RELEASE NOTES

EMC® XtremIO Storage Array

Version 4.0.2-65

Release Notes

P/N 302-002-257
REV 01
December 27, 2015

This Release Notes document contains information on these topics:

EMC²

Revision History

Revision	Date	Description
01	December 27, 2015	Initial release – Software Ver. 4.0.2-65

Product Description

XtremIO is an all-flash storage array that has been designed from the ground-up to unlock flash's full performance potential and deliver array-based capabilities that leverage the unique characteristics of SSDs, based on flash media.

XtremIO uses industry standard components and proprietary intelligent software to deliver unparalleled levels of performance. Achievable performance ranges from hundreds of thousands to millions of IOPS, and consistent low latency of under one millisecond.[*]

The system is also designed to provide minimal planning, with a user-friendly interface that makes provisioning and managing the array very easy.

XtremIO leverages flash to deliver value across the following main dimensions:

- **Performance** – Regardless of how busy the system is, and regardless of storage capacity utilization, latency and throughput remain consistently predictable and constant. Latency within the array for an I/O request is typically far less than one millisecond.[*]

- **Scalability** – The XtremIO Storage Array is based on a scale-out architecture. The system begins with a single building block, called an X-Brick. When additional performance and capacity are required, the system may be scaled out by adding X-Bricks. Performance scales linearly, with two X-Bricks supplying approximately twice the IOPS and four X-Bricks supplying approximately four times the IOPS of the single X-Brick configuration. Latency remains consistently low as the system scales out.

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[*] As measured for small block sizes. Large block I/O by nature incurs higher latency on any storage system.

- **Efficiency –** The core engine implements content-based Inline Data Reduction. The XtremIO Storage Array automatically reduces (deduplicates and compresses) data on the fly, as it enters the system. This reduces the amount of data written to flash, improving longevity of the media and driving down cost. XtremIO arrays allocate capacity to volumes on-demand in granular data blocks. Volumes are always thin-provisioned without any loss of performance, over-provisioning of capacity, or fragmentation. Once content-based inline deduplication is implemented, the remaining data is compressed even further, reducing the amount of writes to the flash media. The data compression is carried out inline on the deduplicated (unique) data blocks.

    Benefits gained from avoiding a large percentage of writes include:

    - Better performance due to reduced data

    - Increased overall endurance of the flash array's SSDs

    - Less required physical capacity to store the data, increasing the storage array's efficiency and dramatically reducing the $/GB cost of storage

- **Data Protection** – XtremIO leverages a proprietary flash-optimized data protection algorithm (XtremIO Data Protection or XDP) which provides protection for data, while enabling performance that is superior to any existing RAID algorithms. Optimizations in XDP also result in fewer writes to flash media for data protection purposes.

- **Functionality** – XtremIO supports high performance and space-efficient Snapshots, Inline Data Reduction, thin provisioning, and full VMware VAAI integration, as well as support for Fibre Channel and iSCSI protocols.

New Features and Changes in Ver. 4.0.2-65

This section describes the following new features and changes that are introduced in this software version.

They include:

- Hardware Enhancements
- Non-Disruptive Online Cluster Expansion
- New Volume Access Levels
- GUI and Usability Enhancements
- Disable Encryption and Non-Encrypted Models
- Scalability Numbers

Hardware Enhancements

This version provides the following new features and changes:

- New cluster configuration –
  Customers can deploy up to 6 and 8 X-Bricks in a cluster for the 40TB X-Brick type.

- New Field Replaceable Units (FRU) –
  This version allows field replacement of the InfiniBand Switches' PSU and fan in by a certified technician.

Non-Disruptive Online Cluster Expansion

This version provides the following new features and changes:

- An XtremIO cluster can be expanded non-disruptively from a single X-Brick to dual X-Brick, while the cluster is online and serving data, adding agility to the data center.

- An XtremIO Storage Array can grow both in capacity and performance as more workload is consolidated into the system. This enables customers to start with a smaller cluster and expand it according to the workload growth.

- The added capacity and performance is available for consumption during the expansion process.

- The following table shows the overall available expansion paths supported in Ver. 4.0.2.

From \ To	2 X-Bricks	4 X-Bricks	6 X-Bricks (20TB/40TB Models Only)	8 X-Bricks (20TB/40TB Models Only)
Single X-Brick	✓	✓*	✓*	✓*
2 X-Bricks	–	✓	✓	✓
4 X-Bricks	–	–	✓	✓
6 X-Bricks	–	–	–	✓

*   Expansion from a Single X-Brick to 4, 6 and 8 X-Bricks requires expanding to 2 X-Bricks before any further expansion.

**   A Starter X-Brick can be expanded to a Single X-Brick and then to multiple X-Bricks.

New Volume Access Levels

In order to prevent unauthorized access to Volumes, especially in disaster recovery (DR) scenarios, the user may want to limit the hosts on the DR site from writing to the DR Volumes before there is an actual failover, but still keep the hosts mapped to the Volume.

This version provides the following new features and changes:

- A Volume is created with Write access rights. A Snapshot can be created as either read-only or writable. Starting from version 4.0.2, after creating Volumes and Snapshots, the user can modify them and change their access level.

- A Volume/Snapshot with write access can have one of the following access levels:

  - **No access** – With this access level, all SCSI commands for accessing data on the Volume (read and write commands) fail, and all SCSI discovery commands (i.e. inquiries on Volume characteristics without accessing the data on the Volume) succeed.

  - **Read access** – With this access level, all SCSI write commands fail, and all SCSI read and discovery commands succeed.

  - **Write access** – With this access level, the host is authorized to write to the Volume and all commands succeed.

GUI and Usability Enhancements

This version adds new maintenance functionality to the Graphical User Interface that allows shutting down or starting/stopping a cluster.

Note: After a cluster has been shut down remotely, physical access to the cluster is required to turn it on.

Disable Encryption and Non-Encrypted Models

This version allows disabling the Data at Rest Encryption (DARE), if desired. Disabling and Enabling is done when the cluster is stopped.

For countries that do not allow import of encrypted products, a special part number has been created with which encryption is disabled and cannot be enabled.

Scalability Numbers

The tables in the following sections show the maximum values of various configuration parameters for the different X-Brick types.

40TB X-Brick

Parameter	Definition	Maximum Value
X-Brick	Number of X-Bricks per cluster	8
Storage Controller	Number of Storage Controllers per X-Brick	2
XMS	Number of management stations per cluster	1
Initiator (FC or iSCSI)	Number of defined Initiators per cluster/XMS	1024
Initiator	Number of defined Initiators per Initiator Group	64
Initiator Group	Number of defined IGs per cluster/XMS	1024
Volume and Snapshots	Number of defined Volumes per cluster/XMS	8192
Volume	Volume size	256 TiB
Thin Provisioning	Thin Provisioning for Volumes	360 TiB[*]
Snapshots	Number of Snapshots per production Volume	512
Snapshots – Consistency Groups	Number of Consistency Groups per Cluster/XMS	512
Snapshots – Consistency Groups	Number of Volumes per Consistency Groups	256
Snapshots – Consistency Groups	Number of Consistency Groups per Volume	4
Capacity	Physical capacity (per X-Brick)	30.55 TiB
Capacity	Maximum logical capacity	290 - 360 TiB[**]
Mapping	Number of Initiator Groups mappings per Volume	64
Mapping	Number of mappings per cluster/XMS (10 Volumes mapped to 10 Initiators maps results in 100 mappings)	16,384
Mapping	Number of Volume mappings per Initiator Group	2048
iSCSI	Number of iSCSI portals per X-Brick	16
iSCSI	Number of physical iSCSI ports per X-Brick	4
iSCSI	Number of iSCSI routes per cluster	32
Fibre Channel	Number of physical FC ports per X-Brick	4
Block Size	Largest block size supported	4 MB

[*] Thin provisioning of more than 360 TiB per X-Brick can be approved via RPQ. If Snapshots are in use, consult the sizing tool for cluster sizing.

[**] Depends on the Data Set and the level of compression/deduplication. Not a final number.

