XtremIO Storage System 1.05

CLI Reference Guide

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Contents

1 About this Guide

1.1 Scope

This guide contains a list of all Command Line Interface (CLI) commands that you can use to manage and monitor the XtremIO Storage System. The guide is intended for all users of the XtremIO Storage System.

NOTE
This guide assumes that XtremIO Storage System is installed and initially configured, as described in the XtremIO Storage System Installation Guide.

1.2 Related Documents

Refer to the following documents for additional information:

- XtremIO Storage System Installation Guide
- XtremIO Storage System User Guide

2 CLI Overview

Most commands belong to one of the following command types:

- Define - To add, modify or remove system components.
- Show - To display a list of a specific component and its current performance.
- Monitor - To view the performance of a specific component. The display is continuously updated at a regular interval.

2.1 Syntax Rules

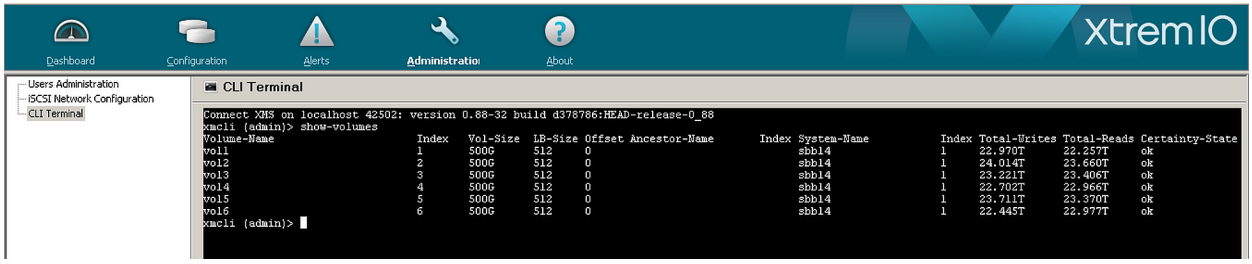
Use the following syntax when entering commands:

- Command parameters that require string parameters must be enclosed in quotes.
- Index integers and enumerated entity types do not require quotes.
- Command actions are case sensitive.
- Blank spaces ( ) separate commands and parameters.
- Each command option follows the syntax field=value.

2.2 Accessing the CLI

To access the CLI

1. SSH to the XMS server with the following credentials:
   User - xmsadmin
   Password - use the password assigned to you by your admin.
2. Login to XtremIO using the username and password assigned to you by your admin.
3. The xmcli session prompt appears, allowing you to run only xmcli commands according to your user's role.



NOTE
Since "monitor" and "show" commands can be run by all roles, these commands do not include the permissions table listing which roles can run commands.

3 General CLI Completion Codes

The following table contains a list of general completion codes that can be issued by any command:

Completion Code	Description
unauthorized_command	The user account which issued this command does not have the required authorization level.
user_not_found	The specified user account does not exist.
ok	The command completed successfully.
invalid_command	The issued command is invalid.
invalid_input	Invalid values were entered with the command. For example, a string was entered for a property that requires an IP address.
system_communication_error	The management server cannot communicate with the system, possibly due to a network error.
system_general_error	An error has occurred in the system.
system_is_busy	The command cannot be completed because the system is busy.
system_timeout	The command timed out before it was completed.
no_sys_response_retrying	The management server lost communication with the system after a command was issued and it is not known if the command completed successfully. This error should clear once communication with the system has been restored.
uncertain_object_error	The current state of the component for which this command was issued is not known. An uncertainty_error completion code has already been issued for this component. If this completion code appears, some xmcli commands display "uncertain" under the certainty-state field. If this persists, contact XtremIO.
invalid_in_cur_sys_state	The command is invalid because of the current **System State**. For example, a **stop-system** command was issued and the system is already stopped.

4 Basic CLI Commands

4.1 exit

Use this command to close the CLI terminal and return to the Administration screen.

When you exit the terminal, all displayed information is removed and does not appear when you reopen the CLI terminal.

4.1.1 Example

```
Exit
```

4.2 help

Use this command to display a list of all CLI commands.

4.2.1 Example

```
help
```

4.3 quit

Use this command to close the CLI terminal and return to the Administration screen.

When you exit the terminal, all displayed information is removed and does not appear when you reopen the CLI terminal.

4.3.1 Example

```
quit
```

5 System Formation Related CLI Commands

5.1 activate-system

Activate the system. Once the modules load and the system is fully activated, the XtremIO Storage System sets the System State to Active.

NOTE
This command is used to bring-up the system. It should not be used on an active system.

5.1.1 Example

```
activate-system sys-id=1
```

5.1.2 Properties

Properties	Description	Mandatory
sys-id	The system's name or index number. May be omitted if there is only one system defined to the environment.	No

5.1.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

5.1.4 Completion Codes

Completion Code	Description
sys_not_found	The specified system does not exist.
sys_id_required	The **System ID** parameter was omitted. This parameter can be omitted if there is only one system defined to the XtremIO Storage System.

5.2 add-brick

Add a brick and its nodes to the XtremIO Storage System. The brick and its nodes are attached and marked as belonging to the XtremIO Storage System.

NOTE
This command is used when bringing up the system. It should not be used on an active system.

5.2.1 Example

```
add-brick brick-name="brick1"
brick-guid="0025900d8e540000000000000000009"
node-list=[node-name="node0"
node-guid="0025905159cc00000000000000000000"
node-mgr-addr="10.20.41.85" ib-addr1="10.100.85.1"
ib-addr2="10.100.85.2" ipmi-addr="10.20.150.86", node-name="node1"
node-guid="002590515b4c00000000000000000000"
node-mgr-addr="10.20.41.86" ib-addr1="10.100.86.1"
ib-addr2="10.100.86.2" ipmi-addr="10.20.150.87"]
```

5.2.2 Properties

Properties	Description	Mandatory
brick-name	The name for the brick.	Yes
brick-guid	The brick's GUID (composed out of 32 hex digits). This GUID can be taken from the example files or decided on during the brick addition. The only restriction is that the GUID is unique within the system.	Yes
node-list	The brick's nodes. For each node enter: • **node-name** - Optional. If not specified, the node is added unnamed. • **node-guid** - The physical node's GUID. Generally, the XtremIO Storage System retrieves this information using brick discovery. • **node-mgr-addr** - The IP address of the node manager. • **ib-addr1** • **ib-addr2** • **ipmi-addr**	Yes

5.2.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

5.2.4 Completion Codes

Completion Code	Description
brick_name_not_unique	A brick with the same Brick Name already exists.

Completion Code	Description
node_name_not_unique	A node with the same Node Name already exists or two nodes in the list have the same Node Name.
brick_guid_not_unique	A brick with the same Brick GUID already exists.
node_guid_not_unique	A node with the same Node GUID already exists. This Completion Code is also returned if the node list contains two nodes with the same Node GUID.
invalid_ib_addr1 invalid_ib_addr2 invalid_node_mgr_addr invalid_ipmi_addr	The value specified by IB Address 1, IB Address 2, Node Manager Address and/or IPMI Address is invalid. For example, a value is outside the allowed range.
ib_addr1_not_unique ib_addr2_not_unique node_mgr_addr_not_unique ipmi_addr_not_unique	The IB Address 1, IB Address 2, Node Manager Address and/or IPMI Address parameter of any of the nodes specified contains an identical value.
node_already_assoc_with_xms	The specified node(s) is already associated with an XMS.
brick_guid_mismatch	The brick GUID of one of the specified nodes is not identical to the brick GUID specified by this command.
node_guid_mismatch	The node GUID of one of the specified nodes is not identical to the node GUID specified by this command.
too_many_brick_obj	Cannot add a brick because the maximum limit has been reached.
too_many_node_obj	Cannot add a node because the maximum limit has been reached.
ipmi_conn_failed	Failed to connect to one of the IPMIs.

5.3 add-system

This adds a group of bricks and nodes to the system as a fully configured (but still inactive) system.

NOTE
This command is used when bringing up the system. It should not be used on an active system.

5.3.1 Example

```
add-system profile="my_1brick.sym" brick-id-list=[1] sys-name="sys1"
```

5.3.2 Properties

Properties	Description	Mandatory
brick-id-list	The list of brick names or index numbers (this is the list of the bricks that form the system). The list may contain between 1 to 32 bricks.	Yes
profile	The profile file name. This file specifies various attributes which are required for system initialization.	Yes
sys-name	The name for the new system.	No

5.3.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

5.3.4 Completion Codes

Completion Code	Description
sys_name_not_unique	A system with the same System Name already exists.
license_not_found	The specified license does not exist.
invalid_license	The license file was found but it contains invalid information.
brick_not_found	One of the specified bricks does not exist.
node_obj_duplicates	A node was specified more than once in the Node ID list.
invalid_num_of_nodes	The specified Node ID list has an invalid number of nodes.
node_assoc_with_other_sys	One of the specified nodes is already associated with another system.
too_many_sys_obj	Cannot add a system because the maximum number of systems has been reached.

5.4 assign-ssd

Assign an existing SSD to a RAID group.

5.4.1 Example

```
assign-ssd ssd-id=10 rg-id=1
```

5.4.2 Properties

Properties	Description	Mandatory
rg-id	The RAID group's name or index number.	Yes
ssd-id	The SSD's name or index number.	Yes

5.4.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

5.4.4 Completion Codes

Completion Code	Description
ssd_not_found	The SSD does not exist.
rg_not_found	The RG does not exist.

Completion Code	Description
too_many_ssds_in_rg	The RG has already reached its maximum number of SSDs.
ssd_already_assigned_to_this_rg	The SSD is already assigned to this RG.
ssd_already_assigned_to_another_rg	The SSD is already assigned to another RG.
ssd_eject_pending	The specified SSD's state is Eject Pending. Therefore, the assignment command failed.
ssd_and_rg_brick_mismatch	The SSD is currently inserted into a brick which does not belong to the RG.
health_check_failed	The health check failed.
ssd_too_small	The size of the SSD is smaller than the system's Useful SSD Space Per SSD property.

