TECH NOTE

FICON Switch I/O Configuration
Quick Reference

This paper is a quick reference for FICON I/O configuration as follows:

- Device Type in Input/Output Configuration Program (IOCP) or Hardware Configuration Definition (HCD)
- I/O Operations (IOOPs) and Authorized Program Analysis Report (APAR) for 16 Gbps Capable Switches
- Control Unit Port (CUP)
- Missing Interrupt Handler Primary Time Out (MIHPTO)
- Switch ID and Switch Address
- Port Range
- Logical Port Number for M-Series Directors
DEVICE TYPE IN IOC OR HCD: 2032

Although IBM has developed new machine types for FICON directors, the device type for all directors and switches, regardless of model or manufacturer, should be configured as type 2032 in HCD. With z/OS V1R12 a generic switch type, FCS, was added, but this generic switch type does not support CUP.

IOOPS AND APAR FOR 16 GBPS CAPABLE SWITCHES

IOOPs: 3.3
APAR: OA37700

Without this APAR, the connected port types are interpreted as type 0 which is used to indicate a direct attachment. Since direct attach is not permitted on a switch, IOOPs does not allow you to make any changes or save any IFPS (Interactive fast path program) files (F5 key).

CONTROL UNIT PORT

In addition to management, RMF 74-7 records can be obtained from the switches and directors. When using the CUP port to collect RMF statistics, it is recommended that a primary path be defined that is shared among all Logical Partitions (LPARs). Dedicated paths from several LPARs may overwhelm the CUP port, resulting in “Reset Allegiance” errors on the MVS console.

The ability to share CUP for this purpose is addressed in IBM Authorized Program Analysis Report (APAR) OA02187. Brocade does not represent IBM but we believe this APAR is standard with z O/S 1.8 and above. LPARs are instructed to gather RMF statistics in IEASYSOA by setting IOS=FC.

Whenever CUP is defined on the host, ports 0xFF and 0xFE are reserved. Port 0xFE is a virtual port used for all CUP activity. If the director has physical ports 0xFE and 0xFF, they cannot be used for device connections, but they can be used for Inter-Switch Link (ISL) connections when cascading or for native FCP connections.

Whenever CUP is defined, the Fabric Management Server (FMS) must be enabled on the switch or director. FMS is a licensed feature. In many cases, the license is a bundled feature.

MIHPTO

The recommended MIHPTO for the CUP is 3 min (180 sec). With older versions of Fabric OS® (FOS), the default was 15 sec. Since FOS 6.1.0c, the default is 180 sec, but it is not changed when older versions of FOS are upgraded. The Missing Interrupt Handles (MIH) timers can be set and viewed from the switch management console.

To set and display the MIH from MVS:

```bash
setios mih,dev=(xxxx),time=03:00
d ios,mih,dev=(xxxx)
```

SWITCH ID AND SWITCH ADDRESS

The Switch ID is used only for switch or director identification in the IOCP (or HCD). The Switch ID must be unique for each FICON switch or director. Although not required, the best practice is to always set the Switch ID = Switch Address.

The Switch Address is the first byte of the two-byte link address. The Domain ID of a switch or director is a unique identifier that is part of the Fibre Channel (FC) address. Even if single-byte addressing is used, it is still useful to have the Switch ID = Switch Address, because the FC address is displayed on management applications, such as Brocade Data Center Fabric Manager (DCFM®) and channel monitoring tools. For older M-Series (former McDATA) and B-Series (Brocade) directors in Interopmode 2 (IM=2), there is a domain ID offset. The Domain ID and offset is...
configurable on the switches/directors. For switches and directors with a Domain ID offset, the Switch Address must be:

Switch Address = Domain ID + Offset (in hex)

For switches or directors that do not have an offset (all B-Series in IM=0 and M-Series configured for an offset of 0), the Switch Address must be:

Switch Address = Domain ID (in hex.)

**Example 1:** Domain ID = 10 and offset = 0x60; Switch Address = 0x6A

**Example 2:** Domain ID = 10 with no offset; Switch Address = 0x0A

**PORT RANGE**

When defining the port range for a switch in the HCD, the best practice is to define the entire port range for the switch, even when the switch is not fully populated with port cards. Doing so eliminates the need to change the switch definition in the HCD if port cards are added at a later date.

**M6064 AND M6140 LOGICAL PORT NUMBER**

The older McDATA 6064 and Brocade M6140 M-Series directors have a port offset, creating a logical port number. Port numbers 0x84 through 0x87 are reserved for internal use only on the M6140. All port numbers in the I/O Configuration (IOCP or HCD) should be entered as the logical port number. Both physical and logical numbers are printed on the back of the directors and can be displayed on the management console. Note that this does not affect any other Brocade switch or director.

Port Number = Physical Port Number In Hex + 4

**Example:** Physical port 42 is logical port 0x2E. (42+4 = 46 = 0x2E)