PHY vs LINK Speed Mismatch

S200PHY+S100LINK, is this feasible?

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Makoto Sato

Peter Johansson

Sony Corporation

Background

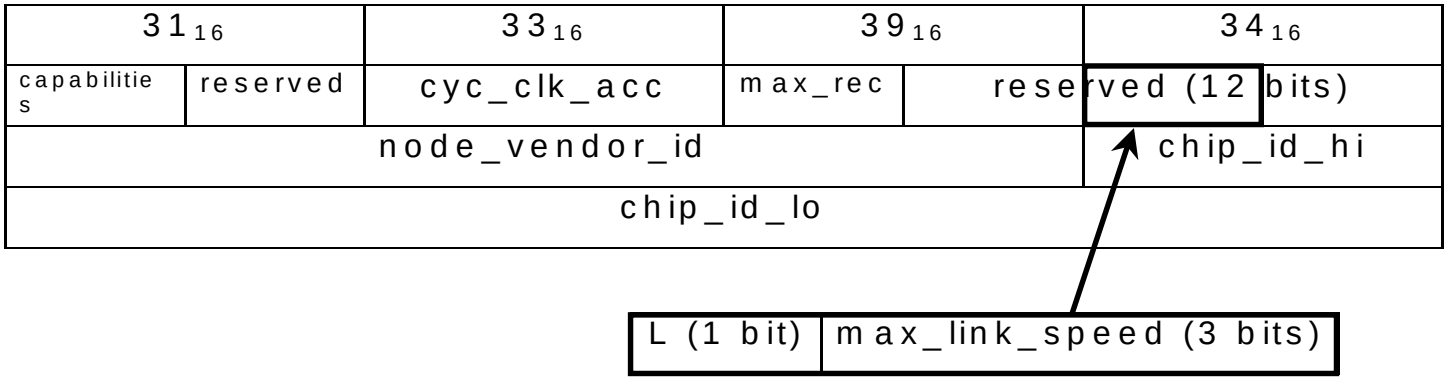
- In the growing market, some product may implement an available LINK which has some integrated capabilities but has slower speed capabilities than popular PHY at certain time. It is not a bad choice, because the product can be a good bus citizen!
- Now, a node can not indicate combining a LINK whose speed capabilities are slower than the PHY.
- How do we determine the speed capabilities of LINK?

Proposal

- Let’s have a new addition of field in the configuration ROM.
- This field indicates;
  - LINK speed capabilities are slower than PHY
  - MAX_LINK_SPEED, the speed which LINK can receive, on a sustained basis, either asynchronous or isochronous packets.

Addition of field in Bus_Info_Block

- The information can be read with other info's.



If the ***L*** bit is set, LINK is slower than PHY and has speed capabilities up to indicated in the max_link_speed field.

000	S100
001	S200
010	S400
011	S800
100	S1600
101	S3200
others	reserved

Result

- Bus manager can build an accurate SPEED_MAP, reading each node’s configuration ROM to get MAX_LINK_SPEED and then combine this with MAX_PHY_SPEED from the self-ID packets.
- For any two nodes m and n, the SPEED_MAP[m, n] entry would need to be the slowest of;
  - a) Node m's MAX_LINK_SPEED
  - b) Node n's MAX_LINK_SPEED
  - c) The slowest MAX_PHY_SPEED
    of any node on the path between m and n.