Shared Virtual Array Administrator

for VM

Configuration and Administration

Documentation Update

Version: 3.1

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Shared Virtual Array Administrator for z/VM Configuration & Administration Guide

PPRCopy support for VM

16-Apr-2007 – VM PTF L2P00DD released. Doc changes delivery to tech pubs

Modify Table 1.1:

Add Function to table: "PPRC cascaded Ficon switches" - V2Xf/V2X4f (only) with microcode G02.03.xx.00

Modify Overview 2-5:

Peer-to-Peer Remote Copy (PPRC)

Peer-to-Peer Remote Copy (PPRC) is a way to synchronously propagate DASD updates from local *primary* volumes to remote *secondary* volumes of a like-device geometry. A primary volume and an associated secondary volume are called a *pair*. PPRC pairs are established and de-established using SVAA or ICKDSF commands.

The SVAA for VM has been enhanced with PTF L2P00DD to provide the new PPRC configuration command PPRCOPY and Subcommands ESTPATH, DELPATH, ESTPAIR, DELPAIR, SUSPEND, RECOVER, CGROUP, and QUERY. These commands provide a central point of configuration for PPRC configuration and management in place of the ICKDSF commands.

Modify Overview 2-9:

PPRCfcn feature

PPRCfcn replaces Standard PPRC and PowerPPRC and is supported only on theV2Xf/V2X4f. PPRCSnapShot continues to be a separate feature and includes support for the Snap to Primary and Remote SnapShot functions.

PPRCfcn is neither pure FICON nor pure Fibre Channel. Instead, it is a StorageTek-proprietary, upper-level protocol based on both. As such, PPRCfcn natively supports longer point-to-point distances than ESCON. PPRCfcn also performs significantly better than ESCON due to less channel overhead and the increased size of data frames.

System Adapter Identifier (SAID) Values

The System Adapter Identifier (SAID) values are specified in the LINKS parameter of the SVAA PPRCOPY ESTPATH command and are different between V2X and V2Xf models. See chapter 8 of this manual for the SAID values define for SVA devices..

These SAID values are used when configuring PPRC using SVAA or ICKDSF commands.

Insert (NEW) Subcommands and Commands (around 9-109):

SVAA PPRCOPY Subcommand

- Subcommand of SIBBATCH or SIBADMIN

This Subcommand is used to configure the Peer to Peer Remote Copy (PPRC) paths. SVAA PPRCOPY Subcommand may be used in place of the ICKDSF utility to configure the PPRC environment.

See the V2X or V2Xf Peer-to-Peer Configuration and User's Guide for a complete description of PPRC configuration and administration.

The SVAA PPRCOPY command provides support to establish and terminate paths, establish and terminate pairs, and to provide suspend, recover, cgroup, and query commands to manage the PPRC environment..

PPRCopy ESTPATH

Use the PPRCOPY ESTPATH command to establish ESCON or FCP (FICON) PPRC paths between a primary (application) site control subsystem and a secondary (recovery) site control subsystem.

Mixing of FCP and ESCON paths between storage subsystems is not allowed.

The PPRCOPY ESTPATH command is a “replace” function.

Each PPRCOPY ESTPATH command can establish up to four paths for a V2X or eight paths for a V2Xf/V2X4f.

Each primary virtual control unit (VCU) can, at any one time, be linked to a maximum of four secondary virtual control units. A separate PPRCOPY ESTPATH command is required for each VCU.

NOTE: SVAA for VM does not provide support for cascaded switches in a WWNN Domain. To support this feature you must use the SVAA z/OS product.

Establish Path -V2X or V2Xf

Required Parameters

PPRCopy ESTPATH (

UNIT (*unitaddr*)
PRImary (SSID(X'*ssid*') SerialNumber (*serialnum*))
SECondary (SSID(X'*ssid*') SerialNumber (*serialnum*))
LINKs (*linkaddrlist*)
)

Example

```
PPRC ESTPATH (UNIT(8300)
                    PRI(SSID(8303) SN(0001002))
                    SEC(SSID(7306) SN(0001001))
                    LINKS(X'000A0003'))
```

Optional Parameters

ConsistencyGROUP(YES | NO)

DEBUG(ON | CCW | OFF)

Parameters

The parameters of the PPRCOPY ESTPATH subcommand follow in alphabetical order.

ConsistencyGROUP(YES | NO)

Optional. This parameter determines how an error that is related to a PPRC device is reported by the storage subsystem.

