

Configuring EMC TimeFinder with
the ECC/SYMCLI software for Solaris

and

Other CLI Reference Commands

and

Setting up a SymAPI server

Configuring TimeFinder with EMC ECC/SYMCLI software for Solaris

After the ECC Solutions Enabler software is installed, perform the following steps:

```
# Create the device group for db240-mc devices
# symdg -type REGULAR create db240-mc-dg
```

Since db240-mc is on Symm0356, get the gatekeepers for it. By convention we'll associate the GK at LUN 241 to the device group. The GK at LUN 240 will be used for ECC/OSM.

```
# db240-mc is on Symm0356; What are Symm0356's GK's?
# symgate -sid 0356 list
```

Symmetrix ID: 000183700356

Device Name	Directors	Device
Physical	Sym SA :P DA :IT Config	Attribute Sts Cap(MB)
/dev/rdisk/c2t18d240s2	155 14B:0 07A:D0 2-Way Mir	N/Asst'd GK RW 3
/dev/rdisk/c2t18d241s2	156 14B:0 08A:D0 2-Way Mir	N/Asst'd GK RW 3

```
# Associate GK on LUN 241 with the device group.
# symgate -g db240-mc-dg associate pd /dev/rdisk/c2t18d241s2
-or-
# symgate -sid 0356 -g db240-mc-dg associate dev 156
```

Notes:

When you add a standard device (i.e. hypervolume), associate a BCV device, or associate GateKeeper device to a device group, its list attribute changes from N/Asst'd or N/Grp'd to Asst'd or Grp'd respectively.

You have to keep manual records of the gatekeeper (of the multiple ones available for a Symm) you assigned to the device group, because there is (apparently) no way to query that information (at least not until you add/associated STD or BCV devices).

```
# Collect a list of all standard devices (hypers) used by db240-mc.
You can do this several ways:
```

- running "**powermt display dev=all**" on db240-mc.
- running "**inq**" on db240-mc.
- running "**fpath -lsdb -d /dev/rdisk/c2t18d0s2**" (now **symmask/symmaskdb**) on the EMC Vlogix Console; you'll need to know the WWN of at least one of db240-mc's JNI cards in use.
- from your documentation

Since we are doing this on the EMC management console (which is also the Vlogix console) we'll conveniently choose the 3rd. method.

```
# fpath -lsdb -d /dev/rdisk/c2t18d0s2
[... output omitted ...]
```

Configuring TimeFinder with EMC ECC/SYMLI software for Solaris

Run the following script for the STD (Standard) devices.

```

#!/bin/sh

SYMMID=0356
DGNAME=db240-mc-dg
#
STD_LIST="086 087 088 089 08a 08b 08c 08d 08e 08f 090 091 \
          092 093 094 095 096 097 098 099 09a 09b 09c 09d \
          09e 09f 0a0 0a1 0a2 0a3 0a4 0a5 0a6 0a7 0a8 0a9 \
          0aa 0ab 0ac 0ad 0ae 0af 0b0 0b1 0b2 0b3 0b4 0b5 \
          0b6 0b7 0b8 0b9 0ba 0bb 0bc 0bd 0be 0bf 0c0 0c1 \
          0c2 0c3 0c4 157 158 159 15a 15b 15c 15d 15e 15f \
          160 161 162 163 164 165 166 167 168 169 16a 16b \
          16c 16d 16e 16f 170 171 172 173 174 175 176 177 \
          178 179 17a 17b 17c 17d 17e 17f 180 181 182 183 \
          184 185 186 187 188 189 18a 18b 18c 18d 18e 18f \
          190 191 192 193 194 195 196"
#
BCV_LIST="0C5 0C6 0C7 0C8 0C9 0CA 0CB 0CC 0CD 0CE 0CF 0D0 \
          0D1 0D2 0D3 0D4 0D5 0D6 0D7 0D8 0D9 0DA 0DB 0DC \
          0DD 0DE 0DF 0E0 0E1 0E2 0E3 0E4 0E5 0E6 0E7 0E8 \
          0E9 0EA 0EB 0EC 0ED 0EE 0EF 0F0 0F1 0F2 0F3 0F4 \
          0F5 0F6 0F7 0F8 0F9 0FA 0FB 0FC 0FD 0FE 0FF 100 \
          101 102 103 104 105 106 107 108 109 10A 10B 10C \
          10D 10E 10F 110 111 112 113 114 115 116 117 118 \
          119 11A 11B 11C 11D 11E 11F 120 121 122 123 124 \
          125 126 127 128 129 12A 12B 12C 12D 12E 12F 130 \
          131 132 133 134 135 136 137 138 139 13A 13B 13C \
          13D 13E 13F 140 141 142 1C7"
#
TYPE=STD; DEV_LIST=${STD_LIST}
#TYPE=BCV; DEV_LIST=${BCV_LIST}
#-----
if [ x${TYPE} = xSTD ]
then
{
  for DEV in ${DEV_LIST}
  do
  {
    echo "symlid -g ${DGNAME} -sid ${SYMMID} add dev ${DEV} ${TYPE}-${DEV}"
    symlid -g ${DGNAME} -sid ${SYMMID} add dev ${DEV} ${TYPE}-${DEV}
  }
  done
}
elif [ x${TYPE} = xBCV ]
then
{
  for DEV in ${DEV_LIST}
  do
  {
    # -----
    # The "add" subcommand works but is not documented.
    # I found out via a cut/paste accident.
    # -----
    #echo "symbcv -g ${DGNAME} -sid ${SYMMID} add dev ${DEV} ${TYPE}-${DEV}"
    #symbcv -g ${DGNAME} -sid ${SYMMID} add dev ${DEV} ${TYPE}-${DEV}
    #symbcv -g ${DGNAME} -sid ${SYMMID} rmall

    echo "symbcv -g ${DGNAME} -sid ${SYMMID} associate dev ${DEV} ${TYPE}-${DEV}"
    symbcv -g ${DGNAME} -sid ${SYMMID} associate dev ${DEV} ${TYPE}-${DEV}
  }
  done
}
else
{
  echo "ERROR: Device type (STD|BCV) not properly set."
  exit 1
}
fi

