



Algebra
visoko učilište

Sustav za pohranu podataka

www.racunarstvo.hr

Sadržaj

- Osnovni pojmovi
- iSCSI
- NFS
- FC i FCoE
- VMFS

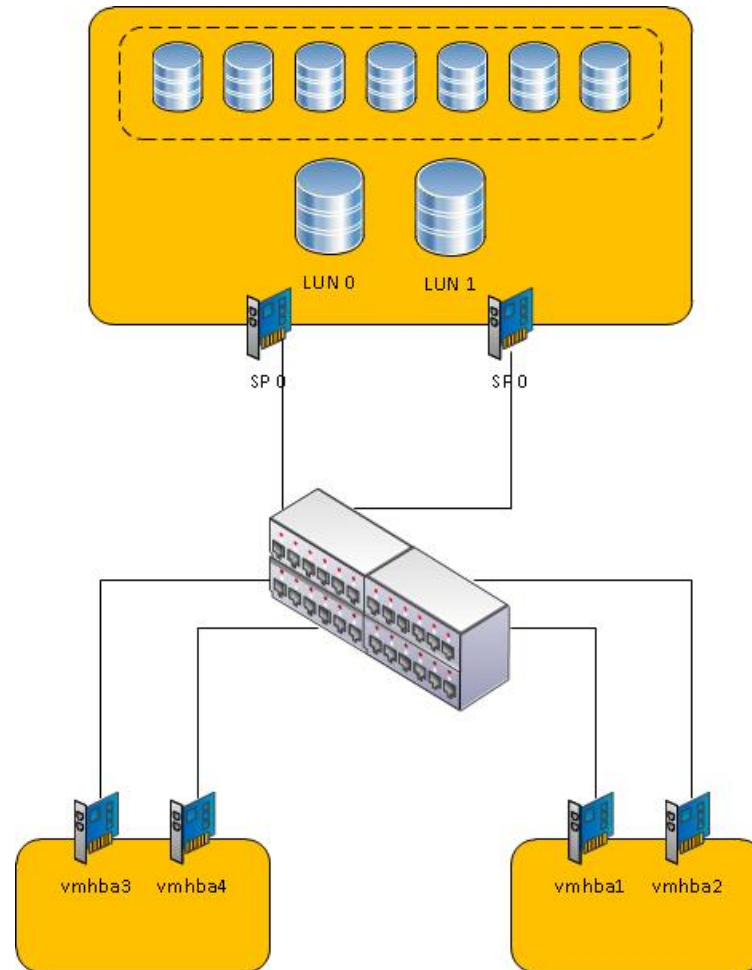


Osnovni pojmovi

- Što je storage?
- Metode pristupa
 - Blok-level
 - File-level
- Protokoli
 - DAS – Shared SAS
 - FC
 - FCoE
 - iSCSI
 - NFS



Storage



Identifikacija

- Canonical Name
 - naa, t10, mpx
- Runtime Name
 - Promjenjiv
 - vmhbaX:CX:TX:LX



iSCSI

- SCSI protokol preko TCP/IP-a
- Target – Initiator
- IP adresa i port 3260
- Prezentira udaljene LUN-ove kao lokalne diskove
- ESXi podržava:
 - ili HW initiator
 - Ili SW initiator – VMkernel port
- Notacija:
 - Iqn - iqn.2000-09.hr.algebra:stor1-34c56f
 - Eui - eui.0123456789abcdef

