Tendrl - Monitoring (and Management) Solution for Gluster

Tendrl is an open source solution designed to manage today's and tomorrow's SDS technologies. It provides for installation, storage provisioning, lifecycle management, monitoring, alerting, trending, and analytics for Ceph and Gluster storage, while providing a framework to encompass other SDS technologies in the future.

Scope

This design covers the changes or enhancements needed to embed Grafana dashboards directly into the tendrl UI:

- embed the existing Grafana dashboards (cluster, host, volume, brick) into the current navigation
- breadcrumb changes needed
- removal of "Dashboard" buttons that used to link-n-launch the Grafana dashboards externally
- adding hyperlinking of cluster, host, volume, brick to their respective overview views (aka dashboard)

Assumptions
- Tendrl admin user has deployed tendrl using tendrl-ansible
- Tendrl admin user has successfully imported 1 or more Gluster clusters
- Plan for a browser window width no larger than 1366
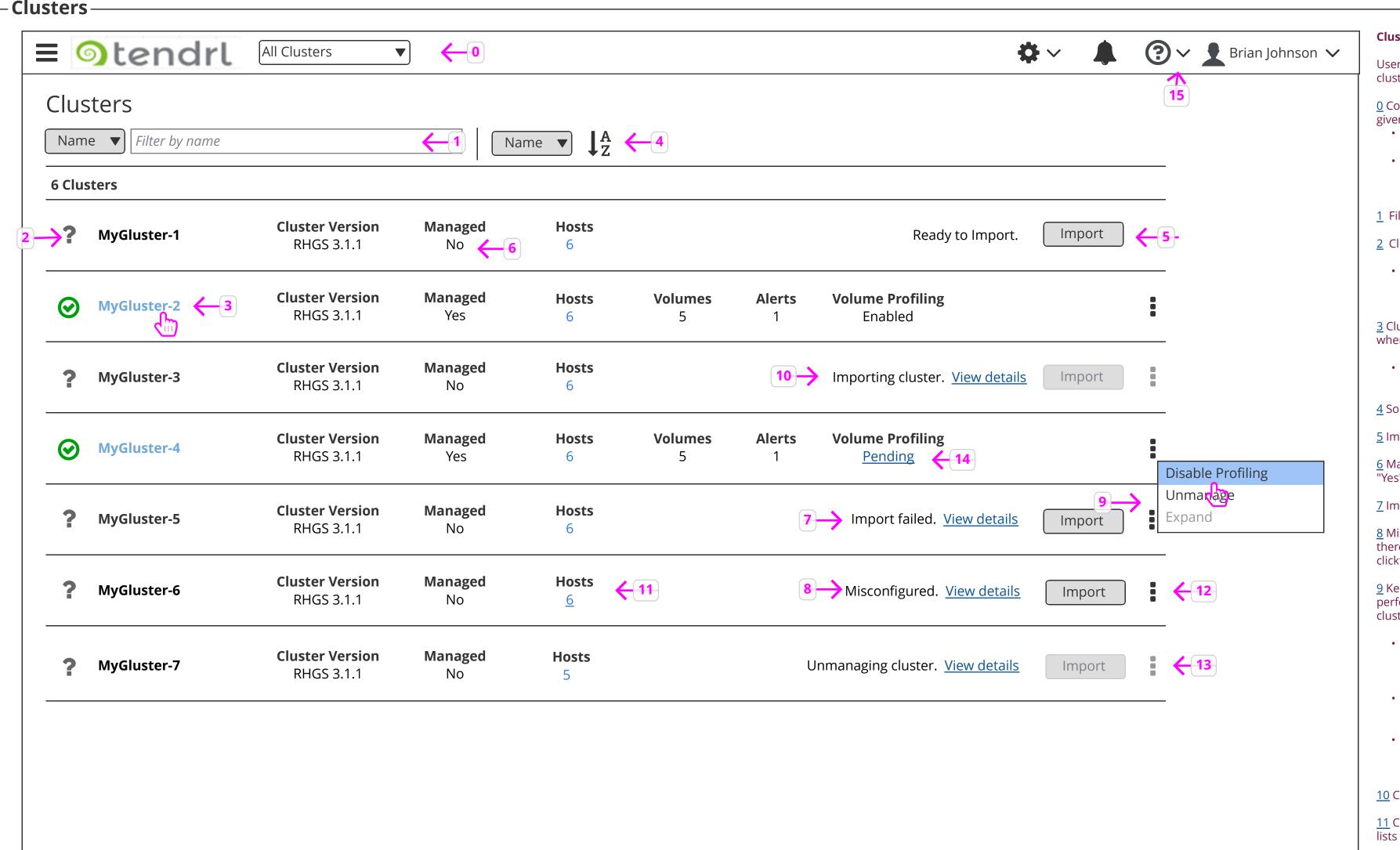
Considerations
- The existing grafana dashboards will need to be refactored to account for layout changes resulting from the iframe embedding of the grafana dashboards in the tendrl UI
- there may be opportunity to remove some health / status panels (if redundant now that the dashboards are embeeded into the tendrl UI)
- relative time period to use for the Grafana dashboards (which is specified as part of the grafana URL used for embedding)
- A need to show the period used for the Grafana dashboard (panels) on the embedded dashboard page itself

Acceptance criteria:
- Tendrl user sees (embedded) dashboards in the tendrl UI
- Tendrl user will not see or know grafana is even there from the tendrl UI
- Tendrl user cannot log in directly to the grafana UI.

