



# Continuous integration and deployment on VIP

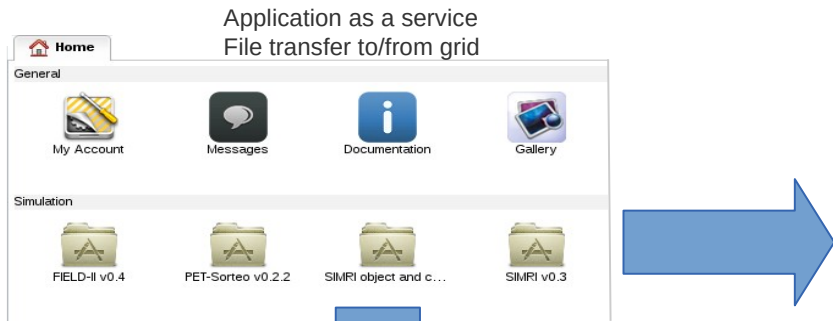
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# Overview

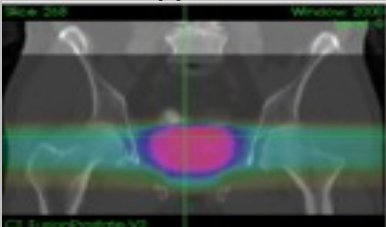
- What is VIP ?
- Why set up CI and CD on VIP ?
- Our solution for continuous integration
- Our solution for continuous deployment
- Conclusion

# The Virtual Imaging Platform



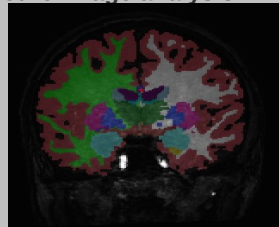
## Scientific applications

### Cancer therapy simulation



Prostate radiotherapy plan simulated with GATE (L. Grevillot and D. Sarrut)

### Neuro-image analysis



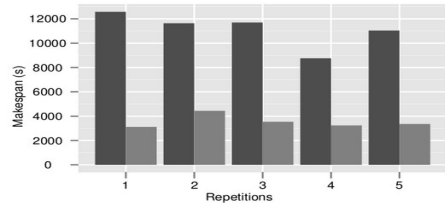
Brain tissue segmentation with Freesurfer

### Image simulation



Echocardiography simulated with FIELD-II (O. Bernard et al)

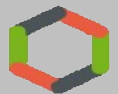
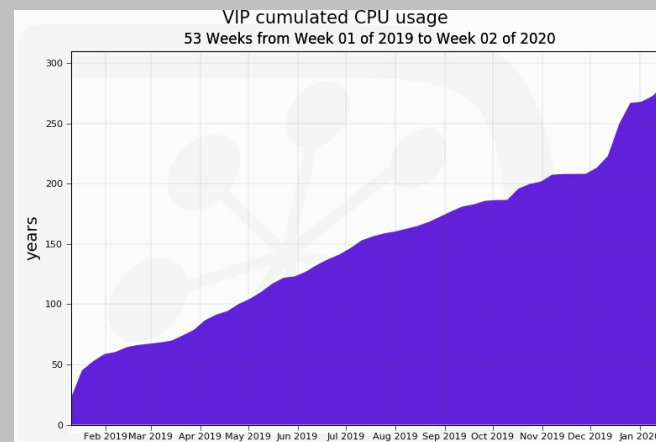
### Modeling and optimization of distributed computing systems



Acceleration yielded by non-clairvoyant task replication (R. Ferreira da Silva et al)

## Infrastructure

Supported by EGI Infrastructure  
Uses biomed VO (~65 sites in Europe and beyond)  
VIP consumes ~23 CPU years every month



DIRAC

## Users

1300+ registered users in September 2021  
61 publications since 2011



# What are continuous integration and continuous deployment (CI / CD) ?

- Automate as much computing tasks as possible
- Gain time
- Avoid errors
- Concerns mainly testing and deployment

[HOME](#) > [NEWS](#) > [OUTAGES](#)

## OVHcloud goes down in outage affecting global backbone

At least it's not a fire this time

October 13, 2021 By: Sebastian Moss [Comment](#)

 **Octave Klab**  @olesovhcom · 5m

```
d2> .. route-map ipv  
d2> 4
```

le copier/coller sur 2 lignes au lieu d'1 ..

