



SuperB DIRAC

paper CHEP2013

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Paper Title



DIRAC integration with a general purpose bookkeeping
DB: a complete general suite for distributed resources
exploitation



Paper Structure



- 1) Introduction
- 2) Description of suite design
- 3) The DIRAC extension
- 4) Bookkeeping DB integration
- 5) Job wrapper component
- 6) Simulation production use case: the SuperB experience
- 7) Test session
- 8) Conclusion
- 9) References



WebUIs list



- 1) https://bbr-serv09.cr.cnaf.infn.it:8443/~webui_sb5/
- 2) <https://bbr-serv09.cr.cnaf.infn.it:8443/~cdesantis/>
- 3) <https://bbr-serv09.cr.cnaf.infn.it:8443/~dirac/>
- 4) <https://bbr-serv09.cr.cnaf.infn.it:8443/~amesin/>

source:

http://mailman.fe.infn.it/superbwiki/index.php/Dirac_testbed/Simulation_Production_use_case



job submission via WebUI



WebUI	Job submission	Job execution	Notes
webui_sb5	Jobs didn't start	NA	
cdesantis	OK	NOT WORKING ?	Jobs remain in "submitted" status
dirac	Jobs didn't start	NA	
amesin	OK	OK	SBK properly updated



job generation via WebUI job submission via DIRAC



WebUI	Job submission Via DIRAC	Job execution	Notes
webui_sb5	FAILURE		Script generation didn't work
cdesantis	OK	OK	Executed; output on SE; SBK not updated
dirac	FAILURE		Script generation didn't work
amesin	OK	OK	Executed; output on SE; SBK not updated



Sites check



Test jobs will run at INFN-T1, INFN-BARI and CYFRONET-LCG2

testing job submission via bbrbuild01 DIRAC

- 1)INFN-T1 → OK
- 2)INFN-BARI → NOT WORKING
- 3)CYFRONET-LCG2 → NOT WORKING



BACKUP SLIDES



Conferences & Journals



- 1)CHEP2013
- 2)IEEE
- 3)EGI User Forum

collect info (date, timeline, draft submission, etc. etc.)



Draft of contents - 1



- Intro
 - general purpose suite: for small and mid size VOs
- Description of suite design
 - philosophy: simple, standard and long term solution
 - bird's eye view all over the project
- The Dirac extension
 - extension structure description
 - Dirac general purpose project short description + Dirac configuration
 - service and systems description in detail
 - web interface components description
 -



Draft of contents - 2



- Bookkeeping DB integration
 - Software layer based on SQLAlchemy
 - advantages using SQLAlchemy: Object relational Mapping, clean code, fast development, change of DB backend
 - BK description, highlighting the general purpose characteristics
 - session, request, dataset
- Job wrapper component
 - general workflow
 - data management policy: stage-in and stage out strategies
- Simulation production use case: the SuperB experience
 - general description: workflow, Dirac portal design
 - past experience: the webui project
 - Session definition interface --> DB dynamic build up



Draft of contents - 3



- Test session
 - goal description
 - testbed description
 - results and conclusions
- Conclusions
 - We are offering a Dirac extended suite capable to satisfy the needs on small and mid size VOs in terms of distributed resource exploitation....



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Latest news



- No more funds for SuperB
- At present time, SuperB must be considered suspended
- A tau-charm factory ?
 - Possible, but not probable
- The question is:
 - How to capitalize done works ?



A snapshot of situation...



- We have expertisement to use and extend DIRAC
- We still have available resources...
- We have a real use case (the SuperB MC production porting)
- Moreover, we have:
 - A new working module (SuperBDIRAC)
 - An innovative DB interface for DIRAC (based on SQLAlchemy)
 - A working webportal extension
 - A populated bookkeeping databse
 - A complete production stack



SuperBDIRAC report



- Latest version: SuperBDIRAC v0-pre2
- SimulationProductionSystem
 - for Simulation Production
 - SBKService running
- TestingSystem
 - free to use for experiments :)
 - Dummy Service SimpleMessage
 - Dummy Agent SimplestAgent
 - Dummy Web page Testing Menu



Sites Overview



https://bbrbuild01.cr.cnaf.infn.it:8443/DIRAC/SuperB-Production/dirac_admin/simulationproduction/SiteManagement/overview

