Hackathon Cyclone

UC3 - live remote cloud cloud processing of sequencing data

Cyclone 2020 : usecases-hackathon-2016
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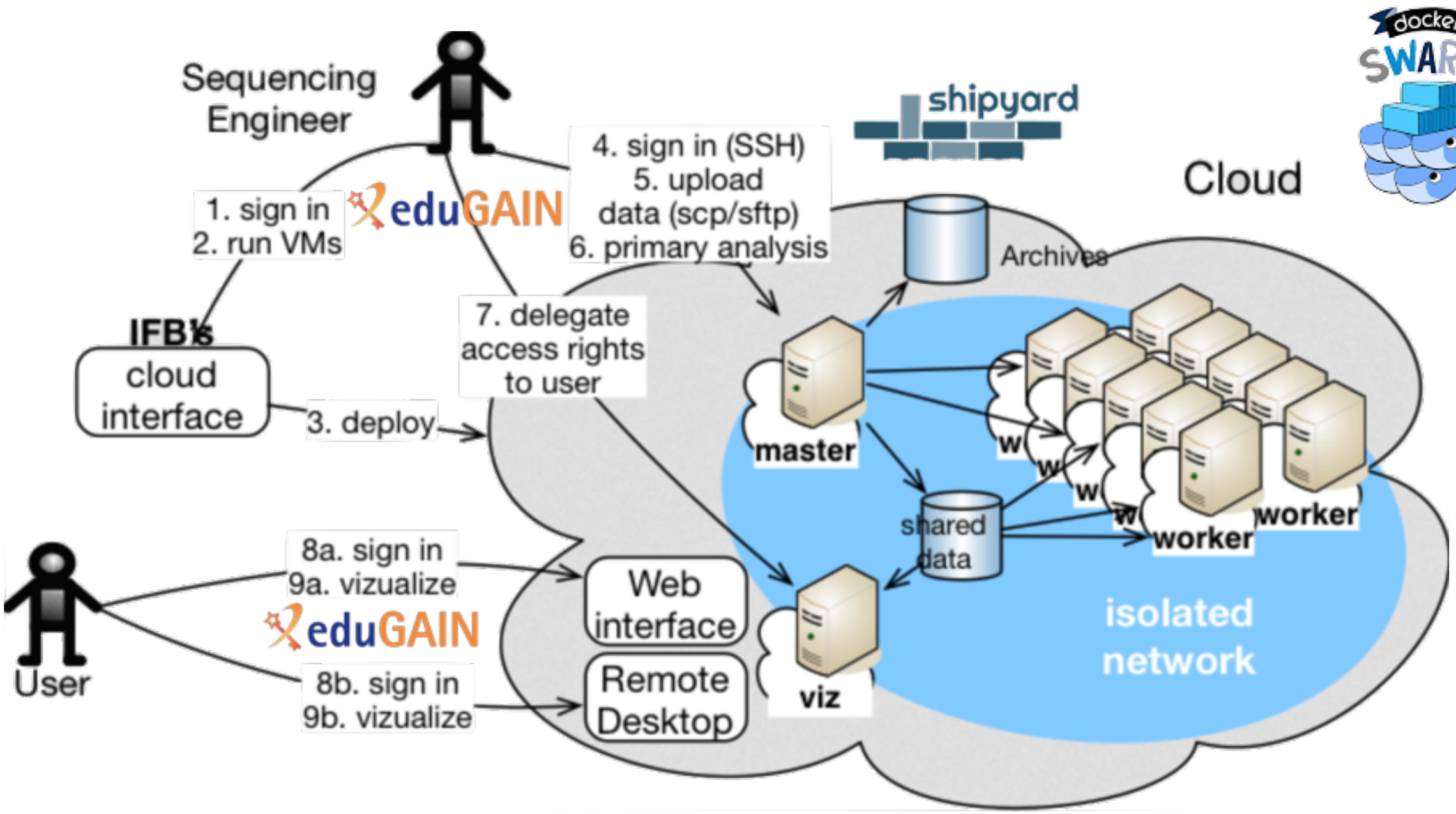
Summary

