



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

/ˈdæʃbɔːd/

- 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

/ˈdɑːʃbɔːd/

- 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



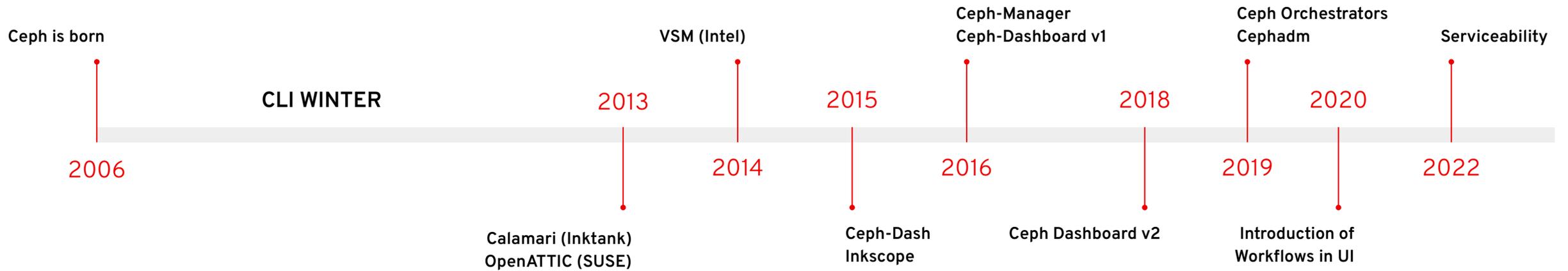
CLI is great but..

