# Migration vplex-Invista to PMAX on Standalone Server

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## Introduction

### Why

Vplex-Invista versus PMAX-Symetrix.

Vplex-Invista storage bay are near end of life.

Moreover, some incident occured on vplex-Invista storage bay.

### How

First, Storage team adds new PMAX LUN.

Next, Linux team switches the vplex lun with the pmax ones without any service interruption using LVM.

Last, Storage team removes the vplex-invista lun.

## Adding PMAX LUN

Storage team adds new LUN from PMAX.

The new luns will be a little bigger than the vplex-Invista ones. (Ex : 128G -> 140G)

To see the new LUNs, you can wait for a server reboot or you can try rescan the disk :

for i in 0 1 2 3;do echo "- - -" > /sys/class/scsi\_host/host$i/scan;done

## Switching vplex and PMAX LUN

### Introduction bis

For each vplex device, we will add a new PMAX disk in lvm.

We update alias in multipath.

Then we wait for lvm synchronization.

We remove the old vplex device.

We remove alias in multipath.

Lastly, if we are able, we reboot the server and if not, we keep watch for the next server reboot.

### Pre-requisites

Storage team will send the matching table between old vplex-Invista luns and pmax new ones.

There is no incident on the server you want to migrate.

### Migration step

#### Stockage is present

[root@slzurncsgl09 ~]# multipath -ll

mpathe (360000970000297600513533030333233) dm-107 EMC,SYMMETRIX

size=512G features='1 queue\_if\_no\_path' hwhandler='0' wp=rw

`-+- policy='round-robin 0' prio=1 status=active

|- 1:0:2:2 sdo 8:224 active ready running

|- 2:0:2:2 sdw 65:96 active ready running

|- 1:0:3:2 sdq 65:0 active ready running

|- 2:0:3:2 sdy 65:128 active ready running

|- 1:0:4:2 sds 65:32 active ready running

|- 2:0:4:2 sdaa 65:160 active ready running

|- 1:0:5:2 sdu 65:64 active ready running

`- 2:0:5:2 sdac 65:192 active ready running

mpathd (360000970000297600513533030333232) dm-106 EMC,SYMMETRIX

size=512G features='1 queue\_if\_no\_path' hwhandler='0' wp=rw

`-+- policy='round-robin 0' prio=1 status=active

|- 1:0:2:1 sdn 8:208 active ready running

|- 2:0:2:1 sdv 65:80 active ready running

|- 1:0:3:1 sdp 8:240 active ready running

|- 2:0:3:1 sdx 65:112 active ready running

|- 1:0:4:1 sdr 65:16 active ready running

|- 2:0:4:1 sdz 65:144 active ready running

|- 1:0:5:1 sdt 65:48 active ready running

`- 2:0:5:1 sdab 65:176 active ready running

mpathA02 (36000144000000010a015272860b2a208) dm-3 EMC,Invista

size=512G features='1 queue\_if\_no\_path' hwhandler='0' wp=rw

`-+- policy='round-robin 0' prio=1 status=active

|- 1:0:0:2 sdd 8:48 active ready running

|- 2:0:0:2 sdj 8:144 active ready running

|- 1:0:1:2 sdg 8:96 active ready running

`- 2:0:1:2 sdm 8:192 active ready running

mpathA01 (36000144000000010a015272860b2a1fe) dm-2 EMC,Invista

size=512G features='1 queue\_if\_no\_path' hwhandler='0' wp=rw

`-+- policy='round-robin 0' prio=1 status=active

|- 1:0:0:1 sdc 8:32 active ready running

|- 2:0:0:1 sdi 8:128 active ready running

|- 1:0:1:1 sdf 8:80 active ready running

`- 2:0:1:1 sdl 8:176 active ready running

If needed, refresh the multipath cache :

multipath –F

multipath –d

multipath –v2

The path number may differ.

In this example, it is a DB2 server and the storage bay replication/duplication was added.

#### Set up multipath alias for PMAX LUN

Inq will give you the storage bay serial number :

[root@slzurncsgl09 ~]# /usr/local/inq-8.0.3.0.HPSA/inq -sym\_wwn 2>/dev/null | grep /dev/dm

/dev/dm-4 000297600511 004CC 60000970000297600513533030333232

/dev/dm-5 000297600511 004CD 60000970000297600513533030333233

For alias naming, we associate a letter for each storage bay : (based on last 3 char)

BAY\_ROOMCHAR="0124D|0230M|0137D|0229M|1678C|1688A|1626M|1297D|1186D|1161M|1299D|2303M|1901D|1766M|0984D|0985M|0513C|0511A|0514D|0512M"

[/etc/multipath.conf]

