

The Need for Whiteboard State Machine Specifications

Presented to the IEEE P802.3bt Task Force
Atlanta, Georgia USA – January 2015 Interim Meeting

Dan Dove, Dove Networking Solutions for LTC



Outline

- Introduction
- Identifying the Problem
- Proposing a Working Approach



Introduction

- The 802.3 PoE and PoE+ state machines have undergone two significant revisions (802.3af and 802.3at) which has led to a relatively complex diagram involving transitions across pages.
- Such complexity in description may lead to errors in implementation, and require additional time to implement and test.
- The Task Force should consider revision of the state machines from a “Back to the Whiteboard” perspective, ensuring compatibility with existing state machines, but improving the clarity and readability of the document.
- With a third major revision, adding functions such as 4PID, we are poised to make the situation worse.
- We should consider a hierarchical approach if possible, breaking down the design into functional blocks that make sense and minimize transitions.



Identifying the Problem

What do you do when you run out of space?



Identifying the Problem (cont)

Just add another box & transitions?



Identifying the Problem (cont)

Or move to a bigger home?



Our current PSE state machine



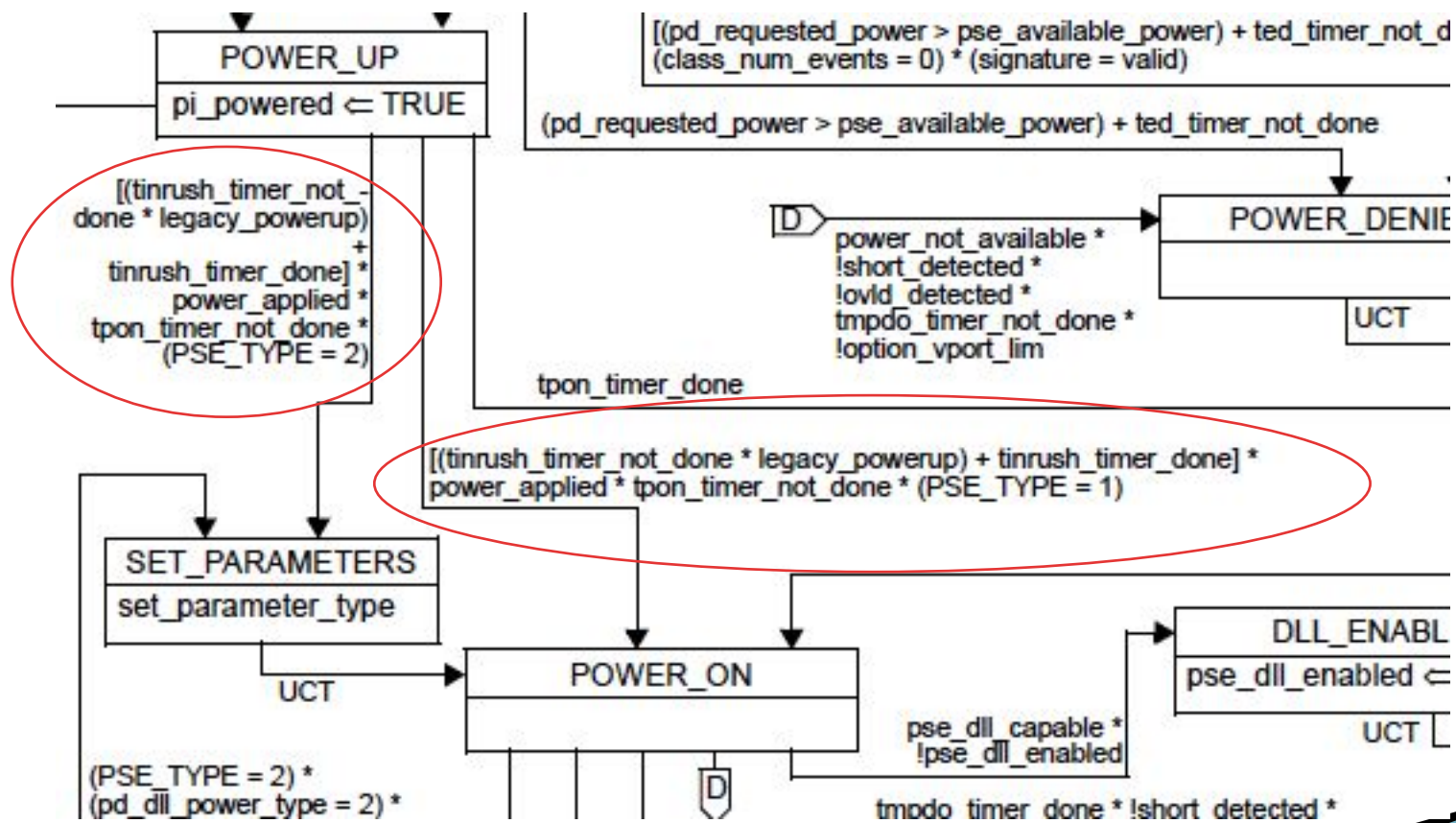
37



38

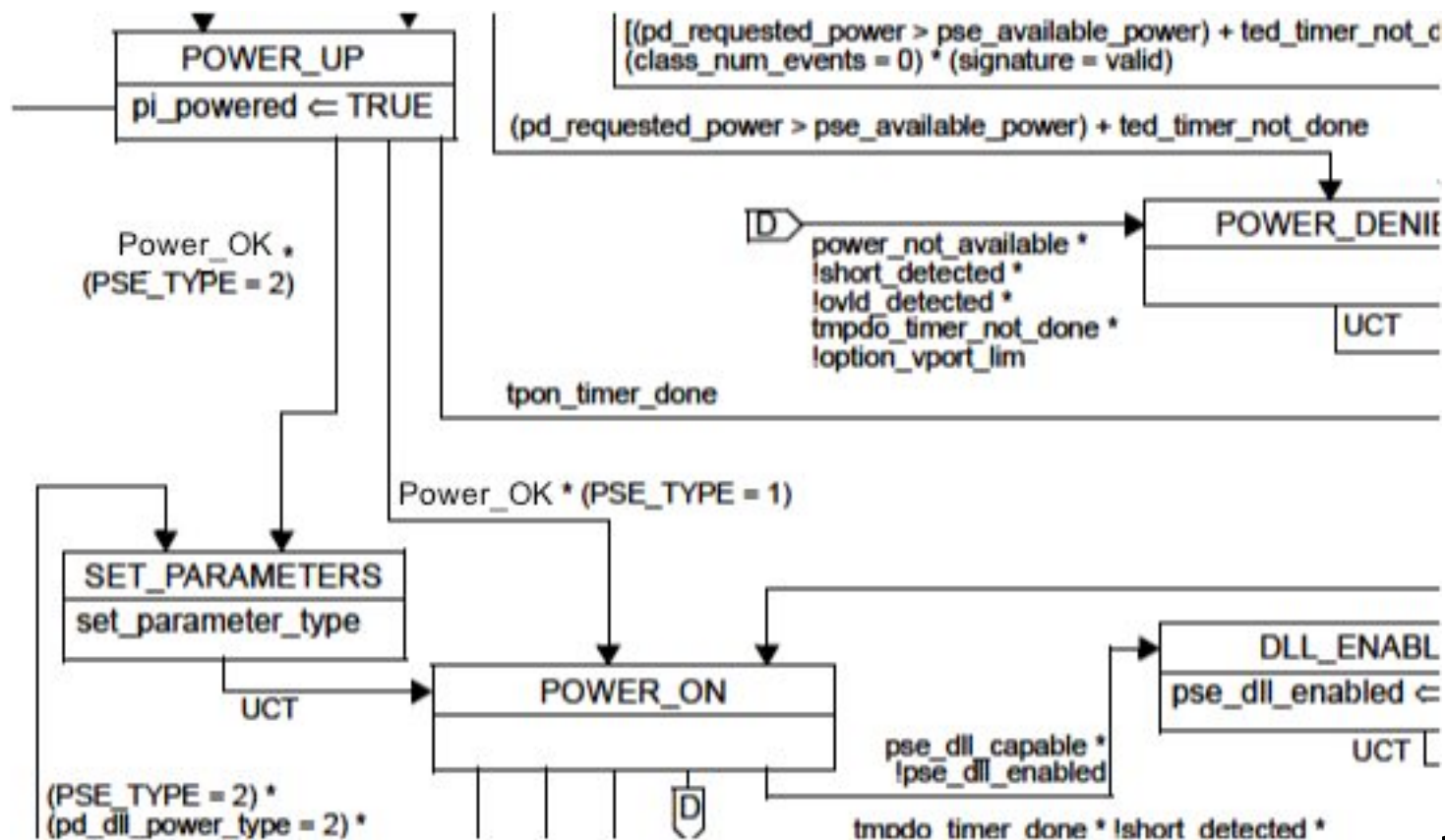
Identifying the Problem (cont)

Example: To clean up the state diagram, remove complex terms from transitions.



Identifying the Problem (cont)

Example: In the “state machine variables” section, define
 "Power_OK" = $[(\text{tinrush_timer_not_done} * \text{legacy_powerup}) + \text{tinrush_timer_done}] * \text{power_applied} * \text{tpon_timer_not_done}$



Proposing a Working Approach

- Establish a “State Machines Ad Hoc” to identify opportunities for simplification of 802.3bt state machines
- Meet & discuss proposals for alternative design approach
- Solidify and validate designs
 - Consider scope of changes ranging from re-stacking the blocks in more manageable stacks to hierarchical approach depending on the state machine and its complexity
- Build consensus for baseline adoption



Thank You

Q&A

DNS For LTC

January 6, 2015

