802.3 Media Access Control Specification at 10 Gbps

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Conclusion

The MAC Layer specification for "10 Gig" Ethernet should be:

- Full Duplex only
- Speed Independent
- Unconstrained Distance

Link speed and distance should be completely determined by the Physical Layer specification.

Could we use CSMA/CD at 10 Gig?

- **Of course we could.**
- **We can scale the Carrier Extension concept introduced in 802.3z to accommodate any transmission speed and distance requirement.**
- **We can extend the Packet Bursting concept introduced in 802.3z to allow multiple packets within the first slot time to minimize carrier extension impact on efficiency.**

Should we use CSMA/CD at 10 Gig?

- **Of course not.**
- **Gigabit Ethernet has demonstrated that there is no market demand for shared bandwidth hubs at high speeds.**
- **Acknowledging that the market can be fickle, there are other ways to provide shared bandwidth hubs that utilize full duplex MAC (e.g. Buffered Distributor).**

Is it still 802.3 without CSMA/CD?

- Ethernet/802.3 networks are no longer a single cable, or even a cluster of cables, running at the same speed. They are a collection of links running on different media at different speeds interconnected by hubs, switches, and routers.
- Ethernet's success depends upon providing a simple evolution to higher speed technologies while providing consistent services at all speeds:
  - **Connectionless packet transmissions**
  - **Consistent addressing and frame format**
  - **No translation, segmentation**

What needs to be specified?

- **802.3 Full Duplex operation is very nearly speed and distance independent as currently specified.**
  - InterFrame Gap (IFG) and Preamble Size should be specified in bit times. Probably should be managed variables with specified minimum and default values.
  - MAC Control Pause Operation response time should be specified in bit times.
- **We should never have to touch the MAC clauses again.**