- YES – This bit enables the extended long busy condition for a consistency group. Auto Operations can detect PPRC volume pair outages on these devices and take appropriate actions.
- NO – No specified error recovery. (DEFAULT)

Debug(On | CCW | Off)

Optional. This parameter directs the SVAA software to operate in DEBUG mode for diagnostic purposes. Use this parameter only at the direction of Software Support personnel.

- OFF – No Debugging messages are generated. (DEFAULT)
- CCW – Generate CCW trace output
- ON – Generated Debug messages.

LINKs(linkaddrlist)

Required. You must specify this parameter to provide the addressing path(s) from the primary to the secondary storage subsystem. It has two possible syntax definitions as follows:

Link Addressing - V2X or V2Xf

linkaddrlist – a comma separated list of 1-8 path addresses. Each path address consists of 8 hexadecimal digits defined here as 'ffff' 'gg' 'hh'. This syntax is used for non-WWNN Domains (N_Port_ID addressing) which is the only support provided with SVAA/VM.

- ffff – Primary storage subsystem's Cluster/Interface System Adapter ID (SAID) value (see table 1)
- gg –Destination Link address. Specify the outgoing port of a Ficon switch or '00' if using direct attach or a static switch
- hh – Destination Logical VCU

TABLE 1 – System Adapter ID (SAID) Values for V2Xf and V2X

Cluster/Interface	IFC or ICE2 Card Slot	V2Xf SAID Value	V2X SAID Value
0 / A	00 Top	X'0000'	X'0000'
0 / B	00 Bottom	X'0001'	X'0001'
0 / C	01 Top	X'0002'	X'0020'
0 / D	01 Bottom	X'0003'	X'0021'
0 / E	02 Top	X'0004'	X'0040'
0 / F	02 Bottom	X'0005'	X'0041
0 / G	03 Top	X'0006'	X'0060'
0 / H	03 Bottom	X'0007'	X'0061'
1 / A	10 Top	X'0008'	X'0010'
1 / B	10 Bottom	X'0009'	X'0011'
1 / C	11 Top	X'000A'	X'0030'

Cluster/Interface	IFC or ICE2 Card Slot	V2Xf SAID Value	V2X SAID Value
1 / D	11 Bottom	X'000B'	X'0031'
1 / E	12 Top	X'000C'	X'0050'
1 / F	12 Top	X'000D'	X'0051'
1 / G	13 Top	X'000E'	X'0070'
1 / H	13 Bottom	X'000F'	X'0071'

PRImary (SSID(X'*ssid*') SerialNumber (*serialnum*))

***Required*. This parameter is required and specifies the primary (application) subsystem.**

- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the primary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the primary storage subsystem.

SECondary (SSID(X'*ssid*') SerialNumber (*serialnum*))|

***Required*. This parameter is required and specifies the secondary (recovery) subsystem.**

- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the secondary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the secondary storage subsystem.

UNIT(unitaddr)

Required. You must specify this parameter.

- For *unitaddr* specify the address known by the host operating system as 3 or 4 hexadecimal digits.

PPRC DELPATH

Use the PPRCOPY DELPATH command to terminate all PPRC paths between a primary (application) site control subsystem and a secondary (recovery) site control subsystem. Only active paths are effected by PPRCOPY DELPATH. You may only terminate the paths if there are no active PPRC pairs.

Terminate Path - V2X or V2Xf

Required Parameters

PPRCopy DELPATH (
UNIT (*unitaddr*)
PRImary (SSID(X'*ssid*') SerialNumber (*serialnum*))
SECondary (SSID(X'*ssid*') SerialNumber (*serialnum*))
)

Examples

```
PPRC DELPATH (UNIT(8300)
                    PRI(SSID(8303) SN(0001002))
                    SEC(SSID(7306) SN(0001001)))
```

Optional Parameters

DEBUG(ON | CCW | OFF)

Parameters

The parameters of the PPRCOPY DELPATH subcommand follow in alphabetical order.

Debug(On | CCW | Off)

Optional. This parameter directs the SVAA software to operate in DEBUG mode for diagnostic purposes. Use this parameter only at the direction of Software Support personnel.

- OFF – No Debugging messages are generated. (DEFAULT)
- CCW – Generate CCW trace output

- ON – Generated Debug messages.

