ForCES Applicability for DMM PFC

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ForCES Architecture In A Nutshell

• A protocol (The *Verbs*)
  - A modular transport for the protocol

• A data model (The *nouns describing resources*)
  - Logical Functional Block which are constructs that describe the resource

• Combine the above and you have a language
  - [<verb> <noun> [args]]+
    • Anti-RPC
      - Few verbs but infinite possibilities of nouns
ForCES Architecture In A Nutshell
Protocol Semantics

- Transport independence
- Simple Verbs
  - Content independence (unlike RPC approaches)
- Optional Transactional capability (2PC)
- Various Execution modes
- Desire for high throughput and low latency
  - optional data batching and command pipeline
  - Binary encoding key
- Security
- Traffic Sensitive Heartbeating
- Optional High Availability
Protocol Semantics

- Rest-like Request-response Verbs
  - SET, GET, DELETE, etc
- Publish-Subscribe semantics
  - Event thresholding etc
LFB Class

• Object oriented resource definition
• Each class has definitions for:
  – Datatype, components, Capabilities, Events
• Multiple instances of an LFB class can be created/instantiated.
  – Fit for Multi-tenancy
  – Each class instance has its own:
    • State/config
    • capabilities
    • events
LFB Datatype Definitions

- Formal constraints for validation of defined attributes
- Atomic types, complex/compound types,
- grouping of compound types in the form of structures and indexed/keyed tables
- Hierarchical/tree semantics
- Aliasing to symlink shared infrastructure
- Optionality and default values
- Basic ACL (RW permissions)
LFB Class Definitions

• Components
  – data type definitions of control/config/state resource attributes acted on by a controller via the ForCES protocol

• Capability
  – definitions of resource capabilities and capacities advertised by the resource owner

• Events
  – hooks for publish/subscribe with expressive trigger and report definitions
    • count, threshold which could be binary, range, or time which could be formed into a compound expression using and/or operators
LFB Class Extensibility

- Inheritance and extension of a parent class
- Inheritance and extension of data definitions
- Backward and forward compatibility of LFB classes and defined data structures
  - Versioning
  - Be liberal in what you expect and conservative in what you do
Fit With DMM

- Good fit for Forwarding Policy Configuration (FPC)
  - Information model that easily mapped to data model
  - Protocol Semantic easily mapped to protocol
Question

• Would the WG be interested in such work?