



G-Technology®

iSCSI
ESSENTIAL GUIDE

G|RACK™ 12

High-Performance NAS



G|RACK™ 12

iSCSI Essentials



G-Technology®

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Overview

In a world where Internet Protocol (IP) dominates local and wide area networks, and data storage requirements grow unabated, it seems inevitable that these two forces converge. The Internet Small Computer Systems Interface (iSCSI) protocol unites storage and IP networking. iSCSI enables the transport of block-level storage traffic over IP networks. The protocol is used on servers (initiators), storage devices (targets), and protocol transfer gateway devices. iSCSI uses standard Ethernet switches and routers to move the data from server to storage.

What is iSCSI

iSCSI, (Internet Small Computer System Interface), an Internet Protocol (IP)-based storage networking standard for linking data storage facilities. By carrying SCSI commands over IP networks, iSCSI is used to facilitate data transfers over intranets and to manage storage over long distances. iSCSI can be used to transmit data over local area networks (LANs), wide area networks (WANs), or the Internet and can enable location-independent data storage and retrieval.

How and when is iSCSI used?

The protocol allows clients (called initiators) to send SCSI commands (CDBs) to SCSI storage devices (targets) on remote servers. It is a storage area network (SAN) protocol, allowing organizations to consolidate storage into data center storage arrays while providing hosts (such as database and web servers) with the illusion of locally attached disks. Unlike some SAN protocols, iSCSI requires no dedicated cabling; it can be run over existing IP infrastructure. As a result, iSCSI is often seen as a low-cost alternative to Fibre Channel.

Target

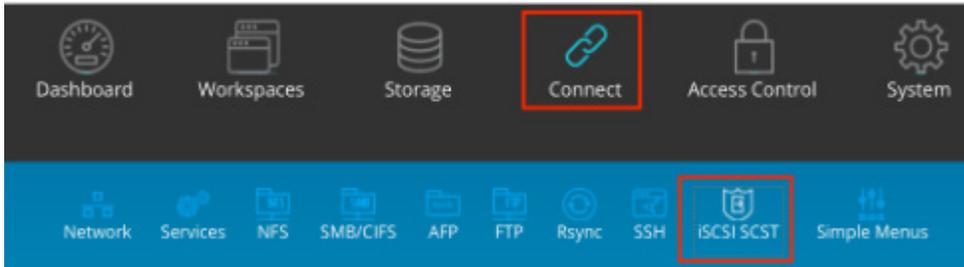
The iSCSI specification refers to a storage resource located on an iSCSI server (more generally, one of potentially many instances of iSCSI storage nodes running on that server) as a target. "iSCSI target" should not be confused with the term "iSCSI" as the latter is a protocol and not a storage server instance. An iSCSI target is often a dedicated network-connected hard disk storage device, but may also be a general-purpose computer, since as with initiators, software to provide an iSCSI target is available for most mainstream operating systems.

Initiator

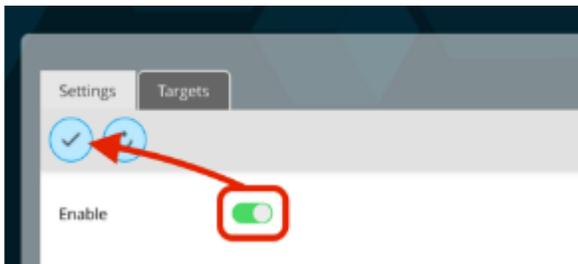
An initiator functions as an iSCSI client. An initiator typically serves the same purpose to a computer as a SCSI bus adapter would, except that, instead of physically cabling SCSI devices (like hard drives and tape changers), an iSCSI initiator sends SCSI commands over an IP network. An initiator falls into two broad types. A software initiator uses code to implement iSCSI. Typically, this happens in a kernel-resident device driver that uses the existing network card (NIC) and network stack to emulate SCSI devices for a computer by speaking the iSCSI protocol. Software initiators are available for most popular operating systems and are the most common method of deploying iSCSI.