PRImary (SSID(X'*ssid*') SerialNumber (*serialnum*))

***Required*. This parameter is required and specifies the primary (application) subsystem.**

- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the primary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the primary storage subsystem.

SECondary (SSID(X'*ssid*') SerialNumber (*serialnum*))

***Required*. This parameter is required and specifies the secondary (recovery) subsystem.**

- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the secondary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the secondary storage subsystem.

UNIT(unitaddr)

Required. You must specify this parameter.

- For *unitaddr* specify the address known by the host operating system as 3 or 4 hexadecimal digits.

PPRCopy ESTPAIR

Use the PPRCOPY ESTPAIR command to establish a peer-to-peer remote copy device pair. It is used to specify the primary and secondary volume within a pair of SVA subsystems with the PPRC Feature enabled..

The device track geometry of the primary and secondary volumes must be the same for both volumes:

- Tracks per cylinder

- Number of bytes per track

The secondary device must have the same track format and at least as many cylinders as the primary devices.

- PPRC allows data to be copied from a smaller primary device to a larger secondary device as long as the device geometry is the same (tracks per cylinder and capacity). The additional space on the secondary device is not available until the devices are returned to simplex state and the secondary volume is re-initialized.

Mult-volume datasets span multiple devices. If any devices of a multi-volume dataset are included in a PPRC pair then all volumes in that dataset should be included in a PPRC pair to insure dataset recoverability.

Required Parameters

PPRCopy ESTPAIR (
UNIT (*unitaddr*)
PRImary (SSID(X'*ssid*') SerialNumber (*serialnum*) CCA(*cca*)
SECondary (SSID(X'*ssid*') SerialNumber (*serialnum*) CCA(*cca*))

Example

```
PPRC ESTPAIR (UNIT(8300)
                PRI(SSID(8303) SN(0001002) CCA(1F)
                SEC(SSID(7306) SN(0001001) CCA(1F)) )
```

Optional Parameters

CRIT (NO | YES)

MODE (COPY | NOCOPY | RESYNC)

MSGREQ (NO | YES)

DEBUG (ON | CCW | OFF)

Parameters

The parameters of the PPRCOPY ESTPAIR subcommand follow in alphabetical order.

CRITical(<u>NO</u> | YES)

Optional. This parameter determines write update error processing

- Yes – Specifies that an I/O failure to write to the secondary will result in a unit check and the primary will not be placed in a suspended duplex state.

- No – Specifies that following an I/O failure to write to the secondary, subsequent write requests to the primary volume in suspended duplex state are allowed without a unit check being issued. (DEFAULT)

DEBUG(On | CCW | <u>Off</u>)

Optional. This parameter directs the SVAA software to operate in DEBUG mode for diagnostic purposes. Use this parameter only at the direction of Software Support personnel.

- OFF – No Debugging messages are generated. (DEFAULT)

- CCW – Generate CCW trace output

- ON – Generated Debug messages.

MODE(COPY | NOCOPY | RESYNC)

Optional. This parameter determines the copy mode of the pair.

- COPY – Specifies that all tracks on the primary are to be copied to the secondary volume. (DEFAULT)
- NOCOPY – Specifies that only those tracks on the primary volume that are updated after the pair is established are to be copied to the secondary device. This mode should be specified only if it is known that the pair are already exact copies of each other. Ensure that no I/O operations occur to either volume prior to starting the copy (establish pair) operation in order to insure data integrity of the volume pair.

- RESYNC – Specifies that a copy (pair) that has been previously suspended, is to be re-established. Only those tracks updated during the period of suspension are copied from the primary volume to the secondary volume.

MSGREQ(<u>NO</u> | YES)

Optional. This parameter determines pair completion message processing

- YES – Specifies that PPRCopy will wait until the initial full-volume copy operation is complete before issuing a completion message.
- NO – Specifies that the command is completee upon initiating the request to the Storage Control Unit (SVA). PPRCopy does not wait for the copy operation to complete before issuing a completion message. (DEFAULT)

PRImary(SSID(X'*ssid*') SerialNumber(*serialnum*) CCA(*cca*))

Required. This parameter is required and specifies the primary (application) subsystem.

- CCA – The channel connection address is a 2-digit hex address for the unit.
- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the primary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the primary storage subsystem.

SECondary(SSID(X'*ssid*') SerialNumber(*serialnum*) CCA(*cca*))

Required. This parameter is required and specifies the secondary (recovery) subsystem.

