Overview: IEEE 802.3 Next Generation Enterprise / Campus / Data Center Ethernet Industry Connections Activity

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IEEE 802 PLENARY, DALLAS, TX, USA

Agenda

- Overview – John D'Ambrosia
- Proposed ICAID – "Next Generation Enterprise / Campus / Data Center Ethernet" – John D'Ambrosia
- Q & A –
  - Panel includes
  - John D'Ambrosia
  - David Law, HPE
  - Mark Nowell, Cisco

IEEE 802.3 NG-ECDC Ad Hoc Project Information

John D'Ambrosia, IEEE 802.3 NG-ECDC Ad Hoc Chair

Reflector Information – Currently using DIALOG Reflector. (Reflector will be set up upon activity approved)

Home Page - http://www.ieee802.org/3/ad_hoc/ngrates/index.html

Draft ICAID - http://www.ieee802.org/3/email_dialog/pdfw5_rCwQx5o.pdf

For This Meeting

We don’t need to

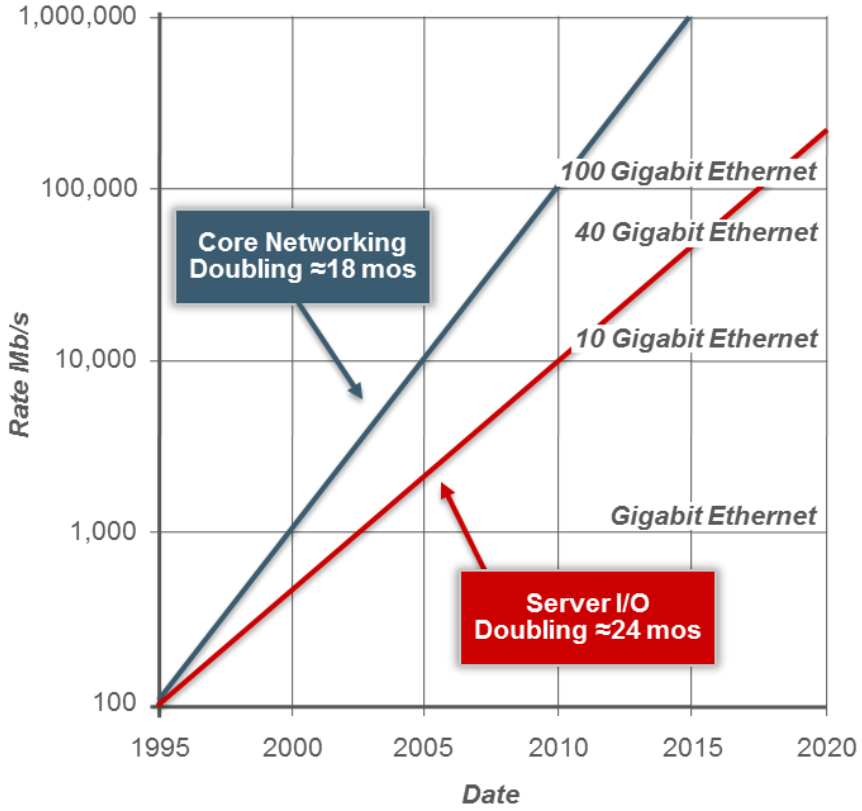
- Fully explore the problem
- Debate strengths and weaknesses of solutions
- Choose any one solution
- Create CSD, PAR, or five criteria
- Create a standard or specification

