




Operating Ceph from the Ceph Dashboard

Past, present and future

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Part 1

Introduction - Ceph Dashboard

Why and Who needs a “dashboard”?

History: Where do we came from?

Architecture

Key features: Quincy (17.2.z)

Roadmap: Reef (18.2.z)

Demo

> whoami?



Nizamudeen A - nizamial09 

2023 - Software Engineer at IBM.

2022 - Became component lead of Ceph Dashboard in upstream and downstream.

2020 - As an Associate joined Ceph Dashboard team.

2019 - Started as an intern and was contributing to the rook and ocs operator at Red Hat.

> whoareyou?



?

Who of you ever **tried** or are currently using **Ceph**?

What **for**? RBD? CephFS? S3? NFS?

Anyone using some **dashboard/GUI**? Calamari? OpenATTIC?

Anyone tried/used **Ceph Dashboard**?

What is a **Dashboard**?

dashboard

/ˈdæʃbo:d/

- 1.** The panel facing the driver of a vehicle or the pilot of an aircraft, containing instruments and controls.

What is a **Dashboard**?

Why Ceph-Dashboard is not *just* a Dashboard for Ceph?

dashboard

/ˈdʌʃbɔːd/

- 1.** The panel facing the driver of a vehicle or the pilot of an aircraft, containing instruments and controls.

Who needs a Dashboard?



Distributed Systems are complex/complicate

install
configure
operate
maintain
troubleshoot



Ceph CLI doesn't provide unified User Experience

ceph
rados
rbd
radosgw-admin
cephadm



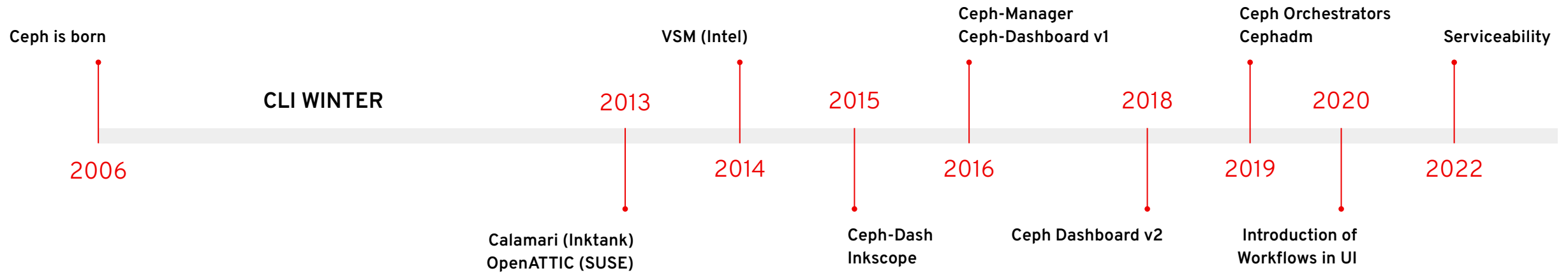
CLI is great but..

SSH vs. HTTPS
CLI vs. REST
text vs. graphics

Reference:

"Hey, You Have Given Me Too Many Knobs!": http://cseweb.ucsd.edu/~tixu/job_search/xu.fse15.pdf

Where do we come from?



Usual Suspects

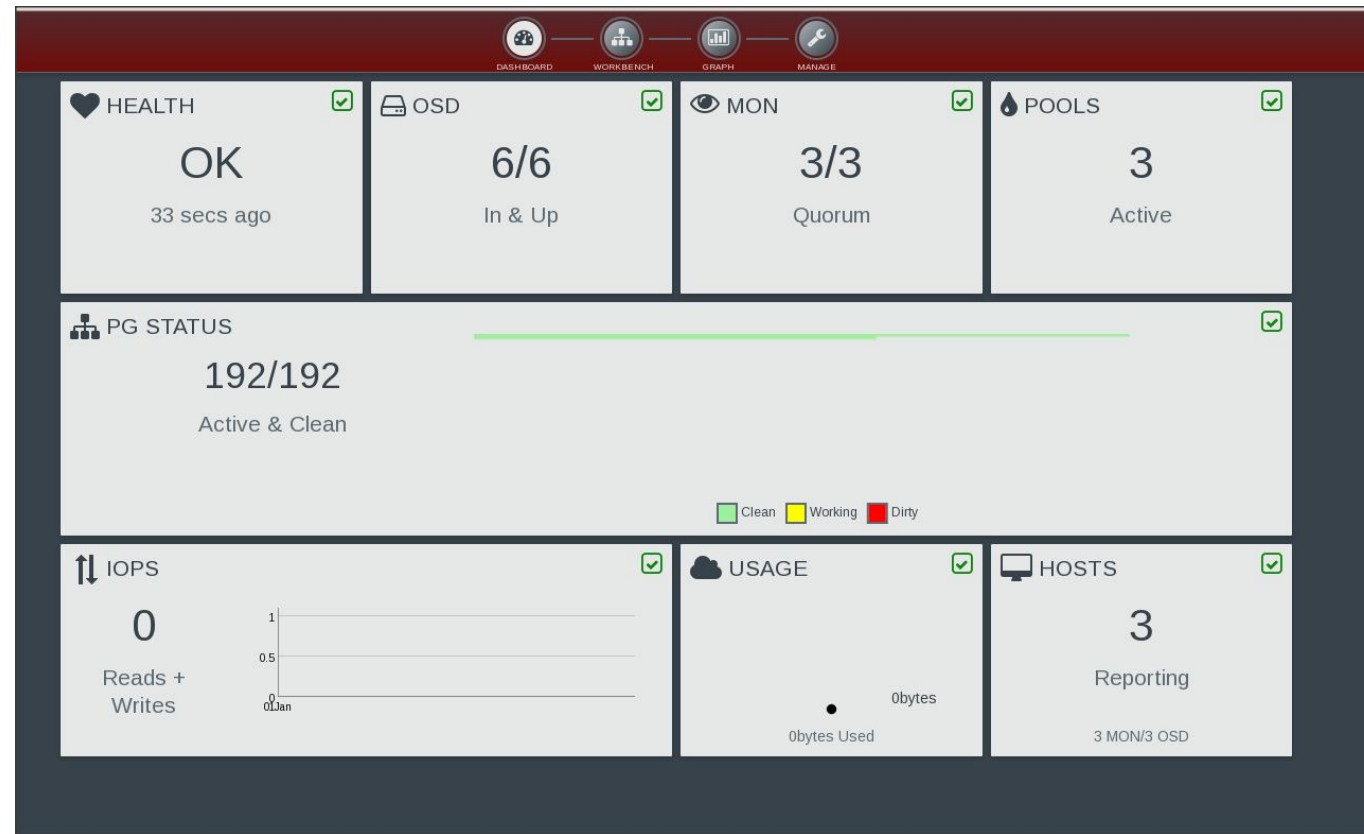
Ceph GUIs

	CALAMARI	OPENATTIC	VSM	INKSCOPE	CEPH-DASH	CEPH-DASHBOARD
WHO	Inktank / Red Hat	ITNovum / SUSE	Intel	Orange Labs		Ceph Community
HOW LONG	2013 - 2018	2013 - 2019	2014 - 2016	2015 - 2016	2015 - 2017	2018 -
CEPH MGMT	Medium	Very Advanced	Advanced	Limited	Monitor-only	Very Advanced
TECHNOLOGY STACK	Salt, Python, Django, REST, ZeroRPC, JS	Salt, Python, Django, AngularJS	Python, Agent-Controller, OpenStack Cinder, JS	Python, MongoDB	Python, Flask, InfluxDB/Graphite	Ceph-Mgr, Python, Angular, Grafana
LICENSE	LGPL 2.1	GPL 2	Apache 2.0	Apache 2.0	BDS 2	LGPL-3
URL	github.com/ceph/calamari	github.com/openattic/openattic	github.com/intel/virtual-storage-manager	https://github.com/inkscope/inkscope	github.com/Crapworks/ceph-dash	github.com/ceph/ceph/tree/master/src/pybind/mgr/dashboard