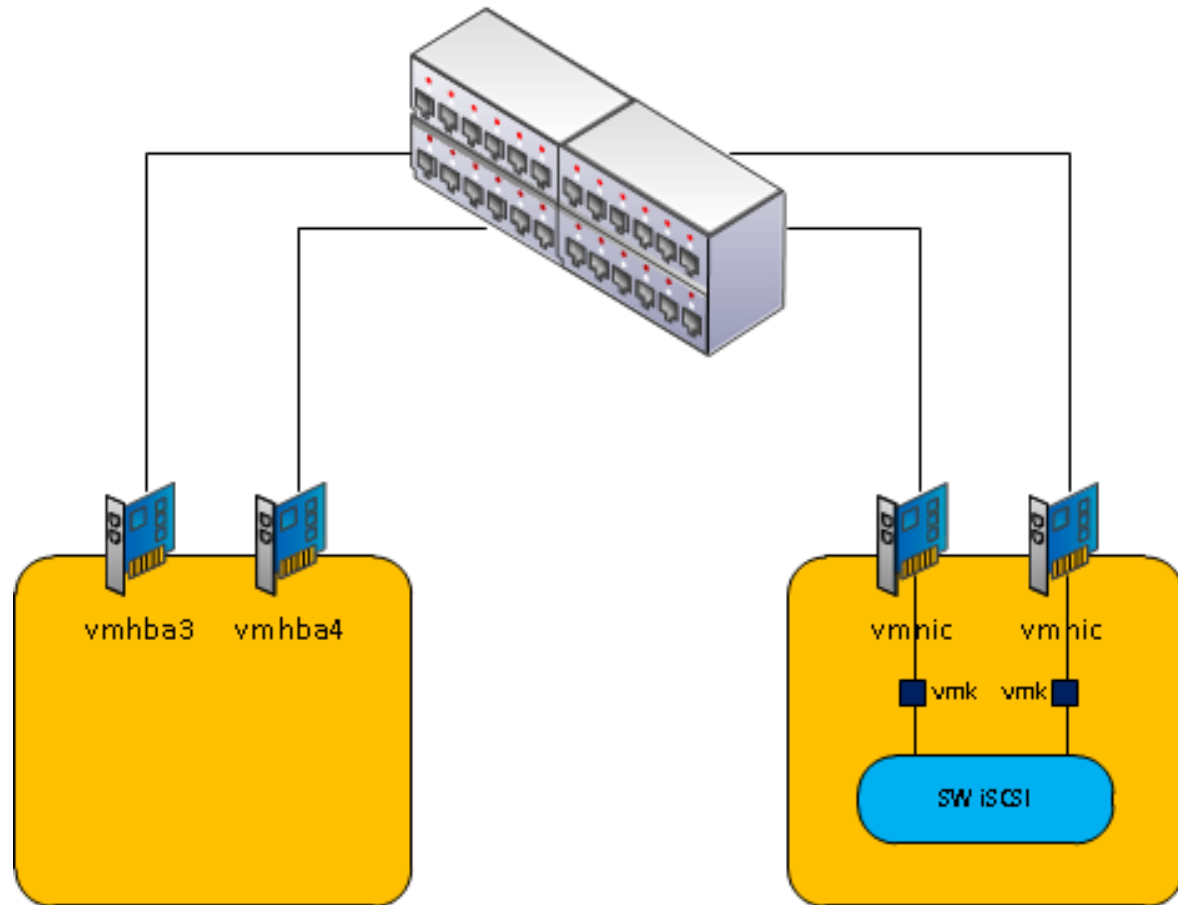


iSCSI (2)

- CHAP – per target; bidirekcionalni
- Port binding – multipathing za SW initiator



iSCSI Port binding



NFS datastore

- Tek nešto manje funkcionalan nego iSCSI
- Koristi VMkernel port za komunikaciju
- File-level access
- Verzija 3 i 4.1 TCP
- Definiran:
 - Imenom ili IP adresom
 - Naziv dijeljene mape
- Unmount
- Podrжан multipathing na ver 4.1



FC i FCoE

- FC – optički medij i malo drugačiji protokol
- Potrebna infrastruktura
- Adresiranje putem WWN-ova – slično MAC adresama
- FCoE – kombiniranje network i FC prometa preko jednog medija
- Razdvajanje prometa odrađuje preklopnik
- Postoji SW FCoE podrška na ESXi-u