I. UC3

II. Cluster deployment

III. Run analysis with Docker

UC-3



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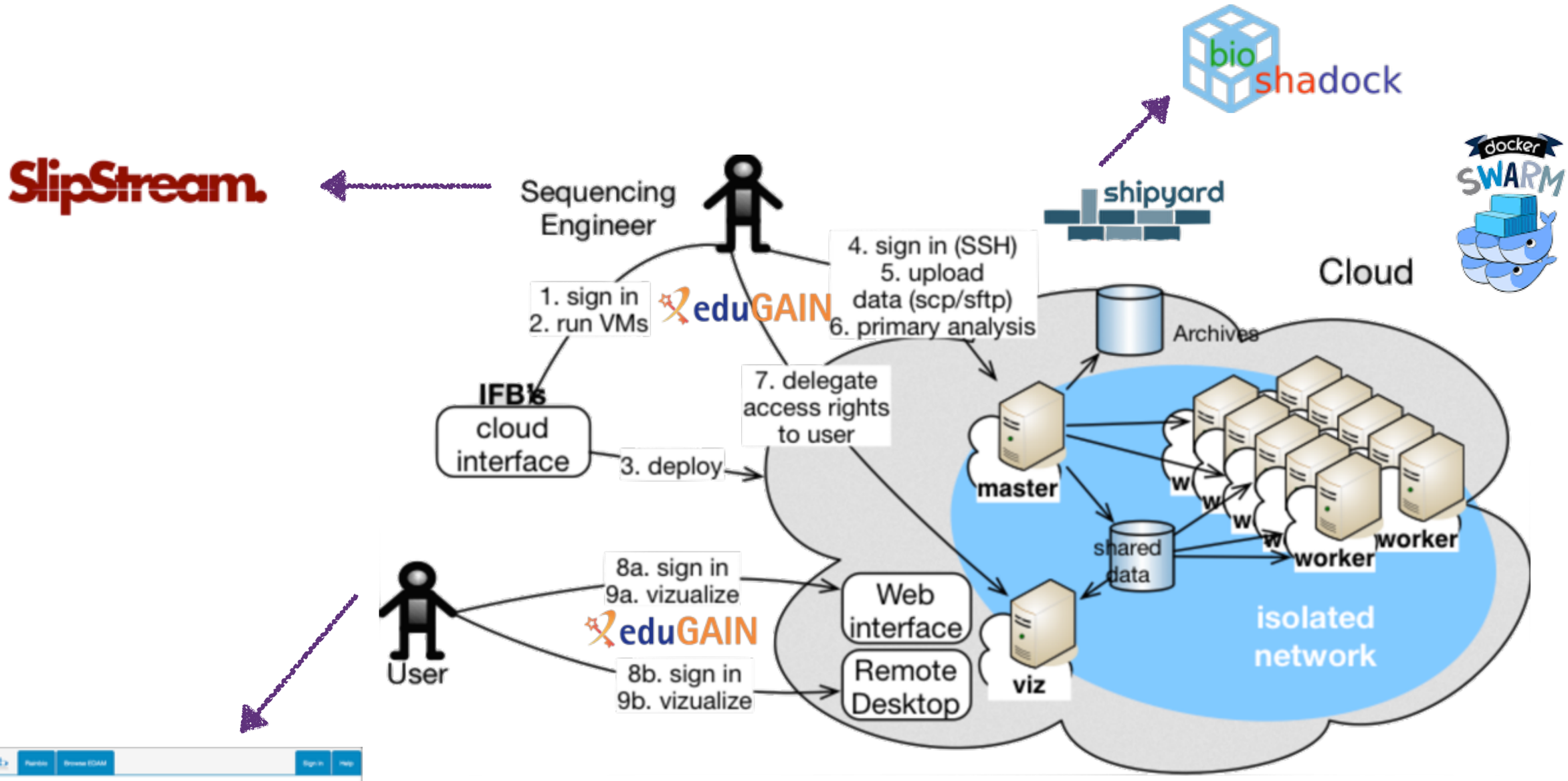
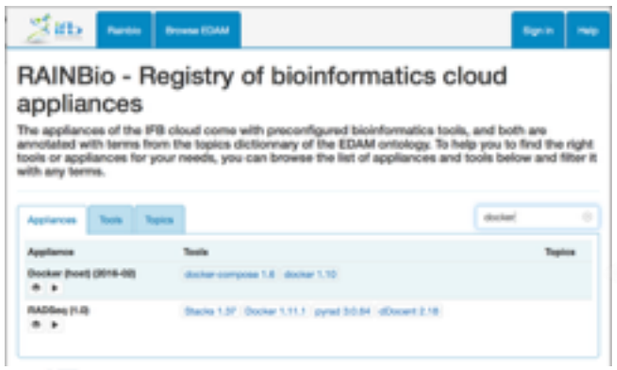
UC-3





