

Kako postaviti lasten iSCSI strežnik z uporabo odprtokodnih tehnologij?

Kaj je iSCSI?

- mrežni standard za dostop do diskovnih sistemov preko IP omrežja
- LAN, WAN ali Internet
- SAN diskovna polja
- konsolidacija, podvajanje, skupna raba



Izbira strojne opreme

- ohišje
 - diski
 - mrežne povezave
 - varnost, zanesljivost in razpoložljivost
 - operacijski sistem
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Ohišje

- 1U do 4 3.5" ali 8 2.5"
- 2U do 12 3.5" ali 24 2.5"
- 3U do 16 3.5"
- 4U 24-45 3.5" ali 48 2.5"



Diski

- 2,5" do 1TB
 - 3,5" do 2TB
 - 5,4k, 7,2k, 10k, 15k obratov/s
 - SSD
 - SATA, SAS, SCSI
 - RAID verzije
 - Zanesljivost, garancija
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Mrežne povezave

- ethernet 1Gb/s
- ethernet združevanje (bonding) 4x1Gb/s
- ethernet 10 Gb/s
- infiniband 10, 20, 40Gb/s
- fibre channel \leq 20Gb/s



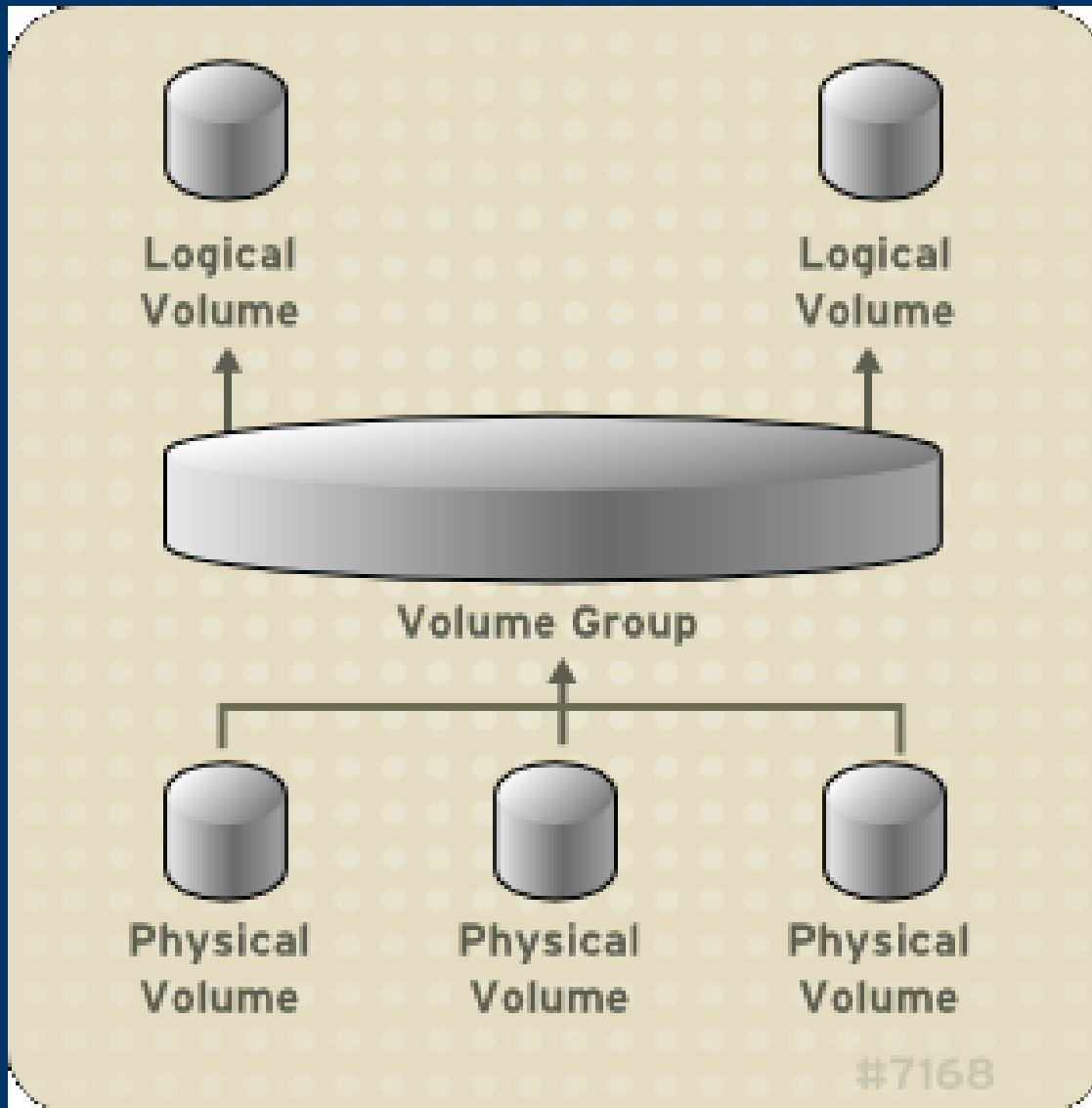
Varnost, zanesljivost in razpoložljivost

