ATLAS system for the experiment software installation in LCG/EGEE, based on the Light Job Submission Framework for Installation (LJSFi), an independent job submission framework for generic submission and job tracking in EGEE.
LJSFi is able to automatically discover, check, install, test and tag the full set of resources made available in LCG/EGEE to the ATLAS Virtual Organization in a few hours, depending on the site availability.

The LJSFi architecture



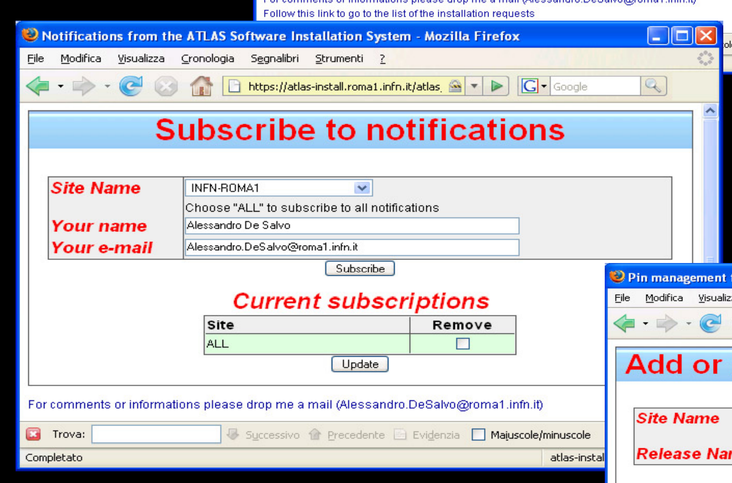
LJSFi modules and extensions

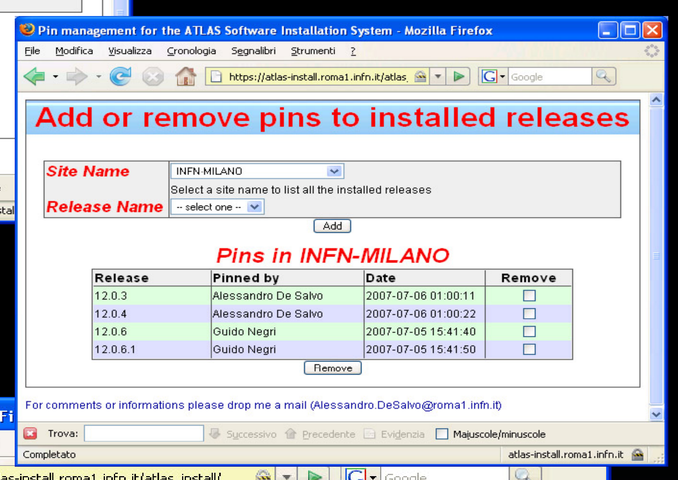
The installations or removals may be centrally triggered as well as requested by the end-users for each site.
The RAI (Request An Installation) web interface is the portal to the user-driven installation requests. Each user is recognized by their credentials, obtained by checking the X509 personal certificate from the browser used to access the page. The page implements a SSL X509 security model, so only the users with a valid certificate, issued by a Certification Authority recognized by EGEE, are allowed to enter.
The centralised installations are triggered by the information stored in the installation database. When a release is tagged as production or obsolete and set to autoinstall, the LJSFi AIR (Automatic Installation Requester) module starts, respectively, the deployment or removal of the specified release, in all the sites where the relevant software tag is not yet published.
LJSFi provides the needed locking mechanisms to avoid collisions among the installation jobs on the same resource or site. The AIR module is usually invoked each hour, in order to handle the installation requests promptly.
The InAgent module reads the installation database every 10 minutes and starts the installation processes. Each process is then handled by the installation agent, which updates the database in real-time with the task status, giving the online view of the software deployment.



User services

Individual users may also ask the system for specific services:
-Pinning Releases: each user may pin a release in one or more sites, to avoid the central system removing them while the pin is active. This is extremely important for releases used also locally at the sites. The pins may be released by any users, and the action is logged by the system
- Action Notification: each user may subscribe to the notification emails for one or more sites. Each time an action on a release on the specified site is performed, the system sends an email to all the subscribers to the given site.



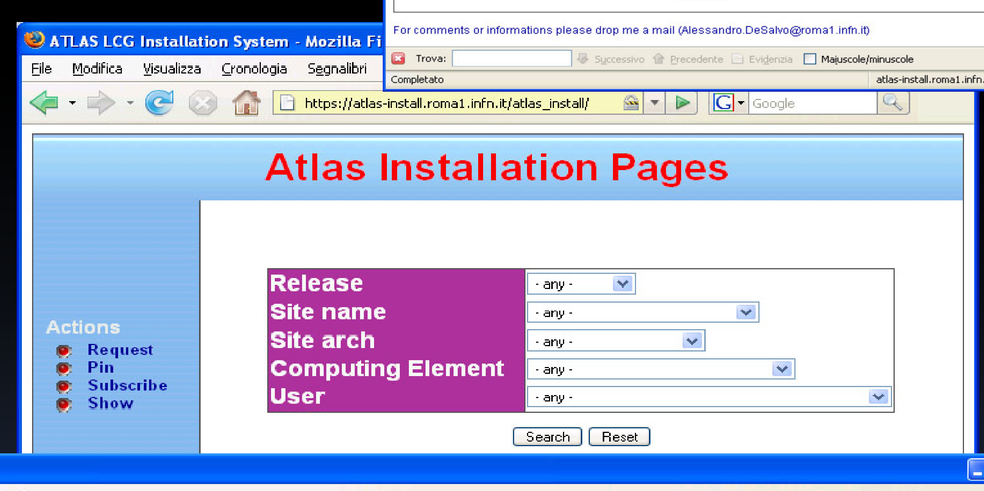


CLI INTERFACE

A fallback option to manual operations is also available, in case of problems. The people from the Installation Team are able to manage all the installation tasks directly from the web interface, changing dynamically the parameters of the auto-installer for the specific task, or manually using the LJSFi CLI interface.