How to create an iSCSI target and LUNs on the G-RACK 12? iSCSI Target Creation

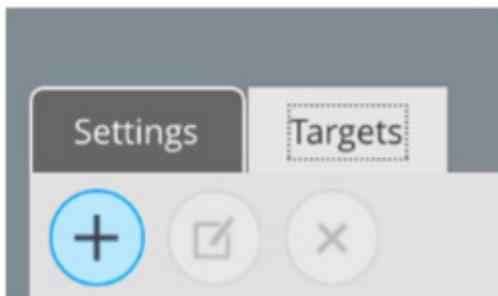
Navigate to the iSCSI SCST under the Connect menu



You will be brought to the iSCSI Settings page where you must first enable the iSCSI service by switching the enable toggle to On (green) and pressing the Save button. The iSCSI service might already be toggled On if you created iSCSI targets in the Wizard setup process.

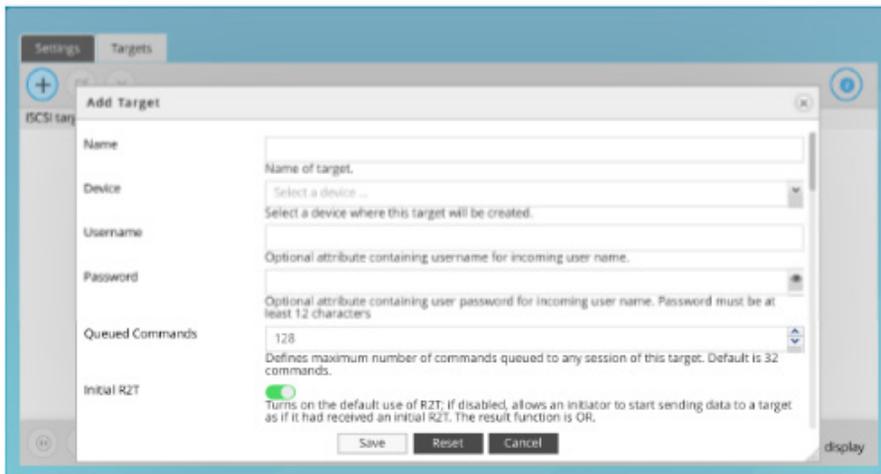
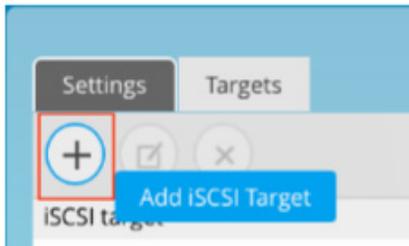


Press the Targets tab in the iSCSI SCST menu to continue to the iSCSI target/LUN creation.



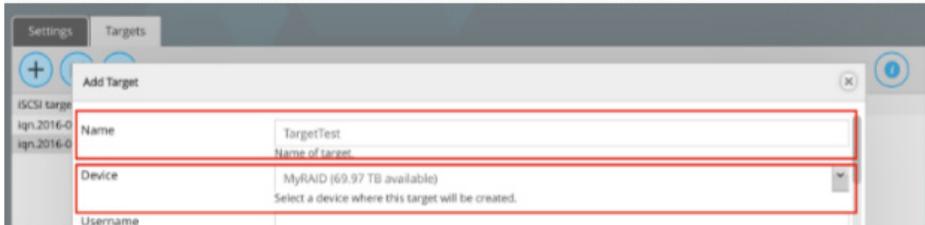
In the iSCSI SCST Targets tab you may notice previously created Wizard-generated target. This page allows you to view the current iSCSI targets and, if highlighted, edit your LUNs associated with that target or delete the Target altogether.

To create a new Target, press the Add iSCSI target button.



G-RACK's iSCSI Add Target page allows you to give your Target a name, associate it with a RAID- Workspace, access credentials like username / password assignments (known by iSCSI initiators as username & secret) as well as a multitude of performance and initiator parameters. G-RACK 12's default advanced parameter configuration has already been maximized for performance but if your network or administrator choose to personalize the advanced parameters for iSCSI targets you will find those attributes here. To expedite this lesson however all you need to proceed is a Target Name and a File device.

Press the Save button to create the target, press the Reset button to return to the default settings or press the Cancel button to exit the iSCSI Add Target page.



