

Consideration of a Topology Discovery Protocol within 802.1

Objective

- To determine if sufficient interest exists with 802.1 to initiate work on a physical topology discovery protocol
- To update working group members on the current state of such protocols

Problem Statement

- A number of vendor specific / proprietary physical topology discovery protocols exist today
 - None of them interoperate
 - More are likely on their way
- A standard Topology MIB (RFC 2922) has been defined, but NO standard protocols exist to populate it
- Determining physical topology can be a difficult task for management systems (Repeaters, Hubs, Link Aggregation)
- The mapping and management of physical 802 topology falls with the realm of 802 architecture

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Background / History

- An IETF working group (ptopo) addressed this problem in 1996. They had the following goals:
 - to agree on and document the common framework/model for discussing physical topology
 - to standardize a set of managed objects that provide physical topology information
 - to document media specific mechanisms to communicate topology information.
- They completed an informational MIB (RFC 2922), but didn't progress the discovery protocol
 - Could never get closure on MAC address assignment
 - Patent claims by IBM concerned developers (US Patent 5,276,440)
 - No committed developers to meet interoperability requirement
 - Some unresolved disagreement on the protocol design (e.g. ASN encoding)

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Possible Courses of Action

1. Nothing - This really isn't all the interesting
2. Pick-up where the IETF left off with PDP
3. Define a new 'more attractive' protocol
4. Define a new protocol and possibly new MIB
5. Tackle additional or different topology problems (VLANs, Link Aggregation)
6. Other things not considered yet (your ideas)
7. Any combination of the above (except 1)

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Discussion

- Does the IEEE policy on and method of working with vendor Intellectual Property change anything regarding this issue?
- What topology to discover (Physical Shared Media, Physical Point-to-Point, Virtual, Active, Layer-3, other)?
- How to handle communication and representation of higher-layer (above 802) information?
- Is RFC 2922 sufficient or do we need a new/augmented MIB?
- Is there interest in doing this...

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Some Possible Requirements

- Protocol should populate a management topology database.
- Protocol should be able to run on all devices with 802 media ports and on all 802 media
- Protocol should allow for multiple connections between devices (link aggregation, redundant links, multiple independent links)
- Protocol should identify peers, their port of attachment and any device identities or management access points that are important to management systems
- Lightweight enough as to not concern users and developers about network bandwidth or device resource needs
- Information learned from the protocol should be considered dynamic and subject to ageing.

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