

# IEEE P802.3at DTE Power Enhancements management ad hoc

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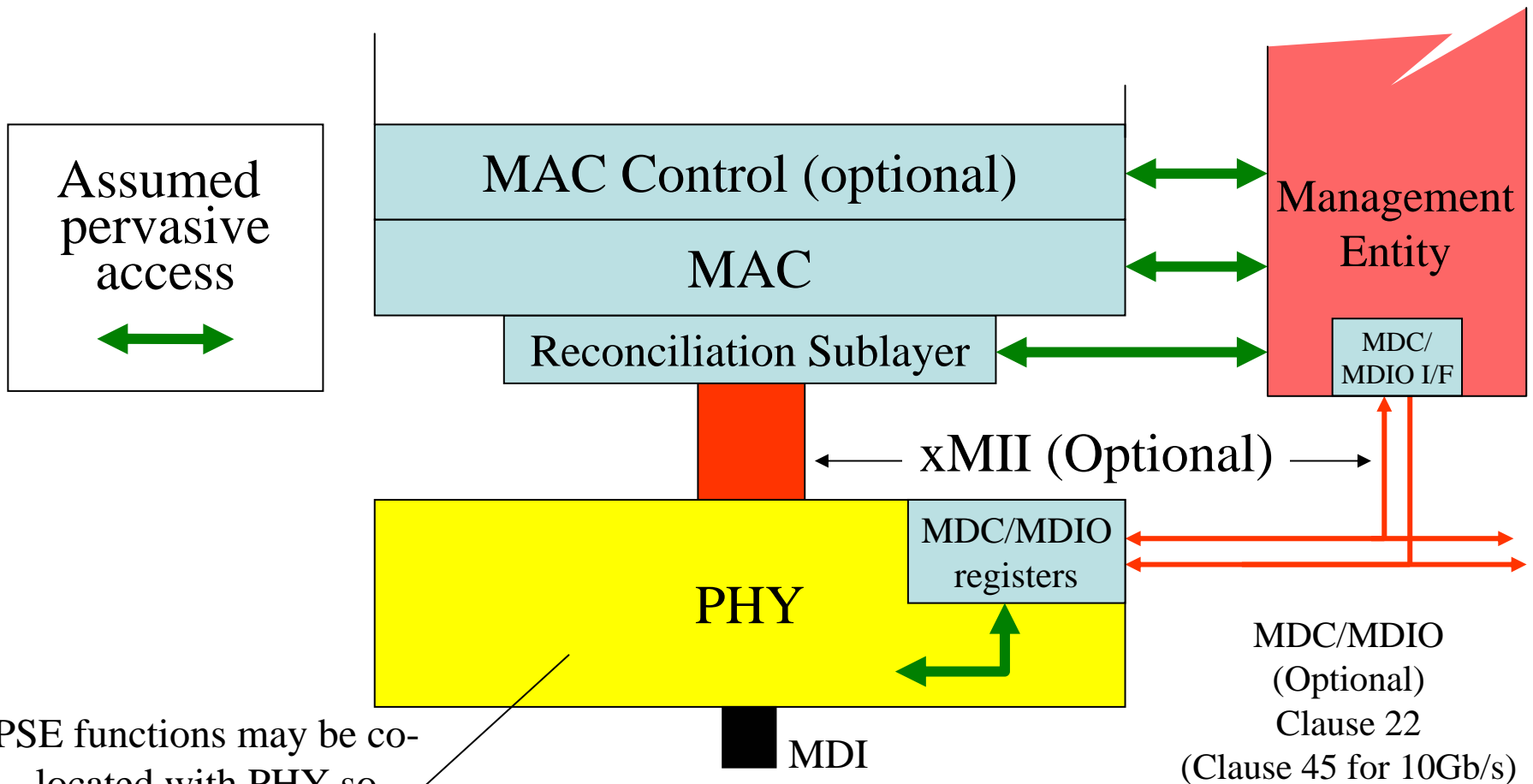
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# Ad hoc scope

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- Management outside of Layer 2
- Out of scope
  - Management of Layer 2 classification
    - Contact Ramesh Sastry
- In scope
  - PSE management
    - Updates to current specification
  - PD management
    - Currently there is none

# Management access



PSE functions may be co-located with PHY so Clause 22 MDC/MDIO registers provide for PSE

MDC/MDIO (Optional) Clause 22 (Clause 45 for 10Gb/s)