20TB X-Brick

Parameter	Definition	Maximum Value
X-Brick	Number of X-Bricks per cluster	8
Storage Controller	Number of Storage Controllers per X-Brick	2
XMS	Number of management stations per cluster	1
Initiator (FC or iSCSI)	Number of defined Initiators per cluster/XMS	1024
Initiator	Number of defined Initiators per Initiator Group	64
Initiator Group	Number of defined IGs per cluster/XMS	1024
Volume and Snapshots	Number of defined Volumes per cluster/XMS	8192
Volume	Volume size	256 TiB
Thin Provisioning	Thin Provisioning for Volumes	130 TiB[*]
Snapshots	Number of Snapshots per production Volume	512
Snapshots – Consistency Groups	Number of Consistency Groups per Cluster/XMS	512
Snapshots – Consistency Groups	Number of Volumes per Consistency Groups	256
Snapshots – Consistency Groups	Number of Consistency Groups per Volume	4
Capacity	Physical capacity (per X-Brick)	15.16 TiB
Capacity	Maximum logical capacity	73 - 130 TiB[**]
Mapping	Number of Initiator Groups mappings per Volume	64
Mapping	Number of mappings per cluster/XMS (10 Volumes mapped to 10 Initiators maps results in 100 mappings)	16,384
Mapping	Number of Volume mappings per Initiator Group	2048
iSCSI	Number of iSCSI portals per X-Brick	16
iSCSI	Number of physical iSCSI ports per X-Brick	4
iSCSI	Number of iSCSI routes per cluster	32
Fibre Channel	Number of physical FC ports per X-Brick	4
Block Size	Largest block size supported	4 MB

[*] Thin provisioning of more than 130 TiB per X-Brick can be approved via RPQ. If Snapshots are in use, consult the sizing tool for cluster sizing.

[**] Depends on the Data Set and the level of compression/deduplication.

10TB and 10TB Encryption Capable X-Brick type

Parameter	Definition	Maximum Value
X-Brick	Number of X-Bricks per cluster	4
Storage Controller	Number of Storage Controllers per X-Brick	2
XMS	Number of management stations per cluster	1
Initiator (FC or iSCSI)	Number of defined Initiators per cluster/XMS	1024
Initiator	Number of defined Initiators per Initiator Group	64
Initiator Group	Number of defined IGs per cluster/XMS	1024
Volume and Snapshots	Number of defined Volumes per cluster/XMS	8192
Volume	Volume size	256 TiB
Thin Provisioning	Thin Provisioning for Volumes	130 TiB[*]
Snapshots	Number of Snapshots per production Volume	512
Snapshots – Consistency Groups	Number of Consistency Groups per Cluster/XMS	512
Snapshots – Consistency Groups	Number of Volumes per Consistency Groups	256
Snapshots – Consistency Groups	Number of Consistency Groups per Volume	4
Capacity	Physical capacity (per X-Brick)	7.48 TiB
Capacity	Maximum logical capacity	110 - 130 TiB[**]
Mapping	Number of Initiator Groups mappings per Volume	64
Mapping	Number of mappings per cluster/XMS (10 Volumes mapped to 10 Initiators maps results in 100 mappings)	16,384
Mapping	Number of Volume mappings per Initiator Group	2048
iSCSI	Number of iSCSI portals per X-Brick	16
iSCSI	Number of physical iSCSI ports per X-Brick	4
iSCSI	Number of iSCSI routes per cluster	32
Fibre Channel	Number of physical FC ports per X-Brick	4
Block Size	Largest block size supported	4 MB

*   Thin provisioning of more than 130 TiB per X-Brick can be approved via RPQ. If Snapshots are in use, consult the sizing tool for cluster sizing.

**   Depends on the Data Set and the level of compression/deduplication.

10TB Starter X-Brick (5TB)

Parameter	Definition	Maximum Value
X-Brick	Number of X-Bricks per cluster	1*
Storage Controller	Number of Storage Controllers per X-Brick	2
XMS	Number of management stations per cluster	1
Initiator (FC or iSCSI)	Number of defined Initiators per cluster/XMS	1024
Initiator	Number of defined Initiators per Initiator Group	64
Initiator Group	Number of defined IGs per cluster/XMS	1024
Volume and Snapshots	Number of defined Volumes per cluster/XMS	8192
Volume	Volume size	120 TiB
Thin Provisioning	Thin Provisioning for Volumes	130 TiB**
Snapshots	Number of Snapshots per production Volume	512
Snapshots – Consistency Groups	Number of Consistency Groups per Cluster/XMS	512
Snapshots – Consistency Groups	Number of Volumes per Consistency Groups	256
Snapshots – Consistency Groups	Number of Consistency Groups per Volume	4
Capacity	Physical capacity (13 SSD)	3.21 TiB
Capacity	Physical capacity with expansion (13+12 SSDs)	7.22 TiB
Capacity	Maximum logical capacity	112 - 130 TiB***
Mapping	Number of Initiator Groups mappings per Volume	64
Mapping	Number of mappings per cluster/XMS (10 Volumes mapped to 10 Initiators maps results in 100 mappings)	16,384
Mapping	Number of Volume mapping per Initiator Group	2048
iSCSI	Number of iSCSI portals per X-Brick	16
iSCSI	Number of physical iSCSI ports per X-Brick	4
iSCSI	Number of iSCSI routes per cluster	32
Fibre Channel	Number of physical FC ports per X-Brick	4
Block Size	Largest block size supported	4 MB

*   Starter X-Brick can be expanded to a full X-Brick, and then expanded on line like a single X-Brick.

**   Thin provisioning of more than 130 TiB per X-Brick can be approved via RPQ. If Snapshots are in use, consult the sizing tool for cluster sizing.

**   Depends on the Data Set and the level of compression/deduplication.

XMS Scalability Numbers

Parameter	Definition	Maximum Value
Clusters	Number of clusters per XMS	8
User	Number of defined users per XMS	128
Volume and Snapshots	Number of defined Volumes per XMS	8192
Initiator (FC or iSCSI)	Number of defined Initiators per XMS	1024
Initiator Group	Number of defined Initiator Groups per XMS	1024
Snapshots – Consistency Groups	Number of Consistency Groups per XMS	512
Mapping	Number of mappings per XMS (10 Volumes mapped to 10 Initiators maps results in 100 mappings)	16,384
Reports	Report retention duration	2 years

New Features and Changes in Ver. 4.0.1-41

There are no new features in 4.0.1-41.

New Features and Changes in Ver. 4.0.0-64

This section describes the following new features and changes that are introduced in this software version.

They include:

- Hardware Enhancements
- Replication – Native RecoverPoint Integration
- Non-Disruptive Online Cluster Expansion
- Snapshots
- Multiple Cluster Support
- GUI Enhancements
- Tags
- Improved Data Collection and Reporting
- RESTful API Enhancements
- OpenStack
- Enhanced Microsoft® Support
- Serviceability Features
- Improved Resiliency
- Security Enhancements
- Port Forwarding

Hardware Enhancements

This version provides the following new features and changes:

- 40TB, double-density X-Bricks –
  The system incorporates stronger hardware (CPU and RAM), providing the equivalent performance on larger X-Bricks.

- New cluster configuration –
  Customers can deploy up to 8 X-Bricks in a cluster[*].

Replication – Native RecoverPoint Integration

This version provides the following new features and changes:

- RecoverPoint for XtremIO provides the best RPO in the All-Flash market (60 seconds using pre-defined RPO).

- RecoverPoint can scale, according to the number of X-Bricks, by adding more RPAs.

- The solution uses an innovative unique replication technique that leverages Snapshot shipping and utilizes external CPUs for replication.
  It provides:

  - A better design to support the high performance I/O characteristic of all-flash arrays.

  - More resources are allocated for BW reduction and efficient transfer of Snapshots (SCSI DIFF), resulting in more savings in BW costs. They include:

    – Compression

    – Deduplication

- Further data saving is enabled on the Snapshots stored at the target site. Any Snapshot is deduplicated and compressed inline while data is written at the target Snapshot.