Sources:

Paul Evans, SysAdmin's Toolbox: Tools for Running Ceph in Production: https://de.slideshare.net/Inktank_Ceph/07-ceph-days-sf2015-paul-evans-static

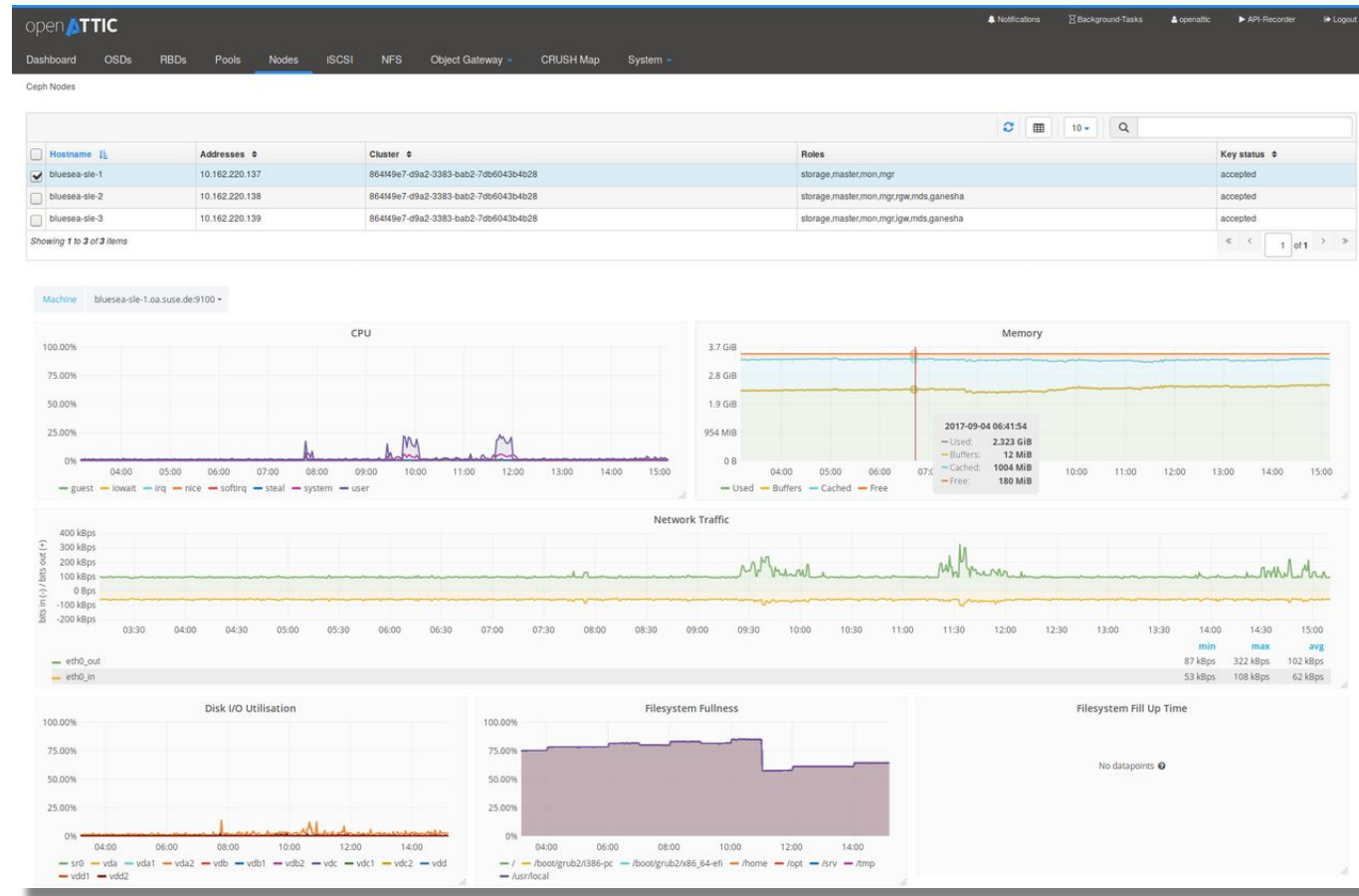
Calamari



Screenshot:

<https://ceph.com/planet/ceph-calamari-the-survival-guide/>, <https://www.openattic.org/media.html>, https://01.org/sites/default/files/documentation/virtual_storage_manager_1.0_operations_guide_0.pdf, <https://github.com/inkscope/inkscope>.


OpenATTIC



Screenshot:

<https://ceph.com/planet/ceph-calamari-the-survival-guide/>, <https://www.openattic.org/media.html>, https://01.org/sites/default/files/documentation/virtual_storage_manager_1.0_operations_guide_0.pdf, <https://github.com/inkscope/inkscope>.

VSM



Virtual Storage Manager for Ceph

Dashboard

[Cluster Status](#)

Server Management

Manage Servers

Manage Devices

Cluster Management

Create Cluster

Manage Pools

Manage Storage Group

All Pools

Logged in as: admin [Sign Out](#)

Storage Pools

[+ Add Cache Tier](#) [+ Remove Cache Tier](#) [+ Create Replicated Pool](#) [+ Create EC Pool](#)