# Clause 30 Objects

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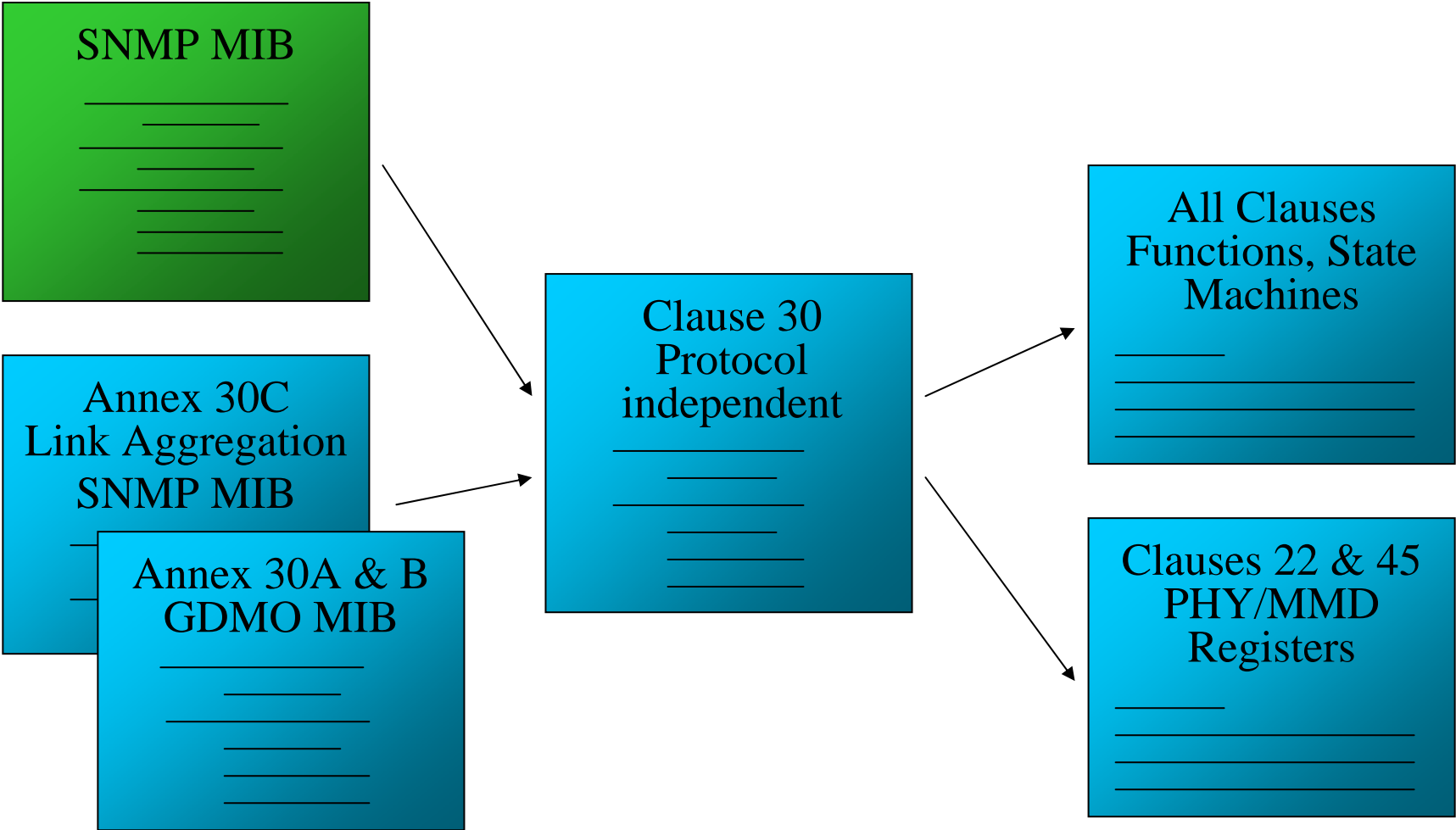
- Generally provide Objects that are associated with hardware function
  - Object behaviour specifications reference functions and registers within the relevant Clause of 802.3
- Generally don't provide object if it doesn't require hardware support
  - Examples
    - Objects that could be calculated from other objects

# Management structure

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- Protocol independent MIB clause
  - Clause 30
- Protocol dependent MIB annexes
  - GDMO
    - Annex 30A & 30B
  - SNMP - Link Aggregation only
    - Annex 30C
    - Being moved to IEEE 802.1
      - IEEE P802.1AX Link Aggregation project
- Other SNMP MIB use to be generated by IETF
  - Referenced Clause 30 definitions
  - This is no longer happening

