Storage Management GUI (Poseidonos-GUI)

Samsung Poseidon

User Manual

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Overview

This document describes the POS Storage Management GUI (also called as Poseidonos-GUI). Poseidonos-GUI enables a user to perform the following functions:

- Dashboard
- Array management
- Volume management
- System resource availability
- User management
- System status

This document covers the following topics:

- Introduction
- Getting started with Poseidonos-GUI
- Array and volume configuration
- User management
- POS Operations and Configurations

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1 Introduction

POS Storage Management GUI aka Poseidonos-GUI enables an easy way to administer POS storage system.

The major objectives of Poseidonos-GUI are:

- **Availability**: Poseidonos-GUI is available from various devices, platforms and systems.
- **Speed**: Poseidonos-GUI provides data with highest performance so that users have access to important data at right times.
- **Simplicity**: A simple and intuitive design to help productivity and overall cost.
- **Commonality**: Commonly used graphics, widgets and terminology enable easy integration with existing systems and onboarding the users quickly.

With these deliverables in mind, a System Administrator can use the Poseidonos-GUI to configure and prepare the storage system for the user workloads quickly after completing the setup. Then the System Administrator can manage the system with minimal knowledge.

Array and volume storage configuration and management is streamlined in Poseidonos-GUI. User management is simplified.

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2 Poseidonos-GUI: Getting started

This section describes how to accomplish the following tasks:

- Accessing the Poseidonos-GUI
- Managing and monitoring the POS system (e.g. array or volume management)
- User management

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2.1 Accessing the Poseidonos-GUI

The Poseidonos-GUI can be accessed using Firefox Mozilla and Google Chrome browser.

The Poseidonos-GUI supports the use of a single point of authentication function for the GUI through a centralized data in a lightweight database.

Poseidonos-GUI is accessible from the browser as shown in Figure1

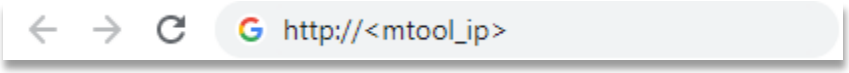

Figure 1. Poseidonos-GUI URL

On the first page for Poseidonos-GUI, user needs to log on as an administrator.

1. Poseidonos-GUI URL: http://<Poseidonos-GUI_ip>**Error! Hyperlink reference not valid.**

Note: Poseidonos-GUI URL may come pre-installed and typically the IP address of the server that the Poseidonos-GUI software is installed on

2. On a new system, users can use the following default credentials:
   - User = admin
   - Password = admin

After initial login, user can add additional users using admin privileges

Note: Poseidonos-GUI supports "admin" role only at this time.

3. Users can configure the Telemetry API endpoint for viewing the metrics in PoseidonOS-GUI by clicking on the “CONFIGURE” button

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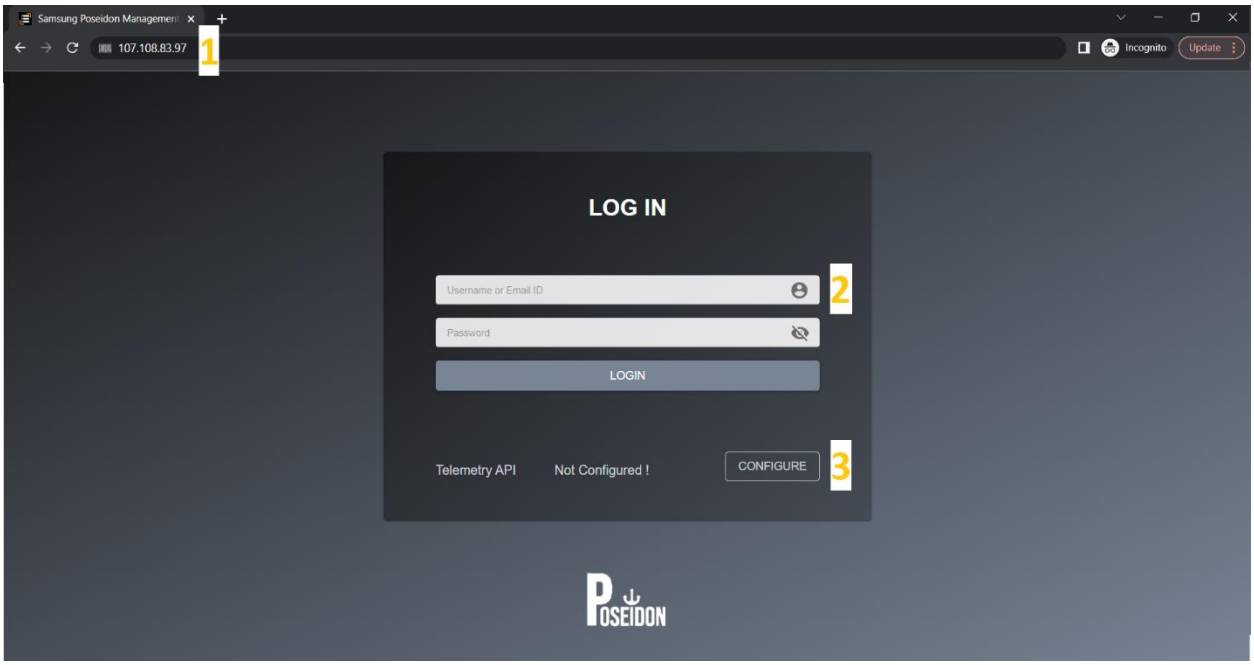

Figure 2. Poseidonos-GUI login page

4. In the configuration screen, users can enter the IP and Port of Telemetry API and save it, or skip the configuration

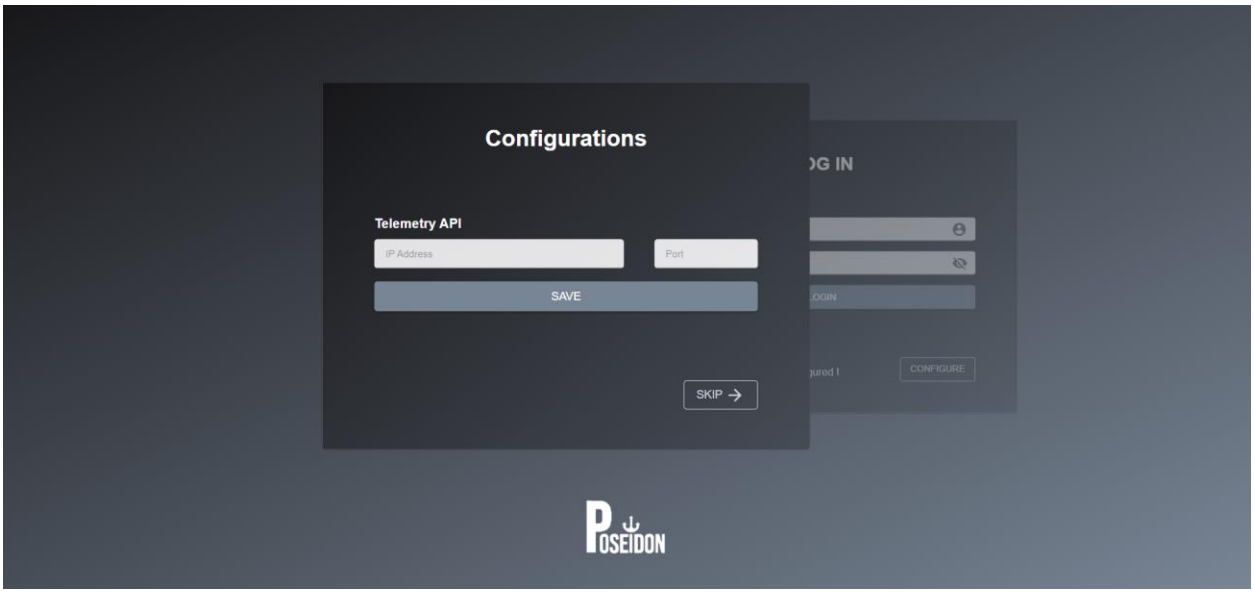

Figure 3. Telemetry API Configuration

5. The configured IP shows up in the Login screen

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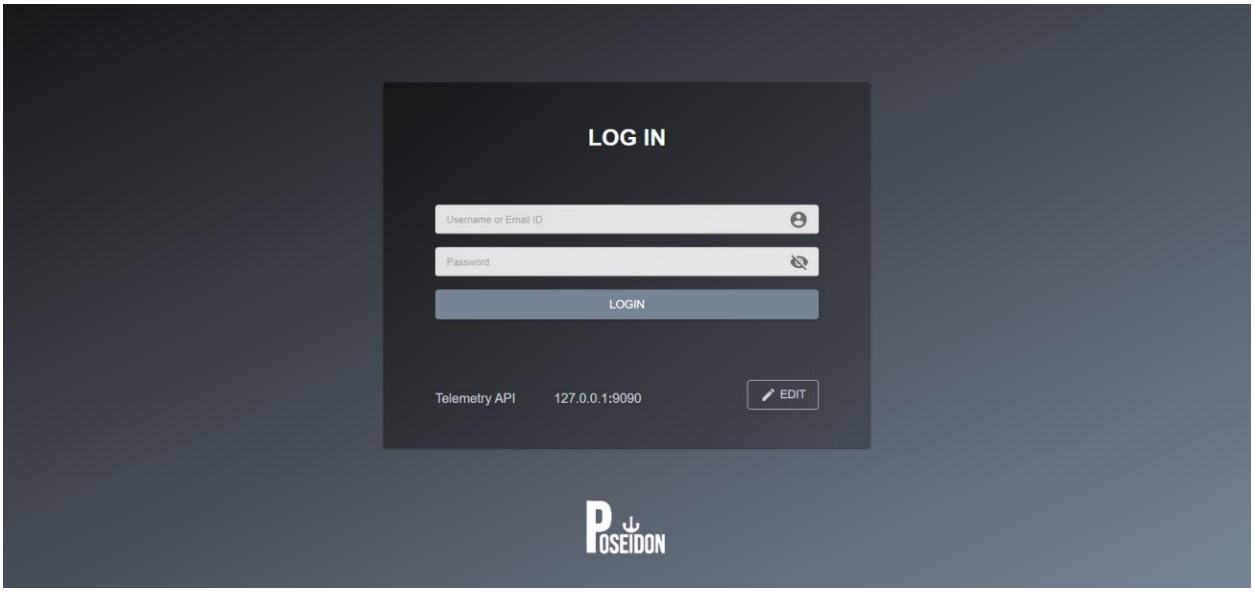

Figure 4. Login Screen Telemetry API configured

2.2 Poseidonos-GUI Dashboard

Dashboard provides user an overview of the Poseidon Storage. It has three sections,

- Performance overview
- Storage Details
- Storage Summary

In addition, it also has links to few admin tasks such as storage management functions, etc. It also shows the current working status of the storage management system and the last time the status is updated.

1. **Performance Overview** shows the basic performance details such as Latency, Bandwidth and Throughput of the storage management box.
2. **Status Label** shows whether the storage management is available or not.
3. **IP Info** shows the IP address of Poseidon and Telemetry
4. **Storage Details** shows the space utilization.
5. **Array Summary** provides the array level information in the storage management box.
6. **Volume Summary** provides the volume level information in the storage management box.

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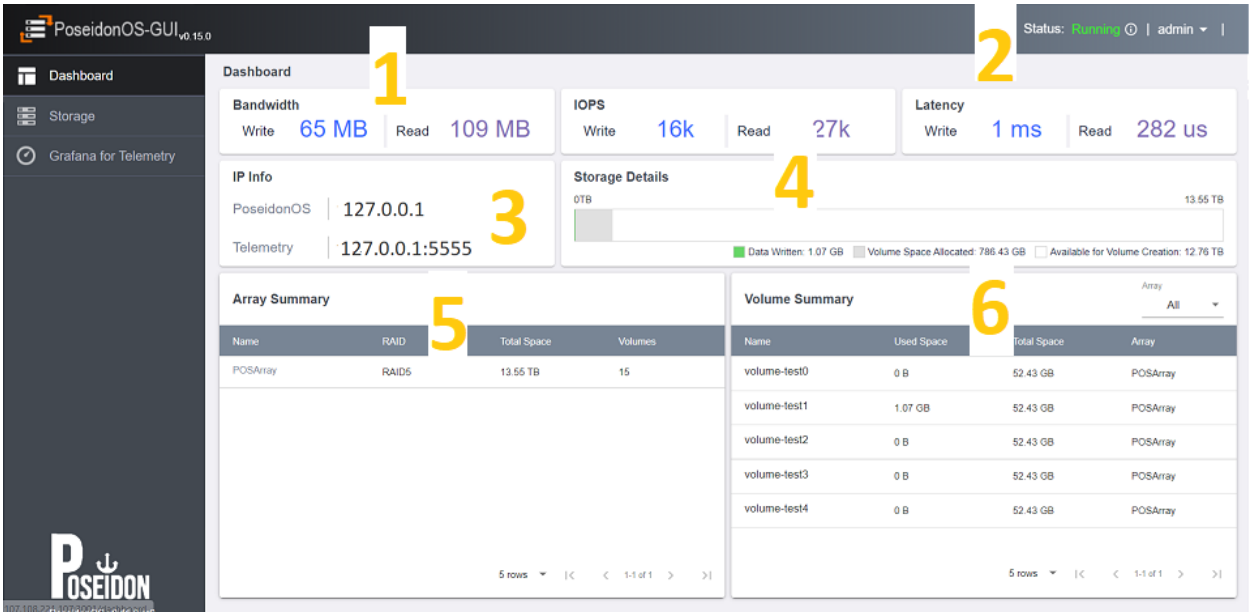

Figure 5. Poseidonos-GUI dashboard page

2.3 Poseidonos-GUI Storage Management

The Storage Management page allows user to create an array and volumes, view existing array and volumes and manage existing arrays and volumes.

1. User can create one or more arrays based on the types of disks selected in the slots .i.e. Storage, Spare and Write Buffer Disks.
2. User can create a single or multiple volumes at a time by specifying the volume name, volume size, volume count and description.
3. User can view the volume information including volume name, volume size, used size, IP, description and status in a tabular format.
4. User can view the existing space for volume creation process.

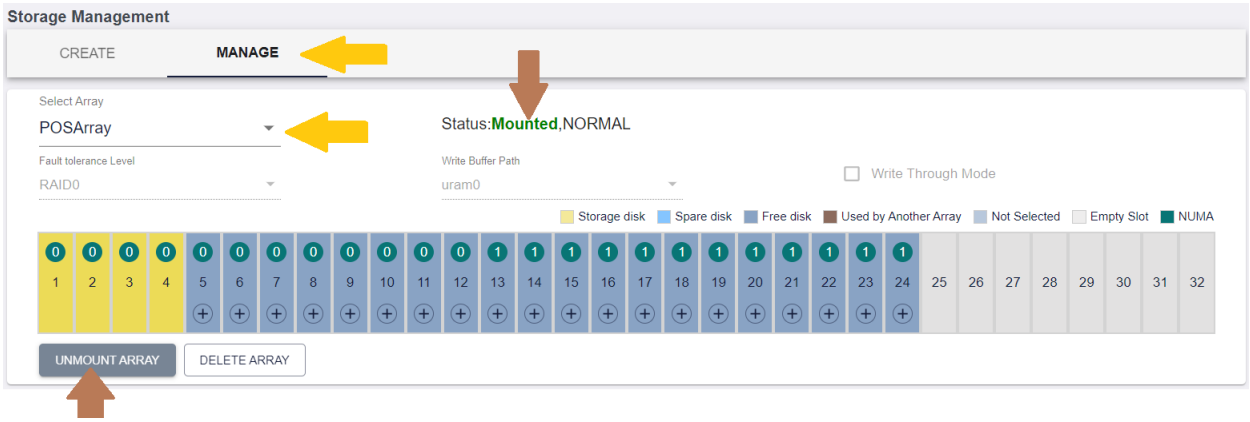

Figure 6. Poseidonos-GUI storage management page

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2.3.1 Array Management

Array management option allows user to create and manage one or more arrays.