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

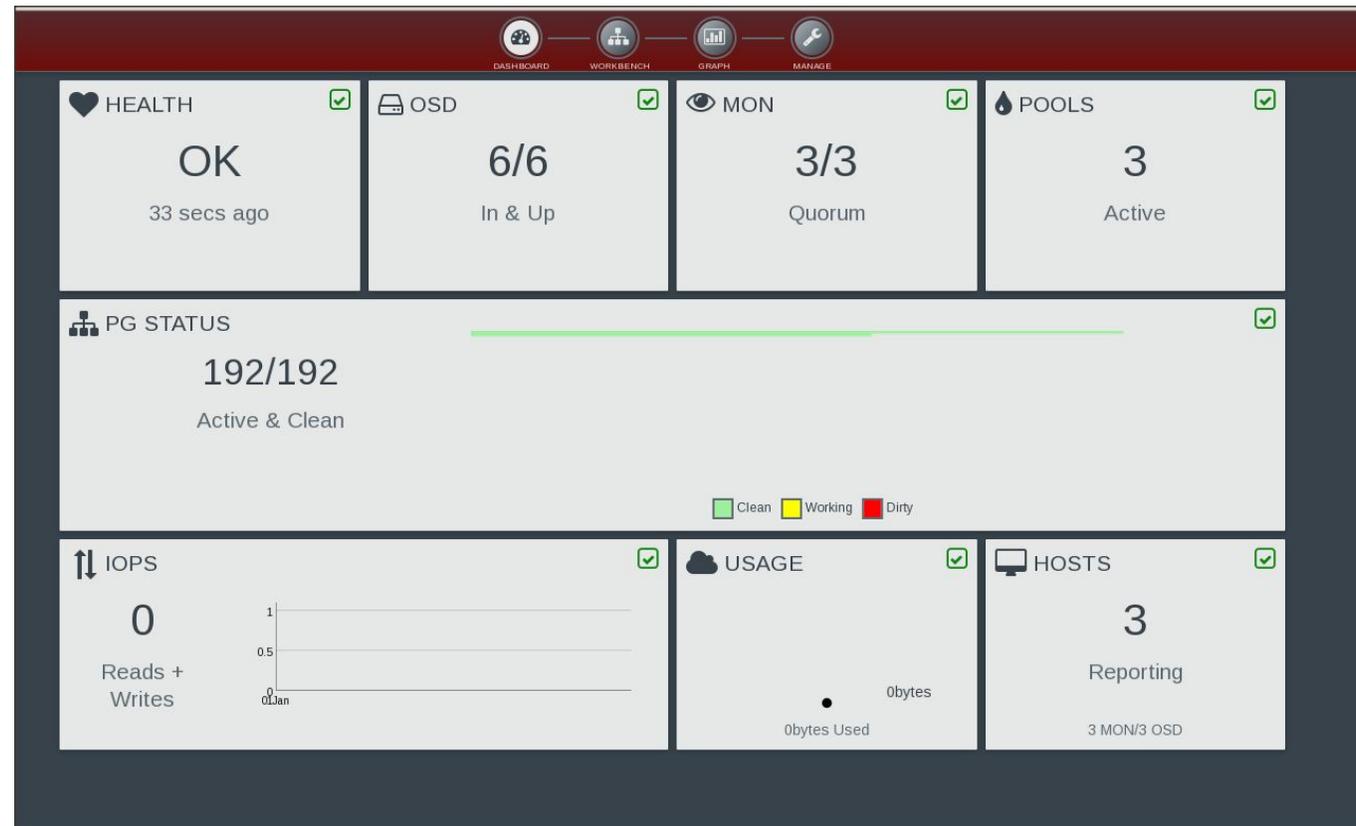
Ceph GUIs

	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

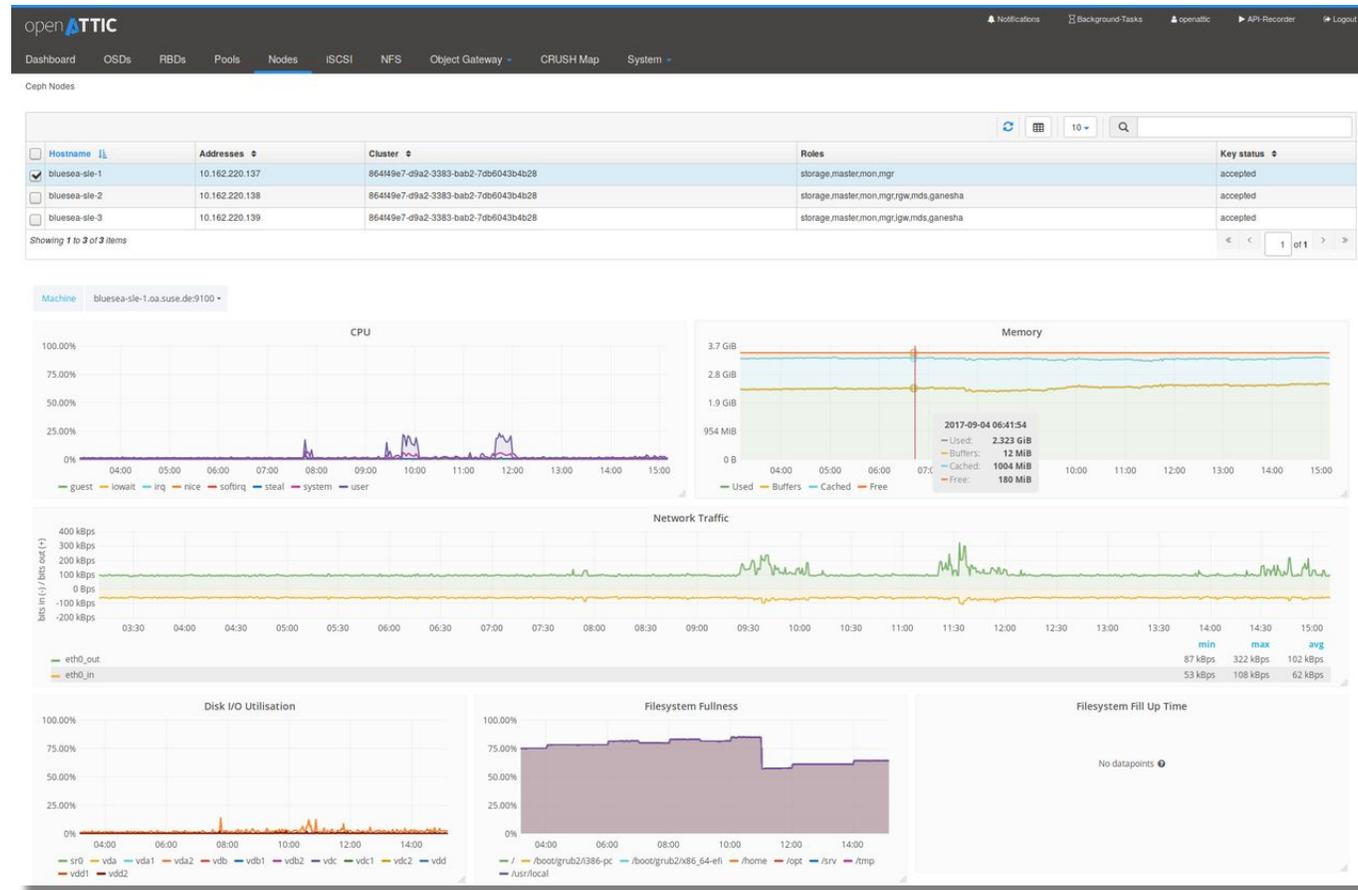
Calamari



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>.

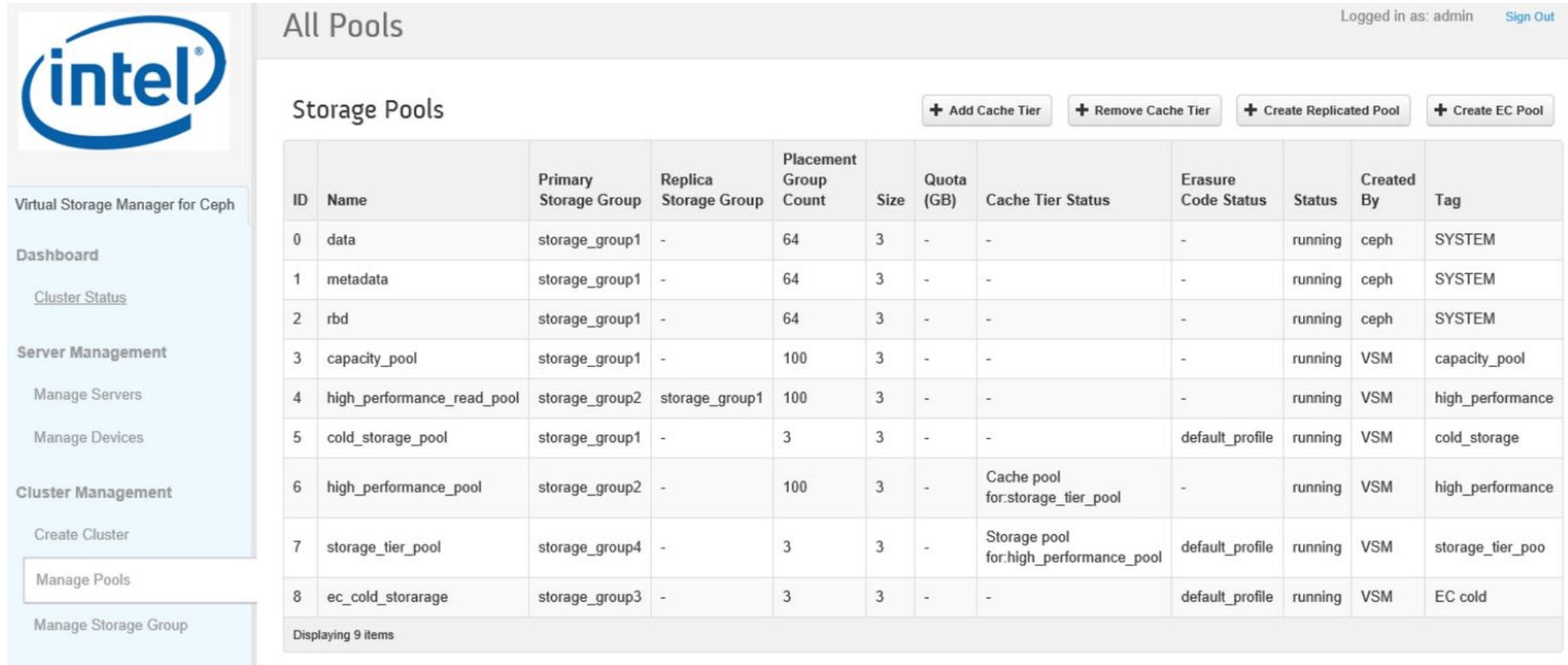
OpenATTIC



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/inkscape/inkscape>.

VSM



The screenshot displays the Intel Virtual Storage Manager (VSM) web interface. The top left features the Intel logo and the text "Virtual Storage Manager for Ceph". A navigation sidebar on the left includes links for "Dashboard", "Cluster Status", "Server Management", "Cluster Management", "Manage Pools", and "Manage Storage Group". The main content area is titled "All Pools" and shows a table of "Storage Pools". Above the table are four buttons: "+ Add Cache Tier", "+ Remove Cache Tier", "+ Create Replicated Pool", and "+ Create EC Pool". The table lists 9 items with columns for ID, Name, Primary Storage Group, Replica Storage Group, Placement Group Count, Size, Quota (GB), Cache Tier Status, Erasure Code Status, Status, Created By, and Tag. The bottom of the table indicates "Displaying 9 items".

