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Olivier Sallou, Cyril Monjeaud

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GO-Docker: Batch scheduling with containers

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https://bitbucket.org/osallou/go-docker/ http://www.genouest.org/godocker/index.html

Jobs in containers

Go-Docker is a batch scheduling job manager. It executes jobs in Docker containers, providing security/isolation of resources and access to a software catalog and multiple operating systems. For multi-user systems, it mounts user directories in the container and schedules jobs according to user requirements (cpu, memory, queues). Quota and priorities are managed at user and group level.



Software is in beta-test at GenOuest BioInformatics core facility, before production, with Apache Mesos.

Go-Docke	r 🗲 Home	Jot	os 🌣 Admin	📰 Projec	ts 💙 Resources				👤 osallou 🛛 🖒 Logout
New job									Auto-refresh: Off
Runr	ning joł	os 🤉	5						
View all use	ers								
Show 10	 entries 							Search:	
🔻 ID 💿 🖕	Status	\$	Container	\$	Interactive	Tags	\$ User id 🛛 🔶	Project 🔶	Usage/Statistics
124	pending	â	centos:latest		false []	genouest	osallou	default	al
Showing 1 to 1	of 1 entries					-		First Pr	revious 1 Next Last
Sear	ch iob								



Go-Docker	Live log 👁	12:30 12:31 12:32 12:33 12:34 12:35 12:36 12:37 12:38 12:39 12:40 12:41 12:42 12:43 12:44 ats.243a6b945670 — stats.d7c681eff410 RAM Usage
New job	 Id: 124 Description: Parent task id: Sub tasks: [] 	
Runnin	 Tags: genouest Exit code: Command: 	12:30 12:31 12:32 12:33 12:34 12:35 12:36 12:37 12:38 12:39 12:40 12:41 12:42 12:43 12:44 ats.243a6b945670 — stats.d7c681eff410 Network
View all users	8 GBps - 5 GBps - 3 GBps - 0 Bps -	
ID Statu 24 runn		atistics
owing 1 to 1 of 1 e		1 Next La
Search Task		_
Finishe ow 10 • er	 run as root: false Interactive: false Container:mesos-5334d986-b134-421b-8064-d88f20f522e5 Requirements CPU: 1 RAM (Gb): 2 	
18 15 13	 Execution Submitted: 23, Jun 2015 11:48:16 Running: 23, Jun 2015 11:48:18 Over: 	Go-Docker Home III Jobs Admin III Projects Resources Losallou O Logout 0.02875 0.02875 0.02875 0.02805 <
Jobs have	 /omaha-beach/bioinfo/go-docker/godshared/tasks/pairtree resource requirements and shared volumes 	e 101500 0.01376 0.01250 0.01250 0.01250 0.00875 0.
Paca	urces can be monitored with live data	RAM Usage

Conclusion

▼ ID 👁 🗸	Status 🌲	Container 🌲	Interactive \Rightarrow	Tags 🌲
118	over	centos:latest	false	genouest
115	over	centos:latest	false	genouest
113	over	centos:latest	false	genouest

Jobs can be managed via the web interface, the REST API or the CLI tool

Plugins

The plugin architecture gives the possibility to add new authentication/authorization scripts, different scheduler algorithms or execution systems. It can also be extended with "watchers" to monitor job life cycle (kill after X days for example).

Search:

Go-Docker processes and databases are

Scalability

Go-Docker provides:

horizontally scalable to scale with jobs load. The single point of failure is the scheduler, a single process to order all pending jobs according to quota and user/projects priorities.

Scalability and cloud setup will be tested soon with an AWS Research grant in Education.

oad.
ler, a single
jobs live monitoring and past statistics
optional root access to the container
immediate access to differents operating systems and a growing catalog of software (Docker registry)

easy container usage with no super-user rights
 Web UI, CLI, REST interface

INRIA, IRISA, GenOuest Core Facility, Campus de Beaulieu, 35042 Rennes, France University of Rennes 1, Campus de Beaulieu, 35042 Rennes, France

GenOuest BioInformatics core facility: http://www.genouest.org



Contact: olivier.sallou@irisa.fr