5.5 modify-system-properties

Modify the system PSNT ID.

5.5.1 Example

```
modify-system-properties psnt="psnt ID"
```

5.5.2 Properties

Properties	Description	Mandatory
psnt	This property defines the system unique identifier.	Yes
sys-id	The system's name or index number. This property can be omitted if there is only one system defined in the XtremIO Storage System.	No

5.5.3 Permissions

User Type	Permission
Tech	Yes
Administrator	No
Configuration	No
Read-Only	No

5.6 modify-raid-properties

Modify the properties of a RAID group.

5.6.1 Example

```
modify-raid-properties rq-max-ud-allowed-in-ssd-units=300
```

One of the following properties must be defined:

- rg-max-ud-allowed-in-ssd-units
- rg-min-ud-guaranteed-in-ssd-units

5.6.2 Properties

Properties	Description	Mandatory
rg-max-ud-allowed -in-ssd-units	This property limits the available user data according to SSD units. By defining this limitation you ensure that there is sufficient user data space available for at least a single rebuild. For example, a RAID group consists of 16 400GB SSDs. The available user data space is defined as 350GB per SSD. Therefore, the maximum user data space available for normal performance is (16-2) * 350 = 4,900GB. This sum is equal to approx. 12 SSD units.	No
rg-min-ud-guarantee d -in-ssd-units	This property defines a minimum amount of user data space is available which cannot be utilized for a rebuild. If you have not used all of the RAID group's user data space, more than one rebuild may be available. This means that the rebuild may use the space, which has been allocated for normal performance. If multiple failures occur and automatic rebuilds are performed, this may affect performance as the space is being used for rebuilds at the expense of normal operations.	No
sys-id	The system's name or index number. This property can be omitted if there is only one system defined in the XtremIO Storage System.	No

5.6.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

5.6.4 Completion Codes

Completion Code	Description
invalid_ud_limits	One or both of the RAID group's following properties are invalid: • max-ud-allowed-in-SSD-units • min-ud-guaranteed-in-SSD Alternatively, the defined values in this command are invalid with the RAID group's existing property values.
cannot_modify_ud_limits	The defined values in this command are valid but the RAID groups current UD space consumption prevents the limits from being modified.

5.7 modify-target

Modifies the port address of a target.

5.7.1 Example

```
modify-target target-name="TAR1" target-id=1
```

5.7.2 Properties

Properties	Description	Mandatory
port-address	The new port address. The following rules apply: • For fibre channel initiators, any of the following formats are allowed ("X" is a hexadecimal digit – uppercase and lower case are allowed): • XX:XX:XX:XX:XX:XX:XX:XX • XXXXXXXXXXXXXXXX • 0xXXXXXXXXXXXXXXXX • For iSCSI initiators, IQN and EUI formats are allowed. • Two targets cannot share the same port address. • You cannot specify a fibre channel address for an iSCSI target and vice-versa. • You cannot change the Port Type of an existing target.	No
target-id	The target's name or index number.	Yes
target-name	The name for the target.	No

5.7.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

5.7.4 Completion Codes

Completion Code	Description
tar_not_found	The specified target does not exist.
port_address_not_unique	The port address specified is identical to the port address of: • an existing target • an existing initiator
invalid_port_address	The Port Address value specified has an invalid format.
dev_not_found	The device was not found.
st_failure	The command failed to add an initiator.

5.8 rename

Rename a component of the XtremIO Storage System.

All objects can be renamed without having any effect on the IO path during runtime and the current mapping will be changed to reflect the new name.

5.8.1 Example

```
rename ig-id="IG1" new-name="IG3"
```

5.8.2 Properties

Properties	Description	Mandatory
sys-id	System's name or index number.	No
brick-id	Brick's name or index number.	No
node-id	Node's name or index number.	No
ssd-id	SSD's name or index number.	No
tar-id	Target's name or index number.	No
initiator-id	Initiator's name or index number.	No
vol-id	Volume's name or index number.	No
snapgrp-id	Snapgroup's name or index number.	No
tg-id	Target group's name or index number.	No
ig-id	Initiator group's name or index number.	No
rg-id	RAID group's name or index number.	No
usr-id	User account's name or index number.	No

Properties	Description	Mandatory
alert-id	Alert's name or index number.	No
xenv-id	**X Environment** 's name or index number.	No
mdl-id	Module's name or index number.	No
new-name	The new name for the component specified in the command.	Yes

5.8.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

5.8.4 Completion Codes

Completion Code	Description
obj_not_found	One of the entities specified in the Object List does not exist.
obj_name_not_unique	The new name defined already exists for a component of the same type.
cannot_rename_fixed_usr	The user accounts admin and technician cannot be modified.

5.9 show-bricks

Displays a list of bricks and their associated system.

5.9.1 Example

```
show-bricks
```

Properties	Description
Name	The name of the brick.
Index (**brick**)	The brick's index number.
Brick-Name	The name of the brick.
Index (**brick**)	The brick's index number.
System-Name	The name of the system the brick belongs to.
Index (**system**)	The index number of the system.
State	The brick's current status: • Not_in_sys – the brick is in the xms but not in the system. • In_sys - the brick is part of the system.

5.10 show-modules

Displays a list of modules with their properties and usage information.

5.10.1 Example

`show-modules`

Properties	Description
Module-Name	The name of the module.
Index (**module**)	The module's index number.
XEnv-Name	The **X Environment**'s name which the module is associated with.
Index (**X Environment**)	The **X Environment** 's index number.
Module-Type	The type of module.
State	The module's current activity status.
Memory	The module's total allocated memory (in kB).
Memory-In-Use	The current amount of memory in use.
Memory-Usage-%	The percentage of the module's memory which is currently in use.

5.11 show-nodes

Displays a list of nodes and their properties.

5.11.1 Example

`show-nodes`

Properties	Description
Node-Name	The name of the node.
Index (**node**)	The node's index number.
Mgr-Addr	The IP address used to access the node manager.
IB-Addr-1 ; IB-Addr-2	The internal backend IP addresses of the node.
IPMI-Addr	The IP address used to access the node's IPMI.
Brick-Name	The ID of the brick which the node belongs to.
Index (**brick**)	The brick's index number.
System-Name	The name of the system which the node belongs to.
Index (**system**)	The system's index number.
State	The active state of the node.
Unorderly-Stop-Reason	The reason for a nodes unorderly stop, if any.
Conn-State	The connectivity status of the node.
IPMI-State	The IPMI status.

5.12 show-systems

Displays systems and their properties.

5.12.1 Example

`show-systems`

Properties	Description
System-Name	The name of the system.

Properties	Description
Index	The index number of the system.
State	The current state of the system.
Conn-State	The connection status: • Disconnected – XMS currently is disconnected from the system. • Connected – XMS is currently connected to the system.
Num-of-Vols	The number of defined volumes in the system.
Vol-Size	The total amount of disk space defined for all volumes in the system.
Address-Space	The logical space used by the system before deduplication.
SSD-Space-In-Use	The physical SSD space currently in use after deduplication. This value may be lower than the Address-Space property if the deduplication ratio is greater than 1.
SSD-Space	The total SSD space available to the XtremIO Storage System.
Total-Writes	The total bytes written to the system since the machine was installed.
Total-Reads	The total bytes read by the system, since the machine was installed.

5.13 show-raid-groups

Displays a list of RAID groups and their properties.

5.13.1 Example

```
show-raid-groups
```

Properties	Description
Brick-Name	The name of the brick.
Index (**brick**)	The brick's index number.
System-Name	The name of the system which the RAID group belongs to.
Index (**system**)	The system's index number.
State	The current state of the RAID group: • Normal – Raid Group is fully protected. • Degraded – Single SSD has failed, data is available and fully protected. • Dual Failure – Two SSDs have failed, Data is still available. • Error – Raid Group has experienced more than two SSD failures.
Useful-SSD-Space	The available physical capacity in the raid group.
SSD-Space	The total SSD space available to the XtremIO Storage System.
SSD-Space-In-Use	The SSD space currently in use.
Rebuild-Progress	The progress of a rebuild action for the RAID group following an SSD failure.
Preparation-Progress	The RAID group is being added to the system and is in preparation.

Properties	Description
Rebalance-Progress	The progress of a RAID group rebalance process.
Rebuild-Prevention	This indicates if a rebuild was prevented due to insufficient user data space.

5.13.2 show-systems-raid-properties

Displays the properties of a system's RAID groups.

5.13.3 Example

```
show-systems-raid-properties
```

Properties	Description
System-Name	The name of the system.
Index	The system's index number.
Min-SSDs-Per-Healthy-RG	The minimum number active SSDs for the RAID group's state to be healthy.
Max-SSDs-Per-RG	The maximum number of SSDs allowed per RAID group.
Useful-SSD-Space-Per-RG	The total SSD space available to the RAID group.
Max-UD-Allowed	The maximum amount of SSD UD space that the RAID can use.
Min-UD-Guaranteed	The minimum UD space which is guaranteed to be available to the RAID group. This property ensures that in the case of multiple failures, a RAID group rebuild is not performed if it will result in the RAID group having less than the guaranteed UD.

6 Basic System Management CLI Commands

6.1 shutdown

Shut down a node (identical to the Linux shutdown command), a defined set of nodes, or all the nodes of a specified system.

Shutting down a node will cause all connected hosts to disconnect from the paths to this node while shutting down the entire system. The entire system will not respond to host IOs accordingly.

NOTE
The node state must be Stopped to perform this command.

6.1.1 Example

```
shutdown node-id=1
```

6.1.2 Properties

Define only one of the following properties. If none of the properties are defined, and there is only one system managed by the XtremIO Storage System, all nodes in that system will be shutdown.

Properties	Description	Mandatory
sys-id	The system's name or index number. Defining this property shuts down all nodes in the specified system.	No
node-id	The node's name or index number. The specified node is shut down.	No
node-id-list	The list of nodes' names or index numbers. The specified nodes are shut down.	No

6.1.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

6.1.4 Completion Codes

Completion Code	Description
sys_not_found	The specified system does not exist.
node_not_found	The specified node does not exist.
invalid_in_cur_node_state	The node is not in stopped state and cannot be shut down.
shutdown_rejected	If a list of nodes was defined, this completion code indicates that one of the nodes in the list cannot be shut down.