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UC-3

- Ready to use bioinformatics tools
- Cluster with Docker-Swarm
- Shipyard web Interface for docker
- Docker ready appliance
- Isolated network (CYCLONE CNSMO)
- Easy to configure Elastic virtual cluster (CYCLONE Slipstream SixSQ)
- Authentication using academics federation (CYCLONE Federation Proxy)
  - ✓for web access and SSH (command line)

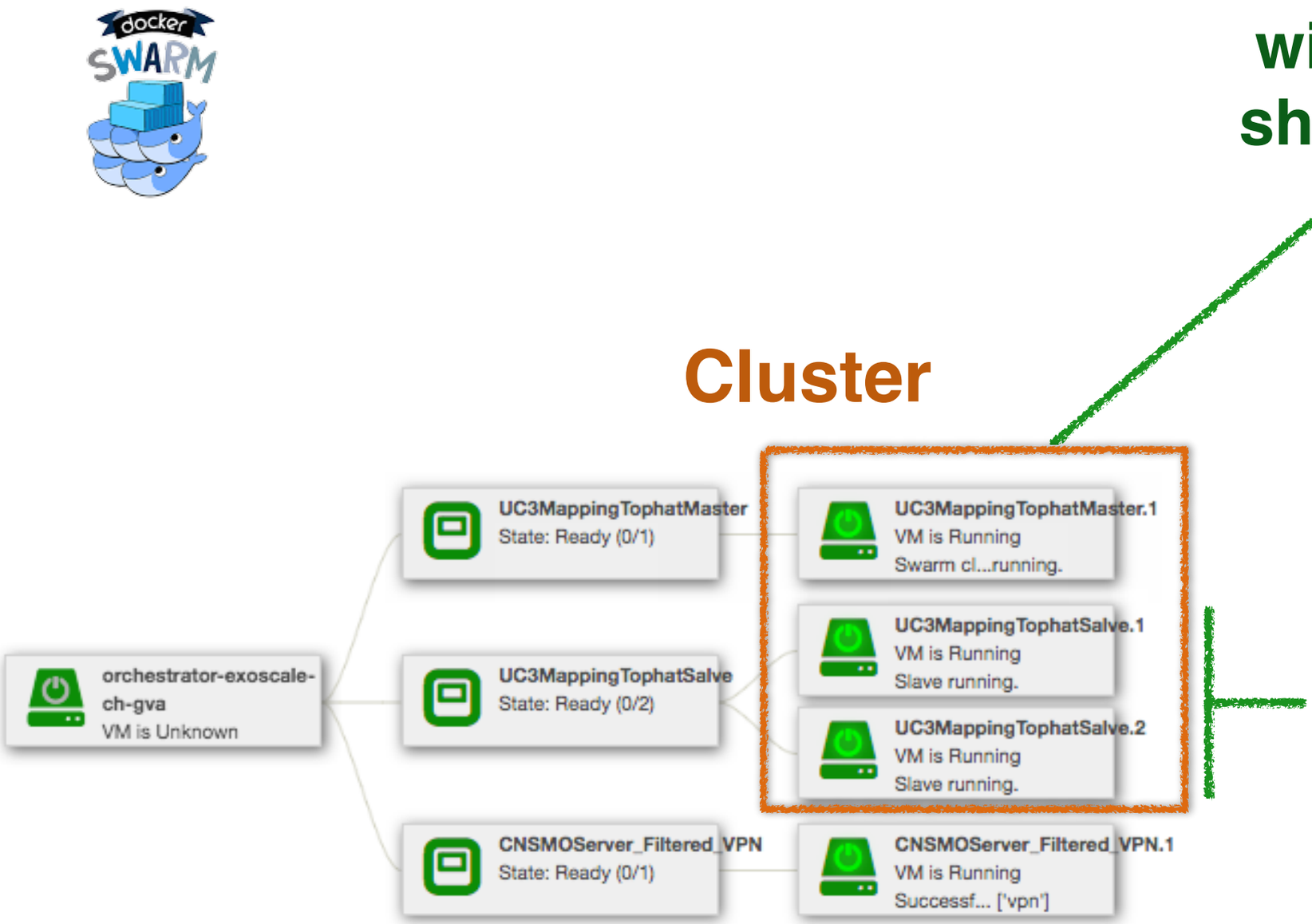
Slipstream Deployment

Master
with data volume,
shared with slaves

shipyard

User interfaces
to manage
Docker containers

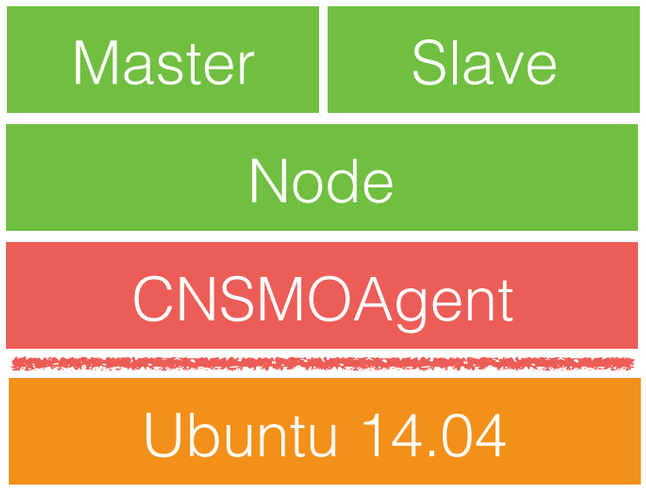
Cluster



Slaves
type medium
to run analysis

