



## Configure RAID with MPIO in Linux

**Purpose:**

Configure RAID with MPIO in Linux

**Product Affect:**

SS-4501R, SS-4502R, SS-6601R, SS-6602R, SS-8801R, SS-8802R, TS-4801R

**Procedure:**

Equipment:

Intel server board SB7520BD2 (CPU:3GHz, memory size: 1GB) / Qlogic fibre card: qlc2462

A. Redundant controller Installation

**Step1** - Configure Redundant unit with DG/LD, and LUN mapping

**Logical Disks**

LD ID	Name	RAID Level	Capacity (MB)	Stripe Size (KB)	State	CTL Prefer/Owner	More
dg0ld0	dg0ld0	RAID5	419,514	64	OPTIMAL	ctlA / ctla	ⓘ
dg1ld0	dg1ld0	RAID5	419,514	64	OPTIMAL	ctlB / ctlb	ⓘ

Create Delete Modify Flush S.VOL

**Storage Provisioning**

Method :  Simple  Symmetric  Selective

HTP ID	LUN ID	Mapping Virtual Disk	Sector Size	CHS Geometry
fcpa1	lun0	dg0ld0	512Byte	C:Auto, H:Auto, S:Auto
fcpa1	lun1	dg1ld0	512Byte	C:Auto, H:Auto, S:Auto
fcpb1	lun0	dg0ld0	512Byte	C:Auto, H:Auto, S:Auto
fcpb1	lun1	dg1ld0	512Byte	C:Auto, H:Auto, S:Auto

Add Remove

**Step2** - Install RHEL 5.5, then check dm-multipath is installed

Execute lsmod to check dm\_multipath has been loaded

```
#lsmod | grep multipath
```

**Step3** - If dm-multipath not installed



Please install dm-multipath rpm from your original CD  
(device-mapper-multipath-xxx.rpm)

#### Step4 - make multipathd daemon autostart

**#chkconfig multipathd on**

```

root@localhost:~
File Edit View Terminal Tabs Help
[root@localhost ~]# lsmod | grep multipath
dm_multipath          25421  0
scsi_dh                12097  1 dm_multipath
dm_mod                 63225  11 dm_multipath,dm_raid45,dm_snapshot,dm_zero,dm_m
irror,dm_log
[root@localhost ~]# chkconfig multipathd on
[root@localhost ~]# █

```

#### Step5 - Edit your multipath configuration file

Edit /etc/multipath.conf to support your device model

Mark black list in multipath.conf

# Blacklist all devices by default. Remove this to enable multipathing

# on the default devices.

#blacklist {

# devnode "\*"

#}

[#@RHEL5.x](#)

devices {

device {

vendor "Arena"

product "TS-4801R"

path\_grouping\_policygroup\_by\_prio

getuid\_callout "/sbin/scsi\_id -p 0x80 -g -u -s /block/%n"

prio\_callout "/sbin/xpath\_prio\_alua %d"

hardware\_handler "1 alua"

path\_checker tur

path\_selector "round-robin 0"

failback immediate

no\_path\_retry queue

[www.maxtronic.com](http://www.maxtronic.com)



```
rr_min_io    100
}
}
```

#### Step6 - Reboot PC server

#### #reboot

=====

Create partition on mpio device

-----

Step1: **#fdisk -l**

Step2: **#fdisk /dev/dm-x**

Step3: **#kpartx -l /dev/dm-x** //lists all partitions on this device

Step4: **#kpartx -a /dev/dm-x** //create all device node on this device



```
File Edit View Terminal Tabs Help
```

```
[root@localhost ~]# fdisk -l
```

```
Disk /dev/sda: 81.9 GB, 81964302336 bytes  
255 heads, 63 sectors/track, 9964 cylinders  
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sda1	*	1	13	104391	83	Linux
/dev/sda2		14	9964	79931407+	8e	Linux LVM

