

Home Setup (always working progress)

Setup of iscsi san

Creating block/luns
(parity, non-parity)

Assigning luns to windows/mac host

Creating Shares

Storage stats

personally crimped cables

```
root@      solaris11      /zstor2tb# stmfadm list-hg  
Host Group: mac-group  
Host Group: win-group  
root@      solaris11      /zstor2tb# stmfadm list-hg -v  
Host Group: mac-group  
    Member: iqn.2003-12.com.small-tree:expensive-rotten-fruit  
Host Group: win-group  
    Member: iqn.1991-05.com.microsoft:[REDACTED]
```

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```
root@      debian:# vi /etc/fstab  
root@      debian:# mount -a  
root@      debian:# ls /mnt/zstor/  
data-vol1  data-vol2  data-vol3  data-vol4  data-vol-temp
```

LU Name: 600144F012F08A00000055396F84001B
Operational State : Online
Provider Name : sbd
Alias : mac-v000-no-chap-auth
View Entry Count : 1
Data File : /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-000
Meta File : not set
Size : 107374182400
Block Size : 4096
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

// list the created iscsi block level luns
you can see the lun mappings / correlations

```
root@ solaris11: /zstor2tb# sbdadm list-lu
```

Found 20 LU(s)

| GUID | DATA SIZE | SOURCE |
|----------------------------------|--------------|--|
| 600144f012f08a0000005533024a0001 | 10737418240 | /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-005 |
| 600144f012f08a000000553302610002 | 10737418240 | /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-006 |
| 600144f012f08a000000553302740003 | 10737418240 | /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-007 |
| 600144f012f08a000000553302830004 | 10737418240 | /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-008 |
| 600144f012f08a0000005533028f0005 | 10737418240 | /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-009 |
| 600144f012f08a00000055331a880006 | 10737418240 | /dev/zvol/rdsk/zstor2tb/iscsi-san/win-vols/vol-005 |
| 600144f012f08a00000055331afe0007 | 10737418240 | /dev/zvol/rdsk/zstor2tb/iscsi-san/win-vols/vol-006 |
| 600144f012f08a00000055331b1e0008 | 10737418240 | /dev/zvol/rdsk/zstor2tb/iscsi-san/win-vols/vol-007 |
| 600144f012f08a00000055331b3f0009 | 10737418240 | /dev/zvol/rdsk/zstor2tb/iscsi-san/win-vols/vol-008 |
| 600144f012f08a00000055331b74000a | 10737418240 | /dev/zvol/rdsk/zstor2tb/iscsi-san/win-vols/vol-009 |
| 600144f012f08a000000553371be0011 | 107374182400 | /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-001 |
| 600144f012f08a000000553371cd0012 | 107374182400 | /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-002 |
| 600144f012f08a000000553371d90013 | 107374182400 | /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-003 |
| 600144f012f08a000000553371e50014 | 107374182400 | /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-004 |
| 600144f012f08a0000005533ca8a0015 | 107374182400 | /dev/zvol/rdsk/zstor2tb/iscsi-san/win-vols/vol-000 |
| 600144f012f08a0000005533ca980016 | 107374182400 | /dev/zvol/rdsk/zstor2tb/iscsi-san/win-vols/vol-001 |
| 600144f012f08a0000005533caa20017 | 107374182400 | /dev/zvol/rdsk/zstor2tb/iscsi-san/win-vols/vol-002 |
| 600144f012f08a0000005533cae0018 | 107374182400 | /dev/zvol/rdsk/zstor2tb/iscsi-san/win-vols/vol-003 |
| 600144f012f08a0000005533cab90019 | 107374182400 | /dev/zvol/rdsk/zstor2tb/iscsi-san/win-vols/vol-004 |
| 600144f012f08a00000055396f84001b | 107374182400 | /dev/zvol/rdsk/zstor2tb/iscsi-san/mac-vols/vol-000 |

Screen Shot
2015-0...37.png