Related GitHub Issue/RFE:
- https://github.com/Tendrl/ui/issues/1046

Clusters

☰ **○ tendrl** [All Clusters ▼] ← [0]   ⚙ ˅   🔔   ❓˅   👤 Brian Johnson ˅

[15]

Clusters

[Name ▼] [Filter by name] ← [1] | [Name ▼] ↕A Z ← [4]

6 Clusters

| [2] ? | **MyGluster-1** | **Cluster Version** RHGS 3.1.1 | **Managed** No ← [6] | **Hosts** 6 | | | Ready to Import. | [Import] ← [5] |

| ✅ | **MyGluster-2** ← [3] | **Cluster Version** RHGS 3.1.1 | **Managed** Yes | **Hosts** 6 | **Volumes** 5 | **Alerts** 1 | **Volume Profiling** Enabled | ⋮ |

| ? | **MyGluster-3** | **Cluster Version** RHGS 3.1.1 | **Managed** No | **Hosts** 6 | | | [10] → Importing cluster. View details | [Import] ⋮ |

| ✅ | **MyGluster-4** | **Cluster Version** RHGS 3.1.1 | **Managed** Yes | **Hosts** 6 | **Volumes** 5 | **Alerts** 1 | **Volume Profiling** Pending ← [14] | ⋮ |

Disable Profiling
Unmanage
Expand
[9]

| ? | **MyGluster-5** | **Cluster Version** RHGS 3.1.1 | **Managed** No | **Hosts** 6 | | | [7] → Import failed. View details | [Import] ⋮ |

| ? | **MyGluster-6** | **Cluster Version** RHGS 3.1.1 | **Managed** No | **Hosts** 6 ← [11] | | | [8] → Misconfigured. View details | [Import] ⋮ ← [12] |

| ? | **MyGluster-7** | **Cluster Version** RHGS 3.1.1 | **Managed** No | **Hosts** 5 | | | Unmanaging cluster. View details | [Import] ⋮ ← [13] |

Clusters

☰ tendrl   MyGluster-2 ▼   ⚙ ▼   🔔   ❓ ▼   👤 Brian Johnso ▼

Dashboard

Hosts

Volumes

Configuration

Events

Tasks

⌄ At-a-glance

Health ⏱ Last 15 minutes

Healthy

Snapshots

0

Hosts
Total - 6
Up - 6
Down - 0

Volumes
Total - 2
Up - 2
Partial - 0
Degraded - 0
Down - 0

Bricks
Total - 30
Up - 30
Down - 0

Geo-Replication Session
Total - 0
Created - 0
Up - 0
Partial - 0
Paused - 0
Stopped - 0
Down - 0

Connections

IOPS

Capacity Utilization
1.1%

Capacity Available
413.0 GiB

Weekly Growth Rate
4.6 GiB

Weeks Remaining
89

Throughput

⌄ Top Consumers

Top 5 Utilization by Bricks	Utilization ▾
sandbox-usm1-gl2_usmqe_lab_eng_brq_redhat_com/mnt/brick_beta_arbiter_2/2	0.1%
sandbox-usm1-gl2_usmqe_lab_eng_brq_redhat_com/mnt/brick_beta_arbiter_1/1	0.1%
sandbox-usm1-gl1_usmqe_lab_eng_brq_redhat_com/mnt/brick_beta_arbiter_3/3	0.1%
sandbox-usm1-gl1_usmqe_lab_eng_brq_redhat_com/mnt/brick_beta_arbiter_2/2	0.1%

Top 5 Utilization by Volume	Utilization ▾
volume_beta_arbiter_2_plus_1x2	1.1%
volume_gama_disperse_4_plus_2x2	1.1%

CPU Utilization by Host	Utilization ▾
sandbox-usm1-gl2_usmqe_lab_eng_brq_redhat_com	4.1%
sandbox-usm1-gl6_usmqe_lab_eng_brq_redhat_com	3.1%
sandbox-usm1-gl4_usmqe_lab_eng_brq_redhat_com	3.0%
sandbox-usm1-gl1_usmqe_lab_eng_brq_redhat_com	3.0%

Memory Utilization by Host	Utilization ▾
sandbox-usm1-gl3_usmqe_lab_eng_brq_redhat_com	9.5%
sandbox-usm1-gl1_usmqe_lab_eng_brq_redhat_com	9.5%
sandbox-usm1-gl4_usmqe_lab_eng_brq_redhat_com	9.4%
sandbox-usm1-gl5_usmqe_lab_eng_brq_redhat_com	9.4%