```
Disk /dev/sdb: 439.8 GB, 439889700864 bytes  
255 heads, 63 sectors/track, 53480 cylinders  
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
--------	------	-------	-----	--------	----	--------

```
Disk /dev/sde: 439.8 GB, 439889700864 bytes  
255 heads, 63 sectors/track, 53480 cylinders  
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
--------	------	-------	-----	--------	----	--------

```
Disk /dev/dm-2: 439.8 GB, 439889700864 bytes  
255 heads, 63 sectors/track, 53480 cylinders  
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
--------	------	-------	-----	--------	----	--------

```
Disk /dev/dm-3: 439.8 GB, 439889700864 bytes  
255 heads, 63 sectors/track, 53480 cylinders  
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
--------	------	-------	-----	--------	----	--------

```
[root@localhost ~]# █
```



```
[root@localhost ~]# kpartx -l /dev/dm-2
dm-2p1 : 0 859156137 /dev/dm-2 63
[root@localhost ~]# kpartx -l /dev/dm-3
dm-3p1 : 0 859156137 /dev/dm-3 63
[root@localhost ~]# kpartx -a /dev/dm-3
[root@localhost ~]# kpartx -a /dev/dm-2
[root@localhost ~]# cd /dev/mapper
[root@localhost mapper]# ls
control  SArena_TS-4801R_10f830b1f6d35d54f9018f9ae98a7432  VolGroup00-LogVol01
dm-2p1  SArena_TS-4801R_3d6729a27ffb1e5b0e5203087b2ff402
dm-3p1  VolGroup00-LogVol00
[root@localhost mapper]# mke2fs -j /dev/mapper/dm-2p1
mke2fs 1.39 (29-May-2006)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
53706752 inodes, 107394517 blocks
5369725 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=0
3278 block groups
32768 blocks per group, 32768 fragments per group
16384 inodes per group
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
    4096000, 7962624, 11239424, 20480000, 23887872, 71663616, 78675968,
    102400000

Writing inode tables: 215/3278
```

=====  
By multipathd

```
linux-l4tl:/mnt # multipathd -k
multipathd> show paths
multipathd> show maps
multipathd> show topology
```



```
File Edit View Terminal Tabs Help
[root@localhost ~]# multipathd -k
multipathd> show paths
hctl dev dev_t pri dm_st chk_st next_check
1:0:0:0 sda 8:0 1 [undef] [ready] [orphan]
4:0:0:0 sdb 8:16 50 [active][ready] XXXX..... 9/20
4:0:0:1 sdc 8:32 1 [active][ready] XXXX..... 9/20
5:0:0:0 sdd 8:48 1 [active][ready] XXXX..... 9/20
5:0:0:1 sde 8:64 50 [active][ready] XXXX..... 9/20
multipathd> show maps
name sysfs uuid
SArena_TS-4801R_3d6729a27ffb1e5b0e5203087b2ff402 dm-2 SArena_TS-4801R_3d6729a27ffb1e5b0e5203087b2ff402
SArena_TS-4801R_10f830b1f6d35d54f9018f9ae98a7432 dm-3 SArena_TS-4801R_10f830b1f6d35d54f9018f9ae98a7432
multipathd> show topology
SArena_TS-4801R_3d6729a27ffb1e5b0e5203087b2ff402 dm-2 Arena,TS-4801R
[size=410G][features=1 queue_if_no_path][hwandler=1 alua ][rw ]
\_ round-robin 0 [prio=50][active]
\_ 4:0:0:0 sdb 8:16 [active][ready]
\_ round-robin 0 [prio=1][enabled]
\_ 5:0:0:0 sdd 8:48 [active][ready]
SArena_TS-4801R_10f830b1f6d35d54f9018f9ae98a7432 dm-3 Arena,TS-4801R
[size=410G][features=1 queue_if_no_path][hwandler=1 alua ][rw ]
\_ round-robin 0 [prio=50][active]
\_ 5:0:0:1 sde 8:64 [active][ready]
\_ round-robin 0 [prio=1][enabled]
\_ 4:0:0:1 sdc 8:32 [active][ready]
multipathd> █
```