```
root@ -solaris11: /zstor2tb# stmfadm list-lu
LU Name: 600144F012F08A0000005533024A0001
LU Name: 600144F012F08A000000553302610002
LU Name: 600144F012F08A000000553302740003
LU Name: 600144F012F08A000000553302830004
LU Name: 600144F012F08A0000005533028F0005
LU Name: 600144F012F08A00000055331A880006
LU Name: 600144F012F08A00000055331AFE0007
LU Name: 600144F012F08A00000055331B1E0008
LU Name: 600144F012F08A00000055331B3F0009
LU Name: 600144F012F08A00000055331B74000A
LU Name: 600144F012F08A000000553371BE0011
LU Name: 600144F012F08A000000553371CD0012
LU Name: 600144F012F08A000000553371D90013
LU Name: 600144F012F08A000000553371E50014
LU Name: 600144F012F08A0000005533CA8A0015
LU Name: 600144F012F08A0000005533CA980016
LU Name: 600144F012F08A0000005533CAA20017
LU Name: 600144F012F08A0000005533CAAE0018
LU Name: 600144F012F08A0000005533CAB90019
LU Name: 600144F012F08A00000055396F84001B
```

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```
root@      solaris11      :/zstor2tb# zfs list zstor2tb
NAME      USED  AVAIL  REFER  MOUNTPOINT
zstor2tb  3.85T  5.01T   104K  /zstor2tb
root@      solaris11      :/zstor2tb# zfs list zstor320gb
NAME      USED  AVAIL  REFER  MOUNTPOINT
zstor320gb 728G  1.00T   140K  /zstor320gb
```

```
pool: zstor2tb
state: ONLINE
  scan: none requested
config:

  NAME          STATE    READ WRITE CKSUM
  zstor2tb      ONLINE    0     0     0
    raidz3-0    ONLINE    0     0     0
      c0t5000CCA221E7E1DBd0  ONLINE    0     0     0
      c0t5000CCA221E77A36d0  ONLINE    0     0     0
      c0t5000CCA222D2930Fd0  ONLINE    0     0     0
      c0t5000CCA229C2152Ed0  ONLINE    0     0     0
      c0t5000CCA229DDFB3Cd0  ONLINE    0     0     0
      c0t5000CCA369F456E6d0  ONLINE    0     0     0
      c0t50014EE25DB0C362d0  ONLINE    0     0     0
      c0t50014EE2085B9A64d0  ONLINE    0     0     0
  spares
    c0t5000CCA222D22B8E... UNAVAIL
    c0t5000CCA222D6243d0  UNAVAIL

errors: No known data errors
```

```
pool: zstor320gb
state: ONLINE
  scan: resilvered 126G in 1h28m with 0 errors on Sun Apr  5 23:36:32 2015
config:

  NAME          STATE    READ WRITE CKSUM
  zstor320gb    ONLINE    0     0     0
    raidz2-0    ONLINE    0     0     0
      c9t5001E678B0589FE1d0  ONLINE    0     0     0
      c9t5001E678B0589FE2d0  ONLINE    0     0     0
      c9t5001E678B0589FE3d0  ONLINE    0     0     0
      c0t50014EE0AB52FCF5d0  ONLINE    0     0     0
      c0t50014EE156F34C8Bd0  ONLINE    0     0     0
      c0t50014EE1029F6FA5d0  ONLINE    0     0     0
      c0t50014EE1591D38AFd0  ONLINE    0     0     0
      c0t50014EE2B15A5E1Cd0  ONLINE    0     0     0
  spares
    c0t50014EE25C049A06d0  UNAVAIL
    c0t50014EE1591F92C7d0  UNAVAIL
```

// data transfer in progress

| | | | |
|---------------------------------------|-------|-------|-------|
| zstor2tb/pool-fs-backup | 1.43T | 5.01T | 122K |
| zstor2tb/pool-fs-backup/data-vol-temp | 512G | 5.01T | 512G |
| zstor2tb/pool-fs-backup/data-vol1 | 249G | 5.01T | 249G |
| zstor2tb/pool-fs-backup/data-vol2 | 99.4K | 5.01T | 99.4K |
| zstor2tb/pool-fs-backup/data-vol3 | 705G | 5.01T | 705G |
| zstor2tb/pool-fs-backup/data-vol4 | 99.4K | 5.01T | 99.4K |
| zstor320gb | 728G | 1.00T | 140K |
| zstor320gb/data-vol-temp | 104K | 1.00T | 104K |
| zstor320gb/data-vol1 | 104K | 1.00T | 104K |
| zstor320gb/data-vol2 | 104K | 1.00T | 104K |
| zstor320gb/data-vol3 | 722G | 1.00T | 722G |
| zstor320gb/data-vol4 | 104K | 1.00T | 104K |