[Show this thread](#)

# Why set up CI / CD on VIP ?

- More than 10 years old
- Small team
- Things kept simple and manual
- Almost no automation

# Why set up CI / CD on VIP ?

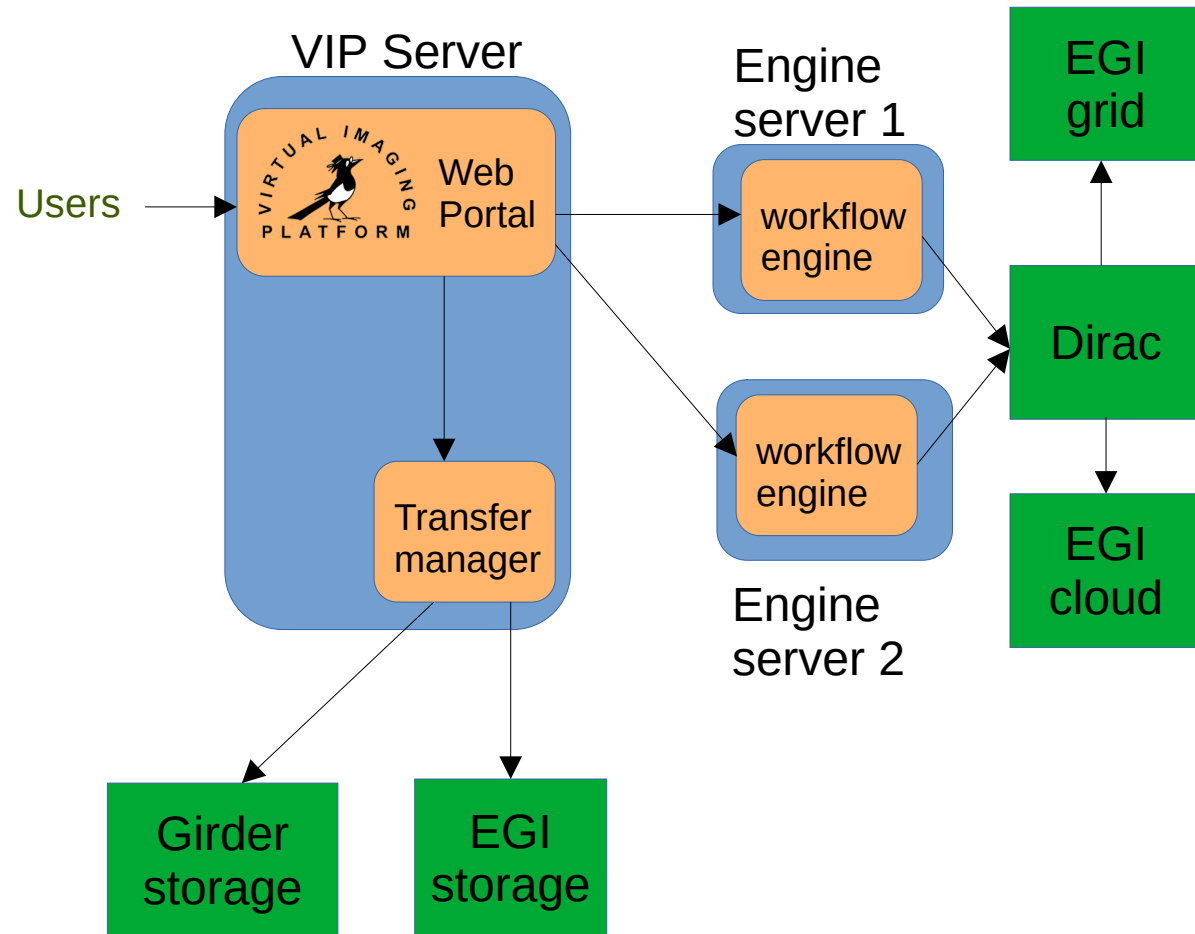
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- Small team
- Things kept simple and manual
- Almost no automation



CI / CD is a possibility for VIP  
But would that be useful ?