Anyone in the room may speak / vote

RESPECT… give it, get it

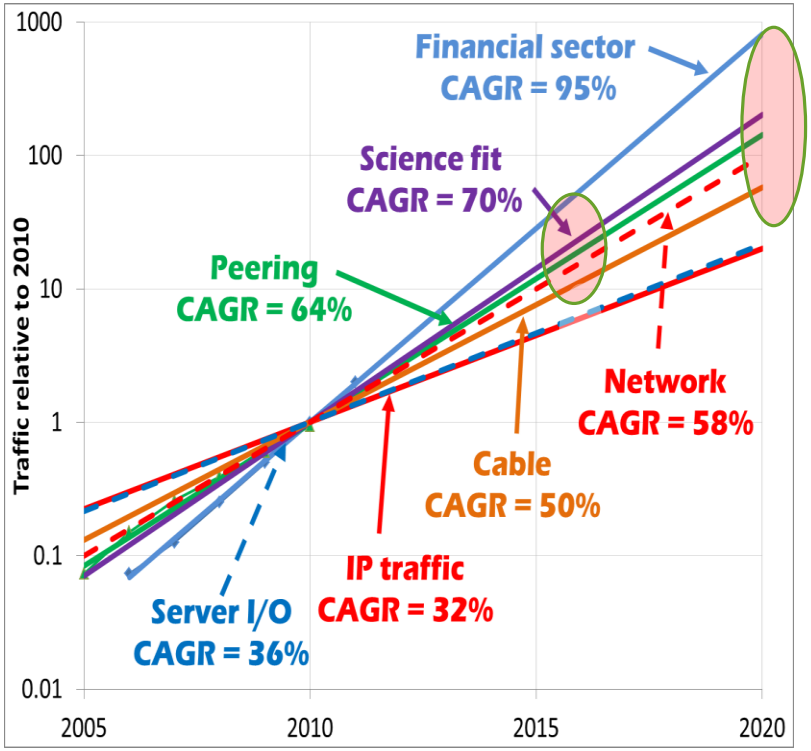
Ethernet… an Evolving Story

IEEE 802.3 HSSG - 2007



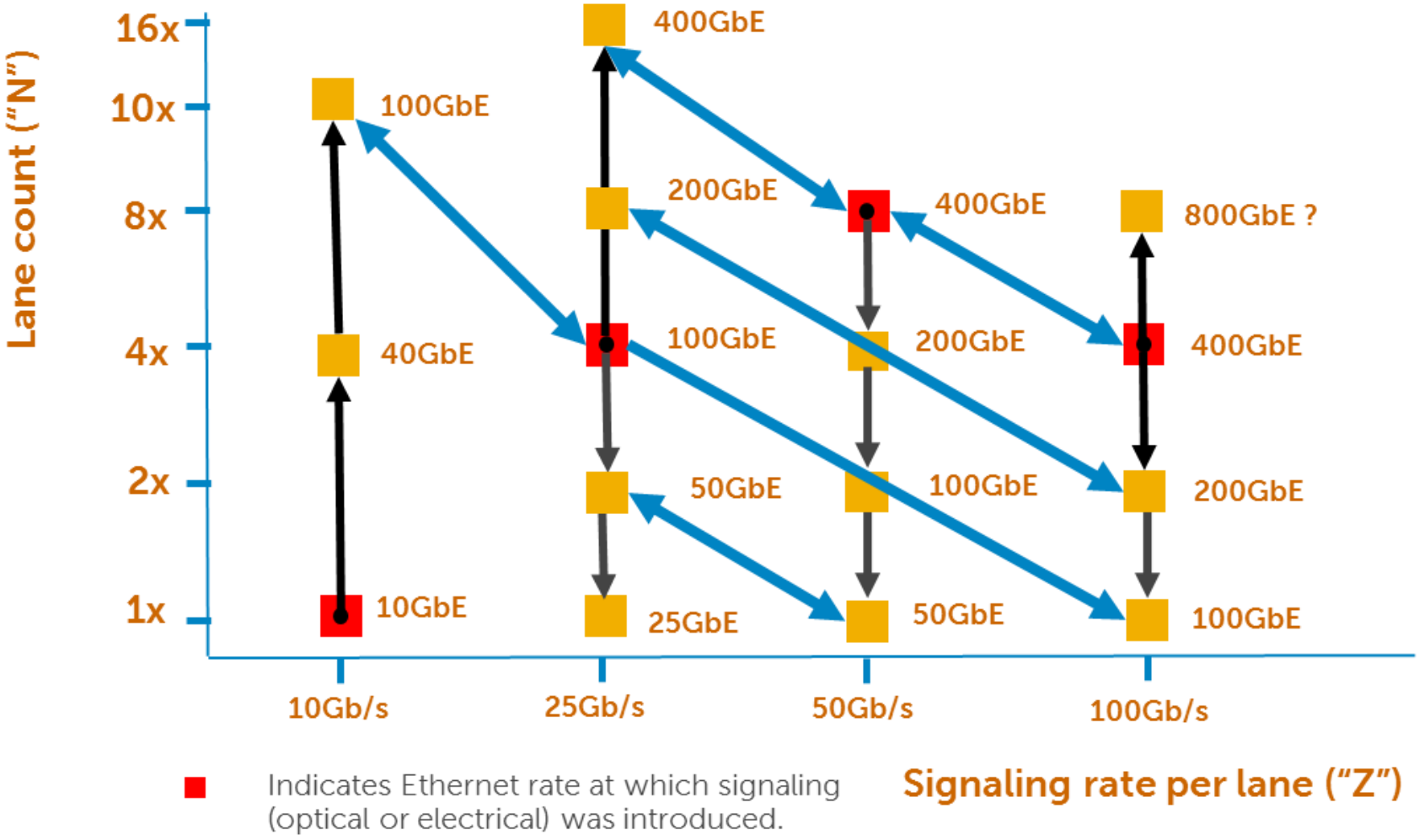
Source:
http://www.ieee802.org/3/hssg/public/nov07/HSSG_Tutorial_1107.zip