| | | | |
|--------------------------------------|-------|-------|-------|
| zstor2tb | 1.85T | 5.01T | 104K |
| zstor2tb/iscsi-san | 2.41T | 5.01T | 114K |
| zstor2tb/iscsi-san/mac-vols | 552G | 5.01T | 94.4K |
| zstor2tb/iscsi-san/mac-vols/vol-000 | 100G | 5.08T | 34.1G |
| zstor2tb/iscsi-san/mac-vols/vol-001 | 100G | 5.09T | 22.6G |
| zstor2tb/iscsi-san/mac-vols/vol-002 | 100G | 5.09T | 22.6G |
| zstor2tb/iscsi-san/mac-vols/vol-003 | 100G | 5.11T | 134M |
| zstor2tb/iscsi-san/mac-vols/vol-004 | 100G | 5.11T | 134M |
| zstor2tb/iscsi-san/mac-vols/vol-005 | 10.3G | 5.02T | 44.0M |
| zstor2tb/iscsi-san/mac-vols/vol-006 | 10.3G | 5.02T | 39.8K |
| zstor2tb/iscsi-san/mac-vols/vol-007 | 10.3G | 5.02T | 39.8K |
| zstor2tb/iscsi-san/mac-vols/vol-008 | 10.3G | 5.02T | 39.8K |
| zstor2tb/iscsi-san/mac-vols/vol-009 | 10.3G | 5.02T | 39.8K |
| zstor2tb/iscsi-san/nix-vols | 103G | 5.01T | 94.4K |
| zstor2tb/iscsi-san/nix-vols/vol-001 | 103G | 5.11T | 39.8K |
| zstor2tb/iscsi-san/test-vols | 1.23T | 5.01T | 94.4K |
| zstor2tb/iscsi-san/test-vols/vol-001 | 103G | 5.11T | 39.8K |
| zstor2tb/iscsi-san/test-vols/vol-002 | 1.03T | 6.04T | 39.8K |
| zstor2tb/iscsi-san/test-vols/vol-003 | 1.03G | 5.01T | 39.8K |
| zstor2tb/iscsi-san/test-vols/vol-004 | 103G | 5.11T | 39.8K |
| zstor2tb/iscsi-san/win-vols | 552G | 5.01T | 94.4K |
| zstor2tb/iscsi-san/win-vols/vol-000 | 100G | 5.11T | 41.3M |
| zstor2tb/iscsi-san/win-vols/vol-001 | 100G | 5.11T | 43.7M |
| zstor2tb/iscsi-san/win-vols/vol-002 | 100G | 5.11T | 51.0M |
| zstor2tb/iscsi-san/win-vols/vol-003 | 100G | 5.11T | 43.0M |
| zstor2tb/iscsi-san/win-vols/vol-004 | 100G | 5.11T | 52.0M |
| zstor2tb/iscsi-san/win-vols/vol-005 | 10.3G | 5.02T | 614K |
| zstor2tb/iscsi-san/win-vols/vol-006 | 10.3G | 5.02T | 605K |
| zstor2tb/iscsi-san/win-vols/vol-007 | 10.3G | 5.02T | 723K |
| zstor2tb/iscsi-san/win-vols/vol-008 | 10.3G | 5.02T | 538K |
| zstor2tb/iscsi-san/win-vols/vol-009 | 10.3G | 5.02T | 12.0M |

```
root@      solaris11    :/zstor2tb# stmfadm list-state
Operational Status: online
Config Status     : initialized
ALUA Status       : disabled
ALUA Node         : 0
```

```
root@      solaris11    :/zstor2tb# stmfadm list-target
Target: iqn.1986-03.com.sun:02:target-chap-authentication
Target: iqn.1986-03.com.sun:01:target-no-chap-authentication