```

The hypervolumes seen on db240-mc, expressed in ranges are, 086:0c4 & 157:196.

Configuring TimeFinder with EMC ECC/SYMCLI software for Solaris

```
# Next we take an inventory of all the BCV devices that are available
# on Symm0356 which also have the N/Asst'd (Not Associated) attribute.
# If there are more BCV devices available than is required by our
# device group, then select a subset of BCV's that are evenly
# distributed (loosely speaking) over the backend DA and frontend SA's.
# symdev -sid 0356 list | grep BCV | grep "N/Asst'd"

# After examining the output of the above, we are satisfied that the listing
# generated is round-robin in nature; so we'll just take the first 127
# devices in the list (because that's how many STANDARD devices on the DG).
# symdev -sid 0356 list | grep BCV | grep "N/Asst'd" \
#       | sed -ne '1,127p' | awk '{print $1}'

# Now run the script above for the BCV devices.

# Finally, verify that our above operations were successful.
# symdg -sid 0356 list; symdg show db240-mc-dg
```

D E V I C E			G R O U P S		
Name	Type	Symmetrix ID	Num of Devices	Num of GateKeepers	Num of BCV's
db240-mc-dg	REGULAR	000183700356	127	1	127

[... verbose output omitted ...]

We are now ready to perform TimeFinder BCV operations via the SYMCLI `symmir` command.

```
# Start the copies, letting the software assign the BCV's
# so as to minimize Director and SCSI bus contention.
#
# symmir -g db240-mc-dg -v establish -full -opt \
#       [ STD-086 bcv ld BCV-0c5 \
#         STD-087 bcv ld BCV-0c6 \
#         ...
#         STD-196 bcv ld BCV-1c7 ]

# Although the software will remember the STD to BCV device
# pairing of the previous establishments (I think), lets take
# note of them here just in case. We might need this information
# when we go to re-establish the pairs, or restore from a BCV.
#
# symmir -g db240-mc-dg query -attach [STD-086 STD-087 ... STD-196]

symmir -d ${DGNAME} -v -force -symforce split LDEV_NAME1 [LDEV_NAME2...]
```

How to move data from R2 to STD on symm2565 using Solution Enabler

This documentation is to explain the detail command line to move data from R2 to STD on symm2565 once data is replicated from source site by. We will use BCV to accomplish the goal.

Right now I created ten device groups on both host prod1 and prod2 (10.18.4.31 and 10.18.4.32) based on the design. Five device groups are for R2 devices (finpdb_r, finpcm_r, toolsp_r, forms_r and ora_tar_r) while other five device groups are for Standard devices (finpdb, finpcm, toolsp, forms and ora_tar). Each of device group has 56, 16, 16, 10 and 6 devices in it respectively.

In order to move data from R2 to STD device, you have to issue the following commands for each group either on prod1 or prod2:

1) **symrdf -g finpdb_r query**

This command is to verify the R1-R2 device pair status to make sure all RDF pair devices are in failover or split status before you move the data from R2 to BCV.

