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# Amendment to 802.1Q: Congestion Management

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Background  
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# Changes in the Networking industry

- Competition and Market needs driving to lower cost of equipment
- Companies are becoming less vertical
  - Focused on core skills, more emphasis on differentiation by services and software
- Design and Manufacturing shifting to ODMs (Outside Design and Manufacturing companies)
- Which means –
  - Standard Building Practices
    - For Telco and Data Center Equipment
      - ATCA , microTCA, and upcoming Blade Server standards
      - ATCA based equipment could have \$7B market in 2007-2008 timeframe (RHK)
      - Standards based backplanes at Physical layer and Layer 2

# Ethernet as interconnect

## ■ Strengths

- The fastest standards-based interconnect in the industry
- Price/performance/ubiquity of Ethernet
- Can match the latency of any known popular interconnects
  - Very important for latency-sensitive applications
  - Switches at 450ns latency available today and going to < 300ns soon
- Proven interoperability
- Low-cost standardized Phy-layer technology suitable for backplanes

## ■ Weakness

- No delivery guarantees
- Not jitter free
- Lacks Carrier grade QOS capability
  - High grade of QOS is now being requested by Data Center, Telecom (ATCA, MicroTCA ) and HPC applications
  - 802.1p can provide some help but needs more capability for converged traffic
  - Congestion management is a key

## ■ Threats

- Serial Rapid-IO
- Infiniband
- PICMG-3.6 Cell Switching specifications
- ASI

## ■ **To broaden and sustain the Ethernet Market, Congestion Management is a must !**

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# Progress till date

- 2004-2005
  - 802.3 Congestion management group explored mechanisms for congestion management in short-range Ethernet networks
  - Mechanisms spanning multiple switches/endstations, were discussed that fall in 802.1 domain
- May 2005
  - Framework and need for Congestion Management in 802 networks presented to 802.1
  - Priority Groups and Backward Congestion Notification (BCN) presented to 802.1
- August 2005
  - Updates to BCN v1.0 along with simulation results presented to 802.1
  - Received feedback from 802.1 to provide analytical study of BCN stability
- September 2005
  - Improved and simplified BCN v2.0 presented to 802.1 along with control theory analysis and simulation results

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# Current Status

- Presentations made to 802.1 have shown the technical feasibility of congestion management mechanisms in short range Ethernet networks like Data Centers and Backplanes.
- Broad support from server, systems, merchant silicon and switch companies.

# Supporting Companies (Alphabetical)

- Broadcom
- Cisco
- Ericsson
- Force10
- Fujitsu
- Fulcrum
- HP
- IBM
- Intel
- Marvell
- Motorola
- Nokia
- Xsigo

**Broad support: Server, Telco, Merchant Silicon and Switch System Vendors**

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# Purpose of today's presentation

- Discuss whether and how a project can be started to address the need of congestion management in short range networks.
- Discuss a proposed draft for PAR and 5 Criteria which will be used to facilitate the discussion.

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# Onto the Discussion on PAR Proposal.....

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