Reach Questionnaire

Name (optional)
Email (optional)
Industry
Size of organization

1) When did you start to deploy 10 GbE?

2003
2004
2005
2006

2) Approximately how many 10 GbE ports are currently deployed in your network?

3) Please estimate the number of 10 GbE ports that you expect to be deployed in your network 2 years from now.

4) What are your primary applications for 10 GbE? (Please check all that apply)
Data Center
High Performance Computing (including clusters)
Building Backbone
Campus Backbone
Long haul WAN
Internet Exchange (service provider)
Metro Area network (service provider)

5) For the above applications of 10 GbE, please indicate the approximate distribution of interface types and the typical and maximum reaches in the following table.

Interface Type	% of ports 2 yrs ago	% of ports today	% of ports in 2 yrs	Reach Today		Reach in 2 yrs	
				Typical	Max	Typical	Max
10GBase-SR/SW							
10GBase-LRM							
10GBase-LX4 MMF							
10GBase-LX4 SMF							
10GBase-LR/LW							
10GBase-ER/EW							
"10GBase-ZR" 80 km							
"10GBase-DWDM"							
10GBase-CX4							
10GBase-T	na	na		na	na		

6) Do you currently use IEEE 802.3ad Link Aggregation Groups (LAG) with multiple 10 GbE links aggregated for higher bandwidth?

7) How would you characterize the need for next generation, "Higher Speed Ethernet" (currently being studied in the IEEE and expected to have a data rate in the range of 80 Gbps to 120 Gbps)?

Needed today
Expect to need in 2 years
Expect to need in 4 years
Expect to need in 6 years

Expect 10 Gigabit Ethernet to meet all foreseeable needs
Don't Know/Too difficult to project

8)) Table 1 below includes a list of possible applications of HSE (column 1), a list of possible data rate and price combinations HSE could offer vs. 10 GbE (column2), a list of reaches that are currently deemed feasible for HSE over multi-mode and single mode fiber (column 3), and a list of possible tradeoffs between reach and price that could possibly be made in standards body work.

Applications of HSE	Possible Data Rate/Price Combinations for HSE	Feasible Reaches over MMF and SMF	Possible Tradeoffs between Reach and Price
a) Data Center LAN b) Data Center SAN c) HPC (e.g.cluster IPC) d) Building Backbone e) Campus Backbone f) Long Haul WAN g) MAN (service provider) h) Internet Exchange	a) 8X DR for 12X price of 10 GbE b) 8X DR for 8X price of 10 GbE c) 8X DR for 6X price of 10 GbE d) 8X DR for 4X price of 10 GbE e) 8X DR for 2.5X price of 10 GbE f) 10X DR for 15X price of 10 GbE g)10X DR for 10X price of 10 GbE h) 10X DR for 7X price of 10 GbE i) 10X DR for 5X price of 10 GbE j) 10X DR for 3X price of 10 GbE k) 12X DR for 18X price of 10 GbE l) 12X DR for 12X price of 10 GbE m) 12X DR for 8X price of 10 GbE n) 12X DR for 6X price of 10 GbE o) 12X DR for 4X price of 10 GbE	a) 0-100 m over MMF b) 0-300 m over MMF c) 0-2 km over SMF d) 0-10 km over SMF e) 0-40 km over SMF f) >40 km over SMF	a) 50% longer reach for 50% higher price b) 100% longer reach for 100% higher price c) 50% lower reach for 50% lower price d) reach/rate/price indicated seems ok

Table 1

Referring to Table 1 above, please fill out the Table 2 below using the following procedure:

1) **In Column 1 list the letters from Table 1/Column 1 corresponding to the applications you anticipate for HSE, with a row of the table/matrix dedicated to each application. Please place your anticipated applications in priority order.**
2) **In Column 2, place the letter corresponding to the Data Rate/Price combination from Table 1/Column 2 that would allow you begin deploying this application in the network.**
3) **In Column 3, place the letter corresponding to the Reach/Media desired from Table1/Column 3 that would be appropriate for this application.**
4) **In Column 4, place the letter corresponding to the tradeoff you would recommend between reach and price to improve the applicability of HSE for this is application.**

HSE Applications in Priority order	Threshold DR/Price Combination for Deployment of HSE Application	Reach Requirement for HSE Application	Desired Reach/Price Tradeoff

Table 2

Example: Suppose a Data Center LAN application requires:

- **10X improvement in data rate at 5X the price of 10 GbE**
- **0-300 meter reach over MMF**
- **it would be practical and desirable to tradeoff lower priced connectivity for reduced length of reach**

The table row for this application would filled out as follows (a second application would add another row to the table):

HSE Applications in Priority order	Threshold DR/Price Combination for Deployment of HSE Application	Reach Requirement for HSE Application	Desired Reach/Price Tradeoff
a	**i**	**b**	**c**

Example of Table 2 Filled out for one HSE Application

9) Referring to Table 2 above and considering all your HSE applications in total, please fill out Table 3 below to indicate your expected distribution of HSE ports across the interface/media types listed.

Reach Need Media type	% of ports Initial Deployment	% of ports 2 yrs later
0-100m MMF		
0-300m MMF		
0-2km SMF		
0-10km SMF		
0-40km SMF		
>40 km SMF		

10) Assuming that Higher Speed Ethernet meets your economical feasibility threshold specified in the previous question, what do you expect to be the ratio of HSE ports to 10 GbE ports 2 years after beginning to deploy HSE?

One HSE port for every_____10 GbE ports

11) Please indicate the degree to which you agree with the following statements regarding HSE. (Agree strongly, Agree Somewhat, Neither Agree nor Disagree, Disagree Somewhat, Strongly Disagree)

a) Compatibility with the existing cabling plant is critical for deployment of HSE in my network

b) Port-to-port latency over short reaches of HSE (i.e., latency increments in the range of 1-3 microseconds for reaches <300 meters) is critical to my anticipated application.

c) Robustness of HSE connections (i.e., the ability to plug and play numerous connections without careful cleaning and verification of connection quality) is critical to my application.

d) I want to adopt a single type of HSE interface that I would use as a common solution to a range of deployment variations (e.g., in the data center, for both horizontal connectivity and vertical (riser) connectivity or e.g., in the metro, deployment in the distribution, aggregation, and core layers of the MAN).

e) For my application, I plan to focus on the Total Cost of Ownership (TCO) to guide my decisions regarding interface types and media options.

12) As a solution for short reach applications (<150 to 300 meters) would you consider pre-terminated MMF array cabling (possibly with as many as 12 fiber pairs) as a viable alternative to a single fiber pair solution (likely to be based on some form of WDM)?

a) Yes, if the Total Cost of Ownership (TCO) of array cabling connectivity is less than one half the TCO of single fiber pair connectivity
b) Yes, if the TCO of array cabling connectivity is less than three quarters the TCO of single fiber pair connectivity
c) Yes, if the TCO of array cabling connectivity is the same as the TCO of single fiber pair connectivity
d) No, would not consider array cabling regardless of TCO advantage