# References to/from Clause 30



# Review of current management attributes

# PSE Disabled

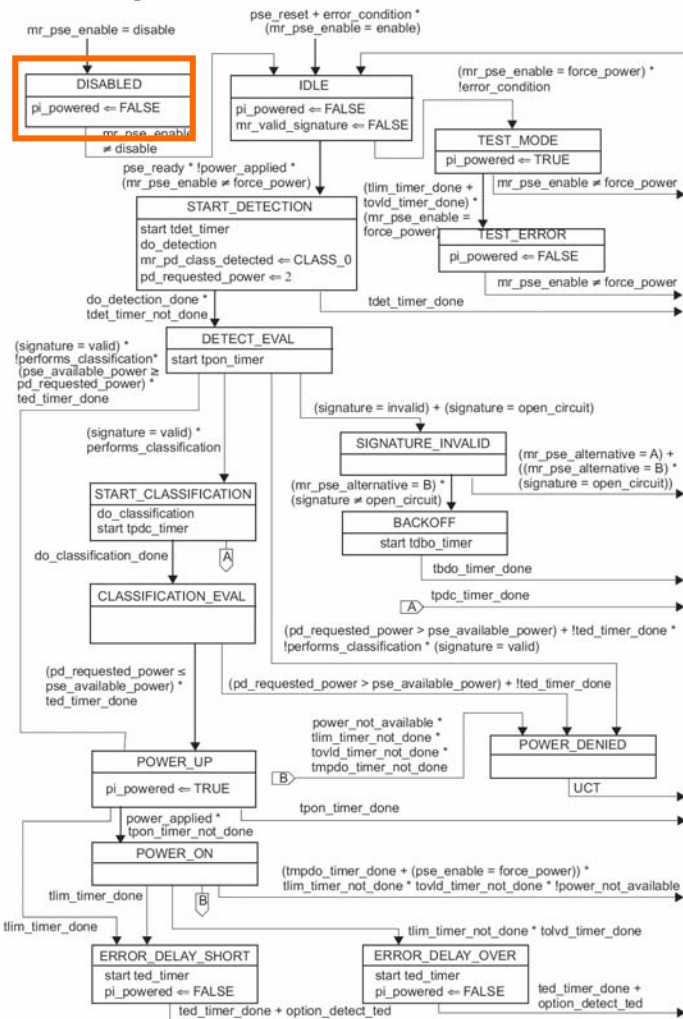


Figure 33-6—PSE state diagram

## oPSE managed object class (30.9.1)

Object Class	Type	Method	Supported	Supported
aPSEID	ATTRIBUTE	GET	X	
aPSEAdminState	ATTRIBUTE	GET	X	
aPSEPowerPairsControlAbility	ATTRIBUTE	GET	X	
aPSEPowerPairs	ATTRIBUTE	GET-SET	X	
aPSEPowerDetectionStatus	ATTRIBUTE	GET	X	
aPSEPowerClassification	ATTRIBUTE	GET		X
aPSEInvalidSignatureCounter	ATTRIBUTE	GET		X
aPSEPowerDeniedCounter	ATTRIBUTE	GET		X
aPSEOverLoadCounter	ATTRIBUTE	GET		X
aPSEShortCounter	ATTRIBUTE	GET		X
aPSEMPSAbsentCounter	ATTRIBUTE	GET		X
acPSEAdminControl	ACTION			X

## Attribute

aPSEPowerDetectionStatus  
aPSEPowerMaintenanceStatus  
aPSEInvalidSignatureCounter  
aPSEPowerDeniedCounter  
aPSEOverLoadCounter  
aPSEShortCounter  
aPSEMPSAbsentCounter

## Enumeration/State

disabled  
MPSAbsent  
Not incrementing  
Not incrementing  
Not incrementing  
Not incrementing  
Not incrementing



# No Signature/Invalid Signature

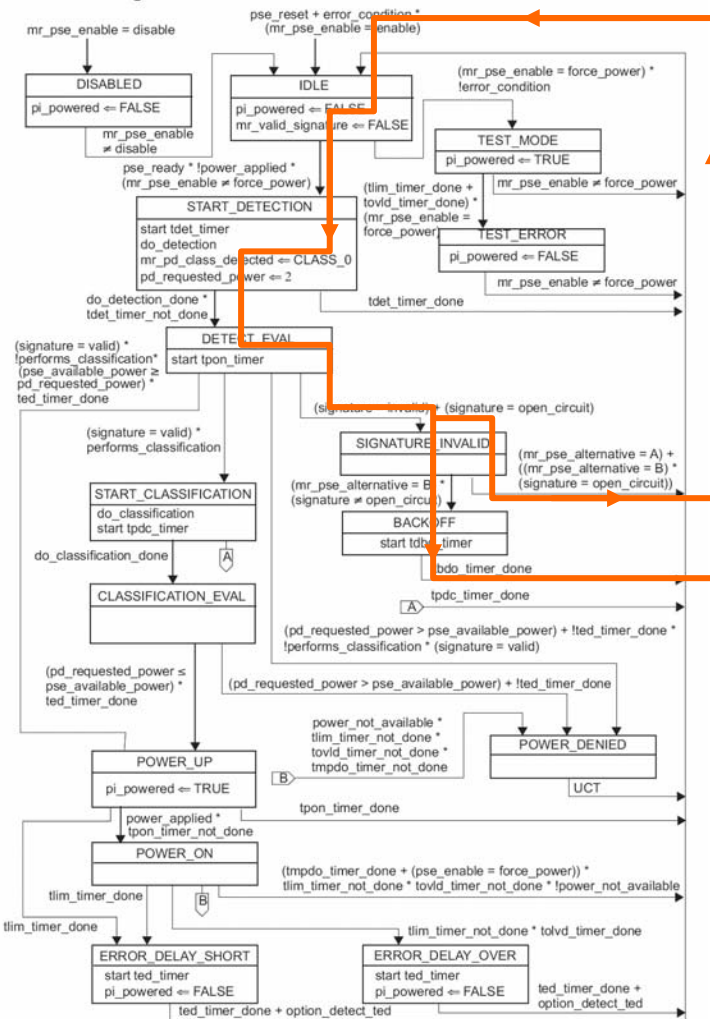


Figure 33-6—PSE state diagram

oPSE managed object class (30.9.1)				
Attribute	Method	Access	Read Only	Write Only
aPSEID	GET	ATTRIBUTE	X	
aPSEAdminState	GET	ATTRIBUTE	X	
aPSEPowerPairsControlAbility	GET	ATTRIBUTE	X	
aPSEPowerPairs	GET-SET	ATTRIBUTE	X	
aPSEPowerDetectionStatus	GET	ATTRIBUTE	X	
aPSEPowerClassification	GET	ATTRIBUTE		X
aPSEInvalidSignatureCounter	GET	ATTRIBUTE		X
aPSEPowerDeniedCounter	GET	ATTRIBUTE		X
aPSEOverLoadCounter	GET	ATTRIBUTE		X
aPSEShortCounter	GET	ATTRIBUTE		X
aPSEMPSAbsentCounter	GET	ATTRIBUTE		X
acPSEAdminControl		ACTION		X

