

# Why We Are Here

- ⇒ Broad level of interest in a solution between 1Gbps and 10Gbps in speed and cost
- ⇒ Wide belief that 2.5Gbps can provide good cost/performance
- ⇒ Discussions on 2.5Gbps solutions have been underway outside the standards forum
- ⇒ It is time to bring 2.5Gbps into 802.3 and study its potential as a standard speed

**Should IEEE 802.3 form a Study Group to develop a standards project proposal (a PAR and 5 Criteria) for 2.5Gbps Ethernet?**

# Tuesday Night's Agenda

- ⇒ Server Perspective
  - ▣ David Koenen, HP
- ⇒ Switch Perspective
  - ▣ Bruce Tolley, Cisco
- ⇒ Feasibility Perspective
  - ▣ Scott Powell, Broadcom
- ⇒ Q&A
- ⇒ Straw Poll of Audience

# Why 2.5Gbps Ethernet

- ⇒ A low cost, low power speed upgrade for 1Gbps is needed for server and switch applications.
- ⇒ 2.5Gbps is the only proposal for higher speed over the installed cable base
  - ▣ Majority of installed cable plants are Cat 5e:  
>450 million Cat 5e ports by 2005
  - ▣ Majority >68% of installed fiber plants are MMF
- ⇒ 2.5Gbps is close to the maximum rate achievable over a worst case 100m Cat 5e channel

# 5 Criteria Can Be Met

## ⇒ 2.5Gbps has a distinct identity

- It is the only incremental speed solution for the currently installed, and forecast to be installed, base of ISO/IEC 11801 UTP infrastructure.

## ⇒ 2.5Gbps is technically feasible

- Functional over entire installed base of Cat 5e/6 UTP
  - Worst case 100m channel per 11801
- Functional over Fiber installed base
  - 100/300m MMF SX/LX, 10km SMF LX)
- One quarter lane of XGMII and XAUI shipping in volume today
- Optical components for 2.5Gbps SX and LX are available today

## ⇒ Minimal impact to 802.3 standard

- Leverages existing clauses
- Backward compatible with 10/100/1000

## ⇒ 2.5Gbps is economically feasible

- Cost and power dissipation fractionally more than 1000Base-T
- Protects multi-billion dollar investment in infrastructure
- 4G fiber modules are becoming cost competitive with 1G

## ⇒ 2.5Gbps has broad market potential

- Near term requirement for Server LOM market
- Today's server is tomorrow's high volume desktop
- Switch stacking and uplinks
- Economics are right for wide deployment

# Contributors and Supporters:

## Individuals from System Vendors

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Ron Nordin;	Panduit
Bob Atkinson;	Tyco



# Volunteers to Work on 2.5Gbps

- ⇒ Attendees that would participate in a 2.5Gbps Study Group in IEEE 802.3.

Count: 42

- ⇒ Organizations that support participation in a 2.5Gbps Study Group in IEEE 802.3

Count: 32

# Straw Poll Tuesday Evening

Should IEEE 802.3 form a Study Group to develop a project proposal for 2.5Gbps Ethernet?