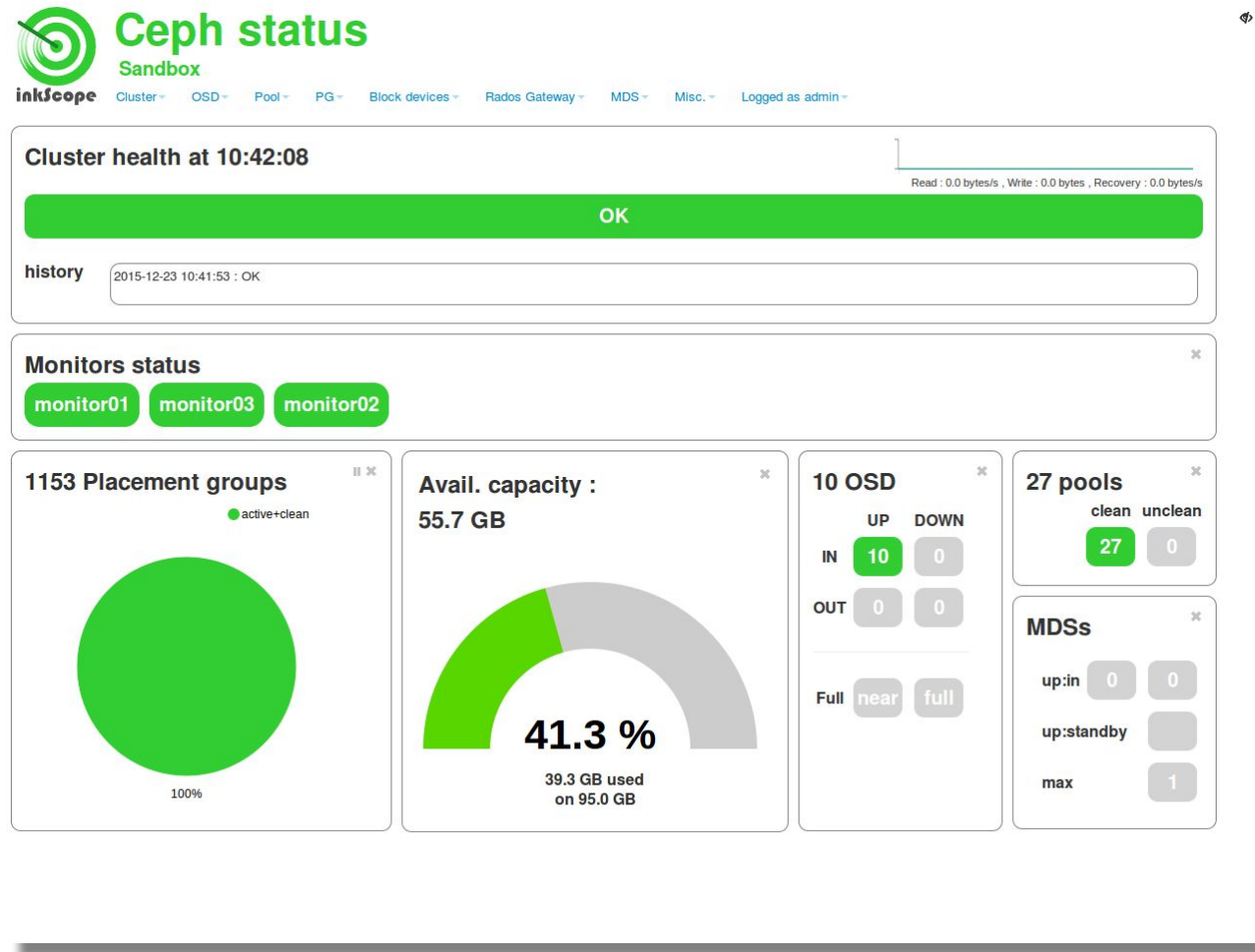
ID	Name	Primary Storage Group	Replica Storage Group	Placement Group Count	Size	Quota (GB)	Cache Tier Status	Erasure Code Status	Status	Created By	Tag
0	data	storage_group1	-	64	3	-	-	-	running	ceph	SYSTEM
1	metadata	storage_group1	-	64	3	-	-	-	running	ceph	SYSTEM
2	rbd	storage_group1	-	64	3	-	-	-	running	ceph	SYSTEM
3	capacity_pool	storage_group1	-	100	3	-	-	-	running	VSM	capacity_pool
4	high_performance_read_pool	storage_group2	storage_group1	100	3	-	-	-	running	VSM	high_performance
5	cold_storage_pool	storage_group1	-	3	3	-	-	default_profile	running	VSM	cold_storage
6	high_performance_pool	storage_group2	-	100	3	-	Cache pool for:storage_tier_pool	-	running	VSM	high_performance
7	storage_tier_pool	storage_group4	-	3	3	-	Storage pool for:high_performance_pool	default_profile	running	VSM	storage_tier_poo
8	ec_cold_storaraage	storage_group3	-	3	3	-	-	default_profile	running	VSM	EC cold

Displaying 9 items

Screenshot:

<https://ceph.com/planet/ceph-calamari-the-survival-guide/>, <https://www.openattic.org/media.html>, https://01.org/sites/default/files/documentation/virtual_storage_manager_1.0_operations_guide_0.pdf, <https://github.com/inkscope/inkscope>.

InkScope



Screenshot:

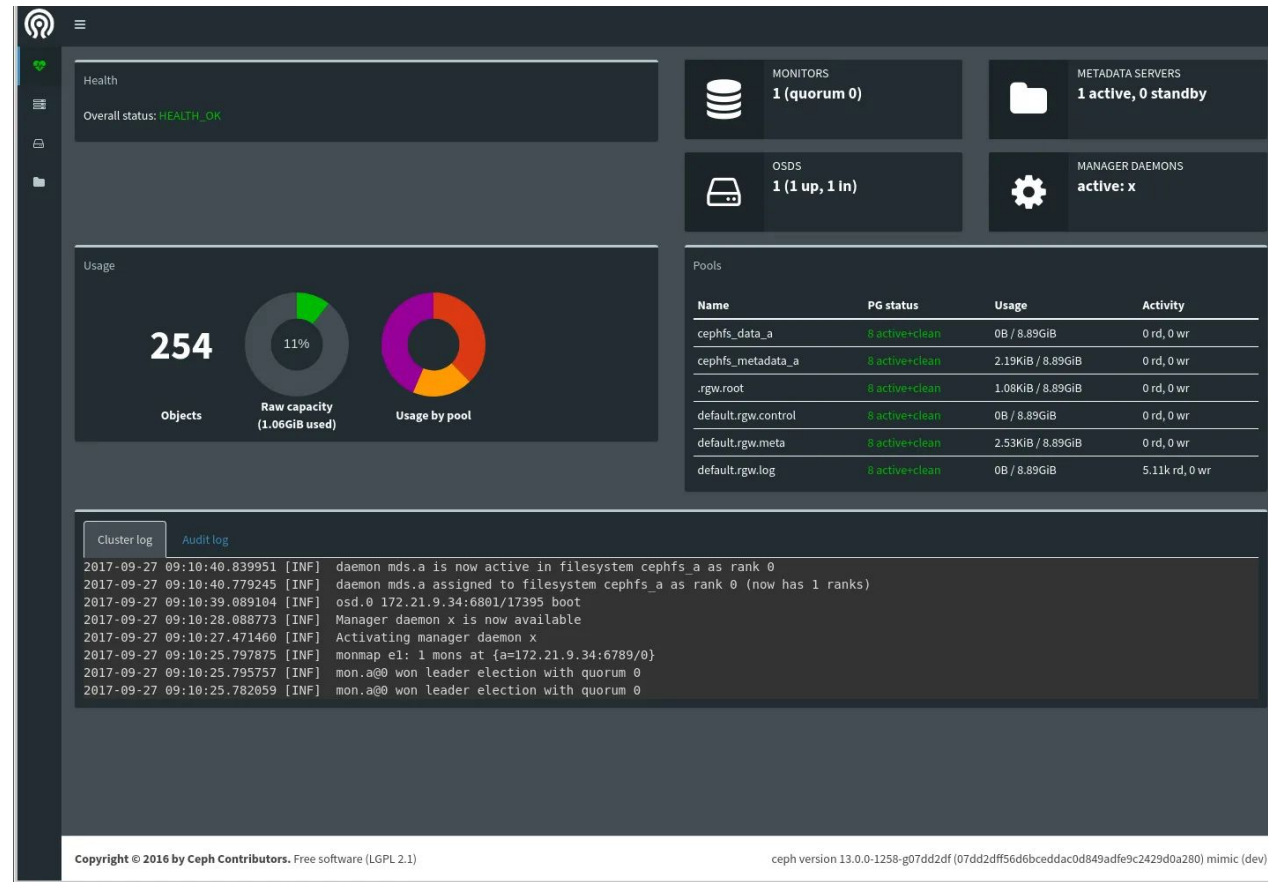
CephDash



Screenshot:

<https://ceph.com/planet/ceph-calamari-the-survival-guide/>, <https://www.openattic.org/media.html>, https://01.org/sites/default/files/documentation/virtual_storage_manager_1.0_operations_guide_0.pdf, <https://github.com/inkscope/inkscope>.