Attribute	Enumeration/State
aPSEPowerDetectionStatus	searching
aPSEPowerMaintenanceStatus	MPSAbsent
aPSEInvalidSignatureCounter	Incrementing
aPSEPowerDeniedCounter	Not incrementing
aPSEOverLoadCounter	Not incrementing
aPSEShortCounter	Not incrementing
aPSEMPSAbsentCounter	Not incrementing

# Power denied

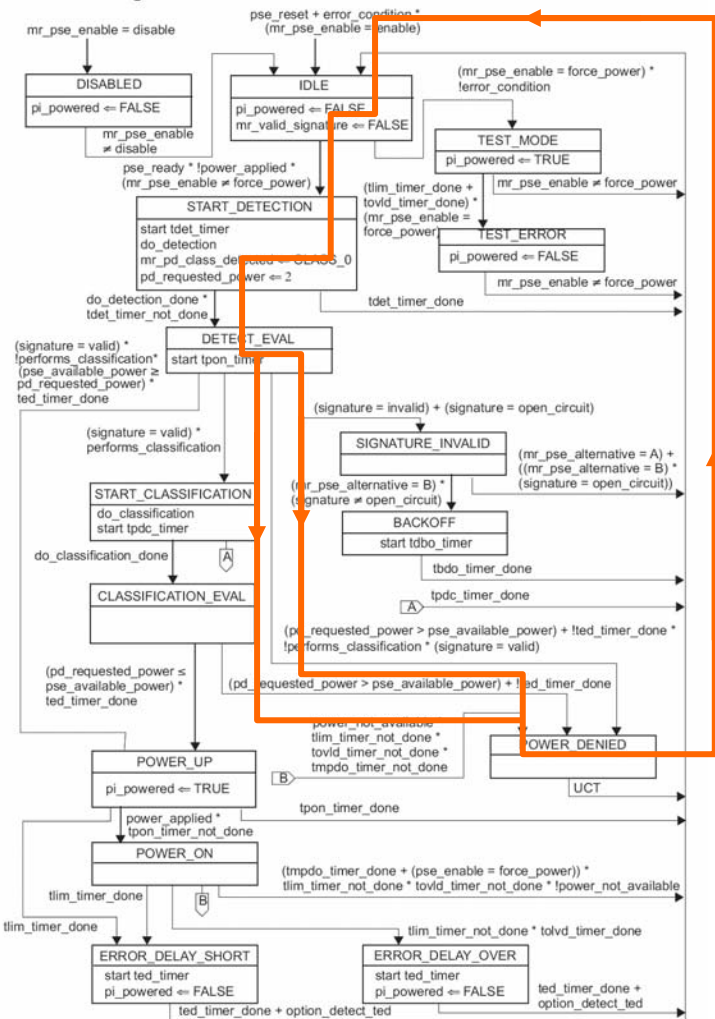


Figure 33-6—PSE state diagram

oPSE managed object class (30.9.1)				
aPSEID	ATTRIBUTE	GET	X	
aPSEAdminState	ATTRIBUTE	GET	X	
aPSEPowerPairsControlAbility	ATTRIBUTE	GET	X	
aPSEPowerPairs	ATTRIBUTE	GET-SET	X	
aPSEPowerDetectionStatus	ATTRIBUTE	GET	X	
aPSEPowerClassification	ATTRIBUTE	GET		X
aPSEInvalidSignatureCounter	ATTRIBUTE	GET		X
aPSEPowerDeniedCounter	ATTRIBUTE	GET		X
aPSEOverLoadCounter	ATTRIBUTE	GET		X
aPSEShortCounter	ATTRIBUTE	GET		X
aPSEMPSAbsentCounter	ATTRIBUTE	GET		X
acPSEAdminControl	ACTION			X

## Attribute

aPSEPowerDetectionStatus  
aPSEPowerMaintenanceStatus  
aPSEInvalidSignatureCounter  
aPSEPowerDeniedCounter  
aPSEOverLoadCounter  
aPSEShortCounter  
aPSEMPSAbsentCounter

## Enumeration/State

searching  
MPSAbsent  
Not incrementing  
Incrementing  
Not incrementing  
Not incrementing  
Not incrementing