System Jobs Views Virtual machines Simulation production Selected setup: SuperB-Production

Name	Flavor	Banned	Target Site	OS	Arch	Prepared Thr	Running Thr	Failed Thr	Bunch Dimens	FastSim supported	FastSim enabled	FullSim supported	FullSim enabled	Note
INFN-PERUGIA	EGI	---	false	SL-4	i386	3	6	3	6	false	false	false	false	It has SL4 and i386 [Manzali 22-12-2011]
INFN-TORINO	EGI	---	false	SL-5.3	x86_64	30	300	10	50	true	true	true	true	error in FullSim: libG4OpenGL.so [Manzali 22-12-2011]
CIT_HEP	OSG	---	false	SL-5.3	x86_64	20	300	10	100	true	true	false	false	/nfs/raid4/osg-app/superbvo.org/SL-5.3_x86_64/bin/ is empty, superb-env.sh not
GridUNESP_CENTRAL	OSG	---	false			0	0	0	0	false	false	false	false	This site need to be configured and tested
WT2	OSG	---	false	SL-5.3	x86_64	50	160	10	100	true	true	false	false	LCG-Utils doesn't work [Manzali 22-12-2011]
GRISU-UNINA	EGI	---	false	SL-5.3	x86_64	2	30	10	10	false	true	false	false	ABORTED: hit job shallow retry count (10) I think there is a problem with Producti
IN2P3-CC	EGI	---	false	SL-5.3	x86_64	50	700	10	100	true	true	true	true	error in FullSim: libG4OpenGL.so [Manzali 22-12-2011]
INFN-BARI	EGI	---	false	SL-5.3	x86_64	30	300	10	50	true	true	false	false	error in FullSim: libG4OpenGL.so [Manzali 22-12-2011]
INFN-CAGLIARI	EGI	---	false	SL-5.3	x86_64	5	300	3	10	false	true	false	false	ABORTED: failed (LB query failed) [Manzali 22-12-2011]
INFN-FERRARA	EGI	---	false	SL-5.3	x86_64	12	300	10	3	false	true	false	false	random /opt/exp_soft/superbvo/SL-5.3_x86_64/bin/superb-env.sh not found; [Ma
INFN-FRASCATI	EGI	---	false	SL-5.3	x86_64	25	100	10	100	true	true	true	true	
INFN-LNL-2	EGI	---	false	SL-5.3	x86_64	30	500	10	50	true	true	false	false	error in FullSim: libG4OpenGL.so [Manzali 22-12-2011]
RAL-LCG2	EGI	---	false	SL-5.3	x86_64	30	800	10	100	true	true	true	true	ABORTED: hit job shallow retry count (10) [Manzali 22-12-2011]
SPRACE	EGI	---	false			0	0	0	0	false	false	false	false	This site need to be configured and tested
UKI-LT2-QMUL	EGI	---	false	SL-5.3	x86_64	50	950	10	100	true	true	true	true	error in FullSim: libG4OpenGL.so [Manzali 22-12-2011]
UKI-SOUTHGRID-RALPP	EGI	---	false	SL-5.3	x86_64	30	550	10	50	true	true	true	true	error in FullSim: libG4OpenGL.so [Manzali 22-12-2011]
UNINA-EGEE	EGI	---	false	SL-5.3	x86_64	3	6	3	6	false	true	false	false	ABORTED: hit job shallow retry count (10) [Manzali 22-12-2011]
VICTORIA-LCG2-SL4	EGI	---	false	SL-4	i386	30	300	10	50	false	false	false	false	It's an old site with SL4 + 32 bit , no longer used [Manzali 19-01-2012]
CIT_CMS_T2B	OSG	---	false	SL-5.3	x86_64	3	5	2	5	false	true	false	false	It's an old site, no longer used [Manzali 19-01-2012]
INFN-PISA	EGI	---	false	SL-5.3	x86_64	50	1000	10	100	true	true	false	false	
CA-MCGILL-CLUMEQ-T2	EGI	---	false	SL-5.3	x86_64	200	200	10	20	false	false	false	false	
INFN-CATANIA	EGI	---	false			0	0	0	0	false	true	false	false	This site need to be tested
IN2P3-LPSC	EGI	---	false	SL-5.3	x86_64	30	200	10	50	true	true	true	true	
IN2P3-IRES	EGI	---	false	SL-5.3	x86_64	30	200	10	50	true	true	true	true	
INFN-T1	EGI	---	true	SL-5.3	x86_64	200	1200	10	300	true	true	true	true	
VICTORIA-LCG2	EGI	---	false	SL-5.1	i386	40	300	10	50	false	true	false	false	Now it has 64 bit architecture
UKI-SOUTHGRID-OX-HEP	EGI	---	false	SL-5.3	x86_64	30	300	10	100	true	true	true	true	error in FullSim: libG4OpenGL.so [Manzali 22-12-2011]
FNAL_FERMIGRID	OSG	---	false	SL-5.3	x86_64	50	500	10	50	false	true	true	true	xx
INFN-MILANO-ATLASC	EGI	---	false	SL-5.3	x86_64	30	300	10	100	true	true	true	true	
INFN-NAPOLI-ATLAS	EGI	---	false	SL-5.3	x86_64	40	300	10	50	true	true	false	false	Now it works for FastSim [Manzali 22-12-2011]
CYFRONET-LCG2	EGI	---	false	SL-5.3	x86_64	50	700	5	50	true	true	true	true	
GRIF	EGI	---	false	SL-5.3	x86_64	30	500	10	50	true	true	true	true	ABORTED: failed (LB query failed) [Manzali 22-12-2011]