Attendees - Y: 53 N: 64 A: 39

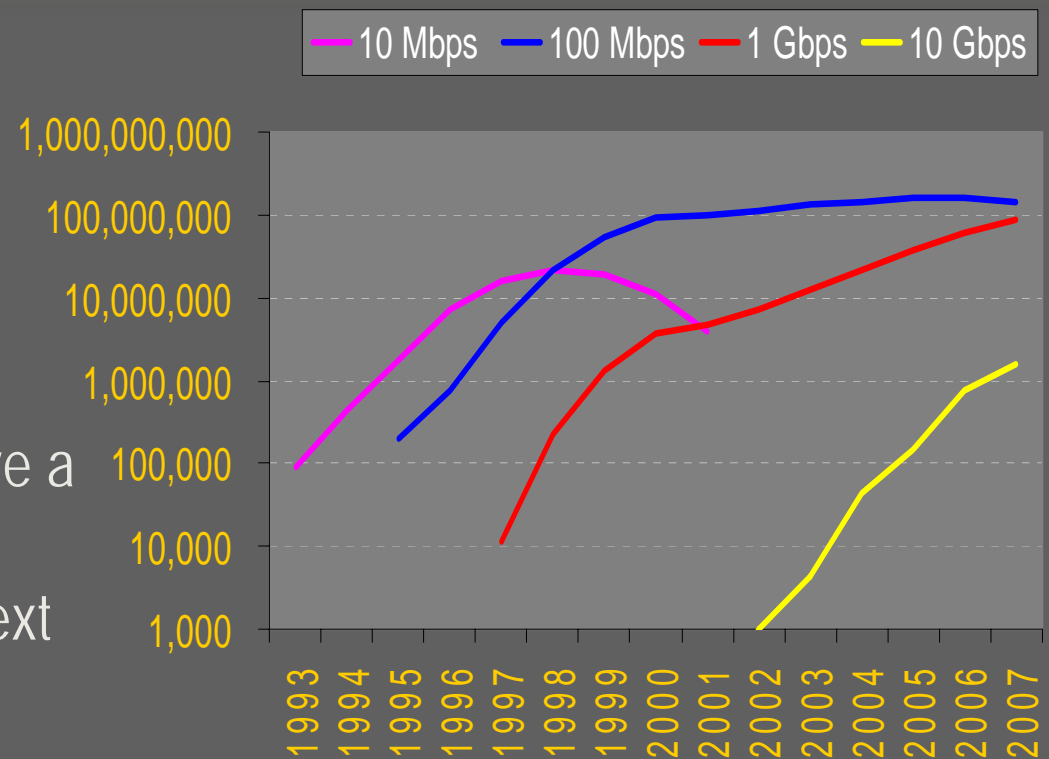
802.3 Voters - Y: 20 N: 29 A: 21

# Concern: Not 10x Speed Upgrade

Ethernet Switch Port Shipments  
Source: Dell'Oro

## Response:

- ➔ Market data show that the transition from 1G to 10G will be much slower than from 10M to 100M, or 100M to 1G.
- ➔ Switch and Server vendors believe a **large % of applications will be satisfied by 2.5Gbps** over the next five years
- ➔ There is **no other 10X improvement** for the majority of the **installed base**



# Concern: 10x Speed 3x relative Price?

Response:

- ⇒ Total solution cost of 2500BASE-T will be very close to 1000BASE-T
  - No change in cost of cabling, connectors
  - Minimal cost adder for silicon
  - No change to other system component costs
  
- ⇒ 2.5Gbps total cost will be better than the 10x performance / 3x price curve.
  
- ⇒ 2.5G optics will be very close to 1G prices, and are available today
  
- ⇒ Better, cheaper, faster.

## Concern: Cable will be upgraded if necessary to support higher speeds

Response:

- ⇒ True, but the end customer would rather not.
- ⇒ The success of 1000BASE-T is due to compatibility with the installed cable.
- ⇒ The installed base was approximately 20 million nodes in 1993. The installed base has been estimated to be close to 1 billion nodes in 2005; ~1/2 will be Cat 5e
- ⇒ Higher grade cable makes sense for new installations, but a requirement to upgrade cable will slow deployment of next generation equipment.

# Concern: Cannibalizing 10G ?

Response:

- ⇒ 2.5G complements 10G
- ⇒ 10G is for backbone, uplinks and data center applications, primarily
- ⇒ >90% of the volume is in the horizontal segment
- ⇒ 2.5G volume in the horizontal segment will **drive more 10G volume**, and drive down prices of 10G faster.

## Concern: 2.5G may take people from 10GBASE-T standards effort

Response:

- ⇒ Resources to work on projects are not fixed; they expand based on interest and belief in market viability
- ⇒ More than 30 organizations volunteered to commit resources to 2.5Gbps
- ⇒ Most of the volunteering organizations have not had significant participation in 10GBASE-T

# Next Steps

Objections should be addressed in detail in  
a Study Group

Request straw poll of 802.3 support for  
Study Group