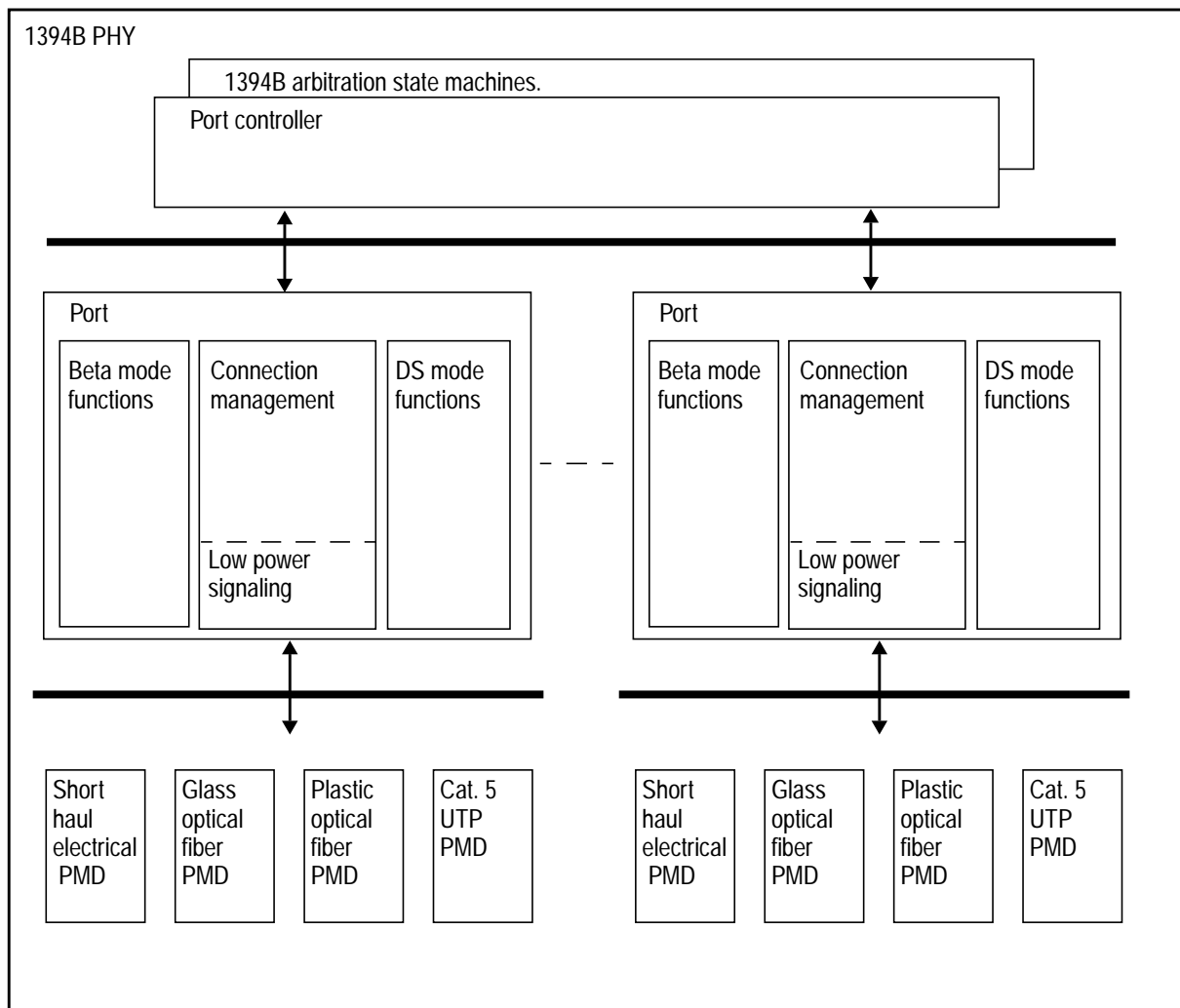


*This is a proposal for a sublayer and interface model for P1394B.*

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## 1. Model



## 2. Connection management services

Connection management services are provided at the interface between the CM function and the repeater function. The method by which these services are communicated is not defined by this standard.

## 2.1 CM status indication (CM\_STATUS.indication)

The CM function uses this service to indicate the status of the port to the repeater function. The following parameters are communicated via this service:

- a) Port mode. This parameter shall contain the mode of the port. The following values are defined for this parameter:
  - 1) DS. The port is operating in DS mode.
  - 2) BETA. The port is operating in beta mode.
- b) Port speed. This parameter shall contain the operating speed of the port. The value of this parameter may be any valid 1394B operating speed (see [tbd]).
- c) Port status. This parameter shall contain the status of the port. The following values are defined for this parameter:
  - 1) DISCONNECTED. The port is currently disconnected.
  - 2) CONNECTED. The port is connected.
  - 3) [FAULT. Something has gone wrong with this port. ]
  - 4) ?