root@      solaris11    :/zstor2tb# stmfadm list-target -v
Target: iqn.1986-03.com.sun:02:target-chap-authentication
    Operational Status      : Online
    Provider Name          : iscsit
    Alias                  : -
    Protocol               : iSCSI
    Sessions               : 2
        Initiator: iqn.1991-05.com.microsoft: [REDACTED]
            Alias: -
            Logged in since: Thu Apr 23 23:40:41 2015
        Initiator: iqn.2003-12.com.small-tree:expensive-rotten-fruit
            Alias: -
            Logged in since: Thu Apr 23 22:51:18 2015
Target: iqn.1986-03.com.sun:01:target-no-chap-authentication
    Operational Status      : Online
    Provider Name          : iscsit
    Alias                  : -
    Protocol               : iSCSI
    Sessions               : 2
        Initiator: iqn.1991-05.com.microsoft: [REDACTED]
            Alias: -
            Logged in since: Thu Apr 23 23:40:39 2015
        Initiator: iqn.2003-12.com.small-tree:expensive-rotten-fruit
            Alias: -
            Logged in since: Thu Apr 23 22:18:45 2015
```

```
root@      solaris11    :/zstor2tb# stmfadm list-tg
Target Group: test-tg
Target Group: test-tg1
root@      solaris11    :/zstor2tb# stmfadm list-tg -v
Target Group: test-tg
    Member: iqn.1986-03.com.sun:01:target-no-chap-authentication
Target Group: test-tg1
    Member: iqn.1986-03.com.sun:02:target-chap-authentication
```

```

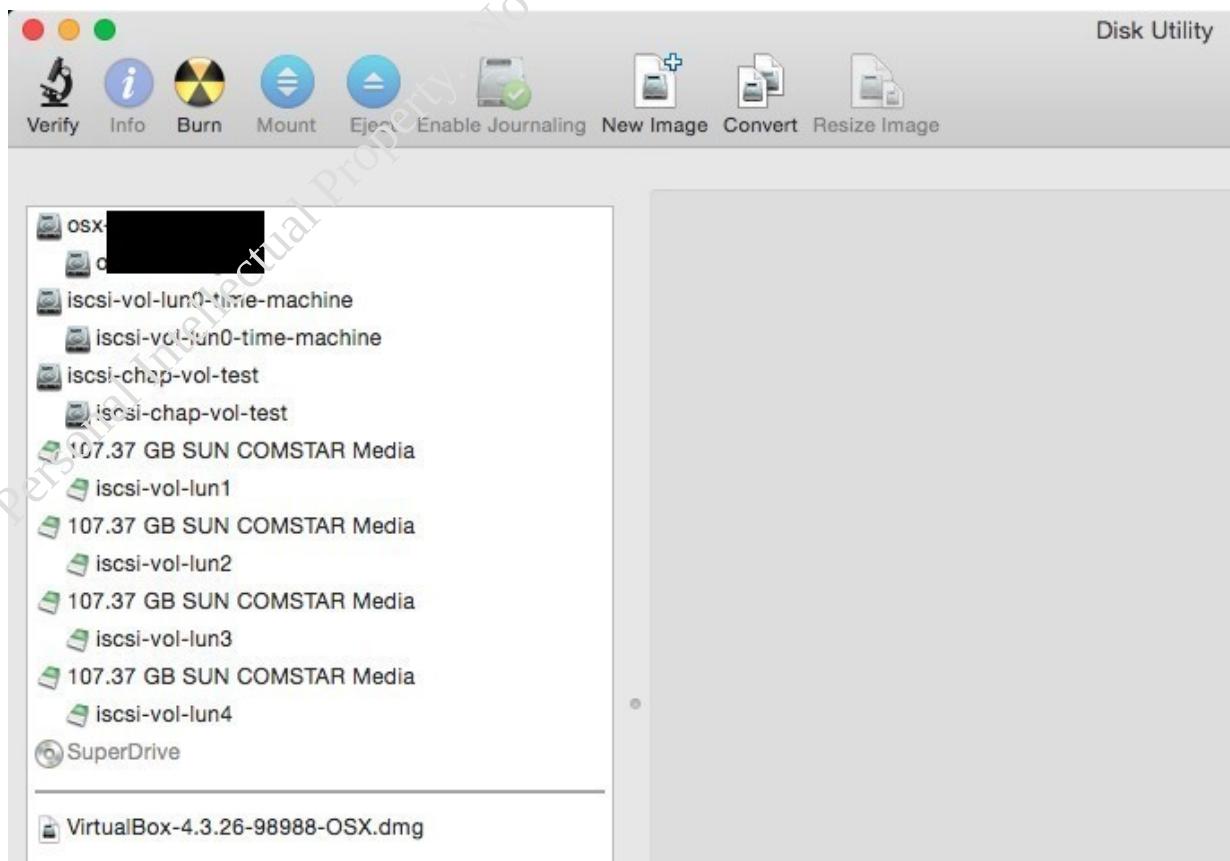
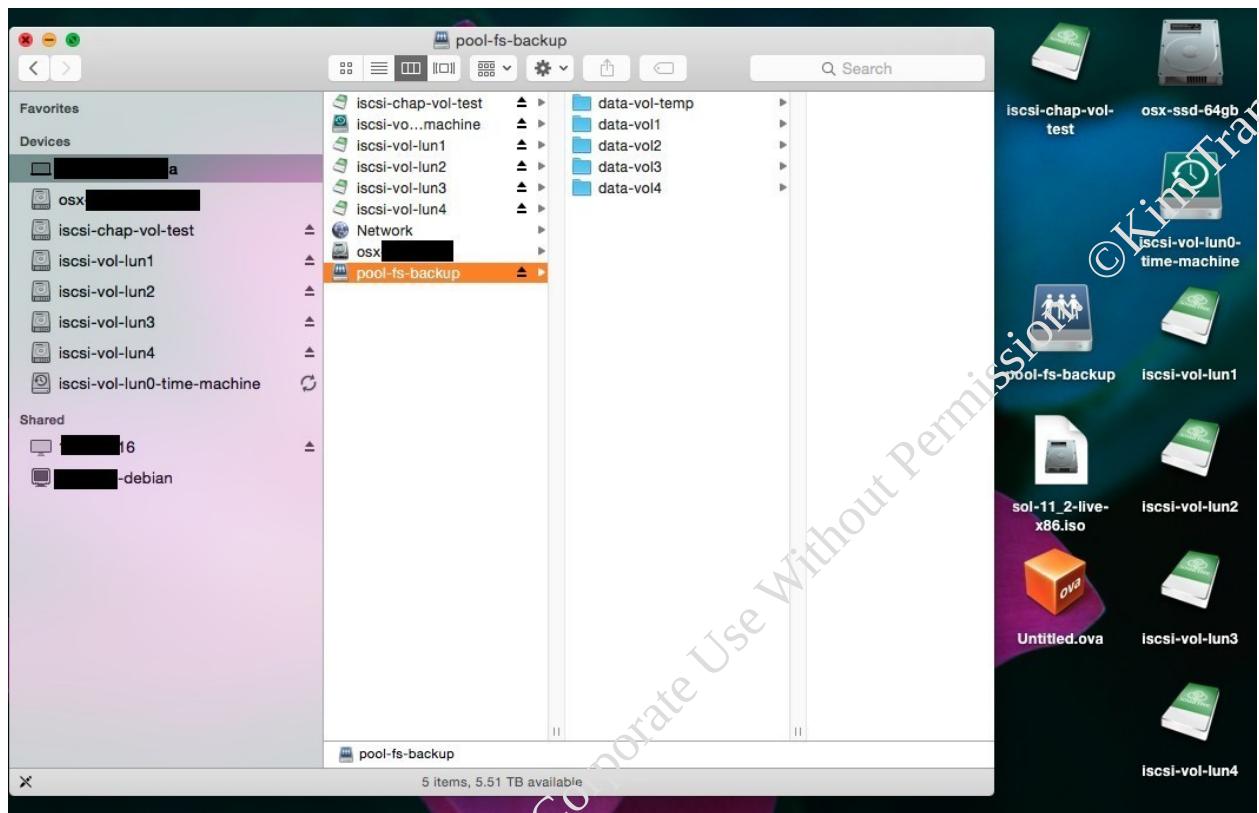
root@      -solaris11      :/zstor2tb# itadm list-target
TARGET NAME                                     STATE   SESSIONS
iqn.1986-03.com.sun:02:target-chap-authentication    online   1
iqn.1986-03.com.sun:01:target-no-chap-authentication   online   1
root@      -solaris11      :/zstor2tb# itadm list-target -v
TARGET NAME                                     STATE   SESSIONS
iqn.1986-03.com.sun:02:target-chap-authentication    online   1
    alias:          -
    auth:           chap
    targetchapuser: test-chap-user
    targetchapsecret: set
    tpg-tags:       test-tpg1 = 2
iqn.1986-03.com.sun:01:target-no-chap-authentication   online   1
    alias:          testing-with-no-chap-authentication
    auth:           none
    targetchapuser: -
    targetchapsecret: unset
    tpg-tags:       default