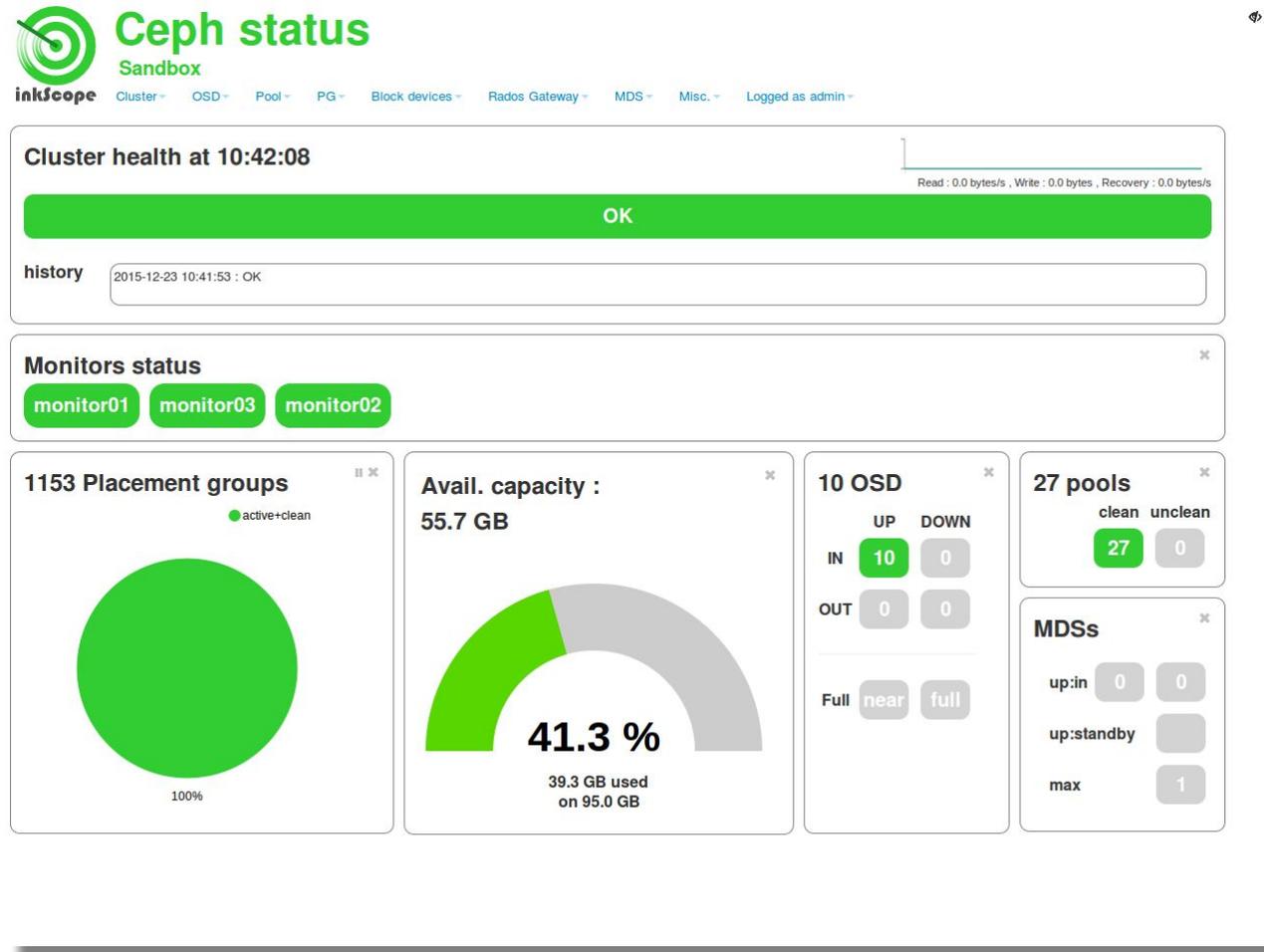
ID	Name	Primary Storage Group	Replica Storage Group	Placement Group Count	Size	Quota (GB)	Cache Tier Status	Erasure Code Status	Status	Created By	Tag
0	data	storage_group1	-	64	3	-	-	-	running	ceph	SYSTEM
1	metadata	storage_group1	-	64	3	-	-	-	running	ceph	SYSTEM
2	rbd	storage_group1	-	64	3	-	-	-	running	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_storagage	storage_group3	-	3	3	-	-	default_profile	running	VSM	EC cold

Displaying 9 items

Screenshot:

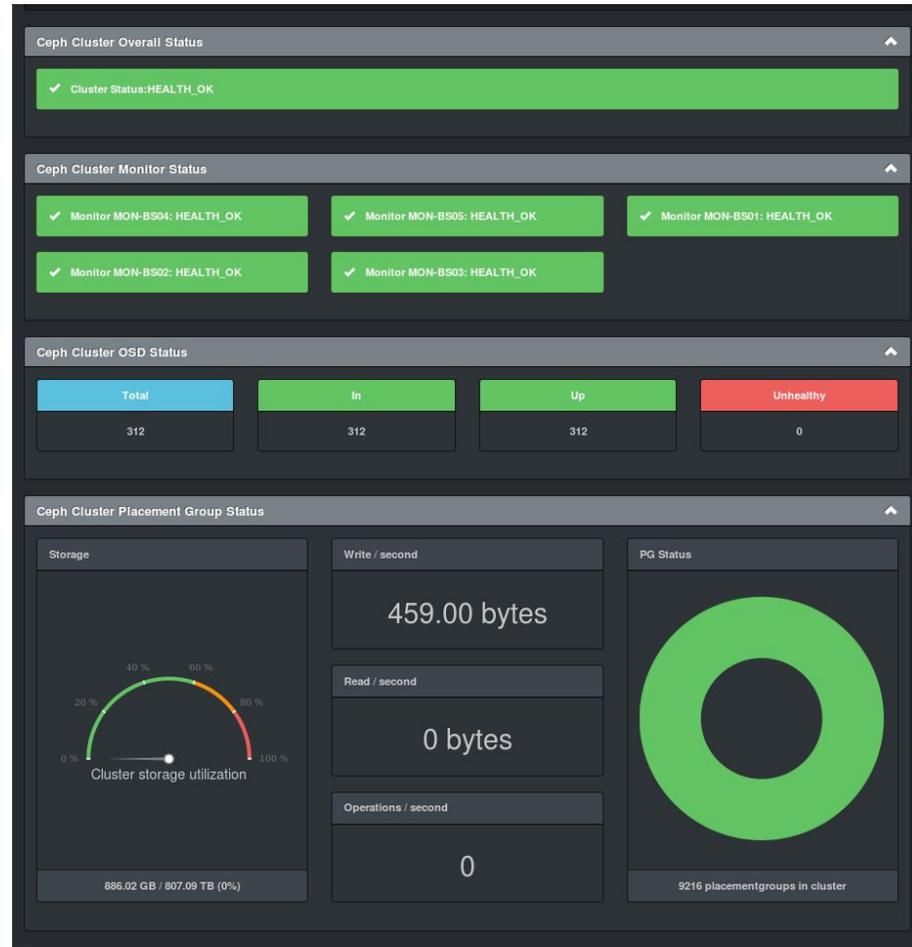
<https://ceph.com/planet/ceph-calamari-the-survival-guide/>, <https://www.openattic.org/media.html>, https://01.org/sites/default/files/documentation/virtual_storage_manager_1.0_operations_guide_0.pdf, <https://github.com/inkscope/inkscope>.

