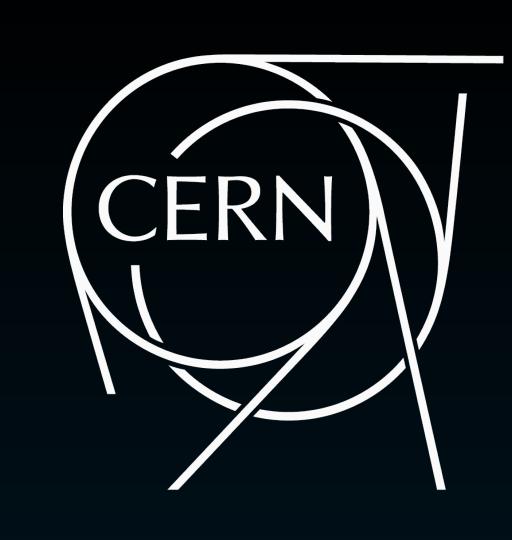


## **ATLAS Distributed Computing Presents** THE RETURN OF





Its Central Services core

#### **ATLAS Distributed Computing (ADC) Central Services**

ADC is responsible for managing

- 700+ virtual machines
- 43 projects hosted in OPENSTACK
- 5310 allocated CPU Cores

1/3<sup>rd</sup> of the cores are used by 3 Projects in OPENSTACK: Build, Panda, and Rucio. The remaining 2/3<sup>rds</sup> cover projects from data preparation to detector safety systems.

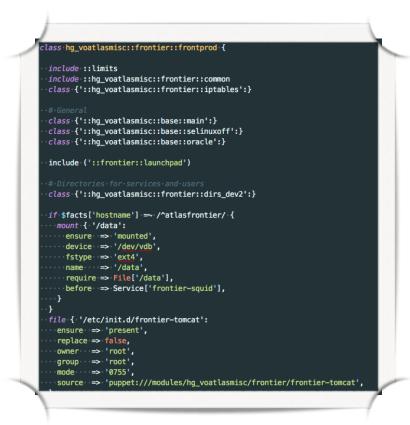
At the core of ADC, is the Central Services, who's job it is to support and maintain all the different applications and systems, be the interface between CERN IT and the service managers of the various projects, all while ensuring that security and good computing practises are being adhered to, all keeping a smile on our face.

### **Design Philosophy**

Central Services coordinators decided to follow the design principle noted by the U.S. Navy in 1960. The is an acronym for "Keep it Simple Stupid". Having a system that is overly sophisticated and takes forever to repair and maintain, wastes precious resources that could be used elsewhere.

With this philosophy in mind, our goal is Simplification via Automation, Trying to automate as much as possible by removing the need for human intervention and using tools that match a minimalistic set of requirements, without a massive overhead required for training and administration:

- Puppet
- Bash
- Continuous Integration in Gitlab
- InfluxDB / Grafana
- RunDeck



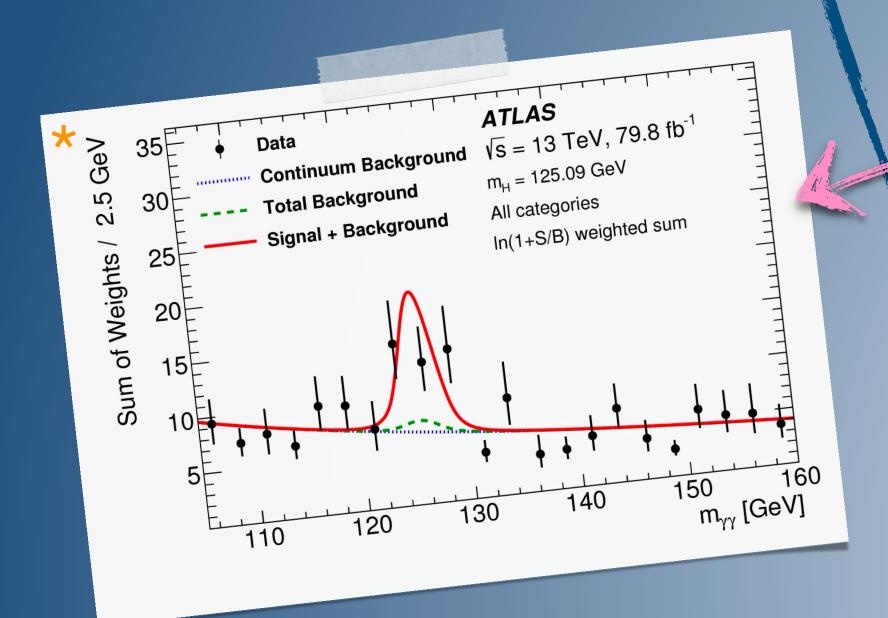


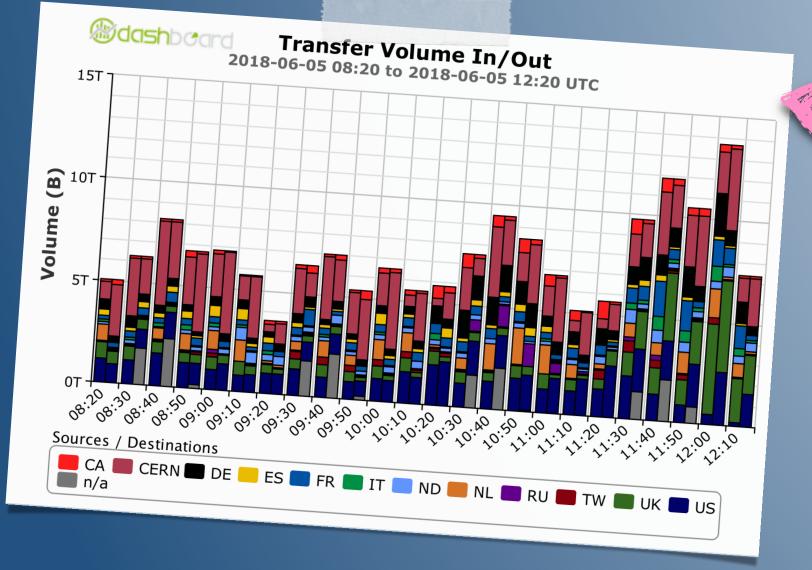
- Configuration automation.
- Reproducibility.
- Logs of changes.
- Security: tracking of any deviation.
- •Reinstall a node in 45 minutes.
- Used by CERN.