# PD Removing Maintain Power Signature

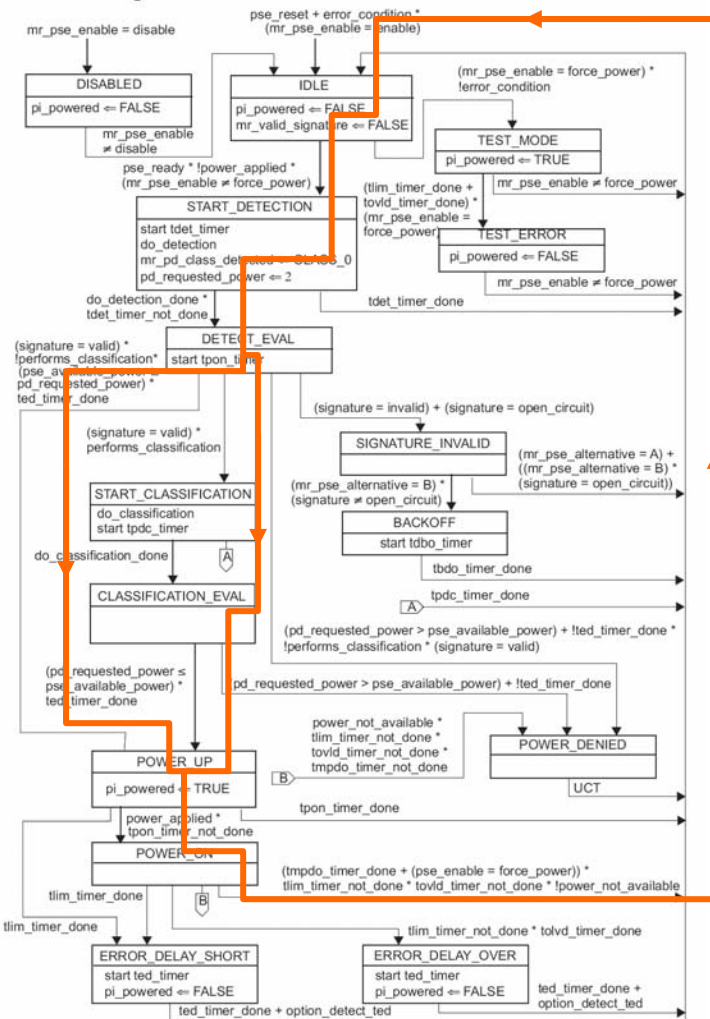


Figure 33-6—PSE state diagram

oPSE managed object class (30.9.1)				
Attribute	Method	Access	Supported	Required
aPSEID	GET	ATTRIBUTE	X	
aPSEAdminState	GET	ATTRIBUTE	X	
aPSEPowerPairsControlAbility	GET	ATTRIBUTE	X	
aPSEPowerPairs	GET-SET	ATTRIBUTE	X	
aPSEPowerDetectionStatus	GET	ATTRIBUTE	X	
aPSEPowerClassification	GET	ATTRIBUTE		X
aPSEInvalidSignatureCounter	GET	ATTRIBUTE		X
aPSEPowerDeniedCounter	GET	ATTRIBUTE		X
aPSEOverLoadCounter	GET	ATTRIBUTE		X
aPSEShortCounter	GET	ATTRIBUTE		X
aPSEMPSAbsentCounter	GET	ATTRIBUTE		X
acPSEAdminControl		ACTION		X

Attribute	Enumeration/State
aPSEPowerDetectionStatus	searching/deliveringPower
aPSEPowerMaintenanceStatus	MPSAbsent
aPSEInvalidSignatureCounter	Not incrementing
aPSEPowerDeniedCounter	Not incrementing
aPSEOverLoadCounter	Not incrementing
aPSEShortCounter	Not incrementing
aPSEMPSAbsentCounter	Incrementing

# Short Circuit

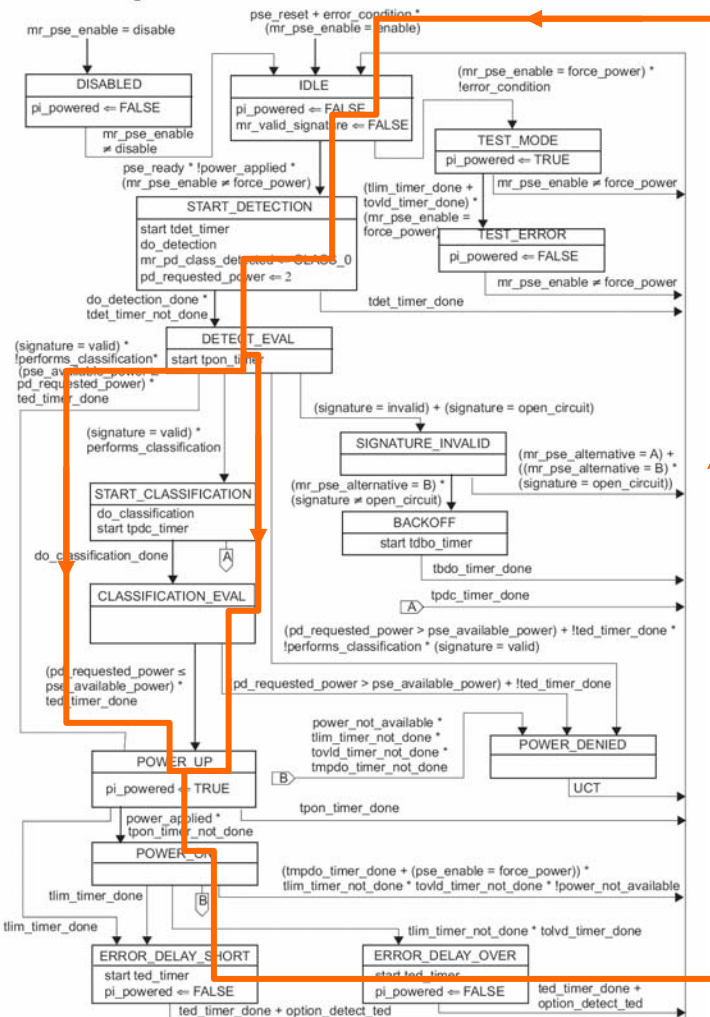


Figure 33-6—PSE state diagram

oPSE managed object class (30.9.1)				
Attribute	Method	Access	Incrementing	Resettable
aPSEID	GET	X		
aPSEAdminState	GET	X		
aPSEPowerPairsControlAbility	GET	X		
aPSEPowerPairs	GET-SET	X		
aPSEPowerDetectionStatus	GET	X		
aPSEPowerClassification	GET		X	
aPSEInvalidSignatureCounter	GET			X

