

2 solaris hosts serving as backup for each other, in addition to one iscsi san allocating block storage (win/nix) and smb/nfs shares 😊

```
root@vnx-solaris-storage:~# zpool status
pool: rpool
state: ONLINE
scan: none requested
config:
```

NAME	STATE	READ	WRITE	CKSUM
rpool	ONLINE	0	0	0
c1t0d0	ONLINE	0	0	0

errors: No known data errors

```
pool: stor-pool
state: ONLINE
scan: none requested
config:
```

NAME	STATE	READ	WRITE	CKSUM
stor-pool	ONLINE	0	0	0
raidz1-0	ONLINE	0	0	0
c3t0d0	ONLINE	0	0	0
c3t1d0	ONLINE	0	0	0
c3t2d0	ONLINE	0	0	0
c3t3d0	ONLINE	0	0	0

errors: No known data errors



// raid 5 equivalent

```
root@vnx-solaris-storage:~# zfs list -rH stor-pool
stor-pool 592G 2.09T 68.8K /stor-pool
stor-pool/iscsi-san 578G 2.09T 62.8K /stor-pool/iscsi-san
stor-pool/iscsi-san/zvols 578G 2.09T 65.8K /stor-pool/iscsi-san/zvols
stor-pool/iscsi-san/zvols/nix 413G 2.09T 59.8K /stor-pool/iscsi-san/zvols/nix
stor-pool/iscsi-san/zvols/nix/v1 103G 2.19T 6.93G -
stor-pool/iscsi-san/zvols/nix/v2 103G 2.18T 7.02G -
stor-pool/iscsi-san/zvols/nix/v3 103G 2.18T 7.02G -
stor-pool/iscsi-san/zvols/nix/v4 103G 2.19T 6.93G -
stor-pool/iscsi-san/zvols/win 165G 2.09T 59.8K /stor-pool/iscsi-san/zvols/win
stor-pool/iscsi-san/zvols/win/v1 20.6G 2.11T 4.94G -
stor-pool/iscsi-san/zvols/win/v2 20.6G 2.11T 694M -
stor-pool/iscsi-san/zvols/win/v3 20.6G 2.11T 4.94G -
stor-pool/iscsi-san/zvols/win/v4 20.6G 2.11T 4.94G -
stor-pool/iscsi-san/zvols/win/v5 20.6G 2.11T 4.45M -
stor-pool/iscsi-san/zvols/win/v6 20.6G 2.11T 4.38M -
stor-pool/iscsi-san/zvols/win/v7 20.6G 2.11T 4.53M -
stor-pool/iscsi-san/zvols/win/v8 20.6G 2.11T 4.52M -
stor-pool/shares 12.7G 2.09T 12.7G /stor-pool/shares
stor-pool/vm-datastore 74.1K 2.09T 74.1K /stor-pool/vm-datastore
```

// block level luns created for
linux/unix and windows os



// general storage pool

// vmware datastore

```
root@vnx-solaris-storage:~# stmfadm list-hg -v
Host Group: nix-solaris
Member: iqn.1986-03.com.sun:01:k-vnx-solaris
Host Group: win-w2k12r2
Member: iqn.1991-05.com.microsoft:vnx-win-host
```

// Iscsi san equivalent of fc san lun masking



```
root@vnx-solaris-storage:~# stmfadm list-state
Operational Status: online
Config Status   : initialized
ALUA Status    : disabled
ALUA Node      : 0

root@vnx-solaris-storage:~# stmfadm list-target -v
Target: iqn.1986-03.com.sun:02:storpool-target
  Operational Status  : Online
  Provider Name     : iscsit
  Alias             : -
  Protocol          : iSCSI
  Sessions          : 2
  Initiator: iqn.1991-05.com.microsoft:vnx-win-host
    Alias: -
    Logged in since: Fri Jul 15 10:31:03 2016
  Initiator: iqn.1986-03.com.sun:01:k-vnx-solaris
    Alias: -
    Logged in since: Thu Jun 30 16:42:31 2016
```

```
root@vnx-solaris-storage:~# stmfadm list-tg -v
Target Group: storpool-tg
  Member: iqn.1986-03.com.sun:02:storpool-target
```