- Administration of 30 petabytes of data, 1600 Users, 89 groups.
- Inject data from EOS.
- Host Metrics.
- OpenStack Projects.
- Monitor and analyse usage.





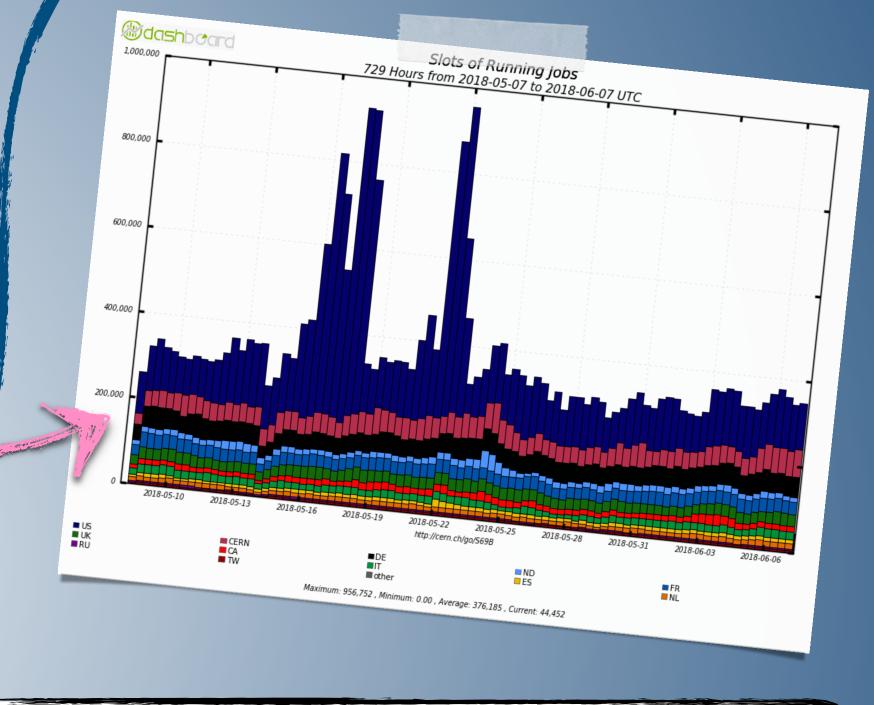




Tier-2 sites

(about 160)

Tier-1 sites



### #!/bin/bash

- Stable! Bash has been around for nearly 30 years.
- Integrated into every Linux OS supported by CERN.
- No need to rewrite code for specific version or regular updates eg: Python or Java.

**BASH** works, every time, every where.

# **-**RUNDECK

- Simplifies repetitive tasks.
- Automatic reboot of entire project:
- Adds/Removes nodes from Load Balancers.
- Checking of Services.
- Updates OS and Packages.
- •~ 8 hours -> 2 hours.



# GitLab

### **Continuous Integration**

- Syntax of code.
- Lint checks. Puppet validation.
- Monitor submissions.
- Automated merging.

Status	Pipeline	Commit	Stages	
	#396412 by 🐪	<b>Ymaster -o-</b> c28b1b40 <b>%</b> fix obsolete repo for APF	<b>⊘</b>	⊙ 00:01: ∰ a day a
	#396181 by 🧶	Ÿ <b>master -o</b> - c832eeb4 remove proxy from aipanda023	<b>⊘</b>	⊙ 00:01: ∰ 2 days a
⊚ passed	#396175 by 🧶	<b>V</b> master -o- dc4d839f new puppet manifest for aipanda	<b>⊘</b>	⊙ 00:01: ≘ 2 days a
	#394592 by 🎩	Ÿ <b>master -o</b> - d9740795 fix pipeline	<b>⊘</b>	⊙ 00:01:
⊗ failed	#394584 by	<b>ymaster - a</b> 9ecf970 fix typo	×	⊙ 00:01:
	#394207 by 🧶	Ÿ <b>master -o-</b> e334482b fix pipeline	<b>⊙</b>	♂ 00:00: 簡 5 days a
	#394186 by 🌑	Ÿ master -o- d74cc1bd fix firewall issue on CSOPS-1350	*	♂ 00:00:

### **Conclusion**

There is still a lot that can be done and no system is infallible, however we feel that if we can "make everything as simple as possible, but not simpler", we will be able to create an easily maintainable environment that is not only capable of handling the current working systems, but keep things running well into run 3 at the LHC.

### FEATURING:

VOZAL7:

Chris Lee (University of Cape Town (ZA))

MANAZEMENT: 

Alessandro Di Girolamo (CERN)

Johannes Elmsheuser (Brookhaven National Laboratory (US))

- **JUPPORT:** Alexey Buzykaev (Budker Institute of Nuclear Physics (RU)) Emil Obreshkov (University of Texas at Arlington (US))
  - Ivan Glushkov (University of Texas at Arlington (US)) Shaojun Sun (University of Wisconsin Madison (US))



ATLAS Press release: http://atlas.cern/updates/press-statement/atlas-observes-tth-production