InkScope



Screenshot:

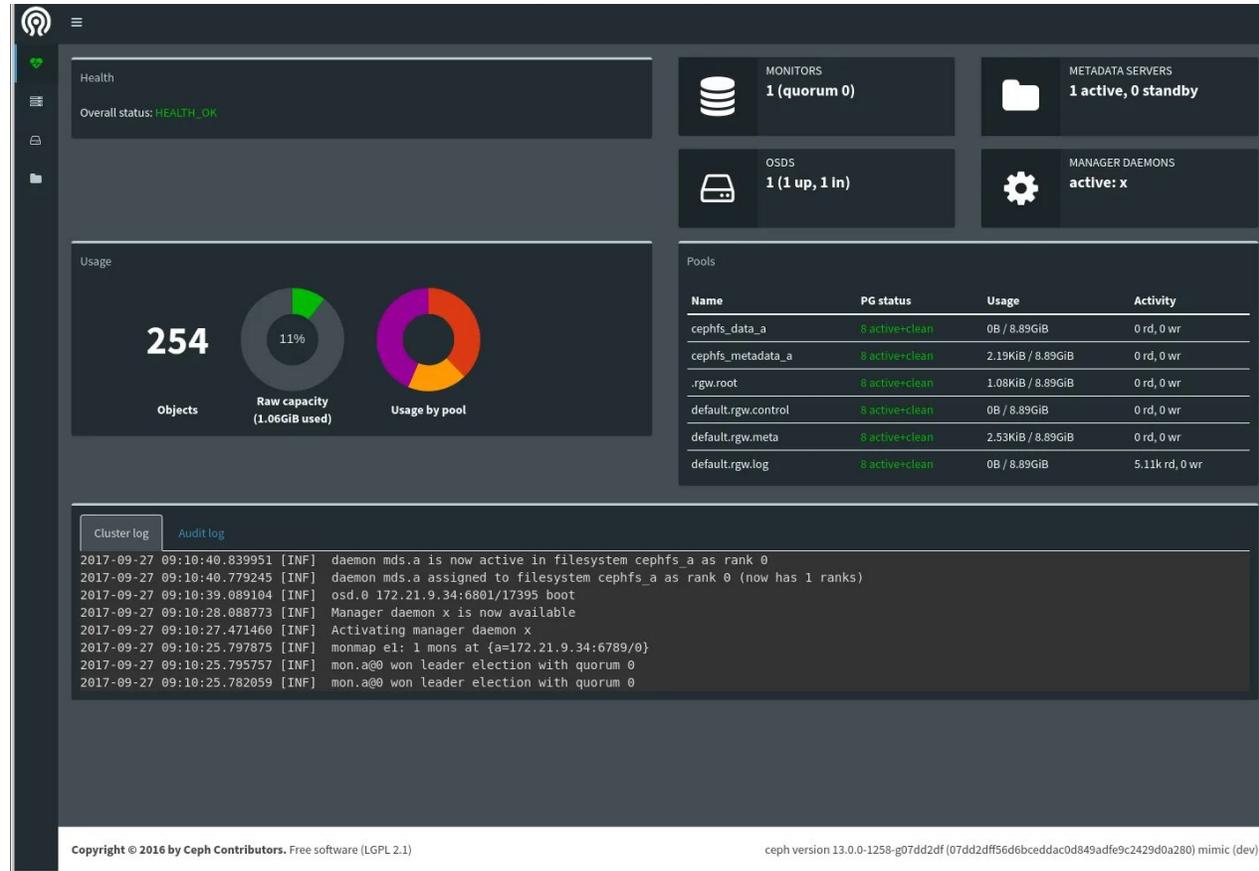
CephDash



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>.

