

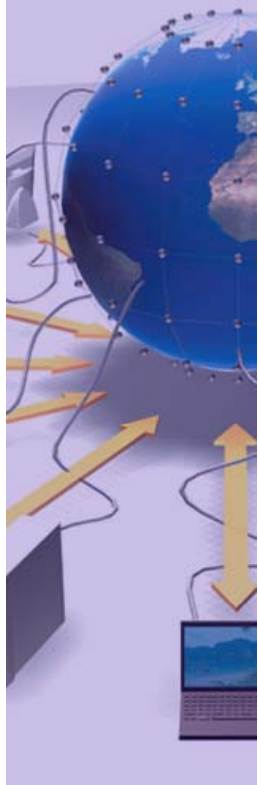
GS



LHCb Software Distribution

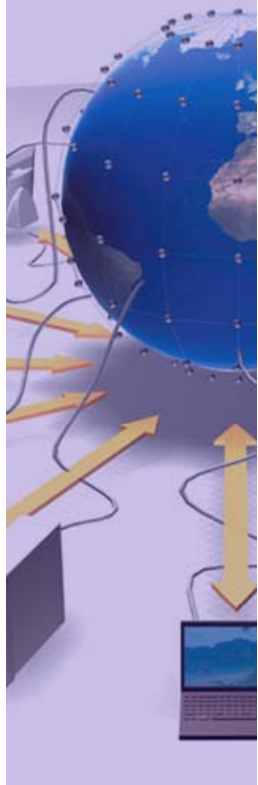
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Outline

- The librarian job: configuration and installation
- The Software Manager job: distribution

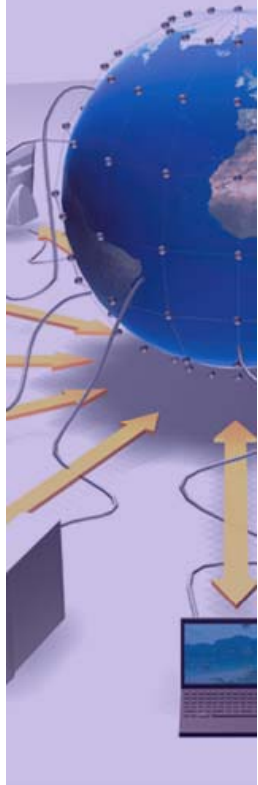


The librarian...

The software, once released by developers, is properly packaged into tarball files by librarians.

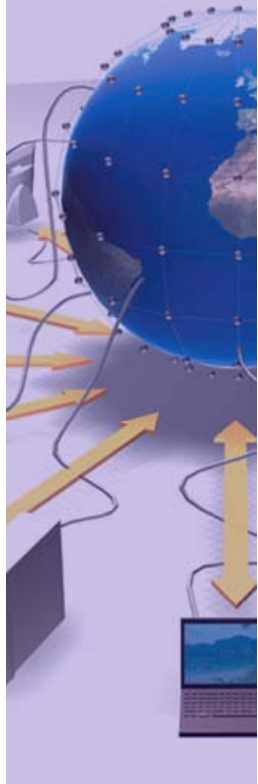
The structure of these tarballs reflects the final structure of the distributed application on the site.

Dependencies and conflicts are all managed at this level by expert hands of package managers.



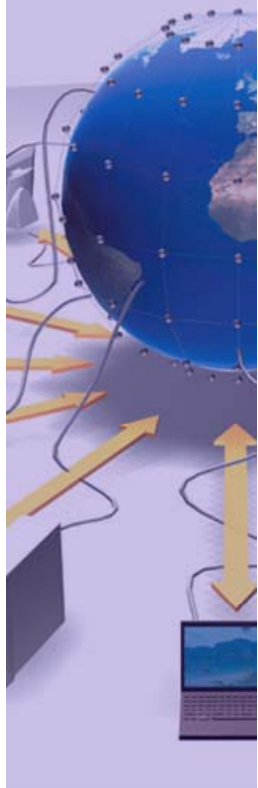
The librarian (cont'd)

- The software is organized in projects.
 - Each project has its version and supported platforms
- Each project is organized in packages
 - A package is the minimum self-consistent quantum of software that can be installed
- Dependencies and conflicts are described in configuration files (with opportune conventions)
 - pre-cooked installation.



CMT

- LHCb librarians use CMT (**Configuration Management Tool - <http://www.cmtsite.org/>**)
- *CMT is just an environment that*
 - Defines conventions (for *naming* packages, files, directories and for *addressing* them)
 - Provides tools for *automating* as much as possible the implementation of these conventions.
 - Permits the *description* of the configuration requirements
 - Automatically deduces from the description the effective set of configuration parameters needed to operate the packages (typically for *building* them or for *using* them).



