
40G, 100G Ethernet or Both... How do we proceed?

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Post Debate

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for

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Supporters

List of Supporters: (as of 9:00am)

Hugh Barass – Cisco Systems

Daniel Cheok Kiang Kho – Altera

Brent Draney – NERSC

Mike Hughes – London Internet Exchange

A review of HSSG Progress

At the time my first presentation was prepared, a number of important issues relating to whether or not 40G Ethernet should be either added to the HSSG PAR A, or have a separate PAR were open. This was demonstrated by the motions & presentation volumes I showed.

Subsequent to that presentation being done, additional work was provided which showed that a market demand for 40G exists, and that it can be considered technically and economically feasible.

Based upon the polling of the Study Group on 5/30/2007, it can be concluded that enough work has not been presented to move forward with a PAR for 40G or to add 40G as an objective into the existing PAR A of the HSSG.

40G Ethernet – Are we done yet?

In my first presentation, I concluded that we were ready to move forward on the 100G PAR (PAR A) and that additional study should be done which could lead to a 40G PAR in July.

Subsequent to the presentations given on May 28th and 29th, I still have doubts as to whether there is a real market need for a 40G Ethernet project.

Specifically, I will address these doubts;

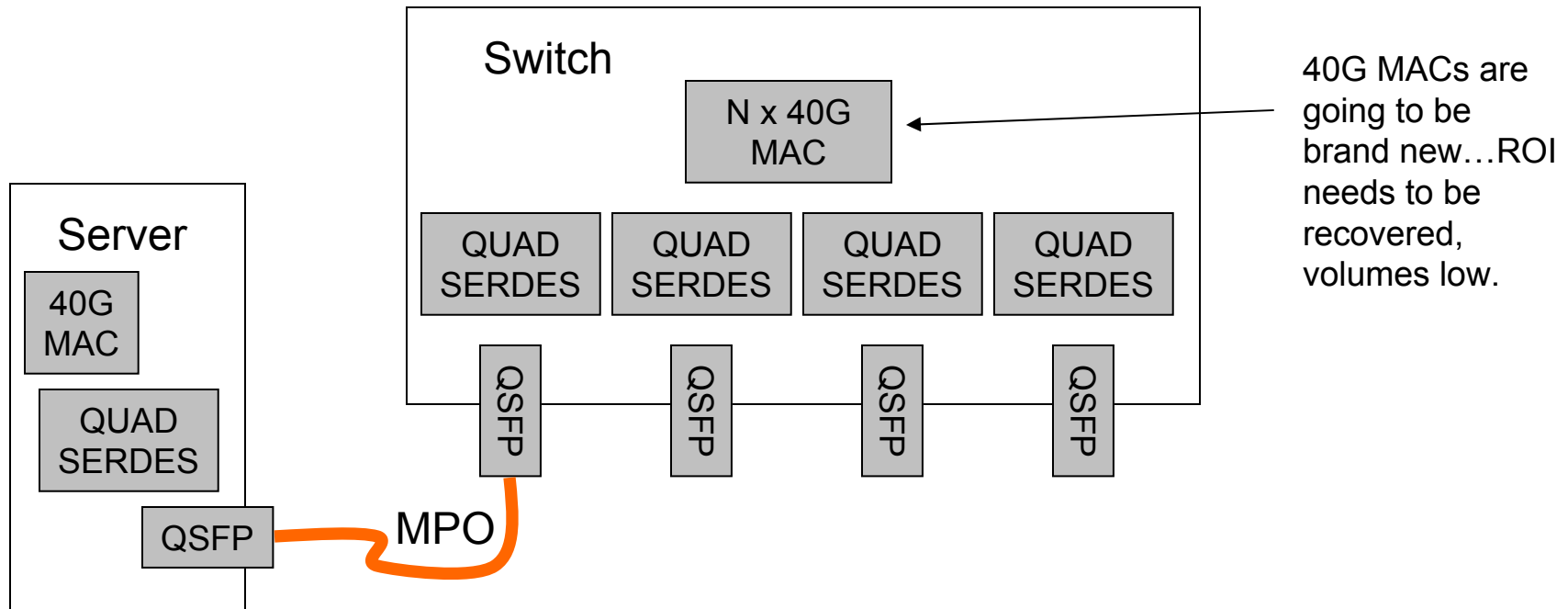
- **cost/Performance benefits vs Investment in a new standard?**
- **Will addition of a 40G project lead to market confusion & disruption?**
- **Will addition of a 40G project divert resources from a critically needed 100G project?**

40G Ethernet – Are we done yet?