IEEE 802.3 BWA - 2012



Source:
http://www.ieee802.org/3/ad_hoc/bwa/BWA_Report.pdf

Ethernet and Lane Rates



2015 Industry Discussions

		Existing Rates										New Rates	
Media		10G	25G	40G	40G (G2)	100G (G1)	100G (G2)	100G (Gn)	400G (G1)	400G (G2+)		50G	200G
PCB Traces		1x10G	1X25G	4X10G	1x40G	10x10G	4X25G	2x50G 1x100G ?	16X25G 8x50G	4x100G		1x50G	4x50G
BP		1x10G	1X25G	4x10G	1x40G		4X25G			4x100G		1x50G	4x50G
Cu Cable		1x10G	1X25G	4x10G	1x40G	10x10G	4X25G			4x100G		1x50G	4x50G
MMF		1x10G	1X25G	4x10G	1x40G	10x10G	4X25G		16X25G	8x50G 4x100G		1x50G	4x50G
SMF	500m		1x25G		1x40G				4x100G (PAM4)			1x50G	4x50G
	2km			1x40G	1x40G				8x50G WDM (PAM4)	4x100G WDM		1x50G	4x50G WDM
	10km	1x10G		4x10G WDM	1x40G	4x25G WDM			8x50G WDM (PAM4)	4x100G WDM		1x50G	4x50G WDM
	40km	1x10G	?	4x10G WDM	?	4x25G WDM		?		?		?	?

Std or in progress | In Debate | Future ?

Note – solutions not implied by “in debate” or “future?”

Ethernet Rate	IEEE 802.3 Standard Completed
10 Mb/s	1983 (For GT – 1980)
100 Mb/s	1995
Gigabit	1998
10 Gigabit	2002
40 Gigabit	2010
100 Gigabit	2010
2.5GbE/ 5GbE / 25 GbE / 400 GbE	In Development
50GbE / 200 GbE	Under Consideration

IEEE 802.3 Ethernet Standards –

"6 Rates in 27 years – 6 new rates possible in next 5 years"

Moving Forward

- Ethernet standardization
  - Currently, 802.3 has 11 task forces and 2 study groups
  - 2 Call-for-Interests at this meeting
  - Discussion re: other activities underway

NO SLOWING DOWN

- Leveraging technologies across Ethernet rates and satisfying industry demands will drive need for pre-PAR consensus building
- Consensus building enables our progress
- No IEEE 802.3 mechanism for pre-PAR activity consensus building

IEEE-SA Industry Connections

- IEEE-SA Industry Connections (http://standards.ieee.org/develop/indconn/) benefits
  - Resources for consensus building
    - Meeting facilities @ IEEE 802.3 meetings
    - Web services – webpages & reflectors
    - Transparency
  - Customizable output
    - Meeting records
    - White papers
    - Position Papers
    - Proposals for projects
- Established history of successes within IEEE 802.3
  - IEEE 802.3 Industry Connections Ethernet BWA Ad Hoc.
  - IEEE 802.3 Industry Connections Higher Speed Ethernet Ad Hoc.
  - IEEE 802.3 Industry Connections NG-EPON Ad Hoc.
- Proposed Industry Connections activity
  - Would not impact IEEE 802.3 process (CFI, Study Group, Task Force)
  - Optional for participants to consider using

Proposed ICAID – Key Items

- **3.1 Motivation & Goal**

  The growing diversity of applications within enterprise, campus, and data center networks requires new Ethernet standards to be developed at a rapid pace. This is evident by recent standardization activities related to 2.5Gb/s, 5Gb/s and 25 Gb/s Ethernet, as well as subsequent conversations related on introducing new Ethernet solutions at these rates. Furthermore, with recent decisions in the IEEE P802.3bs 400GbE Task Force on 50Gb/s and 100Gb/s electrical and optical signaling, there is growing discussion of how to leverage these new signaling technologies for new Ethernet projects.