INITIATOR NAME	CHAPUSER	SECRET
iqn.1991-05.com.microsoft:vnx-win-host	chap	set
iqn.1986-03.com.sun:01:k-vnx-solaris	chap	set

// initiator to target
authentication via CHAP

```
root@vnx-solaris-storage:~# itadm list-target -v
TARGET NAME           STATE SESSIONS
iqn.1986-03.com.sun:02:storpool-target      online  2
alias:          -
auth:           chap
targetchapuser:   chap
targetchapsecret: set
tpg-tags:        default
```

```
root@vnx-solaris-storage:~# iscsiadm list initiator-node
Initiator node name: iqn.1986-03.com.sun:01:e00000000000.5765b11a
Initiator node alias: vnx-solaris-storage
Login Parameters (Default/Configured):
  Header Digest: NONE/-
  Data Digest: NONE/-
  Max Connections: 65535/-
Authentication Type: NONE
RADIUS Server: NONE
RADIUS Access: disabled
Tunable Parameters (Default/Configured):
  Session Login Response Time: 60/-
  Maximum Connection Retry Time: 180/-
  Login Retry Time Interval: 60/-
Configured Sessions: 1
```

```
root@vnx-solaris-storage:~# cat /etc/dfs/sharetab
/var/smb/cvol c$    smb   -  Default Share
-  IPC$  smb   -  Remote IPC
/stor-pool stor-pool  nfs  sec=sys,rw
/stor-pool stor-pool  smb   -
/stor-pool/iscsi-san stor-pool_iscsi-san  nfs  sec=sys,rw
/stor-pool/iscsi-san stor-pool_iscsi-san  smb   -
/stor-pool/iscsi-san/zvols stor-pool_iscsi-san_zvols  nfs  sec=sys,rw
/stor-pool/iscsi-san/zvols stor-pool_iscsi-san_zvols  smb   -
/stor-pool/iscsi-san/zvols/nix stor-pool_iscsi-san_zvols_nix  nfs  sec=sys,rw
/stor-pool/iscsi-san/zvols/nix stor-pool_iscsi-san_zvols_nix  smb   -
/stor-pool/iscsi-san/zvols/win stor-pool_iscsi-san_zvols_win  nfs  sec=sys,rw
/stor-pool/iscsi-san/zvols/win stor-pool_iscsi-san_zvols_win  smb   -
/stor-pool/shares  stor-pool_shares  nfs  sec=sys,rw
/stor-pool/shares  stor-pool_shares  smb   -
/stor-pool/vm-datastore stor-pool_vm-datastore  nfs  sec=sys,rw
/stor-pool/vm-datastore stor-pool_vm-datastore  smb   -
```

// system verification of storage pools/shares being shared out / exported via smb/nfs

```
root@vnx-solaris-storage:~# stmfadm list-lu
LU Name: 600144F03E9782000000574FD81B0001
LU Name: 600144F03E9782000000574FD81F0002
LU Name: 600144F03E9782000000574FD8210003
LU Name: 600144F03E9782000000574FD8250004
LU Name: 600144F03E9782000000574FD82C0005
LU Name: 600144F03E9782000000574FD82F0006
LU Name: 600144F03E9782000000574FD8320007
LU Name: 600144F03E9782000000574FD8350008
LU Name: 600144F03E9782000000574FD8410009
LU Name: 600144F03E9782000000574FD843000A
LU Name: 600144F03E9782000000574FD847000B
LU Name: 600144F03E9782000000574FD849000C
```