6.2 start-system

Start a system.

Once the command has completed successfully, the system's state is active which means that it will respond to host IOs.

6.2.1 Example

```
start-system sys-id="system1"
```

6.2.2 Properties

Properties	Description	Mandatory
sys-id	The system's name or index number. This property may be omitted if there is only one system defined in the XtremIO Storage System.	No

6.2.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

6.2.4 Completion Codes

Completion Code	Description
sys_not_found	The specified system does not exist.
sys_id_required	More than one system is defined to the XtremIO Storage System and the sys-id property was not defined.

6.3 stop-system

Stop an active system (stops the active x-envs only), the nodes will remain up and running but the XtremIO will not respond to any IO requests.

Stopping the entire system means that the entire system will not respond to host IOs.

NOTE
Running this command will disconnect all of the hosts from the XtremIO system and should be used only when instructed by XtremIO.

6.3.1 Example

```
stop-system sys-id=1
```

6.3.2 Properties

Properties	Description	Mandatory
sys-id	The system's name or index number. This property can be omitted if there is only one system defined in the XtremIO Storage System.	No

6.3.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

6.3.4 Completion Codes

Completion Code	Description
sys_not_found	The specified system does not exist.
sys_id_required	More than one system is defined to the XtremIO Storage System and the sys-id property was not defined.

6.4 stop-system-unorderly

This command performs an un-orderly stop to a system.

Stopping the entire system means that the entire system will not respond to host IO requests.

6.4.1 Example

```
system-stop-unorderly sys-id=1
```

6.4.2 Properties

Properties	Description	Mandatory
sys-id	The system's name or index number. This property may be omitted if there is only one system defined in the XtremIO Storage System.	No
node-id	The node's name or index number. Generally, this property should be omitted. When omitted, the XtremIO Storage System issues the un-orderly stop operation to one of the system's node managers.	No

6.4.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

6.4.4 Completion Codes

Completion Code	Description
sys_not_found	The specified system does not exist.
node_not_found	The specified node does not exist.

Completion Code	Description
sys_id_required	More than one system is defined to the XtremIO Storage System and the sys-id property was not defined.

6.5 power-cycle

Restart one or more node(s) or the entire system (using the IPMI power cycle).

Power-cycling a node disconnects all connected hosts from the paths to this node, while power-cycling the entire system means that the entire system will not respond to host IOs requests.

6.5.1 Example

```
power-cycle node-id="node1"
```

NOTE
Only one of the following properties can be specified in the command. If there is only one system defined to the XtremIO Storage System, you can omit all three properties to restart all nodes in the system.

6.5.2 Properties

Properties	Description	Mandatory
sys-id	The system's name or index number. All nodes in the specified system will be restarted.	No
node-id	The name or index number of the node to be restarted.	No
node-id-list	The list of node names or index numbers to be restarted.	No

6.5.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

6.5.4 Completion Codes

Completion Code	Description
sys_not_found	The specified system does not exist.
node_not_found	The specified node does not exist.

6.6 power-off

Power off a node or an entire system (using IPMI power off).

Powering off a node causes all connected hosts to disconnect from the paths to this node, while powering off the entire system means that the entire system will not respond to host IOs requests.

6.6.1 Example

```
power-off node-id="node1"
```

NOTE
Only one of the following properties can be specified for this command. If there is only one system defined to the XtremIO Storage System, you can omit all three properties to power off all nodes in the system.

6.6.2 Properties

Properties	Description	Mandatory
sys-id	The system's name or index number. All nodes in the specified system will be powered off.	No
node-id	The name or index number of the node to be powered off.	No
node-id-list	The list of node names or index numbers to be powered off.	No

6.6.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

6.6.4 Completion Codes

Completion Code	Description
sys_not_found	The specified system does not exist.
node_not_found	The specified node does not exist.

6.7 power-on

Power on one or more nodes in a specific system (using IPMI power on).

6.7.1 Example

```
power-on
```

NOTE
Only one of the following properties can be specified for this command. If there is only one system defined to the XtremIO Storage System, you can omit all three properties to power on all nodes in the system.

6.7.2 Properties

Properties	Description	Mandatory
sys-id	The system's name or index number. All nodes in the specified system will be powered on.	No
node-id	The name or index number of the node to be powered on.	No

Properties	Description	Mandatory
node-id-list	The list of node names or index numbers to be powered on.	No

6.7.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

6.7.4 Completion Codes

Completion Code	Description
sys_not_found	The specified system does not exist.
node_not_found	The specified node does not exist.
power_on_rejected	The power on command has failed.

7 Volume Related CLI Commands

7.1 add-volume

Create a new volume.

7.1.1 Example

```
add-volume alignment-offset=0 lb-size=4096 sys-id=1 vol-name="Volume2"
vol-size="1m"
```

7.1.2 Properties

Properties	Description	Mandatory
alignment-offset	The alignment offset for volumes of 512 lb size, between 0 and 7. If this property is omitted, the offset value is 0. Volumes of lb-size 4096 must not be defined with an offset.	No
lb-size	The volumes lb size: • 512 (default) • 4096 Once defined, the size cannot be modified.	No
sys-id	The system's name or index number. This value may be omitted if there is only one system defined in the XtremIO Storage System.	No
vol-name	The name for the volume.	No
vol-size	The disk space size of the volume in kB(k)/MB(m)/TB(t). This parameter reflects the size of the volume available to the initiators. It does not indicate the actual SSD space this volume may consume. Rules: • Must be an integer greater than 0. • Must be a multiple of 1 MB.	Yes
folder-name	Identifies the volume folder to which this volume will initially belong. The folder's **Folder Type** must be **Volume**. If omitted, the volume will be added to the root volume folder.	No

7.1.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

7.1.4 Completion Codes

Completion Code	Description
vol_name_not_unique	A volume with the same Volume Name already exists.
sys_not_found	The specified system does not exist.
sys_id_required	The System ID parameter was omitted. This parameter can be omitted if there is only one system defined to the XtremIO Storage System.
invalid_vol_size	The Size value is invalid.
invalid_lb_size	The LB Size value is invalid.
invalid_alignment_comp	The Alignment Computation value is invalid.
too_many_vol_obj	A volume cannot be added because the maximum limit has been reached.
sid_alloc_failed	Allocating a SID for the volume failed.
iid_alloc_failed	Allocating an IID (index ID) for the volume failed.
st_failure	The low-level SCSI target code failed to add the volume.
folder_not_found	The specified folder ID does not exist.
folder_type_mismatch	The specified folder's Folder Type is not Volume.

7.2 remove-volume

Remove an existing system volume.

7.2.1 Example

```
remove-volume vol-id=7
```

7.2.2 Properties

Properties	Description	Mandatory
vol-id	The volume's name or index number.	Yes

7.2.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

7.2.4 Completion Codes

Completion Code	Description
vol_not_found	The specified volume does not exist.

7.3 rename

Rename a component of the XtremIO Storage System (X-Brick/Node).

See ***rename*** (on page 19).

7.4 show-volume

Displays information about the volume you specify.

7.4.1 Example

show-volume vol-id=100

Properties	Description
Volume-Name	The name of the volume.
Index (volume)	The index number of the volume.
Vol-Size	The disk space defined for this volume.
LB-Size	The volume type.
Offset	The offset value defined for this volume.
Ancestor-Name	The name of the volume's ancestor.
Index (ancestor)	The ancestor's index number.
System-Name	The name of the system the volume belongs to.
Index (system)	The system's index number.
Parent-Folder-Name?	For XtremIO use only.
Index (parent-folder)	For XtremIO use only.
Total-Writes	The total write bandwidth performed using this volume's disk space.
Total-Reads	The total read bandwidth performed using this volume's disk space.
NAA-Name	The SCSI NAA name for the volume, as exposed to the initiators.

7.4.2 Properties

Properties	Values	Mandatory
vol-id	The ID of the volume.	Yes

7.4.3 Completion Codes

Completion Code	Description
?	?

7.5 show-volumes

Displays a list of volumes and their defined properties.

7.5.1 Example

```
show-volumes
```

7.5.2 Properties

Properties	Description
Volume-Name	The name of the volume.
Index (volume)	The index number of the volume.
Vol-Size	The disk space defined for this volume.
LB-Size	The volume type.
Offset	The offset value defined for this volume.
Ancestor-Name	The name of the volume's ancestor.
Index (**ancestor**)	The ancestor's index number.
System-Name	The name of the system the volume belongs to.
Index (**system**)	The system's index number.
Total-Writes	The total write bandwidth performed using this volume's disk space.
Total-Reads	The total read bandwidth performed using this volume's disk space.

7.5.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

7.6 create-snapshot

Create a point in time snapshot of the specified volume or volumes' list.

7.6.1 Example

```
create-snapshot ancestor-vol-id="ORA_DB_PROD_01"
snap-vol-name="ORA_DB_PROD_01_snap01"
create-snapshot snap-list=[ancestor-vol-id=" ORA_DB_PROD_01"
snap-vol-name=" ORA_DB_PROD_01_snap01",ancestor-vol-id=" ORA_DB_PROD_02"
snap_vol_name=" ORA_DB_PROD_02_snap01"]
```

7.6.2 Properties

Properties	Description
Ancestor-vol-id	A name or an id of the volume for which the snapshot will be taken.
Snap-vol-name	A name that will be associated with the newly created snapshot.
Snap-list	A list of volumes for which the snapshot will be taken at the same point in time (AKA Consistency Group), e.g. when taking a snap of a DB that is composed of several volumes.

7.6.3 Permissions

User Type	Permission
Administrator	No
Configuration	No
Read-Only	No

8 Initiator Group Related CLI Commands

8.1 add-initiator

Adds an initiator and associates it with an existing initiator group.