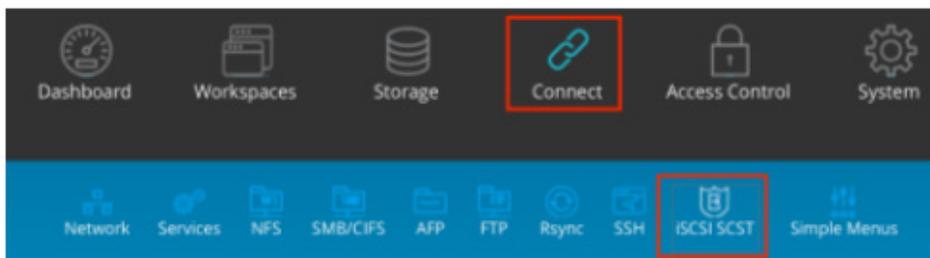
iSCSI is the protocol with which one communicates with the server. The Target is the shell with which one harbors and performs with files and a LUN is the Volume that will eventually be mounted and formatted by a client computer's iSCSI initiator. G-RACK 12 makes LUN creation simple by automatically generating a one-Terabyte allocation within the workspace.

If you choose to, you may edit that LUN or create addition LUNs within a Target resulting in multiple Volumes much like a partition for a Directly Attached Storage device (DAS). However, you should know that once a G-RACK 12 iSCSI target has been initialized by a client computer you will not be able to grow a LUN without wiping out all of your data. So plan accordingly and always make backups of your files.

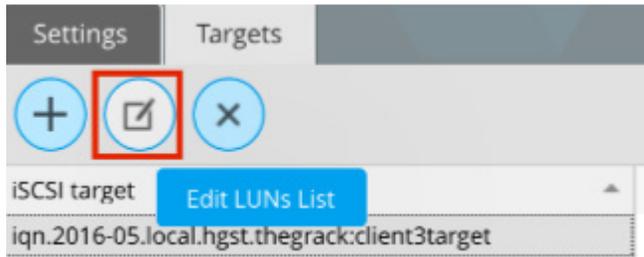
Edit LUN

If you want to grow (increase the size of) your auto-generated one-Terabyte LUN, do this BEFORE it has been mounted and formatted by a client computer.

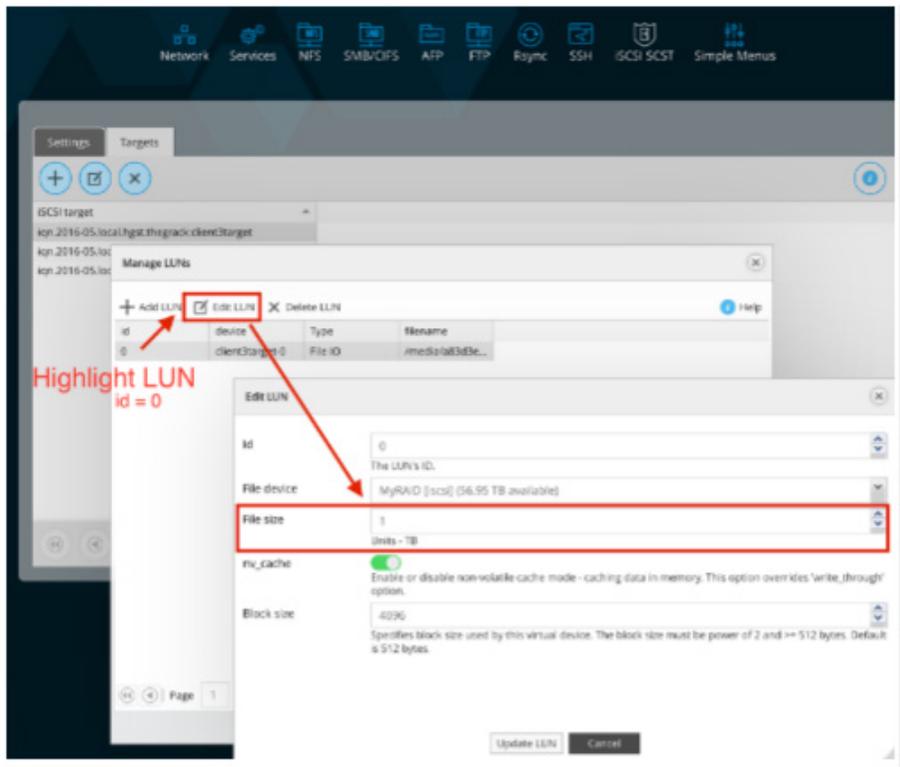
Navigate to the iSCSI SCST under the Connect menu



Highlight the target your desired iSCSI Target and press the Edit LUNs list button.



From the Manage LUNs list page you have the option to add a new LUN to your iSCSI target or edit any of the current LUNs. For this instance we will discuss the Edit LUN function. Highlight the auto-generated LUN (id=0) and press the Edit LUN button. You will be presented with the G- RACK 12's Edit LUN page. Edit the auto-generated File-size field from "1" Terabyte to your desired size. Once satisfied press the Update LUN button.