// block level luns created and listed

root@vnx-solaris-storage:~# stmfadm list-lu -v

LU Name: 600144F03E9782000000574FD81B0001

 Operational Status : Online

 Provider Name : sbd

 Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v1

 View Entry Count : 1

 Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v1

 Meta File : not set

 Size : 21474836480

 Block Size : 512

 Management URL : not set

 Vendor ID : SUN

 Product ID : COMSTAR

 Serial Num : not set

 Write Protect : Disabled

 Write Cache Mode Select: Enabled

 Writeback Cache : Enabled

 Access State : Active

LU Name: 600144F03E9782000000574FD81F0002

 Operational Status : Online

 Provider Name : sbd

 Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v2

 View Entry Count : 1

 Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v2

 Meta File : not set

 Size : 21474836480

 Block Size : 512

 Management URL : not set

 Vendor ID : SUN

 Product ID : COMSTAR

 Serial Num : not set

 Write Protect : Disabled

 Write Cache Mode Select: Enabled

 Writeback Cache : Enabled

 Access State : Active



// lun details, os, size, alias, state, etc

LU Name: 600144F03E9782000000574FD8210003
Operational Status : Online
Provider Name : sbd
Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v3
View Entry Count : 1
Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v3
Meta File : not set
Size : 21474836480
Block Size : 512
Management URL : not set
Vendor ID : SUN
Product ID : COMSTAR
Serial Num : not set
Write Protect : Disabled
Write Cache Mode Select: Enabled
Writeback Cache : Enabled
Access State : Active

LU Name: 600144F03E9782000000574FD8250004
Operational Status : Online
Provider Name : sbd
Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v4
View Entry Count : 1
Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v4
Meta File : not set
Size : 21474836480
Block Size : 512
Management URL : not set
Vendor ID : SUN
Product ID : COMSTAR
Serial Num : not set
Write Protect : Disabled
Write Cache Mode Select: Enabled
Writeback Cache : Enabled
Access State : Active

LU Name: 600144F03E9782000000574FD82C0005
Operational Status : Online
Provider Name : sbd
Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v5
View Entry Count : 0
Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v5
Meta File : not set
Size : 21474836480
Block Size : 512
Management URL : not set
Vendor ID : SUN
Product ID : COMSTAR
Serial Num : not set
Write Protect : Disabled
Write Cache Mode Select: Enabled
Writeback Cache : Enabled
Access State : Active

LU Name: 600144F03E9782000000574FD82F0006
Operational Status : Online
Provider Name : sbd
Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v6
View Entry Count : 0
Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v6
Meta File : not set
Size : 21474836480
Block Size : 512
Management URL : not set
Vendor ID : SUN
Product ID : COMSTAR
Serial Num : not set
Write Protect : Disabled
Write Cache Mode Select: Enabled
Writeback Cache : Enabled
Access State : Active

LU Name: 600144F03E9782000000574FD8320007

Operational Status : Online
Provider Name : sbd
Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v7
View Entry Count : 0
Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v7
Meta File : not set
Size : 21474836480
Block Size : 512
Management URL : not set
Vendor ID : SUN
Product ID : COMSTAR
Serial Num : not set
Write Protect : Disabled
Write Cache Mode Select: Enabled
Writeback Cache : Enabled
Access State : Active

LU Name: 600144F03E9782000000574FD8350008

Operational Status : Online
Provider Name : sbd
Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v8
View Entry Count : 0
Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v8
Meta File : not set
Size : 21474836480
Block Size : 512
Management URL : not set
Vendor ID : SUN
Product ID : COMSTAR
Serial Num : not set
Write Protect : Disabled
Write Cache Mode Select: Enabled
Writeback Cache : Enabled
Access State : Active

LU Name: 600144F03E9782000000574FD8410009

Operational Status : Online
Provider Name : sbd
Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v1
View Entry Count : 1
Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v1
Meta File : not set
Size : 107374182400
Block Size : 512
Management URL : not set
Vendor ID : SUN
Product ID : COMSTAR
Serial Num : not set
Write Protect : Disabled
Write Cache Mode Select: Enabled
Writeback Cache : Enabled
Access State : Active

LU Name: 600144F03E9782000000574FD843000A

Operational Status : Online
Provider Name : sbd
Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v2
View Entry Count : 1
Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v2
Meta File : not set
Size : 107374182400
Block Size : 512
Management URL : not set
Vendor ID : SUN
Product ID : COMSTAR
Serial Num : not set
Write Protect : Disabled
Write Cache Mode Select: Enabled
Writeback Cache : Enabled
Access State : Active

LU Name: 600144F03E9782000000574FD847000B

Operational Status : Online
Provider Name : sbd
Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v3
View Entry Count : 1
Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v3
Meta File : not set
Size : 107374182400
Block Size : 512
Management URL : not set
Vendor ID : SUN
Product ID : COMSTAR
Serial Num : not set
Write Protect : Disabled
Write Cache Mode Select: Enabled
Writeback Cache : Enabled
Access State : Active