Ping Latency

⌄ Status

Volume Status	Status ▾
volume_gama_disperse_4_plus_2x2	0
volume_beta_arbiter_2_plus_1x2	0

Host Status	Status ▾
sandbox-usm1-gl6_usmqe_lab_eng_brq_redhat_com	0
sandbox-usm1-gl5_usmqe_lab_eng_brq_redhat_com	0
sandbox-usm1-gl4_usmqe_lab_eng_brq_redhat_com	0

Brick Status	Status ▾
sandbox-usm1-gl6_usmqe_lab_eng_brq_redhat_com/mnt/brick_gama_disperse_2/2	0
sandbox-usm1-gl6_usmqe_lab_eng_brq_redhat_com/mnt/brick_gama_disperse_1/1	0
sandbox-usm1-gl6_usmqe_lab_eng_brq_redhat_com/mnt/brick_beta_arbiter_3/3	0

Dashboard page for a Cluster

This is the default landing page when a user uses the context-selector to switch to a cluster.

This should contain the embedded Grafana "Cluster dashboard" for the selected cluster.
- User should not be able to see details about Grafana here, e.g. see the Panel JSON, etc.
- Default time period should be set to TBD

Note:
- Grafana dashboards will need to be refactored to factor in less width (due to the left-navigation menu).

Embed Grafana Cluster Dashboard here

Clusters

≡ **⊙ tendrl** | MyGluster-2 ▼ | ⚙▼ 🔔 ❓▼ 👤 Brian Johnson ▼

Dashboard

Hosts

Volumes

Configuration

Events

Tasks

MyGluster-2: Hosts

| Name ▼ | Filter by name | | Name ▼ | ⬇AZ | | 3 → Custer expansion required. | Expand Cluster |

50 Hosts

| ✓ | Host1 ← 1 | **Gluster Version** 2.1.0 | **Managed** Yes | **Role** Gluster Peer | **Bricks** 3 | **Alerts** 0 | |
| 123.45.67.890 | | | | | | |

| ✓ | Host2 | **Gluster Version** 2.1.0 | **Managed** Yes | **Role** Gluster Peer | **Bricks** 3 | **Alerts** 0 | |
| 123.45.67.890 | | | | | | |

| ✓ | Host3 | **Gluster Version** 2.1.0 | **Managed** Yes | **Role** Gluster Peer | **Bricks** 3 | **Alerts** 0 | |
| 123.45.67.890 | | | | | | |

| ✓ | Host4 | **Gluster Version** 2.1.0 | **Managed** Yes | **Role** Gluster Peer | **Bricks** 3 | **Alerts** 0 | |
| 123.45.67.890 | | | | | | |

| ✓ | Host5 | **Gluster Version** 2.1.0 | **Managed** Yes | **Role** Gluster Peer | **Bricks** 3 | **Alerts** 0 | |
| 123.45.67.890 | | | | | | |

| ✓ | Host6 | **Gluster Version** 2.1.0 | **Managed** Yes | **Role** Gluster Peer | **Bricks** 3 | **Alerts** 0 | |
| 123.45.67.890 | | | | | | |

2 → | ? | Host7 | **Gluster Version** 2.1.0 | **Managed** No | **Role** Gluster Peer | **Bricks** N/A | **Alerts** N/A | Ready to import. |
| 123.45.67.890 | | | | | | |

| ? | Host8 | **Gluster Version** 2.1.0 | **Managed** No | **Role** Gluster Peer | **Bricks** N/A | **Alerts** N/A | Ready to import. |
| 123.45.67.890 | | | | | | |

Hosts List for a Cluster

1 Hyperlinking takes you to the Host Details ("Overview" tab is the default, and "Bricks" tab is another view.
• Note: In the future, when actions are added, the kebab will be added to expose any host actions.

2 Unmanaged hosts will display the Unknown status (?), details will not be available, and the Bricks and Alerts fields will display N/A (not available).

3 When there are Unmanaged hosts present, a message will be displayed with a button to begin cluster expansion. Clicking Expand will display a modal dialog asking the user to confirm before beginning expansion.

tendrl

MyGluster-2 ▼

⚙ ▼   🔔   ❓ ▼   👤 Brian Johnso ▼

Dashboard   0 → MyGluster-2 > Host 1 > **Host Overview**

Hosts

Volumes

Configuration

Events

Tasks

Overview | Bricks

∨ At-a-Glance

Health Last 15 minutes	

Bricks

Total - 5
Up - 5
Down - 0

Brick Status

Brick Path	Status ▾
/mnt/brick_gama_disperse_2/2	0
/mnt/brick_gama_disperse_1/1	0
/mnt/brick_beta_arbiter_3/3	0
/mnt/brick_beta_arbiter_2/2	0
/mnt/brick_beta_arbiter_1/1	0