Special Package: LCGCMT

- LCG-AA provides “external” packages containing utilities used by LHCb application (like ROOT, CORAL, POOL, SEAL...). These go into the LCGCMT package that represents then the interface to all non-LHCB specific packages.
- The same mechanism is used now also to deploy grid-middleware clients (gfal/lcg-utils/lfc...). The motivations:
 1. Having a tighter control on their version (guaranteeing stability of the environment as soon as some configuration is demonstrated working fine)
 2. Requested features becomes suddenly available instead of waiting for the whole release and deployment cycle that might take a very long time

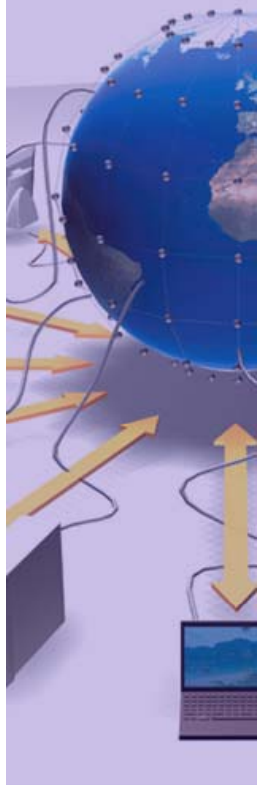
Installation

- The well structured tarballs from librarians make the installation a trivial operation
 - **Wget** for downloading the necessary tar files from a **web server** that sees the LHCb software repository organized in packages conventionally versioned
 - **Untar** the archive into the **Shared Area**
 - **Set** few environment variables
 - The complexity of the configuration and installation is only translates one step above, at packaging level.
 - The software is compiled in building nodes centrally at CERN and binary are only shipped

Distribution

SAM framework (now integrated in DIRAC) is used for running (*on a continuous basis*) jobs for distributing and validating software on the sites:

- Dedicated queues/priorities to sgm users → speeding up resource access
- SAM jobs have to run in any case → minimization of resources wasting
- Publication of results → allowing for a better understanding of the installation process
- Pertinence of the activity → software validation/distribution is part of a site monitoring



Distribution: workflow

- The job guesses the platform. If fails (because not recognized) it exits.
- The job checks all projects that must be installed (it contacts the central DIRAC Configuration Service that contains all official releases to be distributed)
- The jobs checks which packages are installed and which version/platform
- The job installs the missing packages for completing the requested project installation
- The job validates the software by running the application against few test events

The screenshot shows the SAM web interface for DIRAC Monitoring. It displays a list of tests and their results across different sites.

show	stat	description	sum
<input checked="" type="checkbox"/>	NA	no status available	0
<input checked="" type="checkbox"/>	OK	normal status	5
<input checked="" type="checkbox"/>	INFO	useful information	0
<input checked="" type="checkbox"/>	NOTE	important information	2
<input checked="" type="checkbox"/>	WARN	subject may fail soon	2
<input checked="" type="checkbox"/>	ERROR	subject has failed and problem is localized	2
<input checked="" type="checkbox"/>	CRIT	subject has failed and problem is fatal	0
<input checked="" type="checkbox"/>	MAINT	subject is under maintenance	0

testname	desc	lhc tests	crit
LHCb CE-lhcb-queues	LHCb SAM CE-lhcb-queues		CT
LHCb CE-lhcb-job-Gauss	LHCb SAM CE-lhcb-job-Gauss		CT
LHCb CE-lhcb-job-Brunel	LHCb SAM CE-lhcb-job-Brunel		CT
LHCb CE-lhcb-job-DaVinci	LHCb SAM CE-lhcb-job-DaVinci		
LHCb CE-lhcb-job-Boole	LHCb SAM CE-lhcb-job-Boole		CT
LHCb CE-lhcb-remove	LHCb SAM CE-lhcb-remove		
LHCb CE-lhcb-install	LHCb SAM CE-lhcb-install		CT
LHCb CE-lhcb-os	LHCb SAM CE-lhcb-os		CT

No	RegionName	SiteName	NodeName	Status	lhc							
					LHCb CE-lhcb-queues	LHCb CE-lhcb-job-Gauss	LHCb CE-lhcb-job-Brunel	LHCb CE-lhcb-job-DaVinci	LHCb CE-lhcb-job-Boole	LHCb CE-lhcb-remove	LHCb CE-lhcb-install	LHCb CE-lhcb-os
1	France	AUVERGRID	obsauvergridce01.univ-bpclermont.fr	ERROR	ok	error	error	error	error	na	error	na
2	France	GRIF	grid10.al.in2p3.fr	ERROR	ok	ok	ok	error	ok	na	error	note
3	France	GRIF	lpnce.in2p3.fr	OK	ok	ok	ok	ok	ok	na	ok	ok
4	France	GRIF	polgrid1.in2p3.fr	NOTE	ok	na	na	na	na	na	na	note
5	France	IN2P3-CC	cclgce103.in2p3.fr	WARN	warn	na	na	na	na	na	na	ok
6	France	IN2P3-CC-T2	cclgce102.in2p3.fr	WARN	warn	na	na	na	na	na	na	note
7	France	IN2P3-LAPP	lapp-ce01.in2p3.fr	OK	ok	ok	ok	ok	ok	na	ok	ok
8	France	IN2P3-LPC	clrkge01.in2p3.fr	OK	ok	ok	ok	ok	ok	na	ok	ok
9	France	IN2P3-LPC	clrkge02.in2p3.fr	OK	ok	ok	ok	ok	ok	na	ok	ok
10	France	IN2P3-LPC	clrkge03.in2p3.fr	OK	ok	ok	ok	ok	ok	na	ok	ok
11	France	IPSL-IPGP-LCG2	hudson.datagrid.jussieu.fr	NOTE	ok	ok	ok	ok	ok	na	ok	note