Energy Management UML-Based Information Model

Control and Monitoring

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Agenda

- Collaboration with SCTE
- Use of UML Modeling Tools
- Management Protocols
- Gaps in current Information Model
- UML-Based Information Model
SCTE Collaboration

• Collaboration with SCTE Sustainability Management Subcommittee Adaptive Power System Interface Specification (APSIS™) working group
  – IETF should develop & maintain the master common Energy Management Information Model for the industry
  – SCTE willing to contribute into this model as necessary
UML Modeling Tools

• UML Class Diagrams provide a powerful syntax based modeling/design language for defining Information Models
  – Create a holistic view of the EMAN information framework (static class diagrams, object & deployment diagrams for use cases)
  – Create behavioral diagrams if needed

• Include UML Information Model in RFC Appendix as XMI output text file for tool interchange
Management Protocols & Data Models

• Information Model is protocol-agnostic
  – Should not be structured/designed to any data modeling language or their constraints

• Data Models are translated/derived from the Information Model and represent the protocol-specific implementation component
  – Industry moving to XML-based provisioning & more efficient and scalable monitoring/collection
    • TR-069, NETCONF for provisioning
    • TR-232, etc for monitoring
Information Model Gaps

• Power/Energy modeled as interfaces
  – See Class Diagrams in next slides
  – How to best model Physical Device and Physical/Logical interface relationships
  – IF-MIB provides a framework

• Modeling relationships
  – Parent-Child implies UML inheritance (specialization/generalization)
  – No need to have a flat relationship in our model (can be a hierarchical tree
  – How to best configure relationships

• Battery relationship
  – How do you correlate a battery to a Physical Device?
Key Decisions

• draft-ietf-eman-framework-07 consensus on:
  – Information Model will be developed using UML modeling language and included in the draft as XMI interchange format (XML text)
  – Information Model will be architected in a protocol agnostic approach (e.g., data model independent)
Issues

• draft-ietf-eman-framework-07
  – Further work is needed to clarify relationships more generally than Parent-Child
  – Further research into modeling physical interfaces

• draft-ietf-eman-battery-mib-08 consensus on:
  – Further work is needed to clarify the relationship between a battery and its associated physical device

• draft-ietf-eman-energy-aware-mib-07 consensus on:
  – Further work is needed to better clarify how to best configure relationships
  – Further research into modeling physical interfaces at the implementation level (e.g., in the SNMP MIB data model)