- RAID diskovna polja
 - redundantno napajanje
 - redundantne omrežne povezave
 - podvajanje podatkov (data mirroring)
 - povezovanje v gruče (clustering)
 - zaščita z geslom
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Linux RAID

- raid nivoji 0,1,10,4,5,6
 - fdisk (type=fb VMware VMFS)
 - mdadm --create /dev/md0 --level=1
--raid-devices=2 /dev/sdb1 /dev/sdc1
 - nastavitve /etc/mdadm/mdadm.conf
 - stanje cat /proc/mdstat
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Logical volume manager - LVM



```
lvcreate -L16G  
-ndns1 ozsvg1
```

```
vgcreate ozs-vg1  
/dev/sdb /dev/sdc ...
```

```
pvcreate /dev/sdb
```

Lastnosti LVM

- dinamično spreminjanje VG
- dinamično spreminjanje LV
- povezovanje LV podobno RAID 0, 1
- posnetek stanja (snapshot)



dd

- data description, disk duplicator, data destroyer

```
dd if=vhod of=izhod [bs, conv, count]
```

Kako izvedemo kopijo podatkov?

```
lvcreate -L1G -s -n posnetek /dev/ozs-vg1/dns1
```

```
dd if=/dev/ozs-vg1/posnetek of=/mnt/arhiv/dns1.img bs=64k
```

```
lvremove -f /dev/ozs-vg1/posnetek
```

iSCSI target

- apt-get install iscsitarget
- /etc/default/iscsitarget #ISCSITARGET_ENABLE=true
- /etc/ietd.conf

```
Target iqn.2010-01.si.ozs:diski.sas  
Lun 16 Path=/dev/ozs-vg1/dns1,Type=fileio
```

- ietadm --op new --tid=1 --lun=16 --params
Path=/dev/ozs-vg1/dns1,Type=fileio
- cat /proc/net/iet/volume

```
tid:1 name:iqn.2010-01.si.ozs:diski.sas1  
  lun:10 state:0 iotype:fileio iomode:wt path:/dev/ozs-vg1/test2G  
  lun:11 state:0 iotype:fileio iomode:wt path:/dev/ozs-vg1/ozsdc2  
  lun:12 state:0 iotype:fileio iomode:wt path:/dev/ozs-vg1/ub1004_predloga
```

iscsi initiator

- apt-get install open-iscsi
- /etc/iscsi/iscsid.conf #node.startup = automatic
- iscsiadm -m discovery -t st -p 192.168.200.199
- iscsiadm -m node
- ls /dev/disk/by-path

```
ip-192.168.200.199:3260-iscsi-iqn.2010-01.si.ozs:diski.sas1-lun-12  
ip-192.168.200.199:3260-iscsi-iqn.2010-01.si.ozs:diski.sas1-lun-12-part1  
ip-192.168.200.199:3260-iscsi-iqn.2010-01.si.ozs:diski.sas1-lun-12-part2  
ip-192.168.200.199:3260-iscsi-iqn.2010-01.si.ozs:diski.sas1-lun-12-part5
```

- iscsiadm -m session -R
-
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Moj mali prispevek

- /etc/udev/rules.d/60-persistent-iscsi.rules

```
ENV{DEVTYPE}=="disk", ENV{ID_PATH}=="", DEVPATH!="*/virtual/*",  
IMPORT{program}="path_id %p"  
ENV{DEVTYPE}=="disk", ENV{ID_PATH}=="?*", PROGRAM="/usr/local/bin/persistent_iscsi.rb  
$env{ID_PATH}", SYMLINK+="%"c"
```

- /etc/iscsi/persistent.names.conf

```
iqn.2010-01.si.ozs:diski.sas1;10;iscsi/testdisk  
iqn.2010-01.si.ozs:diski.sas1;11;iscsi/ozsdc2  
iqn.2010-01.si.ozs:diski.sas1;12;iscsi/ub1004_predloga
```

- /usr/local/bin/persistent_iscsi.rb

- ls /dev/iscsi

```
testdisk  
ozsdc2  
ub1004_predloga
```

Ruby program

```
#!/usr/bin/ruby
# parameter : ip-192.168.2.199:3260-iscsi-iqn.2010-01.si.ozs:diski.sas1-lun-1
device = nil
# parse parm on - sign
a = ARGV.first.split('-')
# third element should be iscsi
exit 1 unless a[2] == 'iscsi'
# set iqn and lun
id_iqn = a[3] + '-' + a[4]
id_lun = a[6]
# read my configuration file /etc/iscsi/persistent.names.conf
File.new('/etc/iscsi/persistent.names.conf').readlines.each do |line|
# config line looks like this: iqn.2100-05.si.ozs:diski.sas;2;iscsi/dns1
  iqn, lun, dev = line.chomp.split(';')
  if iqn == id_iqn and lun == id_lun
    device = dev
    break
  end
end
# Error if not found
exit 1 if device.nil?
# out device name on stdout
puts device
```

Vprašanja?

info:damjan pika rems pri ozs pika si

