# A Quick Draft to 802.3bz: Editorial Considerations, Standards Dependencies, and Potential Timeline

George Zimmerman

CME Consulting/Aquantia & Commscope

Chief Editor, IEEE P802.3bq Task Force

# Supporters

- Amrik Baines, Cisco

- Brad Booth, Microsoft

- Ron Cates, Marvell

- David Chalupsky, Intel

- Kamal Dalmia, Aquantia

- Yong Kim, Broadcom

- William Lo, Marvell

- Richard Mei, Commscope

# Outline

- Try to look at the entirety of work to get to 802.3bz and move forward decisions
  - A little more complicated than just 'adopt 10GBASE-T and scale the frequency'
  - Kim_NGE_BASE-T_Layering_and_Gaps_v2_2015_03_03.pdf is a good starting point, but not all
- Good news:
  - Much commonality with work already done in 802.3bq
  - Much other work done in ad hocs
- Bad news:
  - Still a lot to do, especially link segment work!

# Morphing 10GBASE-T or 802.3bq to 2.5G/5GBASE-T – Bigger stuff

- MAC/MII clauses
  - See Kim – key questions:
    - Do we need an AUI? – easier if not.
    - Do we base on XGMII? – easier if yes.
- Autoneg changes
  - Clause 28 – easy stuff, see Kim
  - Bigger issues – move exchange to PHY or add new XNP
  - PHY clauses - Register definition & parameters exchanged
- PHY Clauses – one (bq plan) or two (like an)
  - PCS blocking / coding changes (to decide)
  - Link Segment Specification – complex in Clause 55, likely to be more complex here
  - Noise tests – could be new

# Morphing 10GBASE-T or 802.3bq to 2.5G/5GBASE-T – Smaller Stuff

- PHY clause:
  - PCS: Align MII references with new MII (easier if XGMII-based)
- PMA/PMD changes:
  - Frequency scale PMA/PMD and rate specs
    - 15 references to Msymbol/sec + 31 references to MHz on PHY
      - 8 of which are test setups
  - Scale or clean-out fixed references to times
- Clean up Clause 55 form, typos, etc.
  - See bq comment resolution (thanks to Howard Frazier)
- Clause 78 - EEE – include new PHYs
- Clause 30 – Mgmt – include new PHY types

# Morphing 10GBASE-T or 802.3bq to 2.5G/5GBASE-T – Dependent Clauses

- Many are dependent on decisions we have yet to take
  - First define the PHY features, then its control
- Clause 1 – any new definitions or references?
- Clause 30 – Management
  - Easy stuff, include new PHY types, mirror 10GBASE-T functions
  - Harder stuff – is there any more functionality?  Monitoring?
- Clause 45 – MDIO registers
  - Easy stuff, mirror 10GBASE-T bits and assume same
  - Harder stuff – what to change, what to make common, what to add?
- Clause 78 – EEE
  - Easy stuff, include new PHYs
  - Harder stuff – scale timings?  Is there a 'fast wake'?

# Editorial Considerations

- Nomenclature: Long names
  - 10G/40GBASE-T blah blah is kind of wordy,
  - 10/25/40GBASE-T blah blah is worse
  - 2.5/5/10/25/40/50GBASE-T is unwieldy
- PROPOSED SOLUTION: Define term to apply to this family of BASE-Ts
  - Not 1000BASE-T – it's different in too many places
  - If you don't like xGBASE-T, propose something!
  - (See bq comment resolution)
- Handling two rates in 1 clause
  - If we go this route, bz will be ahead of bq on this

# Standards Dependencies: 802.3 base

- Revision draft in sponsor ballot

- Relatively stable

- No significant issues


- PLAN: Check and track these dependencies as we move to WG ballot
  - Do careful check by then, should be near-final


- Additional dependency (not in bx) – bit allocations in multi-speed registers

# Standards Dependencies - Cabling

- ISO/IEC 11801-1: 2002 – done
  - Edition 3 is in timeline, track any changes
- TIA 568-C – done
  - 568-D series likely longer term
- Use cases:
  - TIA guidelines for specific use cases (e.g., education, health care, WAPs)
- TSBs for 2.5G/5G
  - TIA TR42.7 Task Group on 2.5G/5G
  - ISO TR on 2.5G/5G ?

# Parallel Standards work – 802.3bq

- Based on Clause 55 imported text
  - Much cleanup already done in Task Force review, more in WG ballot
- Frequency/'time scalings: much of the work converting 10G to 40G is likely identical to 802.3bz
- Clause 45 register bit additions
  - With the exception of anything new for bz
- Same registers to add bits/multi-purpose
  - Perhaps bq will fix nomenclature & names for bz
  - Defining a term and just adding 2.5/5G to the definition
- Same Autoneg considerations
  - Would be good to go the same path
- Same parts of the text to manage frequency and possible time scalings
- State diagram and base-text cleanup largely same – track bq-Cl 55 cleanup

# Timeline issues

- Adopt baselines quickly, but carefully
  - Consider underlying assumptions on not-yet defined functionality
  - Sometimes the straightforward way doesn't scale
- Link Segment/Noise work to be done
  - Recommend: leave alien crosstalk parameters TBD for now
  - Begin review of an impulse noise test
- Decide what we can, here, starting at the heart:
  - Determining PMA/PCS – will help work issues
  - Determine basis of link segment, identify work for TIA/ISO TSBs
  - Autoneg  Approach to relieve 'overcrowding'
  - Any Clause 45 sharing of functionality
- Move to ask the editor to produce draft 0.x for TF review, based on decisions in bz + cleaned-up text resulting in 802.3bq d2.1 as 802.3bz draft 1.0

# Possible sequence of Events

- May – major PHY decisions made, draft 0.x comes out of this
- June – interim (TBD), correcting minor issues into draft 0.9, refine PHY decisions in dependent clauses in and progressing link segment
- July – link segment filled in, draft 1.0 out of this
- Sept – draft cleaned up, draft 1.1 out of this, requesting presubmission for WG ballot in November
- November – WG ballot
- Should be ready for sponsor ballot in March 2016
- Want a picture?  See Slide 3 of Kim_NGE_BASE-T_Potential_Timeline_and_challenges_v3_2015_02_24.pdf

- "FASTEST Possible Timeline – one can dream, and VERY MUCH achievable" (Y. Kim)…

# BUT…

- Only if we determine the big ticket items (PCS/PMA, Autoneg Approach) soon (before July)

- AND, only if we leverage much of the editorial work in bq (which leverages 10GBASE-T)