8.1.1 Example

```
add-initiator ig-id="IG1" initiator-name="int1"
port-address="50:01:43:80:18:6a:c7:55"
```

8.1.2 Properties

Properties	Description	Mandatory
ig-id	The initiator group name to associate the initiator to.	No
initiator-name	Initiator name.	No
port-address	The initiator's port address. The following rules apply: • For FC initiators, any of the following formats are allowed ("X" is a hexadecimal digit – uppercase and lower case are allowed): • XX:XX:XX:XX:XX:XX:XX:XX • XXXXXXXXXXXXXXXX • 0xXXXXXXXXXXXXXXXX • For iSCSI initiators, IQN and EUI formats are allowed. • Two initiators cannot share the same port address. • You cannot specify a FC address for an iSCSI target and vice-versa.	Yes

8.1.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

8.1.4 Completion Codes

Completion Code	Description
initiator_name_not_unique	An initiator with the same name already exists.
ig_not_found	The specified initiator group does not exist.

Completion Code	Description
port_address_not_unique	The Port Address specified has a value identical to the port address of one of the following: • an existing initiator • an existing target
invalid_port_address	The Port Address value specified has an invalid format.
too_many_initiator_obj	Cannot add an initiator because the maximum limit has been reached.
st_failure	The command failed to add an initiator.

8.2 add-initiator-group

Adds an initiator group and its initiators to the XtremIO Storage System.

8.2.1 Example

```
add-initiator-group ig-name="IG3" initiator-list=[initiator-name="int2"
port-address="50:01:43:80:18:6a:c7:54"]
```

8.2.2 Properties

Properties	Description	Mandatory
ig-name	The initiator group name.	No
initiator-list	The initiator-name and port-address for each initiator you want to add to the group.	No

8.2.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

8.2.4 Completion Codes

Completion Code	Description
ig_name_not_unique	An initiator group with the same Initiator Group Name already exists.
port_address_not_unique	The Port Address specified has a value identical to the port address of one of the following: • An existing initiator • An existing target • Another initiator in the initiator list

Completion Code	Description
invalid_port_address	The Port Address value specified has an invalid format.
invalid_num_of_initiators	The initiator list contains an invalid number of initiators.
too_many_ig_obj	Cannot add an initiator group because the maximum limit has been reached.
too_many_initiator_obj	Cannot add an initiator because the maximum limit has been reached.
st_failure	The command failed to add an initiator.
folder_not_found	The specified folder ID does not exist.
folder_type_mismatch	The specified folder's Folder Type is not IG.

8.3 modify-initiator

Modifies properties of an existing initiator.

8.3.1 Example

```
modify-initiator initiator-id="IG3" initiator-name="IG4"
```

8.3.2 Properties

One the following parameters needs to be specified with the initiator-id:

- Initiator Name
- Port Address

Properties	Description	Mandatory
initiator-id	The initiator's name or index number.	Yes
initiator-name	The new name for the initiator. Omitting this parameter means that the initiator's name is not modified.	No
port-address	Specify an iSCSI port address. This value is unique to the initiator as two initiators or targets cannot share the same port address.	No

8.3.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

8.3.4 Completion Codes

Completion Code	Description
initiator_not_found	The specified initiator does not exist.

Completion Code	Description
initiator_name_not_unique	An initiator with the same Initiator Name already exists.
port_address_not_unique	The Port Address specified is identical to the port address of: • an existing initiator • an existing target
invalid_port_address	The Port Address value specified has an invalid format.
st_failure	The low-level SCSI target code failed to add an initiator.

8.4 remove-initiator

Removes an initiator.

8.4.1 Example

```
remove-initiator initiator-id=2
```

8.4.2 Properties

Properties	Description	Mandatory
initiator-id	The initiator's name or index number.	Yes

8.4.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

8.4.4 Completion Codes

Completion Code	Description
initiator_not_found	`The specified initiator does not exist.

8.5 remove-initiator-group

Removes an initiator group and its associated initiators.

8.5.1 Example

```
remove-initiator-group ig-id="IG3"
```

8.5.2 Properties

Properties	Description	Mandatory
ig-id	The initiator group's name or index number.	Yes

8.5.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

8.5.4 Completion Codes

Completion Code	Description
ig_not_found	The specified initiator group does not exist.

8.6 rename

Rename a component of the XtremIO Storage System (X-Brick/Node).

See ***rename*** (on page 19).

8.7 show-initiators

Displays a list of initiators and their defined properties.

8.7.1 Example

```
show-initiators
```

Properties	Description
Initiator-Name	The name of the initiator.
Index (**initiator**)	The initiator's index number.
Port-Type	The initiator's port type.
Port-Address	The initiator's port address.
IG-Name	The name of the initiator group the initiator belongs to.
Index (**initiator group**)	The initiator group's index number.

8.8 show-initiator-group

Displays an initiator group's name and its index number.

8.8.1 Example

```
show-initiator-group ig-id="IG1"
```

Properties	Description
ig-id	The initiator group's name or index number.

8.9 show-initiator-groups

Displays a list of all initiator groups.

8.9.1 Example

```
show-initiator-groups
```

Properties	Description
IG-Name	The initiator group's name.
Index	The initiator group's index number.

8.10 show-targets

Displays a list of targets and their properties.

8.10.1 Example

```
show-targets
```

Properties	Description
Name	The name of the target.
Index (**target**)	The target's index number.
Port-Type	The target's port type (either FC or iSCSI).
Port-Address	The target's port address.
Node-Name	The name of the node the target is related to.
Index (**node**)	The node's index number.
TG-Name	The name of the target group the target belongs to.
Index (**target group**)	The target group's index number.

8.11 show-target-groups

Displays a list of target groups.

8.11.1 Example

```
show-target-groups
```

Properties	Description
TG-Name	The name of the target group.
Index (**target group**)	The target group's index number.
System-Name	The name of the system the target group is related to.
Index (**system**)	The system's index number.

8.12 show-discovered-initiators-connectivity

Lists all undefined initiators that are currently connected to the system.

8.12.1 Example

show-discovered-initiators-connectivity

Properties	Description
Port-Type	The initiator's port type.
Port-Address	The initiator's port address.
Num-Of-Conn-Targets	The number of connected targets.

8.13 show-initiators-connectivity

Lists all existing initiators that are defined in the system.

8.13.1 Example

show-initiators-connectivity

Properties	Description
Name	The name of the target.
Index (target)	The target's index number.
Port-Type	The initiator's port type.
Port-Address	The initiator's port address.
Num-Of-Conn-Targets	The number of connected targets.

8.13.2 Properties

Properties	Values	Mandatory
target-details	Also displays target name and index.	No

9 LUN Mapping Related CLI Commands

9.1 map-lun

Create a LUN Mapping between volumes and initiator groups.

9.1.1 Example

```
map-lun vol-id=1 ig-id=2 lun=3
```

9.1.2 Properties

Properties	Description	Mandatory
ig-id	Initiator group's name or index number.	No
lun	Lun-id which will expose the volume to the host. The implementation may place limits on the allowed maximum value.	Yes
tg-id	Target group's name or index number. This parameter may be omitted only if the specified system contains exactly one target group. In that case, the volume is mapped to that target group.	No
vol-id	Volume's name or index number.	Yes

9.1.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

9.1.4 Completion Codes

Completion Code	Description
vol_not_found	The specified volume does not exist.
ig_not_found	The specified initiator group does not exist.
tg_not_found	The specified target group does not exist.
tg_not_specified	The Target Group ID was omitted and the specified system contains more than a single Target Group.
invalid_lun	The LUN value specified is out of the allowed range.
too_many_maps_for_vol	The volume has reached its maximum number of mappings.
too_many_maps	The maximum number of mappings was reached. This refers to a global limit and not to this specific volume.
ig_tg_l_already_in_use	The initiator group, target group and/or LUN specified are already in use for this or another volume.
vol_already_mapped_by_ig_tg	The specified volume is already mapped by a nexus that contains the same initiator group and target group specified by this command.

Completion Code	Description
st_failure	The low-level SCSI target code failed to perform the mapping.

9.2 show-lun-mappings

Display a list of LUN mappings between volumes and initiator groups.

9.2.1 Example

```
show-lun-mappings
```

Properties	Description
Volume-Name	The name of the mapped volume.
Index (**volume**)	The volume's index number.
IG-Name	The name of the mapped initiator group.
Index (**initiator group**)	The initiator group's index number.
TG-Name	The name of the target group.
Index (**target group**)	The target group's index number.
LUN	The LUN value.

9.3 unmap-lun

Remove a volume's LUN mappings.

9.3.1 Example

```
unmap ig-id="IG2" lun=2 vol-id="vol1"
```

9.3.2 Properties

Properties	Description	Mandatory
all	Deletes all LUN mappings from the specified volume.	Yes, if **LUN** has not been specified.
ig-id	The name or index number of the initiator group that you want to unmap from the volume.	No
lun	The LUN value for the specific mapping you want to remove.	Yes, if **all** is not specified.
tg-id	The target group name or index number. This must be omitted if the **all** property is defined.	No
vol-id	The name or index number of the volume you want to unmap.	Yes

9.3.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

9.3.4 Completion Codes

Completion Code	Description
vol_not_found	The defined volume does not exist.
ig_not_found	The defined initiator group does not exist.
tg_not_found	The target group does not exist.
tg_not_specified	A target group was not defined in the command and more than one target group exists in the system.
invalid_lun	The LUN value is not valid.
ig_should_not_be_specified	The **all** and **initiator group** properties cannot be both defined.
tg_should_not_be_specified	The **all** and **target group** properties cannot be both defined.
lun_should_not_be_specified	The **all** and **lun** properties cannot be both defined.
mapping_not_found	Either the mapping does not exist or **all** was defined and the volume does not have any mappings.

10 Alert Related CLI Commands

10.1 acknowledge-alert

Acknowledges an outstanding alert.

10.1.1 Example

```
acknowledge-alert alert-id=1
```

10.1.2 Properties

Properties	Description
alert-id	The Index number of the alert you want to acknowledge.

