

RELEASE NOTES

EMC® XtremIO Storage Array

Version 3.0.3-11

Release Notes

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REV 01

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Revision History

Revision	Date	Description
01	March 26, 2015	Initial release – Software Ver. 3.0.3-11

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.

* 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 Fiber Channel and iSCSI protocols.

New Features and Changes in Ver. 3.0.3-11

There are no new features in this version.

New Features and Changes in Ver. 3.0.2-14

There are no new features in this version.

New Features and Changes in Ver. 3.0.1-11

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

- [Six X-Brick Cluster Support](#)
- [Scalability Numbers](#)

Six X-Brick Cluster Support

Version 3.0.1 introduces a new cluster configuration for the 20TB X-Brick type. Starting from this version it is possible to create a Six X-Brick cluster with 90.2TiB of usable physical capacity and over 540 TiB effective logical capacity.*

Scalability Numbers

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

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

20TB X-Brick

Parameter	Definition	Maximum Value
X-Brick	Number of X-Bricks per cluster	6
Storage Controller	Number of Storage Controllers per X-Brick	2
XMS	Number of management stations per cluster	1
XMS	Number of clusters per management station	1
Initiator	Number of defined Initiators per cluster	512
Initiator	Number of defined Initiators per Initiator Group	64
Initiator Group	Number of defined Initiator Groups per cluster	512
User	Number of defined users per cluster	50
Volume and Snapshots	Number of defined Volumes per cluster	8192
Volume	Volume size	256 TiB
Volume	Thin Provisioning per X-Brick	130 TiB*
Folders	Number of folders	128
Snapshots	Number of snapshot per production volume	64
Snapshots	Number of hierarchies (snaps on snaps)	64
Snapshots	Number of members in snapshot set operation (creation of snapshot on a set of members)	32
Folders	Number of folder hierarchical levels	4
Volume	Number of Volumes in folder	500
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 (10 Volumes mapped to 10 Initiators maps results in 100 mappings)	16,384
iSCSI	Number of iSCSI portals per X-Brick	16
iSCSI	Number of iSCSI routes per cluster	32
Block Size	Largest block size supported	4MB

* Thin provisioning of more than 130 TiB per X-Brick can be approved via RPQ.

** 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
XMS	Number of clusters per management station	1
Initiator	Number of defined Initiators per cluster	512
Initiator	Number of defined Initiators per Initiator Group	64
Initiator Group	Number of defined Initiator Groups per cluster	512
User	Number of defined users per cluster	50
Volume and Snapshots	Number of defined Volumes per cluster	8192
Volume	Volume size	256 TiB
Volume	Thin Provisioning per X-Brick	130 TiB*
Snapshots	Number of snapshot per production volume	64
Snapshots	Number of hierarchies (snaps on snaps)	64
Snapshots	Number of members in snapshot set operation (creation of snapshot on a set of members)	32
Folders	Number of folders	128
Folders	Number of folder hierarchical levels	4
Volume	Number of Volumes in folder	500
Capacity	Physical capacity (per X-Brick)	7.58 TiB
Capacity	Maximum logical capacity	110-130 TiB**
Mapping	Number of Initiator Groups mappings per Volume	64
Mapping	Number of mappings per cluster (10 Volumes mapped to 10 Initiators maps results in 100 mappings)	16,384
iSCSI	Number of iSCSI portals per X-Brick	16
iSCSI	Number of iSCSI routes per cluster	32
Block Size	Largest block size supported	4MB

* Thin provisioning of more than 130 TiB per X-brick can be approved via RPQ.

** 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
XMS	Number of clusters per management station	1
Initiator	Number of defined Initiators per cluster	512
Initiator	Number of defined Initiators per Initiator Group	64
Initiator Group	Number of defined Initiator Groups per cluster	512
User	Number of defined users per cluster	50
Volume and Snapshots	Number of defined Volumes per cluster	8192
Volume	Volume size	256 TiB*
Volume	Thin Provisioning per X-Brick	130TB*
Folders	Number of folders	128
Snapshots	Number of snapshot per production volume	64
Snapshots	Number of hierarchies (snaps on snaps)	64
Snapshots	Number of members in snapshot set operation (creation of snapshot on a set of members)	32
Folders	Number of folder hierarchical levels	4
Volume	Number of Volumes in folder	500
Capacity	Physical capacity (13 SSD)	3.26 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 (10 Volumes mapped to 10 Initiators maps results in 100 mappings)	16,384
iSCSI	Number of iSCSI portals per X-Brick	16
iSCSI	Number of iSCSI routes per cluster	32
Block Size	Largest block size supported	4MB

* Thin provisioning of more than 130 TiB per X-Brick can be approved via RPQ.