## 2.2 CM action request (CM\_ACTION.request)

The repeater function uses this service to control the connection management function of the port. The CM function shall service the request immediately upon receipt. The following parameters are communicated via this service:

- a) Action. This parameter shall indicate the action to be taken by the port connection management function. The following values are defined for this parameter:
  - 1) SUSPEND.
  - 2) RESUME.
  - 3) DISABLE.
  - 4) [others]
  - 5)
- b) Port mode. This parameter shall indicate the mode in which the port is permitted to operate. The following values are defined for this parameter:
  - 1) DS. Forces the port to attempt connection only in DS mode.
  - 2) BETA. Forces the port to attempt connection only in Beta mode.
  - 3) DEFAULT. The port may attempt to connect in any mode.
- c) [others?]

## 3. Beta Port Services

Beta port services are provided at the interface between the beta port and the repeater function and at the interface between the beta port and the port connectivity management function. The method by which these services are communicated is not defined by this standard.

### 3.1 Beta port activate request (BPORT\_ACTIVATE.request)

The CM function uses this service to control the operation of the beta port. The Beta Port shall service the request immediately upon receipt by the port. The following parameters are communicated by this service:

- a) Status. This parameter shall contain the operating status that the Beta Port should assume. The following values are defined for this parameter:

- 1) **ACTIVE.** The port shall take the following actions on receiving a beta port activate request with BPORT status parameter of ACTIVE:
  - start issuing beta port clock indications.
  - start servicing beta port training requests.
  - start servicing beta port control requests and beta port data requests.
  - start responding to PMD received symbol indications.
  - start issuing PMD transmit symbol requests.
- 2) **INACTIVE.** The port shall take the following actions on receiving a beta port activate request with BPORT status parameter of INACTIVE:
  - stop issuing beta port clock indications.
  - stop servicing beta port training requests.
  - stop servicing beta port control requests and beta port data requests.
  - stop responding to PMD received symbol indications.
  - stop issuing PMD transmit symbol requests.
- b) **Operating Speed.** This parameter shall contain the speed at which the beta port shall transmit and receive symbols to and from the PMD. The following values are defined for this parameter:
  - 1) S100
  - 2) S200
  - 3) S400
  - 4) S800
  - 5) S1600
  - 6) S3200

### 3.2 Beta port clock indication (BPORT\_CLOCK.indication)

The beta port uses this service to indicate to other ports and the CM function that a character transmission is about to occur. There are no actions provided by this service. Either other ports or the CM function (but not both) respond to this indication with either a beta port data request or a beta port control request. No parameters are communicated via this service.

The port shall begin communicating this indication after it has received a BPORT activate request with a BPORT activated status of TRUE. The port shall stop communicating this indication after it has received a BPORT activate request with a BPORT activated status of FALSE.

### 3.3 Beta port training request (BPORT\_TRAIN.request)

The CM function uses this service to control the operation of the port descrambler training function. The Beta Port shall service the request immediately upon receipt by the port. The following parameters are communicated by this service:

- a) **Descrambler Train.** This parameter shall indicate whether the descrambler should attempt to synchronize itself with the scrambling applied to incoming characters. The following values are defined for this parameter:
  - 1) **TRAIN.** The port descrambler shall attempt to synchronize itself with the scrambling function that has been applied to incoming control characters, as described in tbd.
  - 2) **LOCK.** The port descrambler shall cease attempts to synchronize with the scrambling function that has been applied to incoming control characters, and shall assume normal operation.

### 3.4 Beta port control request (BPORT\_CONTROL.request)

The port controller and CM functions use this service to control the transmission of control symbols by the port. Either the port controller or CM function (but not both) generate one beta port control request for each beta port clock indication during training and control signaling. The Beta Port shall service the request immediately upon receipt by the port. The following parameters are communicated by this service:

- a) Control State. This parameter shall contain the control state to be transmitted on the bus. The following values are defined for this parameter:
  - 1) IDLE
  - 2) TX\_REQUEST
  - 3) TX\_GRANT
  - 4) TX\_PARENT\_NOTIFY
  - 5) TX\_CHILD\_NOTIFY
  - 6) TX\_IDENT\_DONE
  - 7) TX\_DATA\_PREFIX
  - 8) TX\_DATA\_END
  - 9) TX\_DATA\_END\_ERR
  - 10) BUS\_RESET

### 3.5 Beta port speed signal request (BPORT\_SPEED.request)

The port controller uses this service to control the transmission of speed signals by the port. The port controller generates one beta port speed request to cause a speed signal to be transmitted during a packet prefix. The Beta Port shall service the request immediately upon receipt by the port. The following parameters are communicated by this service:

- a) Packet speed. This parameter shall contain the packet speed that is to be indicated by the speed signal. The following values are defined for this parameter:
  - 1) S100 through S1600.