10.1.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

10.1.4 Completion Codes

Completion Code	Description
alert_not_found	The specified alert does not exist.
alert_already_acknowledged	The alert is already acknowledged.

10.2 modify-alert-definition

Modifies alert definition properties for a specified alert type.

10.2.1 Example

```
modify-alert-definition alert-type=alert_def_ups_error
clearance-mode=auto_clear
```

10.2.2 Properties

Properties	Description	Mandatory
activity-mode	• enabled • log-only • disabled	No
alert-type	The alert type.	Yes

Properties	Description	Mandatory
clearance-mode	• auto clear • ack required	No
critical-threshold	The threshold value for a critical severity.	No
information-threshold	The threshold value for an information severity.	No
major-threshold	The threshold value for a major severity.	No
minor-threshold	The threshold value for a minor severity.	No
severity	The alert severity if no threshold is applied: • information • warning • important • critical	No

10.2.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

10.2.4 Completion Codes

Completion Code	Description
obj_not_found	One of the entities specified in the Object List does not exist.
obj_mismatch	One of the objects specified in the Object List does not belong to a class compatible with the specified Alert Type.
auto_clear_not_allowed	The alert is based on a temporary condition. Such an alert cannot have a Clearance Mode of Auto Clear.
invalid_alert_type Invalid_activity_mode invalid_clearance_mode invalid_severity_def_list	The specified parameter has an invalid value.

10.3 show-alerts

Displays a list of alerts and their details.

10.3.1 Example

```
show-alerts
```

Properties	Description
Severity	The severity of the alert.
Raise-Time	The date and time the alert was raised.
Entity	The system component that the alert relates to.
Name	The name of the component.
Index	The component's index number.
Alert-Type	The type of alert.
Threshold	The threshold of the alert, if applicable.
State	The status of the alert.

10.4 show-alert-definitions

Displays a list of pre-defined alerts and their definitions.

10.4.1 Example

```
show-alert-definitions
```

Properties	Description
Alert-Type	The type of alert.
Activity-Mode	This indicates if the alert is enabled or disabled.
Clearance-Mode	The clearance mode of the alert: • acknowledgment required • auto clear
Infor-Thrsh	The condition threshold for an information severity alert.
Minor-Thrsh	The condition threshold for a minor severity alert.
Major-Thrsh	The condition threshold for a major severity alert.
Critical-Thrsh	The condition threshold for a critical severity alert.
Severity	If no threshold is defined for this type of alert, then this property indicates the alert severity.

11 iSCSI Routing Related Commands

11.1 add-iscsi-portal

Map a portal, which is a combination of an IP address, IP port and optionally a VLAN, to a target.

This allows the target port to accept iSCSI traffic via the portal.

11.1.1 Example

```
add-iscsi-portal tar-id=3 ip-addr="10.20.41.85/16"
```

11.1.2 Properties

Properties	Description	Mandatory
ip-addr	The target port's IP address. This IP address cannot be used be defined for another portal.	Yes
tar-id	The name or the index number of the target.	Yes

11.1.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

11.1.4 Completion Codes

Completion Code	Description
tar_not_found	The specified target does not exist.
tar_not_iscsi	The specified target is not an iSCSI target.
ip_addr_not_unique	The IP address is already in use.
invalid_ip_addr	The specified IP address is not valid.
invalid_ip_port	The specified IP port is not valid.
invalid_vlan	The specified VLAN value is not valid.
too_many_portals	The specified target is already associated with a portal.

11.2 add-iscsi-route

Add an iSCSI route.

11.2.1 Example

```
add-iscsi-route gateway="10.20.33.45" dest="16"
```

11.2.2 Properties

Properties	Description	Mandatory
dest	The destination subnet.	Yes
gateway	The gateway IP address.	Yes
iscsi-route-name	The iSCSI route name.	No

11.2.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

11.2.4 Completion Codes

Completion Code	Description
too_many_iscsi_routes	Cannot add an iSCSI route because the maximum limit has been reached.
invalid_dest	The network address indicates an invalid destination.
invalid_gateway	The gateway's address is invalid.
iscsi_route_not_unique	A route with the same gateway and destination properties already exists.
iscsi_route_name_not_unique	A route with the same name already exists.

11.3 remove-iscsi-portal

Remove a portal mapping from a target. The target will stop accepting iSCSI traffic via the portal.

11.3.1 Example

```
remove-iscsi-portal ip-addr="10.200.41.100"
```

11.3.2 Properties

Properties	Description	Mandatory
ip-addr	The IP address of the target port you want to remove.	Yes

11.3.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

11.3.4 Completion Codes

Completion Code	Description
ip_addr_not_found	The specified IP address does not exist.
invalid_ip_addr	The specified IP address is invalid.

11.4 remove-iscsi-route

Remove an iSCSI route.

11.4.1 Example

```
remove-iscsi-route iscsi-route-id=3
```

11.4.2 Properties

Properties	Description	Mandatory
iscsi-route-id	The name or index number of the iSCSI route.	Yes

11.4.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

11.4.4 Completion Codes

Completion Code	Description
iscsi_route_not_found	The specified route does not exist.

11.5 show-iscsi-portals

Displays a list of iSCSI portals and their properties.

11.5.1 Example

```
show-iscsi-portals
```

Properties	Description
IP-Address	The IP address of the portal.
Target-Name	The target port name.
Index	The ports index number.

11.6 show-iscsi-routes

Displays a list of iSCSI routes and their properties.

11.6.1 Example

```
show-iscsi-routes
```

Properties	Description
Name	The iSCSI route's name.
Index	The route's index number.
Gateway	The IP address of the gateway leading to the destination subnet.
Destination	The IP address of the subnet to which this route leads.

12 User Account Management Related CLI Commands

12.1 add-user-account

Add a user account.

12.1.1 Example

```
add-user-account password="123456" role=admin usrname="Admin1"
```

12.1.2 Properties

Properties	Description	Mandatory
password	The user account's password. This property cannot be queried. If the **Allow Empty Password** property is false, this property must be defined.	Yes
role	Define the user account's role, which determines the user's permissions and authorization: • **Read-Only** - Can only query properties. • **Configuration** - Can perform all commands except those which are restricted to technician. This role cannot manage user accounts. • **Administrator** - Can perform all commands except those which are restricted to technician. This role can manage user accounts, with the exception of technician user accounts. • **Technician** - Can perform all commands. This role can manage user accounts, including technician user accounts.	Yes
usr-name	The user's name.	Yes

12.1.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

12.1.4 Completion Codes

Completion Code	Description
usr_name_not_unique	A user account with the same User Account Name already exists.
empty_pwd_not_allowed	The Allow Empty Password property is false, a password must be defined.
invalid_usr_name	The specified User Name contains an invalid value or was not defined.

Completion Code	Description
invalid_role	The Role parameter contains an invalid value.

12.2 modify-user-account

Modifies a user account.

12.2.1 Example

```
modify-user-account usr-id="Admin1" password="654321"
```

12.2.2 Properties

At least one of the following properties must be defined:

- password
- role – see ***add-user-account*** (on page 52)

12.2.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

12.2.4 Completion Codes

Completion Code	Description
empty_pwd_not_allowed	The XtremIO Storage System does not allow empty passwords.
invalid_role	The Role parameter was defined with an invalid value.
usr_has_fixed_role	The user account specified is technician or admin. These user accounts have fixed roles that cannot be modified.

12.3 remove-user-account

Removes a user account. The following rules apply:

- If removal of a user account is requested and the account is currently active (i.e. one of its commands is in progress), then the remove command may fail.
- You cannot remove your own user account.

12.3.1 Example

```
remove-user-account usr-id="User1"
```

12.3.2 Properties

Properties	Description	Mandatory
usr-id	The user account's name or index number. An Administrator cannot remove a Technician user account.	Yes

12.3.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

12.3.4 Completion Codes

Completion Code	Description
usr_is_active	The removal command failed because the specified user account is active (i.e. one of its commands is in progress).
cannot_remove_fixed_usr	The user account specified is technician or admin. These user accounts cannot be removed.

12.4 show-user-accounts

Displays a list of volumes and their defined properties.

12.4.1 Example

```
show-user-accounts
```

Properties	Description
Name	The name of the user.
Index	The index number of the user.
Role	The permissions level of the user.

12.5 modify-my-password

Changes the password of the current user account.

12.5.1 Example

modify-my-password 11223344

12.5.2 Properties

Properties	Values	Mandatory
password	The new password.	Yes

12.5.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	Yes

12.5.4 Completion Codes

Completion Code	Description
empty_pwd_not_allowed	You specified an empty password, but the system does not allow empty passwords.

13 Email Notification Related CLI Commands

13.1 modify-email-notifier

Modify the email notifier mailing list and properties.

13.1.1 Example

```
modify-email-notifier frequency=2
```

13.1.2 Properties

At least one of the following properties must be defined:

Properties	Description	Mandatory
company-name	The company name.	No
contact-details	The contact details.	No
disable	Disable the mail notifier.	No
enable	Enable the mail notifier.	No
frequency	The hours between mailings.	No
mail-password	A password for an SMTP mail relay.	No
mail-relay-address	An IP or DNS for an SMTP mail relay.	No
mail-user	A user for an SMTP mail relay.	No
proxy-address	An IP or DNS address for an http proxy.	No
proxy-password	A password for an http proxy.	No
proxy-port	A port for an http proxy.	No
proxy-user	A username for an http proxy.	No
recipient-list	A list of email recipients.	No
sender	The senders' email address.	No
transport	The mail transport mechanism to be used.	No

13.1.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

13.1.4 Completion Codes

Completion Code	Description
Email_notifier_modified	The command has completed successfully.

13.2 show-email-notifier

Displays the email notification properties.

13.2.1 Example

```
show-email-notifier
```

Properties	Description
Enabled	The active status of the email notifier.
Transport	The mail transport to use: • html • smtp
Frequency (hours)	Defines how often the notifier is sent.
Sender	The sender's email address.
Recipients	The list of email recipients.
Proxy-Address	The address of the proxy server to use for html mail.
Proxy-Port	The port of the proxy server for html mail.
Proxy-User	The user for the proxy server for html mail.
Mail-Relay-Address	The mail relay server to use for smtp mail.
Mail-User	The user for smtp mail delivery.
Company-Name	The name of the company to appear as the sender.
Contact-Details	The contact details to appear for the sender.