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

New Features and Changes in Ver. 3.0.0-44

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

- [Inline Data Compression](#)
- [Mutual CHAP](#)
- [OpenStack Integration](#)

Inline Data Compression

Inline Data Compression is the compression of the already deduplicated data before it is written to the flash media.

XtremIO automatically compresses data after all duplications have been removed. This ensures that the compression is performed only for unique data blocks. Data compression is performed in real-time and not as a post-processing operation.

The nature of the data set determines the overall compressibility rate. The compressed data block is then stored on the array.

Compression reduces the total amount of physical data that needs to be written on the SSD. This reduction minimizes the Write Amplification (WA) of the SSDs, thereby improving the endurance of the flash array.

XtremIO's Inline Data Compression provides the following benefits:

- Data compression is always inline and is never performed as a post-processing activity. Therefore, the data is always written only once.
- Compression is supported for a diverse variety of data sets (e.g. database data, VDI, VSI environments, etc.).
- Data compression complements data deduplication in many cases. For example, in a VDI environment deduplication dramatically reduces the required capacity for cloned desktops. Subsequently, compression reduces the specific user data. As a result, an increased number of VDI desktops can be managed by a single X-Brick.
- Compression saves storage capacity by storing data blocks in the most efficient manner.

Mutual CHAP

Version 3.0 modified the implementation of Mutual CHAP to enable a unique user name and password (CHAP secret) per initiator to increase the security of CHAP implementation.

OpenStack Integration

OpenStack is the open platform for managing private and public clouds. It allows storage resources to be located anywhere in the cloud and available for use upon demand. Cinder is the block storage service for OpenStack.

The XtremIO Cinder driver enables OpenStack clouds to access the XtremIO storage. The XtremIO Cinder management driver directs the creation and deletion of volumes on the XtremIO array and attaches/detaches volumes to/from instances/VMs created by OpenStack. The driver automates the creation of initiator mappings to volumes. These mappings allow the running of OpenStack instances to access the XtremIO storage. This is all performed on demand, based on the OpenStack cloud requirements.

The OpenStack XtremIO Cinder driver utilizes the XtremIO RESTful API to communicate OpenStack's management requests to the XtremIO array.

The OpenStack cloud can access XtremIO using either iSCSI or Fibre Channel protocols.

XtremIO Cinder driver supports OpenStack Havana, Icehouse, and Juno (upon release).

New Features and Changes in Ver. 2.4.1-12 and Older

For new features and changes in versions prior to Ver. 3.0.0-44 refer to the Release Notes of the relevant version, available on the EMC Online Support at <https://Support.EMC.com>.

Fixed Issues in Ver. 3.0.3-11

General Fixed Issues

Issue	Tracking Number
SSD status check has a wrong timeout and may, in some rare cases of SSD failure, cause an unexpected service stop.	XIO-11168
In some rare cases, resetting a new SSD in the DAE causes an unexpected service stop.	XIO-10703
SSD insertion is detected by only one Storage Controller, and in some rare cases causes an unexpected service stop.	XIO-10667
Deleting a high number of snapshots or creating and deleting a snapshot of the same volume at the same time may cause an internal module restart that does not cause any high availability event.	XIO-10550
The System Manager module fails and restarts when the add-initiator command is sent to a non-existing Initiator Group.	XIO-10650
OpenSSL has been upgraded to openssl-1.0.1e-30. OpenSSH has been upgraded to openssh-5.3p1-104. HTTP TRACE method is disabled.	XIO-9196
Replacing an SSD without following the correct procedure causes the SSD replacement to fail with "SSD not initialized" and "SSD is not configured in any XDP group" alerts. The replaced SSD is not cleared from the repository.	XIO-9079
Fabric WWN is displayed as an initiator.	XIO-11050 XIO-5579 XIO-2912
In some rare cases a high volume of deletion I/O causes an increase in the latency.	XIO-10527
SCSI registration preempt with type change can cause an unexpected module restart.	XIO-11089
A "sense data" response is sent during registration conflict, even when the SCSI status is not "Check Condition", which causes Emulex HBA to ignore the registration conflict.	XIO-10692