Memory Available

6.6 GiB

Memory Utilization

- Buffered
- Cached
- Slab Recl
- Slab Unrecl
- Used

Up

Swap Free

100.0%

Swap Utilization

CPU Utilization

- system
- user

Brick IOPS

∨ Capacity & Disk Load

Total Brick Capacity Utilization

Total Brick Capacity Utilization

0.1%

Total Brick Capacity Available

149.0 GiB

Weekly Growth Rate

165.0 MiB

Weeks Remaining

925

Top Bricks by Capacity Percent Utilized	Top Bricks by Total Capacity	Top Bricks by Capacity Utilized

---

Bricks Tab for a Host (Host Details)

Triggered by user clicking on a host name hyperlink (e.g. from Hosts list).

0 Breadcrumb to help user remember the context (Cluster > Host Name)
- Clicking on the hostname will take you to the default tab (Overview) view for the host.

Embed Grafana Host Dashboard here

Bricks Tab for a Host (Host Details)

Triggered by user clicking on a host name hyperlink or bricks hyperlink (e.g. from Hosts list, Alerts).

0 Breadcrumb to help user remember the context (Cluster > Host Name)
  • Clicking on the hostname will take you to the default tab (Overview) view for the host.

1 Filter by:
  • Volume Name
  • Brick Path
  • Brick Status
  • Utilization More Than
  • Utilization Less Than
  • Disk Device Path

2 It shows the number of bricks and failed bricks.

Note: PID is optional

3 Brickpath is a hyperlink to see the Brick Overview page.

Host1: Brick Details

Brick Path	Volume Name ▲	Utilization	Disk Device Path	Port	PID
✓ /bricks/brick1/b1	✓ gluster-vol-1	50% ▓▓▓ 32GB	/dev/sda4	1431	213
✓ /bricks/brick2/b1	✓ gluster-vol-2	50% ▓▓▓ 32GB	/dev/sda5	212	123
✓ /bricks/brick3/b1	✓ gluster-vol-3	50% ▓▓▓ 32GB	/dev/sda6; /dev/sda7	1231	123

3 Bricks ⊘ 1 | Show: ☐ Failed Only

Volume Name ▾ Filter by Volume Name...

MyGluster-2 > Host 1 > Brick Details

Dashboard
Hosts
Volumes
Configuration
Events
Tasks

Overview | Bricks

tendrl

MyGluster-2 ▼

⚙ ⌄   🔔   ❓ ⌄   👤 Brian Johnso ⌄

Dashboard

0 → MyGluster-2 > Host1 > Host1:/bricks/brick1/b1 > **Brick Overview**

Hosts

Volumes

Configuration

Events

Tasks

⌄ At-a-Glance

| Status last 15 minutes | Capacity Utilization | Capacity Utilization | Capacity Available | Weekly Growth Rate |

Started

Capacity Utilization: **0.1%**

Capacity Utilization graph: 0.125% / 0.100% / 0.075% / 0.050% / 0.025% / 0% — 13:10 13:20 13:30 13:40 13:50 14:00

Capacity Available: **29.8 GiB**

Weekly Growth Rate: **33.0 MiB**

Weeks Remaining: **Insufficient data collected for forecast**

Healing: Pending Heal - 0 / Split Brain - 0

IOPS graph: 1.00 iops / 0.75 iops / 0.50 iops / 0.25 iops / 0 iops — 13:10 13:20 13:30 13:40 13:50 14:00

LVM Thin Pool Meta Data %: **0.1%**

LVM Thin Pool Data Usage %: **0.1%**

⌄ Disk Load

Throughput graph: 30 kbps / 25 kbps / 20 kbps / 15 kbps / 10 kbps / 5 kbps / 0 bps — 13:10 13:20 13:30 13:40 13:50 14:00

IOPS graph: 1.50 iops / 1.25 iops / 1.00 iops / 0.75 iops / 0.50 iops / 0.25 iops / 0 iops — 13:10 13:20 13:30 13:40 13:50 14:00

Latency graph: 0.25 ms / 0.20 ms / 0.15 ms / 0.10 ms / 0.05 ms / 0 ms — 13:10 13:20 13:30 13:40 13:50 14:00

Mount Point Utilization graph: 0.125% / 0.100% / 0.075% / 0.050% / 0.025% / 0% — 13:10 13:20 13:30 13:40 13:50 14:00 — ▬ vdb

Clusters

☰ **tendrl** [MyGluster-2 ▼] ⚙▼ 🔔 ❓▼ 👤 Brian Johnso ▼

Dashboard

Hosts

Volumes

Configuration

Events

Tasks

MyGluster-2: Volumes

[Name ▼] [Filter by name] | [Name ▼] ↓ᴬ︎ᶻ ← 2

12 Volumes

✓ **Vol1**
  2-Way Distributed Replicated | **Bricks** 1 | **Running** Yes | **Rebalance** In Progress | **Volume Profiling** Enabled | **Alerts** 3 | [Disable Profiling]