LU Name: 600144F03E9782000000574FD849000C

Operational Status : Online
Provider Name : sbd
Alias : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v4
View Entry Count : 1
Data File : /dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v4
Meta File : not set
Size : 107374182400
Block Size : 512
Management URL : not set
Vendor ID : SUN
Product ID : COMSTAR
Serial Num : not set
Write Protect : Disabled
Write Cache Mode Select: Enabled
Writeback Cache : Enabled
Access State : Active

```
root@vnx-solaris-storage:~# sbdadm list-lu
```

Found 12 LU(s)

GUID	DATA SIZE	SOURCE
600144f03e9782000000574fd81b0001	21474836480	/dev/zvol/rdsk/stor-pool/iscsi-san/zvcis/win/v1
600144f03e9782000000574fd81f0002	21474836480	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v2
600144f03e9782000000574fd8210003	21474836480	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v3
600144f03e9782000000574fd8250004	21474836480	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v4
600144f03e9782000000574fd82c0005	21474836480	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v5
600144f03e9782000000574fd82f0006	21474836480	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v6
600144f03e9782000000574fd8320007	21474836480	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v7
600144f03e9782000000574fd8350008	21474836480	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/win/v8
600144f03e9782000000574fd8410009	107374182400	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v1
600144f03e9782000000574fd843000a	107374182400	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v2
600144f03e9782000000574fd847000b	107374182400	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v3
600144f03e9782000000574fd849000c	107374182400	/dev/zvol/rdsk/stor-pool/iscsi-san/zvols/nix/v4

// lun mapping details

```
root@vnx-solaris-storage:~# ls /mnt/  
r610-shares-backup
```

```
root@vnx-solaris-storage:~# ls /mnt/r610-shares-backup/  
solaris-test-file-for-mounts.txt test2 test4  
test1 test3 test5
```

```
root@k-vnx-solaris-mobile-cart:~# zpool status
pool: r610p-146gb
state: ONLINE
scan: none requested
config:
```

NAME	STATE	READ	WRITE	CKSUM
r610p-146gb	ONLINE	0	0	0
raidz1-0	ONLINE	0	0	0
c2t2d0	ONLINE	0	0	0
c2t3d0	ONLINE	0	0	0
c2t4d0	ONLINE	0	0	0
c2t5d0	ONLINE	0	0	0

errors: No known data errors

```
pool: rpool
state: ONLINE
scan: none requested
config:
```

NAME	STATE	READ	WRITE	CKSUM
rpool	ONLINE	0	0	0
c2t0d0	ONLINE	0	0	0

errors: No known data errors

← // storage pools health status

```
pool: storpool-zvol
state: ONLINE
scan: none requested
config:
```

NAME	STATE	READ	WRITE	CKSUM
storpool-zvol	ONLINE	0	0	0
mirror-0	ONLINE	0	0	0
c0t600144F03E9782000000574FD843000Ad0	ONLINE	0	0	0
c0t600144F03E9782000000574FD847000Bd0	ONLINE	0	0	0
mirror-1	ONLINE	0	0	0
c0t600144F03E9782000000574FD849000Cd0	ONLINE	0	0	0
c0t600144F03E9782000000574FD8410009d0	ONLINE	0	0	0

```
errors: No known data errors
```

```
root@k-vnx-solaris-mobile-cart:~# zfs list -rH r610p-146gb
r610p-146gb 214K 401G 62.8K /r610p-146gb
r610p-146gb/storpool-shares-backup 70.3K 400G 70.3K /r610p-146gb/storpool-shares-backup
```

```
root@k-vnx-solaris-mobile-cart:~# ls /r610p-146gb/storpool-shares-backup/
solaris-test-file-for-mounts.txt test2 test4
test1 test3 test5
```

```
root@k-vnx-solaris-mobile-cart:~# zfs list -rH storpool-zvol
storpool-zvol 12.8G 183G 12.7G /storpool-zvol
```

```
root@k-vnx-solaris-mobile-cart:~# ls /mnt/
stor-pool vm-datastore
```