Create Array

Follow the steps below to create sample array creation process:

1. **Array Name -** Select a name for the array (e.g. name = array_1; Max length = 63 characters)
2. **Fault Tolerance Level** – Select from the dropdown
3. **Disk Type** - Select storage disks from the dropdown list. The 2 options for disk type are (Minimum Storage Disks = 3; Maximum Storage Disks = 32; Minimum Spare Disks = 0; Maximum Spare Disks = 29)
    - Storage Disk
    - Spare Disk
4. **Write Buffer Path** – Select from the dropdown list.
5. **Write Through Mode** – Select this option to mount the array in Write through Mode
6. User can view the available disks.

The max number of allowable disks is 32.

---

7. User can view the color codes for various types of disk supported by Poseidonos-GUI. User can view additional details - name, size- by hovering over disk number
8. User can view the **NUMA** value of the disks.
9. Click **Create Array** button

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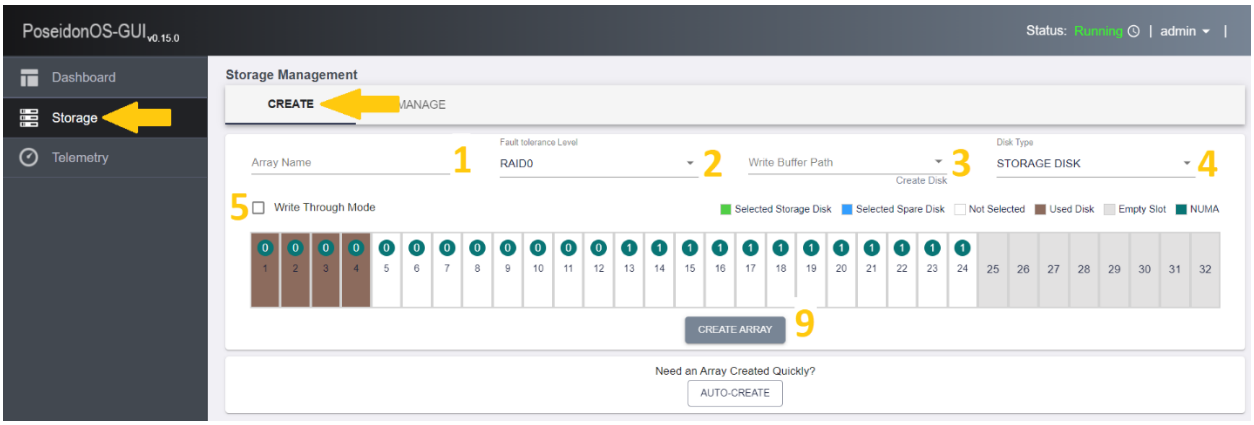

Figure 7. Poseidonos-GUI Array Management

Follow the steps below to create sample array creation process:

1. Selected storage disk is shown in green
2. Select spare disk is shown in blue
3. Additional details of the disk can be seen when hovering on the colored bar
4. Click on the “Create Array” to create an array

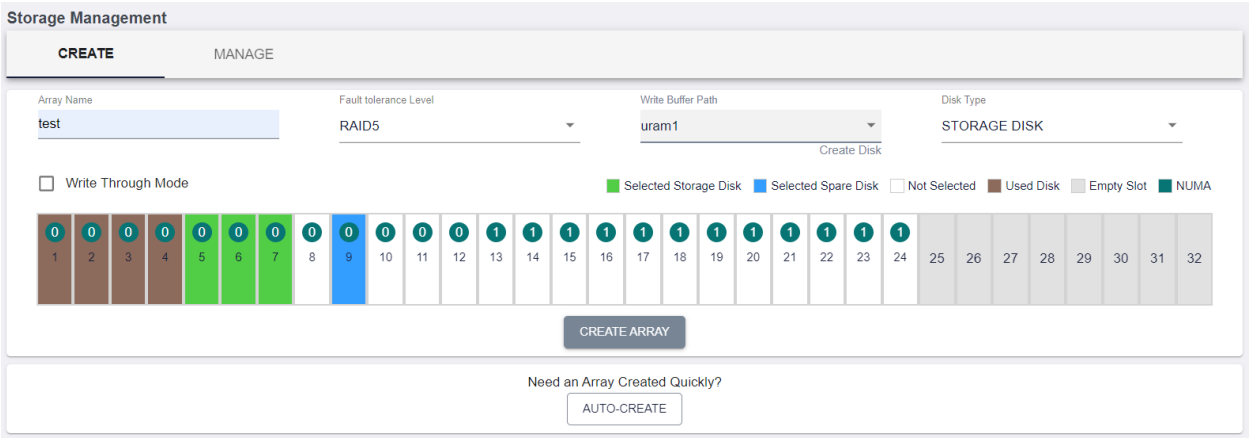

Figure 8. Poseidonos-GUI Array creation steps

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A confirmation message, “**Array Created Successfully**” displayed.

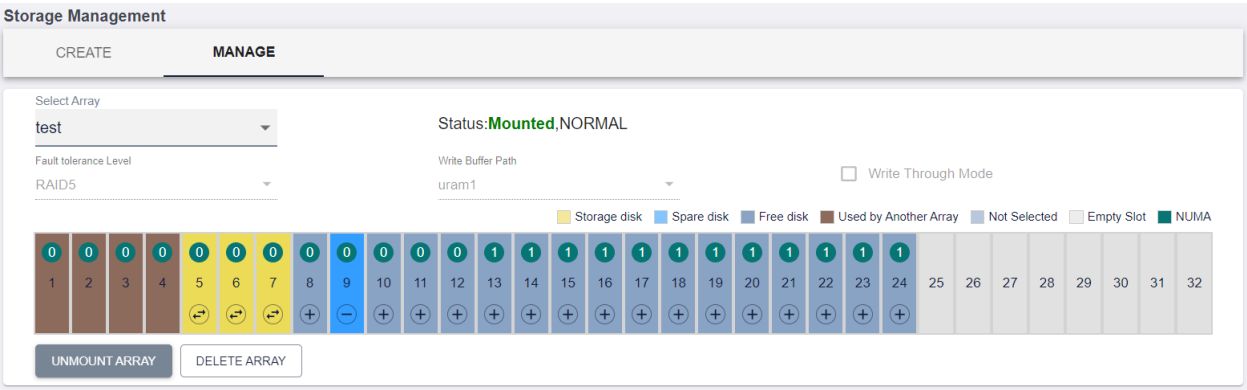

Figure 9. Poseidonos-GUI shows array details after successful array creation

Manage Array

After successful array creation, user has the option to either **delete** or **unmount** an array through the manage section.

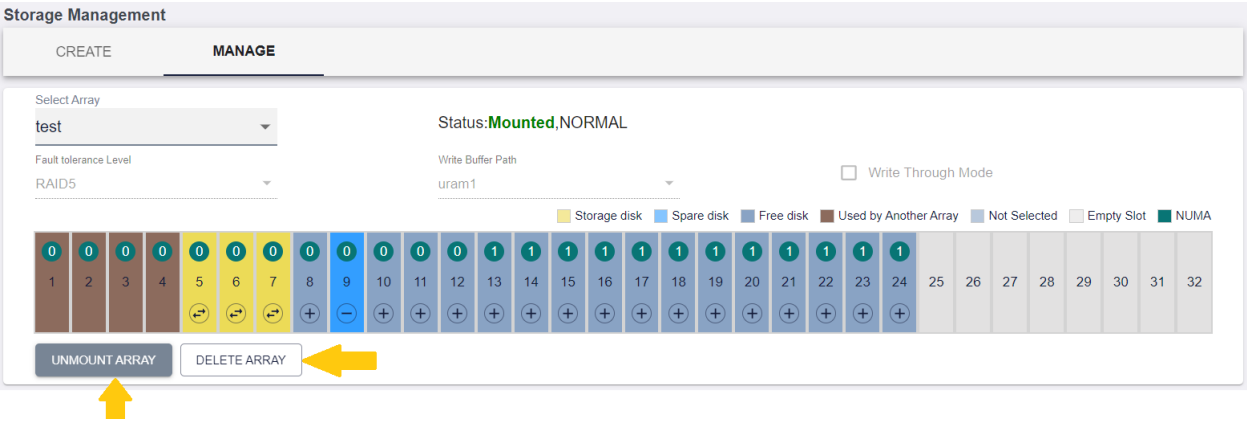

Figure 10. Poseidonos-GUI successful array creation and ability to unmount and delete

2.3.1.1 Unmount Array

Follow the steps below to unmount array:

1. Click “**Unmount Array**” button
2. By hovering over the “**Unmount Array**” button, the additional info is displayed

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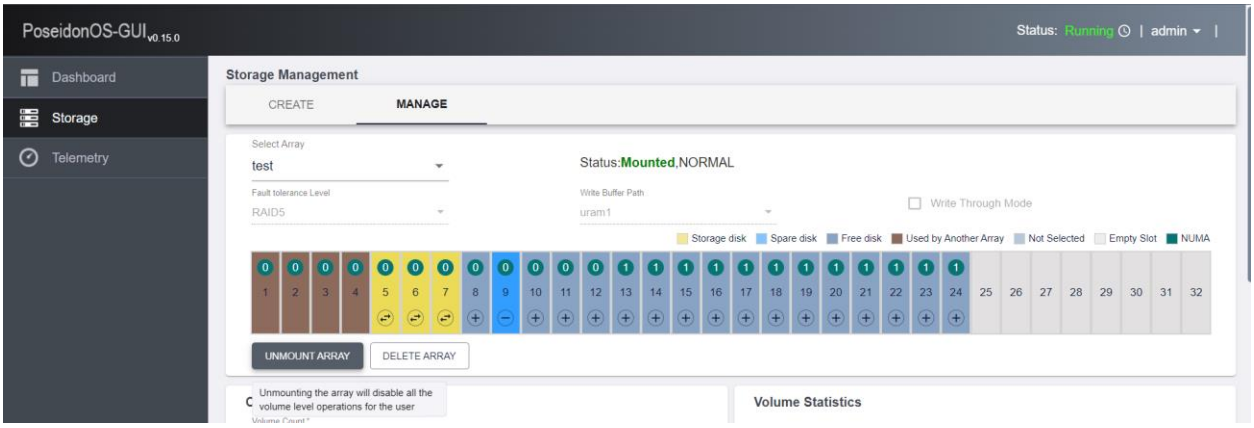

Figure 11. Poseidonos-GUI unmount array operation

A confirmation message, "**Array Unmounted Successfully**" displayed.

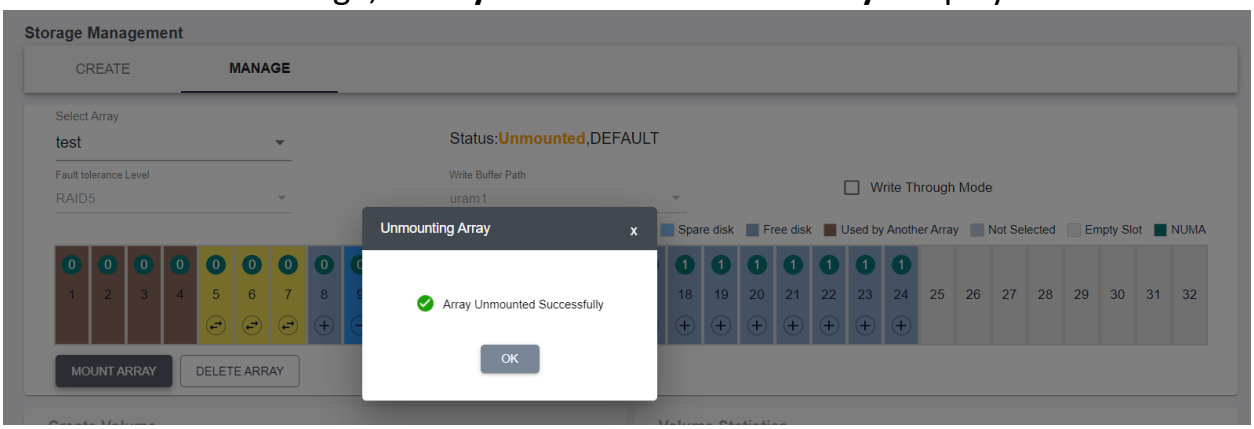

Figure 12. *Poseidonos-GUI successful array unmount confirmation*

2.3.1.2 Delete Array

Follow the steps below to delete array:

1. Click **Delete Array** button
2. A confirmation message is displayed, click **Yes** button to confirm the delete operation

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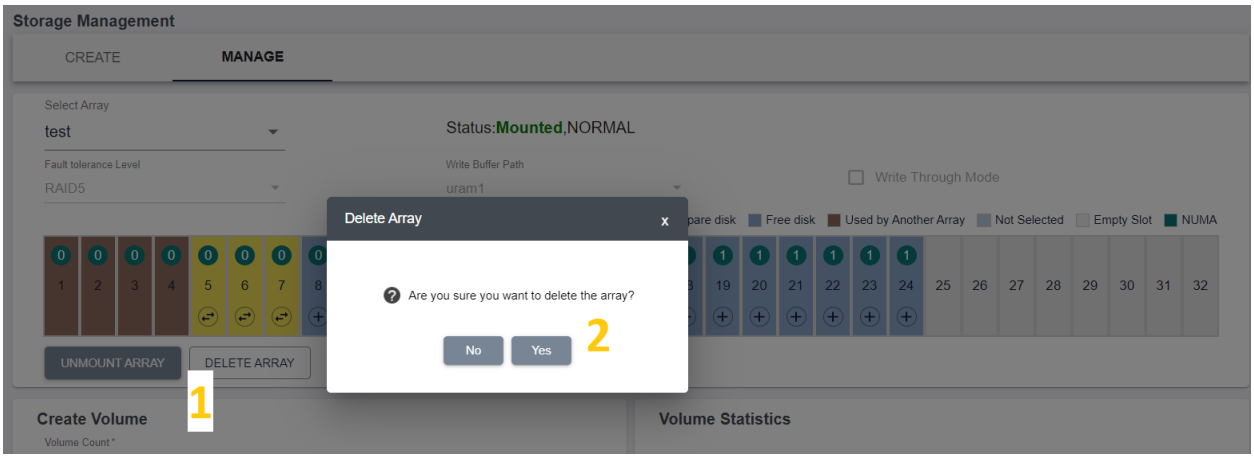

Figure 13. Poseidonos-GUI array deletion confirmation

A confirmation message, "**Array Deleted Successfully**" displayed.