✓ **Vol21**
  2-Way Distributed Replicated | **Bricks** 1 | **Running** Yes | **Rebalance** Paused | **Volume Profiling** Disabled | **Alerts** 3 | [Enable Profiling]

✓ **Vol22** ← 5
  2-Way Distributed Replicated | **Bricks** 1 | **Running** Yes | **Rebalance** Stopped | **Volume Profiling** Enabled | **Alerts** 3 | [Disable Profiling]

✓ **Vol31**
  2-Way Distributed Replicated | **Bricks** 1 | **Running** Yes | **Rebalance** Completed | **Volume Profiling** Enabled | **Alerts** 3 | [Disable Profiling]

> Volume is degraded as at least one brick in a replica set is down.

✗ **Vol32** ← 8
  2-Way Distributed Replicated | **Bricks** 1 | **Running** Yes | **Rebalance** In Progress | **Volume Profiling** Enabled | **Alerts** 3 | [Disable Profiling]

✓ **Vol34**
  2-Way Distributed Replicated | **Bricks** 1 | **Running** Yes | **Rebalance** # Failures | **Volume Profiling** Enabled | **Alerts** 3 | [Disable Profiling]

✓ **Vol4**
  2-Way Distributed Replicated | **Bricks** 1 | **Running** Yes | **Rebalance** OK | **Volume Profiling** Pending ← 6 | **Alerts** 3 | 7 → [Enable Profiling]

✓ **Vol5**
  2-Way Distributed Replicated | **Bricks** 1 | **Running** Yes | **Rebalance** OK | **Volume Profiling** Enabled | **Alerts** 3 | [Disable Profiling]

Volumes List for a Cluster

Each volume entry includes the volume type displayed under the volume name.

1 Filter Volumes by: Name, Cluster, Status, Type.

2 Sort by: Name, Utilization (percentile), Cluster, Status.

3 The Rebalance field displays the status of the file share with respect to rebalancing. It can display the following:
- In Progress
- Paused
- Stopped
- Completed
- # Failures
- OK <-- not running or no action needed
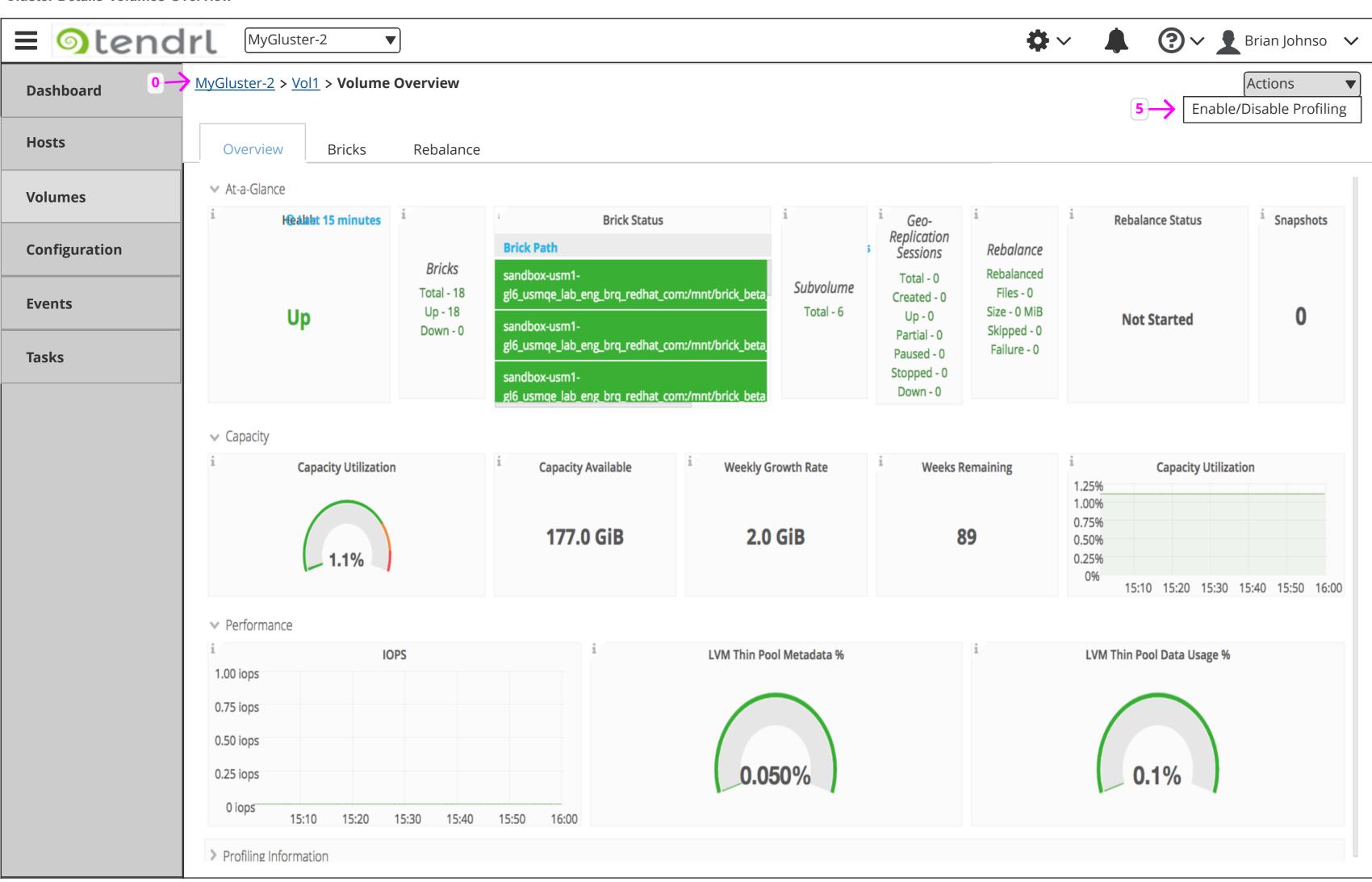- Action needed <-- might not be possible