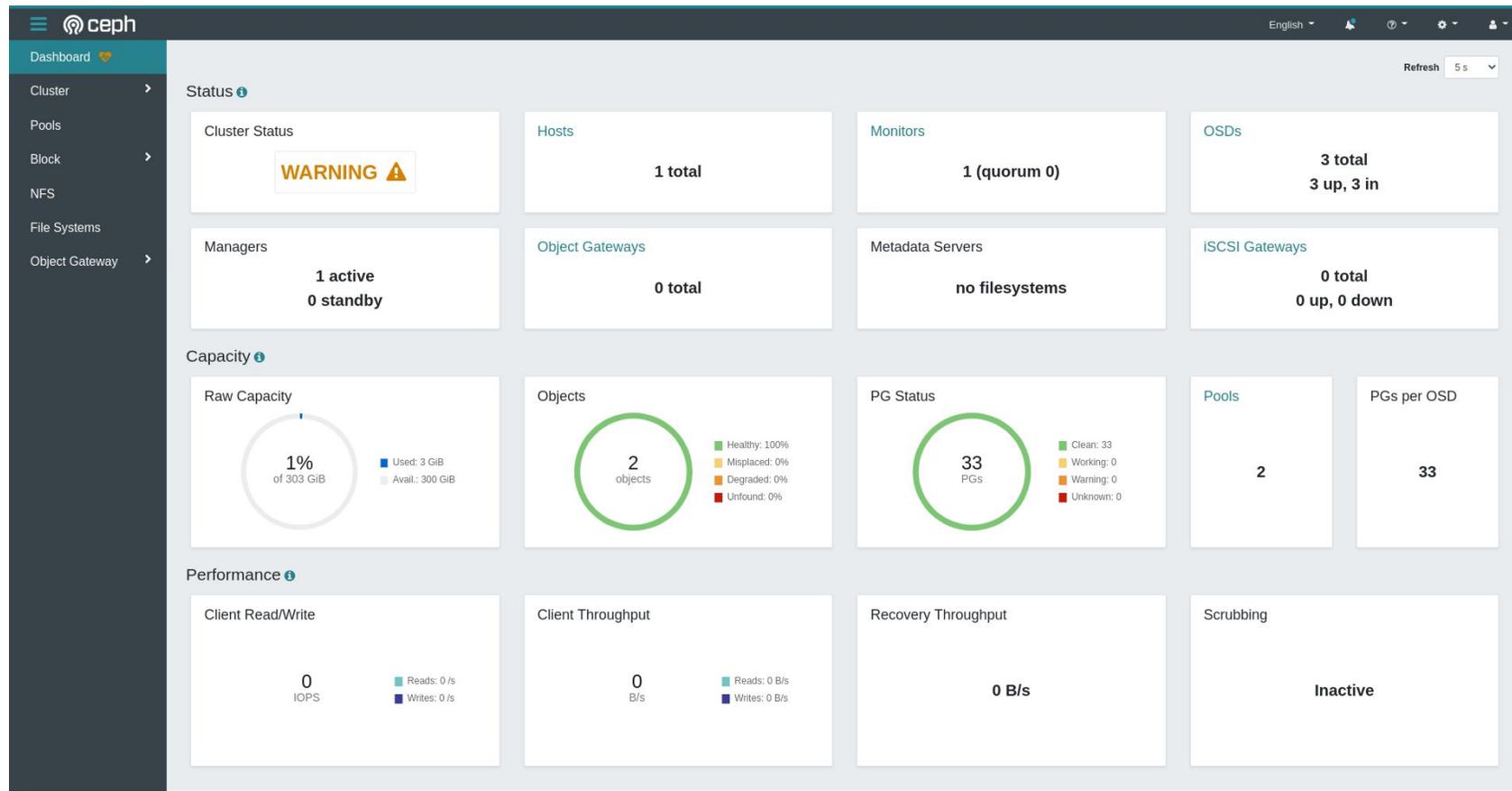
Ceph-Dashboard v1



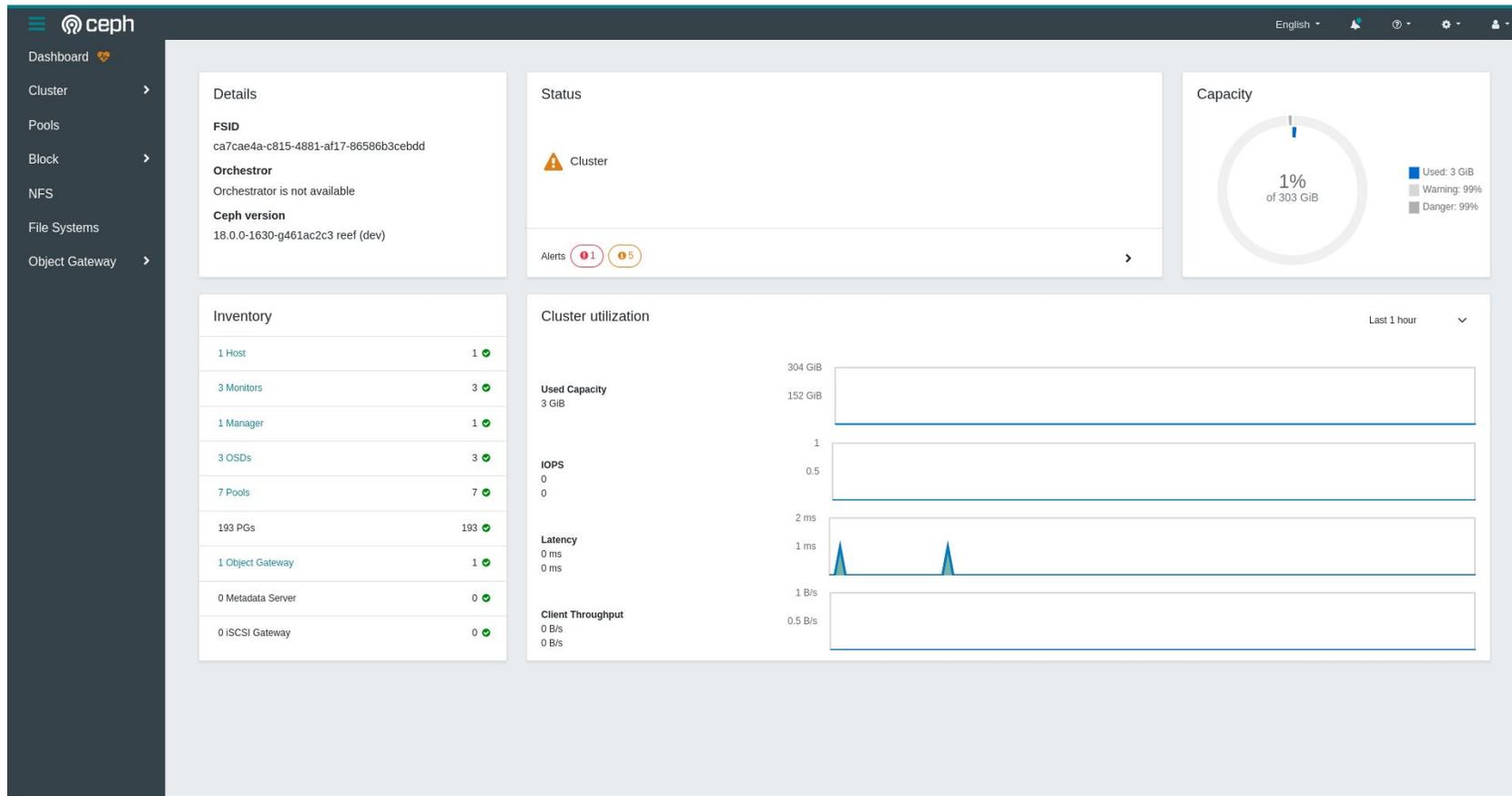
Screenshot:

<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/inkscape/inkscape>.

