Downshift State Diagram Issues

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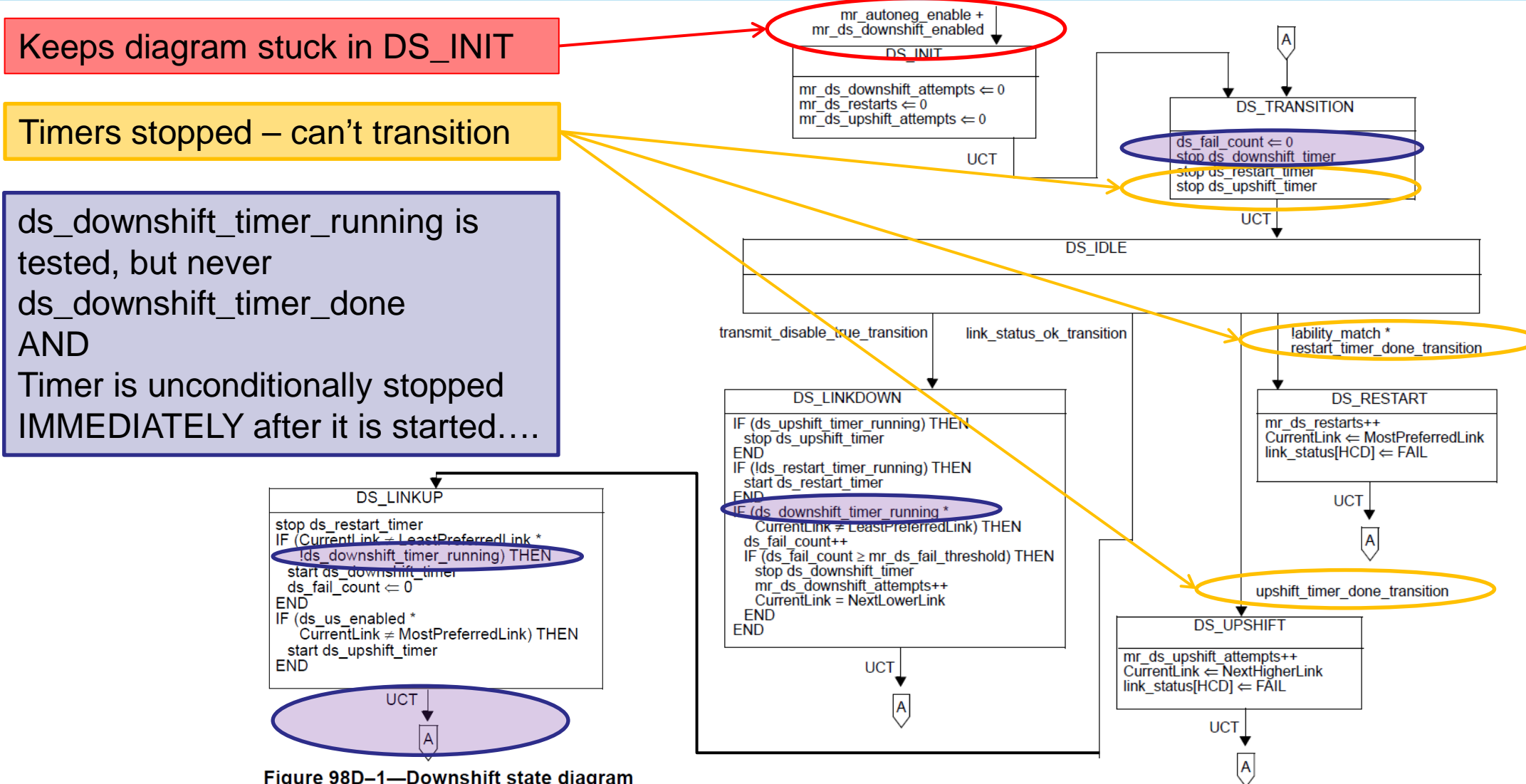(ADI, APL Group, Cisco, Infineon, OnSemi, Sony)

Overview

- ## State diagram in 98D.2 has functional issues, at least:
  - ### Stuck in DS_INIT state
    - Open ended transition into DS_INIT on mr_autoneg_enable & mr_ds_downshift_enabled
  - ### Can never go to DS_UPSHIFT
    - upshift_timer is stopped before waiting for a transition…
  - ### Can never go to DS_RESTART
    - restart_timer is stopped before waiting for a transition…
  - ### ds_downshift_timer doesn't work – stopped right after started
    - ds_downshift_timer_done is never tested, perhaps "_running" might be a function of !done.
- ## Could be more….

Figure 98D-1 Downshift state diagram

Keeps diagram stuck in DS_INIT

Timers stopped – can't transition

ds_downshift_timer_running is tested, but never ds_downshift_timer_done
AND
Timer is unconditionally stopped IMMEDIATELY after it is started….

mr_autoneg_enable + mr_ds_downshift_enabled

DS_INIT
mr_ds_downshift_attempts ⇐ 0
mr_ds_restarts ⇐ 0
mr_ds_upshift_attempts ⇐ 0

UCT

DS_TRANSITION
ds_fail_count ⇐ 0
stop ds_downshift_timer
stop ds_restart_timer
stop ds_upshift_timer

UCT

DS_IDLE

transmit_disable_true_transition   link_status_ok_transition   !ability_match * restart_timer_done_transition

DS_LINKDOWN
IF (ds_upshift_timer_running) THEN
  stop ds_upshift_timer
END
IF (!ds_restart_timer_running) THEN
  start ds_restart_timer
END
IF (ds_downshift_timer_running *
    CurrentLink ≠ LeastPreferredLink) THEN
  ds_fail_count++
  IF (ds_fail_count ≥ mr_ds_fail_threshold) THEN
    stop ds_downshift_timer
    mr_ds_downshift_attempts++
    CurrentLink = NextLowerLink
  END
END

UCT

DS_RESTART
mr_ds_restarts++
CurrentLink ⇐ MostPreferredLink
link_status[HCD] ⇐ FAIL

UCT

DS_LINKUP
stop ds_restart_timer
IF (CurrentLink ≠ LeastPreferredLink *
    !ds_downshift_timer_running) THEN
  start ds_downshift_timer
  ds_fail_count ⇐ 0
END
IF (ds_us_enabled *
    CurrentLink ≠ MostPreferredLink) THEN
  start ds_upshift_timer
END

UCT

upshift_timer_done_transition

DS_UPSHIFT
mr_ds_upshift_attempts++
CurrentLink ⇐ NextHigherLink
link_status[HCD] ⇐ FAIL

UCT

Figure 98D–1—Downshift state diagram

DISCUSSION?

Thank you!