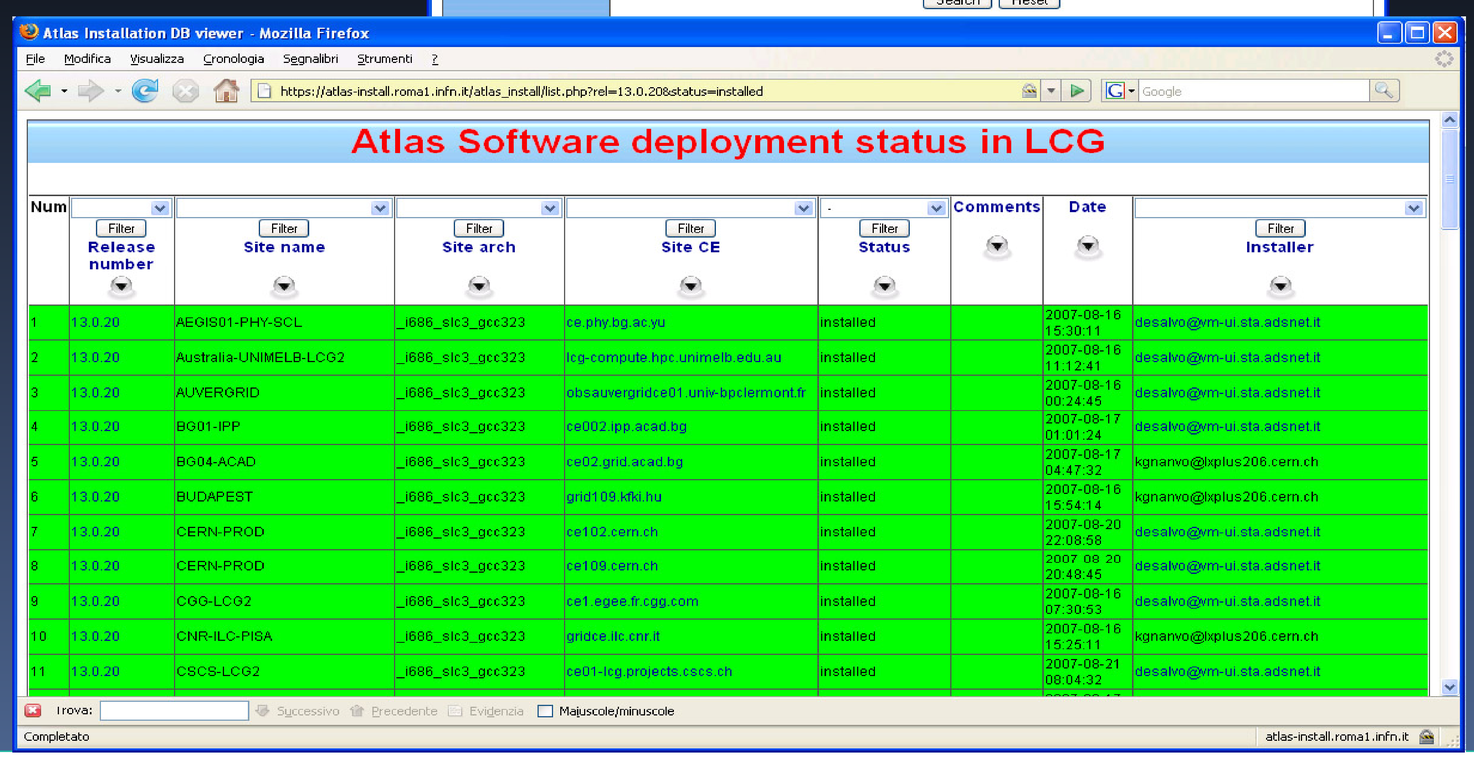
WEB INTERFACE

The installation data, status and job history are centrally kept in the MySQL installation DB and can be browsed via the LJSFi Webber web interface. Also installation logfiles and summary files are made available via the same web portal, protecting the sensitive information of the sites by restricting the access to them.
The automatic installation tasks are performed by one or more agents, which may operate in concurrent mode.
The ATLAS installation team is automatically notified in case of problems, in order to proceed with the manual operations or restart the automatic ones.



GriBB

All the installation tasks, including the LJSFi framework actions, are supervised by the GriBB (Grid Big Brother) watchdog agent.
GriBB provides an easy and comfortable way to introduce timeouts, limits and partial output retrieval for jobs still running in the Grid. In particular GriBB may be used to:
• Terminate the process when it exceeds the given limits for total time, memory size, stdout/sterr size, CPU % used
• Dump, on demand, the partial stdout/stderr of a job still running in the Grid without any need for installing external servers but only using existing DPM SEs (other SE types are being tested)
• Provide statistics on the CPU, disk and memory usage of the running job, at the end of the task or while still running.



Status

This system has been successfully used by ATLAS since 2003 to deploy around 70 different software releases and has performed more than 80000 installation jobs so far. The LJSFi framework is currently being extended to the other WLCG Grids (NDGF and OSG).

Info

The current version of LJSFi is available as pacman package
pacman –get http://classis01.roma1.infn.it/pacman/cache:LJSFi
Wiki pages:
https://twiki.cern.ch/twiki/bin/view/Main/AtlasSoftOnLCG2

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