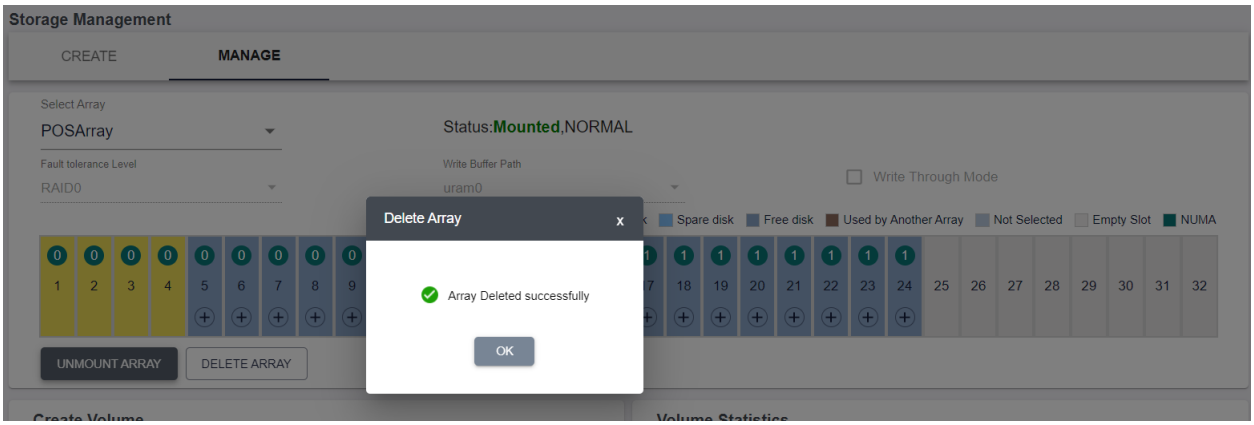

Figure 14. Poseidonos-GUI successful array deletion confirmation

2.3.1.3 Mount Array

Follow the steps below to unmount array:

1. Select or Unselect the "**Write Through Mode"**
2. Click **"Mount Array**" button
3. By hovering over the "**Mount Array**" button, the additional info is displayed

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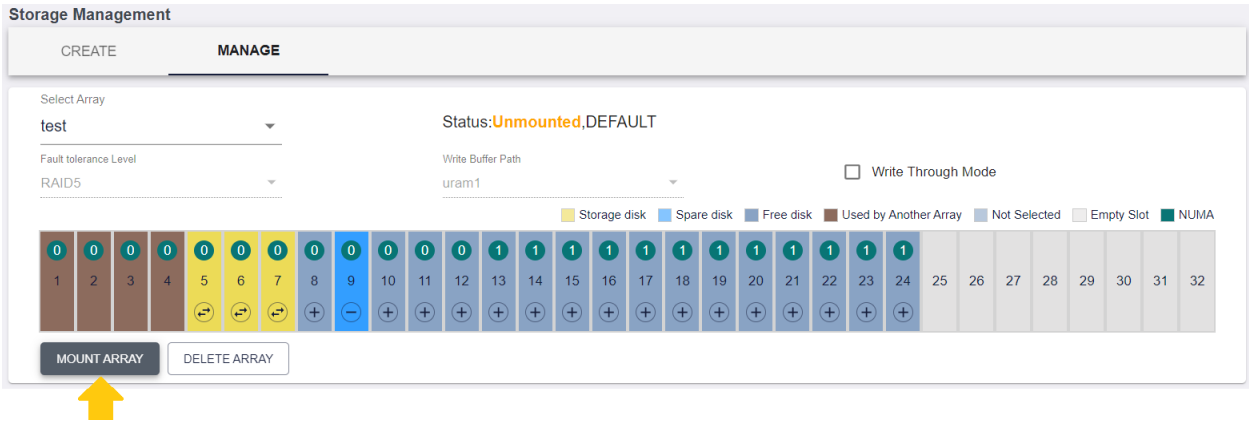

Figure 15. Mount Array

2.3.1.4 Add Spare Device

User can add a Spare Device to the array from the list of free devices by clicking on the “+” button on the free device

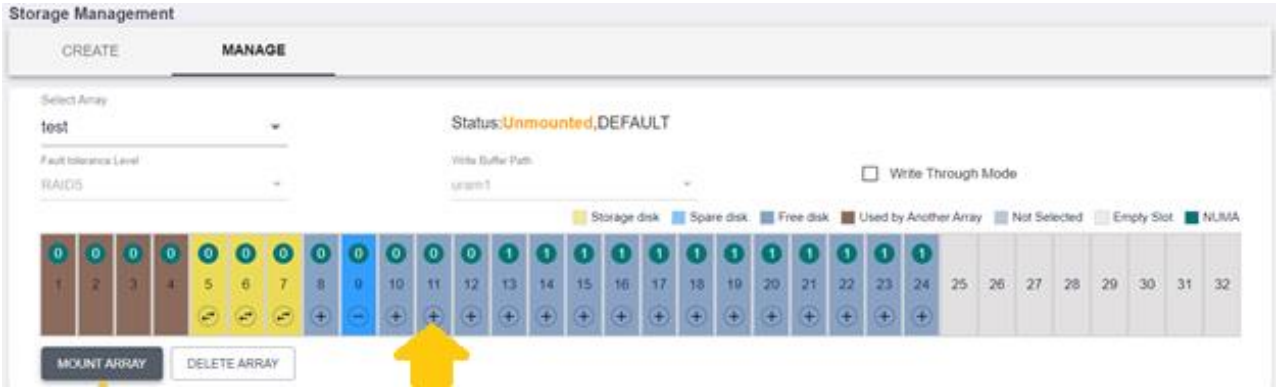

Figure 16. Add Spare device

2.3.1.5 Remove Spare Device

User can remove a spare device from the array by clicking on the “-” button on the spare device

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Figure 17. Remove Spare device

2.3.1.6 Replace Array Device

User can replace an array device with a spare device by clicking on the "⇄" button on the data device

Figure 18. Replace Array Device

2.3.1.7 Rebuild Array

When the array is in degraded state, the user can click on the Rebuild Array button to rebuild the array.

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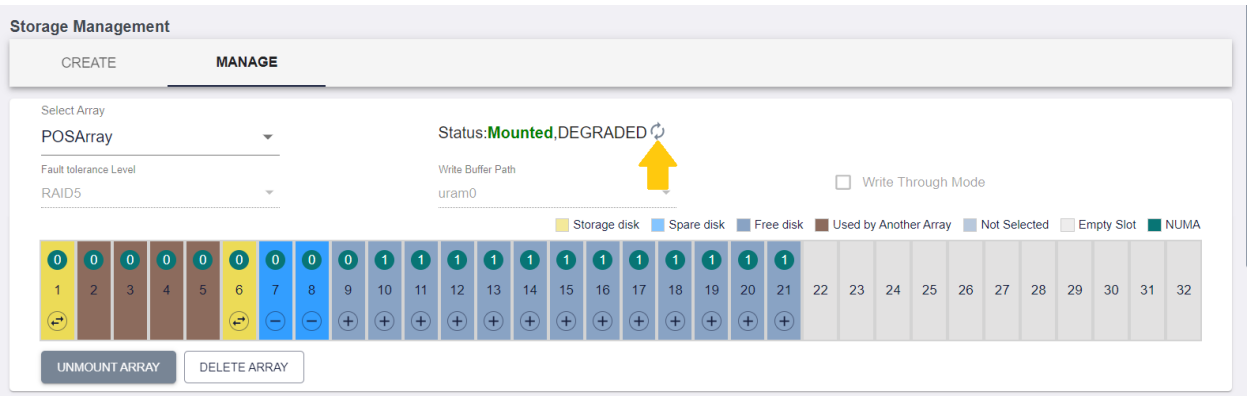

Figure 19. Rebuild Array

User can click on the info icon to see the rebuilding progress.

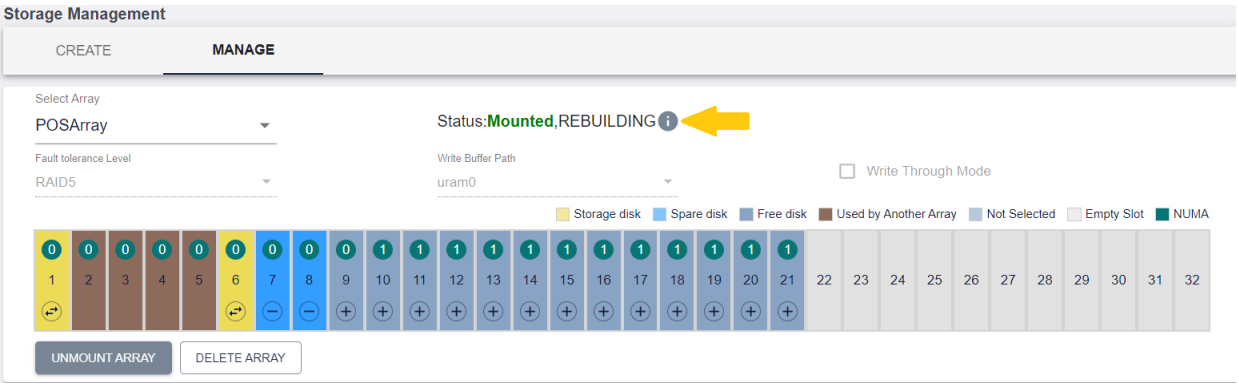

Figure 20. Rebuilding status Icon

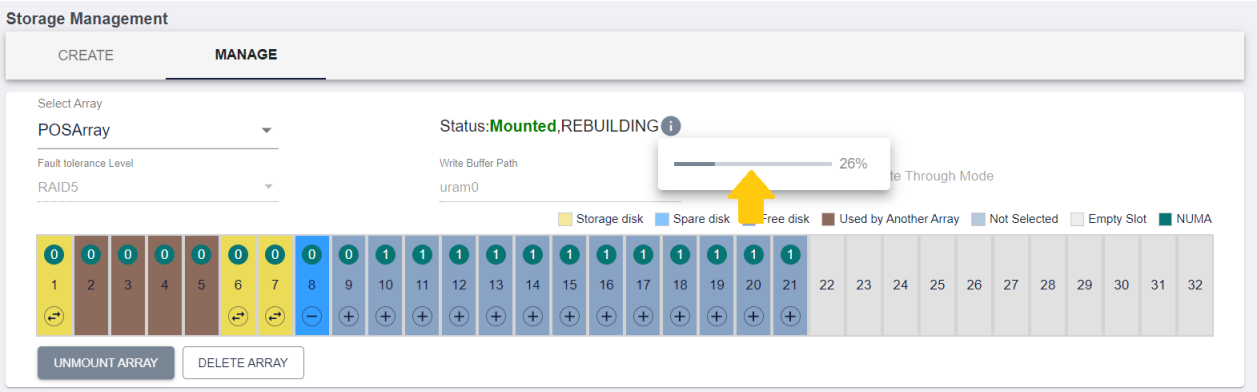

Figure 21. Rebuilding Progress

2.3.2 Volume Management

Volume management option allows user to create and manage one volume or multiple volumes.

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2.3.2.1 Create Volume

Follow the steps below to Manage Volume:

1. User can choose to create one volume or multiple volume. User can enter the number of volume he or she wishes to create.
2. User can enter the volume name (max length of the name is 255). When user tries to create multiple volumes, then user can enter the suffix value to append to the multiple volumes that need to be created.
3. User can choose a number suffix value. For example, if user chooses to create 5 volumes with a volume name as "*volume_company*" and numeric suffix value of 0, then volumes with the following names would be created.
    - Volume_company0
    - Volume_company1 and so on to …
    - volume_company4
4. User can choose to mount the volume or leave it unmounted.
5. User can choose a subsystem in case user wants to mount the volume
6. User can stop the volume creation process when an error occurs.

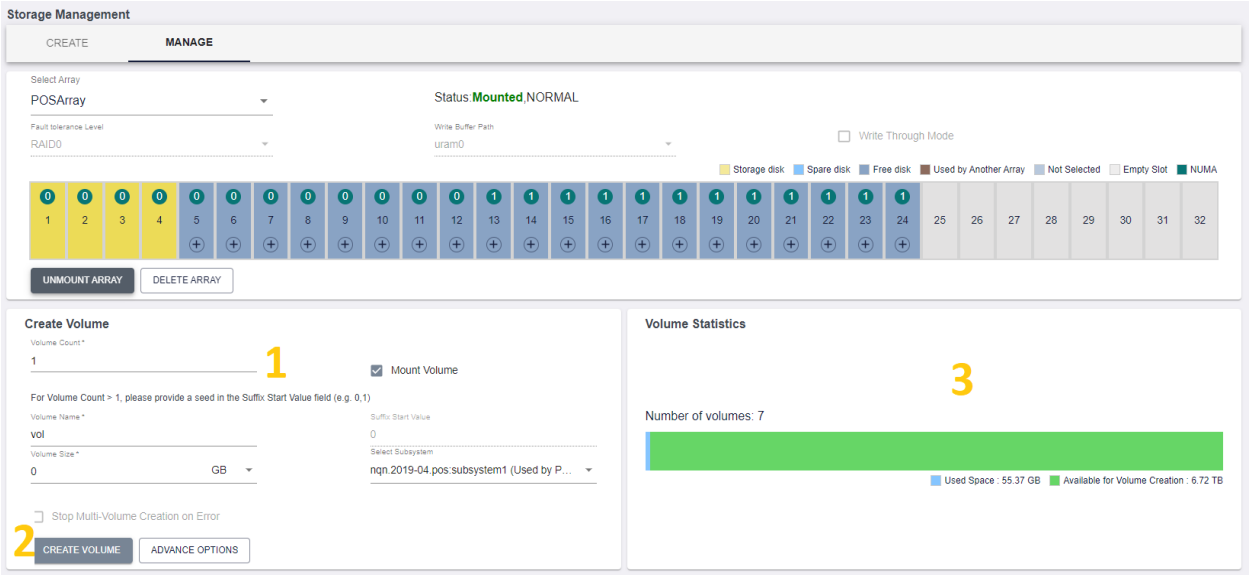

Figure 22. Poseidonos-GUI create volume from Array Manage Page

Below is a screen showing the volume creation step for 5 volumes.

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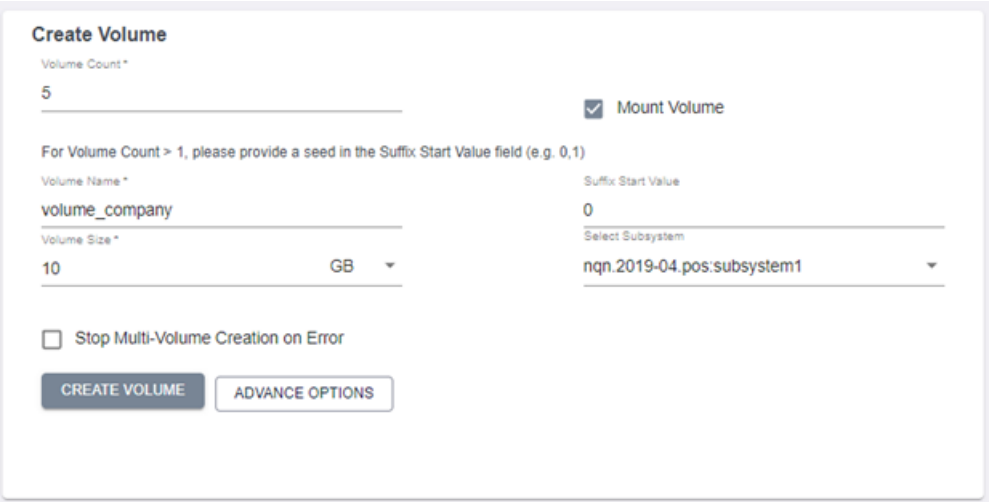

Figure 23. Poseidonos-GUI sample volume create steps

A user can hit the “CREATE VOLUME” button for Poseidonos-GUI to create the required volumes. Poseidonos-GUI may take a few seconds depending on how many volumes are selected for creation.