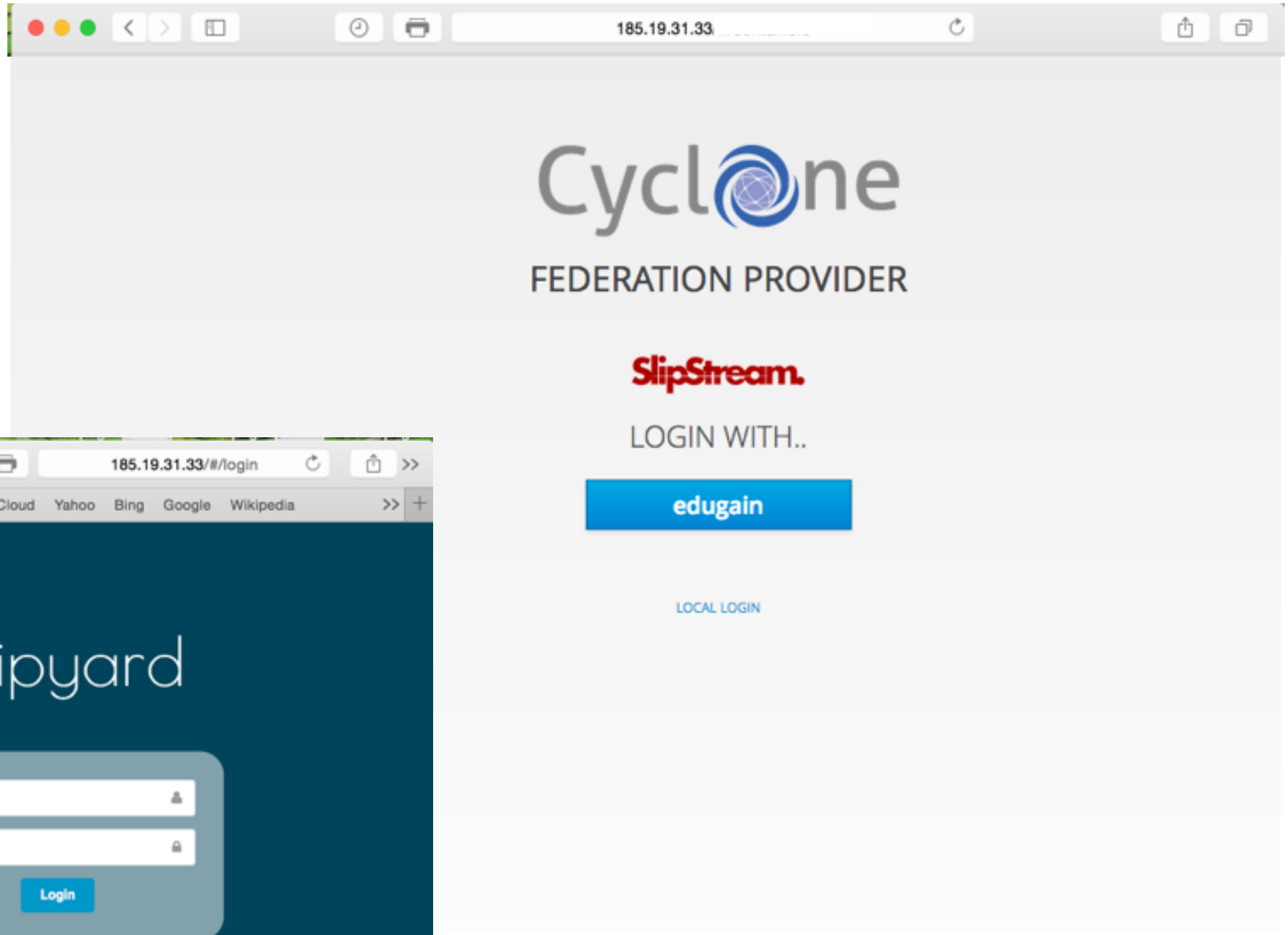
Slipstream Deployment

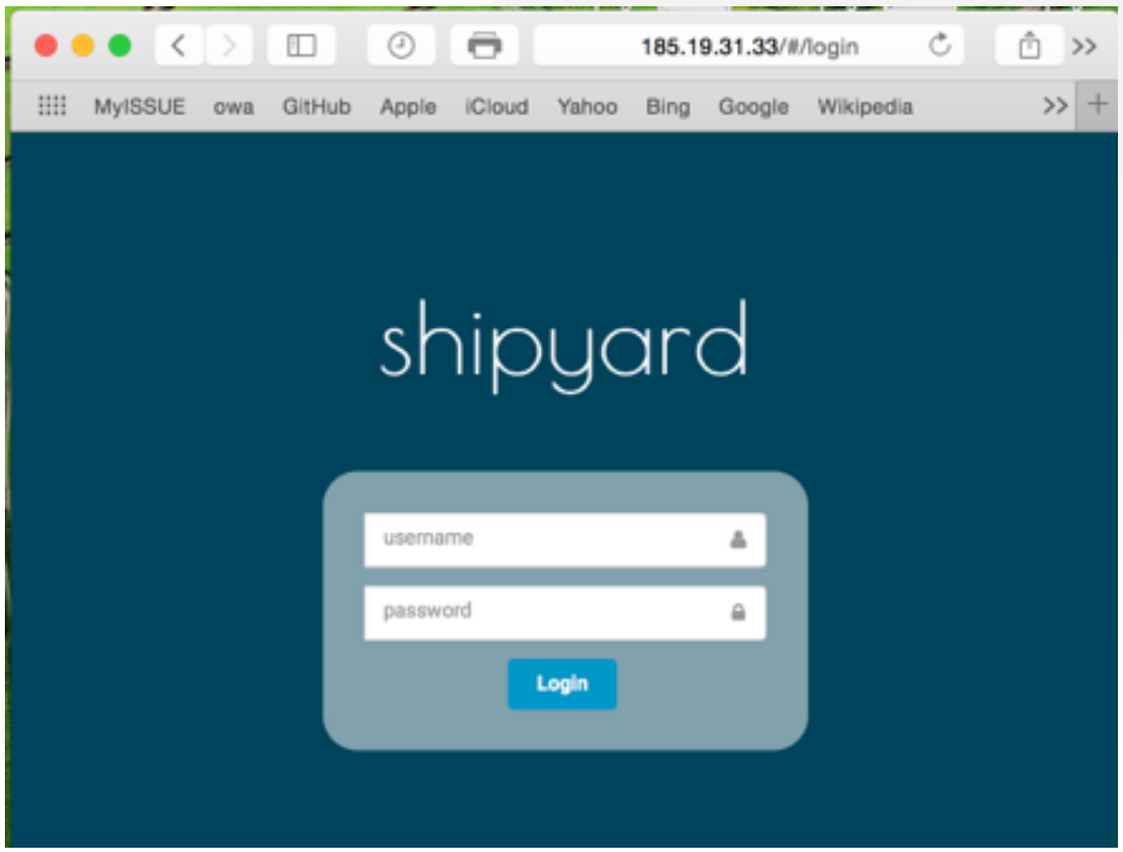
Machine	Function
ServerFiltered_ VPN	install server VPN on cluster with docker
CNSMOAgent	- deployment : install agent VPN with docker
nodes	- build from CNSMOAgent, - post-install : configure docker to run cluster swam; - post-install : configure SSH key between nodes
Master	- build from node - deployment : create nodes files with IP on slaves - deployment : donwload script to create Swarm cluster - deployment : configure connexion by Edugain ; - deployment : configure federated proxy.
slaves	- build from node - nothing to do, configuration made by master



