IBM System Storage SAN Volume Controller
IBM Storwize V7000

IBM®

Information Center Errata

Version 6.2.0
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Contents

Introduction

This guide provides errata information that pertains to release 6.2.0 of the IBM *System Storage SAN Volume Controller Information Center and the IBM Storwize V7000 Information Center.*

Who should use this guide

This errata should be used by anyone using iSCSI as a method to connect hosts or when connecting Texas Memory Systems RamSan Storage to IBM System Storage SAN Volume Controller or IBM Storwize V7000 .

Last Update

This document was last updated: June 10, 2011.

Change History

The following revisions have been made to this document:

Revision Date	Sections Modified
June10, 2011	New publication

Table 1: Change History

iSCSI Limits with Multiple I/O groups

The information is in addition to, and a simplification of, the information provided in the Session Limits pages at the following links:

http://publib.boulder.ibm.com/infocenter/svc/ic/index.jsp?topic=/com.ibm.storage.svc.console.doc/svc_iscsisessionlimits.html

http://publib.boulder.ibm.com/infocenter/storwize/ic/topic/com.ibm.storwize.v7000.doc/svc_iscsisessionlimits.html

Definition of terms.

For the purposes of this document the following definitions are used:

IQN: an iSCSI qualified name – each iSCSI target or initiator has an IQN. The IQN should be unique within the network. Recommended values are of the form iqn.<date>.<reverse domain name>:<hostname>.<unique id> e.g. iqn.03-1996.com.ibm.hursley:host1.1

initiator: an IQN that is used by a host to connect to an iSCSI target

target: an IQN on an SVC or V7000 node that is the target for an iSCSI login

target portal: an IP address that can be used to access a target IQN. This can be either an IPv4 or an IPv6 address.

Limits that take effect when using iSCSI

Single I/O Group Configurations

iSCSI host connectivity only

1 target IQN per node

2 iSCSI target portals (1xIPv4 and 1xIPv6) per network interface on a node

4 sessions per initiator for each target IQN

256 defined iSCSI host object IQNs

512 host iSCSI sessions per I/O group **

256 host iSCSI sessions per node (this is to allow the hosts to reconnect in the event of a failover)

** e.g. if a single initiator logs in 3 times to a single target count this as 3. If a single

   initiator logs in to 2 targets via 3 target portals each count this as 6.

Only the 256 defined iSCSI IQN limit is enforced by the GUI or CLI commands.

Mixed iSCSI and Fibre Channel host connectivity

512 total sessions per I/O group where:

       1 defined FC host object port (WWPN) = 1 session

       1 defined iSCSI host object IQN = 1 session

       1 additional iSCSI session to a target = 1 session

If the total number of defined FC ports & iSCSI sessions in an I/O group exceeds 512, some of the hosts may not be able to reconnect to the SVC/V7000 targets in the event of a node IP failover. See above section for help on calculating the number of iSCSI sessions.

Multiple I/O Group Config

If a host object is defined in more than one I/O group then each of its host object port definitions is counted against the session limits for every I/O group it is a member of. This is true for both FC and iSCSI host objects. By default a host object created using the graphical user interface is created in all available I/O groups.

Symptoms of exceeding the limits.

The following list is not comprehensive. It is given to illustrate some of the common symptoms seen if the limits defined above are exceeded.. These symptoms could also indicate other types of problem with the iSCSI network.

- The host reports a time out during the iSCSI login process
- The host reports a time out when reconnecting to the target after a SVC/V7000 node IP failover has occurred.

In both of the above cases no errors will be logged by the SVC/V7000 system.

Chapter 11. Configuring the Texas Memory Systems Ramsan 500

Configuring Texas Memory Systems RamSan Solid State Storage

This portion of the document covers the necessary configuration for using a TMS RamSan storage device with an IBM SAN Volume Controller cluster.

Support models of TMS RamSan Solid State Storage

The RamSan-500 Cached Flash storage and the RamSan-600 series Flash storages are supported for use with the IBM SVC. This system will be referred to as RamSan.