- Snapshot shipping enables immediate RTO at the target site and offers hundreds of point-in-time copies for recovery. It allows multiple tries for the administrators to select the best copy for a failover.

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[*] The 8 X-Brick configuration is supported with 20TB clusters in the current version. 40TB clusters with the 8 X-Brick configuration will be supported in Q4.

Non-Disruptive Online Cluster Expansion

This version provides the following new features and changes:

- An XtremIO cluster can be expanded non-disruptively, while the cluster is online and serving data, adding agility to the data center.

    An XtremIO Storage Array can grow both in capacity and performance as more workload is consolidated into the system. This enables customers to start with a smaller cluster and expand it according to the workloads growth.

- The added capacity and performance is available for consumption during the expansion process.

- The following table shows the available expansion paths.

To From	4 X-Bricks	6 X-Bricks*	8 X-Bricks*
2 X-Bricks	✓	✓	✓
4 X-Bricks	–	✓	✓
6 X-Bricks	–	–	✓

*   6 and 8 X-Brick clusters are supported only with the 20TB X- Brick type.

Snapshots

This version provides the following new features and changes:

- XtremIO offers unrestrictive immediate refresh capabilities. Any Snapshot can be refreshed with any Snapshot, allowing unlimited flexibility.

- XtremIO supports read-only Snapshots for immutable point-in-time copies.

- Coupled with the ability to retain large numbers of high-performance, space-efficient Snapshots, administrators gain the agility to leverage Snapshots for improving business and administrative operations.

- Application integration –

  XtremIO:

  - Provides better protection for applications using Consistency Groups to enable application consistency:

    - Supports crash consistent Snapshotting for applications.

    - Support application aware Snapshots using VSS, UNIX Scripts or AppSync.

  - Allows restore and refresh of the entire Consistency Group.

- Local protection, using the XtremIO Scheduler –

  XtremIO:

  - Allows setting local protection policies to protect from logical data corruption.

  - Allows a short RPO for crash consistent Snapshots.

  - Enables the user to set retention policies for copies.

  - Allows immediate Recovery Time Objective in case of a logical corruption.

Typical use cases include:

- Protection against logical corruption

- Backup

- Off-host processing – near-real-time analytic, BI and DW

- Test and Dev

Multiple Cluster Support

This version provides the following new features and changes:

- The system allows monitoring and configuration of up to 8 clusters, using a single XMS.

- Clusters can be seamlessly added to an XMS or removed from it.

- Multiple-X-Brick support:

  - Improves the ease of management of a large scale XtremIO deployment.

  - Provides a single aggregated view of all managed clusters, including performance information and cluster health status and easy navigation to individual clusters.

  - Enables programmatic access to multiple clusters.

GUI Enhancements

This version provides the following new features and changes:

- Full support for all of the newly-added features

- New GUI layout for multi-cluster support

- A new configuration module and flows to support:

  - Object tagging

  - Writable and Read-only Snapshots

  - Consistency Groups management

  - Snapshot Scheduler

  - Snapshots Refresh and Restore capabilities

- New Inventory management, allowing the user to view and manage the cluster hardware and different components

- GUI bundle to allow working with local version of Java, in case of compatibility issues and for Mac OS

Tags

This version provides the following new features and changes:

- A new object, to group a set of objects together, for ease of management

- Support of all of existing and new objects of the XtremIO system such as Volumes and Initiators

- Ability for any object to be a member of more than a single tag

- Reporting and filtering on the Tag level, providing accurate aggregated information and statistics and easier operation on a large environment

- Better alignment of the operation with business (for operation and reporting)

- Supporting hierarchy, name and color coding

Improved Data Collection and Reporting

This version provides the following new features and changes:

- XtremIO provides a better visibility of cluster performance and capacity usage over time.

- Data is retained for up to two years and has variable granularity, according to the data age. The lowest sample granularity is 5 seconds.

- The system is very simple to use. Performance and capacity analysis can be carried out via the XtremIO GUI, and there is no requirement for additional/external tools for analysis.

- Reporting can be enabled at any desired level, including:

  - Objects (Initiator, IG, Volumes, etc.)

  - A set of objects

  - Cluster or a set of cluster reports

- Users can choose and define their desired level of aggregation, based on business needs, using Tags. Metrics are also tracked per Tag.

- The system provides both real time and historical numbers:

  - Enabling users the ability to compare current performance with historical data

  - Providing full flexibility of the time horizon of analysis

- Information can be consumed at any form:

  - Data can be analyzed and presented by XtremIO GUI.

  - Data can be freely exported and consumed in CSV format.

  - External programs can consume data via XtremIO APIs (RESTful API and CLI).

- Reports can be enabled for a user, or made publicly available for all cluster users.

- With the newly-introduced user-generated customized templates feature, users can create report template and share them with other users.

RESTful API Enhancements

This version provides the following new features and changes:

- The new (Ver. 2.0) RESTful API supports the new functionalities of XtremIO Ver. 4.0 (e.g. Tags, new Snapshot operations, etc.)

- XtremIO RESTful API Ver. 2.0 has full backward compatibility with Ver. 1.0.

- The RESTful API enables full automation, orchestration and monitoring of XtremIO cluster or clusters.

OpenStack

This version supports the OpenStack KILO release.

Enhanced Microsoft® Support

This version provides the following new features and changes:

- VSS

  - XtremIO supports Microsoft Volume Shadow copy Service on Windows® 2012 and Windows® 2008.

  - XtremIO enables administrators to create application aware Snapshots on Windows environment with supported VSS writers such as SQL, SharePoint and Exchange.

- Microsoft ODX

  - Offload copy operation to the XtremIO array in Microsoft environment, enables accelerating copy operations compared to host-based copy operations.

  - The system leverages XtremIO's in-memory copy technology to establish faster ODX copies.

  - The system Expedites Windows 2012 in-guest or Hypervisor level copy

Supported use cases include:

- Any manual copy operation

- Database cloning for Test and Dev

- Database backups to alternate systems

- Deployments from templates

- VM copying/cloning for Hyper-V cloud deployments

Serviceability Features

This version provides the following new features and changes:

- New WWN (WWPN/WWNN) format for newly-installed systems
  - Encoded PSNT (Cluster serial ID) information
  - Using XtremIO unique vendor specific ID (OUI)
  - Enabling forecasting of the WWN before deployment, based on the PSNT (available in the order), and therefore allowing pre-zoning even before the cluster is deployed
- Improved installation and upgrade flows
  - Configuring the whole cluster through a single Storage Controller
  - Connectivity validation and health checks, such as BBU connectivity test
  - Support for fresh install for XMS only
- GUI Support tab
  - Enabling one-click easy access to EMC Global Support resources, applicable for the specific cluster configuration and version

Improved Resiliency

This version provides the following new features and changes:

- Two simultaneous SSD failure support
- Dual SAS connectivity (Active/Passive connection from each Storage Controller to the DAE)
- Protective power-off
  - Allows powering off the Storage Controller if it does not impose any risk to cluster service.
  - Prevents users from interrupting cluster service by mistake.
  - Allows power-off of a cluster only when the cluster is not servicing I/Os.
- Emergency Shutdown
  - Pressing the Power buttons of any two Storage Controllers in a cluster for 5 seconds shuts down the cluster.
  - Blinking DAE LEDs indicate that it is safe to turn off the PDU.
- Improved Performance during HA events

Security Enhancements

This version provides the following new features and changes:

- The Inactivity Timeout feature logs the user out of the cluster management (from CLI and GUI) when the Inactivity Timeout threshold is reached.

- Users can log out from GUI sessions without closing the XtremIO application.

- The login banner (available for GUI or CLI sessions) can be configured with customized login message to comply with enterprise policy.

- Login audit events.

- iSCSI VLAN support.

- IPV6 support.

- SNMPv3 encryption and authentication for SNMP traps support.

Port Forwarding

This version includes a port forwarding feature, enabling the XMS to communicate with all of the Storage Controllers in the cluster through one of the Storage Controllers in the first X-Brick.