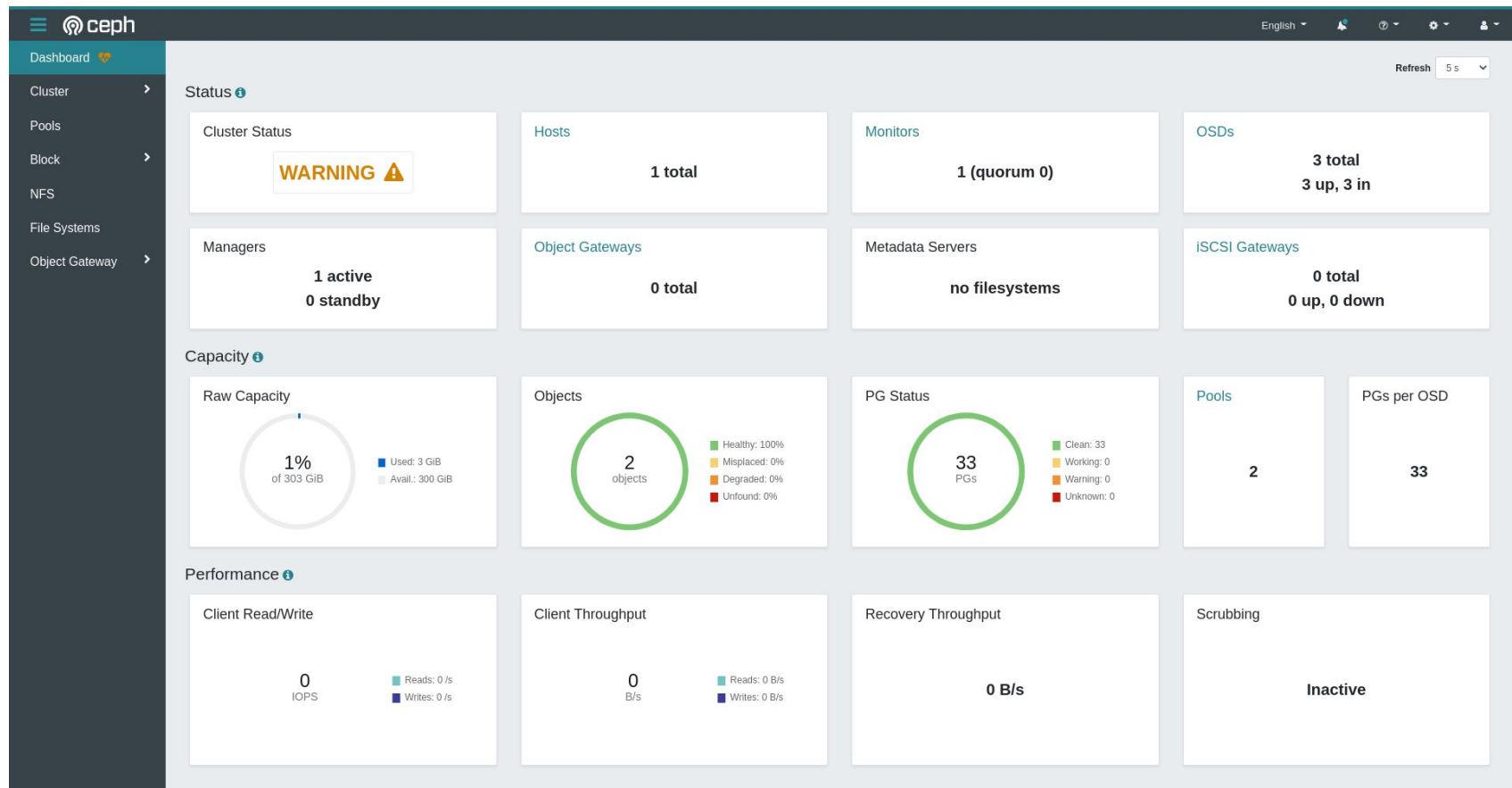
Ceph-Dashboard v1



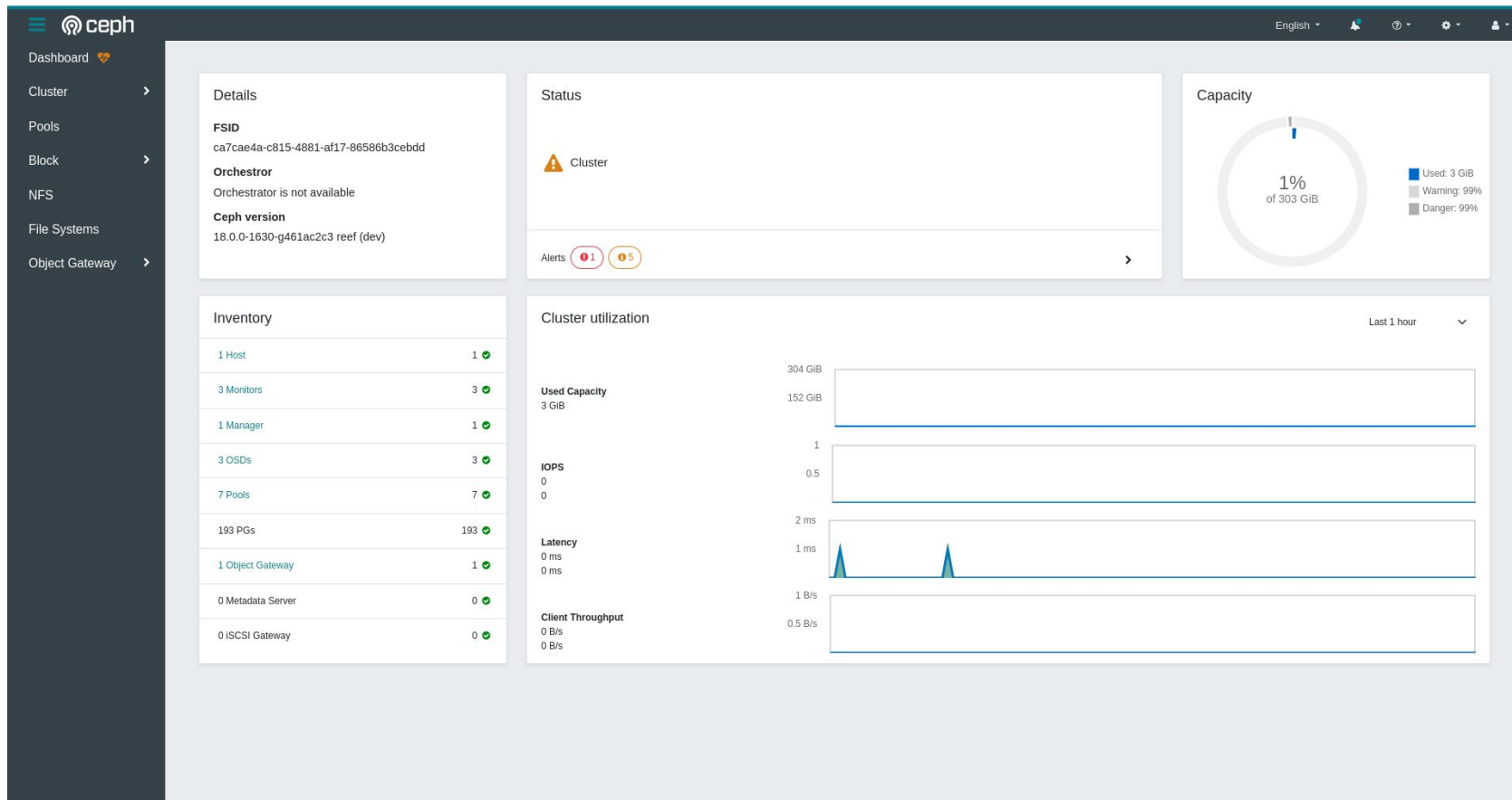
Screenshot:

<https://ceph.com/planet/ceph-calamari-the-survival-guide/>, <https://www.openattic.org/media.html>, https://01.org/sites/default/files/documentation/virtual_storage_manager_1.0_operations_guide_0.pdf, <https://github.com/inkscope/inkscope>.

