IEEE 1914 NGFI

IEEE 1914.3a RoE – Continued Resolution for Comments 116, 117, and 118

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D1.3 Comments 116, 117, and 118 (1/2)

- The following comment is repeated 3 times and applies to Figures 36, 37, and 38 in P1914.3a/D1.3:

  In the 3rd second, The RoE Proxy Follower does not detect cpri_lof_dfct_v = 1 since the CPRI master and the Proxy Follower are both at rate C. This transition shouldn't occur until the CPRI master switches to Rate D. After the CPRI master's rate change, the Proxy Follower should detect cpri_lof_dfct_v = 1 and then switch to its rate D soon afterwards.

- During this investigation, it was found that the psync_timer is responsible for the undesired state-changes identified in the comments and should be removed.

D1.3 Comments 116, 117, and 118 (2/2)

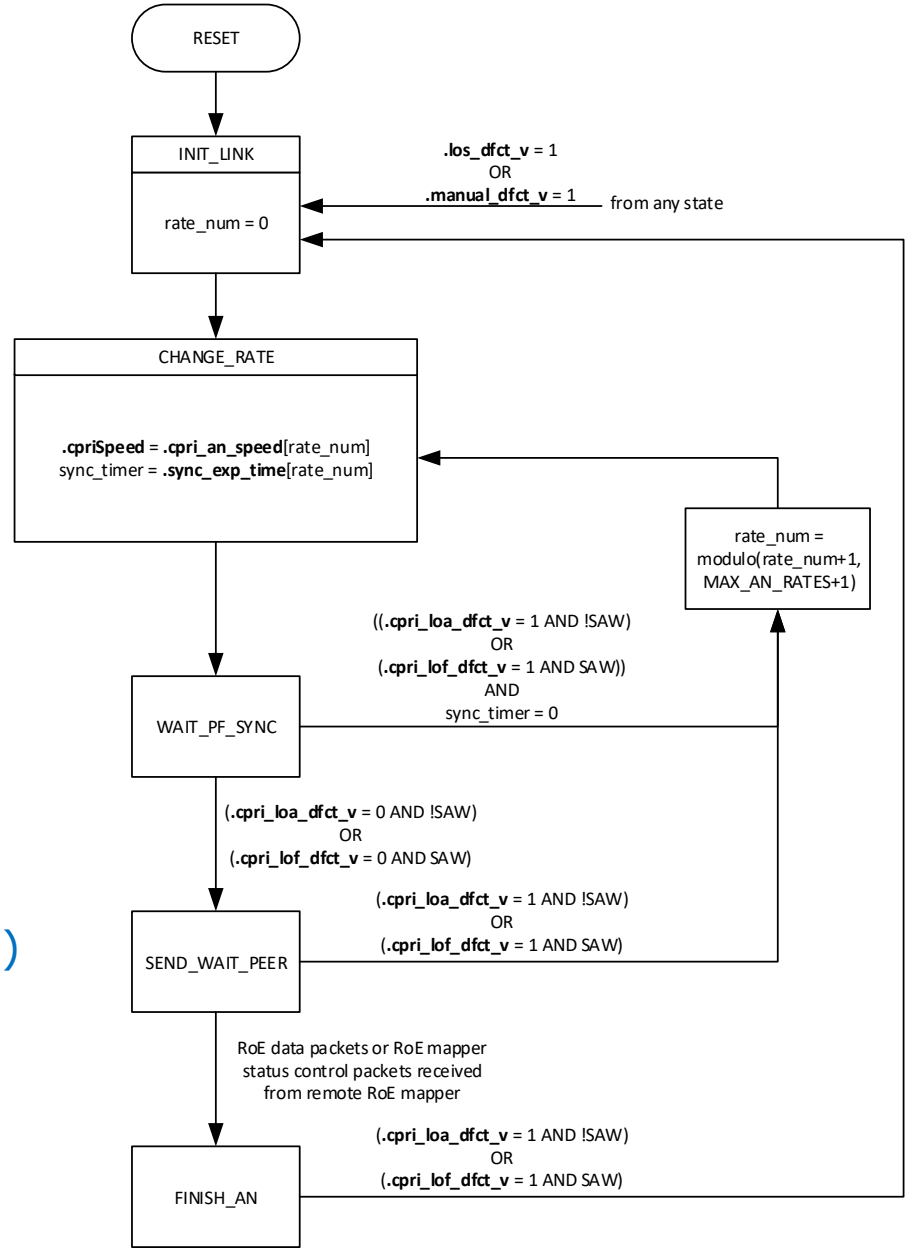
- Changes proposed in tf3_2010_tse_D1.3_comments_116_117_118.pdf were accepted except for the following items:
  1. In Proxy Follower's FINISH_AN state, if LOS, LOF, or MANUAL_DFCT defects are asserted, go to the INIT_LINK state instead of CHANGE_RATE state.
  2. The Proxy Follower's transitions through CHANGE_RATE, WAIT_HFNSYNC, and SEND_WAIT_PEER states might need MAX_AN_RATES + 1 iterations of CHANGE_RATE due to imperfect alignment with CPRI master's rate changes.
     Need to check if we have enough timing margin for this when MAX_AN_RATES = 4.