The port forwarding feature is used during the NDU, Storage Controller FRU, and cluster expansion procedures.

For detailed information on ports, refer to the following documents:

- XtremIO Storage Array Site Preparation Guide

- XtremIO Storage Array Security Configuration Guide

New Features and Changes in Ver. 3.0.3-11 and Older

For new features and changes in versions prior to Ver. 4.0.0-64, refer to the Release Notes of the relevant version, available on the EMC Online Support at https://Support.EMC.com.

Hotfixes Included in Ver. 4.0.2-65

This version incorporates the fixes that were (originally) included in the following hotfixes:

- 4.0.1-41_Hotfix_1
- 4.0.1-41_Hotfix_3
- 4.0.1-41_Hotfix_4

Fixed Issues in Ver.4.0.2-65

General Enhancements and Changes

Issue	Tracking Number
Create Cluster requires a PSNT in order to create a previously configured cluster.	XIO-18505
Fresh-install requires a PSNT in order to install on a previously configured cluster.	XIO-17920
Scheduler creation error messages are more informative.	XIO-16743
The option to set the Storage Controller Identification LED to blinking mode (via CLI) is removed, since blinking mode indicates that the Storage Controller is safe to disconnect.	XIO-17454
The "show-sw-images" command calculates the image checksum.	XIO-9783
Creating a Certificate Signing Request (CSR) without a Cert-IP field leaves the SubjectAltName field empty, allowing editing by the CA.	XIO-13487
IPMI proxy, from the xinstall menu, can use any working Storage Controller from the cluster.	XIO-18004
Live Chat is currently operational from the XMS GUI.	XIO-17883

General Fixed Issues

Issue	Tracking Number
In some rare cases, after an internal process restart, the proactive prefetching of metadata process gets stuck. Any I/O for the address space that is not loaded results in timeout. Restarting the process resolvs the issue.	XIO-18557
In some data patterns, an internal queue is not cleared and causes resource depletion, which results in an internal process restart and host side DU.	XIO-1146
Temporary local SSD failure in one of the Storage Controllers causes an unexpected service interruption.	XIO- 19703
InfiniBand PSUs are reported in reverse order in the CLI.	XIO-15911
Number identifications of the InifiniBand Switches' Power Supply Units are reversed. Running the "check-power-grid-connectivity" test results in errors for correctly connected switches.	XIO-15598
The CLI and Audit log use different parameter names and values for the "create-snapshot-and-reassign" command.	XIO-17232
SCSI 2 reservation reserve/release during HA event can cause un expected service interruption.	XIO-19918
Mapping the old Snapshot after a refresh/restore operation can take a few minutes.	XIO-17801
In a rare scenario, executing the "activate-clusters-memory-recovery" command causes one Storage Controller to reboot and fails to complete the command.	XIO-16896
SCSI reset command during an HA event or NDU can cause a service interruption.	XIO-19563
Adding more than 508 Initiators to Initiator-Groups (one Initiator per group) fails.	XIO-17853
Creating Snapshots, using different interfaces (such as RESTful API, OpenStack, CLI), at nearly the same time, fails.	XIO-17383
Pressing the physical Identification LED button on a Storage Controller does not light the LED.	XIO-17611
Replacing a Storage Controller with the same Storage Controller during Non-Disruptive Upgrade fails.	XIO-20790
SCSI-3 reservations request that is received before a SCSI-3 preemption reservation request is processed can cause a service interruption.	XIO-19085

Issue	Tracking Number
InfiniBand Switch replacement while service is stopped fails with a few ports stuck in initialized state, requiring manual intervention.	XIO-18055
In some rare cases, Storage Controller replacement while the cluster is stopped fails.	XIO-18384
Alerts on wrong InfiniBand Cable connections are not issued during Storage Controller replacement.	XIO-18015
Storage Controller replacement fails when InfiniBand errors are encountered on one of the links.	XIO-17152
In some cases, when a local Storage Controller's HDD is pulled out and returned, the trace data is written to another location and can cause service interruption.	XIO-18673
Volume/Snapshot refresh via the GUI ignores user provided Snapshot Set name and Tag.	XIO-18774
It is possible to refresh/restore a single Volume, using the GUI, after it was added to a Consistency Group.	XIO-18606
In some rare cases, an internal power-cycle command causes a local disk file system corruption and service interruption.	XIO-20586
The Storage Controller replacement procedure does not update WWNN/WWPN on the new Storage Controller.	XIO-20609
In a rare case, removing a DAE Controller card causes a service interruption that is resolved when the card is returned.	XIO-17107
In some rare cases of large configurations combined with multiple Volume operations (for example, multiple Snapshot deletions), a Storage Controller may stop service but keep the FC ports as active.	XIO-12992
Deleting Snapshots that were created by the Scheduler may cause the Scheduler to temporarily create more Snapshots than the allowed number by the retention policy.	XIO-17433
In case of an HA event, the XtremIO cluster may be slow to respond to host Abort command. HP-UX sends the command twice and assumes the write command was aborted without further escalation as required.	XIO-19414
In some rare cases, the combination of large I/O blocks (over 1M) and an HA event can cause the proactive metadata prefetching stage to continue for a very long time.	XIO-21014
Collection of a log-bundle with backtrace option fails.	XIO-12528
In some rare cases, cluster fails to start if one of the BBU serial cables is disconnected.	XIO-20951

Issue	Tracking Number
In some rare cases, a noisy Fibre Channel network and Volume operations, such as Volume un-mapping, cause an unexpected service interruption.	XIO-21007
Scheduler may delete a mapped Snapshot.	XIO-21028
Wrong connection to InfiniBand Switch causes internal IP address conflict.	XIO-21035
In some rare cases, after an SSD replacement, the old SSD is still registered in the cluster.	XIO-21582
In some cases, Xinstall reboot command does not write the Storage Controller memory to disk.	XIO-22058
In some rare cases, a Volume deletion at the exact time of an HA event causes an unexpected service interruption.	XIO-22185
Excessive network errors on the management ports cause an unexpected service interruption.	XIO-22377
In some rare cases, after a short period of no I/Os to the array, the first I/O causes an unexpected short service interruption.	XIO-21700
Mapping Snapshots that were created by the Scheduler may cause the Scheduler to temporarily create more Snapshots than the allowed number by the retention policy.	XIO-17434
Multiple deletions of Volumes during Storage Controller failover may get stuck.	XIO-21946

Cluster and Hardware Upgrade Fixed Issues

Issue	Tracking Number
Cluster fails to start service after cold upgrade (stopping the service, upgrading the cluster, and restarting the service).	XIO-20119
When Storage Controller cables are not connected properly, during FRU, the System Manager metadata can be reformatted, which can lead to un-expected service interruption.	XIO-16821
An auto-generated Tag prefix is added to object and in some cases may cause the new object name to exceed the maximal length and fail the upgrade process.	XIO-17240
In some rare cases, during the Non-Disruptive Upgrade on a large cluster configuration (4 or more X-Bricks), an unexpected service interruption and an automatic start of the cluster occur.	XIO-17840
In a rare case during cluster expansion, if the cluster stops service and tries to resume it automatically, a manual intervention is required to restart the service.	XIO-18036
In some rare cases, cluster expansion from 4 X-Bricks to 6 X-Bricks fails and requires manual intervention.	XIO-17040
In some rare cases, in a multiple X-Brick configuration, during the Non-Disruptive Upgrade, the cluster loses connection to one of the DAEs and rolls-back the NDU.	XIO-17166
Non-Disruptive Upgrade after Cluster Expansion from 4 X-Bricks to 8 X-Bricks may fail.	XIO-18399
In some cases, an expansion from 4 X-Bricks to 6 X-Bricks that followed an expansion from 2 X-Bricks to 4 X-Bricks fail.	XIO-17175
Adding back an "Old" SSD, after a Non-Disruptive Upgrade that was preformed while the SSD was out of the cluster, fails due to wrong Firmware version.	XIO-17649
In some cases, if the "upgrade-firmware" command has failed and is executed again, the command returns an error but executes regardless of the error.	XIO-18711
In some rare cases, Non-Disruptive Upgrade of a 6 X-Bricks cluster fails when trying to failback after an Operating System upgrade on one of the Storage Controllers.	XIO-17862
In a multiple-cluster configuration, if one of the clusters is in maintenance mode, upgrading another cluster will not be possible.	XIO-17766