// raid 10 equivalent,
mirrored configuration

```
root@k-vnx-solaris-mobile-cart:~# ls -ls /mnt/stor-pool/
total 26591631
858 -rwxrwxrwx 1 nobody staff 427680 Aug 22 2013 bootmgr
4 -rwxrwxrwx 1 nobody staff 1 Jun 18 2013 BOOTNXT
632181 -rw-r--r-- 1 nobody nobody 330301440 Jun 22 13:31 debian-8.2.0-i386-netinst.iso
7750575 -rw-r--r-- 1 nobody nobody 3994091520 Jun 22 13:34 debian-8.4.0-amd64-DVD-1.iso
9113654 -rw-r--r-- 1 nobody nobody 4674091008 Jun 22 13:39 debian-8.4.0-amd64-DVD-2.iso
9094305 -rw-r--r-- 1 nobody nobody 4663099392 Jun 22 13:43 debian-8.4.0-amd64-DVD-3.iso
5 -rwxrwxrwx 1 nobody staff 479 Jul 14 11:00 drive-scans.txt
11 -rwxrwxrwx 1 nobody staff 8371 Jun 30 20:04 jf-d1689-post-ica.txt
11 -rwxrwxrwx 1 nobody staff 8866 Jun 30 21:46 jf-d1689-post-nas.txt
5 -rwxrwxrwx 1 nobody staff 459 Apr 14 02:33 post-nas-install-commands.txt
4 -rwxrwxrwx 1 root root 0 Jun 20 16:00 solaris-storage-text-file-for-mounts.txt
7 drwxr-xr-x 2 nobody nobody 7 Jun 20 22:25 test-folder
4 -rwxrwxrwx 1 nobody staff 5242880000 Jul 15 09:54 test1
7 drwxrwxrwx+ 2 nobody staff 6 Jun 21 23:27 testing-windows
```

```
root@k-vnx-solaris-mobile-cart:~# ls -ls /mnt/vm-datastore/
total 3
3 drwxr-xr-x 5 vnxadmin staff 5 Jun 30 15:09 vms
```

```
root@k-vnx-solaris-mobile-cart:~# ls -ls /mnt/vm-datastore/vms/
total 9
3 drwxr-xr-x 3 vnxadmin staff 6 Jun 30 14:06 debian-v8x64
3 drwxr-xr-x 2 vnxadmin staff 5 Jun 30 14:01 test
3 drwxr-xr-x 3 vnxadmin staff 5 Jul 11 16:07 test2
```

```
root@k-vnx-solaris-mobile-cart:~# iscsiadadm list target -v
Target: iqn.1986-03.com.sun:02:storpool-target
  Alias: -
  TPGT: 1
  ISID: 4000002a0000
  Connections: 1
    CID: 0
      IP address (Local): 172.16.100.3:36702
      IP address (Peer): 172.16.100.4:3260
      Transport Type: socket
      Discovery Method: SendTargets
      Login Parameters (Negotiated):
        Data Sequence In Order: yes
        Data PDU In Order: yes
        Default Time To Retain: 20
        Default Time To Wait: 2
        Error Recovery Level: 0
        First Burst Length: 65536
        Immediate Data: yes
        Initial Ready To Transfer (R2T): yes
        Max Burst Length: 262144
        Max Outstanding R2T: 1
        Max Receive Data Segment Length: 32768
        Max Connections: 32
        Header Digest: NONE
        Data Digest: NONE
```

← // iscsi storage target details

```
root@k-vnx-solaris-mobile-cart:~# iscsiadadm list initiator-node
Initiator node name: iqn.1986-03.com.sun:01:k-vnx-solaris
Initiator node alias: k-vnx-solaris-mobile-cart
    Login Parameters (Default/Configured):
        Header Digest: NONE/-
        Data Digest: NONE/-
        Max Connections: 65535/-
        Authentication Type: CHAP
            CHAP Name: chap
        RADIUS Server: NONE
        RADIUS Access: disabled
    Tunable Parameters (Default/Configured):
        Session Login Response Time: 60/-
        Maximum Connection Retry Time: 180/-
        Login Retry Time Interval: 60/-
    Configured Sessions: 1
```

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