SBK5, WebUI and DIRAC



- SuperB production rely on SBK5 and WebUI
 - but SBK5 and WebUI were designed for general use...
- DIRAC offers all you need for distributed computing
 - but not everything you want...
 - No DB management layer to change DB backend
 - No general use bookkeeping database
 - No production “framework”



Next steps proposal



- Using SuperB production use case....
 - Finalize SuperBDIRAC as a DIRAC extension to offer
 - A production management tool
 - An interface to a general use bookkeeping database
 - A generic layer to use different DB backend
- List of existing experiments and research topics that need access to more computing power
- Try to apply SuperBDIRAC to his new use case to prove that our work is of general usage



Discussion time



- Proposal ?
- Suggestion ?



SuperB DIRAC next steps



- gridmonService – DIRAC read data from gridmon
- Use gridmon (filled by Nagios) to ban/unban sites
- Site management via DIRAC webportal
 - Sites overview
 - Site details
- Launch Severus via DIRAC
 - Using DIRAC for stagein and stageout



SuperB DIRAC goals



- A complete Simulation Production stack via DIRAC
 - FastSim (working in progress)
 - FullSim
 - Site Management per session
 - Production and Request management
 - Bunch jobs submission and monitoring
- Mass Data Transfer
 - Transfer and entire dataset via FTS
- Test LFC and DFC sync



Credits



- Marcin Chrzaszcz Kracow
- Christian De Santis Rome
- Giacinto Donvito Bari
- Armando Fella Pisa
- Rafał Grzymkowski Kracow
- Bruno Santeramo Bari
- Miłosz Zdybał Kracow

Thanks to DIRAC developers, especially to
Andrei Tsaregorodtsev, Federico Stagni, Matvey Sapunov,
Krzysztof Daniel Ciba, Ricardo Graciani, Adrian Casajus



BACKUP SLIDES



Development server



- `bbrbuild01.cr.cnaf.infn.it`
 - `/opt/dirac/pro/SuperBDIRAC.<developer_name>`
- Guidelines for development
 - http://mailman.fe.infn.it/superbwiki/index.php/Dirac_testbed/SuperBDIRAC#Guidelines_for_SuperBDIRAC_developers
 - Please, suggest improvements in development guidelines
- Perform by hand commits on repo
 - Script to automatize procedure not yet ready



SuperB DIRAC module installation status



- bbrbuild01.cr.cnaf.infn.it
 - Production
- sb-serv04.cr.cnaf.infn.it
 - Development
- gridtest-05.ba.infn.it
 - Installation procedure test



