

Austausch FC-HBA bei Sun Solaris - Teil 5

25.07.2007 Otmanix

Plan für Inbetriebnahme Ersatz-HBA

- Anmelden am Systemcontroller und der betroffenen Domain
- Domain herunterfahren
- auf Domainshell wechseln und Domain ausschalten
- Kabel aus IB7 ausstecken
- Antistatikmatte auslegen und Antistatikarmband mit Anschluß an Gehäuse anlegen
- IB7 ausbauen und auf Antistatikmatte legen
- Filler Panel einsetzen
- Blindkarte aus Slot 6 ausbauen, Ersatz-HBA einbauen
- Filler Panel ausbauen
- IB7 einbauen
- Kabel in IB7 einstecken
- auf Plattformshell wechseln und Domain einschalten
- (reconfigure) Boot der Domain
- Zoning am FC-Switch anpassen
- Masking anpassen
- sd-Treiber neu laden, Devices anlegen lassen
- Powerpath konfigurieren
- /etc/vfstab anpassen, Filesysteme einhängen

Vorbereitungen

Anmelden am Systemcontroller und der betroffenen Domain

Domain herunterfahren

auf Domainshell wechseln und Domain ausschalten

```
# init 0
INIT: New run level: 0
The system is coming down. Please wait.
System services are now being stopped.
EMC Control Center Master Agent stopping ...
EMC Control Center Master Agent stopped.
Discovery client has been stopped
Sun Microsystems Inc. SunOS 5.9 Generic May 2002
Sun Microsystems Inc. SunOS 5.9 Generic May 2002
...
The system is down.
syncing file systems... done
NOTICE: f_client_exit: Program terminated!
debugger entered.

{4} ok #.
sf68-2-sc0:C> setkeyswitch off
Powering boards off ...
sf68-2-sc0:C> showboards
```

Slot	Pwr	Component	Type	State	Status	Domain
----	---	-----	-----	-----	-----	-----
/N0/SB1	Off	CPU Board	V2	Assigned	Not tested	C
/N0/SB3	Off	CPU Board	V2	Assigned	Not tested	C
/N0/SB5	Off	CPU Board	V2	Assigned	Not tested	C
/N0/IB7	Off	PCI I/O Board		Assigned	Not tested	C

Einbau und Inbetriebnahme

Kabel aus IB7 ausstecken

Antistatikmatte auslegen und Antistatikarmband mit Anschluß an Gehäuse anlegen

IB7 ausbauen und auf Antistatikmatte legen

Filler Panel einsetzen

Blindkarte aus Slot 6 ausbauen, Ersatz-HBA einbauen

Filler Panel ausbauen

IB7 einbauen

Kabel in IB7 einstecken

auf Plattformshell wechseln und Domain einschalten

(reconfigure) Boot der Domain

```
sf68-2-sc0:C> setkeyswitch on
Powering boards on ...
Testing CPU Boards ...
{/N0/SB5/P0} Running CPU POR and Set Clocks
...
{/N0/SB1/P0} CORE 4 clearing 00000041.d5555380 to 00000042.00000000
{/N0/SB1/P0} Running Domain Stick Sync Tests
{/N0/SB1/P0} Subtest: Sync. Stick Registers Test
{/N0/SB1/P0} Running Domain Verify Stick Sync Tests
{/N0/SB1/P0} Subtest: Verify Sync. Stick Registers Test
{/N0/SB1/P0} DCB_DECOMP_OBP command succeeded
{/N0/SB1/P0} Decompress OBP done
{/N0/SB1/P0} DCB_ENTER_OBP command succeeded
{/N0/SB1/P1} DCB_ENTER_OBP command succeeded
{/N0/SB1/P2} DCB_ENTER_OBP command succeeded
{/N0/SB1/P3} DCB_ENTER_OBP command succeeded
{/N0/SB3/P0} DCB_ENTER_OBP command succeeded
{/N0/SB3/P1} DCB_ENTER_OBP command succeeded
{/N0/SB3/P2} DCB_ENTER_OBP command succeeded
{/N0/SB3/P3} DCB_ENTER_OBP command succeeded
{/N0/SB5/P0} DCB_ENTER_OBP command succeeded
{/N0/SB5/P1} DCB_ENTER_OBP command succeeded
{/N0/SB5/P2} DCB_ENTER_OBP command succeeded
{/N0/SB5/P3} DCB_ENTER_OBP command succeeded
Entering OBP ...
```