Upgrade and Cluster Hardware Upgrade Fixed Issues

Issue	Tracking Number
The create-snapshot command may receive a busy response if the cluster is going through OS upgrade.	XIO-10245
In some rare cases, issuing the read-reservation SCSI command after NDU to a registered path that was registered before the NDU, can cause the cluster's state to appear as "unknown". The cluster automatically recovers with no user intervention.	XIO-12127
SCSI reservations that are made during NDU cannot be released.	XIO-11722

High Availability Fixed Issues

Issue	Tracking Number
In some rare cases, losing power on one InfiniBand Switch causes an unexpected service stop.	XIO-10252

UI and XMS Fixed Issues

Issue	Tracking Number
XtremIO SNMP trap OID contains two redundant digits.	XIO-12530
Entering unsupported characters while modifying a password may cause the password to be unusable.	XIO-10800
SSH key based users are removed during the cluster maintenance.	XIO-11202
The severity of sys_ud_ssd_space_very_limited alert (Cluster capacity at 90%) has been changed to "Major" severity.	XIO-11262
The thresholds for free physical space alerts have been changed to: - Limited Free Space threshold : 15% (85% used) - Very Limited Free space: 10% (90% used) - No free space: 3% (97% used)	XIO-9387
Using RESTful API with External User (LDAP) can cause XMS unavailability. Using a local account for RESTful API prevents the issue.	XIO-9589
XMS recovery fails when the configuration has SSH key based users with public key longer than 2048 bytes.	XIO-8891
OpenLDAP authentication fails when "uniquememeber" is used as part of the group membership search.	XIO-9074
RESTful API requests to /api/json do not receive a proper response and time out.	XIO-11406
LDAP authentication fails when the user name contains special characters.	XIO-11015

Enhancements

Enhancement	Tracking Number
Added the NAA identifier to the show-volumes command.	XIO-9071
The modify-cluster-passwords have been changed to allow changing the "xinstall" password. For changing the cluster's passwords, refer to EMC KB 183472.	XIO-10119
Added command to clear SCSI reservations.	XIO-10338
Added a warning message and confirmation request to the clear-volume-reservation command.	XIO-10706
A warning message and additional confirmation were added to the fresh-install command to prevent the installation of an existing cluster.	XIO-11815
Warning messages were added to the stop-cluster command.	XIO-11743

Fixed Issues in Ver. 3.0.2-14

General Fixed Issues

Issue	Tracking Number
In some rare scenarios network issues cause unexpected cluster shutdown.	XIO-10189 XIO-9606 XIO-9524
In some cases Fiber Channel Ports fail to start after a cluster restart.	XIO-10062 XIO-9938
In very rare cases running a specific debug command causes an unexpected Storage Controller restart.	XIO-9863 XIO-10392

Upgrade and Cluster Hardware Upgrade Fixed Issues

Issue	Tracking Number
NDU fails when there are more than 22 SCSI-3 reservations.	XIO-9855
In some rare cases NDU OS upgrade fails without rolling back, causing an unexpected service interruption.	XIO-7072 XIO-9991
In some rare cases firmware upgrade fails during NDU.	XIO-9454

UI and XMS Fixed Issues

Issue	Tracking Number
Using RESTful API with External User (LDAP) can cause XMS unavailability.	XIO-5355
XtremIO has modified the SNMP OID to comply with IANA Enterprise OID. In order to receive traps sent from XtremIO 3.0.2, customers are advised to download the XtremIO MIB file from the EMC Support page. Make sure to download the MIB file that is relevant to the SNMP version (V1 or V2c) that is in use. If the older trap format was specifically handled in the code, it needs to be changed as well.	XIO-5635
XtremIO GUI does not start with Java8u25 and Java7u71.	XIO-8470

Fixed Issues in Ver. 3.0.1-11

General Fixed Issues

Issue	Tracking Number
When switching to the dedicated IPMI configuration, the following XMS alert may appear: "XMS is disconnected from the Storage Controller's IPMI"	XIO-4768
Running the "show-discovered-initiators" command repeatedly every 5 minutes causes Storage Controller failure after two days.	XIO-8000
SSLv3 POODLE vulnerability was fixed (CVE-2014-3566).	XIO-8453
Unix Bash Shell vulnerability (also known as "Shellshock") was fixed (CVE-2014-6271, CVE-2014-6277, CVE-2014-6278, CVE-2014-7169, CVE-2014-7186, and CVE-2014-7187).	XIO-8092
Enhancement: Added support for Russia Daylight Savings Time (DST) abolishment.	XIO-8246

