RESTCONF and CoMI

Thing to Thing PRG
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Agenda

- RESTCONF Protocol
- Constrained Management Interface (CoMI)

Starting Point: NETCONF

- Network Configuration Protocol (RFC 6241)
  - allows all-or-none transaction and rollback-on-error support, using YANG data models
  - Problems for constrained environments
    - SSH session support
    - XML message encoding
    - multi-message operations

Next step: RESTCONF

- RESTCONF Protocol (work-in-progress)
  - Provides REST-like API to developers to access YANG data in NETCONF datastores
    - GET for retrieval
    - POST, PUT, DELETE, PATCH for resource editing
    - SSE for notifications
  - Problems for constrained environments
    - XML encoding mandatory (JSON is optional)
    - TCP transport
    - SSE requires long-lived HTTP/TCP connection

Final step: CoMI

- Constrained Management Interface (work-in-progress)
  - Large subset of the resource management features of RESTCONF
    - Uses CoAP/DTLS/UDP instead of HTTP/SSL/TCP
    - YANG data nodes identified with 30-bit hash instead of long XPath path expression
    - CBOR binary encoding instead of XML or JSON
    - CoAP Observe-based notifications instead of SSE

Importance of YANG

- YANG Data Modeling Language (RFC 6020)
  - Syntax/semantics should be defined out-of-band
    - Minimize meta-data on the wire
    - Maximize interoperability with detailed schema
  - Automation tools work better with YANG
    - Many machine-readable constraints
    - Extensions allow tool-specific directives
    - Common code in the stack increases consistency and reduces the size and complexity of data-model instrumentation code