Now when you mount and format the Target on a client computer via an iSCSI initiator you will have a Volume mounted on your desktop that is of the same size as your edited LUN File-size.

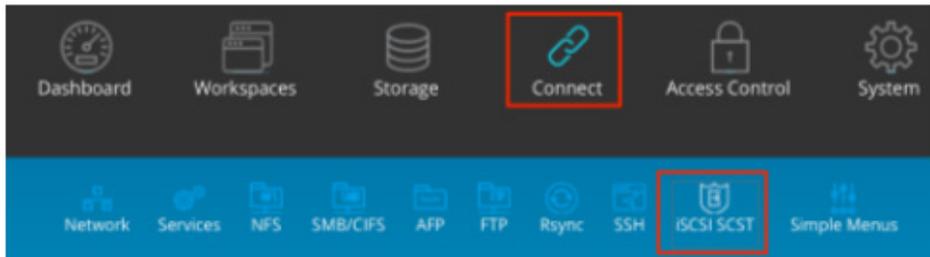
NOTE: A LUN with id#0 MUST always be in place in order for iSCSI targets to be mountable on client.

Warning: NOT to delete LUN id0 without creating a new LUN with id0.

Add LUNs

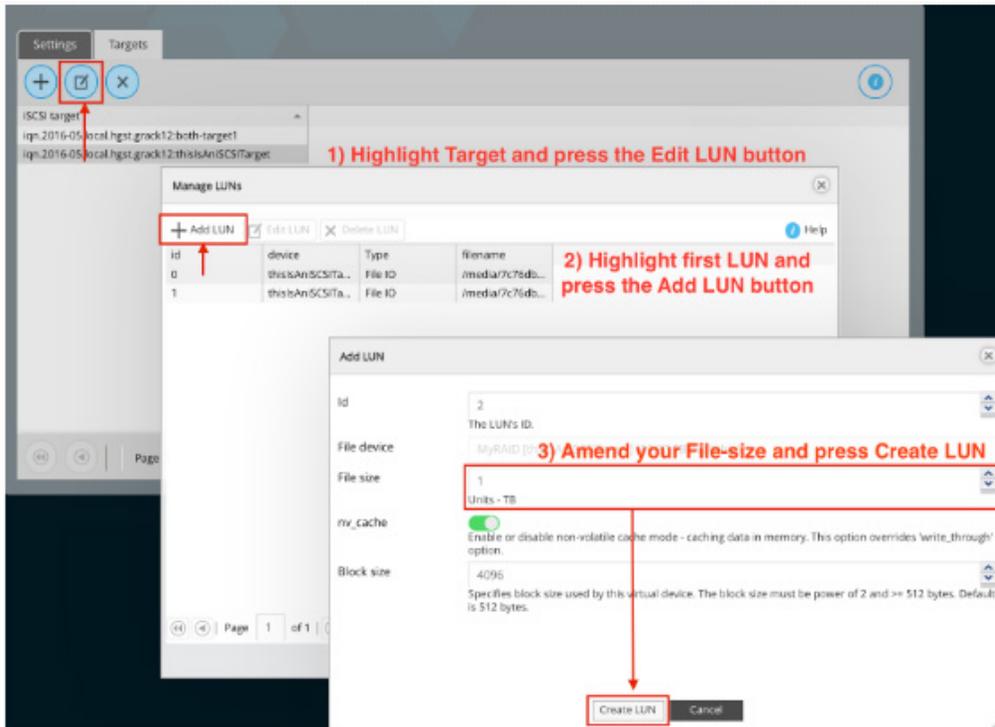
LUN's correspond to Volumes that are mounted on your desktop. The G-RACK 12 has made adding additional LUNs simple.

Navigate to the iSCSI SCST under the Connect menu and select the Targets tab.



Highlight the target you wish to add a LUN to and press the Edit LUNs list button to access the Manage LUNs page.

For organizational reasons the File device field is now a non-editable field. Do not change the auto-generated id number. Leaving nv_cache enabled and Block-size to 4096 will ensure optimal performance but they are editable.



