Standard for Local and Metropolitan Area Networks – Virtual Bridged Local Area Networks – Amendment 12: Forwarding and Queuing Enhancements for Time-Sensitive Streams

Draft 5 Criteria, v6
(Wordsmithed to align with Draft PAR, v7)
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Broad Market Potential

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

- Provide guarantees for time-sensitive (i.e. bounded latency and delivery variation), loss-sensitive real-time audio video data transmission to interconnect consumer electronics devices such as TVs, PVRs, cable and satellite set-top boxes, residential gateways and professional A/V devices. With the entertainment content moving from analog to digital, LAN interconnect is expected to become the mainstream method.

- Many consumer electronics producers and service providers have expressed their support for this standard. Every household in the world is a potential user of this technology.

- The cost of enhancements is not expected to increase the cost of LAN interfaces and expect to decrease the cost of the connectivity by consolidation of legacy, often analog, interfaces.

Compatibility with IEEE Std. 802.1

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.

Each standard in the IEEE 802 family of standards shall include a definition of managed objects which are compatible with systems management standards.

- The proposed standard will be an amendment to 802.1Q and will interoperate and coexist with systems compliant to 802.1Q.

- The proposed amendment defines per priority ingress metering, priority regeneration, and timing-aware queue draining algorithms. These rules only apply to the bridges that are confined to a domain solely of audio video capable bridges and frames that are identified as such. The proposed amendment will not introduce additional requirements to 802.1Q nor affect its services.

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.

- There is no existing 802 standard or approved project that provide guarantees for time-sensitive (i.e. bounded latency and delivery variation), loss-sensitive real-time audio video data transmission over bridged LAN to meet the comparable real-time performance of legacy out-of-band analog media distribution.

Technical Feasibility

a)   Demonstrated system feasibility.

b)   Proven technology, reasonable testing.

c)   Confidence in reliability.

- Several proprietary methods exist and in use that addresses similar needs.

- There are number of technical papers with specific solutions and satisfactory performance simulations

- Ingress metering, timing-aware forwarding algorithms has been proven and in use, such as in IEEE 1394, proprietary systems, etc.

Economic Feasibility

a) Known cost factors, reliable data.

b) Reasonable cost for performance

c) Consideration of installation costs.

- The proposed amendment does not materially change the cost structure of bridges. It specifies queue handling and forwarding rules to achieve interoperable quality of service. The use of the capabilities introduced by 802.1AS is deemed to have marginal effect in cost.

- This proposed amendment adds new capabilities to bridged LAN without substantially adding cost to the bridges. It will also reduce overall cost of audio video distribution by consolidation of interfaces. Such consolidation would further allow for operational and equipment cost benefits.

- It is expected that solution will require no additional installation nor configuration compared to existing bridges.