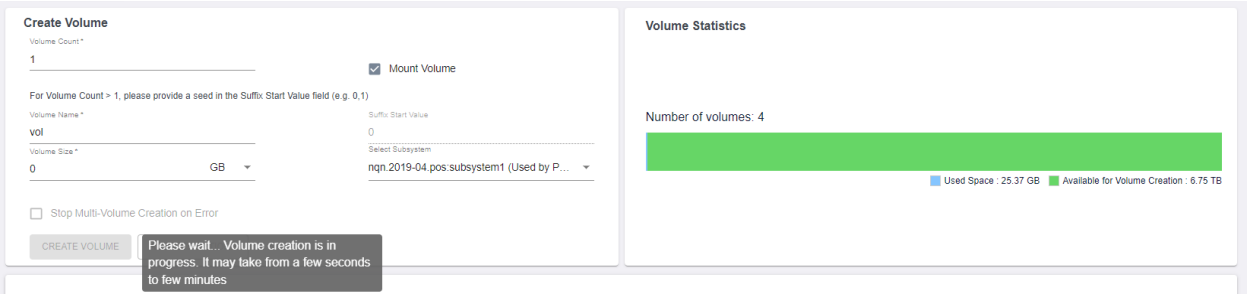

Figure 24. Poseidonos-GUI volume creation intermediate step waiting for processing

2.3.2.2 Advanced Create Volume

User can select to create a volume with Advance settings using the Advance Options button in the UI.

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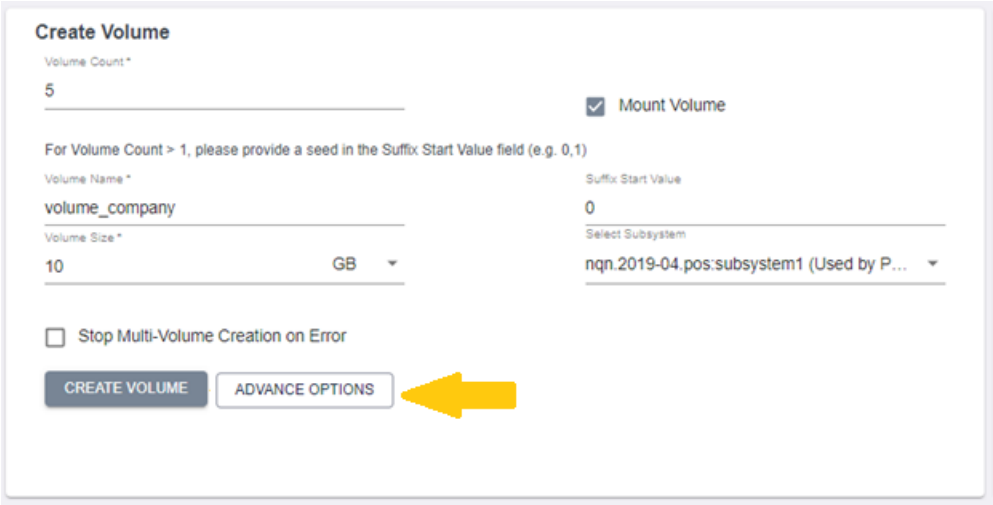

Figure 25. Poseidonos-GUI volume creation with Advance Options

On clicking the Advance options button, a Popup appears with different sections to enter the details of Volume to be created.

In the first section, user should fill the Volume details. All the fields in this section are similar to the fields described in section 2.3.1.1.

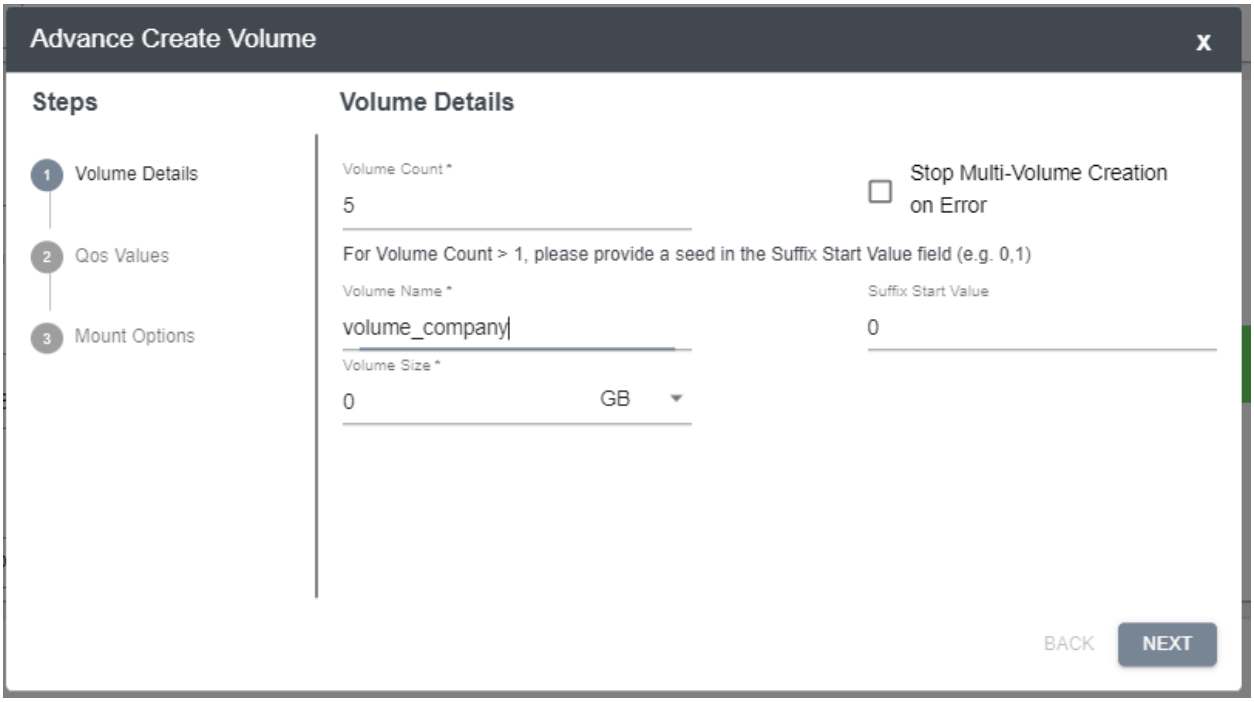

Figure 26. Poseidonos-GUI Advance volume creation – Volume Details

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User should click on the Next button to move to step 2 to fill the details related to QoS values.

In Step 2, user can enter the following Details:

1. Maximum IOPS – The value can be set to 0 to use the maximum value. The minimum value should be 10
2. Maximum Bandwidth – The value can be set to 0 to use the maximum value. The minimum value should be 10
3. Minimum IOPS/BW – The value can be set to 0 to use the minimum value. User can select either to set Minimum IOPS or Minimum Bandwidth

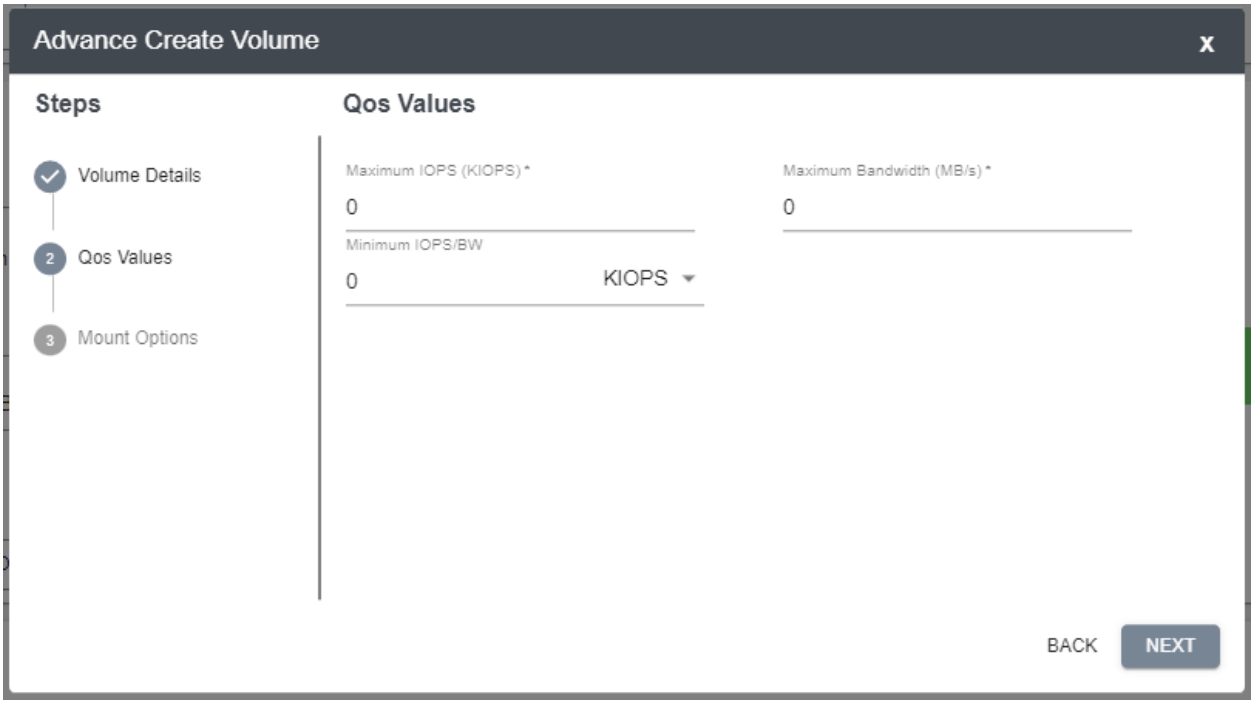

Figure 27. Poseidonos-GUI Advance volume creation – QoS Values

User should click on the Next button to move to step 2 to fill the details related to Mount Options.

1. The user can select to mount the Volume or to not mount the volume by checking/unchecking the "**Mount Volume"** checkbox.
2. If the user selects the **"Mount Volume"** option, the user can further choose to check/uncheck the **"With a New Subsystem"** checkbox
3. If the user unchecks the **"With a New Subsystem"** checkbox, the user should select an existing subsystem to mount the volume

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4. If the user unchecks the **"With a New Subsystem"** checkbox, the user should enter the following details of the new subsystem
    a. **Subsystem Name** – Name of the new subsystem
    b. **Transport Type** – Transport type of the new subsystem
    c. **Target Address** – IP of a listener to the subsystem
    d. **Transport Service ID** – The port through which the listener of the system communicates

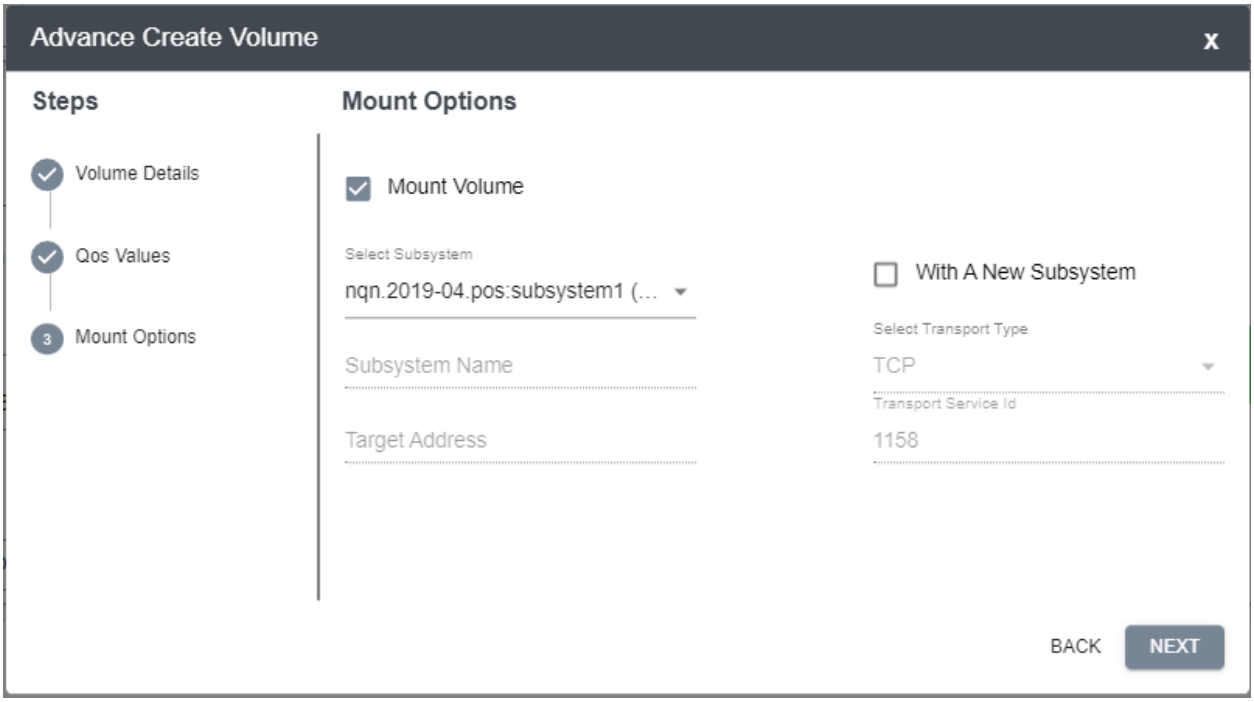

Figure 28. Poseidonos-GUI Advance volume creation – Mount Volume with existing subsystem

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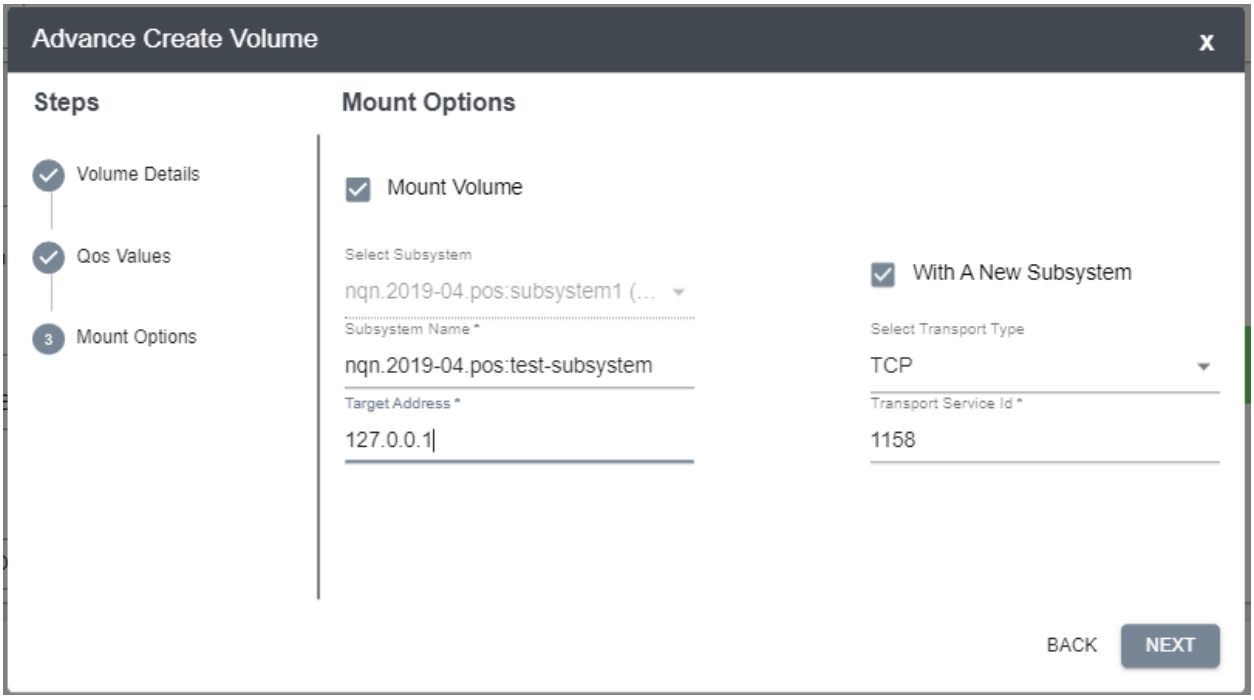

Figure 29. Poseidonos-GUI Advance volume creation – Mount Volume with new subsystem

The user clicks next after the Mount options are entered. A preview of the etered information is shown.