### 3.6 Beta port data request (BPORT\_DATA.request)

Other ports use this service to control the transmission of data by the port. Other ports generate one beta port data request for each beta port clock indication during data signaling. The Beta Port shall service the request immediately upon receipt by the port. The following parameters are communicated by this service:

- a) Data byte. This parameter shall contain the value of one byte of data to be transmitted on the bus.
- b) Data speed. This parameter shall contain the speed of the packet which the data form.

### 3.7 Beta port control indication (BPORT\_CONTROL.indication)

The beta port uses this service to indicate to the port controller and CM functions that a control symbol has been received by the port. The port generates one beta port control indication for each character received during training and control signaling. The following parameters are communicated by this service:

- a) Control State. This parameter shall contain the control state received on the bus. The following values are defined for this parameter:
  - 1) IDLE
  - 2) RX\_REQUEST
  - 3) RX\_GRANT
  - 4) RX\_PARENT\_NOTIFY

- 5) RX\_CHILD\_NOTIFY
- 6) RX\_IDENT\_DONE
- 7) RX\_DATA\_PREFIX
- 8) RX\_DATA\_END
- 9) RX\_DATA\_END\_ERR
- 10) BUS\_RESET

### 3.8 Beta port speed signal indication (BPORT\_SPEED.indication)

The beta port uses this service to indicate to the port controller and CM functions that a speed signal has been received by the port. The port generates one beta port control indication for each speed signal received during a packet prefix. The following parameters are communicated by this service:

- a) Receive packet speed. This parameter shall contain the packet speed determined from the speed signal. The following values are defined for this parameter:
  - 1) S100 through S1600.

### 3.9 Beta port data indication (BPORT\_DATA.indication)

The beta port uses this service to indicate to other ports that a data symbol has been received by the port. The port generates one beta port data indication for each character received during packet reception. The following parameters are communicated by this service:

- a) Data byte. This parameter shall contain the value of data to be transmitted on the bus.
- b) Packet speed. This parameter shall contain the speed of the packet which the data form.

### 3.10 Beta port error indication(BPORT\_ERR.indication)

The beta port uses this service to indicate to the port controller and CM functions that the port has detected an error condition. The following parameters are communicated via this service:

- a) Error type. This parameter shall contain the type of error that the port has detected. The following values are defined for this parameter:
  - 1) INVALID\_character. An invalid character, as defined in [tbd], has been received by the port.
  - 2) INVALID\_PACKET. The port has determined that a packet being received is in some way corrupt.
  - 3) BAD\_LINK. The port has determined that it no longer has reliable communication to or from the bus.

The beta port shall communicate this indication whenever it detects an error condition. The beta port error indication may result in the CM initiating port training, or may result in the [tbd] function indicating to the LINK that a packet is corrupt.

## 4. PMD services

PMD services are provided at the interface between the port function and the PMD. The method by which these services are communicated is not defined by this standard.

### 4.1 PMD data request (PMD\_DATA.request)

The port uses this service to control the transmission of symbols on the bus. The port shall communicate one PMD data request for each symbol to be transmitted. The PMD shall service the request immediately upon receipt by the PMD. The following parameters are communicated by this service:

- a) Symbol value. This parameter shall contain the value of the symbol to be transmitted on the bus. The following values are defined for this parameter:
  - 1) ONE.
  - 2) ZERO.

#### **4.2 PMD data indication (PMD\_DATA.indication)**

The PMD uses this service to indicate to the port that a symbol has been received from the bus. The PMD shall communicate this indication to the port for each received symbol. The following parameters are communicated by this service:

- a) Symbol value. This parameter shall contain the value of the symbol to be transmitted on the bus. The following values are defined for this parameter:
  - 1) ONE.
  - 2) ZERO.

#### **4.3 PMD status request (PMD\_STATUS.request)**

The CM function uses this service to request the PMD to return its status. The PMD shall service the request immediately upon receipt by the PMD. No parameters are communicated by this service.

#### **4.4 PMD status indication (PMD\_STATUS.indication)**

The PMD uses this service to indicate its current status to the CM function. The PMD shall communicate this indication to the CM function in response to each PMD status request. The following parameters are communicated by this service:

- a) Rx\_TpBias. This parameter shall contain the status of the TpBias signal received at the port. The following values are defined for this parameter:
  - 1) True.
  - 2) False.
- b) Rx\_TPA. This parameter shall indicate the value of signal detected on TPA. The following values are defined for this parameter:
  - 1) 1.
  - 2) 0.
  - 3) Z
- c) Rx\_TPB. This parameter shall indicate the value of signal detected on TPB. The following values are defined for this parameter:
  - 1) 1.
  - 2) 0.
  - 3) Z