

Subject: Serial Storage Architecture 200 Mbit/sec VHDL update news letter

Reference: SSA VHDL

Date: July 17, 1997

This news letter is to update the status of SSA VHDL dated August 1994. This updates include TDL to VHDL conversion errors and changes that should be considered when implementing new SSA designs.

Part 1:

The TDL to VHDL conversion errors which existed in the August 94 level of the VHDL but which were detected since are as follows:

- 1) lst.vhdl - The LST_ERROR parity check output has the wrong polarity.
- 2) lnk2.vhdl - Once set, the TX_ABORT term in B_GATE_ABORT process does not clear correctly.
fix: TX_ABORT <= abort_sent;
- 3) lnk2.vhdl - The RX_Z input into the LCMT component port map is fed from the wrong bit of RX.
fix: RX_Z => rx(2)
- 4) larb.vhdl - The COUNT_FOR_SAT term is generated using incorrect bit significance of LOGVAL.
fix: count_for_sat <= n_switch when logval(2 downto 1) = "10" else SWITCH when logval(2) = '1' else logval2_0;
- 5) libb.vhdl - The OFF_END term uses wrong bit of IQTY_IB_SIG.
fix: off_end <= CRAMIPTR(7) and CRAMIPTR(3) and not first_p and not iqty_ib_sig(3);
- 6) lnk2.vhdl - The reset term for NOTRANS in the B_NOTRANS process should use NOTRANS_DET instead of NOTRANS.
fix: if (reset2='1' or (char_rdy_latch='1' and notrans_det='0')) then notrans <= '0';

PART 2:

There are 3 changes which designers should consider when implementing new SSA designs. The first two changes were discussed at SSA IA meetings in 1995. The third change is optional in SSA-TL and was not implemented in SIC chip.

- 1) lnk2.vhdl - need to abort outgoing control frames if error detected
- 2) lnk2.vhdl - need to frame-reject data frames containing 6 characters
- 3) lnk2.vhdl - insert extra character after CRC bytes when aborting a frame

PART 3:

System level testing of the SIC on IBM adapter cards over the last three years has shown up one error (1) and also a desirable design change (2) when implementing new SSA designs.

- 1) larb.vhdl - the ANY_TO_SEND term should not have included cut-thru frames.
fix: any_to_send <= oba_to_send or obb_to_send;
- 2) larb.vhdl - discard cut-thru resets if the port is disabled and not operational
fix: disabled <= '1' when LNK_STATE(1 downto 0)="00" else '0';
bin_ib_r <= IB_RS_FULL_TRA and not OPERATIONAL and disabled;
CLR_IRBF <= (ibr_in_tx and (l_sent or l_abort)) or bin_ib_r;

Daniel Tsai
Tel: 408-256-5729
email: tsaidaniel@vnet.ibm.com
SSA Technology
IBM Storage System Division
San Jose, California