sourcePortIdentity:
optional alternate meaning (and "path version trace" and "path version test")

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sourcePortIdentity

- **in 1588 the sourcePortIdentity is the portIdentity of the master port of the closest upstream GM or BC**
- **for 802.1AS-2011, all time relays are BCs**
  - this means that the sourcePortIdentity is the port ID of the port on the BC that sent the Sync/FollowUp
- **but 802.1AS-rev will allow time relays to behave more like transparent clocks**
  - which in 1588v2 requires that the sourcePortIdentity is forwarded
- **for 802.1AS-rev, I proposed that a time relay is NOT a BC in the 1588 sense *only* for sourcePortIdentity, instead it is more like a TC**
  - meaning that the received sourcePortIdentity in a sync or follow-up is repeated by a time relay
  - it could be “grand master identity” if the path back to the GM is all “-rev” capable
    - ***I think this would be really useful!***
  - but that would be breaking 1588, but perhaps we could ask 1588 to allow profiles to make this change

outline of proposal

For point-to-point links

(those that have a one-to-one correspondence between a master port and the downstream slave port)

- SourcePortIdentity in Sync (and FollowUp) messages should be allowed to be the portIdentity of the port on the current GM
  - **no change** to general messages (e.g., Announce)
- **This was the original proposal for 802.1AS "way back when"**
  - who knows why we changed it?
- **I believe the current meaning of SourcePortIdentity has no useful purpose in Sync/FollowUp for this case**
  - does it?
  - does *anybody* have a use for the current meaning?

proposal #1: sourcePortIdentity

- allow profiles to specify whether sourcePortIdentity is repeated or not
- Change the clause defining SourcePortIdentity in clause 13 to:
  - Except for Sync and Follow Up, the value of the sourcePortIdentity field shall be the value of the portDS.portIdentity member of the data set of the port that originated this message. For Sync and Follow Up the value of the sourcePortIdentity shall be:
  - 1) unless otherwise specified in a PTP profile, the value of the portDS.portIdentity member of the data set of the port that originated this message , or,
  - 2) if specified in a PTP profile, the sourcePortIdentity from the last valid Sync (and Follow Up for two-step) received on the slave port
- we could create a new data set member:
  - optionalDefaultDS:syncSourcePortIdentity - sourcePortIdentity from the last valid Sync (and Follow Up for two-step) received on the slave port.

interoperation issues

- networks that include 802.1AS-2011 devices or other existing 1588v2 profile devices on the path to the GM will NOT propagate the GM sourcePortIdentity on that path
  - in which case the sourcePortIdentity is still not useful
  - need a way to test the path back to the GM to ensure that all devices on the path are repeating the sourcePortIdentity
  - two possible ways: trace and test

proposal #2: path version trace

- **add a new optional forwarding TLV "PATH_VERSION_TRACE"**
  - "pathVersionSequence": list of major/minor version numbers corresponding to clockIdentity values in pathSequence in the existing path trace
- **old BCs just forward, so nothing added to pathVersionSequence**
  - BC's implementing path version trace compare received pathVersionSequence and pathSequence and inserts zeros (?) as version numbers for the number of missing versions at the end (corresponding to the number of immediately upstream devices that don't implement path version trace)
- **perhaps 1588 could suggest something similar for profiles**
  - for profile version numbers

proposal#3: path version test

- for Sync/FollowUp (and maybe DelayRequest/DelayResponse)
  - Repeat the versionNumber and minorVersionNumber if
    - versionNumber*16+minorVersionNumber < DS.versionNumber*16+DS.minorVersionNumber
  - Otherwise just send the DS.versionNumber and DS.minorVersionNumber
  - Now the Sync/FollowUp will have the smallest 1588 version number of any device on the path back to the GM