Item 1 – Additional Issues Found

- D1.3 autonegotiation state-machines depend on the status of CPRI HFNSYNC (reflected by the **.cpri_lof_dfct** parameter) to determine if the CPRI rates are matched
- For structure-agnostic (SAG) mapping modes, the CPRI HFNSYNC status might not be available as a CPRI framing function is not needed alongside the RoE mapper
- "WAIT_HFNSYNC" state name used in two state-machines
- **Proposal:**
  - For SAG mapping modes, use the loss-of-alignment defect (**.cpri_loa_dfct**) parameter to indicate that the CPRI rates are matched
  - Change "HFNSync" to "Sync"
  - Use "PL_SYNC" and "PF_SYNC" as replacement state names for Proxy Leader and Proxy Follower, respectively

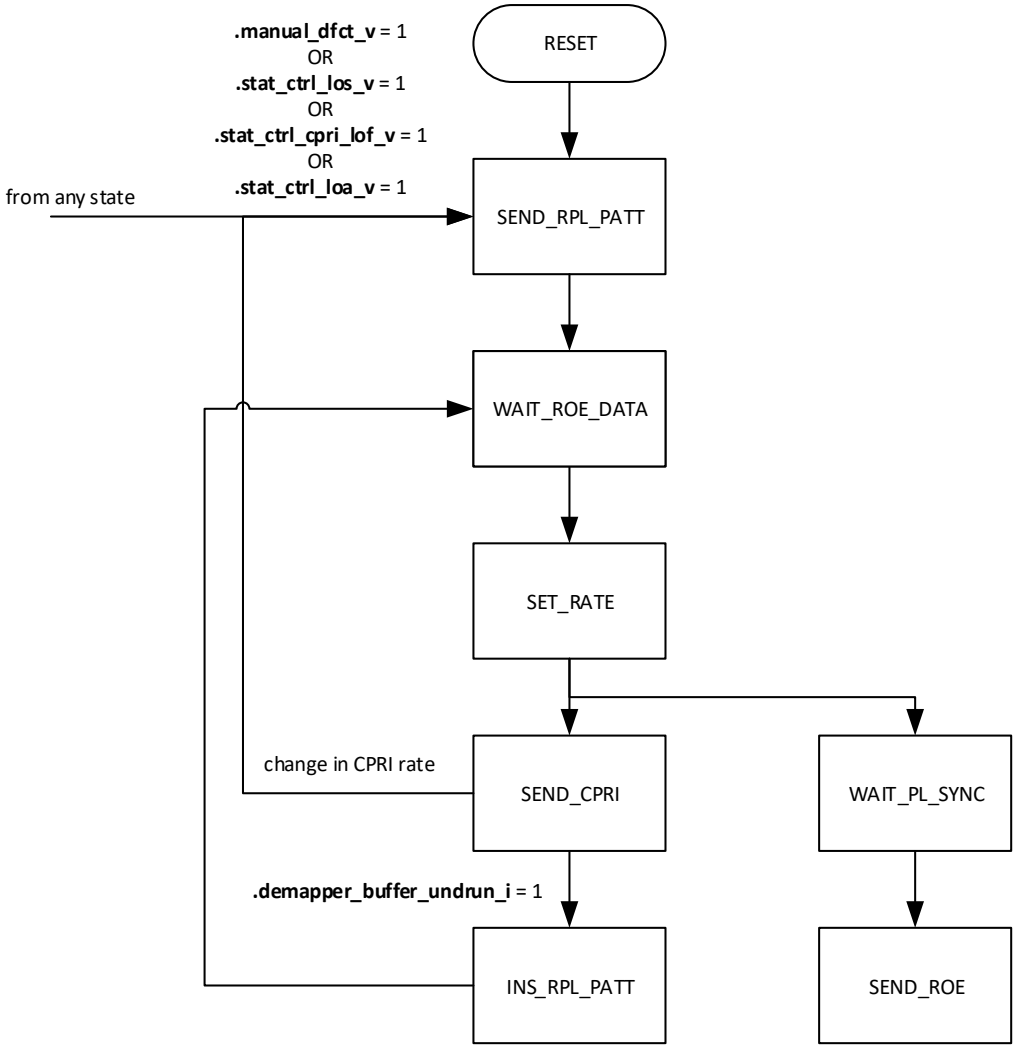
Proposed Figure 34

- Previously agreed changes:
  - psync_timer and all its dependencies are removed
  - From SEND_WAIT_PEER state, move to CHANGE_RATE state instead of INIT_LINK state if defect detected
- New changes:
  - Change "HFNSYNC" to "SYNC"
  - Change condition
    .cpri_lof_dftc_v = 1
    to
    (**.cpri_loa_dftc_v** = 1 AND !SAW)
    OR
    (**.cpri_lof_dftc_v** = 1 AND SAW)



Proposed Figure 35

- Changes:
  - Renamed WAIT_HFNSYNC state to WAIT_PL_SYNC



Remaining Changes for Item 1

- Update state descriptions to reflect name changes and the added condition of SAW vs !SAW mapping modes
- Update subclause 13.7 to add description of why it might take (MAX_AN_RATES + 1) iterations through the CHANGE_RATE state