Issue	Tracking Number
An HA event during Firmware upgrade, after a successful Non-Disruptive Upgrade, causes the FW upgrade to stop and not resume until manual intervention.	XIO-18677
Pre-defined reports are unavailable on XMS after upgrade from version 3.0.x.	XIO-20473
In some rare cases, the Operating System upgrade stage fails and requires manual intervention.	XIO-20344
In some rare cases, the Non-Disruptive Upgrade process fails to upgrade the InfiniBand Switch Firmware.	XIO-20748
Online Cluster Expansion of a cluster configured to use non-default iSCSI port fails.	XIO-21033
Frequent Snapshot creation during XMS upgrade process causes the upgrade to fail.	XIO-21122
In some rare cases, a System Manager Storage Controller restart, after a successful Non-Disruptive Upgrade, can cause an unexpected service interruption.	XIO-21657
Non-Disruptive Upgrade after an SSD replacement (related to XIO-21582) may result in an un-responsive XMS CLI.	XIO-21931
In some rare cases, after a cluster expansion, Volumes/Snapshots are not deleted.	XIO-22407
A removal of an Initiator from an Initiator Group, followed by an unrelated internal module restart, may cause the System Manager Module to restart.	XIO-21502
In some rare cases of high bandwidth, restoring from one remote copy may not work while other copies are working.	XIO-21613 XIO-21660
Cluster Non-Disruptive Upgrade may fail when executed while running high frequency Volume operations, such as Scheduler.	XIO-21982
Volume Name NAA may be reused if a large number of Volumes were mapped and deleted.	XIO-22965

UI and XMS Fixed Issues

Issue	Tracking Number
When the option for sending Event notifications using Email is enabled, username/password to the customer's SMTP server is always requested.	XIO-14263
It is not possible to turn off the SSD Identification LED from the Inventory Tab in the GUI.	XIO-16854
In some cases, if the Storage Controller that is currently running the system manager module is rebooted or failed-over, the UI will report half the logical capacity.	XIO-17507
After an HA event, RecoverPoint replication cannot finish the initial SYNC due to the proactive metadata prefetching process running in the background.	XIO-17981
LDAP CLI configuration allows 255 characters in group name while GUI allows only 128.	XIO-20267
A wrong timeout value causes the xmcli to be unavailable after the cluster stops service.	XIO-17662
The value in the H2P-In-Use when running the Tech Level's "show-memory-usage" command is wrong.	XIO-18248
Running the XMS GUI in low resolution adds slide bars that impact the usability.	XIO-17868
XMS cannot connect via SSH to a cluster if one of the clusters managed by this XMS has its SSH firewall in locked mode.	XIO-17768
If the Identification LED of one of the Storage Controllers in a cluster is "Blinking", the Identification LEDs of all Storage Controllers are reported as "Blinking".	XIO-17372
In some rare cases, the downloadable GUI bundle does not open on the client machine.	XIO-17158
The Inventory tool-tip bubble rises above the other applications.	XIO-17160
Removing a cluster from the XMS does not update the "IP addresses in use" table, preventing the reuse of IP addresses.	XIO-16359
Tags in the "Manage Tags" window disappear after a few minutes.	XIO-13428
When creating a Scheduler and providing a suffix for the Snapshots, the GUI does not limit the Snapshot suffix to 64 characters, but the Scheduler creation will fail if the overall Snapshot+suffix name is too long.	XIO-15936
Turning the Identification LED on/off from the GUI can take up to 30 seconds.	XIO-10036

Issue	Tracking Number
The Volume or Volume Snapshot Group (VSG) space in use is not updated while viewing the Volume/VSG. Changing tabs will refresh the data.	XIO-12770
Changing the Inactivity Timeout does not work on logged-in CLI users. The new Inactivity Timeout will be applied after the user logs out and logs in again.	XIO-15378

High Availability Fixed Issues

Issue	Tracking Number
In some rare cases, when there is no traffic, the cluster tries to access a large offset address which causes an SSD to be falsely marked as failed.	XIO-17044
Due to the XIO-17044 issue, the cluster marks 3 SSDs as failed, causing service interruption.	XIO-19510
In some rare cases, with a large cluster configuration, high loads on the System Manger Storage Controller can cause the System Manager to fail and stop the service until it fails over to the second Storage Controller in the X-Brick.	XIO-17928
In some rare cases, during the failback of the System Manager Module (as part of the NDU process), another HA event occurs, causing an unexpected service stop and an automatic start of the service.	XIO-19326
In some rare cases, during the failback of a Storage Controller (as part of the NDU process), another HA event occurs, causing the failback to fail, and resulting in an unexpected service stop, followed by an automatic start of the service.	XIO-17243
In some rare cases, iSCSI service is interrupted during the simulated HA event testing.	XIO-18142
In some rare cases, cluster fails to start after a full power outage.	XIO-18499
In some rare cases, due to multiple HA events during Non-Disruptive Upgrade, the cluster detects a false-positive problem in journals and stops the service.	XIO-18395
In some rare cases of an HA event during Online Cluster Expansion, an unexpected service interruption occurs.	XIO-18442
In some rare cases, a SAS cable disconnection, combined with an internal SW module restart, causes an unexpected service interruption.	XIO-19843
In some rare cases, after the System Manager restart, a local copy of the System Manger repository is deleted, which may cause short service interruptions in case of another HA event.	XIO-18222

Issue	Tracking Number
Storage Controller HA event fails due to InfiniBand errors, causing service interruption.	XIO-16810
In some rare cases, where cluster memory and disk utilization are very high, Storage Controller failover can cause unexpected service interruption.	XIO-17494
In some rare cases, a single SAS cable disconnection causes a Storage Controller failover.	XIO-20484
In some rare cases of double SSD failure on an X-Brick with a failed Storage Controller, an unexpected service interruption occurs.	XIO-20865
In some rare cases, the System Manager Module does not detect the restart of one of the remote modules, failing to activate the Storage Controller.	XIO-21286
A failed-back Storage Controller starts to receive I/Os before all of the internal modules are active.	XIO-21534

Battery Backup Unit Fixed Issues

Issue	Tracking Number
Replacing a BBU while the cluster is stopped results in BBU registration with the old Serial Number.	XIO-19868
Replacing a BBU while the cluster is stopped results in the BBU communication status marked as "Disconnected".	XIO-19383

Data at Rest Encryption Fixed Issues

Issue	Tracking Number
In some rare cases, an SSD that was added to the XtremIO Data Protection Group is reported as "enc_supported_unlocked".	XIO-16816

ESRS Fixed Issues

Issue	Tracking Number
When the option for sending SYR notifications using Email is enabled, username/password to the customer's SMTP server is always requested.	XIO-18850
In ESRSGW configuration, after running the modify-syr-notifier command, the cluster that is added to XMS is not registered to the ESRS gateway and ESRS. For further details and a workaround, refer to EMC KB 204411 (https://support.emc.com/kb/204411).	XIO-18323
Some clusters may send an oversized daily log-bundle.	XIO-19735
Some clusters may send excessive number of alerts per day.	XIO-22116

OpenStack L Version Fixed Issues

Issue	Tracking Number
Creating an Initiator Group while specifying an Initiator that belongs to another Initiator Group will not add the Initiator to the new Initiator Group, which can result in an empty Initiator Group.	XIO-8334

Fixed Issues in Ver.4.0.1-41

General Enhancements and Changes

Issue	Tracking Number
Improved the logic of the "DAE Controller health status is marginal" and "DAE Controller SAS port X is down" alerts to prevent false alerts.	XIO-19737
Added validation on PSNT length before NDU.	XIO-19725