VMFS datastore

- Cluster filesystem
- Trenutno podržane verzije 5 i 6
- Namijenjen za velike datoteke
- 1 MB i 512 MB block size
- Koristi GPT
- Maksimalna veličina 64 TB
- Maksimalna veličina datoteke 62 TB
- Extend, expand
- Unmount \neq Delete



Multipathing

- **Ugrađene multipathing opcije**
 - Most Recently Used - failover
 - Round Robin - load balancing
 - Fixed – failover sa preferiranom putanjom



Multipathing (2)

The screenshot shows the VMware vSphere Client interface for a host named 'Shared01'. The 'Configure' tab is active, and the 'Connectivity and Multipathing' section is selected in the left sidebar. The main panel displays the 'Connectivity and Multipathing' configuration for the host 172.16.109.147. It includes a table showing the status of datastores and a section for 'Multipathing Policies'.

Connectivity and Multipathing

Select a host to view the multipathing details for its devices.

Mount Unmount

Host	Datastore Mounted	Datastore Connectivity	Mount Poi
172.16.109.147	Mounted	Connected	/vmfs/vol

Multipathing Details

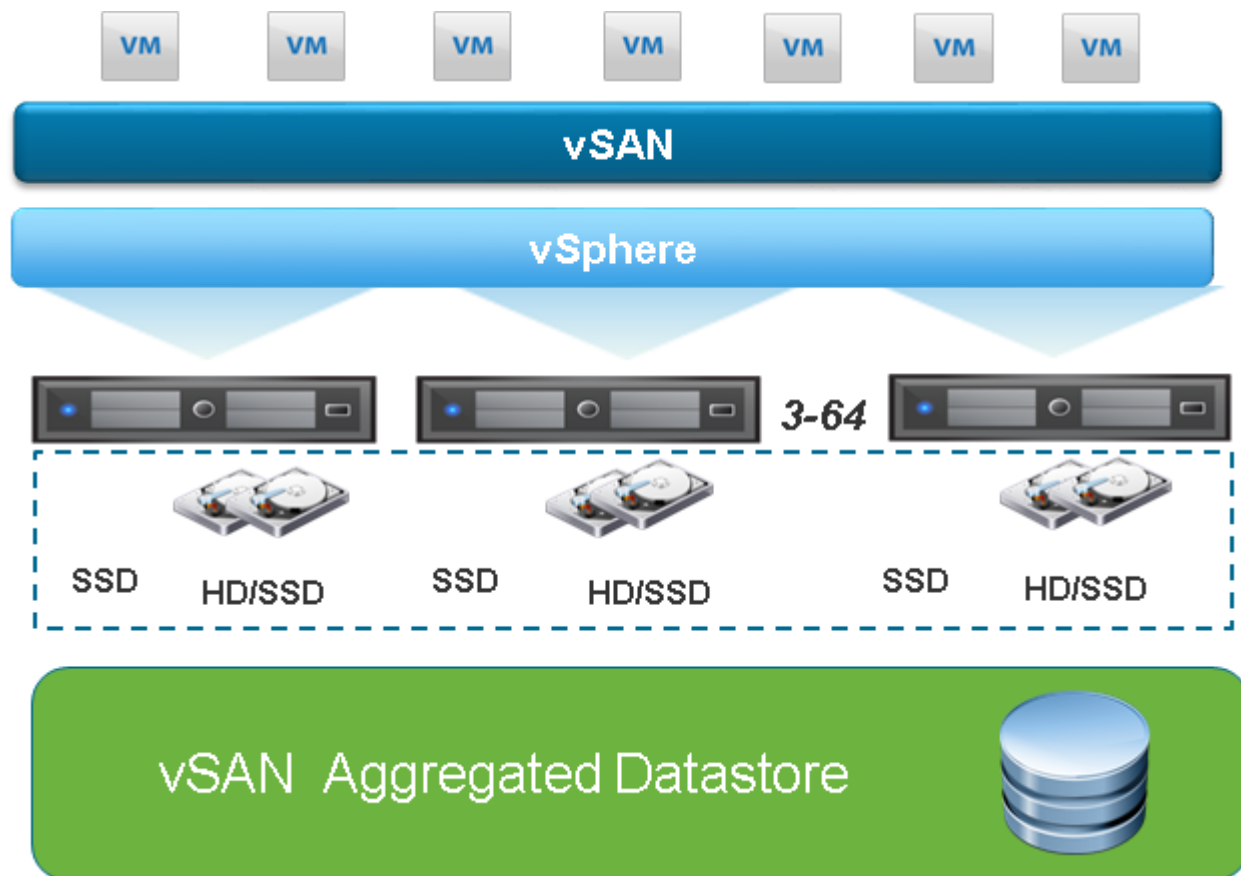
Device: FreeBSD iSCSI Disk (t10.FreeBSD_ISCSI_DISK____NFSN00UEGIUYI8____)