```

| | | | | | | |
|----------|-------|-------|----|-------|-------|-------|
| zstor2tb | 1.20T | 13.3T | 66 | 126K | 89.5K | 70.0M |
| zstor2tb | 1.20T | 13.3T | 49 | 126K | 66.5K | 56.5M |
| zstor2tb | 1.20T | 13.3T | 72 | 84 | 98.0K | 72.1M |
| zstor2tb | 1.20T | 13.3T | 65 | 270 | 87.9K | 95.0M |
| zstor2tb | 1.20T | 13.3T | 5 | 2.38K | 7.89K | 308M |
| zstor2tb | 1.20T | 13.3T | 1 | 2.54K | 3.00K | 326M |
| zstor2tb | 1.20T | 13.3T | 4 | 2.53K | 5.01K | 327M |
| zstor2tb | 1.20T | 13.3T | 38 | 1.51K | 53.5K | 234M |
| zstor2tb | 1.20T | 13.3T | 61 | 74 | 87.0K | 74.0M |
| zstor2tb | 1.20T | 13.3T | 43 | 1.18K | 56.5K | 48.4M |
| zstor2tb | 1.20T | 13.3T | 68 | 78 | 91.0K | 78.0M |
| zstor2tb | 1.20T | 13.3T | 68 | 87 | 91.5K | 76.1M |
| zstor2tb | 1.20T | 13.3T | 69 | 87 | 95.0K | 76.0M |
| zstor2tb | 1.20T | 13.3T | 60 | 72 | 84.0K | 72.0M |
| zstor2tb | 1.20T | 13.3T | 39 | 1.20K | 54.0K | 50.4M |
| zstor2tb | 1.20T | 13.3T | 72 | 75 | 96.5K | 75.0M |
| zstor2tb | 1.20T | 13.3T | 70 | 90 | 98.0K | 76.6M |
| zstor2tb | 1.20T | 13.3T | 70 | 87 | 97.0K | 73.2M |