- CCA – The channel connection address is a 2-digit hex address for the unit.
- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the secondary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the secondary storage subsystem.

UNIT(unitaddr)

Required. You must specify this parameter.

- For *unitaddr* specify the address known by the host operating system as 3 or 4 hexadecimal digits.

PPRCopy DELPAIR

Use the PPRCOPY DELPAIR command to de-establish a peer-to-peer remote copy device pair and return the devices to a Simplex state

Required Parameters

PPRCopy DELPAIR (
UNIT (*unitaddr*)
PRImary (SSID(X'*ssid*') SerialNumber (*serialnum*) CCA(*cca*)
SECondary (SSID(X'*ssid*') SerialNumber (*serialnum*) CCA(*cca*))

Examples

```
PPRC DELPAIR (UNIT(8300)
                PRI(SSID(8303) SN(0001002) CCA(1F)
                SEC(SSID(7306) SN(0001001) CCA(1F)) )
```

Optional Parameters

DEBUG (ON | CCW | OFF)

Parameters

The parameters of the PPRCOPY DELPAIR subcommand follow in alphabetical order.

DEBUG(On | CCW | Off)

Optional. This parameter directs the SVAA software to operate in DEBUG mode for diagnostic purposes. Use this parameter only at the direction of Software Support personnel.

- OFF – No Debugging messages are generated. (DEFAULT)
- CCW – Generate CCW trace output
- ON – Generated Debug messages.

PRImary(SSID(X'*ssid*') SerialNumber(*serialnum*) CCA(*cca*))

Required. This parameter is required and specifies the primary (application) subsystem.

- CCA – The channel connection address is a 2-digit hex address for the unit.
- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the primary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the primary storage subsystem.

SECondary(SSID(X'*ssid*') SerialNumber(*serialnum*) CCA(*cca*))

Required. This parameter is required and specifies the secondary (recovery) subsystem.

- CCA – The channel connection address is a 2-digit hex address for the unit.
- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the secondary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the secondary storage subsystem.

UNIT(unitaddr)

Required. You must specify this parameter.

- Required for an MVS volume. For *unitaddr* specify the address known by the host operating system as 3 or 4 hexadecimal digits.

PPRCopy SUSPEND

Use the PPRCOPY SUSPEND command to suspend PPRC operations between a primary and secondary volume pair. When the Suspend command is directed to a primary or secondary device the pair is suspended and data is no longer transferred to the secondary device. The primary device then begins to record out-of-sync cylinders so that when the pair is re-established with ESTPAIR the MODE(RESYNC) parm may be used to re-synchronize the out-of-sync cylinders and return to Duplex status.

Required Parameters

PPRCopy SUSPEND (
UNIT (*unitaddr*)
PRImary (SSID(X'*ssid*') SerialNumber (`serialnum`) CCA(*cca*)
SECondary (SSID(X'*ssid*') SerialNumber (`serialnum`) CCA(*cca*))

Examples

```
PPRC SUSPEND (UNIT(8300)
                PRI(SSID(8303) SN(0001002) CCA(1F)
                SEC(SSID(7306) SN(0001001) CCA(1F)) )
```

Optional Parameters

DEBUG (ON | CCW | OFF)

Parameters

The parameters of the PPRCOPY SUSPEND subcommand follow in alphabetical order.

DEBUG(On | CCW | Off)

Optional. This parameter directs the SVAA software to operate in DEBUG mode for diagnostic purposes. Use this parameter only at the direction of Software Support personnel.

- OFF – No Debugging messages are generated. (DEFAULT)
- CCW – Generate CCW trace output
- ON – Generated Debug messages.

PRImary(SSID(X'*ssid*') SerialNumber(*serialnum*) CCA(*cca*))

Required. This parameter is required and specifies the primary (application) subsystem.

- CCA – The channel connection address is a 2-digit hex address for the unit.
- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the primary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the primary storage subsystem.

SECondary(SSID(X'*ssid*') SerialNumber(*serialnum*) CCA(*cca*))

Required. This parameter is required and specifies the secondary (recovery) subsystem.

- CCA – The channel connection address is a 2-digit hex address for the unit.
- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the secondary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the secondary storage subsystem.

UNIT(unitaddr)

Required. You must specify this parameter.

- For *unitaddr* specify the address known by the host operating system as 3 or 4 hexadecimal digits.