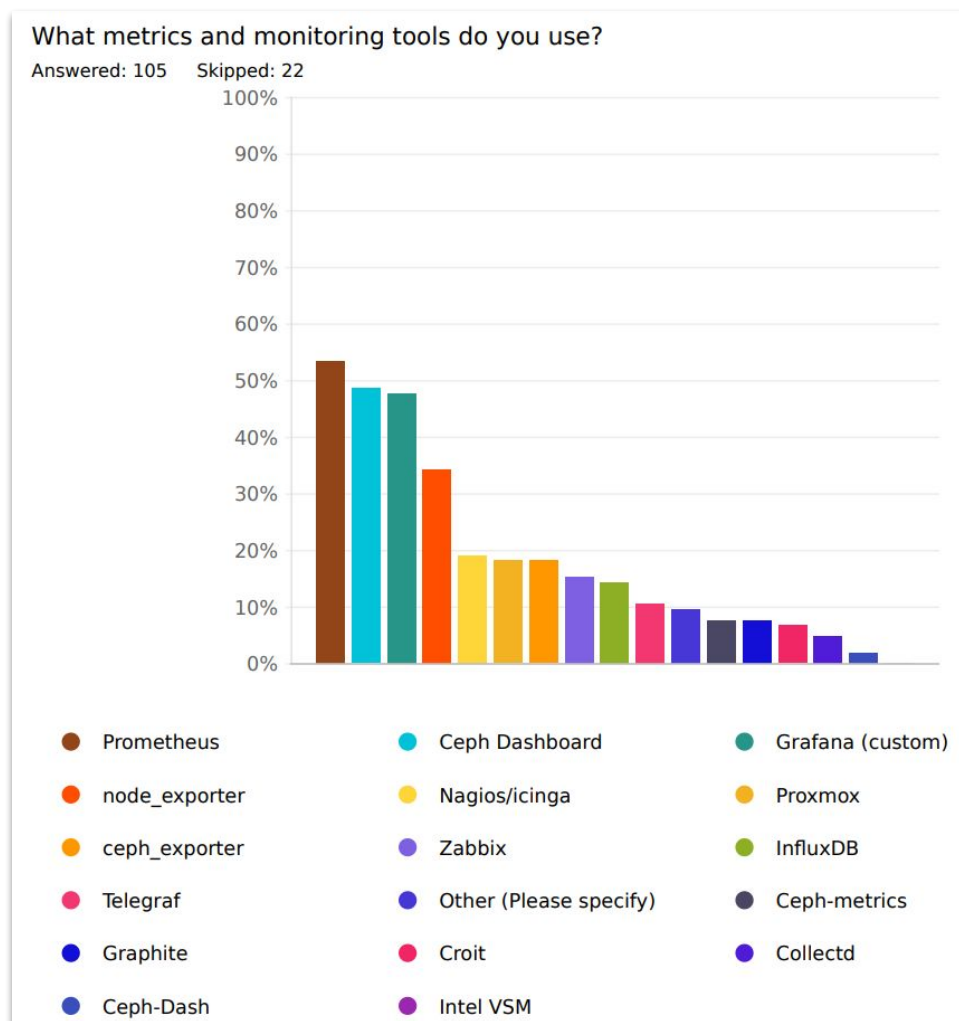
Ceph-Dashboard v2



Ceph-Dashboard v3 (soon)



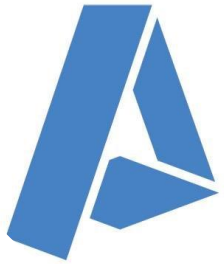
How Ceph Users monitor Ceph?



Source:

Ceph User Survey 2022: <https://ceph.io/en/news/blog/2022/ceph-user-survey-results-2022/images/ceph-user-survey-results-2022.pdf>

Ceph Dashboard v2



OpenATTIC

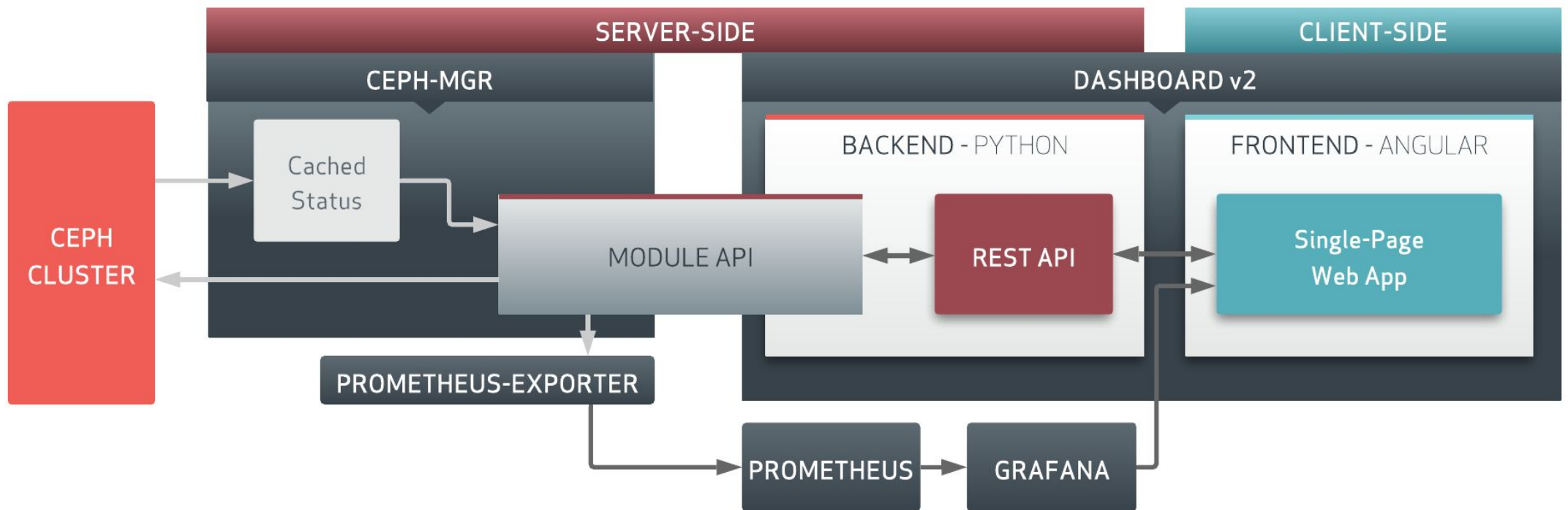


Ceph Manager



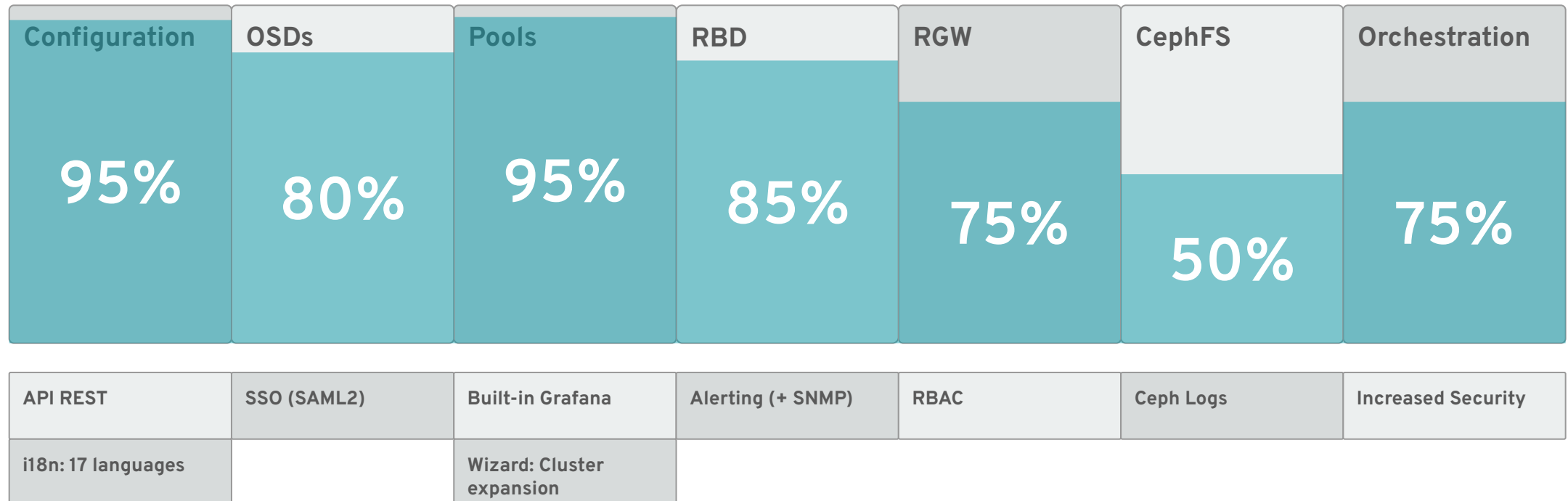
Ceph Dashboard v1

Anatomy of Ceph Dashboard



What can I do from the **Ceph Dashboard?**

Quincy (17.2.z)

