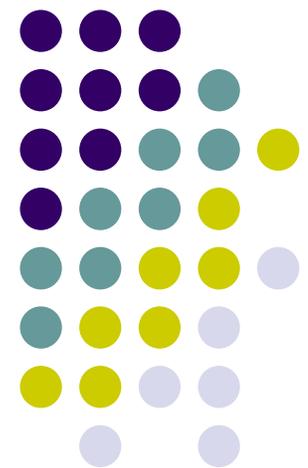


AliRoot Build and Test System

ALICE-FAIR Computing Meeting

28/04/2008

Presented by P.Hristov





History

- AliEn build system developed by Catalin Cirstoiu and Predrag Buncic in 2005
- First port of AliRoot: Vagner Morais in 2006
- Web interface and monitoring: Costin Grigoras in 2006
- Test examples: Peter Hristov in 2006/2007
- Final build system: Catalin Cirstoiu in 2007
- Support and future development: Alina Grigoras and Marco Meoni



Goals

- Automate the process of building AliRoot
- Have a current, up to date, installable binary image of AliRoot for different architectures
- Better understand the dependencies between the packages
- Provide software that works to the end-users
- Reuse the development done for the AliEn build system (AliEnBITS)



Building System

- Based on the Konstruct framework used to build KDE and AliEnBits (originally GAR system)
- Each package has a directory in a hierarchy
- Each Makefile define a set of variables:
 - Name, version, author, web page
 - License information
 - Build and runtime dependencies
 - Sites to download the package source
 - Patches
 - Checksums (integrity of the files)
- The Makefiles are executed recursively



Building Steps [1]

- Get the available Releases
 - Select the one to be (re)built
- Fetch the latest changes for this release
 - Do a svn update
- Determine the build order
 - Analyze the dependencies between packages (AliEn -> Root -> Geant3 -> AliRoot)
- Select the packages that have to be rebuilt
 - Based on modifications received on svn update
 - Based on last build status
 - Based on package dependencies
 - Always rebuild and test AliRoot packages



Building Steps [2]

- For each package
 - Clean its environment
 - Fetch source archive from master sites
 - Generate SLOC statistics
 - Build, install and run tests
 - Create the binary image for binary installations
- Generate web pages
 - Build / SLOC / Graph dependencies
- Generate the pages for AliRoot tests
- Cleanup environment
- Send notification email when status changes

Web Pages of the Build System



- The system generates web pages automatically (Build / SLOC / Graph dependencies)
- Package dependencies:
 - Better and faster understanding of the project
 - To see easily how many packages a certain package brings in
- Provide statistics on the size of the project:
 - For each package
 - For package's dependencies
 - For the whole group
 - Global view



The AliRoot BITS

- AliRoot is being built nightly on all major platforms:
 - i686, x86_64, ia64, IntelMac
 - The i686 build includes SHUTTLE
 - Building is performed only if needed
 - AliRoot or one or more dependencies were modified
 - version or tag or the tag was moved
 - Several AliRoot cvs tags can be tracked and rebuilt if changed
 - AliEn packages (AliRoot/Root/Geant3) are automatically generated
- If build is successful, tests are run
 - Tests provided in the AliRoot's repository
 - Currently: 20 pp, 1 PbPb, sim&rec
 - Monitoring information about the run is collected in ML



AliRoot tests

- Both sim/rec tests, for both pp and PbPb send monitoring information to ML
 - Using the ROOT ML plugin developed by Andreas Peters
- Parameters
 - Cpu/Wall Time, Total/RSS Memory, raw.root and AliESD.root file sizes
 - Sent only if the test succeeds
 - Test success status
 - Sent only if AliRoot is successfully built



http://pcalimonitor.cern.ch:8889/bits/bits_benchmark.jsp

Thanks to Costin Grigoras

ALICE Grid Monitoring with MonALISA - AliRoot benchmarking - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://pcalimonitor.cern.ch:8889/bits/bits_benchmark.jsp

Disable Cookies CSS Forms Images Information Miscellaneous Outline Resize Tools View Source Options

ALICE Grid Monitoring with MonALISA - A...



