draft-ietf-eman-framework-05

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Changes in this Draft

- Added a section on topologies.
  - This will ground the abstract relationships and map them to physical topologies / scenarios.
- More details on the relationship types
- Added a section on guidelines for relationships
- Aligned with terminology from IETF 83 (presented previously)
  - power interfaces, devices, components and latest in definition draft from IETf-83
- clarified items mentioned in the mailing list and minutes from IETF-83 including:
  - Power capping / policies (Georgis)
  - Relationships
  - UUID.
- Added natural gas as example of non-electrical systems

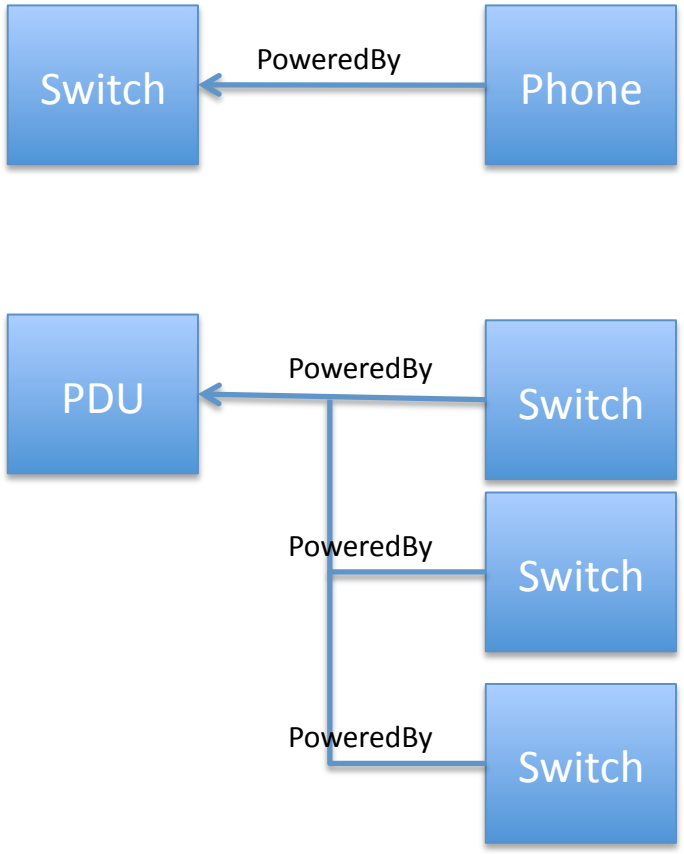
Reference Topology and Guidelines

- "The reference model defines physical and logical topologies of devices and the relationship among them in a communication network."

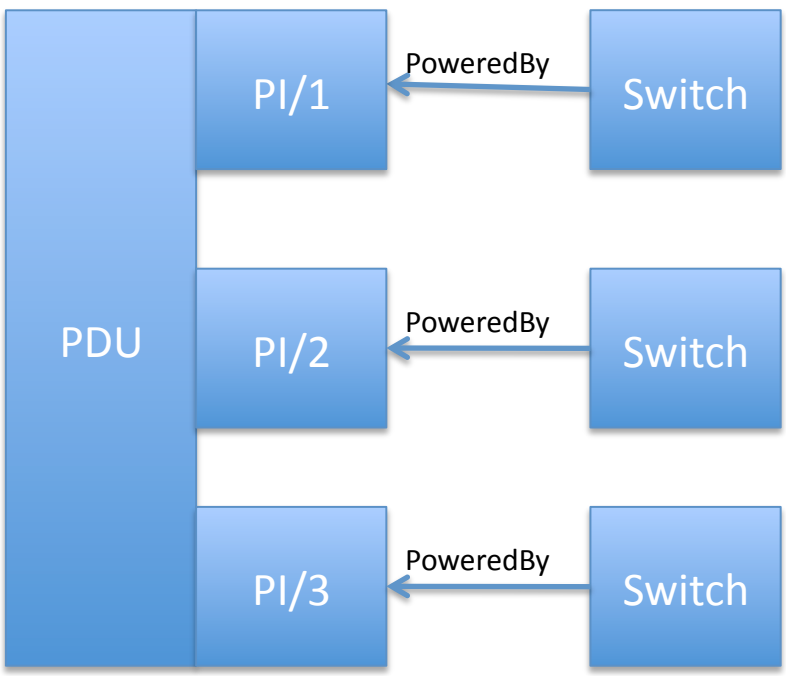
- **Power Source** – "This is a relationship among devices providing energy and devices receiving energy"
- **Metering** – Independent of power source relationship and two type
  - Between Two devices
  - At a point in Distribution
- **Proxy** – Logically showing interfaces independent typically over another protocol
- **Aggregation** – Independent of the physical or communication topology

