FDDI Frequently Asked Questions

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Questions

Introduction

This document answers frequently asked questions about Fiber Distributed Data Interface (FDDI).

Q. Is there a converter between multi−mode and single−mode optic fiber?

- Single−mode fiber: 10/125 um
- Multi−mode fiber: 62.5/125 um

Yes, there are adapters available from third−party vendors.

Q. How can I go from an FC to an ST connector type? What sort of converter is necessary?

A. In order to go from FC single−mode to ST single−mode, you need a patch cable with those two types of connectors at either ends, or you can use a hybrid coupling adapter to convert from one to the other. In order to go from FC single−mode to multi−mode, you need an electronic converter.

Q. What are the attenuation requirements for the connection of single−mode FDDI interfaces on short−haul connections?

A. Cisco uses Category I transceiver interfaces for single−mode FDDI, which do not normally require attenuators. The input power/receive level must not exceed −14 dbm. The output power/transmit level for Category I transceivers must not exceed −14 dbm. If you use Category II transceiver interfaces (non−Cisco) for single−mode FDDI, the receiver expects a minimum optical power loss of 14 to 15 dB, without which the receiver can become

saturated, which cause errors. This attenuation can be achieved if you insert fixed attenuators in line. or darken the end of a connector with a smooth tipped marker pen to accomplish the same purpose.

Q. What is needed to compute the FDDI power budget with the single−mode interface on a Cisco router?

A. Receiver and transmitter sensitivity is the only information necessary to compute the power budget. For Cisco, the Tx optical output is −19 dbm and Rx optical input is −31 dBm.

This is the formula:

```
Power Budget = P − R = M + (A*L/2) + C

Where:
P = Transmitted Output Power
R = Receiver Sensitivity
M = Required Power Margin
A = Fiber Attenuation
C = Connector Losses
L = Fiber Length
```

The transmitted power must always be greater than the sum of the required power margin, receiver sensitivity, fiber attenuation multiplied by the fiber length, and half the connector losses.

Q. What are the maximum multi−mode and single−mode link lengths?

A. This is thee maximum link length (station−to−station):

- Multi−mode (MM): 2km
- Single−mode (SM): 30km

The maximum ring length for a full FDDI path is 200km. When the ring wraps, the length doubles.

65u and 50u are accepted for MM. 8.7u to 10u is accepted for SM.

```
50u   (NA=.20)      6−7 dB
50u   (NA=.21)  6.5−7.5 dB
50u   (NA=.22)      7−8 dB
62.5u (NA=.275)      11 dB
```

The connection loss when you connect 50u to 62.5u is listed; our MM applique is for 62.5u:

```
50u (NA=.20)   2.2 dB
50u (NA=.21)   1.9 dB
50u (NA=.22)   1.6 dB
```

Q. What is normal PCM signaling in dual−homed FDDI?

A. When the B port is active, the A port cycles through the PCM states Next, Break, Signal, and Connect. It also cycles through the line states Idle, Master, Halt, and Quiet. This is normal behavior and is specified in the SMT standard. The A port works as a backup port and cycles through the Break (QLS), Connect (HLS), Next (ILS), and Signal (HLS/MLS) states.

It goes through the Signal and Next states a couple of times before it goes to the Break state and restarts the sequence. You see it more often in the Next state since this is where the Link Confidence Test (LCT) occurs, which takes most of the time of the sequence.

This cycle forces the backup port (port A) to go through the LCT repeatedly while it behaves as a backup so that any problems with the backup link are detected before it is used as the active link.

Q. What does the %CBUS−3−BADTXEOFVEC: Fddi8/0 ustatus: bad txEof vec (0000) error message indicate?

A. A Cisco 7513 router with CX−FIP−MM blade gives this error message:

```
%CBUS−3−BADTXEOFVEC: Fddi8/0 ustatus: bad txEof vec (0000), 0002 0001 FFFF      FFFF
%CBUS−3−BADTXEOFVEC: Fddi8/0 ustatus: bad txEof vec (0000), 0003 0001 FFFF      FFFF
```

These messages indicate a recovery condition of the microcode and occur when a claim on the FDDI ring collides with a transmit on the ring. There are various methods to strip frames off the ring. If an FIP has ever transmitted an FDDI frame, it knows that it is supposed to remove that frame. If, after transmission, and before it has had a chance to strip/remove it, there occurs some ring upset which requires a re−initialization, the FIP knows that it is supposed to remove a frame. The ring has transitioned, and that frame is lost.

If you see these messages only occasionally, there is no need to worry. If you see them often, you must check your entire FDDI ring to see if there is a problem on it. Troubleshoot the source of the claims to solve the root cause of the problem. The condition that causes the message itself ordinarily does not create any issues.

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