



**iStor Networks, Inc.<sup>®</sup>**

iStor Networks, Inc.

Terminology Guide

Version 1.2

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## Document Revision Level

Revision	Date	Description
iSTG1P00	December 2007	Initial Release
iSTG1P10	July 2008	Revision 1.1, supersedes and replaces iSTG1P00.
iSTG1P20	December 2009	Revision 1.2, supersedes and replaces iSTG1P10. Updated the list of iStor patent numbers, minor wording updates and formatting corrections.

iStor Networks, Inc.  
7585 Irvine Center Drive  
Suite 250  
Irvine, CA 92618  
USA

## Acronyms and Abbreviations

### A

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Administrator	The person responsible for managing storage operations. The administrator is the user who will use the storage management console provided with the storage system.
ASIC	Application Specific Integrated Circuit, pronounced "a-sick." A chip that is custom designed for a specific application rather than a general-purpose chip such as a microprocessor.
Available Pool	Disk drives available for use, but with no data stored on them at this time.

### B

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Base Pool	Disk drives used to hold Volume data or ready to be used to hold volume data.
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### C

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CHAP	Challenge Handshake Authentication Protocol. CHAP is a protocol for authenticating the peer of a connection and is based upon the peers sharing a secret (a security key similar to a password).
Chunk	The fixed number of blocks used on each drive in a striped Volume.
CSMA/CD	Carrier Sense Multiple Access/Collision Detection. The LAN access method used in Ethernet.

### D

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Drive	A physical storage drive managed by the storage array.
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### E

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802.3	An IEEE standard for Ethernet II.
Ethernet	A local area network (LAN) architecture.
Expand	A task specified by the administrator to increase the size of a volume.
Extent	A contiguous set of logical blocks (LBs) on a drive. An extent is also called a physical extent.

### G

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Gbps	Billions of bits per second. A measure of bandwidth on a digital data transmission medium such as an Ethernet network.
Gigabit Ethernet	A transmission technology based on the Ethernet frame format and protocol used in local area networks (LANs). Gigabit Ethernet provides a data rate of 1 billion bits per second (one gigabit) and is defined in the IEEE 802.3 standard.

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## H

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**Hub** A small, simple, inexpensive device that joins multiple computers together.

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## I

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**IETF** Internet Engineering Task Force. The main standards organization for the Internet.

**Initialize** A task required by some RAID volume organizations, such as parity. With iStor, this task can be performed while an initiator is accessing (reading and writing) data. An Initialization task can be suspended and resumed, but cannot be cancelled.

**Initiator** A host computer (typically a server) that utilizes the storage available on the storage array. The initiator establishes iSCSI communications with one or more targets that are presented by the storage array. It requests all SCSI operations (such as read or write) and usually is located on the host/server side.

**Initiator node** An iSCSI node that acts as an iSCSI Initiator in accessing data stored on the storage system.

**IP** Internet Protocol. IP specifies the format of packets, or "datagrams," and the addressing scheme.

**iSCSI** Internet Small Computer System Interface. A TCP-based end-to-end storage block protocol that makes it possible to transfer storage data.

**iSNS** Internet Storage Name Service. A protocol that provides discovery management services.

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## L

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**LAG** Link Aggregation Group. The combining of physical network links into a single logical link for increased bandwidth.

**LAN** Local Area Network. A computer network that spans a relatively small area.

**LB** Logical Block. A block of storage stored (and read) by the system.

**LED** Light Emitting Diode. A small indicator light on electronic devices.

**LUN** Logical Unit Number. The number used by an iSCSI initiator to access a target's Logical Unit. In an iStor storage system, a logical unit is a volume.

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## M

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**MAC Address** Media Access Control address. A hardware address that uniquely identifies each node of a network.

**Mbps** Megabits per second. A measure of data transfer speed (a megabit is equal to one million bits). Network transmissions are generally measured in Mbps.

Media scan	A task that reads every physical block in a volume to ensure there are no errors. If there are errors, the scan fixes them if possible. A Media Scan task can be cancelled, suspended, resumed, and scheduled for a future time or at a recurring interval by the administrator. In the case of a Parity Volume, the Parity Scan performs this function, so a Media Scan is not an option with this type of iStor volume.
Member	A group of extents organized vertically in an array. A member often resides on a single drive, but the storage controller can allocate the required space very flexibly (i.e., an entire member does not need to reside on a single drive). Within each member, extents can be obtained from as many drives as necessary.
Mirror	A way to improve reliability where a pair of drives store duplicate data, but appear as a single drive. Write operations go to both drives in a mirrored pair, so information on the drives is kept identical. Each individual drive, however, can perform simultaneous read operations. A mirror is comprised of two members.
Mirrored Stripe	A configuration in which all write operations are performed twice (once to each disk in the mirror) and data can be retrieved from either mirror. Mirrored striping allows large files to be distributed across multiple drives, which takes advantage of parallelism, where many drives do the work of one. In an iStor storage system, a mirrored stripe organization has a member for each stripe, plus a second member (for each stripe) to hold the data copy. Therefore, if a mirrored stripe organization has $x$ stripes, it has $2x$ members.
MPU	Management Processor Unit. The CPU used for management processing on the storage controller.