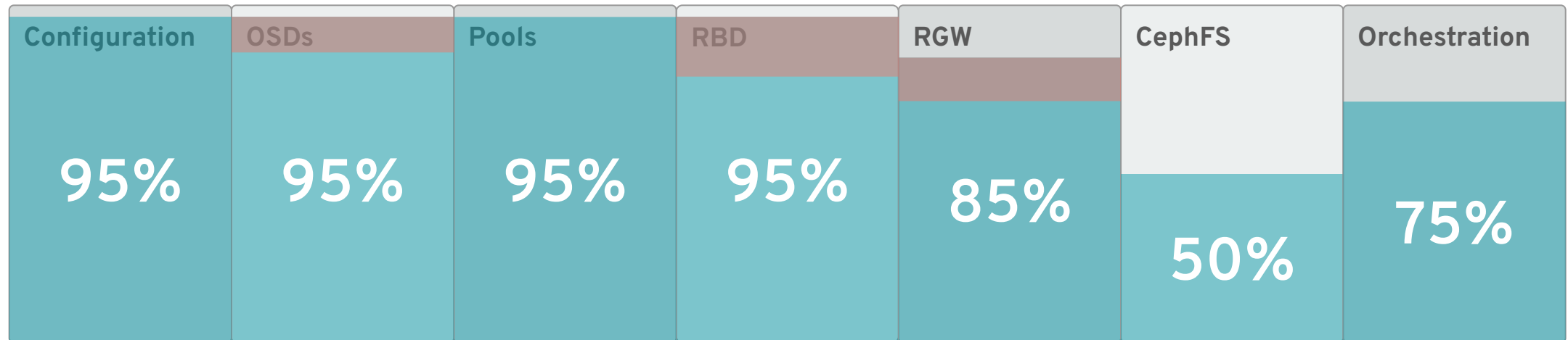


Sources:

Quincy 12.2.3

What can I do from the **Ceph Dashboard?**

Reef (18.2.z)



API REST	SSO (SAML2)	Built-in Grafana	Alerting (+ SNMP)	RBAC	Centralized Logging	Increased Security
i18n: 17 languages	a11n: WCAG-AA	Wizard: Cluster expansion	Wizard: OSD creation	RGW Server Side Encryption	Ceph Auth Management	RBD Snapshot mirroring

Sources:

Quincy 12.2.3

Goals: Beyond Reef

- Improving the Usability Experience
- Low code initiative
- Replacing Grafana with built-in charts
- CephFS Integration
- Multi-cluster monitoring & management
- Feature parity with CLI

Ceph-Dashboard Demo

- **Build:**
 - Ceph main (7f80f5de91)
- **Environment:**
 - Ceph-Dev/kcli/cephadmbox:
<https://github.com/rhcs-dashboard/ceph-dev/>
- **Dashboard:** <https://0.0.0.0:11000>

Part 2

Contributing to the Ceph Dashboard

As a **User**

As a **Documenter** or **Translator**

As a **Developer**

Ceph Dashboard **Community**

How to **contribute** to the Ceph Dashboard?

Choose your own adventure



User



Translator - Documenter



Developer

Source:

<https://unsplash.com/photos/gp8BLyaTaA0> , <https://unsplash.com/photos/ieic5Tq8YMk> , https://unsplash.com/photos/y02jEX_B0O0



As a **User**

Dashboard is **enabled by default with Cephadm**.

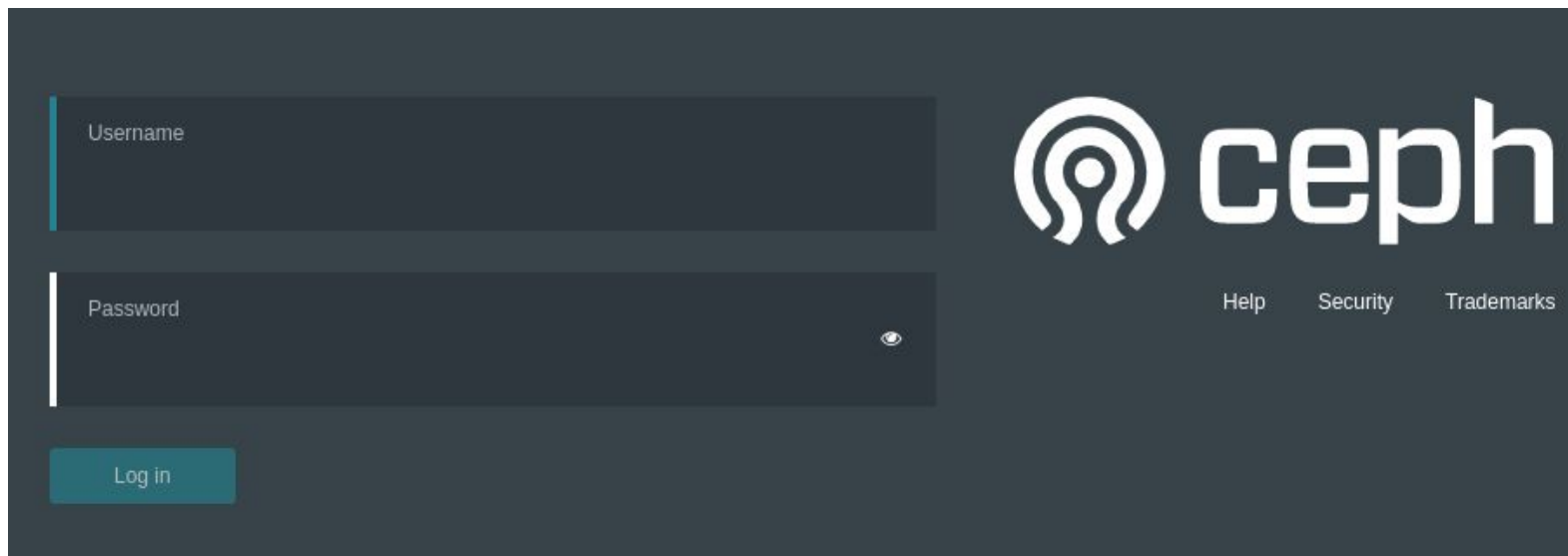
Otherwise, you can enable it manually (<https://docs.ceph.com/en/latest/mgr/dashboard/>):

```
$ ceph mgr module enable dashboard
$ ceph dashboard create-self-signed-cert
$ ceph dashboard ac-user-create admin -i <file_with_password>
$ ceph mgr services
{
  "dashboard": "https://<ip>:<port>/",
  ...
}
```



As a **User**

Give it a **try**:

The image shows a dark-themed login interface for Ceph. On the left, there are two input fields: the top one is labeled 'Username' and has a teal vertical bar on its left side; the bottom one is labeled 'Password' and has a white vertical bar on its left side. Below the password field is a teal 'Log in' button. To the right of the input fields is the Ceph logo, which consists of a stylized circular icon followed by the word 'ceph' in a lowercase, sans-serif font. Below the logo, there are three links: 'Help', 'Security', and 'Trademarks'.