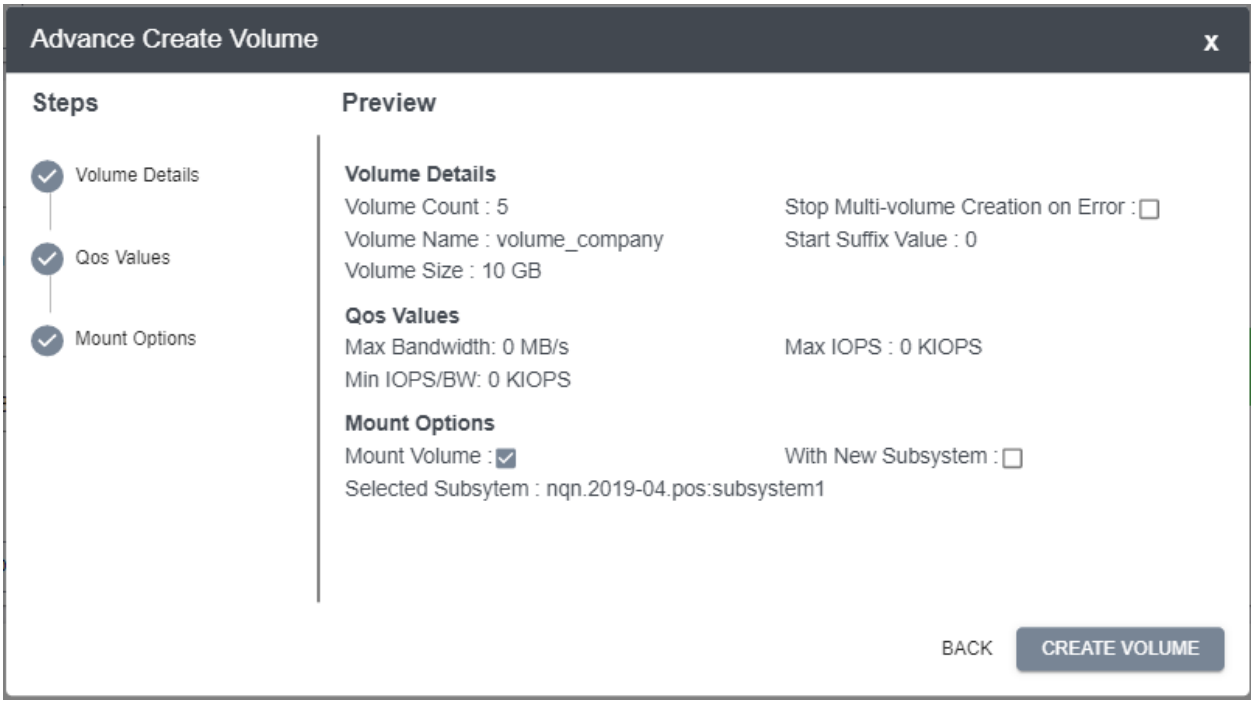

Figure 30. Poseidonos-GUI Advance volume creation – Mount Volume with new subsystem

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If the values look fine, the user should click on the **“CREATE VOLUME”** button for creating the Volume.

On successful creations of volumes, a popup shows that the Volume Creation is successful.

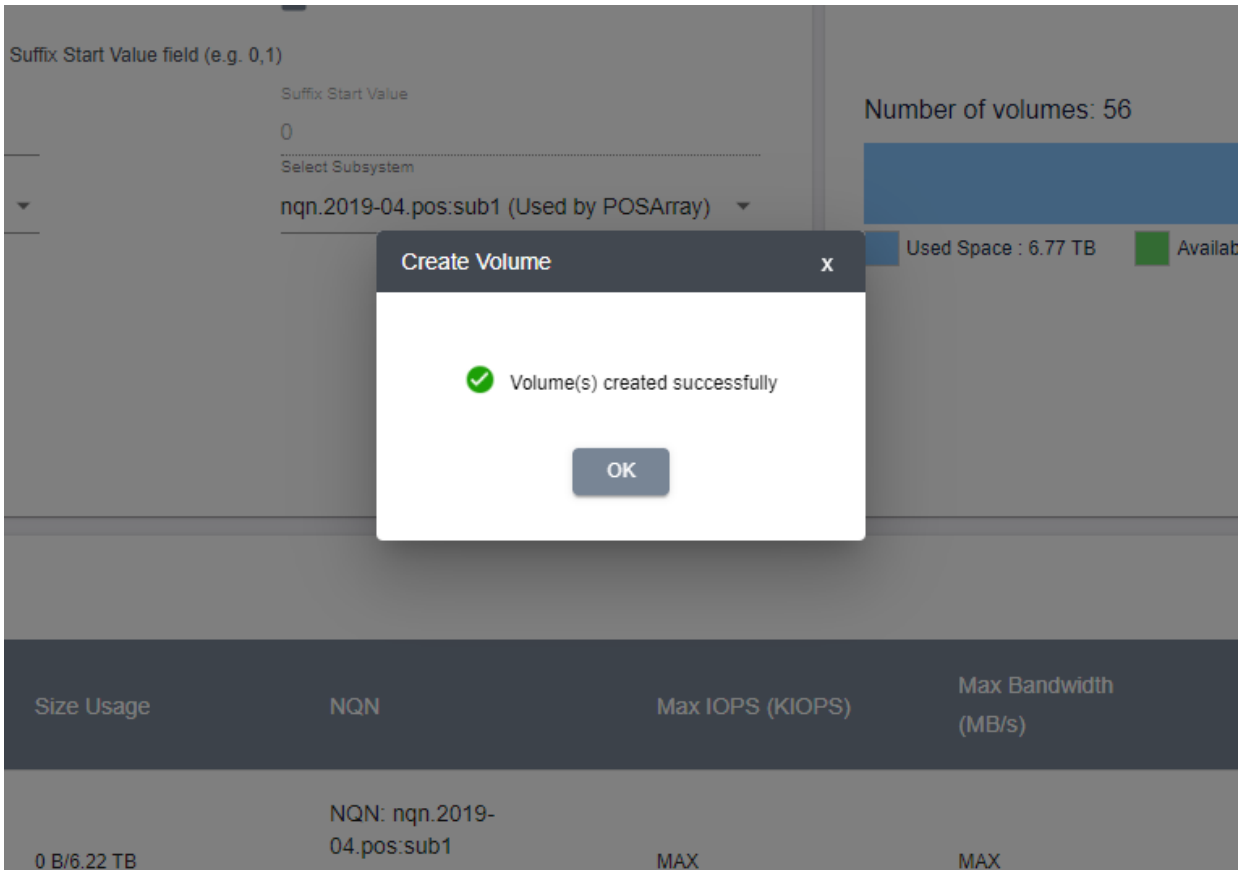

Figure 31. Poseidonos-GUI Advance volume creation – Volume Creation Success popup

2.3.2.3 List Volumes

Below is a screen showing the volume information for the newly created volumes.

1. User can search for specific volumes by using search terms for size, name, etc.
2. User can select all volumes to delete them.

Note: Multi volume edit is not supported at this time.

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3. User can select a specific volume to either delete it or edit it.
4. User has option to either mount or unmount the volume by toggling the button.
5. User can select edit option for a specific volume
6. User can reset the QoS Values of a Volume by clicking on the Reset QoS button
7. User can view the total number of volumes in the system

Figure 32. Poseidonos-GUI volume information

Below is a screen showing *search function* for volume data.

Figure 33. Poseidonos-GUI search volume information by keywords

Below is a screen showing delete function for all volumes.

1. User can select the checkbox to select all volumes
2. User can click on the delete icon to perform delete operation on all volumes

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Figure 34. Poseidonos-GUI delete all volumes

Below is a screen that shows delete function for one or many volumes.

1. User is notified whether one, many or all volumes are selected
2. User can select the checkbox to select one or many volumes
3. User can click on the delete icon to perform delete operation on the selected volumes

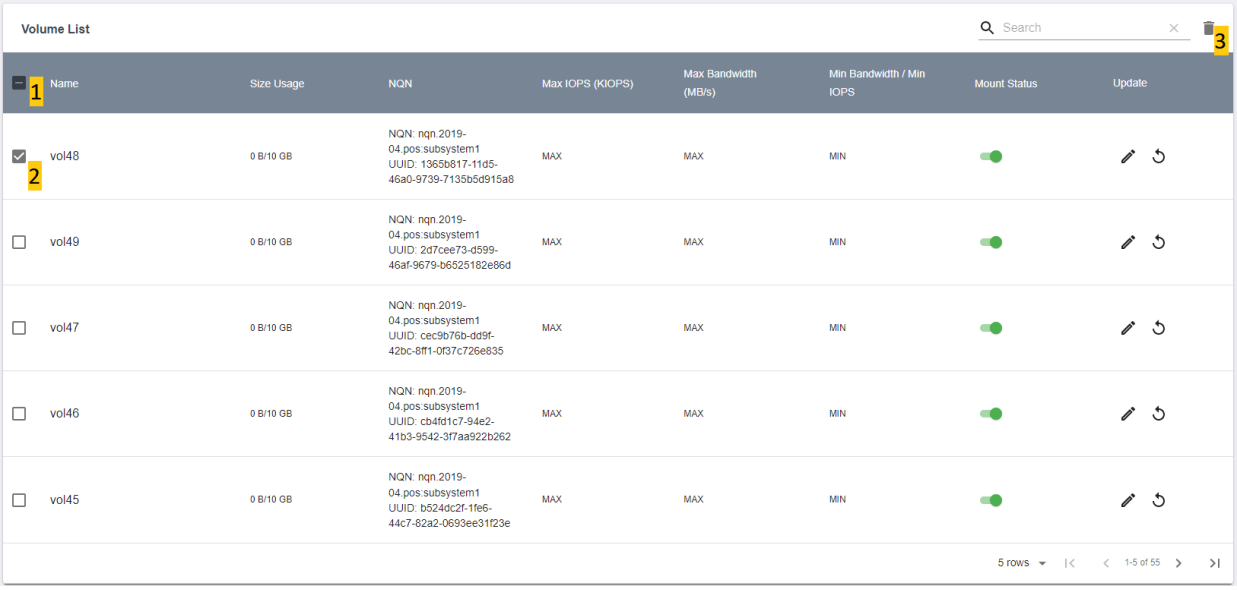

Figure 35. Poseidonos-GUI delete one or more volumes

The screen below shows confirmation of the unmount operation.

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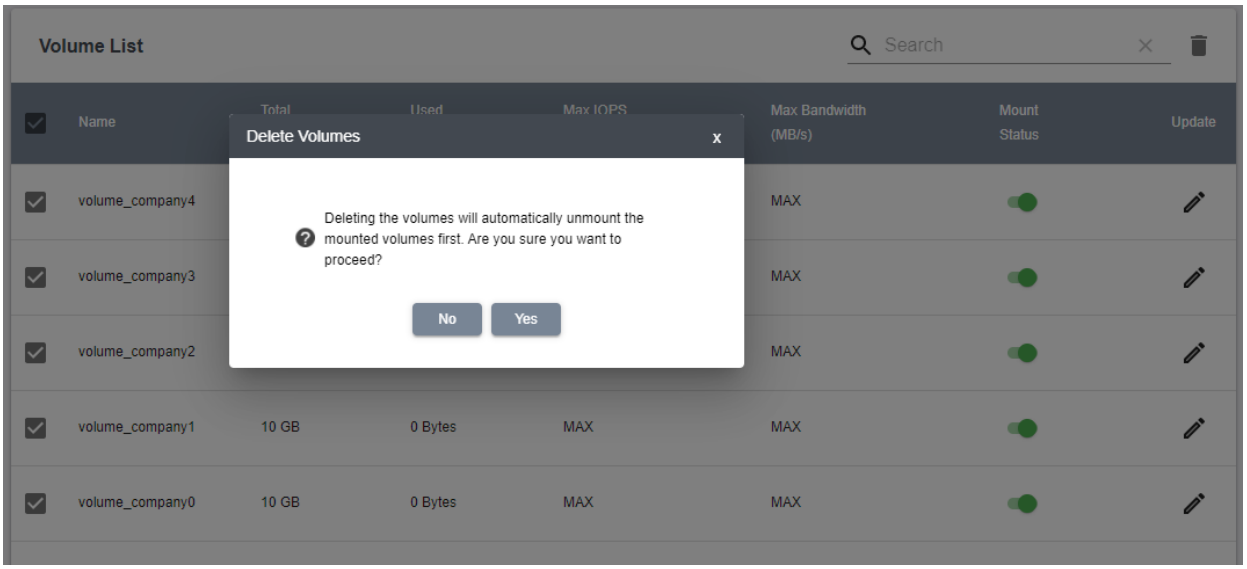

Figure 36. Poseidonos-GUI unmount volume confirmation

The screen below shows unmount or mount operation on a given volume.