- cost/Performance benefits vs Investment in a new standard?

It was argued that 40G would outperform 4x10 LAG for server applications. I do not dispute that.

It was argued that 40G would be less costly than 4x10 LAG, I am not convinced that the difference in cost justifies the effort.

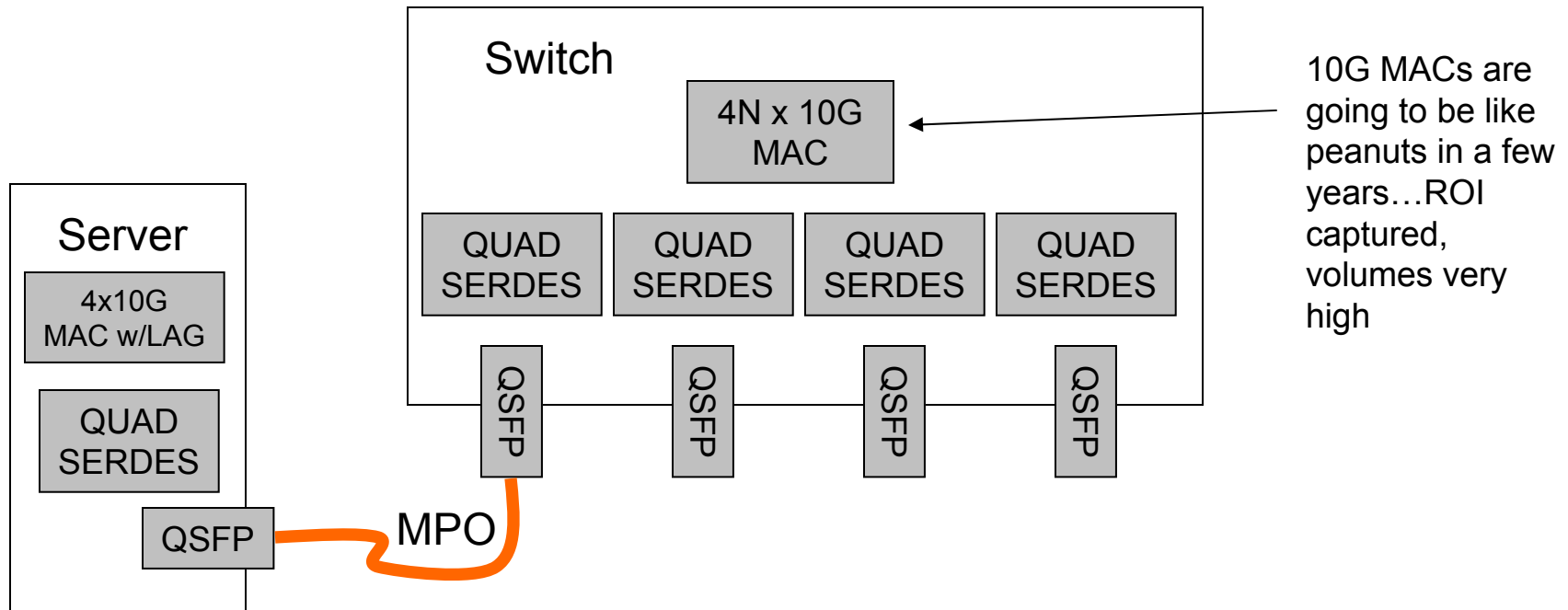


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40G Ethernet – ROI – Is it worth the investment?

cost/Performance benefits vs Investment in a new standard?

- Engineers spending years on a new standard
- Engineers designing 40G MAC chips
- Manufacturers will have to increase investment to add a new 40G MAC
 - muller_01_0507.pdf addresses the performance advantage of a 40G MAC over 4x10 LAG in general terms, but fails to provide concrete performance data for various server applications and does not address the cost/benefit analysis of adding a new standard at all.
- **Economic Feasibility is not just “Does it meet a cost/performance criteria”, but even as important...“Is that cost/performance worth the investment?”**

40G Ethernet – Market Solution or Confusion?

