**SAN**

SAN is collection of block storage devices connected in a n/w acting together to achieve:

1. Used for mainly databases and application servers
2. High application avaibility
3. Enhance app performance low latency
4. Increase storage Utilisation & effectiveness

San can be configured in two ways:

1. ISCSI use Ethernet Port
2. Fiber Channel HBA>HOST Bus ADAPTER like ethernet adapter but not for n/w but for Fiber chnnel

LUN:

A LUN is a unique Identifier given to hard disk device or a group of devices so that the ISCSI or Fiber channel Uniquely identify them or access them. They are configured in RAID Groups

LUN Zoning:

It’s a method to allow access to certain hosts to certain storage devices. Its specify which hosts can see which storage array. Defined in Switch Level. Its something like ACL’s but not ACL.

Zoning are of two Types:

1. Hard Zoning: Zoning done using actual /physical Port\_id and is more secure easy to configure and maintain.
2. Soft Zoning: Zone configured using WWN. Devices can be moved to diff. switch port without configuring zone.
   1. WWN: World wide Name is a unique 64-bit identifier given to the devices. If a device have two ports then it will have 2 WWN’s. Its like MAC address of a N/w adapter.

LUN Masking:

Allows who will speak to the particular LUN and is configured at HBA level on Server. Like if the WWN of the server no.s like 111 and 222 it will allow these WWN’s let us see these luns and to speak we need to configure Targets in server and Configure zoning in Switch level.

Storage Controller: in which Processor Gives specific Instructions to storage devices.

Diff. Types of Storage Controllers:

1. Custom Design: Performance and Reliability
2. Purpose-Built: Scaling and reliability
3. Commodity Server-Based: Cost

<https://www.youtube.com/watch?v=7et3bmXhr8w>

Note: to achive redundancy we ne Multipath config.

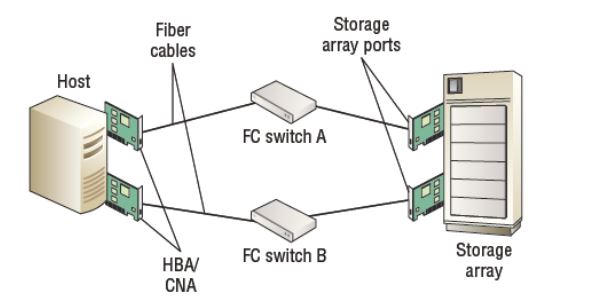
Lspci |grep -i hba >> to see List of HBA’s configured in server also lspci list all h/w in the server

Also we can go to /sys/class/fc\_hosts. Here u can see ports and other stuffs

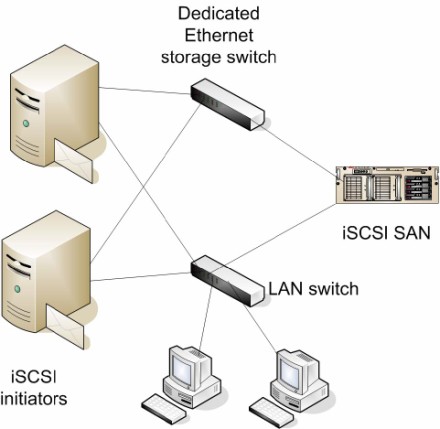
To check Port ID’s and other in full details:

Systool -c fc\_transport -v

Fiber Channel



SCSI



**NAS**

It’s a file based technique where files are kept in a nas server consisting of its own os and ram and CPU , and hosts/servers connected to this n/w can access the same stuff from anywhere. Or if u have Ip then from anywhere. Its supports reliability as it supports RAID.

Now to configure NAS server we need to add ports such as 20,21 should be added in firewall or Iptables.

It uses very small power

Then

* NAS Server IP (e.g. 202.54.20.111 / nas.myserviceprovider.com)
* NAS FTP Username (e.g. nixcraft)
* NAS FTP Password (e.g. mySecret)

### How do I access NAS server using SAMBA client?

Make sure you have samba client installed. Use apt-get or up2date command to install SAMBA client.

a) Create a directory

# mkdir /backup

b) Mount remote NAS share (NOTE: you must type following command on a single line)

# mount -t smbfs -o username=nixcraft,password=mySecret //202.54.20.111/sharename /backup

OR

# smbmount -o username=nixcraft,password=mySecret //202.54.20.111/sharename /backup

You can skip password option for security reason (samba will prompt you for password).

c) Copy files using cp command:

# cp sitebackup.tar.gz /backup

d) You can use /backup directory to dump backup using [mysql script](https://bash.cyberciti.biz/backup/mysql-backup.bash.php) or [backup](https://bash.cyberciti.biz/backup/linux2windowsbackup.bash.php) shell script.

**CLUSTERING**

Is a process for obtaining High AVAibility and High performance. Like making a replica server and then using veritas clustering solution to switch-over when in need.

It can be of mainly 3 types:

Active-passive: High Avaibility

Active-Active: Load Balancing

Storage cluster: HA Increase in space and Performance.