  The goal of this activity is to assess emerging requirements for enterprise, campus, and data center networks, identify gaps not currently addressed by IEEE 802.3 standards, and facilitate building industry consensus towards proposals to initiate new standards development efforts.

- **3.4 Potential Markets Served**

  Ethernet is employed in a number of market applications, such as Enterprise, Campus, and Data Center, which are exhibiting a growing diversity in terms of the Ethernet rates needed. Solutions spanning these different application spaces and rates will be best addressed by leveraging common technology investments. This activity will enable industry consensus building on the market/application requirements and identify gaps not currently addressed by IEEE 802.3 standards of new solutions, which will help to foster industry interest in new Ethernet study groups.

Proposed ICAID – Key Items

- **5. Proposed Deliverables**

  There will be multiple types of deliverables. The first type of deliverable will be the records of the meetings, including minutes and supporting presentations. The second type of output may be the creation of one or more consensus presentations that are used as the basis for one or more Call-for-Interests to study new areas. A third possible type of deliverable may be the creation, as appropriate, of white papers documenting the findings of the IC activity.

- **8.1 Stakeholder Communities**

  Stakeholders identified to date includes but are not limited to: users and producers of systems and components for servers, network storage, networking systems, data centers, high performance computing, and telecommunications carriers.

ICAID Supporters

John D'Ambrosia, Independent
Mark Nowell, Cisco
David Ofelt, Juniper
Adam Healey, Avago
Jonathan King, Finisar
Brad Booth, Microsoft
Xinyuan Wang, Huawei
Tongtong Wang, Huawei
Yu Xu, Huawei
Scott Kipp, Brocade
David Chalupsky, Intel
Hesham Elbakoury, Huawei
Rob Stone, Broadcom
Thananya Baldwin, Ixia
Jerry Pepper, Ixia
Dale Murray, LightCounting
Tom Issenhuth, Microsoft
Paul Brooks, Viavi Solutions
Paul Kolesar, Commscope
Kapil Shrikhande, Dell
David Lewis, Lumentum
Henry Chen, Broadcom
Andre Szczepanek, Inphi
Andrew Zambell, FCI
David Law, Hewlett Packard Enterprise
James Fife, eTopus Technology
Sam Sambasivan, AT&T
Steve Swanson, Corning
Tom Palkert, EIC
Vineet Salunke, Cisco
Mark Gustlin, Xilinx
Bharat Tailor, Semtech
Steve Carlson, High Speed Design
Joel Goergen, Cisco
Jacky Chang, Hewlett Packard Enterprise
Ali Ghiasi, Ghiasi Quantum LLC
Kohichi Tamura, Oclaro
William Szeto, Xtera Communications
Mike Dudek, Qlogic
Matt Brown, Applied Micro
Hideki Isono, Fujitsu Optical Components
Gary Nicholl, Cisco
Dan Dove, Dove Networking Solutions
Brian Teipen, ADVA
Peter Jones, Cisco
Vipul Bhatt, Inphi
Kiyoto Takahata, NTT
Scott Irwin, MoSys
Mike Li, Altera
Kent Lusted, Intel
Greg McSorley, Amphenol
Phil Sun, Credo

ICAID Supporters

Chris DiMinico, MC Communications

Jim Nadolyn, Samtec

Nathan Tracy, TE Connectivity

Erdem Matoglu, Amphnol High Speed Interconnects

Paul Mooney, Spirent

Pete Anslow, Ciena

Pavel Zivny, Tektronix

Pat Thaler, Broadcom

Martin Carroll, Verizon

Yong Kim, Broadcom

Scott Sommers, Molex

Paul Veanderlaan, Nexans

Qing Xu, Belden

Yoshiaki Sone, NTT

John McDonough, NEC

Mike Bennett, 3MG Consulting

Alan Flatman, LAN Technologies

Next Steps

- Endorsement by IEEE 802.3 WG to be requested on Thursday
- If endorsed, endorsement by 802 SEC will be requested by Friday
- Final approval – IEEE-SA Standards Board Meeting (Dec 3 – 5)
- If approved
  - Reflector will be set up
  - Arrangements will be made for 1st Mtg in Jan 2016 Interim Meeting

Thanks!

Questions?