

IEEE 802.3dg 100BASE-T1L: Downshift: Response to “Downshift State Diagram Issues” contribution from George Zimmerman

Peter Jones – Cisco
1/20/2026 5:00 PM

D3.0 issues identified

- https://www.ieee802.org/3/dg/public/May 2025/zimmerman_3dg_01_012026.pdf identifies several issues in the state diagram including:
 1. Stuck in DS_INIT state
 - Open ended transition into DS_INIT on mr_autoneg_enable & mr_ds_downshift_enabled
 2. Can never go to DS_UPSHIFT
 - upshift_timer is stopped before waiting for a transition...
 3. Can never go to DS_RESTART
 - restart_timer is stopped before waiting for a transition...
 4. 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.

D3.0 State Diagram

98D.2.5 State diagram

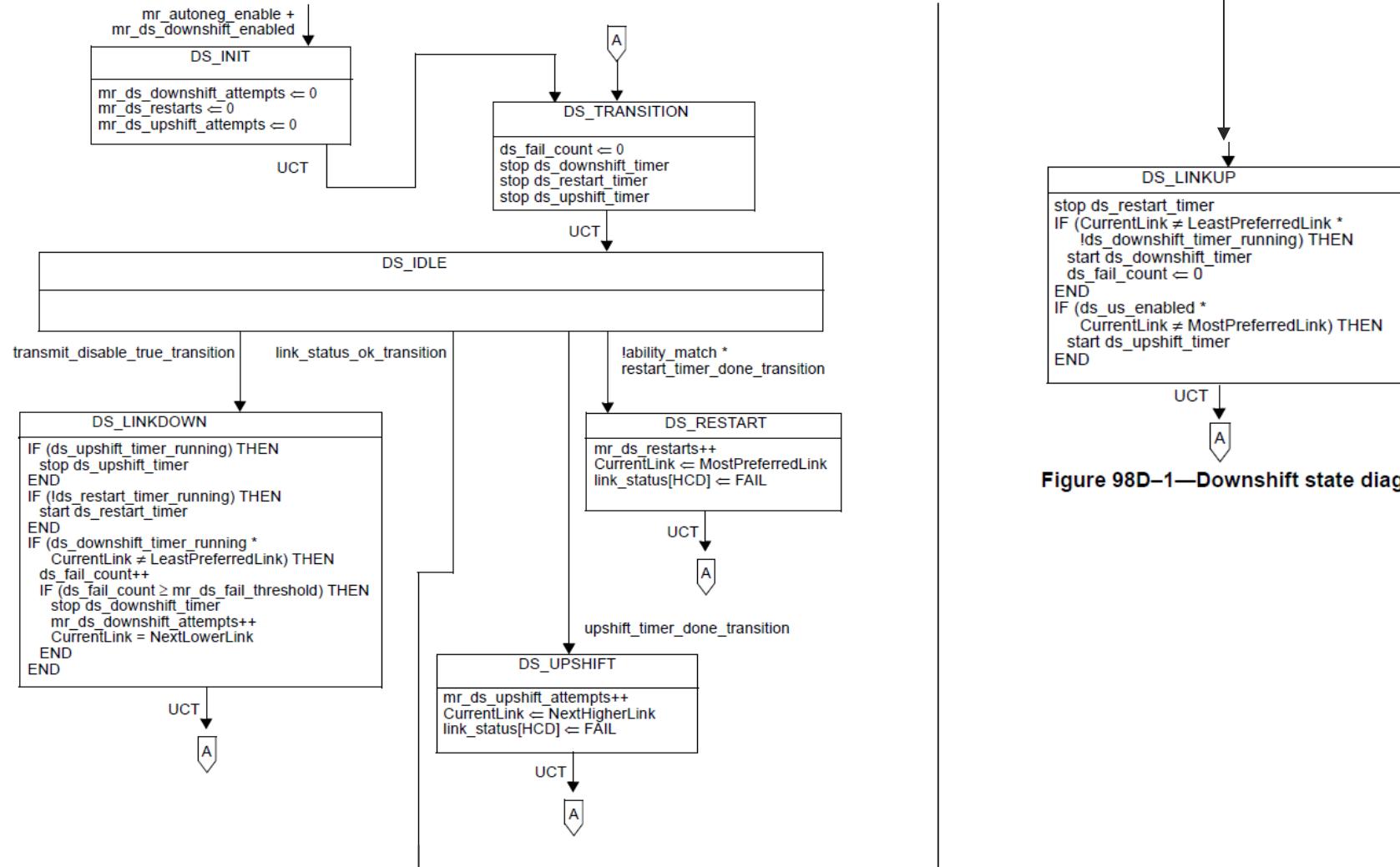


Figure 98D-1—Downshift state diagram

Item 1 - Stuck in DS_INIT state

- I agree. I did not remember (or never knew) the special rule for global transitions (21.5.3):