1. User is notified whether volume is mounted or unmounted
2. User can view the mount status of the volume

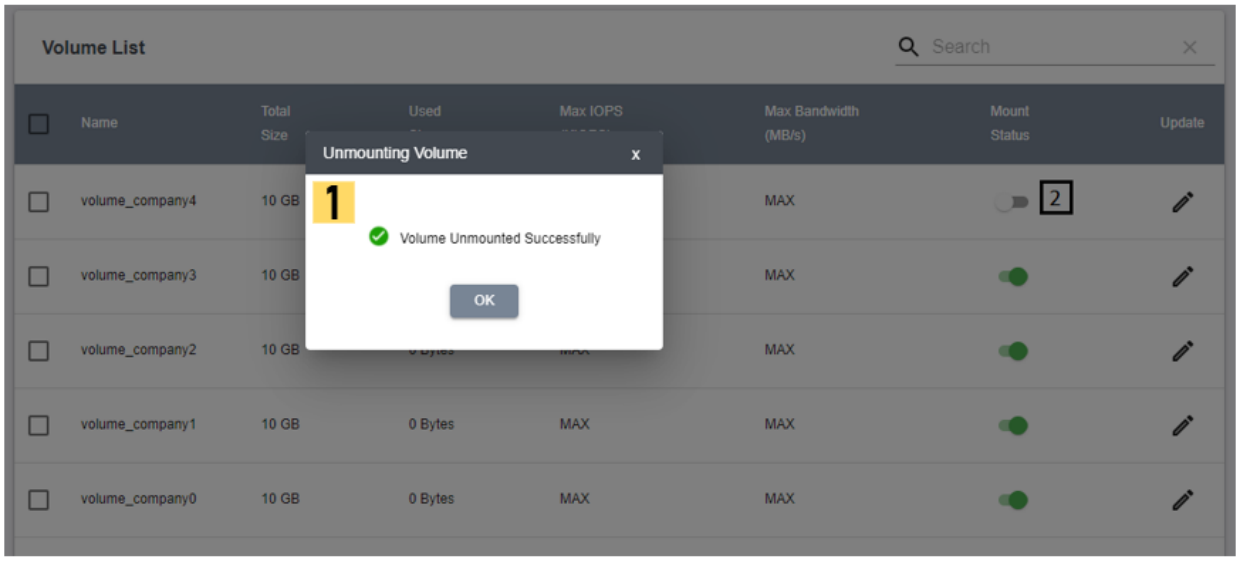

Figure 37. Poseidonos-GUI successful unmount operation confirmation

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The screen below shows update function for a given volume.

1. User can update the name of the volume
2. User can update the IOPS value
3. User can update the bandwidth value
4. User can update the min bandwidth/iops value
5. User can click on the “OK” or “Cancel” button to update or cancel the changes

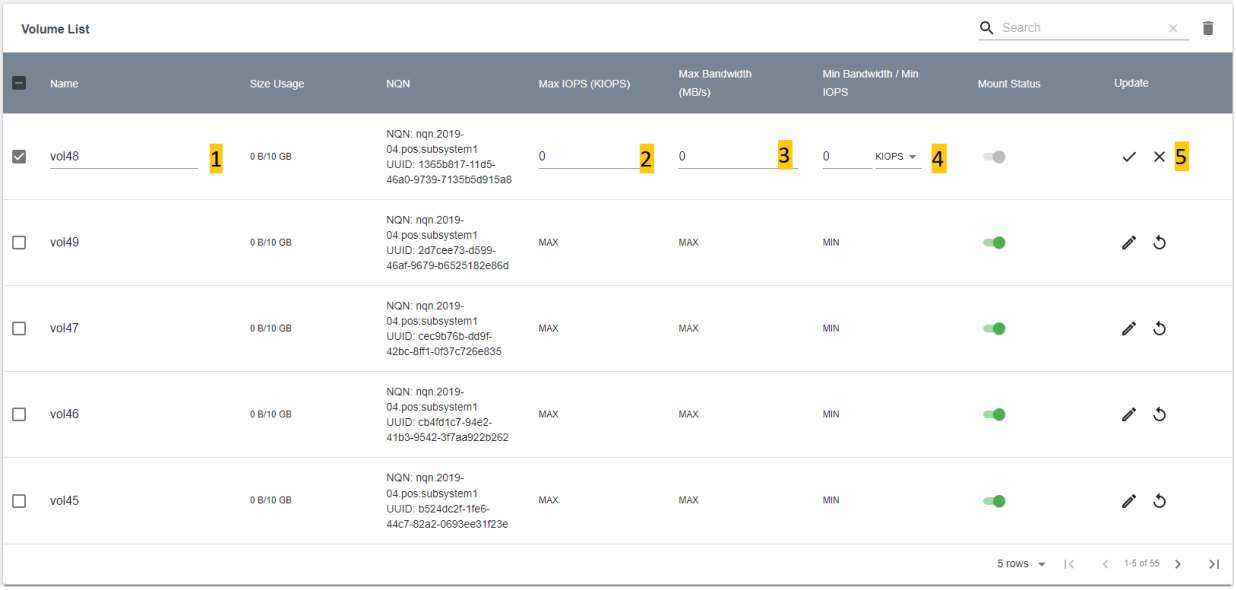

Figure 38. Poseidonos-GUI update volume information

Screen below shows update operation on a given volume.

1. User is notified whether volume is updated successfully
2. User can view the updated data of the volume

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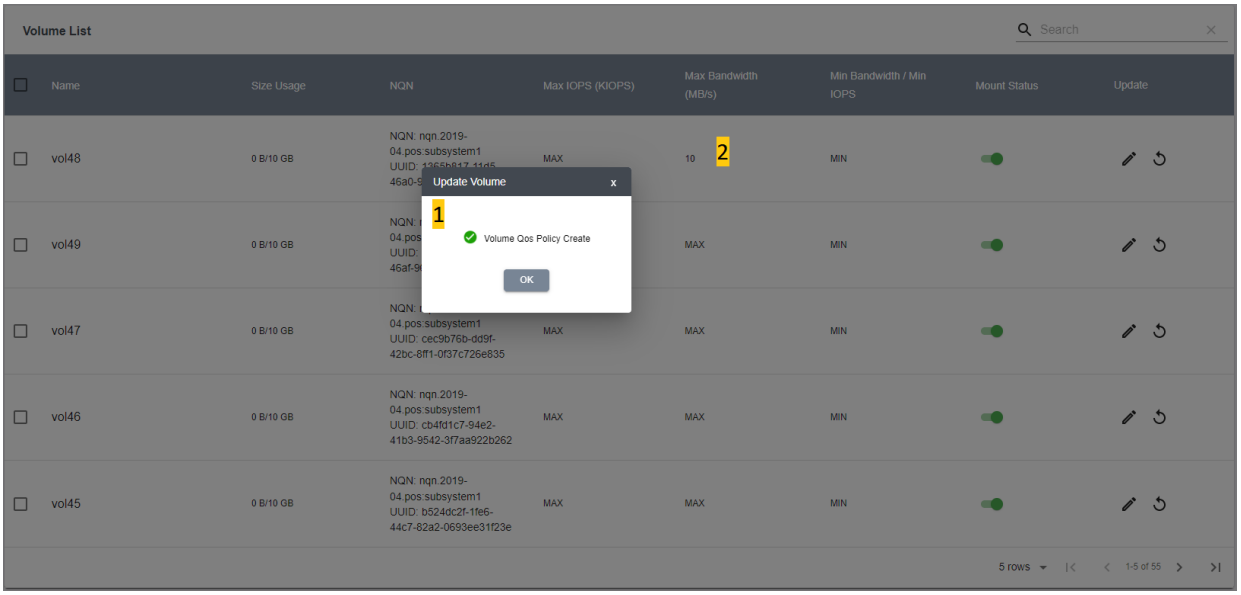

Figure 39. Poseidonos-GUI update volume information confirmation

2.4 Poseidonos-GUI Telemetry

The Telemetry page allows user to configure telemetry and view the embedded Grafana UI.

2.4.1 Telemetry Configure

The Telemetry configure page allows the following operations:

1. User can start the Telemetry
2. User can stop the Telemetry
3. User can see the status of Telemetry
4. User can select/unselect all properties of telemetry
5. User can select/unselect all properties in a group in telemetry
6. User can select/unselect a single property in telemetry
7. User can Save the selected properties

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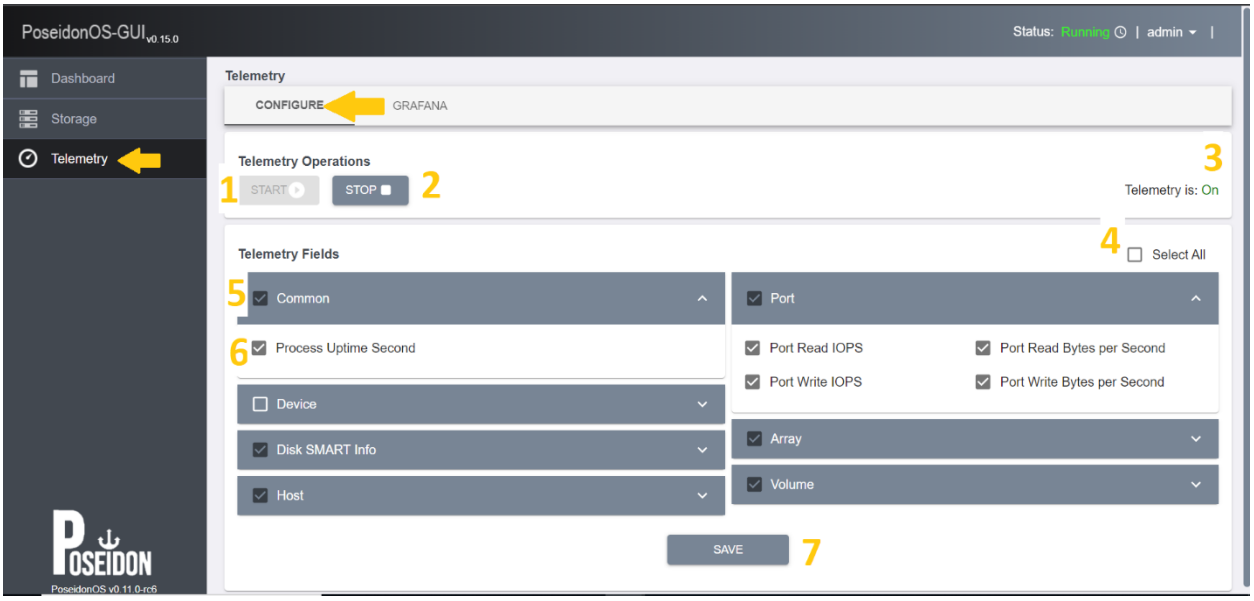

Figure 40. Telemetry COnfiguration

2.4.2 Grafana

Users can view the Grafana UI embedded inside the PoseidonOS-GUI by navigating to the Grafana tab.

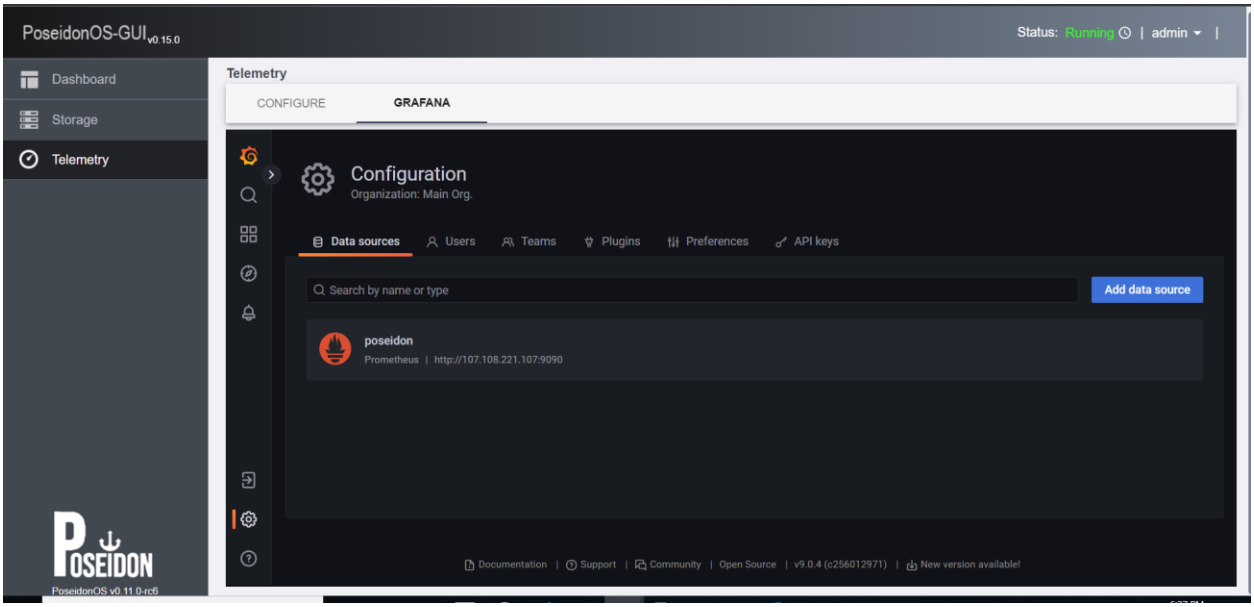

Figure 41. Grafana UI

2.5 Poseidonos-GUI User Management

The user management page allows admins to add a new user and modify Username, Email Id, Mobile Number fields of an existing user.

2.5.1.1 New User

User Addition requires six fields i.e. Username, Role, Password, Confirm password, Mobile Number and Email ID.

Follow the steps below to add a new user:

8. User can add a new user by providing
    - User name
    - Password
    - Phone
9. User can choose the default role “Admin”
10. User can save changes by clicking on “**Submit**” button

Figure 42. Poseidonos-GUI add new user information

2.5.1.2 Delete User

User Deletion allows the admins to delete the entire user(s) details.

Note: If a user record is deleted by the admin, the user would not be able to login to the management portal.

---

1. Admins can view or update existing users and their information.
2. Admins can use **Add New User** functionality to re-add the user.

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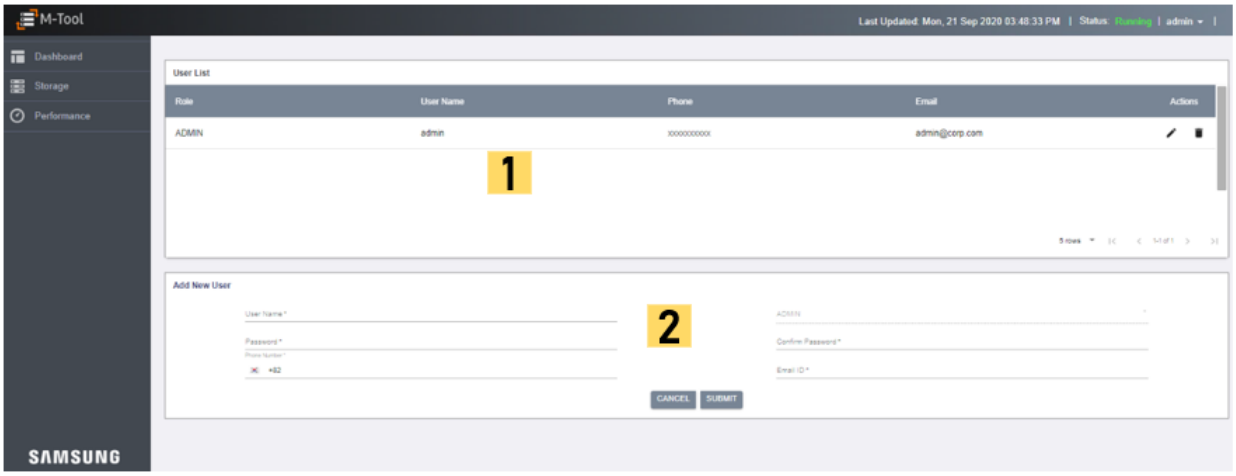

Figure 43. Poseidonos-GUI user management page

2.5.1.3 Modify User

User Modification allows the admins to modify Username, Active Status, Email Id, Mobile Number fields of an existing user.