Note that this field is displayed for distributed volume types only.

4 Actions include:
- Launch Dashboard
- Enable / Disable profiling

Note: Volume storage profiling was previously configured at the time of the "Import Cluster."

5 Volume name is hyperlinkable to see volume details.

6 If a task has been queued to enable or disable profiling at the volume level, the Volume Profiling field will display "Pending" and link to the task details upon click.

7 The Enable/Disable Profiling button will be disabled while the Volume Profiling is pending.

8 If a volume reports "degraded" or "partial" status, change the status icon to 'pficon-degraded' and use color and a tooltip to explain the condition.
- For degraded, color=orange; tooltip="Volume is degraded as at least one brick within a replica set is down."
- For partial, color=red; tooltip="One or more bricks are down. Data availability may be affected."

☰ **tendrl**   MyGluster-2 ▼

⚙ ⌄   🔔   ❓ ⌄   👤 Brian Johnso ⌄

Dashboard

0 → MyGluster-2 > Vol1 > **Volume Overview**

Actions ▼

5 → Enable/Disable Profiling

Hosts

Volumes

Configuration

Events

Tasks

Overview | Bricks | Rebalance

⌄ At-a-Glance

Health 15 minutes	Brick Status		Geo-Replication Sessions	Rebalance	Rebalance Status	Snapshots

Brick Path

Up

Bricks
Total - 18
Up - 18
Down - 0

sandbox-usm1-gl6_usmqe_lab_eng_brq_redhat_com:/mnt/brick_beta

sandbox-usm1-gl6_usmqe_lab_eng_brq_redhat_com:/mnt/brick_beta

sandbox-usm1-gl6_usmqe_lab_eng_brq_redhat_com:/mnt/brick_beta

Subvolume
Total - 6

Total - 0
Created - 0
Up - 0
Partial - 0
Paused - 0
Stopped - 0
Down - 0

Rebalance
Rebalanced
Files - 0
Size - 0 MiB
Skipped - 0
Failure - 0

Not Started

0

⌄ Capacity

Capacity Utilization	Capacity Available	Weekly Growth Rate	Weeks Remaining	Capacity Utilization
1.1%	177.0 GiB	2.0 GiB	89	1.25% 1.00% 0.75% 0.50% 0.25% 0% 15:10 15:20 15:30 15:40 15:50 16:00

⌄ Performance

IOPS	LVM Thin Pool Metadata %	LVM Thin Pool Data Usage %
1.00 iops 0.75 iops 0.50 iops 0.25 iops 0 iops 15:10 15:20 15:30 15:40 15:50 16:00	0.050%	0.1%

> Profiling Information

Bricks Tab for a Volume (Volume Details)