PPRCopy RECOVER

Use the PPRCOPY RECOVER command to allow the secondary (recovery) system to regain control of a secondary PPRC device. It signals the secondary storage control to stop PPRC processing and put the secondary volume into simplex mode to allow secondary (recovery) system control. At this time the recovery system may verify the volser and re-label if so desired.

Required Parameters

PPRCopy RECOVER (
UNIT (*unitaddr*)
PRImary (SSID(X'*ssid*') SerialNumber (`serialnum`) CCA(*cca*)
SECondary (SSID(X'*ssid*') SerialNumber (`serialnum`) CCA(*cca*))

Examples

```
PPRC RECOVER (UNIT(8300)
              PRI(SSID(8303) SN(0001002) CCA(1F)
              SEC(SSID(7306) SN(0001001) CCA(1F)) )
```

Optional Parameters

DEBUG (ON | CCW | OFF)

Parameters

The parameters of the PPRCOPY RECOVER subcommand follow in alphabetical order.

DEBUG(On | CCW | <u>Off</u>)

Optional. This parameter directs the SVAA software to operate in DEBUG mode for diagnostic purposes. Use this parameter only at the direction of Software Support personnel.

- OFF – No Debugging messages are generated. (DEFAULT)
- CCW – Generate CCW trace output
- ON – Generated Debug messages.

PRImary(SSID(X'*ssid*') SerialNumber(*serialnum*) CCA(*cca*))

Required. This parameter is required and specifies the primary (application) subsystem.

- CCA – The channel connection address is a 2-digit hex address for the unit.
- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the primary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the primary storage subsystem.

SECondary(SSID(X'*ssid*') SerialNumber(*serialnum*) CCA(*cca*))

Required. This parameter is required and specifies the secondary (recovery) subsystem.

- CCA – The channel connection address is a 2-digit hex address for the unit.
- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the secondary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the secondary storage subsystem.

UNIT(unitaddr)

Required. You must specify this parameter.

- For *unitaddr* specify the address known by the host operating system as 3 or 4 hexadecimal digits.

PPRCopy CGROUP

Use the PPRCopy CGROUP command to control operations for multiple PPRC volume pairs in a single SSID. This command allows you to suspend or resume all operations for all PPRC volumes in a single SSID. You must issue a separate CGROUP command specifying either the FREEZE or RUN operation for each SSID. You cannot specify the RUN parameter with the FREEZE parameter

Required Parameters

PPRCopy CGROUP (
UNIT (*unitaddr*)
PRImary (SSID(X'*ssid*') SerialNumber (*serialnum*))
SECondary (SSID(X'*ssid*') SerialNumber (*serialnum*))
FREEZE | RUN)

Examples

```
PPRC CGROUP(UNIT(8300)
                PRI(SSID(8303) SN(0001002))
                SEC(SSID(7306) SN(0001001) FREEZE) )

PPRC CGROUP(UNIT(8300)
                PRI(SSID(8303) SN(0001002))
                SEC(SSID(7306) SN(0001001) RUN) )
```

Optional Parameters

DEBUG (ON | CCW | OFF)

Parameters

The parameters of the PPRCOPY CGROUP subcommand follow in alphabetical order.

DEBUG(On | CCW | Off)

Optional. This parameter directs the SVAA software to operate in DEBUG mode for diagnostic purposes. Use this parameter only at the direction of Software Support personnel.

- OFF – No Debugging messages are generated. (DEFAULT)
- CCW – Generate CCW trace output

- ON – Generated Debug messages.

FREEZE | RUN

Required. Specifies that all PPRC operations within the specified SSID are to be suspended or resumed.

- FREEZE – This command allows you to suspend operations for all PPRC volume pairs on a single SSID. FREEZE specifies that PPRC stop all updates to secondary control units that are (PPRC) related to this SSID. The SVA does not allow any subsequent activity to the secondary volumes and all Paths are removed for the secondary controller(s).

- RUN – This command allows you to resume operations for all PPRC volumes on a single SSID. RUN specifies that I/O operations resume for the PPRC primary volumes but the PPRC pairs remain suspended. You must issue the appropriate ESTPATH command followed by the ESTPAIR command with MODE(RESYNC) to re-establish the PPRC Duplex states of the pairs.

PRImary(SSID(X'*ssid*') SerialNumber(*serialnum*))

Required. This parameter is required and specifies the primary (application) subsystem.

- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the primary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the primary storage subsystem.