Upgrade and Cluster Hardware Upgrade Fixed Issues

Issue	Tracking Number
XMS upgrade may fail after a successful Storage Controllers upgrade. To resolve the issue, retry the upgrade.	XIO-6988
In rare cases, creating iSCSI initiators group fails following an NDU.	XIO-7721
In rare cases, Cold Upgrade fails due to journal corruption.	XIO-7821
In rare cases, NDU fails due to the Storage Controller failback issue.	XIO-7906
During Non-Disruptive-Upgrade on a cluster with maximal configuration (in terms of initiators, volumes and mapping), a service interruption of 55 seconds may occur.	XIO-4906
Deactivating a newly-replaced Storage Controller causes unexpected service interruption.	XIO-5429

Interoperability Fixed Issues

Issue	Tracking Number
In case of deleting and re-creating a volume with the same NAA, XCOPY operation may fail.	XIO-8528

High Availability Fixed Issues

Issue	Tracking Number
In rare cases, a Storage Controller in single X-Brick cluster configuration does not failback when an InfiniBand cable is reconnected.	XIO-6701
In Solaris environment with PowerPath, iSCSI sessions are not restored after a Storage Controller reboot.	XIO-7758
In Windows 2012 environment, I/O is interrupted after a second Storage Controller reboot.	XIO-8814
During a power outage, Storage Controllers are shut down only after the Battery Backup Unit power is drained to 0%.	XIO-5940

Performance Fixed Issues

Issue	Tracking Number
Cluster performance during a HA event has been improved.	XIO-8611 XIO-7040
Cluster performance during an XDP rebuild has been improved.	XIO-4301

UI and XMS Fixed Issues

Issue	Tracking Number
In rare cases, when writing a very little amount of physical data, Compression and Data Reduction numbers are not correct.	XIO-8632
The "Insufficient memory" alert is not cleared after resolving the issue.	XIO-6961
User-configurable monitoring does not show correct SSD performance numbers.	XIO-8942
User-configurable monitoring shows incorrect units for SSD performance numbers.	XIO-8975
LDAP: White space in a specific location of the DN may prevent the user from logging in.	XIO-5359

ESRS Fixed Issues

Issue	Tracking Number
Configuring the IP client with the reprovision parameter of the XMS easy-install option "Set DC Agent configuration" (7) fails. Refer to EMC KB 186918 .	XIO-3100

Fixed Issues in Ver. 3.0.0-44

General Fixed Issues

Issue	Tracking Number
If "start-cluster" fails, in some cases it will try to auto-start without notifying the user.	XIO-6889
Cluster does not auto-start when one InfiniBand Switch power is restored.	XIO-6872 XIO-6594
User cannot access IPMI from the neighboring Storage Controllers when using dedicated IPMI port configuration.	XIO-5857
In AIX environment with a fully utilized cluster (capacity), deleting or un-mapping a volume may cause service interruption and require support intervention.	XIO-5448
Heavy network scanning may cause interruption to the IPMI traffic and result in unexpected service shutdown.	N/A
In some cases the SYM module does not restart after an unexpected SYM module stop.	XIO-2734 XIO-6077
In rare scenarios, stopping and starting a cluster during rebuild fails.	XIO-3634
Internal log is flooded with messages when DAE is powered off and on.	XIO-3114
Wrong Storage Controller part number is displayed in the GUI for 20TB and 10TB encryption capable type clusters.	XIO-5571

High Availability Fixed Issues

Issue	Tracking Number
It is possible to deactivate a Storage Controller even if data is at risk.	XIO-6767
In case of a Storage Controller failover, both LCC ports of the failed Storage Controller should be disabled.	XIO-5434 XIO-5485
Cluster may get stuck in a start-stop loop when power is partially restored to the cluster.	XIO-3070
Deactivating a Storage Controller after deactivating and activating the second Storage Controller causes an unexpected service interruption.	XIO-4031