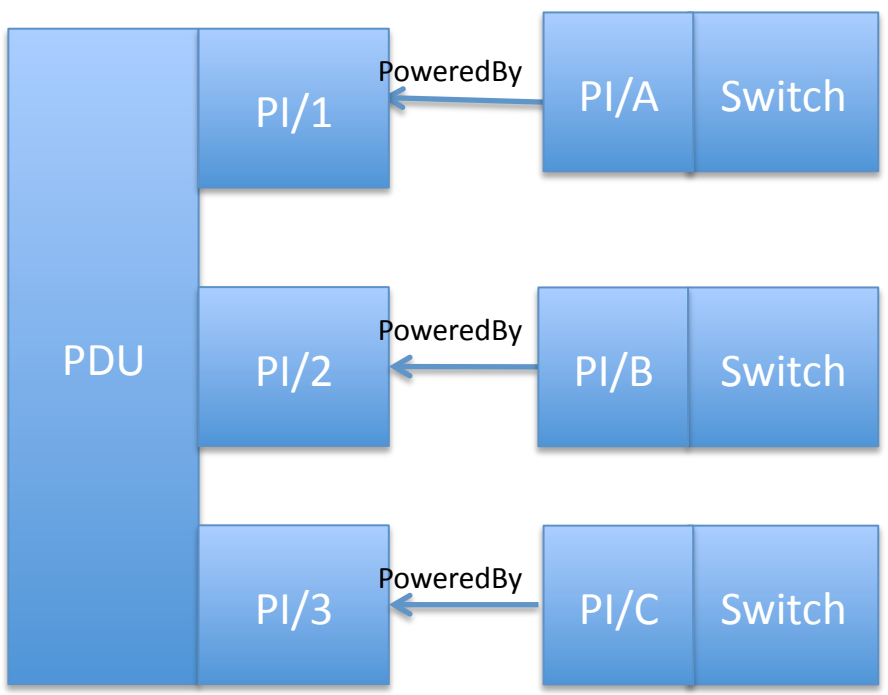
Topologies are represented as relationships of the same name and are generalize with a Parent / Child Relationship

Power Source Topology
(Simple / Multiple)