Triggered by user clicking on a volume name hyperlink or bricks hyperlink (e.g. from Volumes list, Alerts).
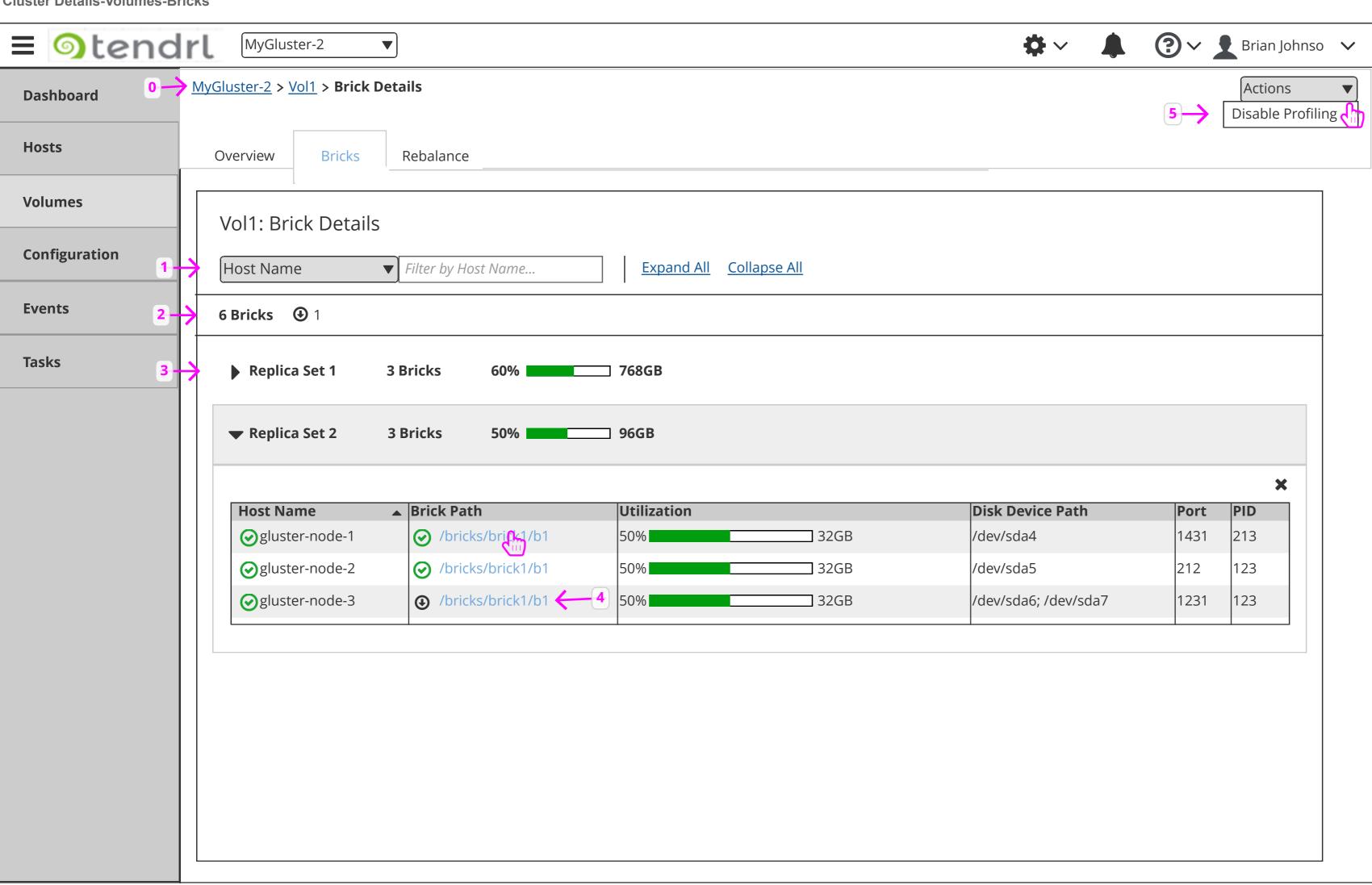
This is the suggested layout for a distributed replicated volume.

0 Breadcrumb to help user remember the context (Cluster > Volume Name)
  • Clicking on the volumename will take you to the default tab (Overview) view for the volume.

Embed Grafana Volume Dashboard here

☰ ◎ tendrl   [MyGluster-2 ▾]   ⚙▾   🔔   ❓▾   👤 Brian Johnso ▾

Dashboard

0 → [MyGluster-2](#) > [Vol1](#) > **Brick Details**   [Actions ▾]

5 → **Disable Profiling** 👆

Hosts

| Overview | **Bricks** | Rebalance |

Volumes

Vol1: Brick Details

Configuration

1 → [Host Name ▾]   [Filter by Host Name...] | [Expand All]   [Collapse All]

Events

2 → **6 Bricks**   ⊕ 1

Tasks

3 → ▶ **Replica Set 1**   **3 Bricks**   **60%** ▓▓▓░░ **768GB**

▼ **Replica Set 2**   **3 Bricks**   **50%** ▓▓░░ **96GB**

✖

Host Name ▲	Brick Path	Utilization	Disk Device Path	Port	PID
✅ gluster-node-1	✅ /bricks/brick1/b1 👆	50% ▓▓▓░ 32GB	/dev/sda4	1431	213
✅ gluster-node-2	✅ /bricks/brick1/b1	50% ▓▓▓░ 32GB	/dev/sda5	212	123
✅ gluster-node-3	⊕ /bricks/brick1/b1 ← 4	50% ▓▓▓░ 32GB	/dev/sda6; /dev/sda7	1231	123

Bricks Tab for a Volume (Volume Details)

Triggered by user clicking on a volume name hyperlink or bricks hyperlink (e.g. from Volumes list, Alerts).

This is the suggested layout for a distributed replicated volume.