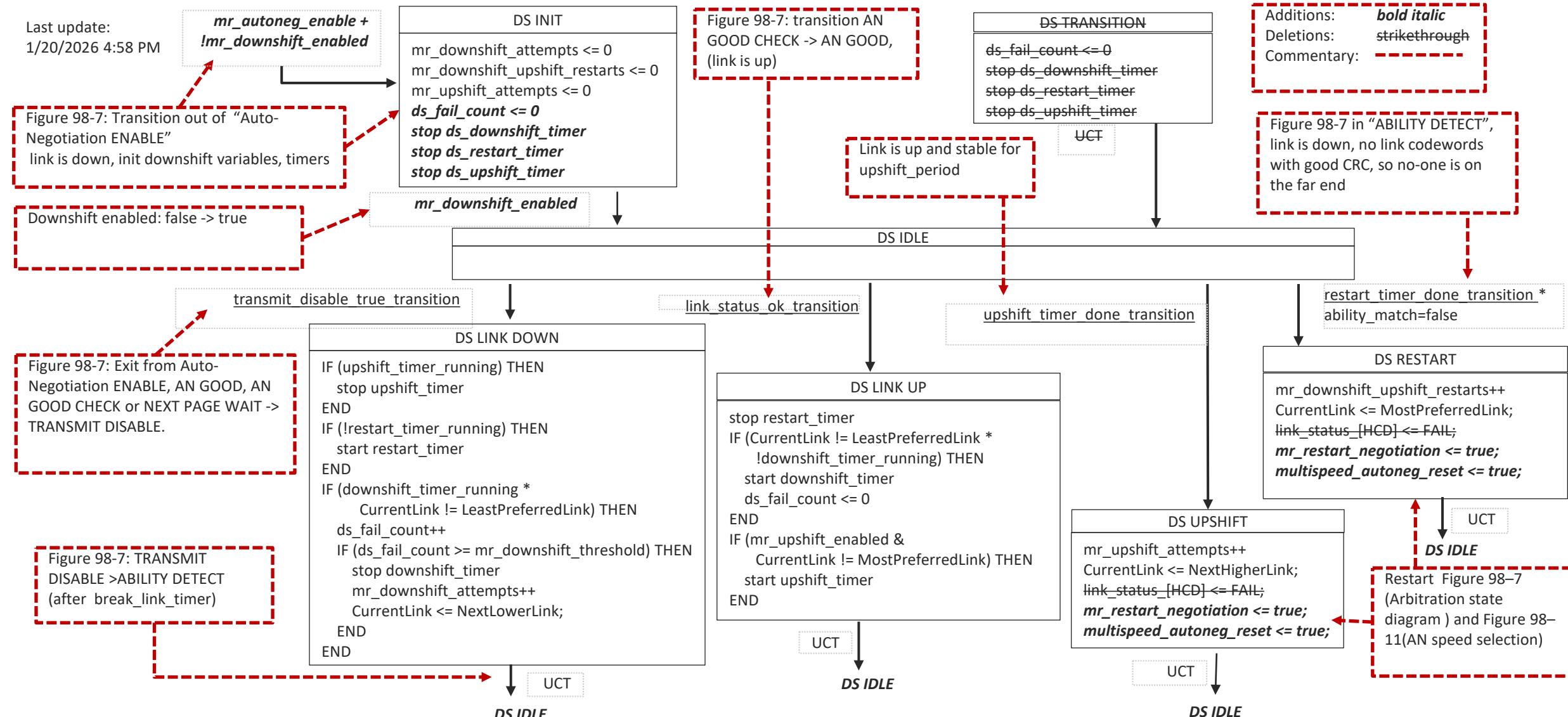
Any open arrow (an arrow with no source block) represents a global transition. Global transitions are evaluated continuously whenever any state is evaluating its exit conditions. When a global transition becomes true, it supersedes all other transitions, including UCT, returning control to the block pointed to by the open arrow.
- This clearly needs to be fixed.