MonALISA Repository for ALICE



Repository Home Administration Section ALICE Reports Events XML Feed Firefox Toolbar MonALISA GUI

ALICE Repository

- ALICE Repository
- Google Map
- MonALISA Map
- Running trend
- Job Information
- SE Information
- Services
- Network Traffic
- FTD Transfers
- CAF Monitoring
- SHUTTLE
- LCG exp. monitoring

close all

Running jobs trend



Running jobs trend

24h 12h 6h 1h

(click arrows for detailed view)

Date	State	OS	Arch	Release	CPU time	Wall time	Total memory	RSS memory	File size
- All -	- All -	- All -	- All -	- All -					
03.05.2007 14:02		Linux	i686	HEAD	547.6s	576.9s	757.4 M	757.4 M	
03.05.2007 11:43	OK	Linux	i686	HEAD					

[Show all history for this test](#)

Date	State	OS	Arch	Release	CPU time	Wall time	Total memory	RSS memory	File size
- All -	- All -	- All -	- All -	- All -					
03.05.2007 10:04	OK	Linux	i686	HEAD					
03.05.2007 10:13		Linux	x86_64	v4-05-13	77s	99s	761.7 K	576.2 K	824 K
03.05.2007 13:23	OK	Linux	x86_64	HEAD					
03.05.2007 12:38	OK	Linux	i686	HEAD	903.8s	1055s	509.9 M	509.9 M	

[Show all history for this test](#)

Date	State	OS	Arch	Release	CPU time	Wall time	Total memory	RSS memory	File size
- All -	- All -	- All -	- All -	- All -					
03.05.2007 10:03	OK	Linux	i686	HEAD					
03.05.2007 13:52		Linux	i686	HEAD	3574s	3727s	485.1 M	485.1 M	75.1 M
03.05.2007 11:37	OK	Linux	i686	HEAD	4492s	4589s	904.4 M	568.1 M	75.11 M

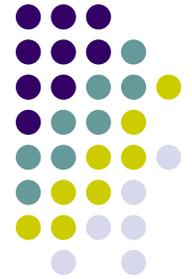
[Show all history for this test](#)

Date	State	OS	Arch	Release	CPU time	Wall time	Total memory	RSS memory	File size
- All -									

Done

Radar: Now: Mostly Sunny, 15° C Thu: 18° C Fri: 16° C Sat: 13° C Sun: 13° C

Useful pointers



AliRoot Build Integration and Testing System

BITS: i686 - i686-pc-linux-gnu
Go to: All . i686 . x86_64 . Itanium . IntelMac

AliRoot Releases for i686-pc-linux-gnu

Release	Date	Description	Status	Built on	Build time	Build #
HEAD	--/--/----	Current CVS head	✗	Fri Apr 25 13:12:41 2008	00:50:58	5
v4-11-Rev-04	02/04/2008	Production	✓	Tue Apr 22 20:51:29 2008	04:19:07	1
v4-11-Rev-03	14/03/2008	Production	✓	Fri Apr 25 18:55:31 2008	04:18:56	1
v4-11-Rev-02	11/03/2008	Production	✓	Thu Apr 24 18:56:45 2008	04:22:49	1
v4-10-Rev-02	22/02/2008	Production	✓	Thu Apr 24 13:19:40 2008	04:17:25	1
v4-10-Rev-01	06/02/2008	Production	✓	Thu Apr 24 01:06:52 2008	04:16:23	1
v4-09-Rev-01	19/12/2007	Production	✓	Wed Apr 23 19:03:17 2008	05:32:01	1

Generated on: Fri Apr 25 18:55:53 2008

AliRoot BITS:

http://pcalibuildintel.cern.ch:8889/global_index.html

AliRoot Benchmarks:

http://pcalimonitor.cern.ch/bits/bits_ben

Simulation pp

Start	End	Duration	State	OS	Arch	Release	CPU time	Wall time	Total memory	RSS memory	File size
25.04.2008 16:23	25.04.2008 17:06	43m 31s		Linux	i686	v4-11-Rev-03	40m 39s	43m 26s	954.3 M	677.4 M	96.62 M
25.04.2008 05:47	25.04.2008 07:12	1:24	OK	Linux	ia64	v4-10-Rev-01	1:13	1:16	784.1 M	734.8 M	95.93 M
25.04.2008 02:56	25.04.2008 03:39	43m 31s	OK	Linux	x86_64	v4-10-Rev-01	32m 31s	36m 22s	770.4 M	770.4 M	96.71 M
24.04.2008 16:24	24.04.2008 17:07	43m 9s		Linux	i686	v4-11-Rev-02	40m 21s	43m 3s	955.4 M	677.4 M	96.84 M
24.04.2008 10:48	24.04.2008 11:31	43m 26s		Linux	i686	v4-10-Rev-02	40m 41s	43m 20s	972 M	689.9 M	96.16 M
24.04.2008 05:31	24.04.2008 07:09	1:38	OK	Linux	ia64	v4-09-Rev-01					
24.04.2008 02:40	24.04.2008 03:29	49m 1s	OK	Linux	x86_64	v4-09-Rev-01					
23.04.2008 22:35	23.04.2008 23:19	43m 30s		Linux	i686	v4-10-Rev-01	40m 47s	43m 25s	963.3 M	687.5 M	96.16 M
23.04.2008 05:49	23.04.2008 07:18	1:28	OK	Linux	ia64	v4-11-Rev-04	1:21	1:24	864.8 M	812.1 M	97.07 M
23.04.2008 02:58	23.04.2008 03:45	47m 30s	OK	Linux	x86_64	v4-11-Rev-04	35m 3s	39m 25s	793.2 M	793.1 M	96.6 M
04.05.2007 01:22	04.05.2007 02:26	1:04	OK	Linux	x86_64	v4-05-13	44m 27s	58m 59s	825.4 M	825.4 M	947.4 M

Show all history for this test



Building a new release

- Used to involve manual editing of the versions, committing & tagging in BITS cvs
- Now requires only a few clicks
- New tags are discovered automatically

Add release

Date: 27/04/2008

Description: Production

Package	Version	Extra version
alien	v2-14	
alroot	v4-12-Rev-01	
geant3	1-9	-3
root	5-19-02a	

Save release Cancel

Current AliRoot Releases

Add release

Release	Date	Description	alien	alroot	geant3	root	Active	Delete
HEAD	--/--/----	Current CVS head	HEAD	HEAD	1-9	5-19-02a	<input checked="" type="checkbox"/>	Delete
v4-11-Rev-04	02/04/2008	Production	v2-14	v4-11-Rev-04	1-9-2	5-18-00b	<input checked="" type="checkbox"/>	Delete
v4-11-Rev-03	14/03/2008	Production	v2-14	v4-11-Rev-03	1-9-2	5-18-00b	<input type="checkbox"/>	Delete
v4-11-Rev-02	11/03/2008	Production	v2-14	v4-11-Rev-02	1-9-2	5-18-00b	<input type="checkbox"/>	Delete
v4-10-Rev-02	22/02/2008	Production	v2-14	v4-10-Rev-02	1-9-1	5-18-00a	<input type="checkbox"/>	Delete
v4-10-Rev-01	06/02/2008	Production	v2-14	v4-10-Rev-01	1-9	5-18-00	<input type="checkbox"/>	Delete
v4-09-Rev-01	19/12/2007	Production	v2-14	v4-09-Rev-01	1-8	5-17-06	<input type="checkbox"/>	Delete

27/04/2008





Work in progress [1]

- Transition to SLC4
- Upgrade of the MacOSX servers
- New tests
 - Backward compatibility
 - Reconstruction of “reference” RAW samples
 - Use of “reference” OCDB data (calibration/alignment)
 - Code checker and reverse engineering tool
 - More “alarms” in case of failure



Work in progress [2]

- “Incremental” builds from the SVN trunk
 - The trunk rarely passes all the tests (some times it even does not compile)
 - Instead of using one single revision (the latest one)
 - Prepare (manually) set of revisions (one per module) that is known to work correctly
 - Revert to the last working revision if a module has a problem
 - Replace the working revision of a module if the version from the trunk is OK



Summary

- The tool for automatic builds has proven its usefulness in two different cases: AliEn - hundreds of packages, AliRoot - 4 packages + AliEn. It
 - Intelligently selects packages that have to be rebuilt
 - Offers different views for packages dependencies - very useful in understanding and managing large projects
 - Provides SLOC statistics
 - Saves and presents relevant logs and statistics on components testing
 - Has “one click” interface for the build management
- Building and continuous testing is important for delivering high quality software to end-users