ChassisSerialNumber xxx

!!! LP9002 Fcode, Copyright (c) 2005 Emulex !!! Version 1.50a4

!!! LP9002 Fcode, Copyright (c) 2005 Emulex !!! Version 1.50a4

!!! LP9002 Fcode, Copyright (c) 2005 Emulex !!! Version 1.50a4

!!! LP9002 Fcode, Copyright (c) 2005 Emulex !!! Version 1.50a4

Sun Fire 6800

OpenFirmware version 5.20.1 (06/05/06 17:37)

Copyright 2006 Sun Microsystems, Inc. All rights reserved.

Use is subject to license terms.

SmartFirmware, Copyright (C) 1996-2001. All rights reserved.

49152 MB memory installed, Serial #xxx.

Ethernet address xxx, Host ID: xxx.

{4} ok boot -r

/

SunOS Release 5.9 Version Generic_118558-25 64-bit

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NOTICE:

Emulex LightPulse FC SCSI/IP 6.02f

NOTICE: lpfc0: Firmware Rev 3.92A3 (C2D3.92A3)

NOTICE: lpfc0: Fcode Rev 1.50a4

NOTICE: lpfc0: WWPN:10:00:00:00:c9:32:6b:c5 WWNN:20:00:00:00:c9:32:6b:c5 DID 0x81500

NOTICE: lpfc1: Firmware Rev 3.92A3 (C2D3.92A3)

NOTICE: lpfc1: Fcode Rev 1.50a4

NOTICE: lpfc1: WWPN:10:00:00:00:c9:32:6b:c6 WWNN:20:00:00:00:c9:32:6b:c6 DID 0x91500

NOTICE: lpfc2: Firmware Rev 3.92A3 (C2D3.92A3)

NOTICE: lpfc2: Fcode Rev 1.50a4

NOTICE: lpfc2: WWPN:10:00:00:00:c9:30:0d:33 WWNN:20:00:00:00:c9:30:0d:33 DID 0xa1500

NOTICE: lpfc3: Firmware Rev 3.92A3 (C2D3.92A3)

NOTICE: lpfc3: Fcode Rev 1.50a4

NOTICE: lpfc3: WWPN:10:00:00:00:c9:30:0d:34 WWNN:20:00:00:00:c9:30:0d:34 DID 0xb1500

WARNING: forcload of misc/md_trans failed

WARNING: forcload of misc/md_raid failed

WARNING: forcload of misc/md_hotspares failed

obpsym: symbolic debugging is available.

Hardware watchdog enabled

...

configuring IPv4 interfaces: ce0 cel.

Hostname: server

Configuring /dev and /devices

Configuring the /dev directory (compatibility devices)

...

Warning:Error occurred loading saved driver state from file /etc/powermt.custom.

Loading continues ...

...

The system is ready.

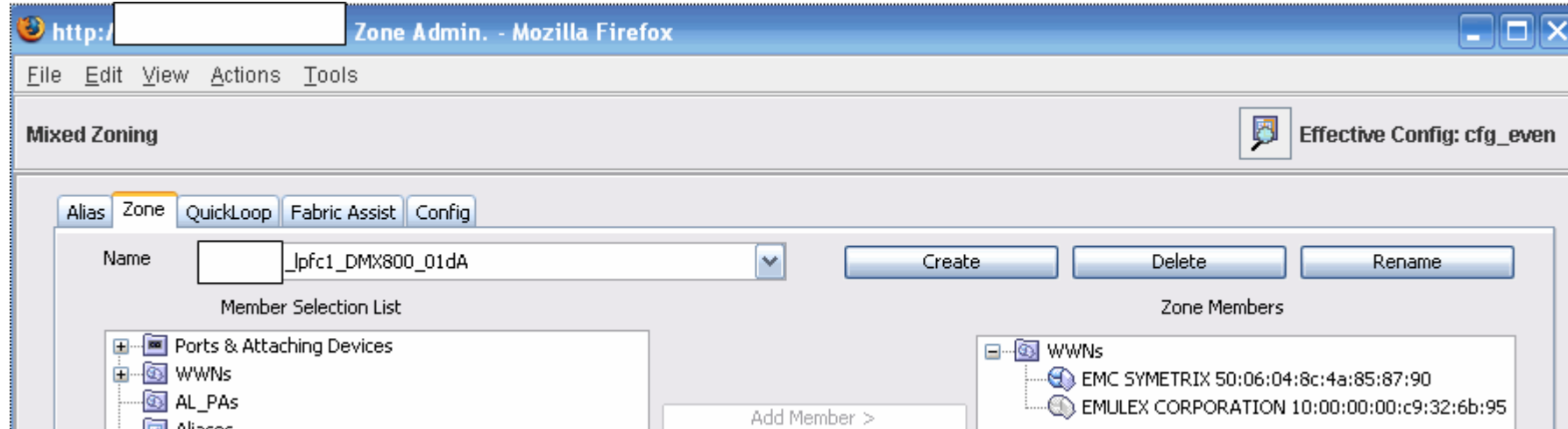
server console login:

Anpassung SAN

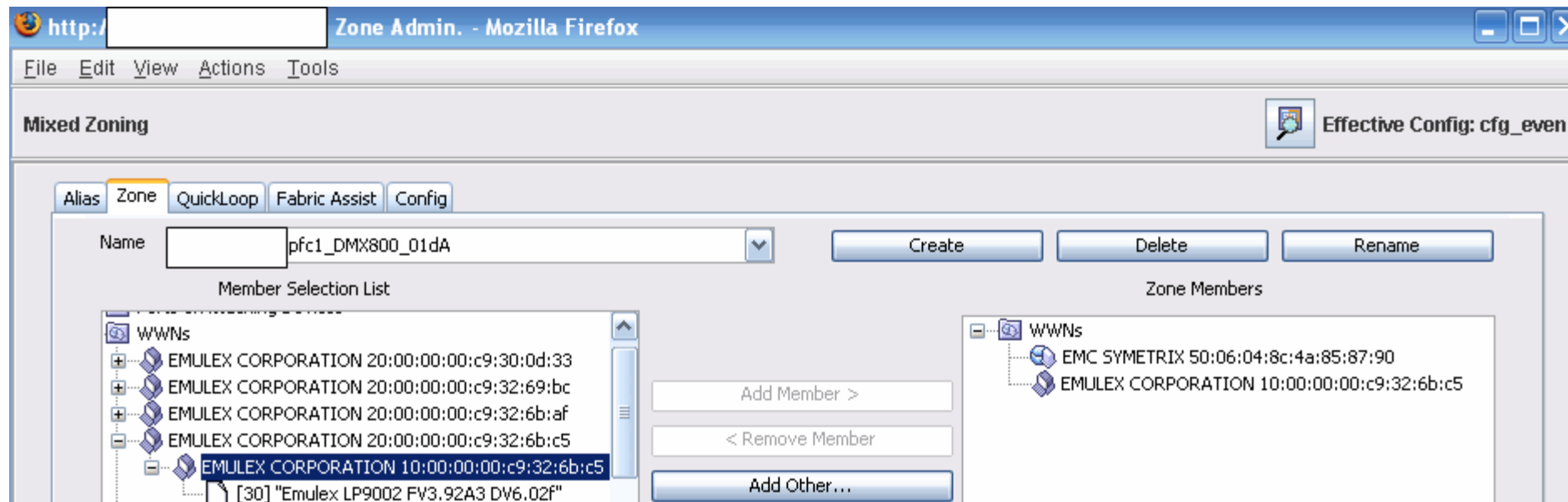
Anpassung Zoning

Zoning am FC-Switch EMC DS4100B (Brocade) anpassen

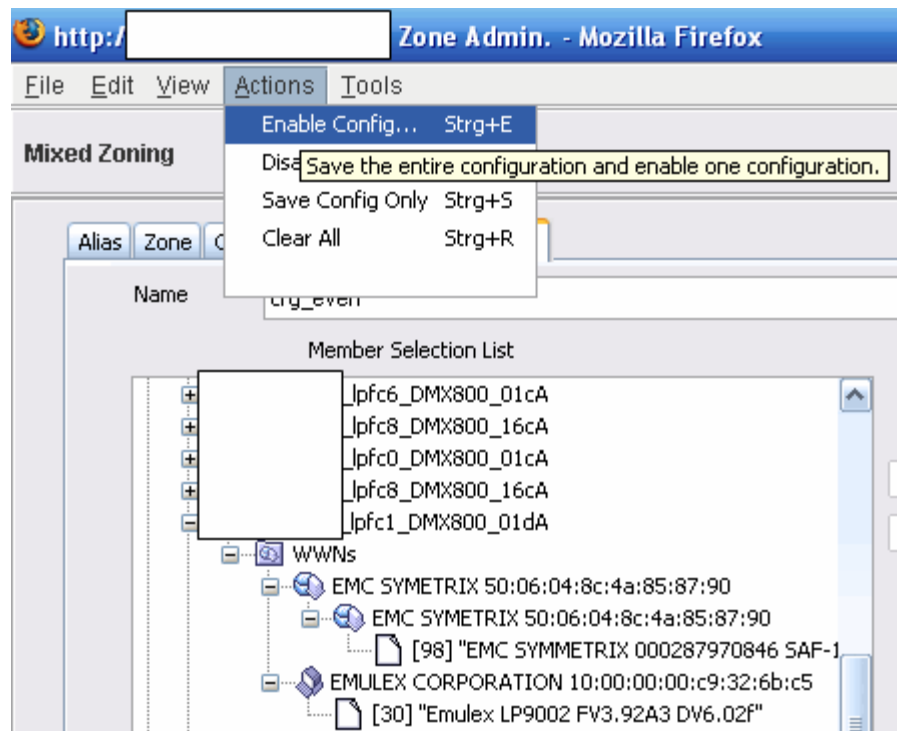
An einem Switch der Fabric EVEN anmelden und in die Zoningadministration wechseln



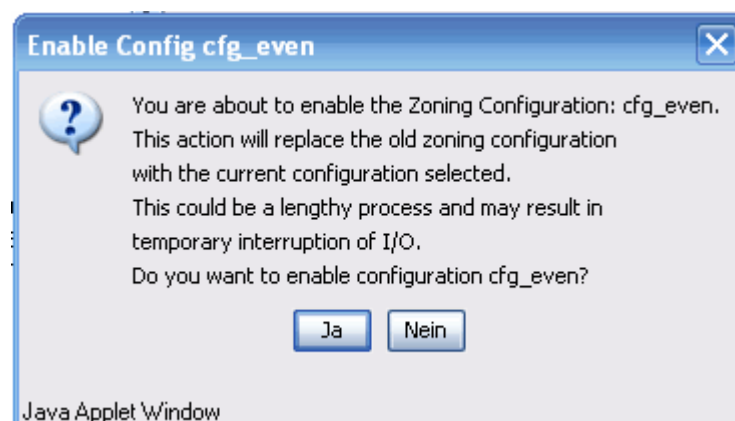
Zone aussuchen, alte WWPN entfernen, WWPN des Ersatz-HBAs einfügen



Konfiguration aktivieren



Das Aktivieren der Konfiguration unterbricht kurzzeitig die Kommunikation des FC-Switches mit den angeschlossenen Geräten (die sollten das verkraften...)

