

Modeling Internal LAN Connections in the MIBS.

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The Problem

- Several of the bridges modeled by the standard MIBS contain multiple components. These are:
 - 802.1AD Provider Edge Bridges
 - 802.1AH Backbone Edge Bridges
- Some ports on these components need to be to be connected together via a real or virtual internal LAN.
- The MIBS do not seem to have a way to configure or examine these internal interconnections.
- The Clause 12 managed object MAY have the same problem. I haven't done enough analysis to be sure.
- Note that even if the committee ultimately decided to forego dynamic component and port creation, it is probably of some interest to management stations that configure services to have a way to discover the topology of these interconnections.

Constraints on the Solution

- There is an issue involving naming of the “ports/macs” that can be connected to internal LANS.
- Provider Instance Ports, PIPs are NOT bridge ports and thus do not have a Bridge Port Number.
- Identifying a port connected to an internal LAN by a Component X Port Number tuple won't work.
 - One cannot specify the PIP to CBP interconnection needed to model the BEB internal interconnections.

Outline of the Solution

- Add a new table to the bridge MIB. Each row in the table is indexed by the ifIndex of the Mac/Port/Bridge port that is to be connected to an internal LAN.
- This table has a two non-index columns.
- The first column is an integer valued column that is the ID of the internal LAN to which the Mac/Port/Bridge is connected.
- The second column is a RowStatus object used to control the addition or deletion of rows in the table.

Assumptions

- This solution assumes that each bridge port or port-like interface is identified by a unique ifIndex. In other words, the scheme identified by the KN-STACK comments against 802.1ap is adopted in principal, if not in detail.
- Many ports may belong to the same internal LAN, but a particular port may belong to no more than 1 internal LAN.

Variants

- One could require that internal LANS be manufactured first by creating an entry in a new “internal LAN” table. This would be a convenient place to hang a network manager friendly name and some statistics.
- Having LanID as a first class object used as an index would also make it easier for the creation of extension tables for those vendors that wish to have extra statistics, configuration parameters, etc...for the control of internal LANs.

Limitations

- I'm assuming that semantic checking is done by the agent. In particular, the syntax of the MIB would permit two external ports to be connected by an "internal lan", even though this is not physically possible. One could complicate the definitions of the table by making explicit rules of the form "A Customer Backbone may only be connected to Provider Instance Ports, etc...".
- These rules are in the standard and agents need to check for them. Rather than explicitly stating these rules in the MIBs in a possibly inconsistent way with the rest of the standard, I'm waving my hands and saying that the agent will do the proper semantic checking.