General Fixed Issues

Issue	Tracking Number
SCSI 2 reserve/release requests on unregistered path receive GOOD response instead of CONFLICT response.	XIO-2027
On "Registrants Only" types (5/6) registered path SCSI 2 reserve/release requests receive CONFLICT response instead of GOOD response.	XIO-20276
SCSI 2 release command on a SCSI 3 reserved Volume is not handled correctly.	XIO-20116
WWN and WWPN are not created according to the formula if PSNT starts with anything other than XIO.	XIO-19810
I/O buffers of unmapped Volumes are not returned to the pool and can result in depletion of available buffers. Over time this can result in QUEUE_FULL messages to new incoming I/O.	XIO-19729
Storage Controller replacement fails when password change fails. After the fix, the replacement does not fail. But it is necessary to run the modify-cluster-passwords command manually.	XIO-19723
Storage Controller replacement fails when password is not set correctly.	XIO-19722
Storage Controller replacement fails while creating objects for PSU and local drives.	XIO-19721
As part of disk operations to reclaim free space from thin LUNs, Windows 2012 Server can issue large numbers of the 0x9E SCSI command (Service Action In) with 0x12 action code (Get LBA Status). This command burst can cause in transit data inconsistency.	XIO-20224 XIO-20115 XIO-19770
In a rare case of an HA event during the proactive metadata prefetching stage, the cluster may stop and start the service several times. Creation of new Volumes and writing to them at the same time (as may occur during replication) increases the possibility of this event.	XIO-20294

High Availability Fixed Issues

Issue	Tracking Number
In some rare cases, when there is no I/O, disconnection of a SAS cable causes the state of several SSDs to change to un-healthy. If the number of the affected SSDs is 3 or more, this causes an emergency shutdown.	XIO-19724

UI and XMS Fixed Issues

Issue	Tracking Number
LDAP configuration does not allow special characters (,;+\"‹›#) in DN or group search. In order to use special characters after the fix, use backslash "\" to escape the character (for example: "\,").	XIO-19964
In RESTful API, creating a Volume using folder name (backward compatibility Ver. 1 API) returns a "tag_not_found" error.	XIO-19529 XIO-19632
Email notification requires username and password.	XIO-19528 XIO-19527

Cluster and Hardware Upgrade Fixed Issues

Issue	Tracking Number
In some cases, the cluster expansion command fails with the "‹ProtocolError for ...." message. Re-running the command succeeds.	XIO-20231
Storage Controller Replacement during NDU fails if the Storage Controller version is older than 4.0.0-64.	XIO-19870
In some rare cases, after NDU an SSD appears in "eject_pending" state.	XIO-19717
In some rare cases, a race condition during NDU results in wrong progress indication reporting.	XIO-19719
In some rare cases, during NDU an inconsistent repository of cluster configuration is created.	XIO-20452
Online Cluster Expansion uses the old WWPN on the newly-added X-Brick ports.	XIO-20714

Fixed Issues in Ver.4.0.1-7

Cluster and Hardware Upgrade Fixed Issues

Issue	Tracking Number
Upgrading a cluster with folders GUID containing 00 fails.	XIO-18519
In some rare cases, following a cluster expansion, a Non-Disruptive Upgrade fails without service interruption.	XIO-18399
In some cases, cluster expansion from 2 X-Bricks to 4 X-Bricks, and then from 4 X-Bricks to 6 X-Bricks may fail.	XIO-18522
Non-Disruptive Upgrade may fail if duplicate SCSI3 registrations are found.	XIO-18520
In some cases, Non-Disruptive Upgrade may not finish upgrading the cluster's firmware and require additional intervention.	XIO-18753

Replication Fixed Issues

Issue	Tracking Number
In some rare cases, an HA event may prevent the RecoverPoint initial SYNC from finishing.	XIO-18763
Parallel Volume or Snapshot delete requests are handled in sequential order.	XIO-18760

Fixed Issues in Ver.4.0.0-64

General Enhancements and Changes

Issue	Tracking Number
Severity of the following Alerts was changed from Critical to Major. <table><tr><th>Alert Code</th><th>Property</th></tr><tr><td>403906</td><td>eth_link_health_level</td></tr><tr><td>401106</td><td>temperature_health_state</td></tr><tr><td>401206</td><td>fan_health_state</td></tr><tr><td>401306</td><td>voltage_health_state</td></tr><tr><td>401406</td><td>current_health_state</td></tr><tr><td>401506</td><td>internal_sensor_health_state</td></tr><tr><td>403306</td><td>dimm_health_state</td></tr><tr><td>401706</td><td>ib1_link_health_level</td></tr><tr><td>404106</td><td>sas1_hba_port_health_level</td></tr><tr><td>404206</td><td>sas2_hba_port_health_level</td></tr><tr><td>900206</td><td>diagnostic_health_state</td></tr><tr><td>900306</td><td>ssd_link1_health_state</td></tr><tr><td>900406</td><td>ssd_link2_health_state</td></tr><tr><td>1100406</td><td>port_health_level</td></tr><tr><td>1400106</td><td>ports[].ib_link_health_level</td></tr><tr><td>1600916</td><td>lcc_health_level</td></tr></table>	N/A

General Fixed Issues

Issue	Tracking Number
Stopping the cluster should be carried out, using the "stop-cluster-unorderly" command. For instructions on how to stop a cluster, refer to the "EMC XtremIO Storage Array User Guide".	XIO-879
The Read/Write flow of XtremIO cluster maintains double parity protection. However, in this version concurrent failure of two SSDs from the same X-Brick results in data loss.	XIO-1064
The "power-off" command does not work while the cluster service is stopped.	XIO-750
When a new Storage Controller Power Supply Unit (PSU) is inserted, the cluster may report the second PSU as disconnected. The problem resolves itself without user intervention after 50 minutes.	XIO-4445
Changing the IPMI configuration to "dedicated" while one of the Storage Controllers was off results in only one Storage Controller changing configuration.	XIO-7194
XtremIO removes deleted data in background batches. If the size of the deleted data is smaller than the batch size (64 GB per X-Brick), the data remains in the system until additional data is deleted.	XIO-9098
Windows cluster (2008 and 2012) SCSI group registration while using PowerPath is not supported. During NDU or Cold Upgrade, some of the paths that are added while one of the Storage Controllers is down will be inactive. Restarting the cluster service or one of the hosts in the cluster will refresh the registration.	XIO-9399

Cluster and Hardware Upgrade Fixed Issues

Issue	Tracking Number
The XMS server name is modified after NDU. Run the modify-server-name CLI command again to configure the correct name.	XIO-3326
Unexpected service interruption occurs during NDU on a multiple X-Brick cluster, connected to Solaris.	XIO-13780
XIOS reformat or fresh install does not return a dedicated IMPI port configuration to the management, thus preventing cluster creation. Reset the IPMI configuration from the xinstall menu.	XIO-6965 XIO-5907
Unexpected emergency shutdown occurs while performing NDU during a high IOPS load on a highly-utilized (logical capacity) cluster. It is recommended to perform the NDU during a maintenance window, at which the load on the array is lightest.	XIO-8971
Fresh Install does not issue a warning if it is run on an installed cluster. Make sure to verify the correctness of the IP addresses before running the installation.	XIO-9178
In rare cases, if FW upgrade fails, the NDU will roll back to the previous version. Running the FW upgrade manually solves the problem.	XIO-9451

Performance Fixed Issues

Issue	Tracking Number
Host I/O performance is degraded to 10% while the Storage Controllers proactively fetch metadata from SSD after cluster services were stopped or restarted.	XIO-8611

High Availability Fixed Issues

Issue	Tracking Number
During HA scenarios, the Storage Controller failover and failback processes may cause over 15 seconds of latency increase and service interruption.	XIO-311
Power outage (or DAE power off) during cluster stopping may require support intervention to restart the cluster.	XIO-7084
Unexpected service stop may occur if both InfiniBand cables are disconnected at the same time from the SYM Storage Controller.	XIO-6911
Unexpected service stop may occur if a SAS cable is disconnected from the SYM Storage Controller.	XIO-8582

