

Overview:

SAS is a point-to-point connection scheme, with a maximum cable length of eight meters for each drop. There is no daisy chaining, no terminators, and no SCSI id concept like parallel SCSI, thus the WWN is used to identify each device, as with Fibre Channel.

The Qualstar SAS drives have a single SFF-8088 connector. The typical SAS HBA has either one or two SFF-8088 connectors, giving either four ports or eight ports. Each HBA SFF-8088 connector can directly support four SAS devices.

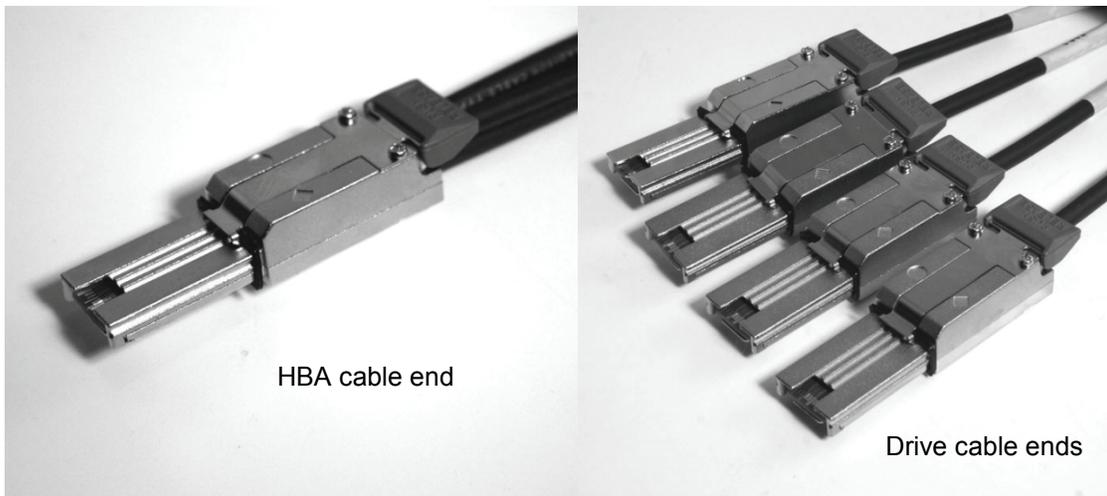
NOTE

IBM recommends that 6Gb SAS HBAs be used due to improved error recovery, and that the drives be direct-connected - no hub.

Qualstar offers external MiniSAS Fan-Out cables that have one SFF-8088 connector on one end and either one, two, or four separate cables with SFF-8088 connectors on each of the other one/two/four ends. The single end goes into the HBA; the other ends go into up to four drives. The Qualstar SAS cable is 5 meters long; other cables can be ordered off-the-shelf from http://www.tmcscsi.com/SAS_MiniSAS_fanout.shtml. They are listed as: "EXTERNAL MiniSAS to MiniSAS FANOUT x 4".

HBAs:

There are two important considerations: first, IBM recommends that 6Gb SAS HBAs be used for LTO 5, although the drive will negotiate 3Gb/sec. The 6Gb HBAs are recommended because they have improved error recovery that is utilized by the IBM drives and twice the burst data rate. Second, the HBA must have external connector(s), and that the external connection match the cable at the HBA end – or vice versa, of course. Also recommended is that PCI-e HBAs be used rather than trying to retrofit PCI-X HBAs. Note that although many PCI-X HBAs can be plugged into a PCI slot, if that slot does not support 3.3V, some PCI-X cards will not plug into that PCI slot. PCI-e is preferable, since it has a much higher bandwidth than PCI-X, and dramatically more bandwidth than a PCI-X card plugged into a PCI slot. This recommendation also applies to selecting Fibre Channel HBAs.



For identifying which drive is in which library position in Windows systems, please use the commands below, which are part of the QuickConf package, available from Qualstar Tech Support.



E-mail: support@qualstar.com Web: www.qualstar.com
3990-B Heritage Oak Court, Simi Valley, CA 93063; FAX: (805) 583-7749; Phone: (805) 583-7744

**Product Information
Note # 46**

Subject: **SAS Cable and HBA Considerations for
Qualstar Libraries**

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1. `scanscsi *,*,*` (to determine [id],[lun],[host])
2. `readelem [id],[lun],[host] e:4 voltag` (to Library result of scanscsi)
3. `inquiry [id],[lun],[host] v:128` (each Drive result of scanscsi)
4. match s/n in `readelem` to s/n from `inquiry` to each drive.

Please don't hesitate to contact Technical Support if you have any questions:

Tel: 877-444-1744
support@qualstar.com