



-
-
-
-
-

Border PHY Operation Summary

Presented by Michael Johas Teener

... but Jerry Hauck and Colin Whitby-Strevens did the work

Beta packet filtering

Requirements for Border PHYs:

- Legacy formatted packets in a beta cloud are repeated by a border directly into any D/S cloud as normal (with DATA_PREFIX replacing the payload if the speed is too great)

- For beta-only packets, a border will begin generating DATA_PREFIX and holds DATA_PREFIX until a legacy packet arrives.

- The legacy packet is then simply tacked onto the end of the DATA_PREFIX which allows the D/S cloud to return to idle.

Requirements for all PHYs:

- BOSS PHYs are required to issue a legacy null packet anytime the end of a subaction has been reached AND there are no more in-phase requests to grant AND the last packet sent was not a legacy packet.

Synchronizing Legacy Gaps

Requirements for Border PHYs:

- – Border PHYs with active legacy ports or attached link announce their presence within a bus during Self-ID. This is recorded by all beta-capable PHYs.
- – If the duration of IDLE at a border reaches a gap timed threshold, that border will issue the corresponding gap token. A bus with multiple borders will issue duplicate gap indications as each of the border PHY's reach the gap timeout.

■ Requirements for all PHYs:

- If the BOSS has no more in-phase requests to grant at the end of a subaction AND it knows that it is in a hybrid network, control is passed towards the local root.

Propagating Legacy Requests

Requirements for Border PHYs:

- Border PHYs that receive requests on child D/S ports shall immediately propagate them to a parent beta port as a LEGACY_REQUEST.

Requirements for all PHYs:

- The LEGACY_REQUEST has priority over any normal asynchronous or isochronous request. The LEGACY_REQUEST in itself is neither asynch nor isoch.
- The BOSS must either grant the LEGACY_REQUEST or grant a higher priority request within ARB_RESPONSE_DELAY of receiving the LEGACY_REQUEST to prevent gaps from occurring.
- Unlike other BOSS request types, the LEGACY_REQUEST operates like it does in P1394a and is expected to be withdrawn if denied.

Acceleration control

(packet concatenation restriction)

Requirements for Border PHYs:

- The border node that is the local root in a beta cloud sends a high priority BORDER request whenever a cycle start is expected.

- Done by "cycle start expected" signal from an attached P1394b or P1394a Link

- If no active "a" or "b" link is attached, the BORDER request is ALWAYS sent by the local root, effectively preventing all BOSS accelerations in the cloud

Requirements for all PHYs:

- The BORDER request has priority over any normal asynchronous request.

Border Request Mapping

D/S to BOSS

- RX_REQUEST from D/S (only heard between active packet transfers) is mapped to LEGACY_REQUEST immediately.

BOSS to D/S

- The border PHY always respects the P1394a quiet times when forwarding eligible BOSS requests into the D/S cloud.
- The border PHY determines which requests are eligible based on the phase of the bus, asynch or isoch, even or odd.
- LEGACY_REQUEST are always forwarded.

Issues for Later Discussion

Loss of Synch

Worst-case topology timeouts

- – Max bus diameter (in units of time)
- – Max hop distance (in units of time)
-
-
-