## 30.9.5.1.5 aPSEPowerDetectionStatus

NOTE—A derivative attribute may wish to apply a delay to the use of the 'deliveringPower' enumeration as the PSE state diagram will enter then quickly exit the POWER\_ON state if a short-circuit or overcurrent condition is present when power is first applied;

Attribute	Enumeration/State
aPSEPowerDetectionStatus	searching/deliveringPower
aPSEPowerMaintenanceStatus	MPSAbsent/ok
aPSEInvalidSignatureCounter	Not incrementing
aPSEPowerDeniedCounter	Not incrementing
aPSEOverLoadCounter	Not incrementing
aPSEShortCounter	Incrementing
aPSEMPSAbsentCounter	Not incrementing

# Overload

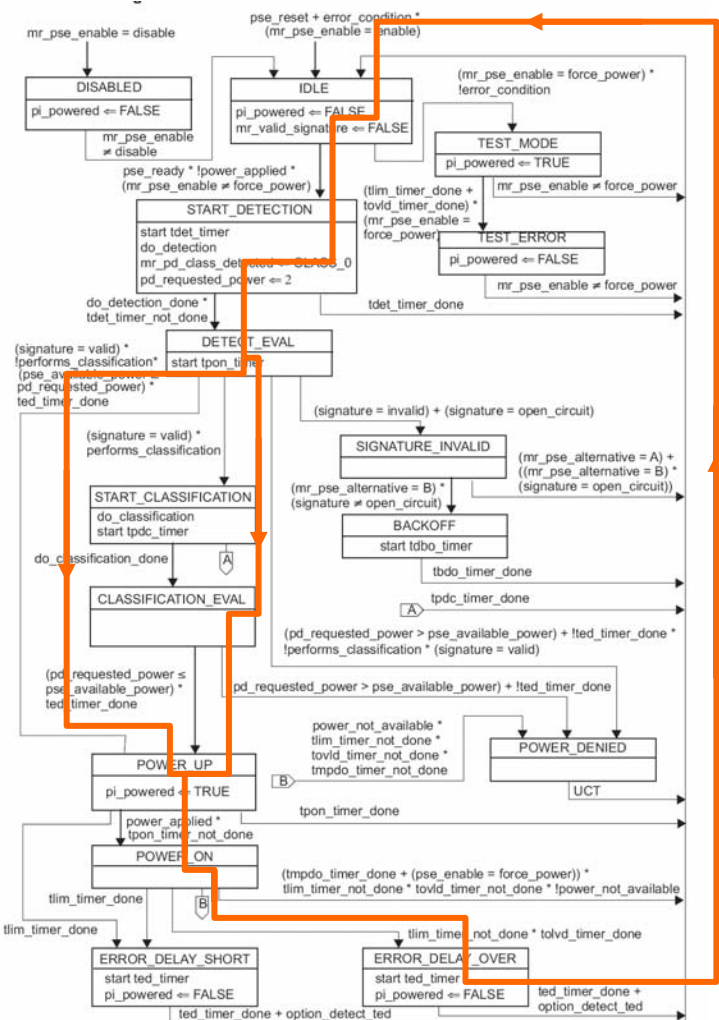


Figure 33-6—PSE state diagram

oPSE managed object class (30.9.1)				
Attribute	Method	Access	Read Only	Write Only
aPSEID	GET	ATTRIBUTE	X	
aPSEAdminState	GET	ATTRIBUTE	X	
aPSEPowerPairsControlAbility	GET	ATTRIBUTE	X	
aPSEPowerPairs	GET-SET	ATTRIBUTE	X	
aPSEPowerDetectionStatus	GET	ATTRIBUTE	X	
aPSEPowerClassification	GET	ATTRIBUTE		X
aPSEInvalidSignatureCounter	GET	ATTRIBUTE		X

### 30.9.5.1.5 aPSEPowerDetectionStatus

NOTE—A derivative attribute may wish to apply a delay to the use of the 'deliveringPower' enumeration as the PSE state diagram will enter then quickly exit the POWER\_ON state if a short-circuit or overcurrent condition is present when power is first applied;

Attribute	Enumeration/State
aPSEPowerDetectionStatus	searching/deliveringPower
aPSEPowerMaintenanceStatus	MPSAbsent/ok
aPSEInvalidSignatureCounter	Not incrementing
aPSEPowerDeniedCounter	Not incrementing
aPSEOverLoadCounter	Incrementing
aPSEShortCounter	Not incrementing
aPSEMPSAbsentCounter	Not incrementing