- Update Figures 37 and 38 to reflect changes in state names

Item 2

- Analysis has been checked in: CPRI_autoneg_time_margins_4.xlsx
  - Step #3 updated for "4 rate changes" instead of "4 rates"
  - Assumes PLL base-rate change needed only once, between CPRI option 8 and CPRI option 7 (at step #3)

step #	event	event duration (sec)	accumulated time (sec)	direction
1	master CPRI restarts timer	0	0	forward path (CPRI master to CPRI slave)
2	master CPRI Tx SERDES becomes valid	0.1	0.1	
3	proxy follower CPRI Rx SERDES changes to new rate and checks for HFN sync, done for a max of 4 rate changes	0.126000	0.226000	
4	proxy follower sends CPRI status control message to proxy leader (RoE system transit time, CPRI master to CPRI slave)	0.00125	0.227250	
5	proxy leader CPRI Tx SERDES becomes valid	0.09	0.317250	
6	slave CPRI strives for HFNSync (includes Rx SERDES bring up + PCS align + HFN sync + reset time)	0.2	0.517250	
7	after HFNSync achieved, slave CPRI Tx SERDES becomes valid	0.1	0.617250	return path (CPRI slave to CPRI master)
8	proxy leader achieves HFNSYNC	0.001200	0.618450	
9	proxy leader passes data to proxy follower (RoE system transit time, CPRI slave to CPRI master)	0.00125	0.619700	
10	proxy follower enables Tx SERDES	0.001	0.620700	
11	CPRI master achieves HFNSYNC (includes Rx SERDES bring up + PCS align + HFN sync + reset time)	0.2	0.820700	