UI and XMS Fixed Issues

Issue	Tracking Number
LDAP configuration does not allow spaces in the Search Base field.	XIO-7472
The "system_metadata_utilization_level" event/alert is replaced with "system_sharedmemory_in_use_ratio_level" event/alert. If the "system_metadata_utilization_level" alert is received (rare possibility), ignore it.	XIO-8680
Using RESTful API with External User (LDAP) can cause XMS unavailability. Using a local account for RESTful API will prevent the issue.	XIO-5355
MAC OS - Download the GUI bundle from the XMS landing page.	TRAC-7953
If communication between the XMS and Storage Controllers is lost, the XMS may log the connection error reason as "None".	XIO-4132
If the client machine running the GUI loses communication with the XMS, it issues an error message. The message does not disappear automatically, even if the communication is re-established.	XIO-4379
If a Storage Controller is turned off, the GUI will present the connected BBU as the old version BBU.	XIO-4490
While the proactive prefetching metadata process is in progress, after a cluster start or during an HA event, the GUI may present partial or inaccurate capacity, data reduction ratios, and performance information.	XIO-6903
LUN mapping internal indexing may change after an XMS recovery. Host LUN mapping and I/O process are not affected.	XIO-5696

Issue	Tracking Number
The "Obfuscate debug info" option in the "modify-clusters-parameters" command does not work correctly and is reset after an NDU or XMS recovery.	XIO-9060
It is not possible to add over 1000 Volumes in single action using the GUI.	XIO-8862
It is not possible to edit CHAP username credentials if a wrong username has been entered. To edit the information, close the Initiator window and re-open it.	XIO-4763
It is not possible to clear CHAP credentials from the Initiator. To resolve the issue, delete and recreate the Initiator.	XIO-16208

Battery Backup Unit Fixed Issues

Issue	Tracking Number
In a Single X-Brick cluster, if the BBU input power is lost the BBU will not be turned off and may drain. Ensure that the BBU is fully charged before performing any power maintenance.	XIO-6896

iSCSI Fixed Issues

Issue	Tracking Number
XtremIO iSCSI target ports cannot be set to an IP address with the same subnet as the IPMI or Management ports.	Trac-5077
When iSCSI TCP port is modified, the Portal configuration GUI still shows the default value.	XIO-2736
Mapping a LUN while the cluster is busy with large iSCSI writes may take several minutes.	XIO-1571
When using CHAP authentication, the Initiator name should not be equal to the Initiator Group name.	XIO-4663

Fibre Channel Fixed Issues

Issue	Tracking Number
Connecting a zone with more than 512 hosts and running the "show-discovered-initiators-connectivity" may fail.	XIO-3897
Hosts may not discover paths from a Storage Controller following its reboot.	XIO-2596

Data at Rest Encryption Fixed Issues

Issue	Tracking Number
Local SSD encryption may fail and may not resume if the Storage Controller rebooted during the encryption process.	XIO-3949
A new SSD that is added to an encrypted cluster appears as not encrypted, even though it is encrypted.	XIO-6586

ESRS Fixed Issues

Issue	Tracking Number
Secondary ESRS GW is not supported with XtremIO.	XIO-8145

Fixed Issues in Ver. 3.0.3-11 and Older

For fixed issues in versions prior to Ver. 4.0.0-64, refer to the Release Notes of the relevant version, available on the EMC Online Support at https://Support.EMC.com.

Limitations and Known Issues

General Limitations and Known Issues

Issue	Tracking Number
High Temperature Alert action is disabled by default and the array will not shut-down automatically. To enable the action, contact EMC support.	N/A
The IP version is defined during the cluster creation. It is not possible to change the IP version from IPv4 to IPv6 or from IPv6 to IPv4.	N/A
A 1 GbE full-duplex network is required for the XMS and Storage Controller connection.	N/A
The actual used physical capacity might be, temporarily, slightly different from the one presented in the GUI. The user may still notice non-zero physical capacity, although all data is deleted from the cluster.	XIO-8813
A host may not automatically discover a Volume that is mapped to LUN 0, after discovering the cluster's dummy LUN, prior to the Volume mapping.	XIO-7927
Overwriting the existing data is impossible when no free SSD space is left. To free up space in this scenario, either write zeros to the Volume or delete a Volume.	Trac-1161 Trac-1403
Volume-related actions, such as mapping/unmapping and adding/removing take longer on highly-utilized clusters or during HA events.	XIO-15104
The VAAI soft limit alert is not sent to the host server.	XIO-3804
OpenStack Cinder driver fails to create an image instance when iSCSI Discovery CHAP is configured.	XIO-7650
A physical access is required to turn on a cluster, after the cluster is turned off using the "power-off cluster-id=‹cluster-id›" command or the GUI option.	XIO-17313
When two SSDs fail in the same X-Brick, the overall available capacity will be reduced in a linear ratio to the number of X-bricks in the cluster. This is due to the inherently balanced architecture of the cluster.	XIO-17033

Issue	Tracking Number
Installing version 4.0.0 XMS, using the XINSTALL menu, does not change the menu version to 4.0.0. Log out and log in to obtain the new XINSTALL menu.	XIO-14829
Disconnecting a Fibre Channel or iSCSI port does not trigger an alert.	XIO-17811
On a cluster without any I/O, trimming (unmap) of all data will leave 95GB used on SSD.	XIO-21125
If the cluster's memory is fully utilized, new data can be written only after the Volume deletion is complete.	XIO-22055
If the cluster is upgraded while service is stopped (cold upgrade), Volume access level will change from "Read-Only" or "No-Access" to "Write-Access". The user is required to reapply Volume permissions before starting the applications.	XIO-22608
During successful Non-Disruptive Upgrade, the alert "DPG cannot perform rebuild for additional SSD failures" appears. The alert will be automatically cleared when NDU is over.	XIO-23415
Following a power restoration, the cluster does not automatically restart if only half of the power supply is restored.	XIO-22763

Cluster and Hardware Upgrade Limitations and Known Issues

Issue	Tracking Number
It is not possible to upgrade only the XMS to version 4.0.0 while the cluster is still in version 3.0.x. To recover (following the failed upgrade attempt), it is necessary to reinstall the XMS with the correct 3.0.x version.	N/A
In a cluster expansion after NDU from 3.0.x, the newly-added X-Bricks do not inherit the existing WWN (3.0 format), but are given a new one (4.0 format).	N/A
Creating a new Ver. 4.0.x cluster on a previous generation hardware (destructive upgrade from Ver. 2.4.x/3.0.x) will result in new WWN and WWPN, according to the new version 4.0.0 format, and will require re-zoning.	N/A
The virtual XMS requires 8GB of virtual memory, 900GB of virtual disk (thin-provisioned), and at least 200GB of free disk space on the data store in which the virtual XMS is to be provisioned on. Refer to the XtremIO Storage Array Site-Preparation Guide for details.	N/A

Issue	Tracking Number
In Windows cluster environment with Power Path, during NDU or HA events servers may receive reservations conflict or device busy status (STATUS_DEVICE_BUSY).	XIO-6770
Performance history is lost when upgrading from version 3.0.x to version 4.0.0. Use the "export-performance-history" command to export the data before the upgrade. Once upgraded, the monitoring data will be reset.	XIO-2561
During cluster expansion, the deduplication ratio may increase and return to normal levels when cluster automatic re-balancing is done.	XIO-12389
During a Non-Disruptive Upgrade from version 3.0.x to version 4.0.0, the deduplication rate is shown as 1:1.	XIO-17669
Starting a cluster immediately after the "upgrade-stopped-cluster" procedure may result in "system_version_mismatch" message for up to two minutes.	XIO-22003
During a Non-Disruptive Upgrade the Snapshot Scheduler may miss creating a Snapshot.	XIO-22907
During a Non-Disruptive Upgrade, the XMS does not sample the cluster's performance information while copying the upgrade package to the Storage Controllers.	XIO-21518
After a Non-Disruptive Upgrade of the XMS, the "show-clusters" command may not show any clusters for a few minutes.	XIO-21721