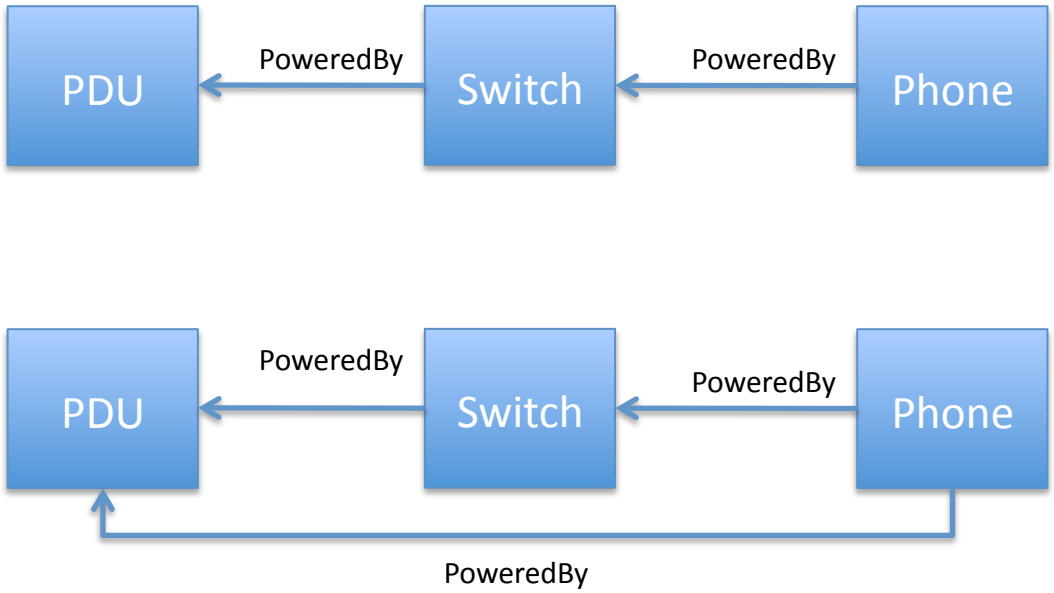


Power Source Topology (interfaces)





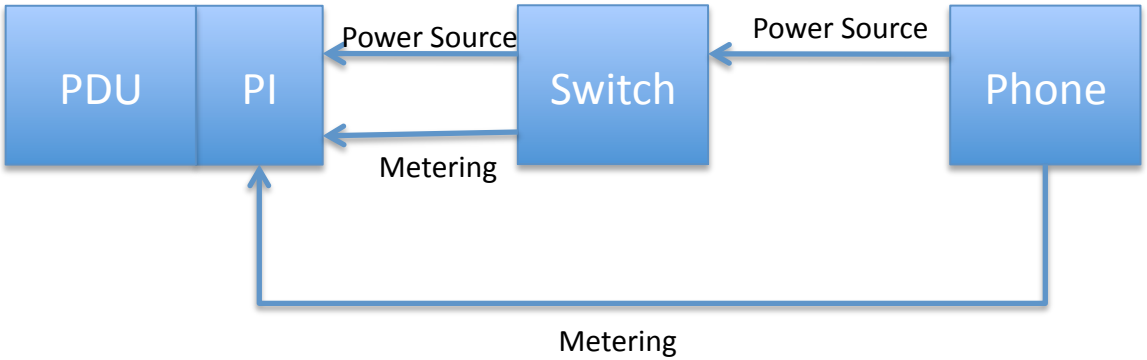
Power Source Topology
(Transitive)