Support firmware levels of RamSan subsystems

Firmware revision 3.4.3 is the earliest supported level of firmware for use with IBM SVC. For support on later versions, consult http://www-01.ibm.com/support/docview.wss?uid=ssg1S1003697

Concurrent maintenance on RamSan subsystems

Firmware upgrades should be applied to a RamSan during a maintenance window; a power cycle of the RamSan is required for firmware to take effect.

RamSan user interfaces

Users may configure a RamSan through a Java-based Web GUI and a CLI. Some system-critical operations may be performed using the front panel on the RamSan.

RamSan Web GUI

The Web GUI is a java-based applet that is accessible through the IP address of the RamSan. All configuration and monitoring steps are intuitively available through this interface. By default, the Web GUI uses SSL encryption to communicate with the RamSan.

RamSan CLI

The CLI is accessible through SSH, Telnet, and RS-232 port (Not null-modem). The CLI includes all functionality available in the GUI. The CLI does include a diagnostics interface for internal hardware checks.

Logical units and target ports on RamSan subsystems

For clarification, partitions in the RamSan are exported as Logical Units with a Logical Unit Number (LUN) assigned to the partition.

LUNs

RamSan systems are shipped with a particular capacity of user space. In the RamSan-500, this is 1TB or 2TB while the RamSan-600 series can scale to many terabytes. A partition of this capacity is referenced as a Logical Unit.

RamSan subsystems can export up to 1024 LUNs to the SVC Controller through any variety of exported FC ports. The maximum Logical Unit size is the full usable capacity of the RamSan.

LUN IDs

RamSans will identify exported Logical Units through Identification Descriptors 0, 1 and 2. The EUI-64 Identifier for the Logical Unit is in the CCCCCCLLLLMMMMMM notation where CCCCCC is the Texas Memory Systems IEEE Company ID of 0020C2h, the LLLL is the Logical Unit handle, and the MMMMMM is the Serial Number of the chassis. The EUI-64 Identifier is available on the detailed view of each logical unit in the GUI.

LUN creation and deletion

Logical Units are created, modified, or deleted through the use of a wizard tutorial in the GUI or through a single CLI command. LUNs are not formatted to all zeros upon creation.

To create a Logical Unit, highlight the Logical Units tree item and select the Create toolbar button. To modify, resize, or destroy a Logical Unit, select the appropriate toolbar button when the specific Logical Unit is highlighted in the GUI Tree.

*** Note: Delete the mdisk on the SVC Cluster before deleting the LUN on the RamSan.

LUN presentation on the RamSan

LUNs are exported through the RamSan's available FC ports by Access Policies. Access Policies are associations of Logical Unit, Port, and Host. The RamSan requires that one of the three items is unique across all available access policies. There is no restraint to which ports or hosts a logical unit may be addressable.

To apply Access Policies to a logical unit, highlight the specific Logical Unit in the GUI and select the Access toolbar button.

Special LUNs

There are no special considerations to a Logical Unit numbering. LUN 0 may be exported where necessary. In the RamSan-500, a licensed Turbo feature is available to create a Logical Unit up to half the size of the cache to keep locked in the DRAM cache for the highest of performance. There is no identification difference with a Turbo/Locked LUN as opposed to any other LUN ID.

Target Ports

A RamSan is capable of housing 1-5 dual-ported FC cards. Each WWPN is identified with the pattern 2P:0N:00:20:C2:MM:MM:MM where P is the port number on the controller and N is the controller's address. The MMMMMM represents the chassis serial number.

The controller address is as follows:

04: FC-1
08: FC-2
0C: FC-3
10: FC-4
14: FC-5

Port 2B would have the WWPN of 21:08:00:20:C2:07:83:32 for a system with serial number G-8332. The same system would have a WWNN for all ports of 10:00:00:20:C2:07:83:32.

LU access model

All controllers are Active/Active on a non-blocking crossbar. In all conditions, it is recommended to multipath across FC controller cards to avoid an outage from controller failure. All RamSan controllers are equal in priority so there is no benefit to using an exclusive set for a specific LU.