Will addition of a 40G project lead to market confusion & disruption?

- Engineers designing products are not an infinite pool and manufacturers will have to decide how to apply their resources.
 - Do we go after a more integrated 4x10G server solution (quads, QSFP) or do we build 40G, or do we do both?
 - Splitting resources, multiple overlapping solutions → Confusion & Disruption
- Customers will likely migrate to a 4x10 LAG solution while waiting for the standard to complete. Will they be willing to toss that investment for 40G or wait a bit longer for 100G?
 - I would argue “BOTH”. A market going in two or three different directions to solve a single problem is a reasonable definition of “confusion”.
- **Distinct Identity does not just mean “Is there anything else exactly like this?” but also “Is there sufficient difference between this and available alternatives to justify the effort?”**

40G Ethernet – Disruption or Solution?

Will addition of a 40G project divert resources from a critically needed 100G project?

- Engineers spending years on standards are not an infinite pool, and will have to either spend more hours/day working on 100G and 40G standards simultaneously, or those specifications will take longer to produce than either one by itself
- Multiple straw polls and motions showed that the HSSG does not want to delay 100G for a 40G solution.



Debate – The art of persuasion?

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A debate addressing these issues should be constructive to achieving the goals of all parties involved. In order to persuade, it has to answer concerns, not simply parrot demands.

- ~30% of HSSG has indicated it is willing to stop forward progress of 100G PAR if they do not get their way NOW. They constitute a “super-minority” and if they want to block our progress, they can.
- I was a strong proponent of moving 100G PAR A forward and continuing work on a 40G PAR to address these critical concerns.
- The form and content of the debate of 5/30/2007 have persuaded me to change my mind.

Conclusions: (Pre-Debate)

- 100G Ethernet has been soundly demonstrated to have Broad Market Potential, Distinct Identity, Economic Feasibility, Technical Feasibility, and Compatibility with 802.3
- HSSG has already requested an extension and further delay to the project will impact adoption of 10G and 100G Ethernet
- Straw Polling and Motions show that the HSSG does not want to delay 100G for 40G
- Lack of supporting presentations for 40G broad market potential, technical and economic feasibility are going to demand more time
- The HSSG should move forward with PAR A (100G, 40Km, 10Km, 100m, 10m)
- *40G should either move forward as PAR B or with a CFI and Study Group, however 802 rules provide*

Conclusions: (Post-Debate)

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- Straw Polling and Motions show that the HSSG does not want to delay 100G for 40G
- Lack of supporting presentations for 40G broad market potential, technical and economic feasibility are going to demand more time
- The HSSG should move forward with PAR A (100G, 40Km, 10Km, 100m, 10m)
- **The HSSG should NOT move forward on a 40G PAR as this solution is not sufficiently distinct, does not justify the investment, and would be disruptive to the industry.**

The Aftermath

- Multiple instances of competing standards created to satisfy a super-minority have shown that the benefits of “letting the market decide” do not justify the costs in time/disruption/confusion they cause.
 - **As an inventor and contributor to the 100VG-AnyLAN standard, I can tell you in hindsight that we (IEEE, customers, manufacturers) would have all been better off if the IEEE had not authorized its PAR to satisfy a super-minority.**
 - **I am familiar with a number of people who invested their time, money and effort into 100BASE-T4 who would probably tell you now that they would have been better off if the IEEE had not authorized that PMD to satisfy a super-minority.**
 - **As a system manufacturer of 10G products, I can tell you that the world would have been a better place if we had chosen a few good PMDs, rather than settled on a basket full to satisfy a few super-minorities.**
- The IEEE 802.3 rules require a super-majority to pass technical motions. This is a **good thing** because it ensures that a robust, well considered solution is being moved forward. It is a **bad thing** when it allows a super-minority to thrust its less-than-persuasive solutions into the standards process and the market.
- If 40G is good for the IEEE, for the market, for the industry, they should stand on their own two feet and demonstrate a super-majority supports them, rather than acting as a super-minority to stall 100G.