2) **Symmirt -g finpdb_r establish -exact**

This command will establish the R2 device to BCV to make BCV copy of R2.

3) **symmir -g finpdb_r query -I 30**

This command is to verify the device copy status in 30 second interval. You have to make sure all devices are in synchronized mode before move on.

4) **symmir -g finpdb_r split**

This command will split the R2 device group from BCV.

Use **symmir -g finpdb_r query** to verify all devices are in split mode afterward.

5) **symbcv -g finpdb_r moveall finpdb**

This command will move all BCV from finpdb_r to finpdb device group.

6) **symmir -g finpdb restore -exact**

Before you restore the standard device, you have to stop the application on host prod1 or prod2, un-mount the filesystem, vary off the volume group and finally export the volume groups. (Since **the data was replicated from cluster env., you have export volume groups**)

This command will restore all BCV to Standard device incrementally.

Use **symmir -g finpdb query -I 30** to verify until all devices in the group are fully restored.

7) **symmir -g finpdb split**

This command will split BCV from Standard devices.

8) **symbcv -g finpdb moveall finpdb_r**

Move all BCV back to R2 device group.

Now you can import the volume group, vary off the volume group with **-c** option, vary on the volume group and mount the files system to start to use the devices on host prod1 or prod2. **symcfg** - Displays various symmetrix configuration. By varying options to this command, you can get a lot of information about the configuration of a Symm. Remember to update the local database of information (on the ECC server) with the latest information from the Symmetrix by running the **"symcfg discover"** command (also see **"symcfg sync"**).

Configuring TimeFinder with EMC ECC/SYMCLI software for Solaris

More SymCLI Commands and outputs.

List all FA ports on a Symmetrix, their WWN, and other attributes.

```
eccadmin@ec5-rmhi-jrn$ symcfg -sid 2565 list -FA all
```

```
Symmetrix ID: 000184502565
```

S Y M M E T R I X F I B R E D I R E C T O R S					
Dir	Port	WWN	VCN Enabled	Volume Set Addressing	Pnt to Pnt
FA-3A	0	50060482bfd24942	Yes	No	Yes
FA-5A	0	50060482bfd24944	Yes	Yes	Yes
FA-5A	1	50060482bfd24964	Yes	Yes	Yes
FA-12A	0	50060482bfd2494b	Yes	Yes	Yes
FA-12A	1	50060482bfd2496b	Yes	Yes	Yes
FA-14A	0	50060482bfd2494d	Yes	No	Yes
FA-3B	0	50060482bfd24952	Yes	No	Yes
FA-5B	0	50060482bfd24954	Yes	Yes	Yes
FA-5B	1	50060482bfd24974	Yes	No	Yes
FA-12B	0	50060482bfd2495b	Yes	Yes	Yes
FA-12B	1	50060482bfd2497b	Yes	No	Yes
FA-14B	0	50060482bfd2495d	Yes	No	Yes

Configuring TimeFinder with EMC ECC/SYMCLI software for Solaris

List all FA ports on a Symmetrix and the SLV's (Hypers) assigned to them, including their assigned Target & Lun. symcfg -sid 2565 list -FA all -addr

```
eccadmin@ec5-rmhi-jrn$ symcfg -sid 2565 list -FA all -addr
```

```
Symmetrix ID: 000184502565
```

Director			Device Name		Attr	Address			
Ident	Symbolic	Port	Sym	Physical		VBUS	TID	LUN	
FA-3A	03A	0	0000	Not Visible	VCM	0	0	000	
			0059	Not Visible		0	0	001	
			0001	Not Visible		0	0	010	
			0041	Not Visible		(M)	0	0	030
			0055	Not Visible		(M)	0	0	050
			005B	Not Visible			0	0	060
			005C	Not Visible			0	0	061
			0025	Not Visible			0	0	070
			002A	Not Visible			0	0	071
[...]									
FA-5A	05A	0	0000	Not Visible	VCM	0	0	000	
			009E	Not Visible		0	0	001	
			009F	Not Visible		0	0	002	
			00A0	Not Visible		0	0	003	
			00A1	Not Visible		0	0	004	
			00A2	Not Visible		0	0	005	
			00A3	Not Visible		0	0	006	
			00A4	Not Visible		0	0	007	
			00A5	Not Visible		0	1	000	
			00A6	Not Visible		0	1	001	
00A7	Not Visible	0	1	002					
00A8	Not Visible	0	1	003					
[...]									
FA-5A	05A	1	0000	Not Visible	VCM	0	0	000	
			01D8	Not Visible		0	F	000	
			01D9	Not Visible		0	F	001	
FA-12A	12A	0	0000	Not Visible	VCM	0	0	000	
			009E	Not Visible		0	0	001	
			009F	Not Visible		0	0	002	
			00A0	Not Visible		0	0	003	
			00A1	Not Visible		0	0	004	
			00A2	Not Visible		0	0	005	
			00A3	Not Visible		0	0	006	
			00A4	Not Visible		0	0	007	
			00A5	Not Visible		0	1	000	

[...] Rest of output (similar to above) omitted.