LU grouping

LU grouping does not apply to RamSans.

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LU preferred access port

There are no preferred access ports on the RamSan as all ports are Active/Active across all controllers.

Detecting Ownership.

Detecting Ownership does not apply to RamSans.

Switch zoning limitations for RamSans

There are no zoning limitations for RamSans.

Fabric zoning

When zoning a RamSan to the SVC backend ports be sure there are multiple zones or multiple RamSan and SVC ports per zone to enable multipathing.

Target port sharing

The RamSan may support LUN masking to enable multiple servers access separate LUNs through a common controller port. There are no issues with mixing workloads or server types in this setup. LUN Masking is a licensed feature.

Host splitting

There are no issues with host splitting on a RamSan.

Controller splitting

RamSan subsystem LUNs that are mapped to the SAN Volume Controller cluster cannot be mapped to other hosts. LUNs that are not presented to SVC may be mapped to other hosts.

Configuration settings for RamSan subsystems

The java-based GUI allows for a very intuitive setup of the RamSan LUNs and exporting them to the SAN Volume Controller cluster.

Logical unit options and settings for RamSan-500 subsystems

For the RamSan-500 the following dialog of options appears when creating a Logical Unit.

Option	Data Type	Range	Default	SVC Setting	Notes
Name	String	1 to 32 Characters	"Logical Unit #"	Any	This is only for management reference
Number	Integer	0-1023	Next available LUN	0-254	Some hosts have known limitations of 254 as their highest LUN ability. The RamSan also allows identical LUNs, i.e. multiple LUN 0s.
Size	Integer	1MB - Max Capacity	Max Available Capacity	Any	MB and GB are Base2 offerings

Backup Mode	Option List	Writeback, writethrough	Writeback	Writeback	Writeback should be used in production.
Device ID	Integer	Blank, 0 – 32768	Blank	Blank	Specific only to OpenVMS
Report corrected media errors	Checkbox	Checked/Unchecked	Checked	Checked	Alerts the host if ECC was used to correct the requested data
Report uncorrected media errors	Checkbox	Checked/Unchecked	Checked	Checked	Always report uncorrected media errors.

Logical unit options and settings for RamSan-600 subsystems

For the RamSan-600 series, the following options are available when LUNs are presented in the JBOF storage mode

Option	Data Type	Range	Default	SVC Setting	Notes
Name	String	1 to 32 Characters	"Logical Unit #"	Any	This is only for management reference
Number	Integer	0-1023	Next available LUN	0-254	Some hosts have known limitations of 254 as their highest LUN ability. The RamSan also allows identical LUNs, i.e. multiple LUN 0s.

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Size	Integer	Flashcard capacity	Flashcard capacity	Default	MB and GB are Base2 offerings
Device ID	Integer	Blank, 0 – 32768	Blank	Blank	Specific only to OpenVMS
Sector Size	Drop box	512b or 4096b	512b	512b	Should change to 4KB sector size when support for Large Sectors available in SVC
Offset	Slider	0b – 31.5KB	0b	0b	Do not offset. Alignment should be set on host-side
Report uncorrected media errors	Checkbox	Checked/Unchecked	Checked	Checked	Always report uncorrected media errors.
Enable ACA support	Checkbox	Checked/Unchecked	Unchecked	Unchecked	Specific only to AIX

Host options and settings for RamSan subsystems

There are no host options required to present the RamSan subsystems to SAN Volume Controller clusters.

Quorum disks on RamSan subsystems

The SAN volume Controller cluster selects disks that are presented by the RamSan as quorum disks. To maintain availability with the cluster, each quorum disk should reside on a separate disk subsystem.

Clearing SCSI reservations and registrations

You must not use the RamSan CLI to clear SCSI reservations and registrations on volumes that are managed by SAN Volume Controller. The option is not available on the GUI.

Copy functions for RamSan subsystems

The RamSan does not provide the copy/replicate/snapshot features.

Thin Provisioning for RamSan subsystems

The RamSan does not provide the thin provisioning feature.