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## N

Node	A computer or server that has a unique network address, sometimes called a Data Link Control (DLC) address or Media Access Control (MAC) address.
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## P

Parity	A way to improve reliability of a volume by providing data redundancy. In a parity volume, data redundancy is improved by recording data blocks across multiple drives and recording one additional parity block on an additional drive. If any single drive fails, the original data can be reconstructed from the remaining blocks. The iStor storage system distributes the volume into the array described for a stripe organization, and reserves one chunk from each stripe to hold the parity information.
Parity scan	The administrator can scan a parity volume for errors by starting a Parity Scan task. This task reads every block in the volume looking for errors as described for Media Scan to ensure that the media is sound and parity is correct.
PLBN	Physical Logical Block Number. The number of an LB on a drive.

## R

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Rebuild	When a drive fails, every redundant volume that occupied space on it can be rebuilt. When the storage system finds replacement space on another drive, it performs one Rebuild task for each extent that used space on the failed drive.
Redundancy	A way to store data on multiple different drives to reduce the possibility of data loss.
RFC	Request for Comments. A series of notes about the Internet started in 1969.
RJ	Registered Jack. A standardized physical interface (commonly, a telephone jack) for connecting communications equipment or computer networking equipment. The RJ-45 jack is used to connect equipment to a local area network (LAN).
Router	A hardware device that routes data from a local area network (LAN) to another network connection. A router allows only authorized machines to connect to other computer systems.
RS-232-C	Recommended Standard-232-C. A standard interface approved by the Electronic Industries Alliance (EIA) for connecting serial devices.

## S

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SAN	Storage Area Network. A high-speed subnetwork of shared storage devices that potentially makes all storage devices available to all servers.
SAS	Serial-attached SCSI. SAS is an interface used to connect hard drives and other peripherals to a PC. SAS offers data transfer rates of 3 or 6 Gbps. A SAS drive is a drive that utilizes the SAS interface.
SATA	Serial Advanced Technology Attachment. SATA is an interface used to connect hard drives and other peripherals to a PC. A SATA drive is a drive that utilizes the SATA interface.
Server	A computer or device that manages network resources.
S.M.A.R.T	Self-Monitoring Analysis and Reporting Technology. S.M.A.R.T is a technology developed by a number of major hard drive manufacturers to increase the reliability of SATA drives.
Spare	A drive physically installed in the array that is inactive until an active drive fails, at which time the system may automatically replace the failed drive with the spare, rebuilding the array with the spare drive.
Storage pool	A collection of drives used as a group for common functions (for example, the space used by a volume must be allocated from a specific storage pool).
Storage virtualization	Describes the shift from managing physical disk drives to logical volumes.

Stripe	Data distributed among multiple drives. Each stripe consists of a fixed number of blocks on each drive.
Striping	A way to improve I/O performance on a volume by splitting data among multiple drives. Striping involves partitioning each drive's storage space into Stripes.
Subnet	A portion of a network that shares a common address component. On TCP/IP networks, subnets are defined as all devices whose IP addresses have the same prefix. For example, all devices with IP addresses that start with 100.100.100. are part of the same subnet.
Switch	A small hardware device that joins multiple computers together within one local area network (LAN). While network switches can be nearly identical to network hubs, a switch generally contains more "intelligence" than a hub. Unlike hubs, network switches can inspect data packets as they are received, determining the source and destination device of that packet, and forwarding it appropriately, conserving network bandwidth and offering generally better performance than a hub.

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## T

Target	The storage device that controls and serves volumes or virtual volumes. The target is the device that performs the SCSI command or bridges it to an attached storage device. In an iStor storage system, each volume has its own unique target name.
TCP	Transmission Control Protocol. A network protocol that guarantees delivery of data and also guarantees that packets will be delivered in the same order in which they were sent.

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## U

UPS	Uninterruptible Power Supply. A device that maintains a continuous supply of electric power to connected equipment by supplying power from a separate source when utility power is not available.
Unusable Pool	In an iStor storage system, there are two types of drives that can appear in the Unusable Pool: Drives not available for use either because they have already failed and have not been removed from the enclosure, and drives inserted into the storage array that were found to be used previously by an iStor storage system.

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## V

VLBN	Virtual Logical Block Number. The number of an LB within a Volume. The LB is used to store customer data.
Volume	A virtual unit of storage space created by an iStor storage array. A Volume is seen by a SCSI initiator as a SCSI Logical Unit. A Volume is comprised of extents with some RAID organization. In an iStor storage array, RAID is performed on a Volume basis rather than a RAID Set (a RAID Set binds drives together in a RAID organization while an iStor storage array binds Extents together in a RAID organization).