SuperB DIRAC shared development



- /opt/dirac/pro
 - SuperB DIRAC.main
 - SuperB DIRAC.bruno
 - SuperB DIRAC.mylosz
 - SuperB DIRAC.marcin
 - SuperB DIRAC.rafal
- Symbolic link
 - SuperB DIRAC → SuperB DIRAC.main (for example)
- Working directly on sb-serv04
- Update SVN directly from sb-serv04



SVN usage



- Now, only sb-serv04 should be used for development purposes
 - If needed, also bbrbuild01 can be used for same task
 - especially when new DIRAC head node will be available
- `svn co https://sbrepo.pd.infn.it:8910/WebUi/trunk/DIRAC`
- `svn commit -m "Update from git release"`
- `svn push`
- SVN now available on sb-serv04 (thanks to Armando)



SVN usage improvements



- <https://sbrepo.pd.infn.it:8910/WebUi/trunk/DIRAC/SuperBDIRAC>
- Introduce trunk, tags and branches (one branch for each developer)
 - .../SuperBDIRAC/trunk
 - .../SuperBDIRAC/tags/<tagged_release>
 - .../SuperBDIRAC/branches/<bruno|mylosz|rafal|marcin>
- Sync (automatically or via script) personal branches with personal SuperBDIRAC version
 - See previous slide



SuperB DIRAC status



- SuperB DIRAC installed and usable
 - New system defined: SimulationProductionSystem
 - Dummy service tested
- Now we can place all our code in proper places under SuperB DIRAC
- VMDIRAC properly installed
 - Together to SuperB DIRAC (SuperB DIRAC doesn't depends by VMDIRAC)
 - If occi or amazon cloud resources available, we can test job submission to cloud



SimulationProductionSystem



- Easy to configure, transparent usage
- We can start using Mylosz code to create a working service (named SBKAlchemy ?)
 - To return site's data
 - Info needed to create Site Management webpage



Task assignement proposal



- Bruno
 - Solve repo troubles
 - Complete Severus porting under DIRAC
- Mylosz
 - Prepare a working service
 - To return Site's list
- Marcin, Rafal
 - Webpage to diplay site's list (taking data from Mylosz's service)
 - Permission management:
 - The same page (site's list) but adding an “edit” button foreach site
 - Page should be availble only for sb_productionmanager members



Groups



Groups and Role in VO and DIRAC

Group/Role	Type	Description	VO share	DIRAC mapping
/superbvo.org	Standard User	Generic user group	0	sb_user
/superbvo.org/Role=ProductionManager	Production Manager	User role related to MC production management	20	sb_productionmanager
/superbvo.org/Role=SoftwareManager	Software Manager	VO Software administrator	0	sb_softwaremanager
/superbvo.org/Role=Analysis	Standard User	User role related to analysis task	0	sb_analysis
	DIRAC administrator	DIRAC administrator		dirac_admin
	DIRAC pilot job	Useful for DIRAC		sb_pilot



DIRAC API



- DIRAC offers a powerful set of API
 - We need a good quality documentation to speed up development
- API documentation
 - <http://diracgrid.org/files/docs/CodeDocumentation/API/index.html>
 - Epydoc generated – updated – maintained by developers