Interoperability Fixed Issues

Issue	Tracking Number
Solaris version 11.2 does not work with 4KB logical block size volumes.	XIO-7147
Boot from SAN on Windows 2012R2 is not supported.	XIO-6598
It is not possible to create SQL DB using SQL Server 12 or 14 on physical Windows 2012R2 server or on Virtual Windows 2012R2 server using RDM.	XIO-7970

Upgrade and Cluster Hardware Upgrade Fixed Issues

Issue	Tracking Number
Windows server with power path receives the STATUS_DEVICE_BUSY SCSI error during NDU.	XIO-5390
In rare cases, an NDU fails to upgrade the Storage Controller firmware due to timeout issue.	XIO-2647 XIO-4589

UI and XMS Fixed Issues

Issue	Tracking Number
In a 10TB Starter X-Brick (5TB), the cluster properties show 25 SSDs while there are only 13 SSDs.	XIO-5309

iSCSI Fixed Issues

Issue	Tracking Number
Mutual CHAP does not work with MS Windows servers.	XIO-3630

Data at Rest Encryption Fixed Issues

Issue	Tracking Number
Local SSD encryption may fail and not be resumed if the Storage Controller rebooted during the encryption process.	XIO-3243
Pulling an encrypted SSD from a cluster and adding it back after cluster re-encryption will fail. Contact EMC Support for a workaround.	XIO-2655
Adding an SSD to an encrypted cluster while one of the Storage Controllers is rebooting will return an error.	XIO-3323
Resume encryption fails following a Storage Controller failure during the encryption process.	XIO-6259
Storage Controller fails to boot on a cluster with encryption enabled, following a cluster power-cycle/shutdown.	XIO-6917
In some rare cases, the Storage Controller loses connection with the DAE when enabling encryption.	XIO-3322
In some rare cases the cluster encryption fails.	XIO-2692
In a rare case, encrypting a cluster takes more than 20 minutes.	XIO-6205

ESRS Fixed Issues

Issue	Tracking Number
Failure in DAE PSU does not generate a Call Home alert.	XIO-5363
The "No physical Space" alert does not generate a Call Home alert, and the severity is changed to "Critical".	XIO- 6768

Fixed Issues in Ver. 2.4.1-12 and Older

For fixed issues in versions prior to Ver. 3.0.0-44 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
Stopping the cluster should be carried out, using the "stop-cluster-unorderly" command. Do not attempt to perform cold-upgrade (upgrade-cluster-unorderly) if the cluster was stopped, using the "stop-cluster" command.	XIO-879
The Read/Write flow of XtremIO's 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
In some rare cases, SSD removal from DAE may cause Storage Controller failover.	XIO-8482
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 mapped to LUN 0 after discovering the cluster's dummy LUN prior to the volume mapping.	XIO-7927
Overwriting 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
During an unexpected service shutdown, some hardware states are not reported.	Trac-2856
Volume related actions, such as mapping/unmapping and adding/removing take longer on highly utilized clusters.	XIO-8477
It is impossible to change the IP address of a stopped cluster. If an IP change is required, modify the IP address before stopping the cluster.	XIO-7579
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
When using the dedicated IPMI cable connection, the Storage Controller power state appears empty in the "show-storage-controllers" command.	XIO-7230

Issue	Tracking Number
Changing the IPMI configuration to dedicated while one of the Storage Controllers was off results in only one Storage Controller changing configuration.	XIO-7194
VAAI soft limit alert is not sent to the host server.	XIO-3804
OpenStack Cinder driver fails to create an image instance when iSCSI CHAP is configured.	XIO-7650
The XtremIO array does not count zero pages in the logical space calculation. This may result in a discrepancy with the ESX host space calculation.	XIO-8910
XtremIO removes deleted data in background batches. If the size of the deleted data is smaller than the batch size (64GB 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
When issuing a create-snapshot command using "source-folder-id", the user must provide a "suffix".	XIO-3131 XIO-10063

Cluster and Hardware Upgrade Limitations and Known 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
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
Unexpected service interruption occurs during NDU on a multiple X-Brick cluster, connected to Solaris.	XIO-2565
Xtremapp 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
XMS may not respond after easy-install configuration. Once the configuration is completed, restart the XMS from the xinstall menu.	XIO-9441
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 Limitations and Known Issues

Issue	Tracking Number
Host I/O performance is degraded while the Storage Controllers proactively fetch metadata from SSD after Cluster services were stopped or restarted.	XIO-7730 XIO-7723
Reclamation of a deleted volume space while the cluster is under a workload is not immediate (~4GB/Sec).	XIO-6932