…

multipaths {

multipath {

wwid "360000970000297600513533030333232"

alias mpathA03

}

multipath {

wwid "360000970000297600513533030333233"

alias mpathA04

}

}

multipath –F

multipath –d

multipath –v2

#### LVM status before

[root@slzurncsgl09 ~]# vgs

VG #PV #LV #SN Attr VSize VFree

vg\_arch 1 2 0 wz--n- 512.00g 472.00g

vg\_dat1 1 4 0 wz--n- 512.00g 392.00g

[root@slzurncsgl09 ~]# pvs

PV VG Fmt Attr PSize PFree

/dev/mapper/mpathA01p1 vg\_dat1 lvm2 a-- 512.00g 392.00g

/dev/mapper/mpathA02p1 vg\_arch lvm2 a-- 512.00g 472.00g

#### Create PV

[root@slzurncsgl09 ~]# pvcreate /dev/mapper/mpathA03

Physical volume "/dev/mapper/mpathA03" successfully created

[root@slzurncsgl09 ~]# pvcreate /dev/mapper/mpathA04

Physical volume "/dev/mapper/mpathA04" successfully created

#### Extend VG

[root@slzurncsgl09 ~]# vgextend vg\_dat1 /dev/mapper/mpathA03

Volume group "vg\_dat1" successfully extended

[root@slzurncsgl09 ~]# vgextend vg\_arch /dev/mapper/mpathA04

Volume group "vg\_arch" successfully extended

#### LVM status before copy

[root@slzurncsgl09 ~]# pvs

PV VG Fmt Attr PSize PFree

/dev/mapper/mpathA01p1 vg\_dat1 lvm2 a-- 512.00g 392.00g

/dev/mapper/mpathA02p1 vg\_arch lvm2 a-- 512.00g 472.00g

/dev/mapper/mpathA03 vg\_dat1 lvm2 a-- 512.00g 512.00g

/dev/mapper/mpathA04 vg\_arch lvm2 a-- 512.00g 512.00g

[root@slzurncsgl09 ~]# vgs

VG #PV #LV #SN Attr VSize VFree

vg\_arch 2 2 0 wz--n- 1024.00g 984.00g

vg\_dat1 2 4 0 wz--n- 1024.00g 904.00g

#### Copy data from old pv to new pv

[root@slzurncsgl09 ~]# pvmove /dev/mapper/mpathA01p1 /dev/mapper/mpathA03

/dev/mapper/mpathA01p1: Moved: 0.0%

/dev/mapper/mpathA01p1: Moved: 1.7%

/dev/mapper/mpathA01p1: Moved: 3.4%

…

[root@slzurncsgl09 ~]# pvmove /dev/mapper/mpathA02p1 /dev/mapper/mpathA04

…

Only one pvmove at a time.

If the pvmove encounter trouble, you can start it again without problem.

The duration is related to the server load.  
In this first server, it took 15 minutes to copy 210Go. (Without any load on the fs from application)

#### LVM status after copy

[root@slzurncsgl09 ~]# pvs

PV VG Fmt Attr PSize PFree

/dev/mapper/mpathA01p1 vg\_dat1 lvm2 a-- **512.00g 512.00g**

/dev/mapper/mpathA02p1 vg\_arch lvm2 a-- **512.00g 512.00g**

/dev/mapper/mpathA03 vg\_dat1 lvm2 a-- **512.00g 392.00g**

/dev/mapper/mpathA04 vg\_arch lvm2 a-- **512.00g 472.00g**

#### Reduce the VG

[root@slzurncsgl09 ~]# vgreduce vg\_dat1 /dev/mapper/mpathA01p1

Removed "/dev/mapper/mpathA01p1" from volume group "vg\_dat1"

[root@slzurncsgl09 ~]# vgreduce vg\_arch /dev/mapper/mpathA02p1

Removed "/dev/mapper/mpathA02p1" from volume group "vg\_arch"

#### Remove the old pv

[root@slzurncsgl09 ~]# pvremove /dev/mapper/mpathA01p1

Labels on physical volume "/dev/mapper/mpathA01p1" successfully wiped

[root@slzurncsgl09 ~]# pvremove /dev/mapper/mpathA02p1

Labels on physical volume "/dev/mapper/mpathA02p1" successfully wiped

#### LVM status at the end

[root@slzurncsgl09 ~]# pvs

PV VG Fmt Attr PSize PFree

/dev/mapper/mpathA03 vg\_dat1 lvm2 a-- 512.00g 392.00g

/dev/mapper/mpathA04 vg\_arch lvm2 a-- 512.00g 472.00g

[root@slzurncsgl09 ~]# vgs

VG #PV #LV #SN Attr VSize VFree

vg\_arch 1 2 0 wz--n- 512.00g 472.00g

vg\_dat1 1 4 0 wz--n- 512.00g 392.00g

#### Remove old lun alias in multipath and refresh

multipath -F

multipath –d

multipath –v2

### Keep watch on it

If you have not a switch-over downtime planned, keep a close watch on the other node reboot by PCL.

## Remove vplex LUN

/ ! \ Before everything, you have to check that no vplex-Invista is in use. (GO/NOGO from you.)

The Storage team will do most actions in this.

During intervention, multipath will be very slow to answer and there will be a lot of error logs in /var/log/messages.

When all the vplex-Invista luns are removed for a cluster from both sites (Chartres Diderot/D’Alembert or Gradignan Salle A/Salle C), the error logs will stop and vplex-Invista lun will remain with no path available in multipath.

Easy check : Multipath will reply as usual (quickly) and there will be no more path on Invista.

multipath -ll | grep Invista

multipath -ll | grep SYM

Then Linux team can remove the luns from multipath cache :

multipath -F

multipath –d

multipath –v2

Easy check : Multipath will reply as usual (quickly) and there will be no more lun on Invista.

multipath -ll | grep Invista

multipath -ll | grep SYM