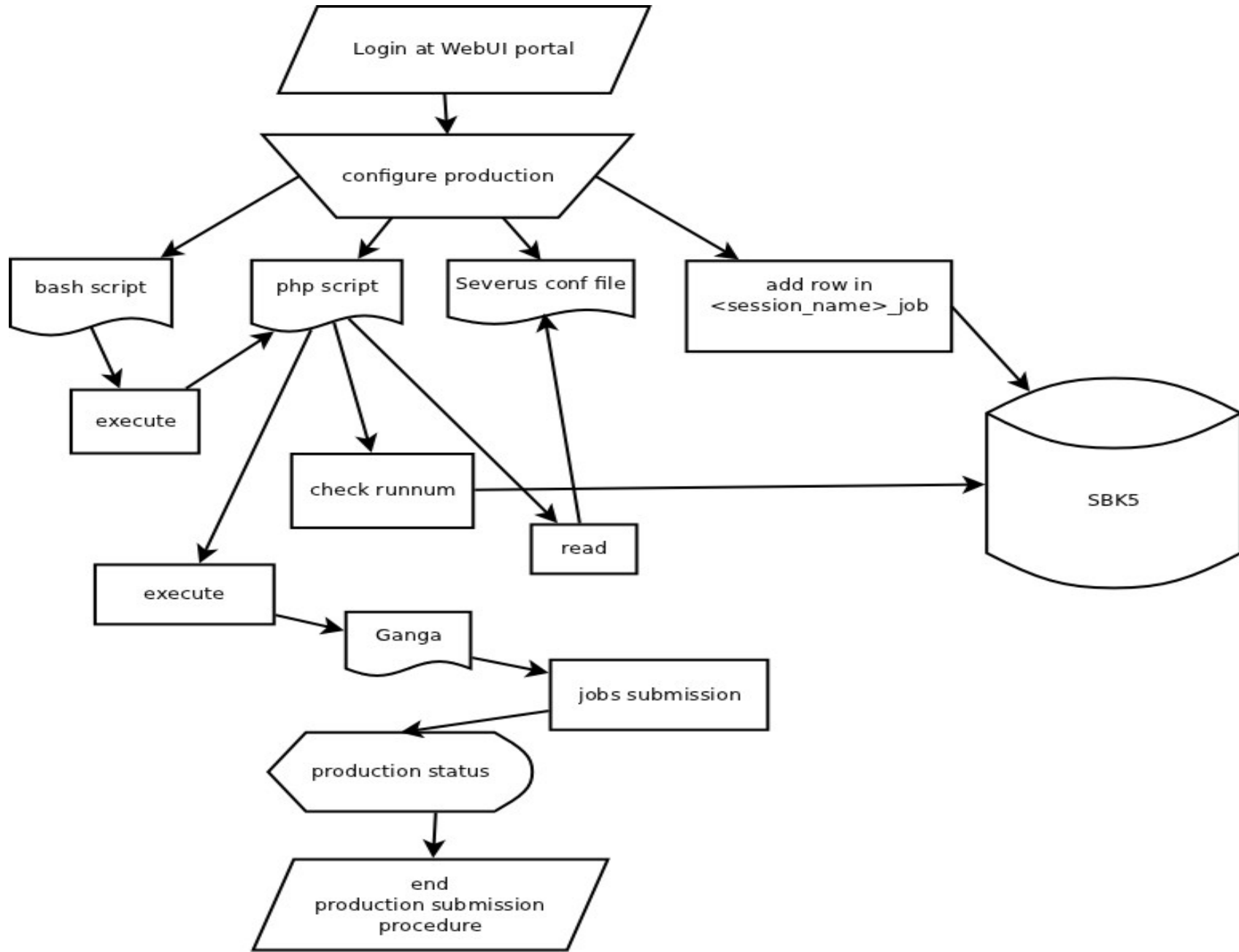


Useful links



- **DIRAC official site**
 - <http://diracgrid.org/>
- **DIRAC official forum**
 - <https://groups.google.com/forum/?hl=en&fromgroups#!forum/diracgrid-forum>
- **DIRAC repository**
 - <https://github.com/DIRACGrid>
- **DIRAC API documentation**
 - <http://diracgrid.org/files/docs/CodeDocumentation/API/index.html>
- **DIRAC testbed for SuperB wiki page**
 - http://mailman.fe.infn.it/superbwiki/index.php/Distributed_Computing/Dirac_testbed
- **DIRAC testbed webportals:**
 - bbrbuild01.cr.cnaf.infn.it
 - <https://bbrbuild01.cr.cnaf.infn.it:8443/DIRAC/>
 - sb-serv04.cr.cnaf.infn.it
 - <https://sb-serv04.cr.cnaf.infn.it:8443/DIRAC/>
- **Production WebUI**
 - https://bbr-serv09.cr.cnaf.infn.it:8443/~webui_sbk5/
- **SuperB resources (google Doc)**
 - <https://docs.google.com/spreadsheets/ccc?key=0AsjxRpEZ2zEIdHU2cjh4YTdrajdYdlNmajdBVGZWLWc#gid=0>
- **SuperB Production Shifter Guide wiki page**
 - http://mailman.fe.infn.it/superbwiki/index.php/Distributed_Computing/Production_Shift_Guide

WebUI workflow





SuperB DIRAC chaintool