| | | | | | | |
|----------|-------|-------|----|-------|-------|-------|
| zstor2tb | 1.23T | 13.3T | 0 | 201 | 0 | 25.2M |
| zstor2tb | 1.23T | 13.3T | 23 | 1.66K | 33.0K | 233M |
| zstor2tb | 1.23T | 13.3T | 70 | 82 | 98.5K | 63.5M |
| zstor2tb | 1.23T | 13.3T | 52 | 704 | 74.0K | 116M |
| zstor2tb | 1.23T | 13.3T | 64 | 897 | 90.0K | 61.5M |
| zstor2tb | 1.23T | 13.3T | 0 | 171 | 0 | 21.5M |
| zstor2tb | 1.23T | 13.3T | 24 | 27 | 32.5K | 19.4M |
| zstor2tb | 1.23T | 13.3T | 56 | 556 | 77.5K | 41.6M |
| zstor2tb | 1.23T | 13.3T | 0 | 206 | 0 | 24.0M |

// provisioned iscsi luns to macbook pro to add additional storage



Small Tree iSCSI Manager

Discover Connect & Mount Disconnect Session Parameters Initiator Options

Targets Sessions

| Target | Mount At Boot? |
|--|-------------------------------------|
| iqn.1986-03.com.sun:01:target-no-chap-authentication-[REDACTED]:3260 | <input checked="" type="checkbox"/> |
| iqn.1986-03.com.sun:02:target-chap-authentication-[REDACTED]:3261 | <input checked="" type="checkbox"/> |

Small Tree iSCSI Manager

Discover Connect & Mount Disconnect Session Parameters Initiator Options

Targets Sessions

| Target |
|--|
| ▼iqn.1986-03.com.sun:01:target-no-chap-authentication [REDACTED] 6:3260 |
| ▼iqn.1986-03.com.sun:02:target-chap-authentication [REDACTED] 6:3261 |

// connection to windows host, with and without CHAP authentication

iSCSI Initiator Properties

Targets Discovery Favorite Targets Volumes and Devices RADIUS Configuration

Quick Connect
To discover and log on to a target using a basic connection, type the IP address or DNS name of the target and then click Quick Connect.

Target: [REDACTED] Quick Connect...

Discovered targets Refresh

| Name | Status |
|--|-----------|
| iqn.1986-03.com.sun:01:target-no-chap-authentication | Connected |
| iqn.1986-03.com.sun:02:target-chap-authentication | Connected |

// provisioned iscsi luns to a windows laptop,
disks are recognized by the system

The screenshot shows the Windows Disk Management interface. On the left, a navigation pane lists 'Computer Management (Local)', 'System Tools' (Task Scheduler, Event Viewer, Shared Folders, Performance, Device Manager), 'Storage' (Disk Management), and 'Services and Application'. The main area displays disk information in two tables.

Volume Table:

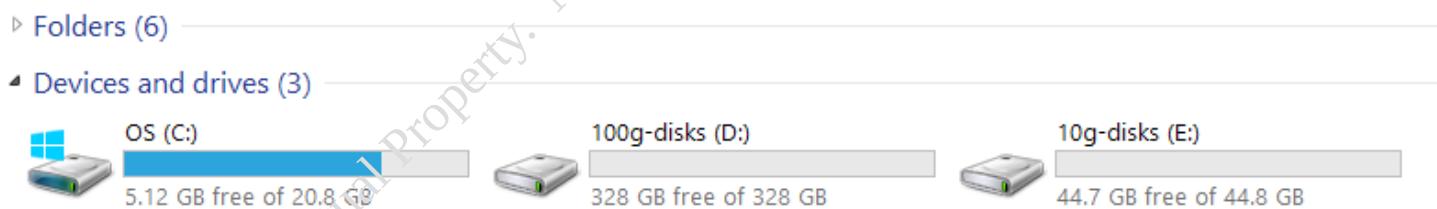
| Volume | Layout | Type | File System | Status | Capacity | Free Space | % Free |
|-----------------|--------|-------|-------------|--|-----------|------------|--------|
| | Simple | Basic | | Healthy (EFI System Partition) | 100 MB | 100 MB | 100 % |
| | Simple | Basic | | Healthy (Recovery Partition) | 8.00 GB | 8.00 GB | 100 % |
| 10g-disks (E:) | Simple | Basic | NTFS | Healthy (Primary Partition) | 44.87 GB | 44.78 GB | 100 % |
| 100g-disks (D:) | Simple | Basic | NTFS | Healthy (Primary Partition) | 328.87 GB | 328.74 GB | 100 % |
| OS (C:) | Simple | Basic | NTFS | Healthy (Boot, Page File, Crash Dump, Wim Boot, Primary Partition) | 20.90 GB | 5.13 GB | 25 % |