Configuring TimeFinder with EMC ECC/SYMCLI software for Solaris

Adding (authorizing) or removing (un-authorizing) an HBA wwn's ability to read/write from/to Hypers through a particular Symmetrix Director/Port combination.

```
eccadmin# symmask -sid 2565 -wwn <host_HBA_wwn> add devs \  
00c, 00d, 012 -dir 14a, port 0
```

-or-

```
eccadmin# symmask -sid 2565 -wwn <host_HBA_wwn> add devs \  
00c:00d, 012 -dir 14a, port 0
```

```
eccadmin# symmask -sid 2565 [-noprompt] refresh
```

```
eccadmin# symmaskdb -sid 2565 backup -file \  
symm2565_Date.vcmdbbkup
```

```
eccadmin# symcfg discover
```

Now reboot the host that contains the HBA whose WWN is **host_HBA_wwn**

```
#####
```

```
eccadmin# symmask -sid 2565 -wwn <host_HBA_wwn> remove devs \  
00c:00d, 012 -dir 14a, port 0 [-force]
```

```
eccadmin# symmask -sid 2565 [-noprompt] refresh
```

```
eccadmin# symmaskdb -sid 2565 backup -file \  
symm2565_Date.vcmdbbkup
```

```
eccadmin# symcfg discover
```

```
#####
```

```
eccadmin# symmaskdb -sid 2565 restore -file \  
symm2565_Date.vcmdbbkup
```

Replacing a failed HBA (which results in a change of WWN's)

```
symmask list logins (get old WWN)
```

(SWAP card here)

```
symmask [list|discover] hbas (get new WWN or look on FC switch)
```

```
symmaks -sid 2565 -wwn failed_card_wwn replace new_card_wwn
```

```
symmask discover
```

```
symmask -sid 2565 [-noprompt] refresh
```

Configuring TimeFinder with EMC ECC/SYMCLI software for Solaris

```
symcfg -sid 2565 -SA ALL list
```

```
Symmetrix ID: 000184502565
```

```
S Y M M E T R I X   D I R E C T O R S
```

Ident	Symbolic	Numeric	Slot	Type	Status
FA-3A	03A	3	3	FibreChannel	Online
SA-4A	04A	4	4	SCSI	Offline
FA-5A	05A	5	5	FibreChannel	Online
FA-12A	12A	12	12	FibreChannel	Online
FA-14A	14A	14	14	FibreChannel	Online
FA-3B	03B	19	3	FibreChannel	Online
SA-4B	04B	20	4	SCSI	Offline
FA-5B	05B	21	5	FibreChannel	Online
FA-12B	12B	28	12	FibreChannel	Online
FA-14B	14B	30	14	FibreChannel	Online

```

#!/bin/sh
#
SYMM_SERIAL_NUM=2565
#
#
#####
# Remember to do a "symcfg discover" if anything
# on the Symmetrix has changed, before running
# this script.
#####

#####
# First we run the 'symdev list' command for
# each Front End Adapter installed (i.e. we run it
# once for each Adapter by explicitly specifying
# that adapter). We have to do this because running
# a 'symdev list' specifying "-SA ALL" will (for
# some Hypers or BCVs -- who knows why) show
# '???:?' as the FA its mapped to when, in fact,
# they are mapped.
#
# Later we'll get all devices by running a full
# symdev list (because you would miss unmapped
# Hypers/BCVs/RDF devices).
#####
FRONT_END_ADAPTER_LIST=`symcfg -sid ${SYMM_SERIAL_NUM} -SA ALL list \
    | awk '/[FS]A-/ {print $2}`

for ADAPTER in ${FRONT_END_ADAPTER_LIST}
do
{
#echo "\n\n\n\n"
#echo "#####"
#echo "# Getting all devices connected to          #"
#echo "# Front End Director Port '${ADAPTER}'.          #"
#echo "#####"
echo "symdev -sid ${SYMM_SERIAL_NUM} list -SA ${ADAPTER}"
symdev -sid ${SYMM_SERIAL_NUM} list -SA ${ADAPTER}
#symdev -sid ${SYMM_SERIAL_NUM} list -SA ${ADAPTER} -multiport
#echo "#####"
}
done
#####

#####
# Now get all the devices (as explained above).
#####
#symdev -sid ${SYMM_SERIAL_NUM} -DA ALL list
#####

