LUN MASKING

LUN masking

So-called LUN masking brings us to the third important function – after instant copy and remote mirroring – that intelligent disk subsystems offer over and above that offered by RAID. LUN masking limits the access to the hard disks that the disk subsystem exports to the connected server. A disk subsystem makes the storage capacity of its internal physical hard disks available to servers by permitting access to individual physical hard disks, or to virtual hard disks created using RAID, via the connection ports. Based upon the SCSI protocol, all hard disks – physical and virtual – that are visible outside the disk subsystem are also known as LUN. Without LUN masking every server would see all hard disks that the disk subsystem provides. Figure 2.26 shows a disk subsystem without LUN masking to which three servers are connected. Each server sees all hard disks that the disk subsystem exports outwards. As a result, considerably more hard disks are visible to each server than is necessary.

In particular, on each server those hard disks that are required by applications that run on a different server are visible. This means that the individual servers must be very carefully configured. In Figure 2.26 an erroneous formatting of the disk LUN 3 of server1 would destroy the data of the application that runs on server 3. In addition, some operating systems are very greedy: when booting up they try to draw to them each hard disk that is written with the signature (label) of a foreign operating system.

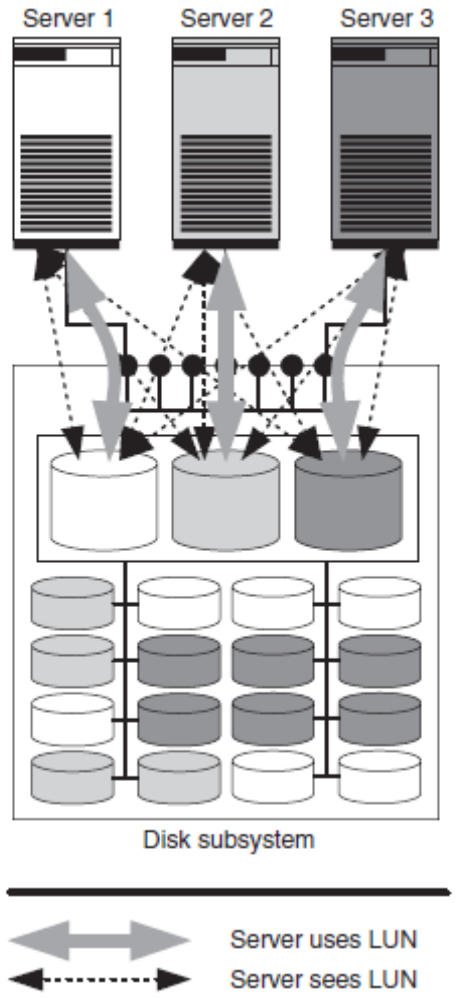

Figure Chaos: Each server works to its own virtual hard disk. Without LUN masking each server sees all hard disks. A configuration error on server 1 can destroy the data on the other two servers. The data is thus poorly protected.

Without LUN masking, therefore, the use of the hard disk must be very carefully configured in the operating systems of the participating servers. LUN masking brings order to this chaos by assigning the hard disks that are externally visible to servers. As a result, it limits the visibility of exported disks within the disk subsystem. Figure 2.27 shows how LUN masking brings order to the chaos of Figure 2.26. Each server now sees only the hard disks that it actually requires. LUN masking thus acts as a filter between the exported hard disks and the accessing servers. It is now no longer possible to destroy data that belongs to applications that run on another server. Configuration errors are still possible, but the consequences are no longer so

devastating. Furthermore, configuration errors can now be more quickly traced since the information is bundled within the disk subsystem instead of being distributed over all servers.

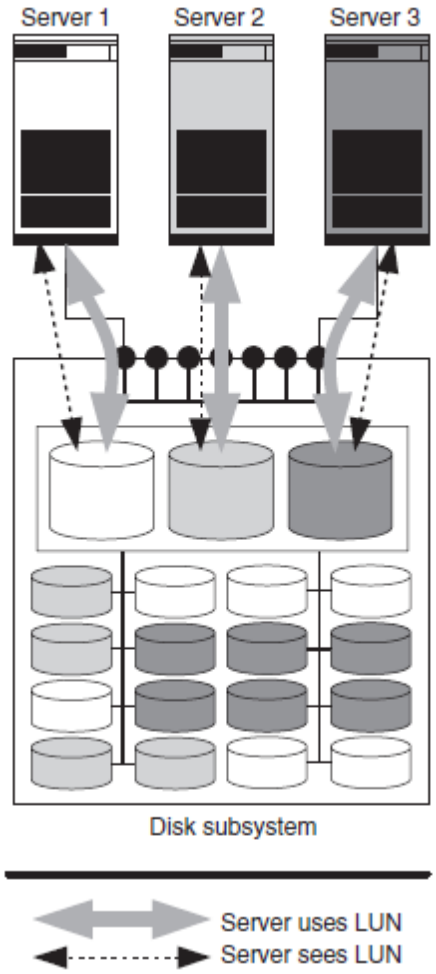

Figure Order: each server works to its own virtual hard disk. With LUN masking, each server sees only its own hard disks. A configuration error on server 1 can no longer destroy the data of the two other servers. The data is now protected.

We differentiate between port-based LUN masking and server-based LUN masking. Port-based LUN masking is the 'poor man's LUN masking', it is found primarily in low-end disk subsystems. In port-based LUN masking the filter only works using the granularity of a port. This means that all servers connected to the disk subsystem via the same port see the same disks.

Server-based LUN masking offers more flexibility. In this approach every server sees only the hard disks assigned to it, regardless of which port it is connected via or which other servers are connected via the same port.

Source : http://elearningatria.files.wordpress.com/2013/10/cse-viii-storage-area-networks-06cs833-notes.pdf