Multipathing Policies [Edit Multipathing...](#)

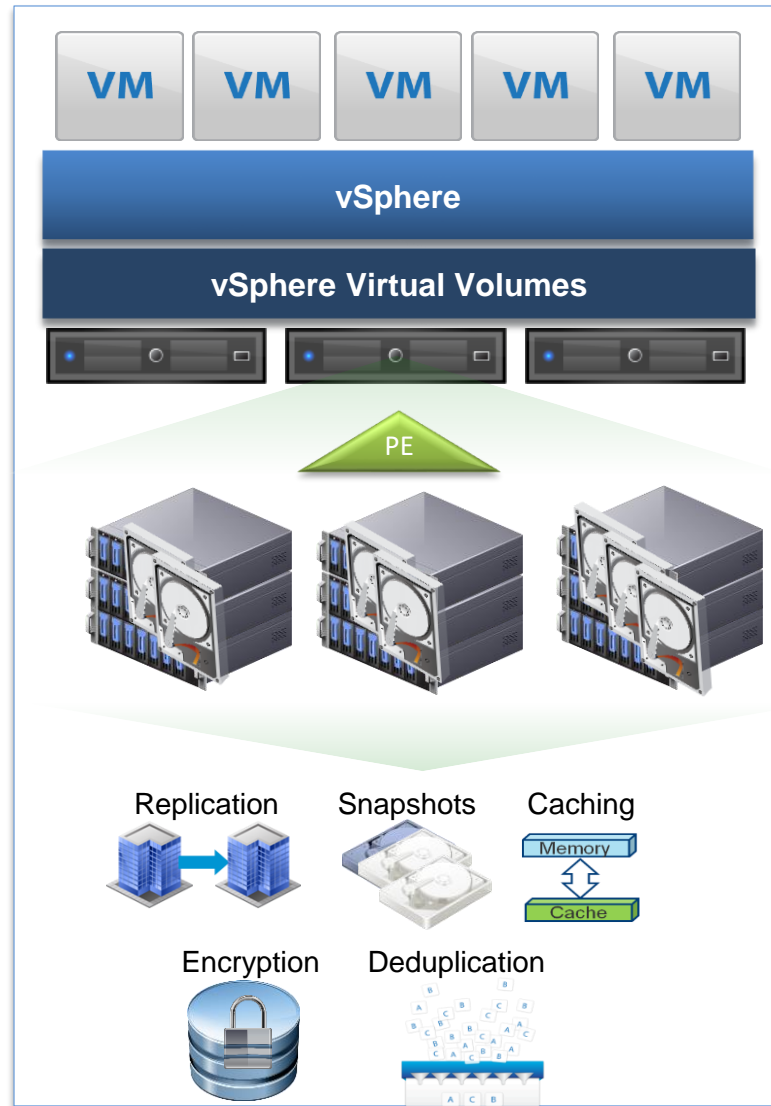
Path Selection Policy	
Path Selection Policy	Fixed (VMware)
Preferred Path	vmhba65:C1:T0:L0
Storage Array Type Policy	VMW_SATP_DEFAULT_AA



vSAN



VVOL





Algebra
visoko učilište