SECondary(SSID(X'*ssid*') SerialNumber(*serialnum*))

Required. This parameter is required and specifies the secondary (recovery) subsystem.

- SSID - The storage control subsystem ID (*ssid*) is a 4-digit hexadecimal address of the secondary control subsystem.
- SerialNumber – The *serialnum* is the last 1 to 8 digits of the frame serial number for the secondary storage subsystem.

UNIT(unitaddr)

Required. You must specify this parameter.

- For *unitaddr* specify the address known by the host operating system as 3 or 4 hexadecimal digits.

PPRCopy QUERY

Use the PPRCOPY QUERY command to display information about PPRC pairs to either a primary or secondary PPRC volume. PPRC path information is available from the primary volume only. Output generated by the QUERY command indicates Primary and Secondary with respect to the PPRC relationship.

If a host system is attached only to a primary volume it cannot obtain the status for the secondary volume for that pair. The same is true with respect to a host that is only attached to a secondary volume which cannot obtain status for a primary volume.

Required Parameters

PPRCopy QUERY (
UNIT (*unitaddr*)
)

Examples

PPRC QUERY (UNIT(8300))
PPRC QUERY (UNIT(8300) PATHS)

Optional Parameters

PATHS

DEBUG(ON | CCW | OFF)

Parameters

The parameters of the PPRCOPY QUERY subcommand follow in alphabetical order.

Debug(On | CCW | Off)

Optional. This parameter directs the SVAA software to operate in DEBUG mode for diagnostic purposes. Use this parameter only at the direction of Software Support personnel.

- OFF – No Debugging messages are generated. (DEFAULT)

- CCW – Generate CCW trace output
- ON – Generated Debug messages.

PATHS

Optional. This parameter directs the QUERY command to display all of the paths associated with the PPRC primary subystem, and the status of each path.

UNIT(unitaddr)

Required. You must specify this parameter.

- For *unitaddr* specify the address known by the host operating system as 3 or 4 hexadecimal digits.

Example of PPRC QUERY DEVICE output

```
SIB0700I   09:29:57 PPRCOPY QUERY (UNIT(8300))
SVAA PPRCOPY QUERY DEVICE    -    DATE:  Tue Sep 19, 2006   TIME: 09:29:56

   UNIT   STATUS       DEVTYPE    CYLS   CUMODEL   CUTYPE   CRIT   CGROUP
  -----   ----------   -------   -----   -------   ------   ----   ------
   8300   SIMPLEX      3390-03    3339    3990     00V2Xf    NO       NO

  STATE:  (0)  SIMPLEX

               SSID   VCU   CCA     SERIAL #           WWNN
               ----   ---   ---    ----------    ----------------
  SIMPLEX      8303    3     00    0000001002    500104F000821550

SIB5201I   The QUERY command completed successfully, return code = 0.
```

Example of PPRC QUERY PATHS output

```
SIB0700I   09:29:57 PPRCOPY QUERY (UNIT(8300) PATHS)
SVAA PPRCOPY QUERY PATHS     -    DATE:  Tue Sep 19, 2006   TIME: 09:29:56

   UNIT   STATUS       DEVTYPE    CYLS   CUMODEL   CUTYPE   CRIT   CGROUP
  -----   ----------   -------   -----   -------   ------   ----   ------
   8300   SIMPLEX      3390-03    3339    3990     00V2Xf    NO       NO

  STATE:  (0)  SIMPLEX

               SSID   VCU   CCA     SERIAL #           WWNN
               ----   ---   ---    ----------    ----------------
  SIMPLEX      8303    3     00    0000001002    500104F000821550

  **********   PATH INFORMATION     *********

               SSID   VCU    SERIAL #           WWNN
               ----   ---   ----------    ----------------
       SCU.0   7306    3    0000001001    500104F000821530

        PATH  PFCA  SFCA  STATUS  DESCRIPTION
       -----  ----  ----  ------  -----------
          1   0001  0001    01    PATH ESTABLISHED
          2   0003  0009    01    PATH ESTABLISHED
          3   0009  0003    01    PATH ESTABLISHED
          4   ....  ....    ..    NO PATH
          5   ....  ....    ..    NO PATH
          6   ....  ....    ..    NO PATH
          7   ....  ....    ..    NO PATH
          8   ....  ....    ..    NO PATH

SIB5201I   The QUERY command completed successfully, return code = 0.
```

Definitions of QUERY Report Headings

The terms that appear as column headers in the reports generated by the PPRC QUERY commands are defined in the following list in alphabetical order.