Docker : run analysis

Connect to the master

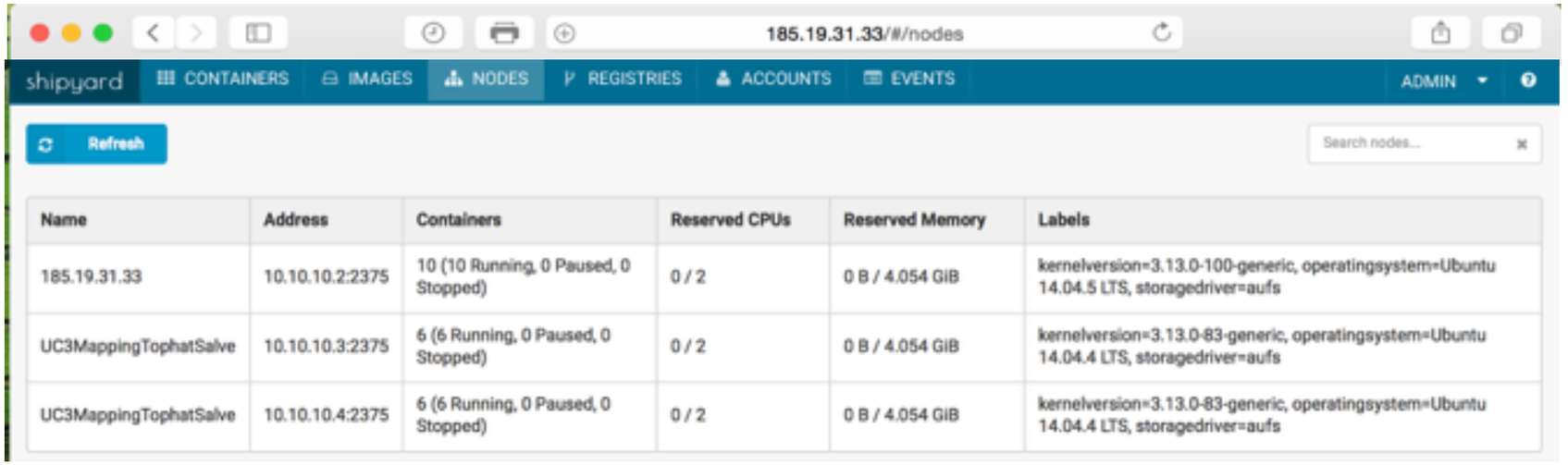




Run analysis

Run analysis with a script.
- one container by steps;
- one sample by nodes

Cluster



Name	Address	Containers	Reserved CPUs	Reserved Memory	Labels
185.19.31.33	10.10.10.2:2375	10 (10 Running, 0 Paused, 0 Stopped)	0 / 2	0 B / 4.054 GiB	kernelversion=3.13.0-100-generic, operatingsystem=Ubuntu 14.04.5 LTS, storagedriver=aufs
UC3MappingTophatSalve	10.10.10.3:2375	6 (6 Running, 0 Paused, 0 Stopped)	0 / 2	0 B / 4.054 GiB	kernelversion=3.13.0-83-generic, operatingsystem=Ubuntu 14.04.4 LTS, storagedriver=aufs
UC3MappingTophatSalve	10.10.10.4:2375	6 (6 Running, 0 Paused, 0 Stopped)	0 / 2	0 B / 4.054 GiB	kernelversion=3.13.0-83-generic, operatingsystem=Ubuntu 14.04.4 LTS, storagedriver=aufs

All container running to make analysis

Id	Node	Name	Image	Status	Created	Actions
0fe86898c2a9	UC3MappingTophatSalve	tophat2_0268	docker-registry.genouest.org/ifb/tophat:2.1.0	Exited ago		
1120d7b278cd	UC3MappingTophatSalve	tophat2_0267	docker-registry.genouest.org/ifb/tophat:2.1.0	Exited ago		
d27b9faac351	UC3MappingTophatSalve	sortbma_0267	docker-registry.genouest.org/ifb/tophat:2.1.0	Exited ago		
4a4499279e57	UC3MappingTophatSalve	bai_0267	docker-registry.genouest.org/ifb/tophat:2.1.0	Exited ago		
990822219e3a	UC3MappingTophatSalve	bam2sam_0267	docker-registry.genouest.org/ifb/tophat:2.1.0	Exited ago		
670c5d229379	UC3MappingTophatSalve	sortbma_0268	docker-registry.genouest.org/ifb/tophat:2.1.0	Exited ago		
305a0de55278	UC3MappingTophatSalve	bai_0268	docker-registry.genouest.org/ifb/tophat:2.1.0	Exited ago		
b85dbe94504d	UC3MappingTophatSalve	bam2sam_0268	docker-registry.genouest.org/ifb/tophat:2.1.0	Exited ago		

Step 1 : mapping

Step 2, 3, 4 : convert output files

Perspectives

- **use others technologies :**
  - ✓ for cluster : SGE
  - ✓ for packages manager : Conda

- **manage data to download input data and upload result data;**
- **visualize results.**