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 physical space is freed, the cluster begins rebuilding automatically.	N/A
Avoid turning off the Storage Controllers not through XMCLI commands. Refer to the "EMC XtremIO Storage Array Operations Guide" for the proper shut down procedures. Failing to follow these procedures may cause data loss in certain scenarios.	N/A
During HA scenarios, the Storage Controller failover and failback processes may cause latency increase and service interruption for a few seconds.	XIO-311
The cluster switches to "Degraded Mode" when pulling the 6 th SSD from a DAE (only 19 disks remain). Avoid inserting that specific (6 th) SSD back to the DAE prior to rebuilding the Data Protection Group.	Trac-2174
The SSD slot state may not get updated correctly if the SSD was added during Storage Controller failover and failback. Eject the SSD and re-insert it when the failback is completed.	Trac-9081
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 Limitations and Known Issues

Issue	Tracking Number
Refer to the "EMC XtremIO Storage Array Software Installation and Upgrade Guide" for instruction on how to access the XMS after an installation or upgrade, using server FQDN.	N/A
The minimal supported screen resolution for the GUI is 1280 x 720. The recommended resolution is 1440 x 900 or above.	N/A
XtremIO GUI does not load with Java8u25 and Java7u71. For the supported Java versions, refer to EMC KB 193700 .	N/A
Java Client misses tool-tips and field explanations with Java 7 update 65 and above. Refer to EMC KB 191612 .	XIO-6895
Alerts and Events' text may contain internal abbreviations.	N/A
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
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 is not a supported GUI Client platform.	TRAC-7953
The Hardware component status may be inconsistent when the XMS is disconnected from the cluster or when service is stopped. The XMS status message will be "disconnected from the cluster".	Trac-2425
During a Data Protection Group rebuild, in rare occasions the UI may seem "stuck" at 99% progress due to background operations. However, the operation will eventually be completed.	Trac-1862
An iSCSI IQN length is limited to 64 characters.	XIO-7474
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

Issue	Tracking Number
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
When dragging multiple folders into another folder, only one folder is moved.	XIO-7766
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
The reported physical capacity of the six X-Brick cluster is incorrect. The cluster indicates 91.468TiB, while the actual available capacity is 90.736TiB.	XIO-8540
It is not possible to add over 1000 volumes in single action using the GUI.	XIO-8862

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
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 Limitations and Known 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 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 Limitations and Known 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. Contact EMC Support before rebooting the Storage Controller again,	XIO-2596

Data at Rest Encryption Limitations and Known Issues

Issue	Tracking Number
Enabling or configuring Data at Rest Encryption is a tech level function. A service request should be opened for any Data at Rest Encryption changes.	N/A
Local SSD encryption may fail and not resumed 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 Limitations and Known Issues

Issue	Tracking Number
ESRS-VE based GW is not supported with XtremIO.	XIO-8152
Secondary ESRS GW is not supported with XtremIO.	XIO-8145

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
- XMCLI Client
- 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 3.0.3-11.

	Component	Package/Image Name in the XtremIO Support Page (http://Support.EMC.com)	File Name
Images/OVAs	Storage Controller	XtremIO Storage Controller 2.4.0-19.1 Rescue Image	xtremapp_2.4.0-19.1.img
	XMS	XtremIO XMS 2.4.0 Rescue Image	xms-2.4.0.img
		XtremIO Virtual XMS (vXMS) OVA 3.0.1 for VMware vSphere	vxms-master-v3.0.1.ova
Packages	XtremIO Software Bundle	XtremIO 3.0.3 (3.0.3-11)	upgrade-to-3.0.3-11.tar
	XtremIO XMCLI Client	XMCLI Client for XtremIO 3.0.3 (3.0.3-11)	xmcli-3.0.3-11.tgz
	XtremIO MIB	XtremIO Management Information Base (MIB)	SNMPv1: EMC-XtremIO-SNMPv1.mib SNMPv2c: EMC-XtremIO-SNMPv2c.mib

* Use 2.4.0 rescue image for version 3.0.3 installation.

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 3.0.3-11 can be used to upgrade from the following version:

- 3.0.0-42
- 3.0.0-44
- 3.0.1-11
- 3.0.2-14

Before installing this version, consult with XtremIO Support.

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.

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