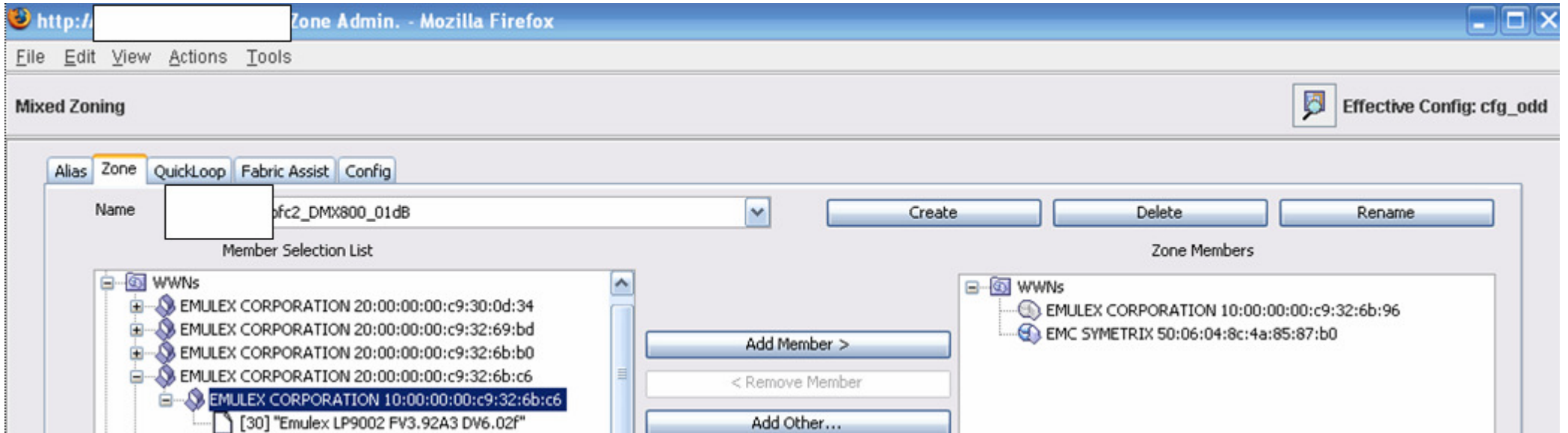


```
--- start of commit (Enable Config) at: Sa Jul 21 2007 09:25:06 UTC
Commit succeeded.
--- end of commit at: Sa Jul 21 2007 09:25:06 UTC
```

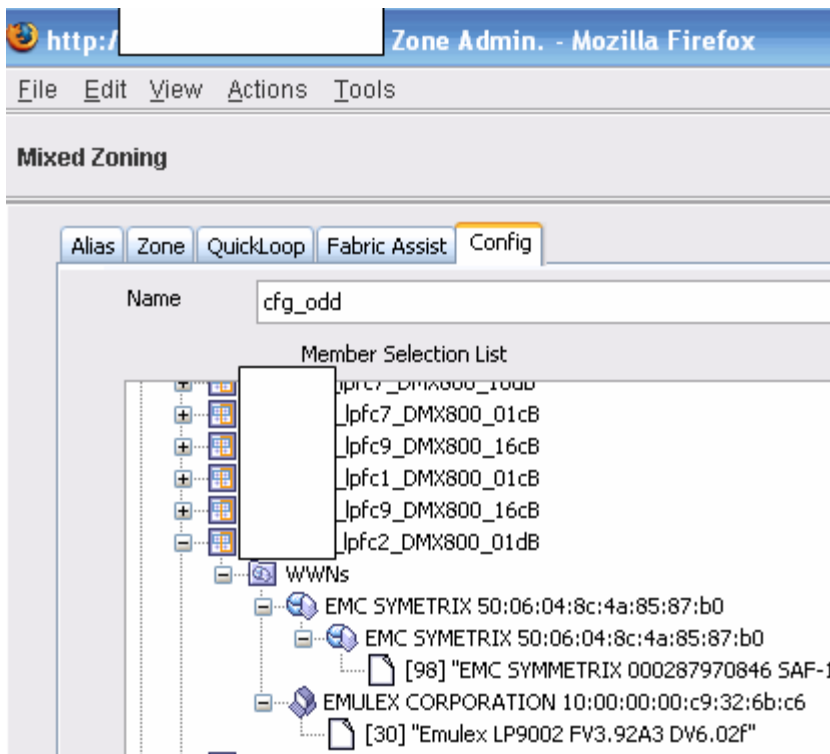
Successfully committed the changes to the fabric.

Nun die Konfiguration für den zweiten HBA-Port:

An einem Switch der Fabric ODD anmelden und in die Zoningadministration wechseln



Zone aussuchen, alte WWPN entfernen, WWPN des Ersatz-HBAs einfügen



Konfiguration aktivieren

Das Aktivieren der Konfiguration unterbricht kurzzeitig die Kommunikation des FC-Switches mit den angeschlossenen Geräten (die sollten das verkraften...)



```
--- start of commit (Enable Config) at: Sa Jul 21 2007 09:28:23 UTC
Commit succeeded.
--- end of commit at: Sa Jul 21 2007 09:28:23 UTC
```

Successfully committed the changes to the fabric.