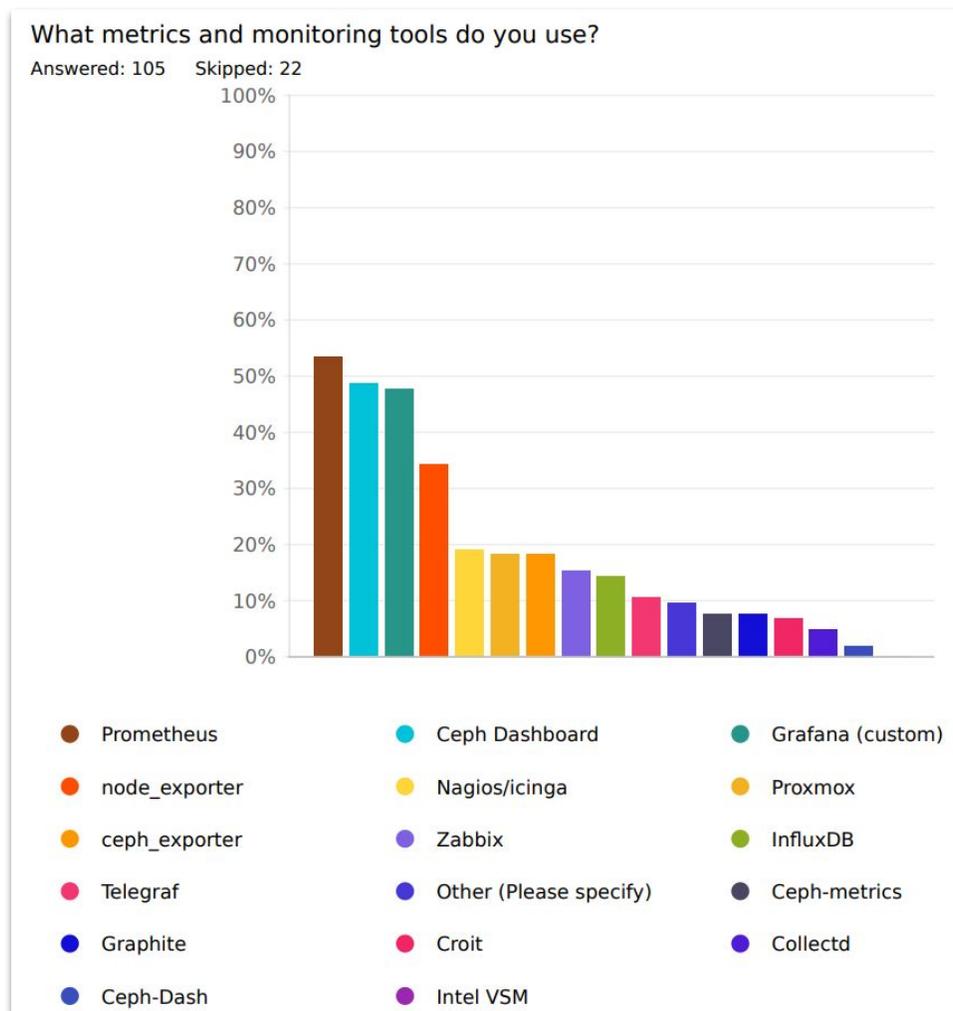
Ceph-Dashboard v2



Ceph-Dashboard v3 (soon)



How Ceph Users monitor Ceph?



Source:

Ceph Dashboard v2



OpenATTIC

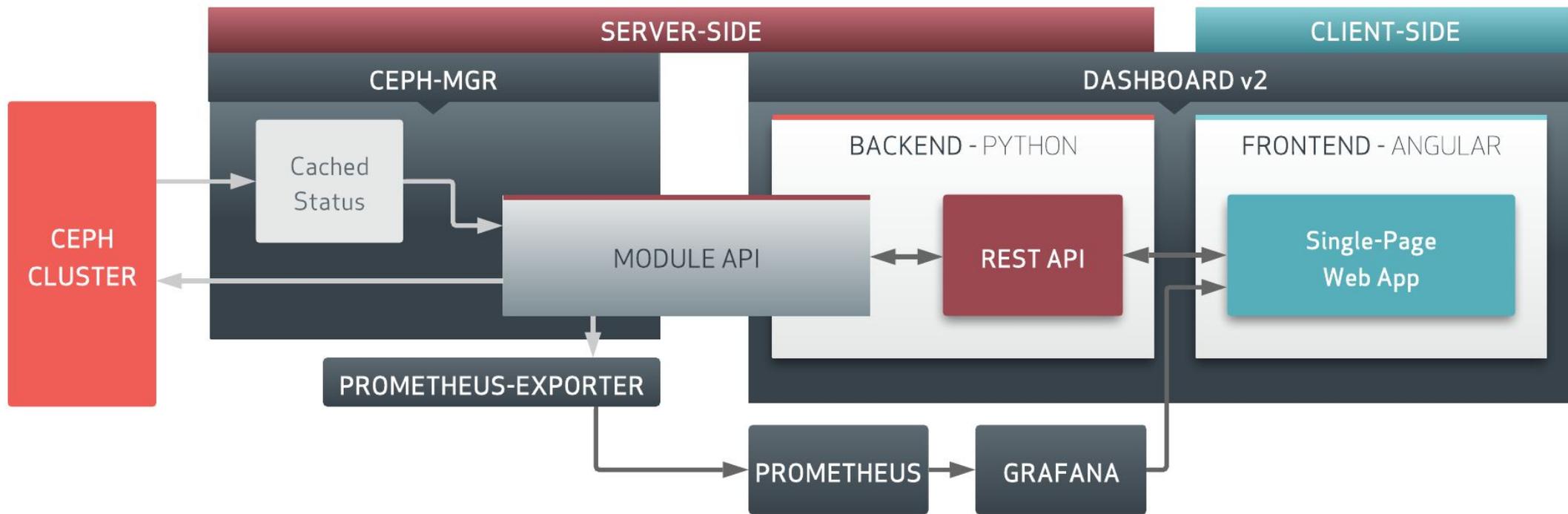


Ceph Manager

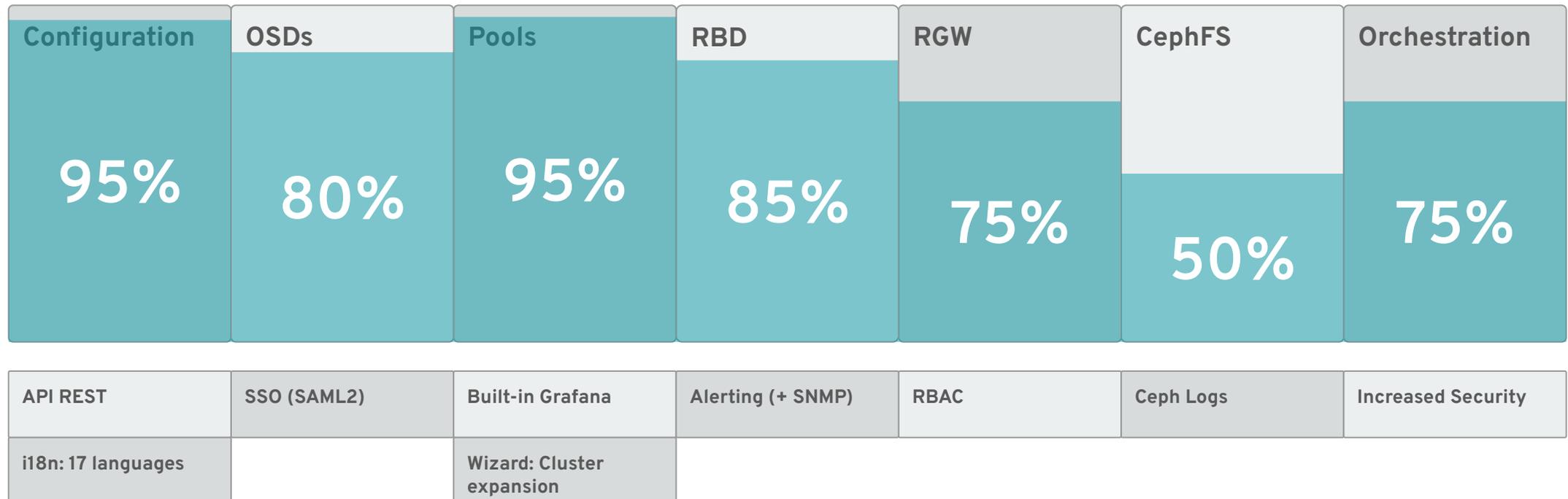


Ceph Dashboard v1

Anatomy of Ceph Dashboard



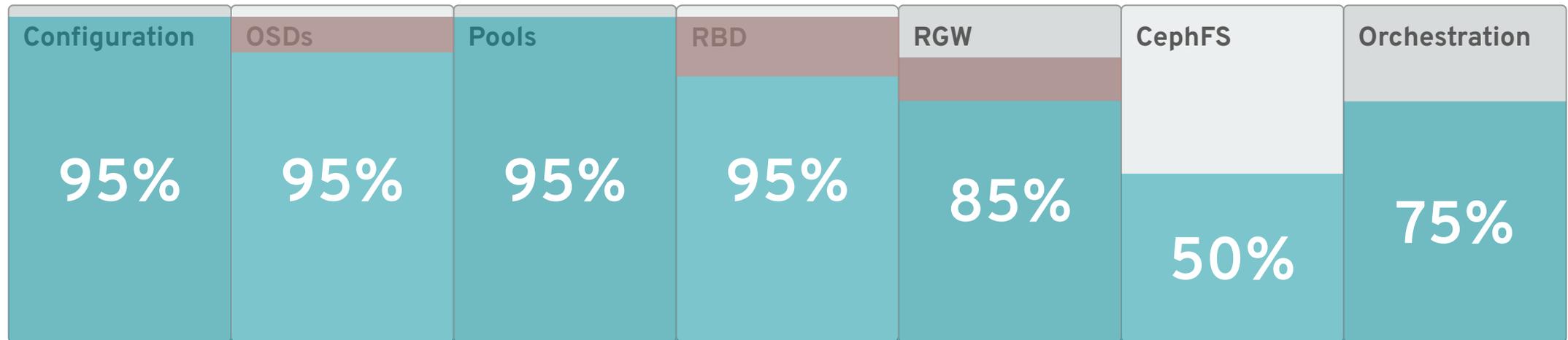
What can I do from the **Ceph Dashboard?** **Quincy (17.2.z)**



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_B000



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**:

Username

Password

Log in

 **ceph**

[Help](#) [Security](#) [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**

The screenshot illustrates the process of reporting an issue in the Ceph Dashboard. On the left, a dark navigation bar contains a question mark icon in a dropdown menu, which is highlighted with a red box and an arrow. The dropdown menu lists 'Documentation', 'API', 'About', and 'Report an issue...', with the last option also highlighted by a red box and an arrow. On the right, the 'Report an issue' form is displayed, featuring the following fields:

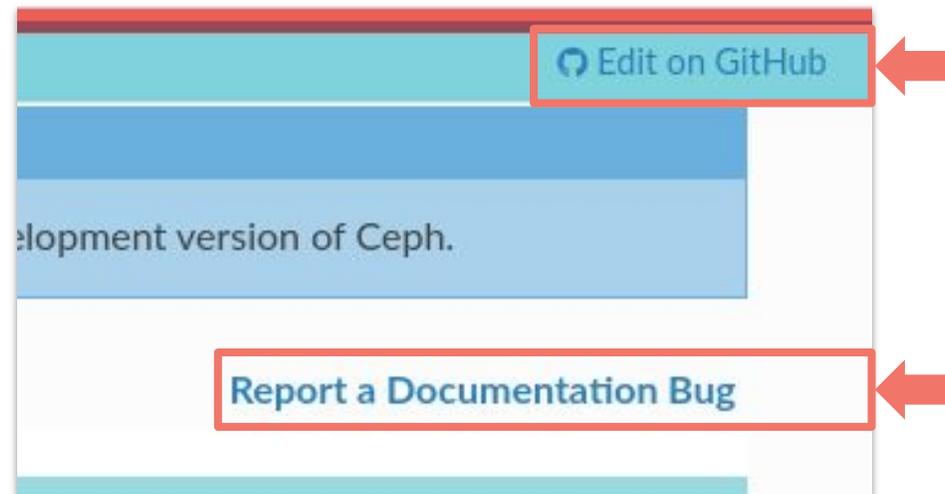
- Ceph Tracker API Key ***: A text input field with a green checkmark.
- Project name ***: A dropdown menu with 'dashboard' selected and a green checkmark.
- Tracker ***: A dropdown menu with 'feature' selected and a green checkmark.
- Subject ***: A text input field with 'Add cluster topology view' and a green checkmark.
- Description ***: A text area with the text 'Having a cluster topology view would be helpful to relate performance issues with' and a green checkmark.

At the bottom right of the form, there are 'Cancel' and 'Submit' buttons.



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

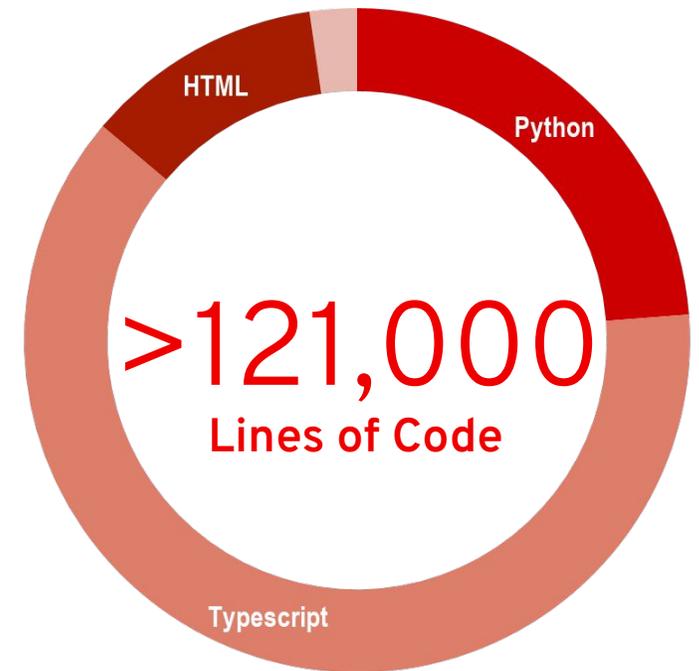
Entity	Caps	Key
client.admin	mds: allow * mgr: allow * mon: allow * osd: allow *	*****
client.bootstrap-mds	mon: allow profile bootstrap-mds	*****
client.bootstrap-mgr	mon: allow profile bootstrap-mgr	*****
client.bootstrap-osd	mon: allow profile bootstrap-osd	*****
client.bootstrap-rbd	mon: allow profile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

11 total « < 1 of 3 > »