# PSE in Force Power Test Mode

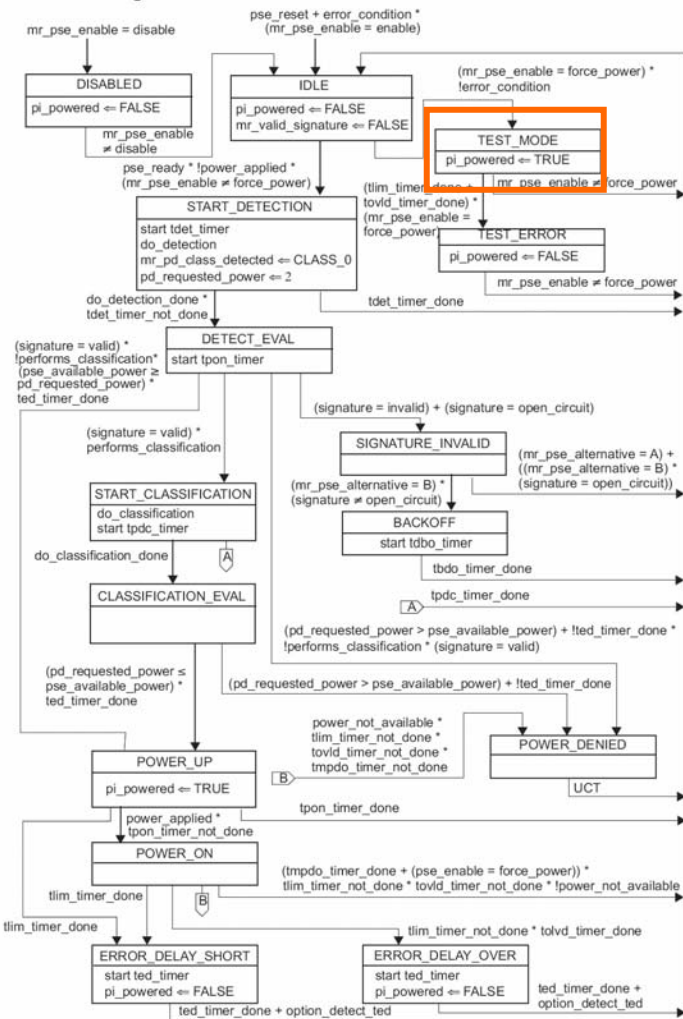


Figure 33-6—PSE state diagram

oPSE managed object class (30.9.1)				
aPSEID	ATTRIBUTE	GET	X	
aPSEAdminState	ATTRIBUTE	GET	X	
aPSEPowerPairsControlAbility	ATTRIBUTE	GET	X	
aPSEPowerPairs	ATTRIBUTE	GET-SET	X	
aPSEPowerDetectionStatus	ATTRIBUTE	GET	X	
aPSEPowerClassification	ATTRIBUTE	GET		X
aPSEInvalidSignatureCounter	ATTRIBUTE	GET		X
aPSEPowerDeniedCounter	ATTRIBUTE	GET		X
aPSEOverLoadCounter	ATTRIBUTE	GET		X
aPSEShortCounter	ATTRIBUTE	GET		X
aPSEMPSAbsentCounter	ATTRIBUTE	GET		X
acPSEAdminControl	ACTION			X

## Attribute

aPSEPowerDetectionStatus  
aPSEPowerMaintenanceStatus  
aPSEInvalidSignatureCounter  
aPSEPowerDeniedCounter  
aPSEOverLoadCounter  
aPSEShortCounter  
aPSEMPSAbsentCounter

## Enumeration/State

test  
MPSAbsent  
Not incrementing  
Not incrementing  
Not incrementing  
Not incrementing  
Not incrementing