Anpassung Device-Masking

Variante 1: Über EMC Control Center GUI (hier nicht beschrieben)

Variante 2: über SYMCLI

Auf Rechner mit installiertem EMC Solution Enabler / SYMCLI anmelden

Konfiguration des Storage (EMC DMX800-M2) auslesen

Devicemasking anpassen

geänderte Konfiguration speichern

```
root@server2 # symcfg discover
```

This operation may take up to a few minutes. Please be patient...

```
root@server2 #
```

```
root@server2 # symcfg list
```

S Y M M E T R I X

SymmID	Attachment	Model	Mcode Version	Cache Size (MB)	Num Phys Devices	Num Symm Devices
000285502382	Local	8530	5568	8192	266	485
000287970846	Local	800-M2	5671	32768	174	565

```
root@server2 # symmask -sid 000287970846 -wnn 10000000C9326B95 replace 10000000C9326BC5
```

```
root@server2 # symmask -sid 000287970846 -wnn 10000000C9326B96 replace 10000000C9326BC6
```

```
root@server2 # symmask -sid 000287970846 refresh
```

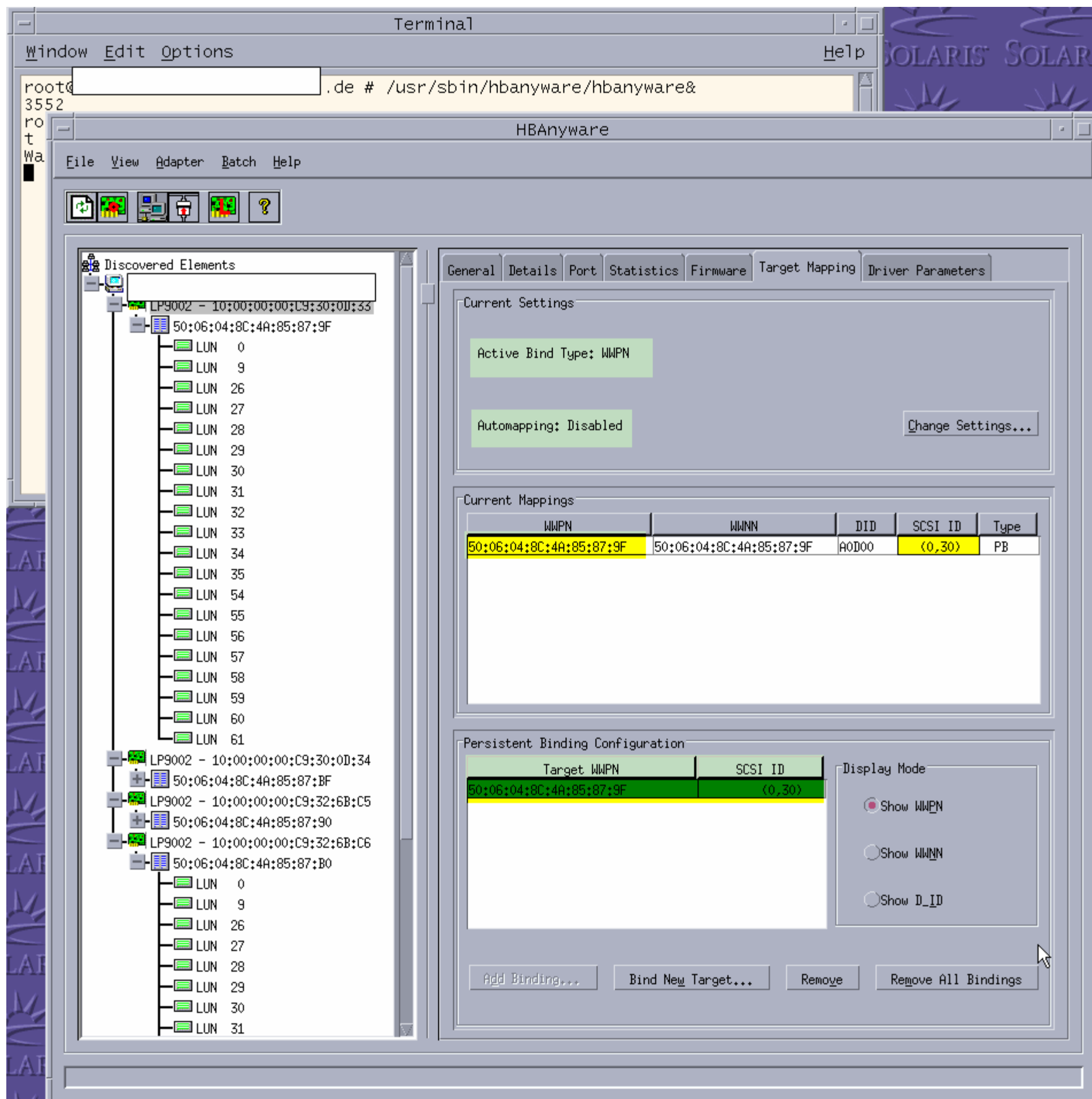
Refresh Symmetrix FA directors with contents of SymMask database 000287970846 (y/[n]) ? **y**