13.3 send-email-notification

Use this command to send an email notification.

13.3.1 Example

```
send-email-notification
```

14 RAID Related CLI Commands

14.1 rebuild-raid-group

Manually initiates a RAID group rebuild. This command is used if a rebuild was not initiated automatically.

14.1.1 Example

```
rebuild-raid-group rg-id="brick1"
```

14.1.2 Properties

Properties	Description	Mandatory
rg-id	The RAID group's name or index number.	Yes

14.1.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

14.1.4 Completion Codes

Completion Code	Description
rg not found	The specified RAID group does not exist.

14.2 remove-ssd

Remove an SSD from the system. You cannot remove an SSD that belongs to a RAID Group.

If the SSD has already been physically removed from its slot in the brick, the SSD is immediately eliminated from system records. If it is still inserted, its status is defined as Eject Pending. Once it is removed, the XtremIO Storage System automatically removes the SSD.

14.2.1 Example

```
remove-ssd ssd-id=2
```

14.2.2 Properties

Properties	Description	Mandatory
ssd-id	The SSD's name or index number.	Yes

14.2.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

14.2.4 Completion Codes

Completion Code	Description
ssd-not-found	The specified SSD does not exist.
invalid_in_current_ssd_state	The SSD's current status is In RAID Group or Eject Pending and cannot be removed.

14.3 show-slots

Displays a list of SSD slots and their properties.

14.3.1 Example

```
show-slots
```

Properties	Description
System-Name	The name of the system.
Product-Model	The product model of the SSD in the slot.
SSD-Size	The disk space size of the SSD in the slot.
Index (**ssd**)	The SSD's index number.
Brick-Name	The name of the brick which the slot belongs to.
Index (**brick**)	The index number of the brick.
Slot #	The slot number.
State	The current status of the slot in relation to an SSD. See Brick Slot States and SSD States Overview in the XtremIO User Guide.
Health-State	The current functional status of the slot.
Error	Indicates an error related to the slot.
Signature	The XtremIO Storage System signature of the SSD in the slot.
UID	The unique identifier (WWN) of the disk inserted in this slot.
Product-Model	The model of the SSD inserted into the slot.

14.4 show-ssds

Display a list of SSDs and their properties.

14.4.1 Example

```
show-ssds
```

Properties	Description
SSD-Name	The name of the SSD.
Brick-Name	The name of the brick in which the SSD is inserted.
Index (**brick**)	The index number of the brick.
Slot#	The slot number of the brick in which the SSD is inserted.
Index (**slot**)	The index number of the slot.
Product-Model	The model of the SSD.
SSD-Size	The disk space size of the SSD.
RG-Name	The RAID group name to which the SSD belongs.
Index (**RAID group**)	The index number of the RAID group.
State	The current status of the SSD in the brick.
Health-State	The current health status of the SSD.
Position-State	The current position status of the SSD.

14.5 add-ssd

Adds an SSD to a brick.

Generally, an SSD is automatically added by the XtremIO Storage System.

This command is used to add an SSD for a foreign XtremIO Storage System SSD.

14.5.1 Example

```
add-ssd ssd-name="SSD16" brick-id=brick1 ssd-uid=16
```

14.5.2 Properties

Properties	Description	Mandatory
brick-id	The name or index number of the brick in which the SSD is inserted.	Yes
is-foreign-xtremapp-ssd	Indicates if this SSD has been in a different XtremIO Storage System.	No
ssd-name	The name for the SSD. If omitted, the SSD is added without a name.	No
ssd-uid	The SSD's unique ID.	Yes

14.5.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

14.5.4 Completion Codes

Completion Code	Description
ssd_name_not_unique	An SSD with the same name already exists.
brick_not_found	The specified brick does not exist.
invalid_in_the_cur_sys_state	The system's state is not active.
invalid_ssd_uid	The defined SSD UID value is invalid.
dev_not_found	The SSD specified by the SSD UID was not found.
ssd_uid_not_unique	An SSD with the same SSD UID already exists.
foreign_ssd	The specified SSD is not a foreign SSD, but the is-foreign-ssd property was defined.
ssd_attached_failed	Attachment of the SSD failed.
health_check_failed	The health check failed.
format_ssd_failed	Formatting the SSD failed.
too_many_ssd_obj	Cannot add an SSD because the maximum limit has been reached.

15 System Health Related CLI Commands

15.1 show-systems-info

Displays information on the current system.

15.1.1 Example

show-systems-info

Properties	Description
System-Name	The name of the system.
Index	The system's index number.
State	The current status of the system.
Conn-State	The connection status: • Disconnected – XMS currently is disconnected from the system. • Connected – XMS is currently connected to the system.
Start-time	Time stamp of system start in seconds since 1.1.1970.
Activation-time	Time stamp of system activation in seconds since 1.1.1970.
SW-Version	The software version of the system.
PSNT	Product system identifier.

15.2 show-systems-memory

Displays a system's memory and usage. The displayed memory does not correspond to the entire system’s memory, but to the specific memory used by the dedup engine.

This command can indicate if the system is about to run out of cache memory.

15.2.1 Example

```
show-systems-memory
```

Properties	Description
System-Name	The name of the system.
Index	The system's index number.
Memory	The system's total memory.
Memory-In-Use	The current amount of memory that is currently in use.
Memory-Usage-%	The percentage of the system's memory that is in use.
Max-Memory-Usage-%	The maximum percentage of VAMD memory usage for all C-modules.

15.3 monitor-systems-memory

Displays the output of the command "show-systems-memory" and is continuously updated.

To stop the monitor update, press Ctrl+C.

15.3.1 Example

```
monitor-systems-memory
```

15.4 monitor-modules

Displays a list of modules with their properties and usage information and is continuously updated.

To stop the monitor update, press Ctrl+C.

15.4.1 Example

```
monitor-modules
```

Properties	Description
Module-Name	The name of the module.
Index (**module**)	The module's index number.
XEnv-Name	The name of the **X Environment** with which the module is associated.
Index (**X Environment**)	The **X Environment** 's index number.
Module-Type	The type of module.
State	The module's current activity status.
Memory	The module's total memory.
Memory-In-Use	The current amount of memory in use.
Memory-Usage-%	The percentage of the module's memory which is currently in use.

15.5 show-target-groups-performance-fc

Displays the counter values for various types of target errors.

NOTE
This command only applies to FC type targets.

15.5.1 Example

```
show-target-groups-fc-error-counters
```

Properties	Description
Name	The target's name.
Index	The target's index number.
Dumped-Frames	The total number of dumped frames.
Sync-Loss	The total number of sync losses.
Signal-Loss	The total number of times a signal loss has occurred.
Invalid-Crc	The number of times an invalid CRC error has occurred.
Link-Failure	The total number of link failures.
Prime-Seq-Err	The number of prime sequential protocol errors.

15.6 monitor-target-groups-performance-fc

Displays the output of the command "show-target-groups-performance-fc" and is continuously updated.

To stop the monitor update, press Ctrl+C.

15.6.1 Example

```
monitor-target-groups-fc-error-counters
```

15.7 show-targets-fc-error-counters

Displays the counter values for various types of target errors.

NOTE
This command only applies to FC type targets.

15.7.1 Example

```
show-targets-fc-error-counters
```

Properties	Description
Name	The target's name.
Index	The target's index number.
Dumped-Frames	The total number of dumped frames.
Sync-Loss	The total number of sync losses.
Signal-Loss	The total number of times a signal loss has occurred.
Invalid-Crc	The number of times an invalid CRC error has occurred.
Link-Failure	The total number of link failures.
Prime-Seq-Err	The number of prime sequential protocol errors.

15.8 monitor-targets-fc-error-counters

Displays the output of the command "show-targets-fc-error-counters" and is continuously updated.

To stop the monitor update, press Ctrl+C.

15.8.1 Example

```
monitor-targets-fc-error-counters
```

15.9 show-xenvs

Display **X Environment** s' status and properties

15.9.1 Example

```
show-xenvs
```

Properties	Description
XEnv-Name	The name of the **X Environment.**
Index (**X Environment**)	The **X Environment** 's index number.
State	The current status of the **X Environment.**
CPU(%)	The percentage of CPU currently in use by the **X Environment.**
Node-Name	The name of the node to which the **X Environment** is associated.
Index (**node**)	The node's index number.

15.10 monitor-xenvs

Displays the output of the command "show-xenvs" and is continuously updated.

To stop the monitor update, press Ctrl+C.

15.10.1 Example

```
monitor-xenvs
```

15.11 show-nodes-info

Displays information about nodes.

15.11.1 Example

show-nodes-info

Properties	Description
Node-Name	The name of the node.
Index (node)	The node's index number.
Mgr-Addr	The IP address used to access the node manager.
Brick-Name	The ID of the brick which the node belongs to.
Index (brick)	The brick's index number.
System-Name	The name of the system which the node belongs to.
Index (system)	The system's index number.
State	The active state of the node.
Conn-State	The connectivity status of the node.
SW-Version	The software version of the node.
HW-Model	The hardware model of the node.

15.12 show-nodes-power

Displays a list of nodes and their current power supply properties.

15.12.1 Example

```
show-nodes-power
```

Properties	Description
Node-Name	The name of the node.
Index	The index number of the node.
Monitoring	The monitoring state.
Conn-State	The connectivity status of the node to the UPS.
Battery-Charge (%)	The percent of the UPS battery's charge.
Voltage	The UPS voltage.
Load (%)	The current percentage of the UPS load.
Serial-Number	The serial number of the UPS attached to this node.

Properties	Description
Power-Connectivity	The current power connectivity status.

15.13 show-nodes-sensors

Displays a list of nodes and their sensors.

