

The 5 Critters



Broad
Market
Potential



Compatibility



Distinct
Identity



Technical
Feasibility



Economic
Feasibility

Broad Market Potential

- a) Broad sets of applicability**
- b) Multiple vendors and numerous users**
- c) Balanced costs (LAN versus attached stations)***

- a) Specific to automotive in-vehicle environment.
Streaming, Data, Control, over single wire that supports, infotainment, driver assist and diagnostics within various functional LAN segments within a vehicular network. Control system requires lower-latency bridged network for this convergence.

Specific to Industrial network environment. Low Latency Sampling Data, (Closed Loop) Control, Data Streaming (e.g. image processing) and supervision data traffic. Sampling Data and Closed Loop Control traffic have very demanding latency requirements, Data streaming (e.g. image processing) is less demanding than control, but higher than best effort. Supervision Data traffic is not time-critical, but provides a constant source for interference traffic.
- b) 60 million in 2010 (56~70 million per annum from 1960's till now) cars and light-trucks/SUVs sold per year. In-vehicle networking is expected to reach >15% in 2011 and grow. With a assumption of @ 5 Ethernet nodes/vehicle, Assuming 60 million vehicles/year, potential vehicle market served at 15% adoption would yield 45+ million nodes (plus 45+ million Switchports). The number of Ethernet Switch ports is ~400 million/yr, split 35%:60%:5% FE/GE/10+GE in 2011.

Thus potential for 15% Ethernet market expansion as adoption occurs in automotive. Industrial Automation –The number of industrial Ethernet ports sold worldwide is 24 million per year in 2010. This is expected to grow to 40 million per year in 2014.] Additional market served with this standards are medical control systems (e.g. MRI), and Energy (e.g. Power substation power controllers), and Avionics.
- c) This project does not materially alter the existing cost structure of bridged networks.

Compatibility

- a) **IEEE 802 defines a family of standards. All standards shall be in conformance with the IEEE 802.1 Architecture, Management and Inter-working documents as follows: 802-Overview and Architecture, 802.1D, 802.1Q and parts of 802.1f. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with 802.Conformance with 802.1D, 802.1Q, 802.1f**
- b) **Each standard in the IEEE 802 family of standards shall include a definition of managed objects that are compatible with systems management standards.**

- a) The standard will conform to the above architectures, and specifically 802.1Q bridge framework for forwarding and receiving compatibility at the ISS . This guarantees that 802.1Q bridges can be added to a network of bridge and an end stations that implements this standard to increment the network functionality.

This project will be coordinated with proposed new work in 802.3. That work may result in an 802.3 project that would enhance the MAC service interface in support of this facility.

This enhancement of a link will interoperate with existing networks.

- b) Such a definition will be included.

Distinct Identity

- a) **Substantially different from other IEEE 802 standards**
- b) **One unique solution per problem (not two solutions to a problem)**
- c) **Easy for the document reader to select the relevant specification**

- a) There is no IEEE 802 based solution for a single link that improves latency to be better than transmit of urgent frame after a lower-priority frame.
- b) There is no IEEE 802 based solution that improves latency to be better than transmit of urgent frame after a lower-priority frame.
- c) This standard enhances QoSrelevant sections of 802.1Q.

Technical Feasibility

- a) Demonstrated system feasibility**
- b) Proven technology, reasonable testing**
- c) Confidence in reliability**
- d) Coexistence of 802 wireless standards specifying devices for unlicensed operation.**

- a) This standard is based on mature virtual LAN bridging and transmit selection and scheduling. General fragmentation and reassembly has been demonstrated in large volume production of (for example) PROFINET(tm) based systems.
- b) This standard is based on mature virtual LAN bridging and transmit selection and scheduling.
- c) The technology re-use, and other augmented methods are deemed proven for their reliability.
- d) Not Applicable

Economic Feasibility

- a) Known cost factors, reliable data**
- b) Reasonable cost for performance**
- c) Consideration of installation costs**

- a) The standard would add small and contained incremental cost to bridge and end station implementations.
- b) Reasonable cost for performance, widely accepted today in IT segment, will be consistent in this standard. In addition, this standard would help convergence of low-latency control application over time sensitive networking supported by AV Bridging and virtual LAN bridging that exist today, thereby helping to replace a) overlay LANs, b) multiple dedicated point-to-point wires.
- c) Installation cost is expected to be not different than installation cost of existing VLAN bridges and end station.