Symmetrix FA directors updated with contents of SymMask Database 000287970846

```
root@server2 #
```

Kontrolle der SAN-Anpassungen

über HBAnyware müssen die LUNs des EMC Storage am Target 30 auf allen HBA-Ports auftauchen:



Auch über das Commandline-Tool lputil muß man zumindest das Target 30 (FA im EMC Storage) auf den Ports des Ersatz-HBAs sehen:

```
# lputil
LightPulse Common Utility for Solaris/SPARC. Version 2.0a5 (4/7/2005).
Copyright (c) 2005, Emulex Corporation
```

```
Emulex Fibre Channel Host Adapters Detected: 4
Host Adapter 0 (lpfc0) is an LP9K (Ready Mode)
Host Adapter 1 (lpfc1) is an LP9K (Ready Mode)
Host Adapter 2 (lpfc2) is an LP9K (Ready Mode)
Host Adapter 3 (lpfc3) is an LP9K (Ready Mode)
```

MAIN MENU

1. List Adapters
2. Adapter Information
3. Firmware Maintenance
4. Reset Adapter
5. Persistent Bindings

0. Exit

Enter choice => 5

PERSISTENT BINDINGS MENU

1. Display Current Bindings
2. Display All Nodes

3. Duplicate Adapter Bindings
4. Bind Target Manually
5. Bind Automapped Targets
6. Delete Binding(s)

0. Return to Main Menu

Enter choice => **2**

0. lpfc0
1. lpfc1
2. lpfc2
3. lpfc3

Select an adapter => **0**

Visible Nodes:

Node	Target	WWPN	WWNN
In Transition	0	20-15-00-05-1e-35-98-9c	10-00-00-05-1e-35-98-9c
In Transition	0	21-fc-00-05-1e-35-98-9c	10-00-00-05-1e-35-98-9c
Mapped FCP Node	30	50-06-04-8c-4a-85-87-90	50-06-04-8c-4a-85-87-90

Press the Enter or Return key to continue:

PERSISTENT BINDINGS MENU

1. Display Current Bindings
2. Display All Nodes
3. Duplicate Adapter Bindings
4. Bind Target Manually
5. Bind Automapped Targets
6. Delete Binding(s)

0. Return to Main Menu

Enter choice => **2**

0. lpfc0
1. lpfc1
2. lpfc2
3. lpfc3

Select an adapter => **1**

Visible Nodes:

Node	Target	WWPN	WWNN
In Transition	0	20-15-00-05-1e-35-98-44	10-00-00-05-1e-35-98-44
In Transition	0	21-fc-00-05-1e-35-98-44	10-00-00-05-1e-35-98-44
Mapped FCP Node	30	50-06-04-8c-4a-85-87-b0	50-06-04-8c-4a-85-87-b0

Press the Enter or Return key to continue:

PERSISTENT BINDINGS MENU

1. Display Current Bindings
2. Display All Nodes
3. Duplicate Adapter Bindings
4. Bind Target Manually
5. Bind Automapped Targets
6. Delete Binding(s)

0. Return to Main Menu

Enter choice => **0**

MAIN MENU

1. List Adapters
2. Adapter Information
3. Firmware Maintenance
4. Reset Adapter
5. Persistent Bindings

0. Exit

Devices anlegen und Multipathing konfigurieren

sd-Treiber neu laden

Devices anlegen lassen (darauf achten, ob wieder vorherige Controller-Nummern benutzt werden!)