As a **User**

Share your **experience** or ask for **help**

ceph-users@lists.ceph.com

IRC: OFTC #ceph-dashboard

Report **issues**, **suggestions**, or new **features**

Report an issue

Ceph Tracker API Key * ✓

Project name * ✓

Tracker * ✓

Subject * ✓

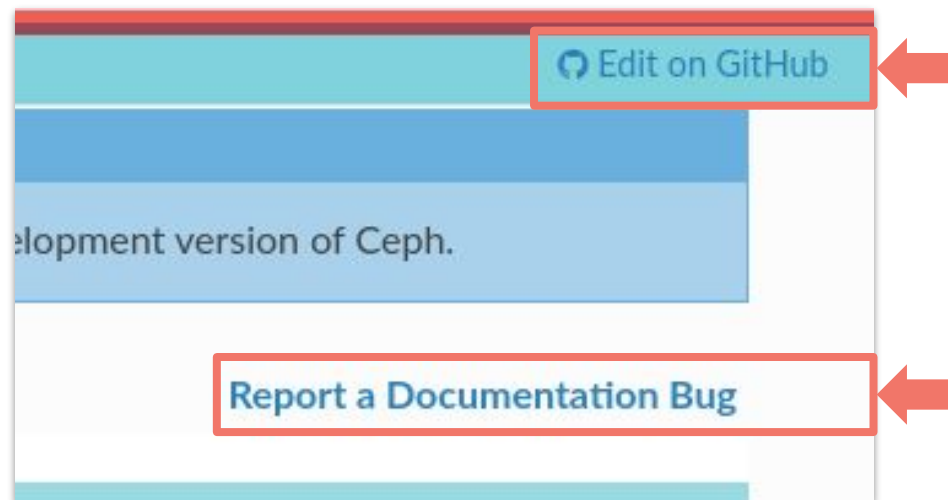
Description *

Cancel Submit



As a **Documenter**

- Where are Dashboard docs?
 - <https://docs.ceph.com/en/latest/mgr/dashboard/>
- You may report **issues** or review, amend or extend docs yourself:





As a **Translator**

- You may help translate the Dashboard to other languages:
 - <https://www.transifex.com/ceph/ceph-dashboard/dashboard>
 - Currently available: Chinese (Cantonese), French, German, Italian, Japanese, Portuguese, Spanish, Korean, Czech, Indonesian, Polish, Finnish and Norwegian.
 - Persian and Hungarian have no translators



As a **Developer**

How to start:

- Ceph devels Mailing List: dev@ceph.io
- IRC: OFTC #ceph-dashboard
- Docs:
 - https://docs.ceph.com/en/latest/dev/developer_guide/
 - https://docs.ceph.com/en/latest/dev/developer_guide/dash-devel/



As a **Developer**

Where is the Dashboard code?

- **Back-End:**
 - Python 3.6
 - <https://github.com/ceph/ceph/blob/main/src/pybind/mgr/dashboard>
- **Front-End:**
 - Angular 12 (Typescript) + Bootstrap 4 (CSS)
 - <https://github.com/ceph/ceph/blob/main/src/pybind/mgr/dashboard/frontend>



As a **Developer**




What is Low Code Initiative?

- **No UI skills required:**
“everyone can now extend the *Ceph-Dashboard*”
- **Self-descriptive** back-end
- Similar to Openshift’s “[OLM Descriptors](#)”
- First back-end only feature:
“**Ceph Auth Management**”

```
{  
  path: 'ceph-users',  
  component: CRUDTableComponent,  
  data: {  
    breadcrumbs: 'Cluster/Users',  
    resource: 'api.cluster.user@1.0'  
  }  
}
```



Cluster » Users

Entity 	Caps 	Key 
client.admin	<div>mds: allow * mgr: allow * mon: allow * osd: allow *</div>	*****
client.bootstrap-mds	<div>mon: allow profile bootstrap-mds</div>	*****
client.bootstrap-mgr	<div>mon: allow profile bootstrap-mgr</div>	*****
client.bootstrap-osd	<div>mon: allow profile bootstrap-osd</div>	*****
client.bootstrap-rbd	<div>mon: allow profile bootstrap-rbd</div>	*****

11 total « < 1 of 3 > »