Note: If a user's active status is disabled by the admin, then the user would not be able to login till the status is reverted to active state by the admin

---

Follow the steps below to update a given user information:

1. User can update the phone
2. User can update an email
3. User can either save changes or discard them

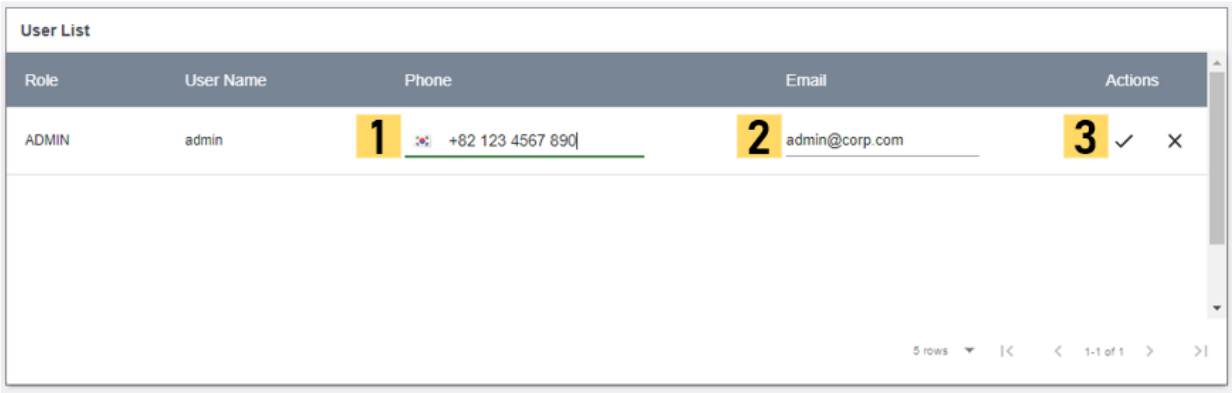

Figure 44. Poseidonos-GUI update user information

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2.6 Poseidonos-GUI Storage Management Operations and Configurations

This page allows users to do operations like Start or Stop Poseidonos, set and get rebuild property, device operations and subsystem related operations.

The Poseidonos operations page has three tabs:

1. Operations
2. Devices
3. Subsystem

The user can navigate to the operations page by clicking on the **"Poseidon Operations"** link in the dropdown in the header

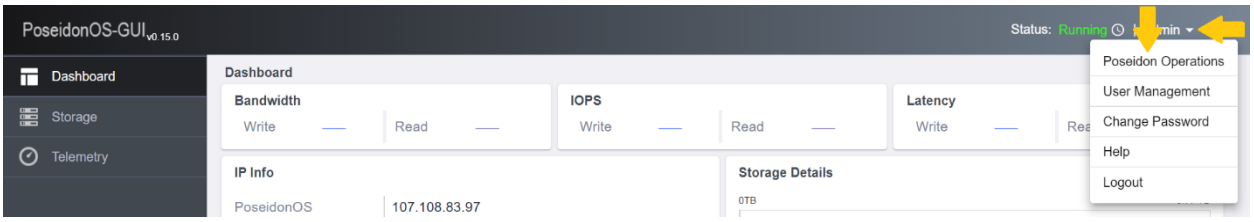

Figure 45. Poseidonos-GUI POS Operations Navigation

2.6.1 Poseidonos Operations

The operations page allows the user to do the following operations:

1. Start Poseidonos
2. Stop Poseidonos
3. Display the status of Poseidonos
4. The performance impact during Rebuild can be selected
5. The Selected level of Impact can be set using the button "SET PROPERTY"
6. The current impact level is displayed

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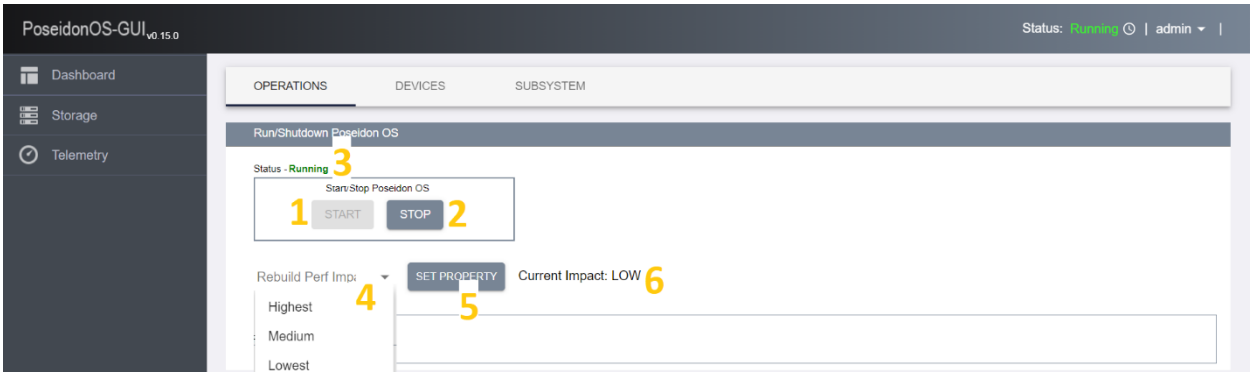

Figure 46. Poseidonos-GUI POS Operations

2.6.2 Devices

The Devices page allows users to create and list the buffer devices.

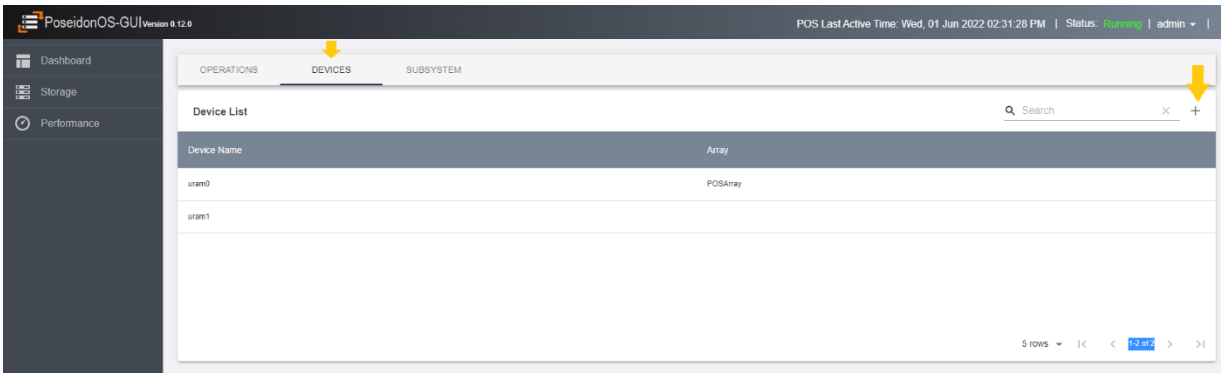

Figure 47. Poseidonos-GUI Devices

To create a buffer device, user should click on the **"+"** button.

On clicking the **"+"** button, a popup appears for creating a buffer device. The following fields should be filled for creating the device.

1. Disk Name
2. Block Size
3. Number of Blocks
4. NUMA
5. Disk Type

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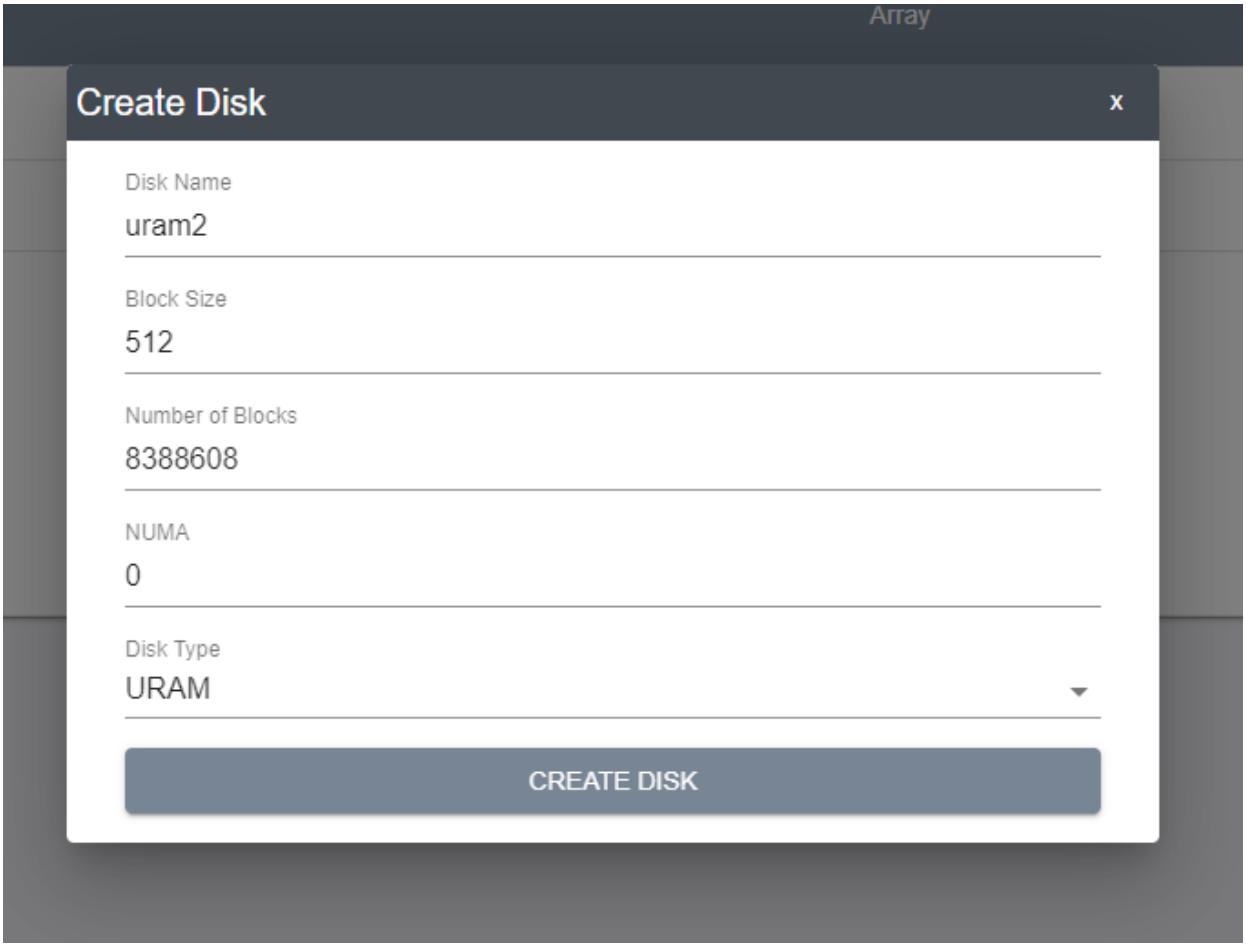

Figure 48. Poseidonos-GUI Create Disk

2.6.3 Subsystems

The Subsystems page allows users to create and list the subsystems.

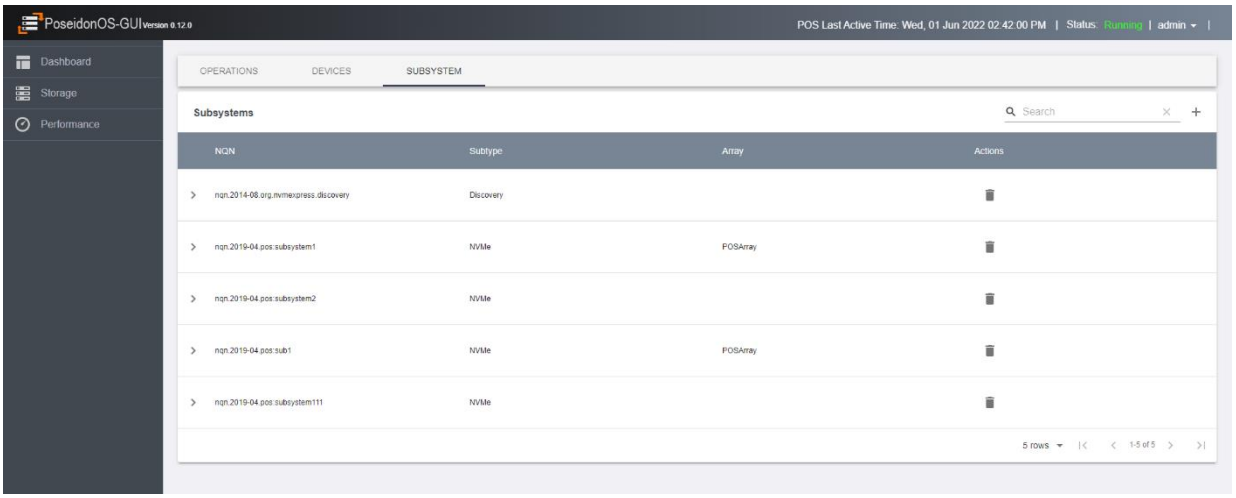

Figure 49. Poseidonos-GUI Subsystem list

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To create a new subsystem, the **"+"** button can be clicked. A new popup will appear for entering details of new subsystem

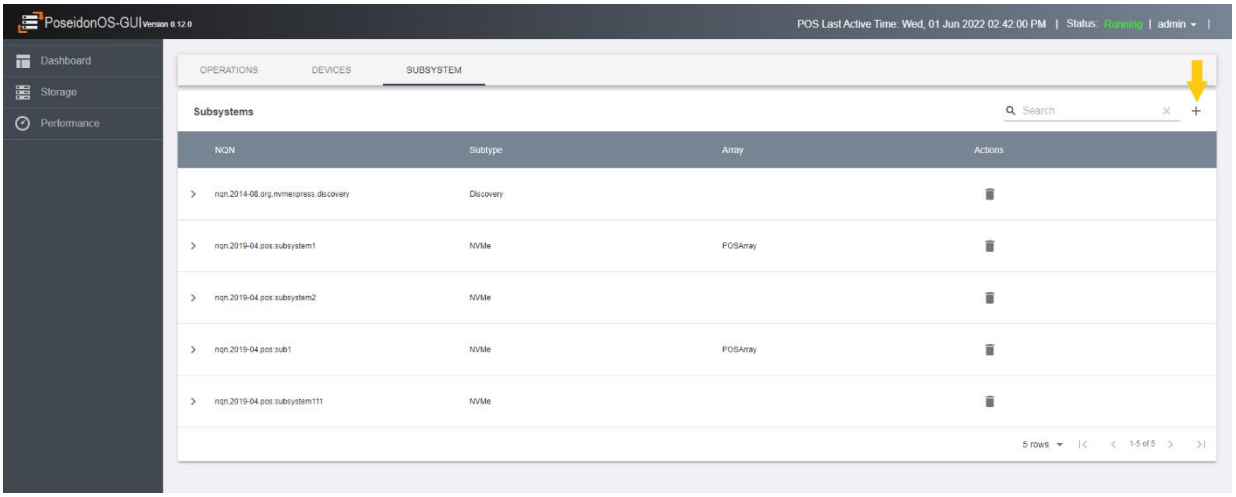

Figure 50. Poseidonos-GUI Create Subsystem

The user should enter the following details for creating the subsystem:

1. SubNQN name
2. Serial Number
3. Model Number
4. Maximum Namespaces
5. Allow Any Hosts

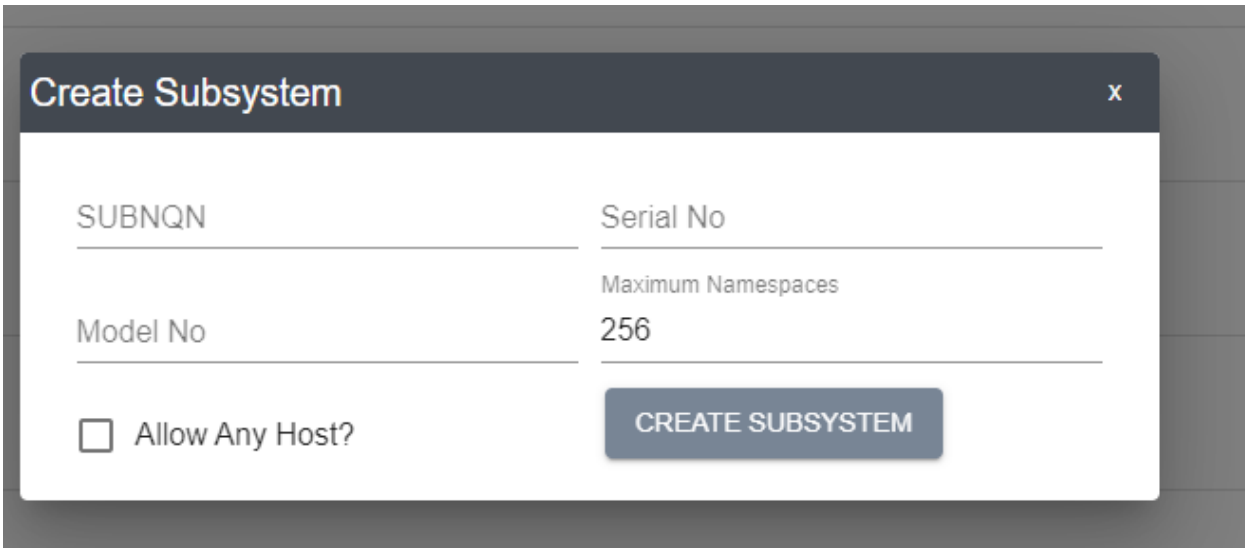

Figure 51. Poseidonos-GUI Create Subsystem Popup

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User can click on the delete button to delete a subsystem

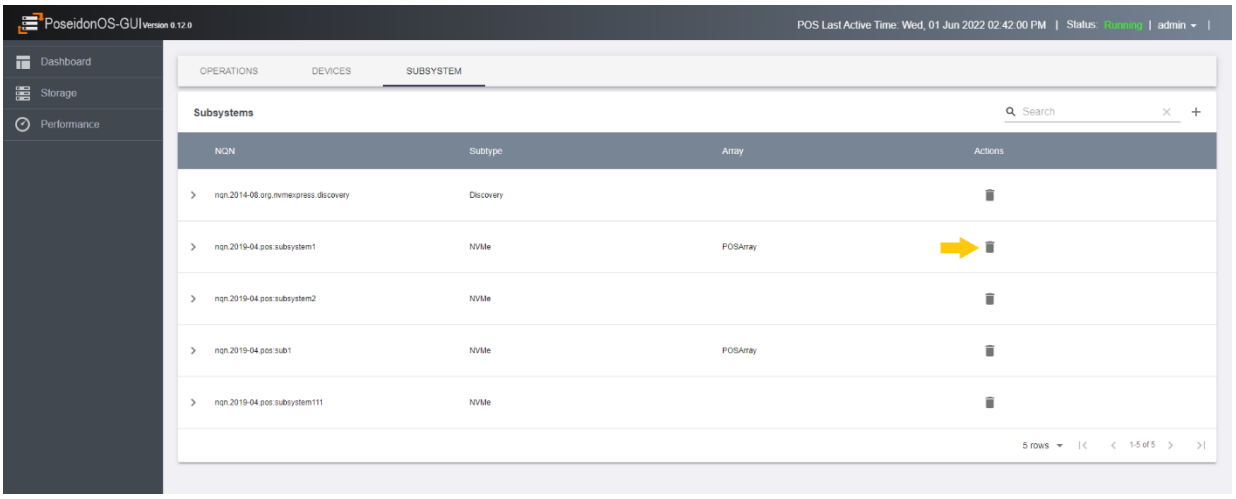

Figure 52. Poseidonos-GUI Delete Subsystem

User can get the details of a subsystem by clicking on the **“>”** button

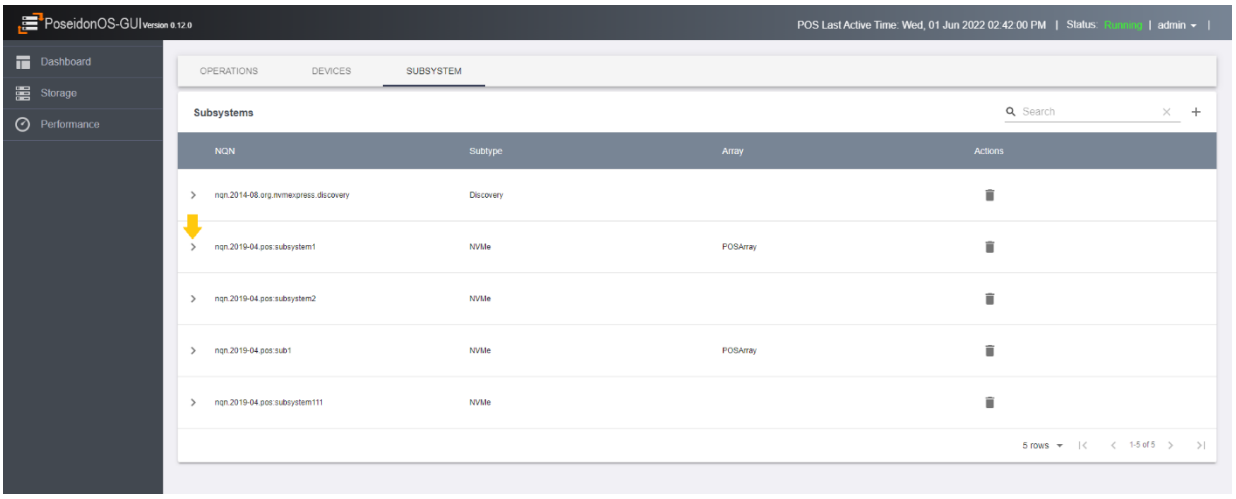

Figure 53. Poseidonos-GUI Subsystem Expand

The following details will be available:

1. SubNQN name
2. Serial Number
3. Model Number
4. Maximum Namespaces
5. Allow Any Hosts

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6. List of Namespaces
7. Listen Addresses

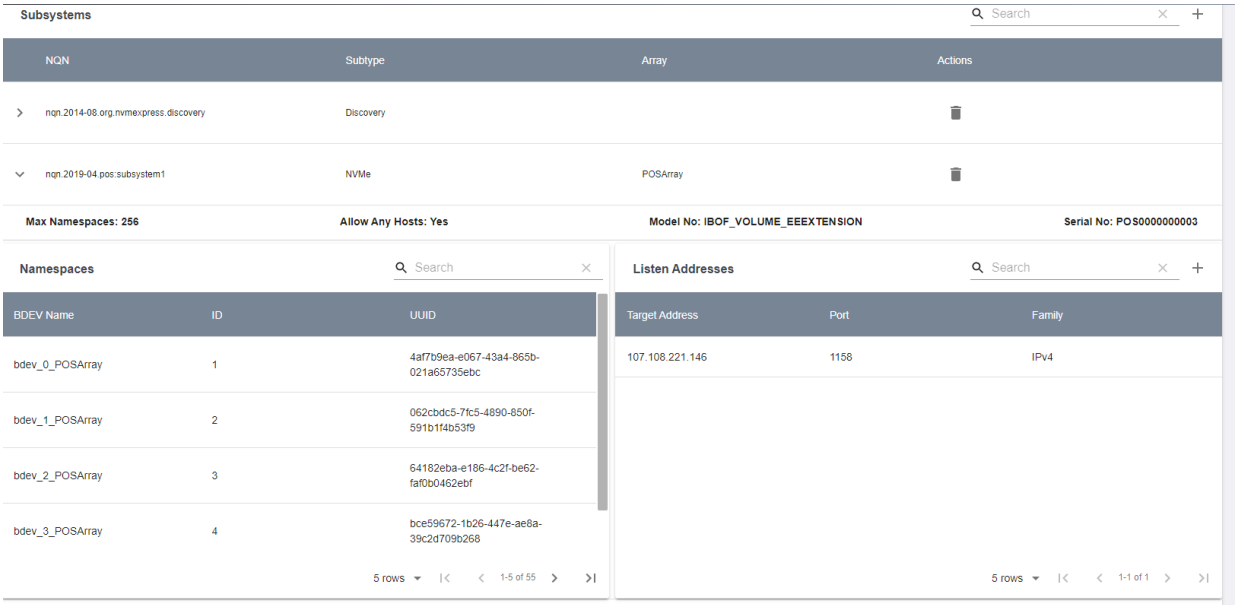

Figure 54. Poseidonos-GUI Subsystem Details

The user can create listen address by clicking on the **"+"** button on the Listen Addresses table.

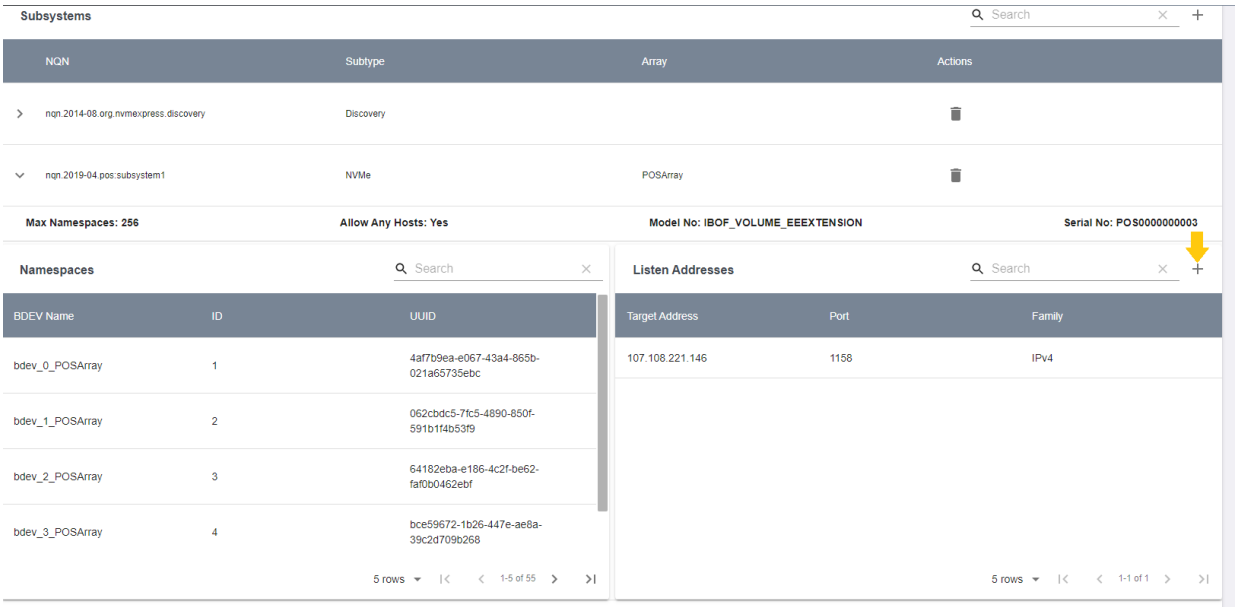

Figure 55. Poseidonos-GUI Add Listener

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The user should enter the following details to add a listener to a subsystem:

1. IP
2. Port
3. Transport type

Figure 56. Poseidonos-GUI Add Listener Popup

On clicking the **"Add Listener"** the listener should be added to the subsystem. A popup with the success message should be displayed

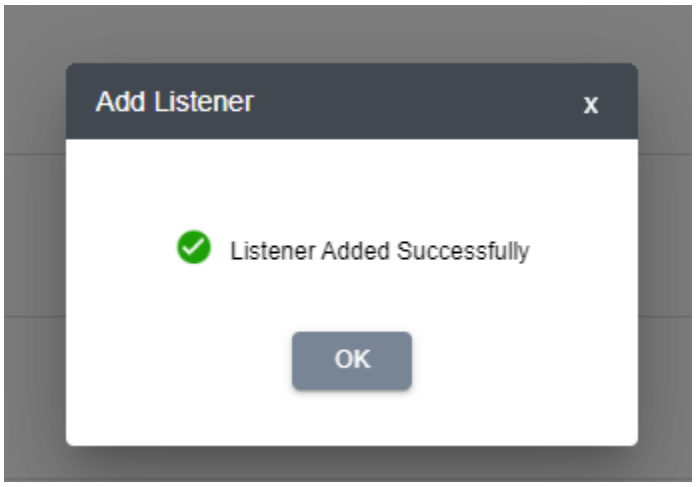

Figure 57. Poseidonos-GUI Add Listener Success

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3 How to install Poseidonos-GUI

Follow the steps below to set up and run the Poseidonos-GUI (the scripts shown below are available in the root directory)

Prerequisites

1. python3
2. go v1.14+
3. nodejs 14.x
4. InfluxDB (1.8.x)

Supported OS and Version

1. Linux Ubuntu 18.04

Download and Install dependencies

1. Clone the project from GitHub - https://github.com/poseidonos/poseidonos-gui.git
2. Navigate to poseidonos-gui directory
3. Run scripts as described below to install and run the application
4. Access the application in the browser (e.g. http://<local_ip_addr>)

1. git clone https://github.com/poseidonos/poseidonos-gui.git
2. cd poseidonos-gui
3. ./script/install_all.sh
4. ./script/build_all.sh
5. ./script/run_all.sh

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1. Install Packages

These packages are required for proper working of the Poseidonos-GUI. This will install required packages such as influxdb, chronograf, kapacitor on the host.

./script/install_all.sh

2. Build the application

./script/build_all.sh

3. Run application

To run various applications, use this command below.

./script/run_all.sh

3. Access the Poseidonos-GUI application via browser

The server will run on the local web server and will be accessible from the browser

http://<ip_address>

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4 How to Uninstall Poseidonos-GUI

Follow the steps below to uninstall the Poseidonos-GUI (the scripts shown below are available in the root directory)

1. Uninstall services and applications running

./script/uninstall.sh

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