Neue Devices im Powerpath konfigurieren

Überflüssige Devices im Powerpath entfernen

Powerpath-Konfiguration sichern

Powerpath-Zustand anzeigen

```

# update_drv -f sd
Cannot unload module: sd
Will be unloaded upon reboot.
Forcing update of sd.conf.
# devfsadm
# ls -l /dev/dsk/c2*
lrwxrwxrwx 1 root other 59 Jul 21 11:35 /dev/dsk/c2t30d26s0 ->
../../../../devices/ssm@0,0/pci@1a,600000/pci@1/lpfc@4/sd@1e,1a:a
lrwxrwxrwx 1 root other 59 Jul 21 11:35 /dev/dsk/c2t30d26s1 ->
../../../../devices/ssm@0,0/pci@1a,600000/pci@1/lpfc@4/sd@1e,1a:b
lrwxrwxrwx 1 root other 59 Jul 21 11:35 /dev/dsk/c2t30d26s2 ->
../../../../devices/ssm@0,0/pci@1a,600000/pci@1/lpfc@4/sd@1e,1a:c
...
lrwxrwxrwx 1 root other 58 Jul 21 11:35 /dev/dsk/c2t30d9s6 ->
../../../../devices/ssm@0,0/pci@1a,600000/pci@1/lpfc@4/sd@1e,9:g
lrwxrwxrwx 1 root other 58 Jul 21 11:35 /dev/dsk/c2t30d9s7 ->
../../../../devices/ssm@0,0/pci@1a,600000/pci@1/lpfc@4/sd@1e,9:h
# powermt config
# powermt check
# powermt save
# powermt display
Symmetrix logical device count=19
CLARiiON logical device count=0
Invista logical device count=0
=====
----- Host Bus Adapters -----
### HW Path Summary Total Dead IO/Sec Q-IOs Errors
=====
2304 ssm@0/pci@1a/pci@1/lpfc@4 optimal 19 0 - 0 0
2305 ssm@0/pci@1a/pci@1/lpfc@5 optimal 19 0 - 0 0
2306 ssm@0/pci@1b/pci@1/lpfc@4 optimal 19 0 - 0 0
2307 ssm@0/pci@1b/pci@1/lpfc@5 optimal 19 0 - 0 0
# powermt display dev=all
Pseudo name=emcpower52a
Symmetrix ID=000287970846
Logical device ID=000B
state=alive; policy=SymmOpt; priority=0; queued-IOs=0
=====
----- Host -----
### HW Path I/O Paths Stor Interf. I/O Path Mode State Q-IOs Errors
-----
2304 ssm@0/pci@1a/pci@1/lpfc@4 c2t30d9s0 FA 1dA active alive 0 0
2305 ssm@0/pci@1a/pci@1/lpfc@5 c3t30d9s0 FA 1dB active alive 0 0
2306 ssm@0/pci@1b/pci@1/lpfc@4 c4t30d9s0 FA 16dA active alive 0 0
2307 ssm@0/pci@1b/pci@1/lpfc@5 c5t30d9s0 FA 16dB active alive 0 0
...
Pseudo name=emcpower70a
Symmetrix ID=000287970846
Logical device ID=01C8
state=alive; policy=SymmOpt; priority=0; queued-IOs=0
=====
----- Host -----
### HW Path I/O Paths Stor Interf. I/O Path Mode State Q-IOs Errors
-----
2304 ssm@0/pci@1a/pci@1/lpfc@4 c2t30d61s0 FA 1dA active alive 0 0
2305 ssm@0/pci@1a/pci@1/lpfc@5 c3t30d61s0 FA 1dB active alive 0 0
2306 ssm@0/pci@1b/pci@1/lpfc@4 c4t30d61s0 FA 16dA active alive 0 0
2307 ssm@0/pci@1b/pci@1/lpfc@5 c5t30d61s0 FA 16dB active alive 0 0

```

Inbetriebnahme

in /etc/vfstab die Kommentare entfernen

Filesysteme einhängen

...fertig!!!!!!!!!!

Sauberen Ausgangszustand für Betrieb schaffen

Das fällt unter die Kategorie "nice to have" und hängt davon ab welches Zeitfenster für die Wartungsarbeiten zur Verfügung steht. Spielt Zeit eine untergeordnete Rolle sollte das auf jeden Fall durchgeführt werden.

- Rechner herunterfahren
- Autoboot im OBP wieder aktivieren
- Rechner starten
- Bootmeldungen und Protokolle prüfen