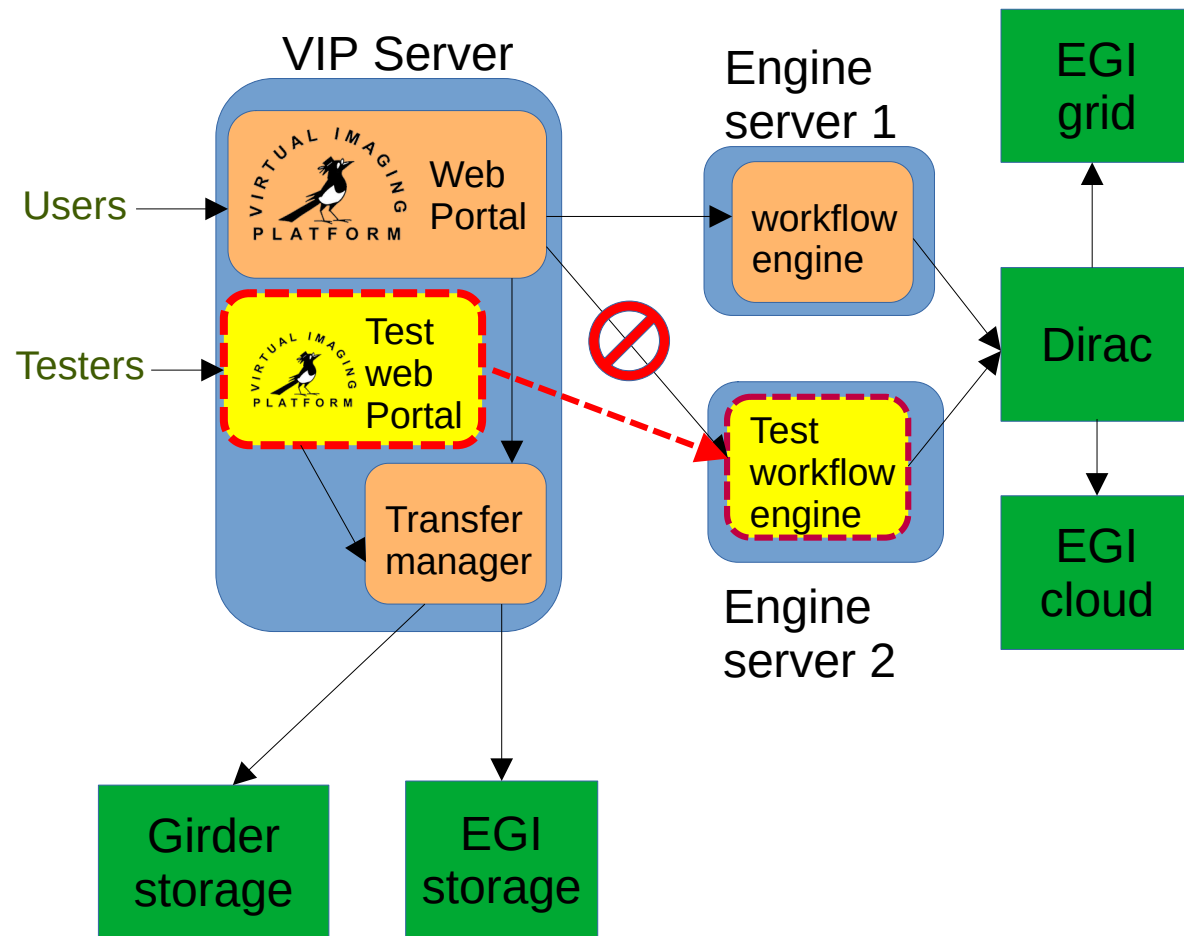
# Interest of CI/CD in VIP : testing new developments

- Testing on production servers



# Interest of CI/CD in VIP : testing new developments

- Testing on production servers
  - Risk of impacting production service (Database, ports...)
- Manual delivery deliveries
  - Manual configuration
  - Takes a long time
- Manual tests
  - Covers a small subset of features
- Pray





# Testing new developments :

## Before CI /CD

- Testing on production servers
- Risk of impacting production service (Database, ports...)
- Manual delivery deliveries
- Manual configuration
- Takes a long time
- Manual tests
- Covers a small subset of features
- Pray

## After

- New identical and independent development platform
- CD : Continuous deployment
- Changes automatically delivered on dev. platform
- CI : Continuous integration
- Changes automatically tested (compilation, unit tests, functional tests)
- Be a relaxed developer

# Our solution for the CI part

- Done with jenkins
- Hosted jenkins instance
- Automatic scan of github
- Essentially java deployment : easy with maven
- BUT : need more tests

