1394c C code

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This not summarizes the changes to the 1394b C code which have been made to create the 1394c C code.

1 Revised data_structures.h

1.1 Introduces the constants:-

```
#define TMODE_JITTER 9 // number of 10 bit "no symbol" symbol times resulting from insertion of
                       // 8 bit idles between data bursts on 802.3ab encoding

#define TMODE_RESUME_CHECKS ((GMII_LINK_PULSE_INTERVAL/10)+1) // number of pulse times per
interval
```

1.2 Add to port_wait_times

```
enum port_wait_times {. . . .

, GMII_PORT_ENABLE_TIME,
 GMII_AUTONEGOTIATE_TIME, GMII_LINK_PULSE_DURATION, GMII_LINK_PULSE_INTERVAL,
 GMII_RECEIVER_INIT_TIME};
```

1.3 Add internal decode position state:-

```
// Tport symbol position state
typedef enum {A, B, C, D } symbol_position;
```

1.4 Add a port state

```
typedef enum {. . . , P13} port_state_type;
```

1.5 Add two more ArbState internal symbols for use in the T port.

```
. . .
// used in the T_port state machine
  SKIP_INVALID = 30, COUNT_INVALID = 31
```

1.6 Add a structure to represent the GMII interface

```
typedef struct {
  int TXD;
  int TX_EN;
  int TX_ER;
  int GTX_CLK;

  int COL;

  int RXD;
  int RX_ER;
  int RX_CLK;
  int RX_DV;

  int CRS;
} GMII;
```

2 Revised shared.h

2.1 Change the receive FIFO size

```
#define FIFO_DEPTH (10+TMODE_JITTER+2) // depth of receive FIFO - 10 normally, add extra for
tports
                        // add two extra symbols for quantization effects
```

2.2 Add shared variables and constants:

```
// shared between tport_tx.c and tport_rx.c

#ifdef unsubscripted
GMII gmii;                    // TPORT data transfer interface
#else
GMII gmii[NPORT];
#endif

const Tmode_port;           // TRUE if the port is a T_mode (and therefore T_mode only) port

// shared between port.c, tport_rx.c and tport_tx.c

boolean tport_on;           // Set to true to instruct the T port to commence operating
                            // Set to false to instruct the T port to cease operating
boolean tport_on[NPORT];


boolean TPORT_802_mode;     // Set if the port is operating in TPORT_802_mode (and we can't get
at it!)

boolean T_mode;             // Set if the port is operating in T mode,
                            // unset otherwise (i.e. when operating in Beta_mode or DS-Mode,
                            // unset otherwise (i.e. when operating in DS-Mode,
                            // or when in P0:disconnected).
                            // This is maintained as a read-only bit in the port register map.
```

3 Revised receive_functions()

Add code to center the FIFO allowing for the jitter on a T_mode connection:-

In start_rx_packet():-

```
if (T_mode[receive_port]) {
      arb_timer = 0;
      while ((fifo_backlog < (FIFO_DEPTH/2)) && (arb_timer < TMODE_JITTER)) {
        // Allow time for the FIFO to load, but start repeat immediately if critical
        fifo_backlog = (FIFO_DEPTH + fifo_wr_ptr[receive_port] - fifo_rd_ptr[receive_port]) %
FIFO_DEPTH;
      }
    }
```

4 Revised Phy services

4.1 New control request types

```
// 1394c specific

   PMD_LINKPULSE_ON,                // instructs the PMD to generate an Ethernet link pulse
   PMD_LINKPULSE_OFF,               // instructs the PMD to cease generating an Ethernet link
pulse
   PMD_AUTONEGOTIATE,               // instructs the PMD to perform 1394c/Ethernet
autonegotiation
   PMD_SELECT_TPORT,                // PMD uses bport for t mode I/O - only set while
                                    // tport_on is TRUE, unset during suspend etc
   PMD_DISCONNECT_TPORT,            // Stops 802.3ab PHY operating as a Tport PHY.
                                    // Clears operating mode status bits
   PMD_TPORT_OFF                    //

} PMD_control_request_type;
```

4.2 New status values

```
// 1394c

#define PMD_TPORT_SIGNAL_DETECT 0x00000040
#define PMD_AUTONEGOTIATION_ACTIVE 0x00000080
#define PMD_TPORT_FW          0x00000100  // autonegotiation has established FW mode
#define PMD_TPORT_802         0x00000200  // autonegotiation has established GE mode
#define PMD_TPORT_OK          0x00000400  // 802.3ab connection is synchronized (FW mode only)
```

5 Revised port.c

Numerous updates to add in tport control – see code

6 New tport_rx.c and tport_tx.c

Loosely based in bport_rx.c and bport_tx.c.