Disk Table:

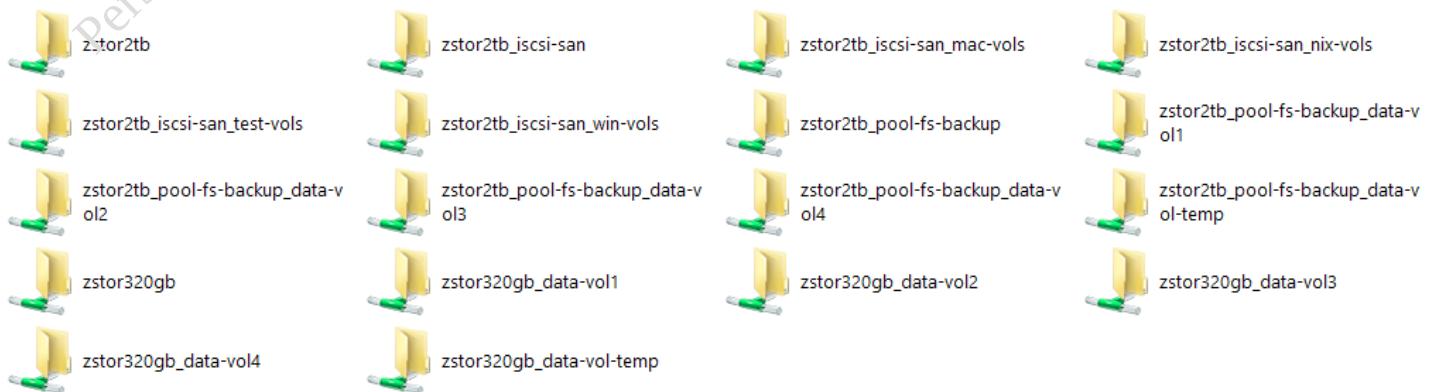
| Disk | Size | Partition | File System | Status |
|---------|-----------|-----------------|----------------|---|
| Disk 0 | 29.00 GB | OS (C:) | 20.90 GB NTFS | Healthy (Boot, Page File, Crash Dump, Wim Boot, Recovery Partition) |
| Disk 11 | 328.88 GB | 100g-disks (D:) | 328.87 GB NTFS | Healthy (Primary Partition) |
| Disk 12 | 44.88 GB | 10g-disks (E:) | 44.87 GB NTFS | Healthy (Primary Partition) |

Legend: Unallocated (Black), Primary partition (Blue).

This PC



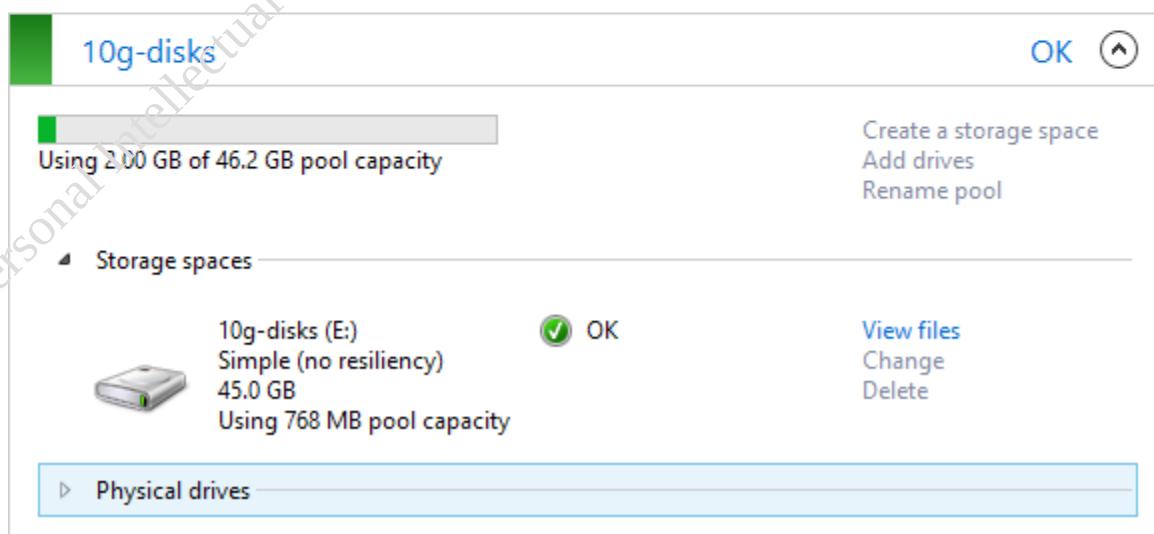
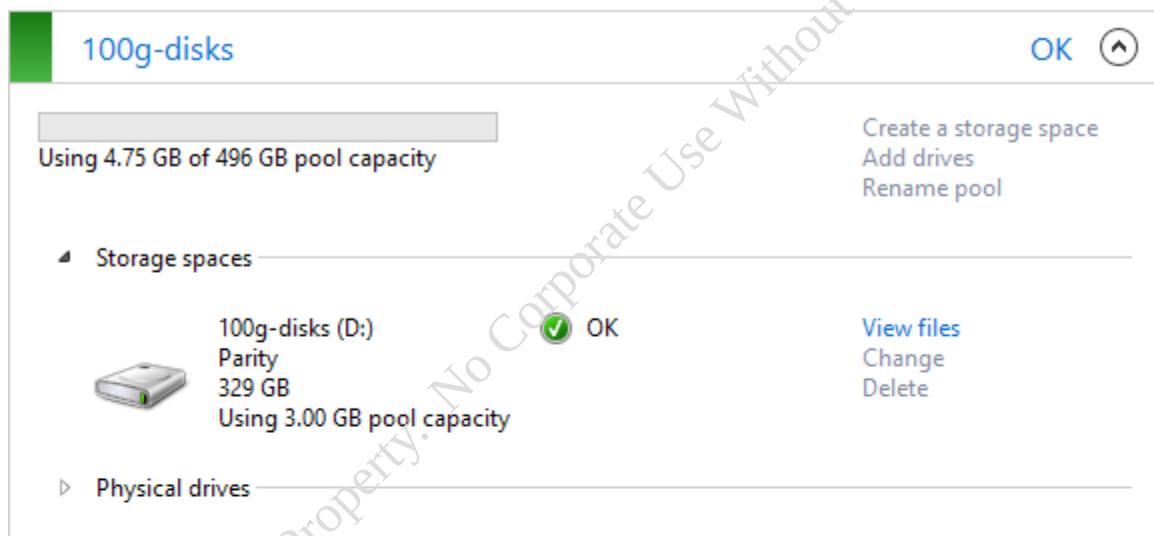
// shares, exported via smb/cifs, recognized by the system