# PSE in Force Power Test Mode with Fault

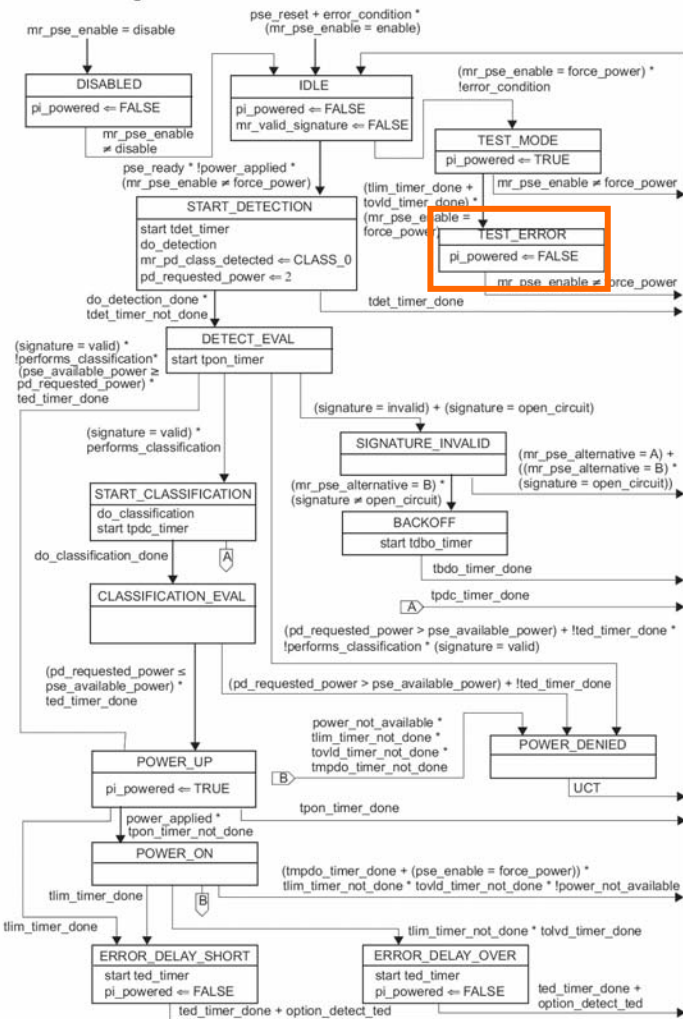


Figure 33-6—PSE state diagram

oPSE managed object class (30.9.1)				
Object Class	Attribute	Method	Read Only	Write Only
aPSEID	ATTRIBUTE	GET	X	
aPSEAdminState	ATTRIBUTE	GET	X	
aPSEPowerPairsControlAbility	ATTRIBUTE	GET	X	
aPSEPowerPairs	ATTRIBUTE	GET-SET	X	
aPSEPowerDetectionStatus	ATTRIBUTE	GET	X	
aPSEPowerClassification	ATTRIBUTE	GET		X
aPSEInvalidSignatureCounter	ATTRIBUTE	GET		X
aPSEPowerDeniedCounter	ATTRIBUTE	GET		X
aPSEOverLoadCounter	ATTRIBUTE	GET		X
aPSEShortCounter	ATTRIBUTE	GET		X
aPSEMPSAbsentCounter	ATTRIBUTE	GET		X
acPSEAdminControl	ACTION			X

Attribute	Enumeration/State
aPSEPowerDetectionStatus	fault
aPSEPowerMaintenanceStatus	MPSAbsent
aPSEInvalidSignatureCounter	Not incrementing
aPSEPowerDeniedCounter	Not incrementing
aPSEOverLoadCounter	Not incrementing
aPSEShortCounter	Not incrementing
aPSEMPSAbsentCounter	Not incrementing

# PSE with Implementation specific fault

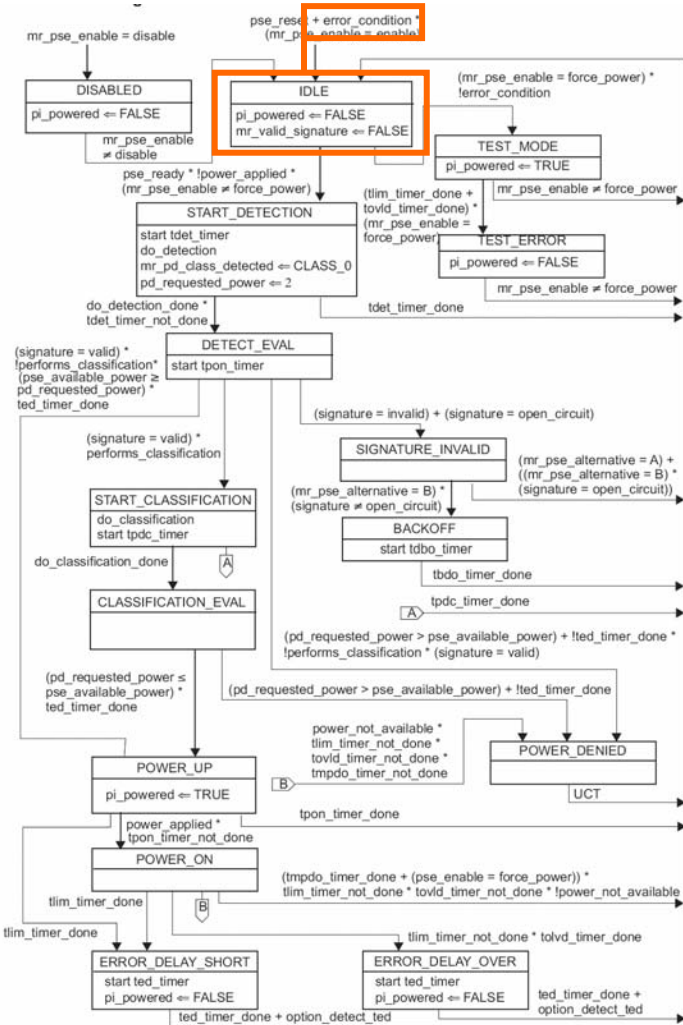


Figure 33-6—PSE state diagram

oPSE managed object class (30.9.1)				
Object Class	Attribute	Method	Read Only	Write Only
aPSEID	ATTRIBUTE	GET	X	
aPSEAdminState	ATTRIBUTE	GET	X	
aPSEPowerPairsControlAbility	ATTRIBUTE	GET	X	
aPSEPowerPairs	ATTRIBUTE	GET-SET	X	
aPSEPowerDetectionStatus	ATTRIBUTE	GET	X	
aPSEPowerClassification	ATTRIBUTE	GET		X
aPSEInvalidSignatureCounter	ATTRIBUTE	GET		X
aPSEPowerDeniedCounter	ATTRIBUTE	GET		X
aPSEOverLoadCounter	ATTRIBUTE	GET		X
aPSEShortCounter	ATTRIBUTE	GET		X
aPSEMPSAbsentCounter	ATTRIBUTE	GET		X
acPSEAdminControl	ACTION			X

## Attribute

- aPSEPowerDetectionStatus
- aPSEPowerMaintenanceStatus
- aPSEInvalidSignatureCounter
- aPSEPowerDeniedCounter
- aPSEOverLoadCounter
- aPSEShortCounter
- aPSEMPSAbsentCounter

## Enumeration/State

- otherFault
- MPSAbsent
- Not incrementing
- Not incrementing
- Not incrementing
- Not incrementing
- Not incrementing



# Some thoughts

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- Updating state machines
  - Need to think about MIB
    - Preferable to add enumeration
- Updating Clause 30
  - In some cases need new state machines first