15.13.1 Example

```
show-nodes-sensors
```

Properties	Description
Node-Name	The name of the node.
Index	The index number of the node.
Sensor-Type	The sensor type.
Sensor-Name	The name of the sensor.
Slot-Value	The actual value indicated by the sensor. For example, if Sensor-Name is +1.5V and Sensor-Type is voltage, Slot-Value may be 1.536V.

15.14 show-nodes-fw-versions

Displays nodes firmware versions.

15.14.1 Example

```
show-nodes-fw-versions
```

Properties	Description
Node-Name	The name of the node.
Index	The index number of the node.
Local-Disk-Controller	Local Disk Controller ID.
PCI-Disk-Controller	PCI Disk Controller FW.
IPMI-BMC	IPMI firmware.
UPS	UPS firmware.
FC-HBA	FC Targets firmware.
PCI-10GE-HBA	iSCSI Targets firmware.
PCI-IB-HBA	InfiniBand Targets firmware.
BIOS	Node BIOS firmware.

15.15 show-nodes-local-disks

Displays nodes local disks configuration.

15.15.1 Example

```
show-nodes-local-disks
```

Properties	Description
Node-Name	The name of the node.
Index	The index number of the node.
Slot #	Slot ID.
State	Disk current activity status.
UID	Disk unique identifier.
Product-Model	Disk model name.
Disk-Type	Disk type SSD/HDD/None.
Disk-Expected-Type	Expected disk type.
Disk-Purpose	Disk purpose of use.

15.16 show-nodes-port-error-counters-ib(1|2)

Displays the counter values for various types of port errors.

15.16.1 Example

```
show-nodes-port-error-counters-ib1
```

Properties	Description
Node-Name	The name of the node.
Index	The node's index number.
Sym-Errs	Symbol Error counter. The total number of minor link errors that were detected.
Sym-Errs-pm	The change in counter value from the previous total value displayed.
Recovers	Link Error Recovery Counter. The total number of times that the link error recovery process has completed successfully.
Recovers-pm	The change in counter value from the previous total value displayed.
Lnk-Downed	Link Downed Counter. The total number of times that the link error recovery process has failed and downed the link.
Lnk-Downed-pm	The change in counter value from the previous total value displayed.
Rev-Errs	Port Receive Error Counter. The total number of packets received on the port which contained an error, such as: • Local physical errors (e.g. CRC error) • Malformed data packet errors • Malformed link packet errors • Packets discarded due to buffer overrun
Rev-Errs-pm	The change in counter value from the previous total value displayed.
Rmt-Phys-Errs	Port Receive Remote Physical Error counter. The total number of packets received on the port that were marked as corrupted.
Rmt-Phys-Errs-pm	The change in counter value from the previous total value displayed.
Inteq_Errs	Local Link Integrity Error Counter. The number of times that the local physical errors count exceeded its threshold.
Inteq-Errs-pm	The change in counter value from the previous total value displayed.
Rate-Gbps	The active rate of the port in Gbps.

15.17 monitor-nodes-port-error-counters-ib(1|2)

Displays the output of the "show-nodes-port-error-counters-ib(1|2)" command and is continuously updated.

To stop the monitor update, press Ctrl+C.

15.17.1 Example

```
monitor-nodes-port-error-counters-ib1
```

15.18 create-debug-info

Create debug archive log collection.

15.18.1 Example

```
create-debug-info
```

15.18.2 Properties

Properties	Description	Mandatory
debug-info-name	The debug info name.	No
debug-level	Debug Level of the log collection: tiny, small, medium, large, huge When not selected the default size is medium.	No
sys-id	The system's name or index number. May be omitted if there is only one system defined to the environment.	No

15.18.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

15.19 show-debug-info

Displays the archives that were created.

15.19.1 Example

```
show-debug-info
```

Properties	Description
Name	The debug info name.
System-Name	The name of the system which the node belongs to.
Debug-Level	Debug Level of the log collection: tiny, small, medium, large, huge.
Start-time	Time stamp of create debug start.
Create-time	Time stamp of debug collection completion.
Output-Path	The web output path.

15.20 remove-debug-info

Delete archive from the system.

15.20.1 Example

```
remove-debug-info debug-info-id="name"
```

Properties	Description	Mandatory
debug-info-id	Name or index of the archive.	Yes

15.20.2 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

16 Performance-Related CLI Commands

16.1 show-initiator-groups-performance

Displays the performance of initiator groups.

16.1.1 Example

```
show-initiator-groups-performance
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	
Total-Write-IOs	
Total-Read-IOs	

16.2 monitor-initiator-groups-performance

Displays the output of the command "show-initiator-groups-performance" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.2.1 Example

```
monitor-initiator-groups-performance
```

16.3 show-initiator-groups-performance-small

Displays the performance of initiator groups.

16.3.1 Example

```
show-initiator-groups-performance-small
```

Properties	Description
Name	The component's name.
Index	The component's index number.
S-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPs of I/Os which are smaller than 4kB.
S-Write-IOPS	
S-Read-BW (MB/s)	
S-Read-IOPS	
S-BW (MB/s)	
S-IOPS	
Total-S-Write-IOs	

Properties	Description
Total-S-Read-IOs	

16.4 monitor-initiator-groups-performance-small

Displays the output of the command "show-initiator-groups-performance-small" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.4.1 Example

```
monitor-initiator-groups-performance-small
```

16.5 show-initiator-groups-performance-unaligned

Displays the performance of initiator groups.

16.5.1 Example

```
show-initiator-groups-performance-unaligned
```

Properties	Description
Name	The component's name.
Index	The component's index number.
U-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPS of unaligned I/Os which are greater than 4kB I/Os.
U-Write-IOPS	
U-Read-BW (MB/s)	
U-Read-IOPS	
U-BW (MB/s)	
U-IOPS	
Total-U-Write-IOs	
Total-U-Read-IOs	

16.6 monitor-initiator-groups-performance-unaligned

Displays the output of the command "show-initiator-groups-performance-unaligned" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.6.1 Example

```
monitor-initiator-groups-performance-unaligned
```

16.7 show-initiators-performance

Displays the performance of initiators.

16.7.1 Example

```
show-initiators-performance
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	
Total-Write-IOs	
Total-Read-IOs	

16.8 monitor-initiators-performance

Displays the output of the command "show-initiators-performance" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.8.1 Example

```
monitor-initiators-performance
```

16.9 show-initiators-performance-small

Displays the performance of initiators.

16.9.1 Example

```
show-initiators-performance-small
```

Properties	Description
Name	The component's name.
Index	The component's index number.
S-Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPs of I/Os which are smaller than 4kB.
S-Write-IOPS	
S-Read-BW (MB/s)	
S-Read-IOPS	
S-BW (MB/s)	
S-IOPS	
Total-S-Write-IOs	
Total-S-Read-IOs	

16.10 monitor-initiators-performance-small

Displays the output of the command "show-initiators-performance-small" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.10.1 Example

```
monitor-initiators-performance-small
```

16.11 show-initiators-performance-unaligned

Displays the performance of initiators.

16.11.1 Example

```
show-initiators-performance-unaligned
```

Properties	Description
Name	The component's name.
Index	The component's index number.
U-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPS of unaligned I/Os which are greater than 4kB I/Os.
U-Write-IOPS	
U-Read-BW (MB/s)	
U-Read-IOPS	
U-BW (MB/s)	
U-IOPS	
Total-U-Write-IOs	
Total-U-Read-IOs	

16.12 monitor-initiators-performance-unaligned

Displays the output of the command "show-initiators-performance-unaligned" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.12.1 Example

```
monitor-initiators-performance-unaligned
```

16.13 show-most-active

Displays the four most active volumes and initiator groups.

16.13.1 Example

```
show-most-active
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	

Properties	Description
Read-IOPS	
BW (MB/s)	
IOPS	

16.14 monitor-most-active

Displays the output of the command "show-most-active" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.14.1 Example

```
monitor-most-active
```

16.15 show-most-active-initiator-groups

Displays the performance of the most active initiator groups.

16.15.1 Example

```
show-most-active-initiator-groups
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	

16.16 monitor-most-active-initiator-groups

Displays the output of the command "show-most-active-initiator-groups" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.16.1 Example

```
monitor-most-active-initiator-groups
```

16.17 show-most-active-volumes

Displays the performance of the most active volumes.

16.17.1 Example

```
show-most-active-volumes
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	

16.18 monitor-most-active-volumes

Displays the output of the command "show-most-active-volumes" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.18.1 Example

```
monitor-most-active-volumes
```

16.19 show-raid-groups-performance

Displays the performance of RAID groups.

16.19.1 Example

```
show-raid-groups-performance
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	

16.20 monitor-raid-groups-performance

Displays the output of the command "show-raid-groups-performance" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.20.1 Example

```
monitor-raid-groups-performance
```

16.21 show-ssds-performance

Displays the performance of SSDs.

16.21.1 Example

```
show-ssds-performance
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	

16.22 monitor-ssds-performance

Displays the output of the command "show-ssds-performance" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.22.1 Example

```
monitor-ssds-performance
```

16.23 show-systems-performance

Displays the performance of systems.

16.23.1 Example

```
show-systems-performance
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	
Total-Write-IOs	
Total-Read-IOs	

16.24 monitor-systems-performance

Displays the output of the command "show-systems-performance" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.24.1 Example

```
monitor-systems-performance
```

16.25 show-systems-performance-small

Displays the performance of systems.

16.25.1 Example

```
show-systems-performance-small
```

Properties	Description
Name	The component's name.
Index	The component's index number.
S-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPs of I/Os which are smaller than 4kB.
S-Write-IOPS	
S-Read-BW (MB/s)	
S-Read-IOPS	
S-BW (MB/s)	
S-IOPS	
Total-S-Write-IOs	
Total-S-Read-IOs	

16.26 monitor-systems-performance-small

Displays the output of the command "show-systems-performance-small" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.26.1 Example

```
monitor-systems-performance-small
```

16.27 show-systems-performance-unaligned

Displays the performance of systems.

