draft-ietf-eman-framework-11

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History: Draft Evolution

- IETF 77, 78 3/2010
  - OPSAG Monitor MIB
  - Introduction, MIB, Use Cases

- IETF 79 11/2010
  - EMAN WG Start
  - Introduction, UML become draft along with UML from MIB

- IETF 80 3/2011 –
  - UML and MIB Revised
  - feedback from PDU vendors
  - Requirements and use cases added

- IETF 81 7/2011
  - -Single Power State Series set detailed

- IETF 82 11/2011
  - Single Power State discussed
  - Definitions discussed in separate draft
  - Use Cases and Requirements modev to drafts

- IETF 83 3/2012
  - Multiple Power State Series Adopted
  - Power Interfaces Adopted

- IETF 84 7/2012
  - Definitions reviewed and incorporate
  - Relationships detailed and Topology examples put in

- IETF 85 11/2012
  - Editorial changes from tracker

- IETF 86 3/2013
  - Examples removed form Terminology
  - Editorial changes form tracker and reorganization

- IETF 87
  - Edited intro, Model format, Realtionship intro

- IETF 88
  - WGLC Feedback

History: Stable

		REQ	USE CASES	Intro	Info Model	States	Relationships	Topologies	Interfaces	Defiinitions
IETF	78			ADD						
IETF	79			EDIT	ADD					
IETF	80	ADD	ADD	EDIT	CHG		ADD			
IETF	81	EDIT	EDIT	EDIT	EDIT	ADD	=			
IETF	82	DEL	DEL	EDIT	=	EDIT	=			ADD
IETF	83			EDIT	=	CHG	=		ADD	EDIT
IETF	84			=	=	=	=	ADD	=	EDIT
IETF	85			=	=	=	=	=	=	=
IETF	86			=	=	=	=	=	=	=
IETF	87			EDIT	= *	=	EDIT**	=	=	=
IETF	88			=	=	=	=	=	=	=

ADD : concept is new to the draft

CHG : Concept is not new approach is changes

=   : Concept and text is the same, editorial or language edits may have been made

EDIT : Concept and approach(class) is the same attributes may have been modified, added or deleted

DEL : Concept was removed from the draft

Summary: Work Since 87

- Rev-11 based on feedback for WGLC of Rev-09
  - **Feedback: 66 edits, 29 clarifications, 15 regrets**
- Weekly Author meetings with chair to go over feedback
- ETSI GAL Liaison review
- Implementations
- Summary of edits were sent to the list
  - Major items highlights here

Summary: Highlighted Edits in this draft

- EDIT: Terminology capitalization / consistency
  - Modeling definitions out of terminology in model
  - Clarified physical / conceptual model notation
- DEL: Concerns section removed
- CLARIFIED: Metering clarified as pertaining to Meter devices not just measuring
- EDIT: Fixed IEEE1621 hibernate as off not sleep and quoted verbatim
- EDIT: replaced power interface and component attribute in pseudo code that was lost from UML

Edit: Clarify Physical v Model

- Common terms lower case
- Moved modeling definitions to modeling section out of terminology
- Summary of Notation for Modeling Physical Equipment

```
Physical             Modeling (Meta Data)      Model Instance
------------------------------------------------------------
equipment            Energy Object (Class)     Energy Object
device               Device (Class)            Device
component            Component (Class)         Component
inlet/outlet         Power Interface (Class)   Power Interface
```

Edit: Removed sections "Concerns"

- Scrubbed information and was covered in applicability and other parts of doc
- Promoted sections
  - Target Devices
 - Physical Reference Model
  - Nor Covered By Framework

Summary: Not Applied

- Kept Power State discussion in section on control even though it can be for monitoring only.

- Kept Context on the device and not only in EnMS

- Kept Scalar for role and category

- Kept Attributes and did not use name value pairs in keyword

- Kept caliber since we had consensus and also asked implementations and liaison
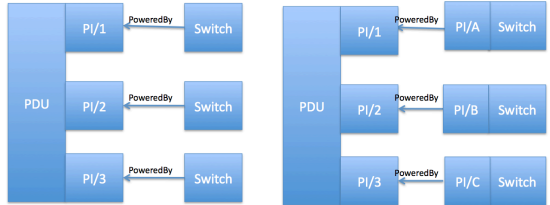
- See list where approach differences not applied.
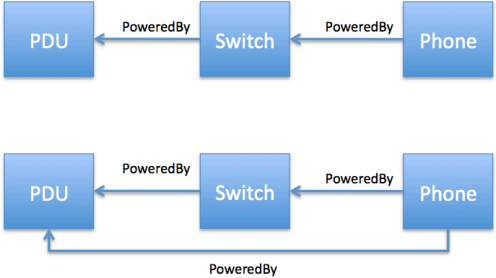
Review: Topologies (Since IETF 84)
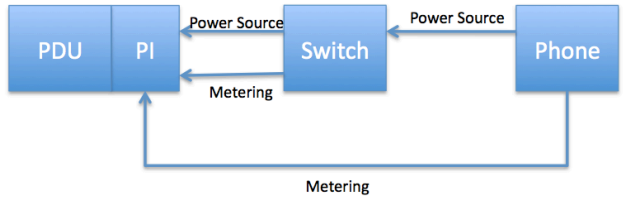
Power Source Topology
(Simple / Multiple)
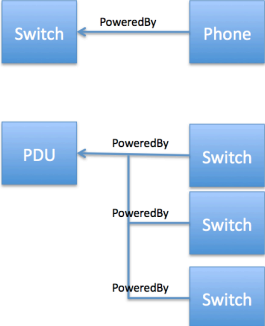
Power Source Topology
(interfaces)