Items 2, 3, 4 - timers

- I agree.
- I believe the changes are relatively simple, BUT, they need to be validated before we are done.
- We either fix this or pull it out.
- The next slide is an updated state diagram that I believe resolves the items 1-4 and cleans up other sundry issues.
- Decoder
 - additions in *bold italic*,
 - deletions in ~~strikethrough~~
 - commentary in **red-dashed -----**

Proposed changes

Last update:
1/20/2026 4:58 PM



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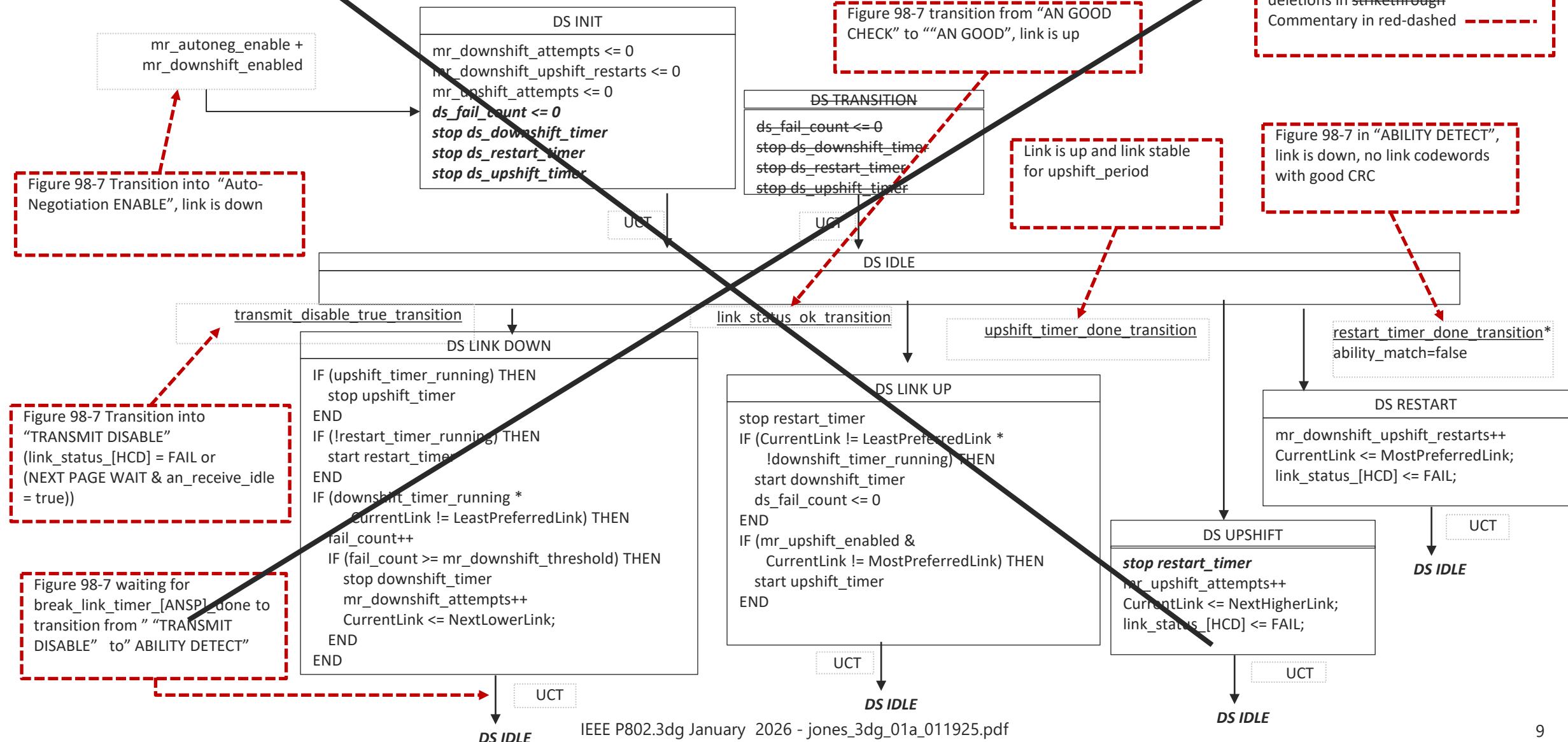
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Phone: +1 732 981 0060 Fax: +1 732 562 1571
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State diagram from
jones_3dg_01a_011925.pdf

Proposed changes



Thanks!