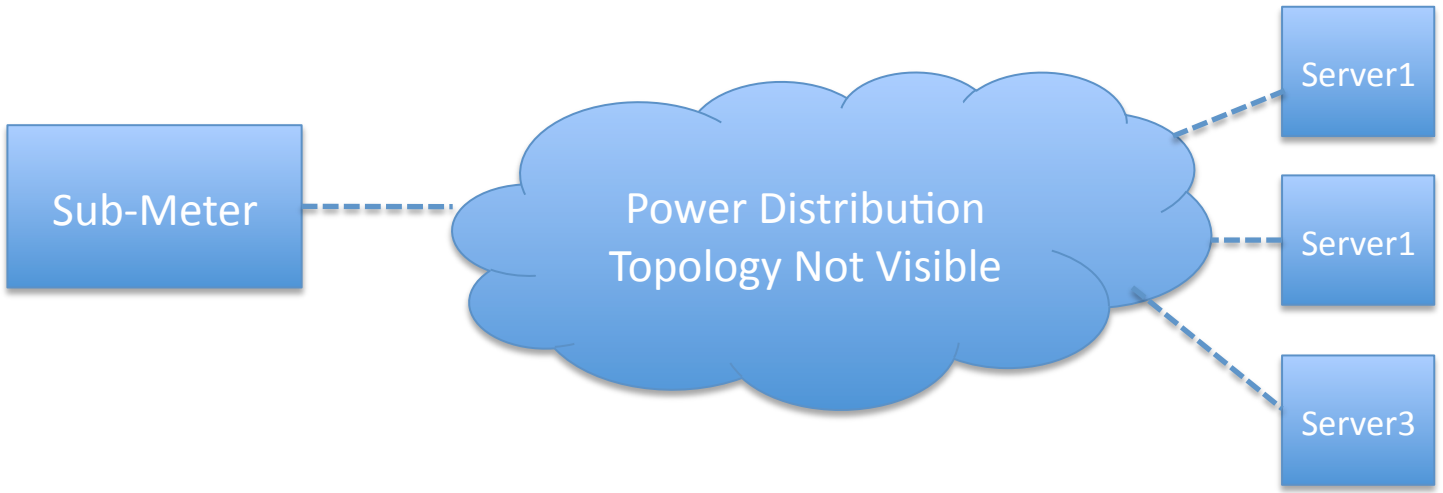
Power Source Guidelines

- Preferred is to use Interfaces but not mandatory if information is not available
- Intended for use between devices so within a device or between components it is implied
- An Energy Object SHOULD NOT establish a Power Source Relationship with a Component.
- A Power Source Relationship SHOULD be established with next known Power Interface in the wiring topology.
- Transitive Power Source relationships SHOULD be avoided as they can be implied

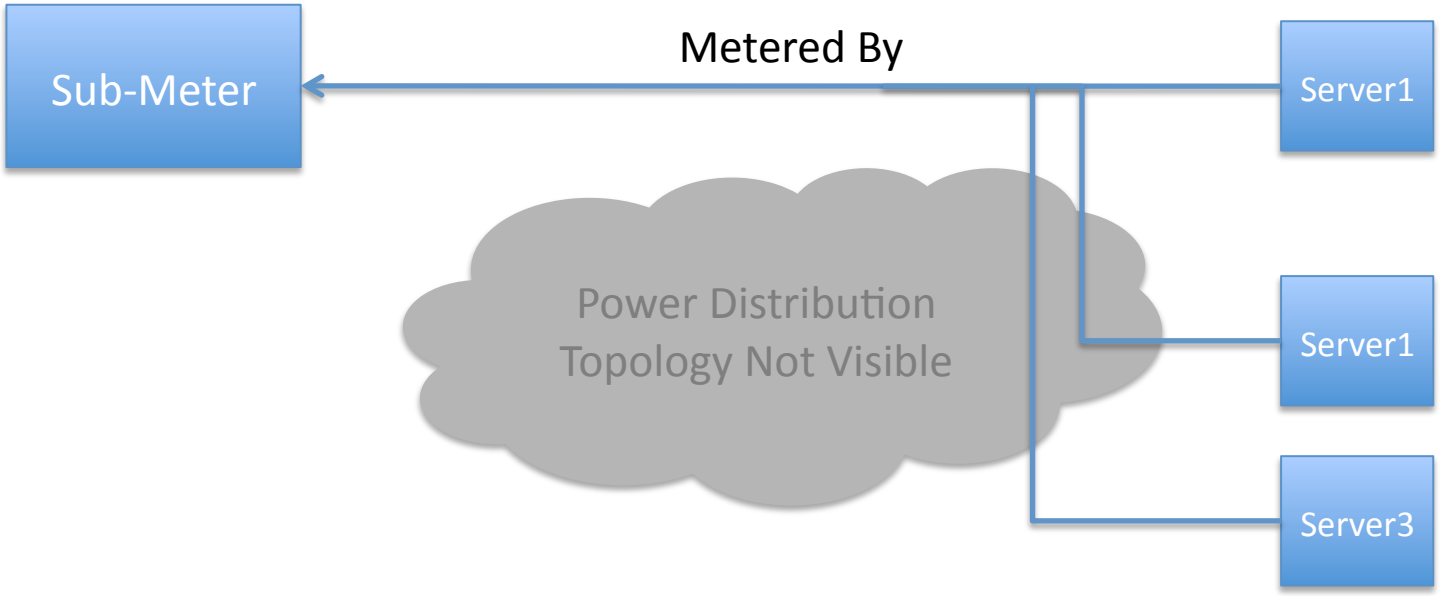
Metering Topology (Between Devices)



Metering Topology
(Power Distribution Point)



Metering Topology (Power Distribution Point)

