Review and Progression of 802.1AB-d1.0

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Interesting changes since d0

- Updated scope and purpose based upon recommendations from New Orleans
  - Exact text from PAR, plus further itemized descriptions
- Incorporated single architectural diagram
- Updated LLDP Frame Format per 802.1 style
  - Consistent with LACP and slow-protocol format
- Separated capabilities and current capability configuration vectors
- Modified 802.3 Link-duplex TLV to be consistent with capability and capability configuration separation.
- Revised and expanded frame transmission and reception clauses.

- Issues and proposals to discuss…
Discussion #1: Architecture Diagram

- Diagram shows where protocol fits with respect to link aggregation, but doesn’t depict controlled vs uncontrolled port.
- Consideration of running over uncontrolled port
  - Advertising information that could be valuable to 802.1X authentication procedure (e.g. Network Service Identifiers)
  - Alternatively, it could be part of 802.1X in the Req/ID exchange.
  - Why do we want to mandate that this run on the controlled port only?
Issue #2: Principals of Operation are still lite

- Currently covered at a high level
  - Link layer advertisements of info to populate topology MIBs
  - Periodic one-way protocol
  - Various types of information advertised
  - Time-to-live component in frames
  - Non-goals of being a configuration or control protocol
  - Possibility to discover configuration inconsistencies

- Areas for improvement
  - Topology considerations (e.g. forwarding vs non-forwarding devices (repeaters vs bridges/routers))
  - Advertising multiple capabilities and the current status of the capabilities.
  - Further description of the handling of received data and the operation of the object storage managers (e.g. PTOPO MIB)
  - The ageing and removal of stale information via time-to-live mechanism
  - Shutdown process
Issue #3: 802.3 Frame Format Only

- LDPDU is defined for 802.3 only, but document indicates scope covers all 802 media.
- Slow protocols is defined for 802.3 only today
- Questions:
  - Is defining frame format for ring media sufficient?
  - What about others (e.g. 802.11)? Can we do what we did in clause 7 of 802.1X?
  - What else must be done to define slow protocols SAPs for other media?
  - Can we punt other media as done by slow protocols in 802.3 clause 43? (I think this violates the scope).
Issue #4: Max Frame Size

- Slow protocols ‘recommends’ a max PDU size of 128 octets, we have TLVs that can be 256 octets.
- Choices:
  - Select some max, less than media max that accommodates needs.
  - Allow LDPDUs to utilize media max frame size
- Recommendation:
  - Allow LDPDUs to utilize the media max frame size.
  - Specify exact values in figure 8-1
Discussion #5: TLV type definitions

- Current TLV types distinguish mandatory verses optional. Mandatory types are lower values.
- Should we separate and reserve space for future mandatory definitions or let new values be defined sequentially as needed?
- Recommendation:
  - Define as needed. Range checking isn’t that critical to implementations.
Issue #6: Mandatory Address TLV

• Current text is unclear on including multiple address TLVs in a single PDU.
  – Indicates that mandatory TLVs must only be included once
  – Indicates that devices may have multiple addresses to advertise, and if none available, always use MAC address

• Recommendation:
  – Clarify that multiple address TLVs may be sent, and that at least one must be sent.
  – Clarify that when multiple exist, but are all included, the ones included should be the ones preferred by the device, or the ones that offers the best management capability.
  – Clarify that the MAC address must only be included if no higher layer addresses are available.
**Discussion #7: Duplex TLV changes**

<table>
<thead>
<tr>
<th>Link Duplex Value Length</th>
<th>TLV Type = 5</th>
<th>2 octets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Link Duplex Value Length = 4</td>
<td>2 octets</td>
</tr>
<tr>
<td></td>
<td>Duplex Capability</td>
<td>2 octets</td>
</tr>
<tr>
<td></td>
<td>Duplex Configuration</td>
<td>2 octets</td>
</tr>
</tbody>
</table>

- Added both capability and current status words
- Values include:
  - Half-duplex
  - Full-duplex
  - unknown
Issue #8: Capabilities vector incomplete

- Current vector is a mix of status and capability. New philosophy is to have two vectors: device capabilities and status of capabilities.
- A capability being indicated provides a hint on how to manage the device for that capability (i.e. MIB reference).
- The status of a capability provides a hint about a possible manual configuration inconsistency.
- Current vector includes:
  - PortInAggregation, PVIDEnabled, PortandProtocolPVIDsEnabled, TaggedVLANsEnabled, L2Forwarding, SourceRouteBridging, SpanningTreeEnabled, L3Forwarding, L3MulticastForwarding, HigherLayerForwarding, NonForwardingStation.
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## Proposed capability vector

<table>
<thead>
<tr>
<th>Capability</th>
<th>MIB or Std Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeater</td>
<td>802.3 clause x, RFC 2108</td>
</tr>
<tr>
<td>Link Aggregation</td>
<td>802.3 clause 43, clause 30c</td>
</tr>
<tr>
<td>Bridge</td>
<td>802.1?</td>
</tr>
<tr>
<td>Spanning Tree</td>
<td>802.1D</td>
</tr>
<tr>
<td>Rapid Spanning Tree</td>
<td>802.1w, draft-bell</td>
</tr>
<tr>
<td>Multiple Spanning Tree</td>
<td>802.1s, draft-bell</td>
</tr>
<tr>
<td>Access Point</td>
<td>802.11?</td>
</tr>
<tr>
<td>Port VLANs</td>
<td>802.1Q, RFC 2674</td>
</tr>
<tr>
<td>Port and Protocol VLANs</td>
<td>802.1v</td>
</tr>
<tr>
<td>Multiple FDBs</td>
<td>802.1Q clause xxx</td>
</tr>
<tr>
<td>IP Router</td>
<td>IP Router RFC ???</td>
</tr>
<tr>
<td>IP Multicast Router</td>
<td>IP Multicast RFC ???</td>
</tr>
<tr>
<td>IP NAT</td>
<td>RFC ???</td>
</tr>
<tr>
<td>???</td>
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</tr>
</tbody>
</table>
Issue #9: Structure for Vendor TLV

- Still need to put some structure on the TLV so it can be stored and indexed from a MIB.
- Proposal:
  - Change reserved field to a sub-type field, allowing 256 vendor specific TLVs.
Other immediate document work items

- Incorporate text, state machines and variables to manage the objects received via the protocol. Use text and algorithms defined in PTOPO MIB as the basis.
- MIBs updated or replacement with a placeholder before running 1st ballot.