Virtual Network Management Information Model
draft-okita-ops-vnetmodel-01
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About the proposed model

• The proposed model is presented at the 75\textsuperscript{th} meeting.

• Contents
  – An information model for managing virtual networks in data centers that are using server virtualization

• Comments after Stockholm
  – Necessity and applicability of the proposed model
  – Relationships to the existing standard MIBs

• Contents of this presentation
  – The existing MIBs related to the proposed model
  – Remained issues of the existing standards
  – How to resolve the issues by the proposed model
Necessity and Applicability

• Why standard?
  – A data center system is normally composed of multi-vendor platforms.

• Why IETF?
  – The IETF has more experience of standardization of network-related models than IEEE or DMTF.

• Why opsawg?
  – This is the focused work for a management model for the limited target.

• Why information model?
  – Datamodels like MIB or an XML datamodel can be easily developed from an abstract information model.
Comments about existing MIBs

• Relationship to the Entity-MIB
  – “The informational model in the proposed model is similar to the information model that is implicit in the ENTITY-MIB data model design.”
  – “I could imagine a MIB module based on the ENTITY MIB that realizes the information model for virtual entities in SMI.”

• Connection information
  – “Topology detection of an IP network is well supported by other MIB modules.”
    • LLDP-MIB or Bridge-MIB for layer-2 MAC bridges
    • OSPF-MIB for layer-3 IP routers
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Existing Standard: Entity MIB

- Standardized as the RFC4133 "Entity MIB (Version3)" by the entmib WG.
- Defined for managing multiple entities by a SNMP agent.
- Composed of 5 tables.
  - Physical entities (chassis, module, port, etc...)
  - Logical entities (OSPF, dot1dBridge, etc...)
  - Logical-to-Physical mappings
  - Physical-to-Logical mappings
  - Physical containment tree
- Widely supported by routers/switches.
Existing Standard: LLDP-MIB

- Standardized as a part of IEEE802.1AB “Link Layer Discovery Protocol.”
- Defined for managing connection information between IEEE802.1D MAC bridges.
- Composed of 4 groups.
  - Configuration group
  - Statistics group
  - LocalSystemData group
  - RemoteSystemData group
- Widely supported by layer-2/layer-3 switches and utilized for layer-2 topology management.
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The ENTITY-MIB can list the physical entities and virtual entities. And, it can describe the component tree of the physical entities.

It can also describe the mappings between physical entities and virtual entities for both direction.

However, it cannot describe the component-of relationships between a virtual switch and their virtual interfaces in the virtual entities.

**Issue: VSW-Virtual I/F Relationship**

- **entLogicalTable (List)**
- **entLPMappingTable (Logical-to-Physical)**
- **entAliasMappingTable (Physical-to-Logical)**
- **entPhysicalTable (List)**
- **entPhysicalContainsTable (Tree)**
• LLDP-MIB can describe the connections between physical switches.
• However, it cannot describe the connections between virtual switches and network switches.
• Therefore, operators cannot manage the virtual network that each connection between virtual entities belongs to.
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The VirtualNode object and VirtualInterface object enable the management of the relationship among virtual switch and virtual I/Fs.
• The VirtualInterface object and VirtualLink object enable the virtual connection management.
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Summary and Questions

• Summary
  – After the Stockholm meeting, comments about the relationships to the existing MIBs arose from ML.
  – However, the existing MIBs lack the capability to describe the relationships between virtual entities.
  – We will update our draft based on the comments after the Hiroshima meeting.
  – We’d like to propose the standardization of a new virtual network management model based on our proposed model as a new work of opsawg.

• Questions
  – Is there interest in the virtual network management model?
  – If yes, is it an opsawg work?
  – If yes, is the extension of ENTITY-MIB sufficient for the requirements?