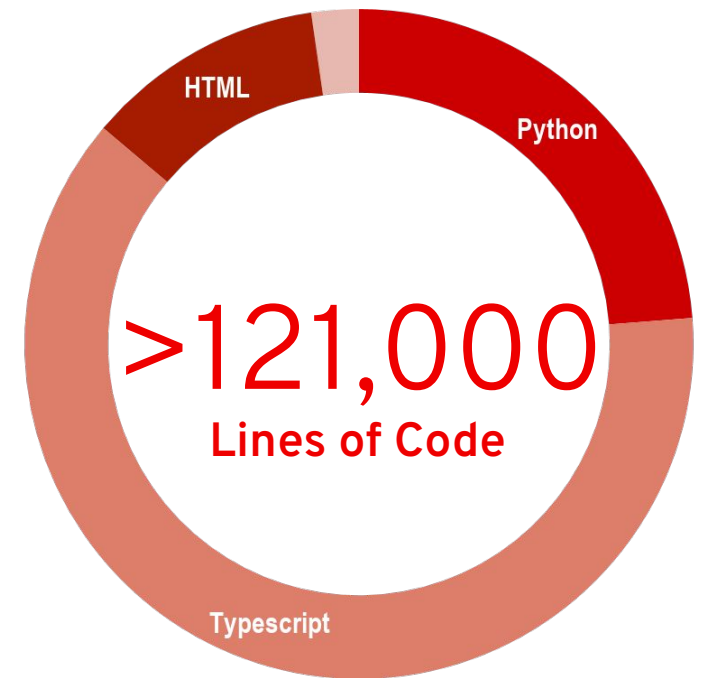
Dashboard in numbers Since Mar. 2018

>2,700

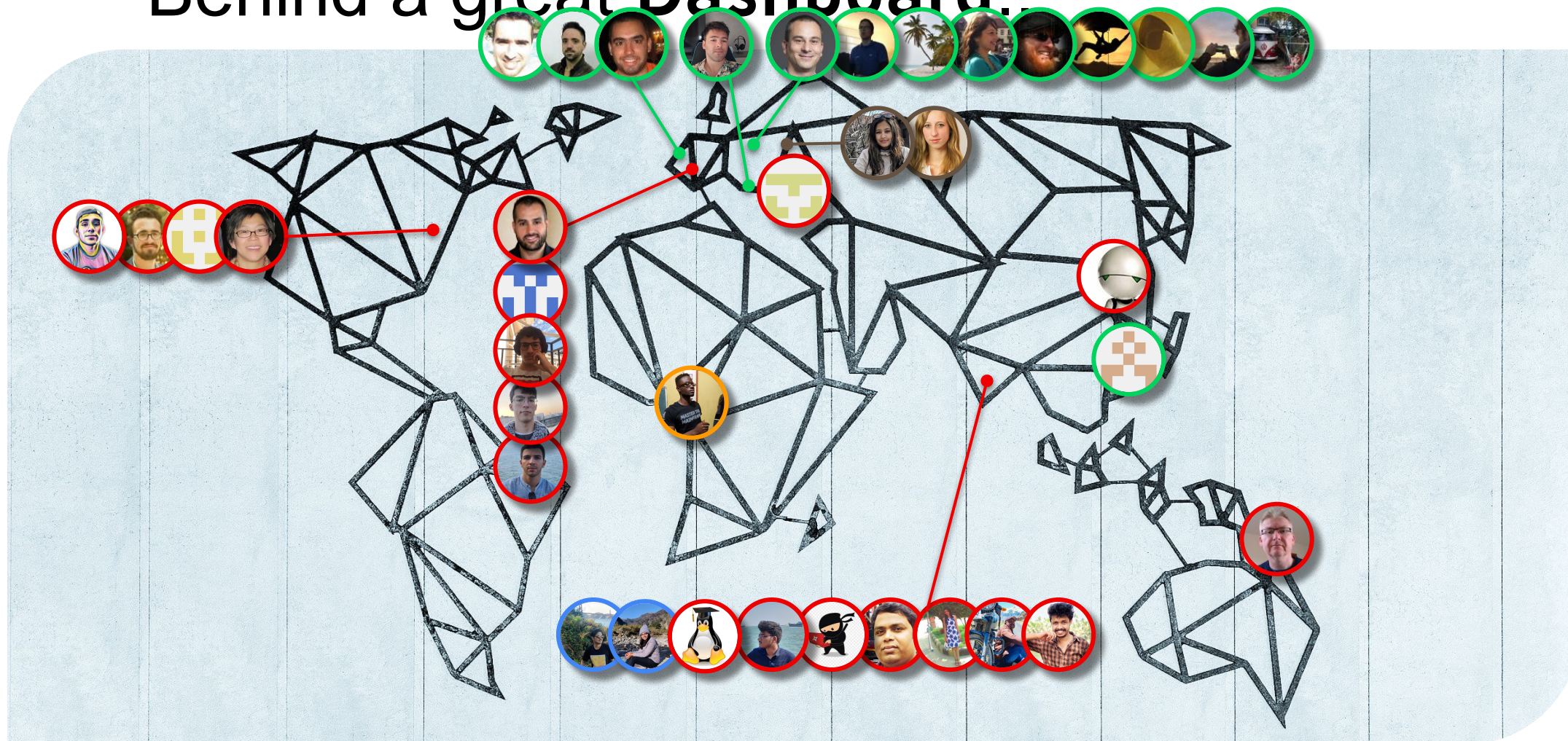
Pull Requests

>4,200

Commits



Behind a great Dashboard...



Map: <https://unsplash.com/photos/6bXvYyAYVrE> (modified)

How do we coordinate?

Stand-up

Daily 11.00am (CET/CEST)
30 min

“Upstream Sync”

Tuesdays, fortnightly 14.00 (CET/CEST)
30 min

“Face to Face”

Yearly (pre-pandemic times)
~3 days

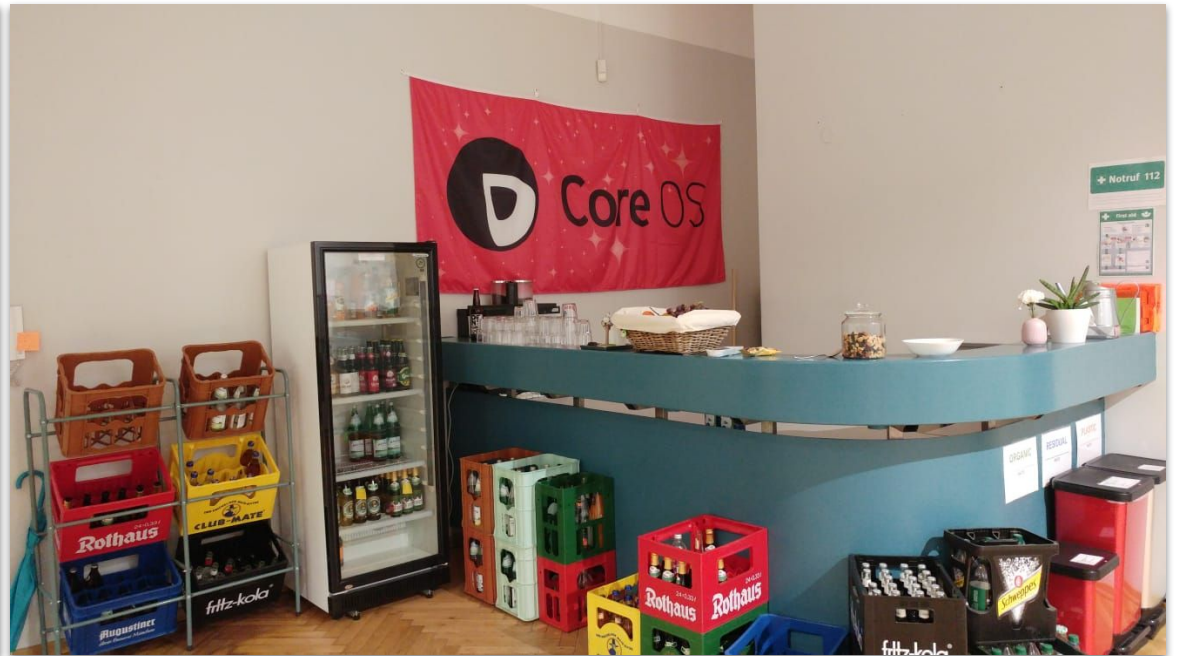
How do we **coordinate**?

1st Face to Face: SUSE HQ, Nuremberg. Jul



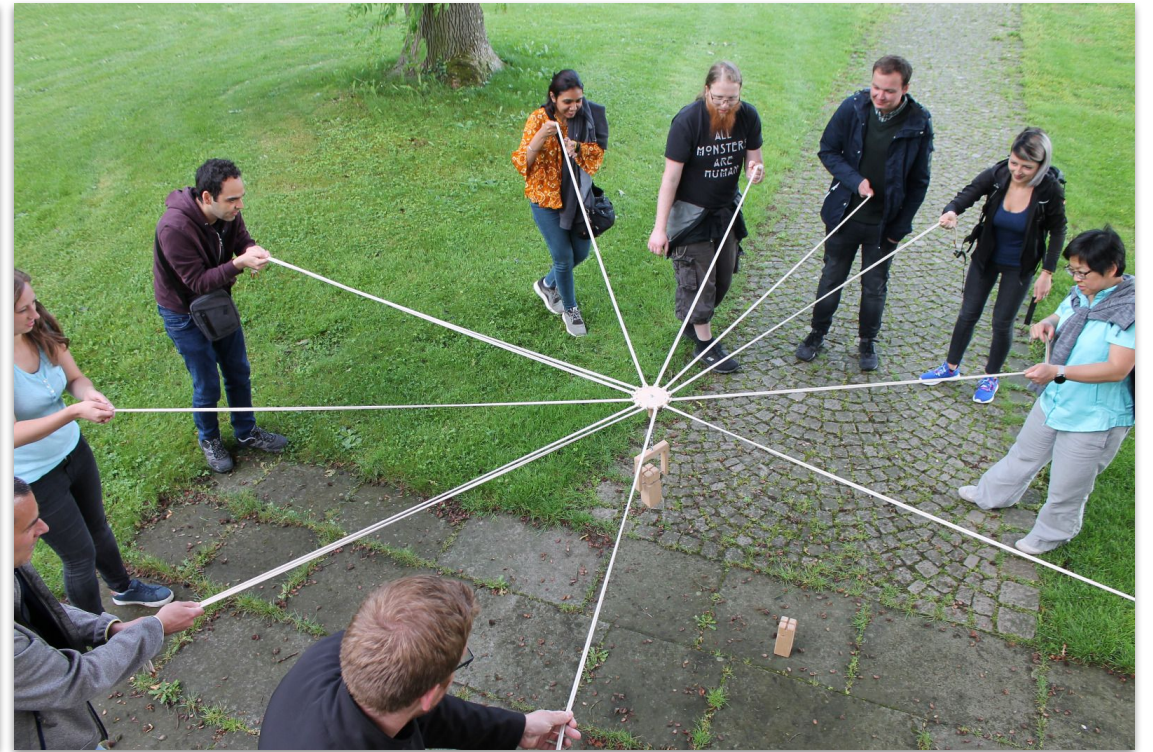
How do we **coordinate**?

Dashboard-Orchestrator F2F, OpenStack Summit Berlin



How do we **coordinate**?

2nd Face to Face, Fulda, Jun 2019



Questions?

Thank you!