CCA - The 2-digit hexadecimal Channel Connection Address of the primary volume

CRIT – Specifies whether CRIT (Yes or No) has been specified for this device

CGROUP – Specifies whether CGROUP (Yes or No) has been specified for this device

CUTYPE – Control Unit Type (vendor)

CUMODEL – Control Unit Model emulation

CYLS – Number of addressable cylinders on the device

DEST - Displays a 4-digit hexadecimal LINK address made up of an outgoing port (or 00) and a destination VCU SAID and DEST make up the LINK address in a non-WWNN Domain.

DEVTYPE – Device Model emulation

FIRST CYL… - This information is presented only for volumes in duplex pending or suspended duplex states. If this is a primary volume, this is the lowest cylinder out of sync on the primary volume. If this is a secondary volume, this is the lower cylinder number received from the primary which is staged in cache and not yet written to the secondary volume (and may be affected by staging in cache).

LAST CYL… - This information is presented only for volumes in duplex pending or suspended duplex states. If this is a primary volume, this is the highest cylinder out of sync on the primary volume. If this is a secondary volume, this is the higher cylinder number received from the primary which is staged in cache and not yet written to the secondary volume (and may be affected by staging in cache).

NUMBER OF TRACKS REMAINING – This is the number of tracks remaining to be copied from a primary to a secondary PPRC pair. This information is only for primary volumes in duplex pending or suspended states.
PATH – Logical path number of 1 to 8 for each secondary control unit (SCU.x)

PFCA – The 4-digit SAID (System Adapter ID) for the primary fibre channel adapter. The PFCA and SFCA make up the LINK address in a WWNN Domain.
SAID – The 4-digit hexadecimal System Adapter ID of the primary storage control unit. SAID and DEST make up the LINK address in a non-WWNN Domain.

SERIAL # - The 10-digit storage control unit serial number

SFCA – The 4-digit SAID (System Adapter ID) for the secondary fibre channel adapter. The PFCA and SFCA make up the LINK address in a WWNN Domain.

SCU.x – The Secondary Control Unit by index value

SSID - The 4-digit hexadecimal Subsystem ID for the Primary Site Storage Control Unit

STATE – Indicates the state of the PPRC volume. It may be in simplex, duplex pending, duplex, or in a suspended state. The value [*n*] may be any one of the following:

[0] Simplex
[1] Duplex Pending
[2] Full Duplex
[3] Host suspended primary device. The Copy is suspended and no read or write commands will be accepted.
[4] Host suspended secondary device. Updates to the primary device will continue to be accepted and out of sync cylinders will be recorded.

[5] Copy is suspended by the primary control unit update secondary device status command. This value is only returned by a secondary device.
[6] Copy is suspended by an internal control unit condition.
[7] Copy is suspended due to secondary control unit sending a state change interrupt to the primary control unit indicating a transition to simplex state.
[8] Copy is suspended by internal conditions within the secondary device.
[9] Copy is suspended as a result of an IML or power interruption to the primary control unit.
[A] Copy is suspended due to the host issuing a Freeze PPRC group order.

STATUS (DEVICE) – Displays the PPRC status of the device

STATUS (PATH) – The DESCRIPTION of the path status as indicated below:
[00] No Path (The SAID/DEST appears as "---- ----")
[01}Path established
[02] Initialization failure
[03] Time-out
[04] No resources available at primary
[05] No resources available at secondary
[06] Serial number mismatch
[07] SCU/SSID mismatch
[08] ESCON link is offline
[09] Establish failed but will retry when conditions change
[0A] System adapter has a host path already established
[0B] Path cannot be connected in the same cluster
[10] Configuration error
[12] VCU and link address miscompare
[13] Fibre path established
[14] Fibre channel path link down
[15] Fibre channel path retries exceeded
[16] Fibre channel path secondary adapter not PPRC capable
[17] Fibre channel path secondary adapter not available
[18] Fibre channel path primary login exceeded
[19] Fibre channel path secondary login exceeded
[nn] Status is undetermined

SUBSYSTEM – The disk storage subsystem participating in the Peer-to-Peer Remote Copy configuration

UNIT – Host addressable device number

VCU – Virtual Control Unit (synonymous with LSS in ICKDSF or TSO commands)

WWNN – World Wide Node Name utilized by the Fibre (Ficon) channel protocol

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