<u>0</u> Breadcrumb to help user remember the context (Cluster > Volume Name)
- Clicking on the volumename will take you to the default tab (Overview) view for the volume.
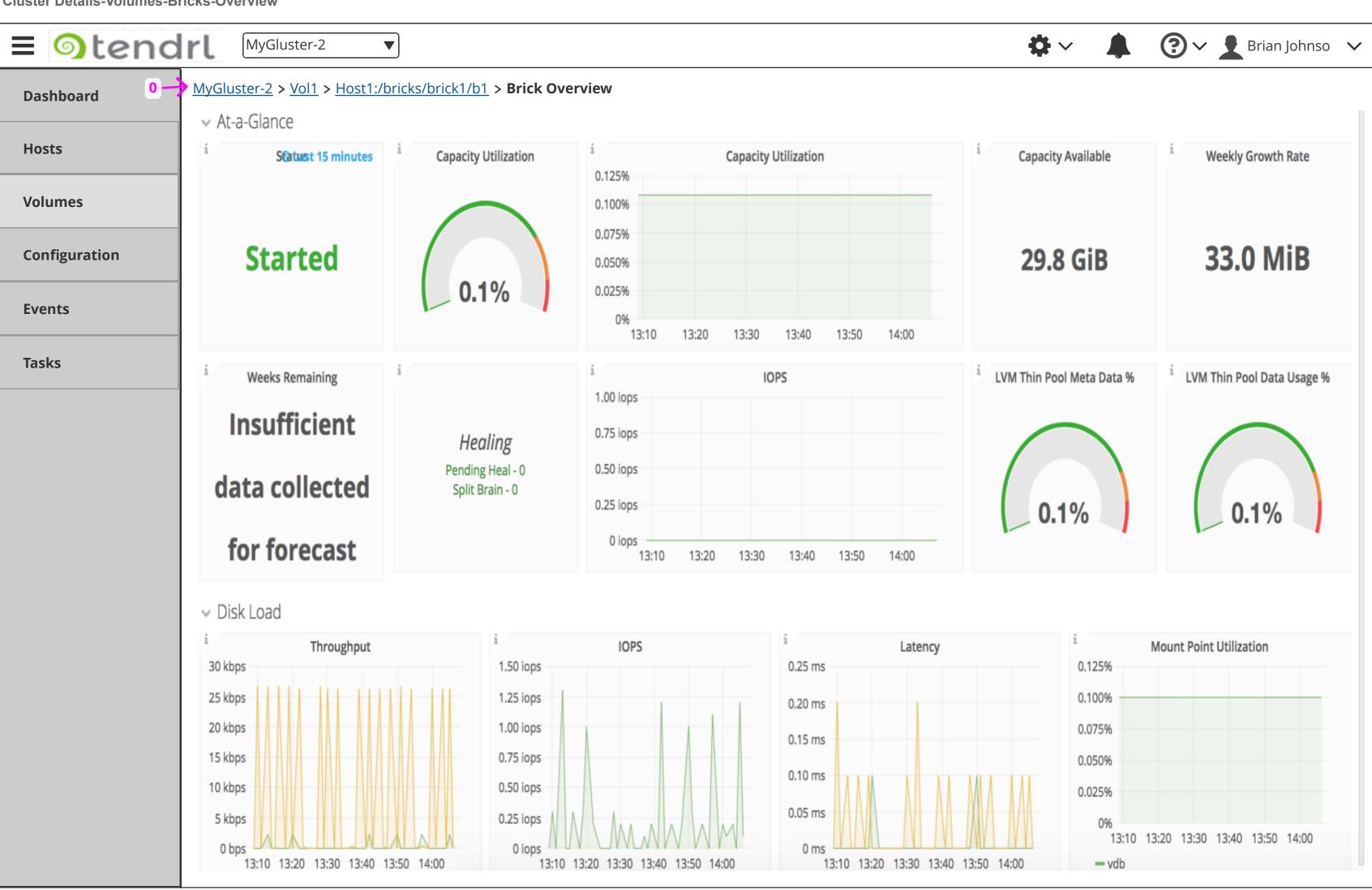
<u>1</u> Filter by:
- Host Name
- Brick Path
- Brick Status
- Utilization More Than
- Utilization Less Than
- Disk Device Path

<u>2</u> It shows the number of bricks and failed bricks.

<u>3</u> When tab is initially open, the default is to show the Replica Sets collapsed.

<u>4</u> Brickpath is a hyperlink to see the Brick overview page (embedded Grafana brick dashboard).

<u>5</u> When Actions is clicked, either Enable Profiling or Disable Profiling is shown (depending on

Brick Overview Page (Dashboard) for a Brick

Triggered by user clicking on a brickpath hyperlink (from Host > Bricks > Brick Details tab or Volume > Bricks Brick Details tab)

0 Breadcrumb to help user remember the context (Cluster > Volume Name)
- Clicking on the volume name will take you to the default tab (Overview) for the volume.
- Clicking on the brickpath will take you to the Bricks tab for the volume.

Embed Grafana Brick Dashboard here