High Availability Limitations and Known Issues

Issue	Tracking Number
The cluster does not rebuild the Data Protection Group if the physical space is insufficient (for example, when one SSD fails, the rebuild finished by the SSD is not replaced). Once the physical space is freed, the cluster begins rebuilding automatically.	N/A
Refer to the "EMC XtremIO Storage Array User Guide" for the proper shut down procedures. Failing to follow these procedures may cause data loss in certain scenarios.	N/A

UI and XMS Limitations and Known Issues

Issue	Tracking Number
Refer to the "EMC XtremIO Storage Array Software Installation and Upgrade Guide" for instructions on how to access the XMS after an installation or upgrade, using server FQDN.	N/A
The minimum supported screen resolution for the GUI is 1280 x 720. The recommended resolution is 1440 x 900 or above.	N/A
XtremIO GUI supports Java7 (1.7.0) and above. If your installed version is lower and upgrade is not possible, or if you experience problems due to future upgrade, download the GUI bundle from the XMS landing page.	N/A
Java Client misses tool-tips and field explanations with Java 7 update 65 and above. Upgrade to version 7 update 71.	XIO-6895
Under certain HA failure scenarios, erroneous alerts may be sent in addition to the root cause alert.	XIO-6902
Changes in LDAP role mapping occur after the user credential cache expires.	XIO-7240
The reported physical capacity of the six X-Brick cluster is incorrect. The cluster indicates 91.468 TiB, while the actual available capacity is 90.736 TiB.	XIO-8540
Zooming-in on the history chart of the GUI does not change the aggregation on data. Different views of the same time period with different time scales (i.e. last week vs last hour) may show different graphs.	XIO-13189
With Mac OS, using GUI Bundle, the embedded CLI terminal in the GUI is not displayed. Use a different SSH tool to connect to xmsadmin@‹xms-server›.	XIO-11295
An XMS managing a single cluster shows the performance history of this single cluster, even if the XMS previously managed other clusters.	XIO-15954
When moving a cluster to a new XMS, the XMS level configuration and Tags are not moved to the new XMS. Instead, the new XMS settings will be applied.	XIO-14068
The performance history file, created by the "export-performance-history" command may have periods of missing information.	XIO-3434
MTU for Fibre Channel ports is wrongly shown as 1500B.	XIO-10686
In the multi-cluster Dashboard view, it is not possible to see Performance per Block Size.	XIO-16090

Issue	Tracking Number
The Graphical UI may get stuck if left open overnight on the HW graphical view.	XIO-22902
RESTful API requests that are sent to a multi-cluster environment without "cluster-id" or "cluster-name", return information without the cluster name.	XIO-14433
Data in the Performance History Report is shown using UTC, while the performance data in GUI is translated to client machine time.	XIO-15283
In some rare cases, in large cluster configuration and many Volume operations, the XMS may run out of memory.	XIO-19473

VSS Limitations and Known Issues

Issue	Tracking Number
Creating a Snapshot using XtremIO's VSS HW provider is supported via tools such as DiskShadow.exe or VShadow.exe. Right-clicking a drive in Windows and taking a Snapshot is an integrated Windows action. The Snapshots are cached by Windows System Writer and are not managed by XtremIO.	N/A

Battery Backup Unit Limitations and Known Issues

Issue	Tracking Number
Battery Backup Unit communication may not be restored when the COM cable is reconnected to the Battery Backup Unit expansion slot. Reconnecting the cable to the port may solve the problem.	Trac-2106

iSCSI Limitations and Known Issues

Issue	Tracking Number
An iSCSI IQN length is limited to 64 characters.	XIO-7474

Data at Rest Encryption Limitations and Known Issues

Issue	Tracking Number
Clusters that support encryption are encrypted upon cluster creation.	XIO-14962
Encrypted Cluster icon is removed if an unencrypted SSD is inserted into the cluster without adding the SSD to the XtremIO Data Protection Group. The cluster's Data At Rest Encryption is still maintained.	XIO-4373
Removing an SSD from an encrypted cluster, and reinserting it after the rebuild and cluster re-encryption (key rotation) will fail.	XIO-10419
It is not possible to change the encryption mode if the cluster is missing SSDs.	XIO-23274
If encryption is disabled, it may not be possible to enable it again.	XIO-23274

ESRS Limitations and Known Issues

Issue	Tracking Number
ESRS-VE is supported only in legacy GW mode (i.e. leveraging the ESRS VE backward compatibility with ESRS 2).	XIO-8152
The ESRS IP Client configuration does not support a multi-cluster XtremIO configuration. In NDU to XtremIO version 4.0, if you are using ESRS IP Client and you intend to use multi-cluster, switch to the ESRSGW configuration and connect the XMS to an ESRS-VE type gateway.	N/A

Software, Media, Organization, and Files

The XtremIO software includes the following components:

- XtremIO Software Bundle for this XtremIO version
- SC Rescue Images
- XMS Rescue Image and OVA
- VSS HW Provider
- XtremIO MIB

For the most up-to-date information, go to EMC Online Support at https://Support.EMC.com.

Use the following packages to upgrade the cluster to version 4.0.2-65.

	Component	Package/Image Name in the XtremIO Support Page (http://Support.EMC.com)	File Name
Images/OVAs	Storage Controller	XtremIO Storage Controller 4.0.0-49 Rescue Image	xtremapp_4.0.0-49.USB.2.img
	XMS	XtremIO XMS 2.4.0 Rescue Image	xms-2.4.0.img
		XtremIO Virtual XMS (vXMS) OVA A.1.0 for VMware vSphere	vxms-master-ova–vA.1.0.ova
Packages	XtremIO Software Bundle	XtremIO 4.0.2 (4.0.2-65)	upgrade-to-4.0.2-65.tar
	XtremIO MIB	XtremIO Management Information Base (MIB)	SNMPv1: EMC-XtremIO-SNMPv1.mib SNMPv2c: EMC-XtremIO-SNMPv2c.mib
	XtremIO VSS Provider	XtremIO VSS Provider	XtremIOVSSProvider-1.0.8.msi

Installation and Upgrade

The version of the XtremIO Storage Array, including its software, must be installed only by EMC-authorized technical personnel.

It is mandatory to contact XtremIO Support, before performing any upgrade procedure, to obtain the latest update on the process.

Upgrade Path

Version 4.0.2-65 can be used to upgrade from the following versions:

- 3.0.0-42
- 3.0.0-44
- 3.0.1-11
- 3.0.2-14
- 3.0.3-11
- 4.0.0-64
- 4.0.1-7
- 4.0.1-41
- 3.0.2-14_hotfix_2
- 3.0.3-11_hotfix_1
- 3.0.3-11_hotfix_2
- 3.0.3-11_hotfix_4
- 3.0.3-11_hotfix_5
- 3.0.3-11_hotfix_7
- 4.0.0-64_hotfix_2
- 4.0.1-41_hotfix_1

Before installing this version, consult with XtremIO Support.

Upgrading a stopped cluster (i.e. cold upgrade) from any version prior to 4.0.1-41_Hotfix_1 requires upgrading to 4.0.1-41_Hotfix_1 first, and then performing a Non-Disruptive upgrade to 4.0.2-65.

For migration services from versions 2.4.1 and older, contact your EMC account manager or EMC Support.

While XtremIO arrays are engineered and tested for fully non-disruptive upgrades, it is recommended to follow IT management best practices when upgrading your array. To ensure that upgrades are completed in the shortest time and with minimal impact on performance, take advantage of maintenance windows rather than using production hours. This way you can perform upgrades when the load on the array is lightest.

Troubleshooting and Getting Help

EMC support, product, and licensing information can be obtained as follows:

Product information
For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to EMC Online Support (registration required) at: http://Support.EMC.com.

Troubleshooting
Go to EMC Online Support. After logging in, locate the appropriate Support by Product page.

Technical support
For technical support and service requests, go to EMC Online Support. After logging in, locate the appropriate Support by Product page and choose either Live Chat or Create a service request. To open a service request through EMC Online Support, you must have a valid support agreement. Contact your EMC Sales Representative for details about obtaining a valid support agreement or to answer any questions about your account.