```

Setting up a SymAPI server

First install the Solutions Enabler component on the EMC Solaris management host (note that the full ECC suite is not necessary). After setting up the basics (symcfg discover, defining gatekeepers, etc.), perform the following to get the SYMAPI server running:

```
root@emc1# vi /var/symapi/config/netcnfg --AND--
root@client# vi /var/symapi/config/netcnfg
```

```
#####
#
#          SYMAPI NETWORK SERVICE FILE TEMPLATE
#
# This network service file maps a service name to a remote
# server host node name and/or internet address and also to
# a port number to provide a TCP/IP connection for executing
# remote SYMAPI functions. More than one service can be
# listed; one per line. This file, netcnfg is maintained in the SYMAPI
# configuration directory.
#
# There are six space separated fields:
# Service name, domain, protocol, server node, server address, and port.
# Domain should be unspecified (-) and protocol specified as TCPIP.
# A hyphen (-) may be used as a substitute for an unspecified
# server nodename or internet address field.
# A hatch (#) may be used as the first character in the line
# to indicate a comment line.
#
# Service Name  Domain  Protocol  Server Nodename  IP Address  Port #
#
# For example:
# SYMAPI_SERVER  -      TCPIP      node001          208.148.76.168  1234 #
# SYMAPI_BACKUP  -      TCPIP      node002          -              1234 #
#
#####
SYMAPI_LAB_EMCL -      TCPIP      -                167.206.125.200  2707
```

```
root@emc1# symapisrv -service SYMAPI_LAB_EMCL start -background
root@emc1# symcfg list -service <--- to check if the service is up.
root@emc1# netstat -a | grep 2707 <--- also to check if the service is up.
root@emc1# telnet localhost 2707 <--- also to check if the service is up.
```

-or-

```
root@emc1# symapisrv stop
```

```
#####
# Useful for testing the SYMAPI service right on the #
# SYMPI server you just started it on. #
#####
root@emc1# export SYMCLI_CONNECT=SYMAPI_LAB_EMCL
root@emc1# export SYMCLI_CONNECT_TYPE=[REMOTE|REMOTE_CACHED|LOCAL]
```

Configuring TimeFinder with EMC ECC/SYMCLI software for Solaris

So:

```
root@emc1# export SYMCLI_CONNECT_TYPE=LOCAL
root@emc1# export SYMCLI_CONNECT=SYMAPI_LAB_EMCL
root@emc1# symdev list <--- get a fast response here.
root@emc1# export SYMCLI_CONNECT_TYPE=REMOTE
root@emc1# symdev list <--- get a slower response here.
```

```
#####
# This is a must on the client side. This, in combination #
# with the application specific SYMAPI netcnfg file,      #
# directs application requests to the SYMAPI server.      #
#####
root@client# export SYMCLI_CONNECT=SYMAPI_LAB_EMCL
root@client# export SYMCLI_CONNECT_TYPE=[REMOTE|REMOTE_CACHED]
```

```
=====
For example, to test remote connection from a Windows2000
client, do the following:
```

- ```
=====
- Install Solutions Enabler (you don't need the full ECC)
 suite on the machine.

- Edit C:\Program Files\EMC\SYMAPI\config\netcnfg
 (see example above; you can optionally copy the netcnfg
 file that exists on the SYMAPI server and strip it down
 of entries [services] not needed).

- Add the path C:\Program Files\EMC\SYMCLI\Binaries to your
 path via the System tool under Control Panel.

- Start a DOS prompt and type the following:

 set SYMCLI_CONNECT_TYPE=REMOTE
 set SYMCLI_CONNECT=SYMAPI_LAB_EMCL (for example).

- Run the command "symdev list"
```

```
=====
Unless the file /var/symapi/config/nethost (singular) is set-up,
anyone who has Solutions Enabler (SYMCLI commands) available to
them will be able to connect to the remote SYMAPI server and
manipulate the associated Symmetrix with CLI commands. This is
not good, so you must always set this file up.
```

## Configuring TimeFinder with EMC ECC/SYMCLI software for Solaris

Its various line formats for this file are (see EMC Solutions Enabler documentation for more information):

```
=====
node user1 [, user2, ... userN]
IPaddress user1 [, user2, ... userN]
* user1 [, user2, ... userN]

node *
IPaddress *
* *
=====
```

For example, to enable only the Administrator in the Windows2000 example above to be able to connect to the remote SYMAPI server, the entry might look similar to this:

```
=====
167.206.9.168 Administrator
=====
```