Power Source Topology
(Transitive)

Metering Topology

Metering Topology
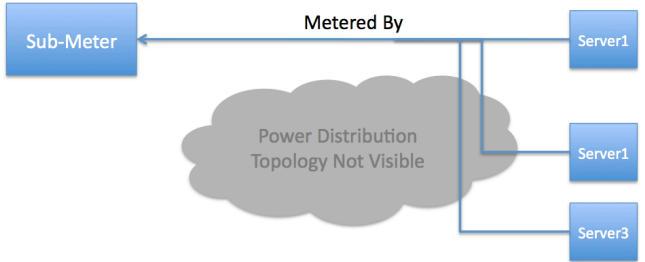
```
class EnergyObject {

// identification
   index        : int
   identifier   : uuid  // RFC 4133
   alternatekey : string

// context
   domainName      : string
   role            : string
   keywords [0..n] : string
   importance      : int

// relationship
   relationships [0..n] : Relationship

// measurements
   nameplate    : Nameplate

// power and energy
   power    : PowerMeasurement
   energy   : EnergyMeasurment
   demand   : DemandMeasurement

// power states
   powerControl [0..n] : PowerStateSet
}
```

```
CLASS PowerInterface EXTENDS EnergyObject{
            eoIfType : enum { inlet, outlet, both}
        }


class Device extends EnergyObject {
      eocategory   : enum { producer, consumer
                   , meter, distributor, store
      }
      powerInterfaces[0..n]: PowerInterface
      components [0..n] Component
}


class Component extends EnergyObject
      eocategory   : enum { producer, consumer
                   , meter, distributor, store
      }
      powerInterfaces[0..n]: PowerInterface
      components [0..n] Component
}


class Relationship {
      relationshipType    : enum {
            meters, meteredby
          ,powers, poweredby
          ,aggregates, aggregatedby
      }
      relationshipObject  : uuid
}
```

Liaison: ETSI Green Abstraction Layer Liaison

- https://docs.google.com/file/d/0B31njMYqFndxNEZZdVlaQkw0N28/edit?usp=sharing

- Adopted from our discussion
  - Id's should conform to new RFC4133
  - Power measurement as base plus exponent
  - Power measurement caliber added
  - Power States can be represented as single vector
    - GAL EnergyAwareState (P,S) intersection can be one vector

Ready for WGLC

Aside from what we discuss today we are ready for WGLC!

Discuss: Continue with pseudo code IM description or use a table?

Discuss: Should implementation section be added?

Discuss: Pseudo Code

Discuss: Continue with pseudo code or use a table?

Our pseudo code:

```
CLASS Measurement {
    multiplier: enum { -24..24}
    caliber   : enum { actual, estimated, static }
    accuracy  : enum { 0..10000} // hundreds of percent
}
```

Re-written in a tabular format:

1.0 Measurement Class

Properties	Description	Type	Get/Set	Requirement
Multiplier	Base 10 exponent	Enum	G	Mandatory
Caliber	Actual, estimate, or static	Enum	G	Optional
Accuracy	Hundredths of percent	Enum	G	Optional

Inheritance can be specified as in IEC 68150

Discuss: Implementation Section

Discuss: Should implementation section be added?

- Reference implementations
    - SNMP.com prototypes
    - Stanford Python
- Compatible Implementations
    - EnMS' (Joulex, Verdiem, CA Nimsoft, IBM Tivoli, Schneider)
    - ciscoEnergyWiseMib 1.3.6.1.4.1.9.9.683
    - Cisco EnergyWise Device Partners
        - IM is a subset of Model in this program
        - Java, TLV, C, Python implementations of model
        - Devices:
            - PDU (APC, Schneider,Raritan,WTI,Cyberswitching)
            - Light (NuLeds)
            - Facilities translators (Field Server, Schneider)
            - Facility controllers (Schneider, JCI)
            - 102 Partner Companies…

Summary:

- Reviewed with WG and Liaisons

- Lots of Editorial Revisions applied

- Approach is stable

- No open issues

- **Given Stability and lots of review…**
  - **WG last call?**

Thanks!