Links and references

<https://en.wikipedia.org/wiki/ISCSI>

About G-RACK 12

iSCSI Essentials > About G-RACK12

The G-RACK 12 Network-Attached Storage (NAS) delivers the ultimate in high-performance, centralized storage for small-to-medium size post-production houses, ad agencies, TV/broadcast studios and in-house creative departments that use Avid Media Composer, Final Cut Pro X, or Adobe Premiere.

The G-RACK 12 brings G-Technology's industry-leading reliability, scalability and studio-friendly technology to shared storage. Streamline demanding media and entertainment workflows of 4K and above with:

- A flexible 12-Bay server in 48TB to 120TB capacities;
- An optional 48TB to 120TB Expansion Module;
- Seamless integration with your data network and non-linear editing (NLE) suites; and
- The latest Btrfs file system for better data protection and faster content recovery.

Key Features:

- Enterprise-grade Network-Attached Storage (NAS)
- Seamless integration with top non-linear editing suites
- Internet Small Computer System Interface (iSCSI) support for simple shared storage management over data networks
- G-Technology NAS operating system with easy-to-use workstation interface and setup Wizard
- Advanced B-tree file system (Btrfs) for superior data protection
- Scalable 12-bay server with 48, 72, 96, 120TB capacities
- Expandable to 240TB capacity with optional 120TB Expansion Module
- Up to (TBD) MB/s transfer rates
- Ultra-reliable premium quality G-Technology hard disk drives
- Outstanding 5-Year limited warranty

Safety Notice

Please read and observe the following precautions to assure personal safety. Improper use can result in hazardous situations.

1. The G-RACK 12 operates normally in the temperature range of 0°C–50°C and relative humidity of 8%–90%. Please make sure the environment is well ventilated.
2. The power cord and devices connected to the G-RACK 12 must provide correct supply voltage (100W, 90–264V). If unsure, please contact the distributor or the local power supply company.
3. Do NOT place the G-RACK 12 in direct sunlight or near chemicals.
4. Unplug the power cord and all the connected cables before cleaning. Wipe the G-RACK 12 with a dry towel. Do NOT use chemical or aerosol to clean the G-RACK 12.
5. Do NOT place any objects on the G-RACK 12 during normal system operations to avoid overheating.
6. Use the flat head screws in the product package to lock the hard disk drives in the G-RACK 12 when installing the hard drives for proper operation.
7. Do NOT place the G-RACK 12 on any uneven surface to avoid falling off and damage.
8. Do NOT expose the G-RACK 12 to dampness, dust, corrosive or any liquids.
9. Do NOT attempt to repair the G-RACK 12 in any occasions. Improper disassembly of the product may expose you to electric shock or other risks. For any inquiries, please contact the distributor.
10. Do NOT use the G-RACK 12 near water, for example, in a wet basement or near a swimming pool.
11. Do NOT place any object on the power cord. Do NOT locate the G-RACK 12 where it can be stepped on or tripped over.
12. Do NOT install, use, or service the G-RACK 12 during a thunder storm. There is a remote risk of electric shock from lightning.
13. If an extension cord is used with the G-RACK12, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed the fuse rating.
14. Do NOT drop the G-RACK 12.
15. Do NOT use the G-RACK 12 outside, and make sure all the connections are indoors.
16. Never push objects of any kind into the G-RACK 12 through the chassis slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock.
17. ONLY qualified service personnel should service or disassemble the G-RACK 12.
18. If the power adapter or cord is damaged, remove it from the power outlet. Do NOT attempt to repair the power adapter or cord. Contact your local vendor to order a new one.

System Requirements

iSCSI Essentials > System Requirements

Any computer that will be used to access your the G-RACK 12 must meet these requirements to ensure the best use experience:

Software

A Microsoft Windows® or Apple Macintosh® computer running one of these operating systems:

- Windows 7, 8.1, or 10, with the latest Service Pack installed
- Mac OS X 10.9, 10.10, 10.11

Supported Web browsers:

- Microsoft Internet Explorer 11 or newer (Windows only)
- Microsoft Edge
- Apple Safari vs9 newer (Windows or Mac)
- Mozilla Firefox v42 or newer (Windows or Mac)
- Google Chrome v46 or newer

Hardware

- Local area network (LAN) or wireless LAN (WLAN)
- Network switch or router, with at least one available Ethernet port
- Internet connection (for remote access to server and software and firmware updates)
- Ethernet port on your computer

NOTE: Compatibility may vary depending on your computer's hardware configuration and operating system.

For highest performance and reliability install the latest updates and service packs.