Dashboard ▸ moteur1-staging ▸

All	cobertura test	moteur1-staging	release	test-launch-form	test-templates	+
S	W	Name	Last Success ↑	Last Failure	Last Duration	
✓	☁	VIP-Portal	1 mo 6 days - #163	1 mo 7 days - #160	4 min 15 sec	🔄
✓	☁	GRIDA	1 mo 18 days - #71	1 mo 20 days - #70	24 sec	🔄
✓	☁	GASW-Dirac-Plugin	2 mo 23 days - #26	3 mo 21 days - #23	25 sec	🔄
✓	⚙️	GASW	2 mo 23 days - #71	6 mo 9 days - #64	11 sec	🔄
⚠️	☁	...	2 mo 24 days -	2 mo 16 days -	1 min 25 sec	🔄

Dashboard ▸ moteur1-staging ▸ VIP-Portal ▸ #162

- 🏠 Back to Project
- 🔍 Status
- 📄 Changes
- 🖨️ Console Output
- 📄 Edit Build Information
- 🚫 Delete build '#162'
- 📄 Polling Log
- 🔗 Git Build Data

✓ **Build #162 (Sep 7, 2021 ...)** Keep this build forever

Started 1 mo 6 days ago  
Took **0.78 sec**

📄 **Changes**

- prepare release 2.1 (#301) ([commit: 76cd68c](#)) ([details](#) / [githubweb](#))

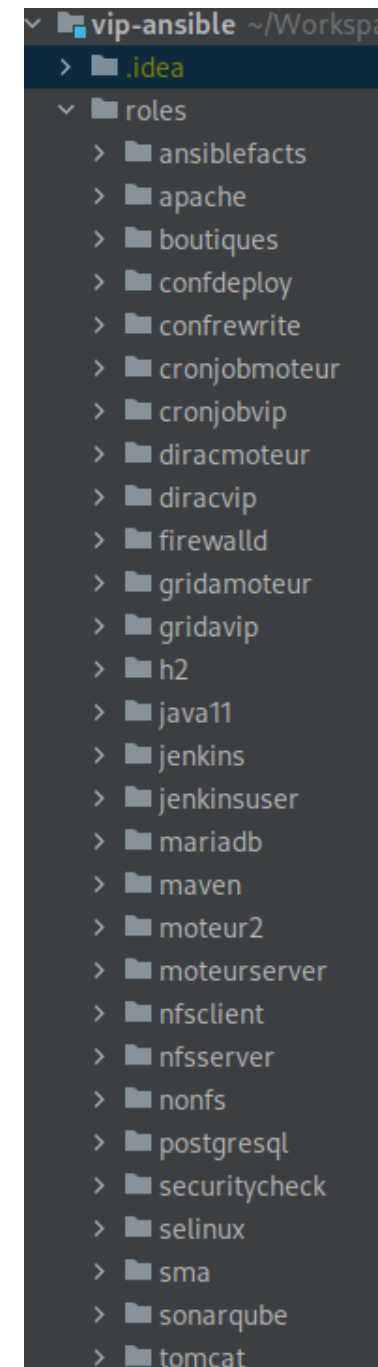
📄 **Started by an SCM change**

🔗 **Revision:** 76cd68c9043b903971b4545bc595a6f1b313e74d

- refs/remotes/origin/develop

# Our solution for CD

- Done with Ansible
- With Ansible, describe deployment for each software element
  - How to install / update the software
  - How to install / update the configuration files
- Many Yaml files with precise instructions
  - Packages / Files / Permissions / Services...



# CI and CD

- Jenkins and Ansible can work together
- On every change on our “develop” branches on github
  - Jenkins compiles, tests, and builds the package
  - Jenkins asks Ansible to update the package on the development platform

# Use Ansible to deploy a VIP test instance

- With Ansible alone : install all the VIP infrastructure from scratch on brand new Vms
- Can use several VMs with Centos images
- Edit some config files
  - IP adress
  - Activate Dirac/NFS/etc options as desired
- Call `$ ansible-playbook -i vip-config/hosts prod.yml`
- 10 minutes later : a brand new VIP instance ready to be tested

# Conclusion

- Big effort (5 months internship) but big improvement on VIP
- Faster and less stress to develop and test
- Need a more complete test suite
- Better in the end for VIP users
- Advice :
  - Think about deployment / tests as soon as possible

Thank you for your attention!

Questions?