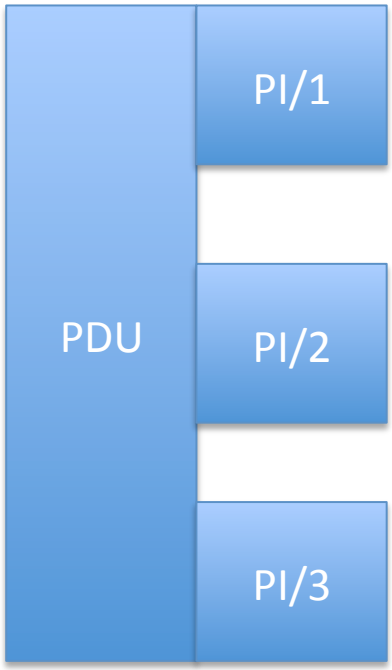


Metering Topology Guidelines

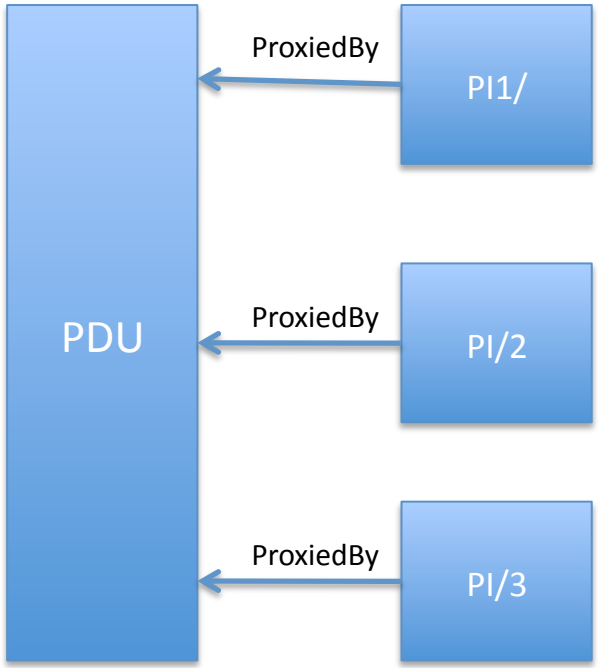
- Metering Relationships are intended to show when one Device is measuring the power or energy at a point in a power distribution system.
- Since one point of a power distribution system may cover many Devices with a complex wiring topology, this relationship type can be seen as an arbitrary set.
- Additionally, Devices may include metering hardware for components and Power Interfaces or for the entire Device. For example some PDUs may have the ability to measure Power for each Power Interface (metered by outlet).
- Others may only be able to control power at each Power Interface but only measure Power at the Power Inlet and a total for all Power Interfaces (metered by device).
- In such cases a Device SHOULD be modeled as an Energy Object that meters all of its Power Outlets and each Power Outlet MAY be metered by the Energy Object representing the Device.
- A Meter Relationship MAY be established with any other Energy Object, Component, or Power Interface.
- Transitive Meter relationships MAY be used.

Proxy Topology

Logical View



Proxy View Reveals Physical



Proxy Guidelines

Strictly speaking a a Component of a Device may provide the Energy Object capabilities for that Device (and vice versa) this relationship is intended to model relationships between Devices.

- A Proxy relationship SHOULD be limited when possible to Energy Objects of different Devices.

Aggregation Topology

- Similar to Metering Topology as arbitrary sets.

GUIDELINES

- Aggregation is independent of the physical power or communication topology. We define in this case an Aggregation Relationship between a device containing aggregate values for arbitrary groups of other devices.
- While any power or energy values monitored from a device/power interface can be seen as a summation for all devices downstream from the monitoring device, the aggregation relationship is used to represent a summation when it is **not obvious** from the powering topology or a device to component containment.

Open Items

REQUIREMENTS

OPEN Draft should include a requirement for the windowing as described by comments on the list

OPEN Strongly suggested to use the term Asset instead of Entity.

FRAMEWORK

NIT: Add a clarification that nameplate is manufacturer defined. Defer to ASHRAE

OPEN: As part of section reorganization authors will review each paragraph and either (trim, delete, move, remain) each. Must be done with all authors

OPEN: Review UML with latest draft from Monitoring MIB/Aware

OPEN: Review States again and ASHRAE curtailment levels to be in line with their spec which separates out state as simple on.pause,off and uses curtailment levels – NOTE: This will open the issue again

Thanks!