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| 8802-3/802.3 REVISION REQUEST |
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DATE: 21-May-2017
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REQUESTED REVISION:
  STANDARD: IEEE Std 802.3-2015
  CLAUSE NUMBER: 33
  CLAUSE TITLE: DTE Power via MDI

PROPOSED REVISION TEXT:

[1] The equation on the transition from the POWER_ON state to the SET_PARAMETERS state in Figure 33-13 'Type 1 and Type 2 PSE state diagram' be changed to read '(PSE_TYPE = 2) * (pd_dll_power_type = 2) * (parameter_type = 1) * pse_dll_capable * pse_dll_ready'.

[2] The assignment 'pd_dll_power_type <= parameter_type' in the INITIALIZE state in Figure 33-46 'PSE power control state diagram' be removed.

[3] The definition of parameter_type be removed from 33.5.3.3 'Single-signature system Variables'.

[4] The definition of pd_dll_power_type be removed from 33.5.3.3 'Single-signature system Variables'.

[5] In definition of pd_dll_power_type in subclause 33.2.5.4 'Type 1 and Type 2 variables' change the text 'A control variable output by the PSE power control state diagram (Figure 33-46) that indicates ...' to read 'A variable mapped from the aLldpXdot3RemPowerType as defined in Table 33-41 that indicates ...'.

RATIONALE FOR REVISION:

There is an assignment to the pd_dll_power_type variable in the INITIALIZE state of Figure 33-46 'PSE power control state diagram' as well as a mapping to it in Table 33-41 'Attribute to state diagram variable cross-reference' so effectively there are two sources to this variable. There is a case where a Type 2 PSE that supports 1-event physical layer classification, Data Link Layer Classification, and chooses the option of setting the parameter_type variable to 1 in the set_parameter_type function if mutual identification is not complete, is connected to a Type 2 PD, which will result in two different values for pd_dll_power_type from these two sources.

After a successful detection, Figure 33-13 'Type 1 and Type 2 PSE state diagram' will transition in to the DETECT_EVAL state and then to the ONE_EVENT_CLASS state (arrow B), since the PSE supports 1-event physical layer classification (class_num_events = 1). The state diagram will then call the do_classification function which will result in the pd_requested_power variable being set to 3 and the mr_pd_class_detected variable being set to 4. The state diagram will then proceed to the

CLASSIFICATION_EVAL and, assuming sufficient power, to the POWER_UP state.

Once power up has been completed successfully, since this is a TYPE 2 PSE (PSE_TYPE = 2), the state diagram will transition from the POWER_UP state to the SET_PARAMETERS state calling the set_parameter_type function. Since only 1-event physical layer classification has taken place mutual identification is not complete however a Type 2 PD has been detected since the mr_pd_class_detected variable is set to 4. The PSE therefore has the option of setting the parameter_type variable to 1 (see page 72, line 54, 'When a Type 2 PSE powers a Type 2 PD, the PSE may choose to assign a value of '1' to parameter_type if mutual identification is not complete ...'). I will assume this option is taken.

The state diagram will therefore transition to the POWER_ON state. At some point later, since Data Link Layer Classification is supported, the pse_dll_ready variable becomes TRUE and the aLldpXdot3RemPowerType attribute will return a bit string indicating a Type 2 PD. This, according to Table 33-41 'Attribute to state diagram variable cross-reference', also results in pd_dll_power_type being set to 2. The problem is that, according to the Figure 33-46 'PSE power control state diagram', when pse_dll_ready becomes TRUE the value of parameter_type is latched on to pd_dll_power_type, and at that point in time it is 1.

Now it seems that the intent was that when pd_dll_power_type became 2 due to Data Link Layer Classification, the equation on the transition from the POWER_ON state to the SET_PARAMETERS state became true ((PSE_TYPE = 2) * (pd_dll_power_type = 2) * (parameter_type = 1)) resulting in the set_parameter_type function being called for a second time. The parameter_type variable would then be set 2 enabling the PSE to increase the power it supplies from Type 1 to Type 2 limits.

The problem is there are two values of pd_dll_power_type once Data Link Layer Classification is in operation, the one based on the Table 33-41 mapping which in this case would be set to a value of 2, and the one output by the Figure 33-46 state diagram, which in this case would be set to a value of 1. As well as the statement that 'State diagrams take precedence over text.' incorporated by the reference to subclause 21.5 in subclause 33.2.5.2 the definition of the pd_dll_power_type variable in subclause 33.2.5.4 'Type 1 and Type 2 variables' for Figure 33-13 state that it is 'control variable output by the PSE power control state diagram (Figure 33-46) ...'. Based on this it would seem that the latter value of 1 should be used, however the problem with that is the second call to SET_PARAMETERS state will then never happen, and the PSE will have to continue using Type 1 limits.

It would seem a better approach would be to remove the assignment of parameter_type to pd_dll_power_type in the INITIALIZE state of Figure 33-46 'PSE power control state diagram' and just use the Table 33-41 'Attribute to state diagram variable cross-reference' mapping for Figure 33-13. This is the only use of the parameter_type and pd_dll_power_type variables in Figure 33-46 so they can also be removed from the associated variable definition lists.

The variable pd_dll_power_type however has to gated while

pse_dll_ready is FALSE, since at that time aLldpXdot3RemPowerType is undefined and therefore the mapping of Table 33-41 'Attribute to state diagram variable cross-reference' is undefined. There also needs to be some qualification based on DLL being implemented for the case of a Type 2 PSE with 2-event physical layer classification but no Data Link Layer Classification.

Based on this the use of pd_dll_power_type on the POWER_ON to SET_PARAMETERS transition should be qualified with pse_dll_capable = TRUE and pse_dll_ready = TRUE, so the equation would become (PSE_TYPE = 2) * (pd_dll_power_type = 2) * (parameter_type = 1) * pse_dll_capable * pse_dll_ready.

IMPACT ON EXISTING NETWORKS:

None. This change will clarify the source of pd_dll_power_type. Type 2 PSEs with 1-event physical layer Classification and Data Link Layer Classification, will have to have been implemented using the suggested source, if not the PSE would never have been able to source in excess of Type 1 power limits.

Please attach supporting material, if any
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