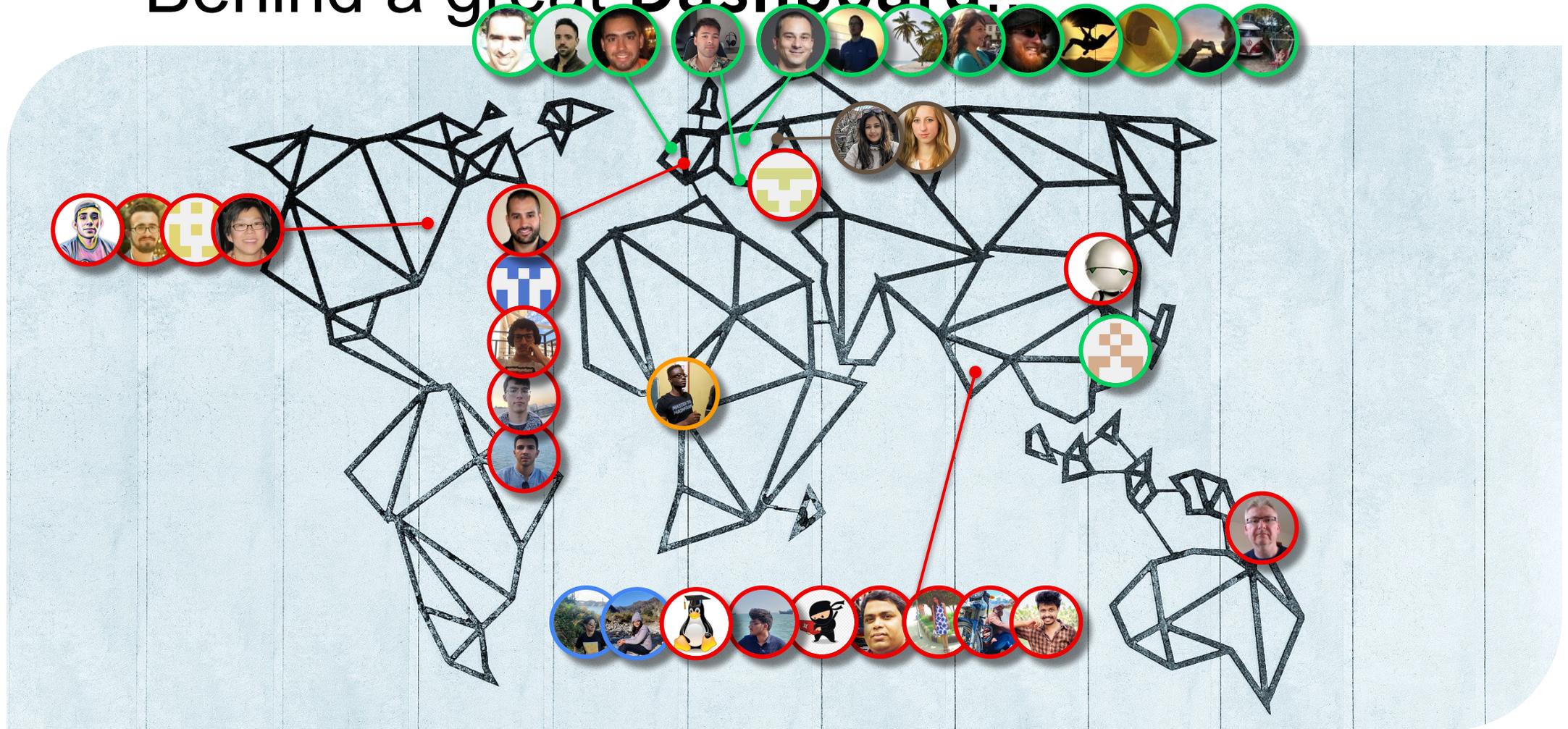
Dashboard in numbers Since Mar. 2018

> 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



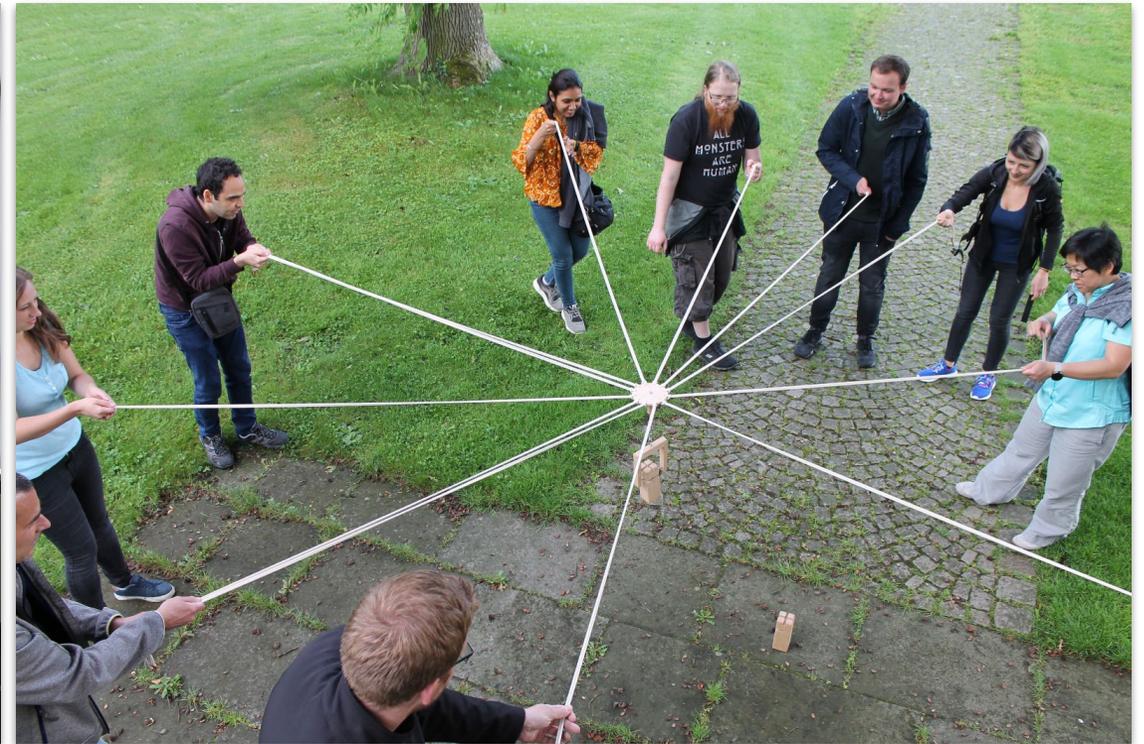
How do we coordinate?

Dashboard-Orchestrator F2F, OpenStack Summit Berlin



How do we **coordinate**?

2nd Face to Face, Fulda, Jun 2019



Questions?

Thank you!