// windows laptop only had ~20gb of system storage hdd space,
no room for updates or local storage

added the provisioned iscsi luns to overcome laptop limitations

// provisioned iscsi luns to windows laptop
Configured for parity and no parity (no resiliency)



// configured provisioned iscsi luns in a concatenate non raid set

10g-disks

Using 2.00 GB of 46.2 GB pool capacity

OK ⌂

Create a storage space
Add drives
Rename pool

Storage spaces

10g-disks (E:) Simple (no resiliency) 45.0 GB Using 768 MB pool capacity

View files Change Delete

Physical drives

| | | | | | |
|---------------------------|--------------------|-------------|---------------------------------|----|---------------|
| SUN COMSTAR SCSI Disk ... | Attached via iSCSI | 2.70 % used | Providing 9.25 GB pool capacity | OK | Rename Remove |
| SUN COMSTAR SCSI Disk ... | Attached via iSCSI | 5.40 % used | Providing 9.25 GB pool capacity | OK | Rename |
| SUN COMSTAR SCSI Disk ... | Attached via iSCSI | 2.70 % used | Providing 9.25 GB pool capacity | OK | Rename Remove |
| SUN COMSTAR SCSI Disk ... | Attached via iSCSI | 8.10 % used | Providing 9.25 GB pool capacity | OK | Rename |
| SUN COMSTAR SCSI Disk ... | Attached via iSCSI | 2.70 % used | Providing 9.25 GB pool capacity | OK | Rename Remove |

// configured provisioned iscsi luns in a raid 5 or 6 set

100g-disks

OK

Using 4.75 GB of 496 GB pool capacity

Create a storage space
Add drives
Rename pool

Storage spaces

100g-disks (D:) Parity 329 GB Using 3.00 GB pool capacity

View files Change Delete

Physical drives

SUN COMSTAR SCSI Disk ... OK Rename
Attached via iSCSI
0.75 % used
Providing 99.2 GB pool capacity

SUN COMSTAR SCSI Disk ... OK Rename
Attached via iSCSI
1.00 % used
Providing 99.2 GB pool capacity

SUN COMSTAR SCSI Disk ... OK Rename
Attached via iSCSI
1.00 % used
Providing 99.2 GB pool capacity

SUN COMSTAR SCSI Disk ... OK Rename
Attached via iSCSI
1.00 % used
Providing 99.2 GB pool capacity

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// updated the original half rack setup to include
refreshed/rebuild of new equipment/storage server and network layout
still a working progress :-)

old custom built storage server : 6U near bottom
new rebuilt storage server 1U beneath keyboard
new system environment to build : proxmox vm/container clusters :-)