16.27.1 Example

```
show-systems-performance-unaligned
```

Properties	Description
Name	The component's name.
Index	The component's index number.
U-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPS of unaligned I/Os which are greater than 4kB I/Os.
U-Write-IOPS	
U-Read-BW (MB/s)	
U-Read-IOPS	

Properties	Description
U-BW (MB/s)	
U-IOPS	
Total-U-Write-IOs	
Total-U-Read-IOs	

16.28 monitor-systems-performance-unaligned

Displays the output of the command "show-systems-performance-unaligned" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.28.1 Example

```
monitor-systems-performance-unaligned
```

16.29 show-target-groups-performance

Displays the performance of target groups.

16.29.1 Example

```
show-target-groups-performance
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	
Total-Write-IOs	
Total-Read-IOs	

16.30 monitor-target-groups-performance

Displays the output of the command "show-target-groups-performance" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.30.1 Example

```
monitor-target-groups-performance
```

16.31 show-target-groups-performance-small

Displays the performance of target groups.

16.31.1 Example

```
show-target-groups-performance-small
```

Properties	Description
Name	The component's name.
Index	The component's index number.
S-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPs of I/Os which are smaller than 4kB.
S-Write-IOPS	
S-Read-BW (MB/s)	
S-Read-IOPS	
S-BW (MB/s)	
S-IOPS	
Total-S-Write-IOs	
Total-S-Read-IOs	

16.32 monitor-target-groups-performance-small

Displays the output of the command "show-target-groups-performance-small" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.32.1 Example

```
monitor-target-groups-performance-small
```

16.33 show-target-groups-performance-unaligned

Displays the performance of target groups.

16.33.1 Example

```
show-target-groups-performance-unaligned
```

Properties	Description
Name	The component's name.
Index	The component's index number.
U-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPS of unaligned I/Os which are greater than 4kB I/Os.
U-Write-IOPS	
U-Read-BW (MB/s)	
U-Read-IOPS	
U-BW (MB/s)	
U-IOPS	
Total-U-Write-IOs	
Total-U-Read-IOs	

16.34 monitor-target-groups-performance-unaligned

Displays the output of the command "show-target-groups-performance-unaligned" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.34.1 Example

```
monitor-target-groups-performance-unaligned
```

16.35 show-targets-performance

Displays a list of targets by their name and index number, and the following performance properties.

16.35.1 Example

```
show-targets-performance
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	
Total-Write-IOs	
Total-Read-IOs	

16.36 monitor-targets-performance

Displays the output of the command "show-targets-performance" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.36.1 Example

```
monitor-targets-performance
```

16.37 show-targets-performance-small

Displays the performance of targets.

16.37.1 Example

```
show-targets-performance-small
```

Properties	Description
Name	The component's name.
Index	The component's index number.

Properties	Description
S-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPs of I/Os which are smaller than 4kB.
S-Write-IOPS	
S-Read-BW (MB/s)	
S-Read-IOPS	
S-BW (MB/s)	
S-IOPS	
Total-S-Write-IOs	
Total-S-Read-IOs	

16.38 monitor-targets-performance-small

Displays the output of the command "show-targets-performance-small" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.38.1 Example

```
monitor-targets-performance-small
```

16.39 show-targets-performance-unaligned

Displays the performance of targets.

16.39.1 Example

```
show-targets-performance-unaligned
```

Properties	Description
Name	The component's name.
Index	The component's index number.
U-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPS of unaligned I/Os which are greater than 4kB I/Os.
U-Write-IOPS	
U-Read-BW (MB/s)	
U-Read-IOPS	
U-BW (MB/s)	
U-IOPS	
Total-U-Write-IOs	
Total-U-Read-IOs	

16.40 monitor-targets-performance-unaligned

Displays the output of the command "show-targets-performance-unaligned" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.40.1 Example

```
monitor-targets-performance-unaligned
```

16.41 show-total-performance

Displays the total performance for all systems managed by the current XMS.

16.41.1 Example

```
show-total-performance
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	
Total-Write-IOs	
Total-Read-IOs	

16.42 monitor-total-performance

Displays the output of the command "show-total-performance" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.42.1 Example

```
monitor-total-performance
```

16.43 show-total-performance-small

Displays the total performance for all systems managed by the XtremIO Storage System.

16.43.1 Example

```
show-total-performance-small
```

Properties	Description
Name	The component's name.
Index	The component's index number.
S-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPs of I/Os which are smaller than 4kB.
S-Write-IOPS	
S-Read-BW (MB/s)	
S-Read-IOPS	
S-BW (MB/s)	

Properties	Description
S-IOPS	
Total-S-Write-IOs	
Total-S-Read-IOs	

16.44 monitor-total-performance-small

Displays the output of the command "show-total-performance-small" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.44.1 Example

```
monitor-total-performance-small
```

16.45 show-total-performance-unaligned

Displays the total performance for all systems managed by the XtremIO Storage System.

16.45.1 Example

```
show-total-performance-unaligned
```

Properties	Description
Name	The component's name.
Index	The component's index number.
U-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPS of unaligned I/Os which are greater than 4kB I/Os.
U-Write-IOPS	
U-Read-BW (MB/s)	
U-Read-IOPS	
U-BW (MB/s)	
U-IOPS	
Total-U-Write-IOs	
Total-U-Read-IOs	

16.46 monitor-total-performance-unaligned

Displays the output of the command "show-total-performance-unaligned" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.46.1 Example

```
monitor-total-performance-unaligned
```

16.47 show-volumes-performance

Displays the performance of volumes.

16.47.1 Example

```
show-volumes-performance
```

Properties	Description
Name	The component's name.
Index	The component's index number.
Write-BW (MB/s)	These properties indicate the current Bandwidth/IOPS.
Write-IOPS	
Read-BW (MB/s)	
Read-IOPS	
BW (MB/s)	
IOPS	
Total-Write-IOs	
Total-Read-IOs	

16.48 monitor-volumes-performance

Displays the output of the command "show-volumes-performance" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.48.1 Example

```
monitor-volumes-performance
```

16.49 show-volumes-performance-small

Displays the performance of volumes.

16.49.1 Example

```
show-volumes-performance-small
```

Properties	Description
Name	The component's name.
Index	The component's index number.
S-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPs of I/Os which are smaller than 4kB.
S-Write-IOPS	
S-Read-BW (MB/s)	
S-Read-IOPS	
S-BW (MB/s)	
S-IOPS	
Total-S-Write-IOs	
Total-S-Read-IOs	

16.50 monitor-volumes-performance-small

Displays the output of the command "show-volumes-performance-small" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.50.1 Example

```
monitor-volumes-performance-small
```

16.51 show-volumes-performance-unaligned

Displays the performance of volumes.

16.51.1 Example

```
show-volumes-performance-unaligned
```

Properties	Description
Name	The component's name.
Index	The component's index number.
U-Write-BW (MB/s)	These properties indicate the current Bandwidth/ IOPS of unaligned I/Os which are greater than 4kB I/Os.
U-Write-IOPS	
U-Read-BW (MB/s)	
U-Read-IOPS	
U-BW (MB/s)	
U-IOPS	
Total-U-Write-IOs	
Total-U-Read-IOs	

16.52 monitor-volumes-performance-unaligned

Displays the output of the command "show-volumes-performance-unaligned" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.52.1 Example

```
monitor-volumes-performance-unaligned
```

16.53 show-target-groups-performance-fc

Displays the performance of target groups FC.

16.53.1 Example

```
show-target-groups-performance-fc
```

Properties	Description
TG-Name	The component's name.
Index	The component's index number.
Dumped-Frames	The total amount of dumped fraems.
Sync-Loss	The total amount of sync loss.
Signal-Loss	The total amount of signal loss.

Properties	Description
Invalid-Crc	The total amount of invalid CRC.
Link-Failure	The total amount of link failure.
Prim-Seq-Err	The total amount of primary sequence error.

16.54 monitor-target-groups-performance-fc

Displays the output of the command "show-target-groups-performance-fc" and is continuously updated.

To stop the monitor update, press Ctrl+C.

16.54.1 Example

```
monitor-target-groups-performance-fc
```

16.55 export-performance-history

Create an export of performance history.

16.55.1 Example

```
export-performance-history
```

16.55.2 Properties

Properties	Description	Mandatory
filename	File name of the export.	No

16.55.3 Permissions

User Type	Permission
Administrator	Yes
Configuration	Yes
Read-Only	No

17 Glossary

Terms	Description
Alert	Indicates a condition that requires your attention and in some cases needs your intervention.
Brick	A physical chassis that contains nodes and SSDs.
Data protection group	A set of SSDs that form a redundancy group.
Dedup	See **Real time inline data reduction**.
Gbps	Gigabits per second. A unit of data transfer speed.
InfiniBand	A type of communications link for data flow between processors and I/O devices.
Initiator Group	A group of ports (initiators) which can access a volume.
IPMI	Intelligent Platform Management Interface is a standardized computer system interface used by system administrators to manage a computer system and monitor its operations.
iSCSI	Internet Small Computer System Interface. iSCSI is an Internet Protocol based storage networking standard for linking data storage facilities.
LUN	A Logical Unit Number identifies a logical unit, which is a device addressed by the SCSI protocol or similar protocols such as Fiber Channel or iSCSI. A LUN may be used with any device which supports read/write operations.
Node	Represents a computer in the system located in the brick.
Notifier	A XtremIO Storage System function that sends system information by email to a defined list of recipients.
PuTTY	A terminal emulator application which acts as a client for SSH.
Real time inline data reduction	A data compression process that eliminates redundant data. This process improves storage utilization and increase efficiency by reducing the number of bytes that must be sent across a link in a network data transfer.
SMTP	Simple Mail Transfer Protocol is an Internet standard for e-mail transmission across Internet Protocol (IP) networks.
SSD	Solid State Disk.

Terms	Description
SYM	Management module.
System	A system consists of all components (bricks, nodes and SSDs) managed by a single XtremIO Storage System.
Target	A physical port located in one of the system nodes.
Unmap	The action of removing a LUN mapping between a volume and an initiator group.
Volume	A defined quantity of disk space in an active system.