

Proposed PAR and 5 Criteria:

1. Date of Request: October 1, 1997
2. Assigned Project # 802.5
3. Does the PAR revise a previously approved PAR? - NO
4. Description of Proposed Project:
 - Standard
 - New
 - Full Use
5. Is this standard intended to form the basis of an international standard?
 - YES
6. Project Title:
 - Part 5: Token Ring access method and physical layer specifications
 - 100 Mbit/s Dedicated Token Ring Operation Over 2-Pair Cabling
7. Scope of Proposed Project:
 - Generate a standard for a MAC and a Physical layer for 100 Mbit/s 802.5 Token Ring LANs. It will support 2-pair Category 5 (100 ohm) and STP (150 ohm) cabling as specified in IS-11801 (and EIA/TIA 568A).

The standard will consist of specifications for both stations and ports and their corresponding MAC and physical layers.

MAC Frame format will be based on that defined for IEEE 802.5, modified only to meet the specifications for the Tx PHY.

The frame format between MAC and LLC is being preserved.

Purpose of Proposed Project:

The objective of higher speed Token Ring is to provide a cost effective solution for the Token Ring users by specifically developing a High Speed LAN technology that can be incorporated into a Token Ring environment with minimal increase in LAN complexity.

This standard is expected to support emerging applications requiring higher bandwidths than are currently available with 4 and 16 Mbit/s signaling rates.

8. Sponsor:

IEEE Computer Society
LAN MAN Standards Committee

9. Name of Working group that will be writing the document:

IEEE P802.5

10. Target Completion date for submittal to IEEE Standards

Review Committee:

November 1998.

11. Proposed Coordination:

Recommended

Method of Coordination

SCC 10 (IEEE Dictionary)

Circulation of

Drafts

SCC14 (Quantities, Units,

Circulation of

Drafts

and Letter Symbols)

(Availability of

Drafts on the web)

SC6 TAG

12. Are you aware of any patent, copyright, or trademark issues?

No, we are not aware of any patents that would apply only to high speed Token Ring, and not to present Token Ring or Ethernet IEEE 802 standards based products.

13. Copyright Agreement for IEEE Standards

I hereby acknowledge my appointment as Official Reporter to the IEEE P802.5 committee to write/revise a Standards Publication "Part 5: Token Ring access method and physical layer specifications High Speed Token Ring Operation"

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THE 5 CRITERIA

- Show that the proposed solution satisfies the "5 Criteria"
 - IEEE 802 5 Criteria
 1. Broad Market Potential
 2. Compatibility
 3. Distinct Identity
 4. Technical Feasibility
 5. Economic Feasibility
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1. BROAD MARKET POTENTIAL

REQUIREMENT:

A standards project authorized by IEEE Project 802 shall have a broad market potential. Specifically, it shall have the potential for:

- Broad Sets of Applicability

RESPONSE:

This standard will specifically address the needs of the Token Ring marketplace which is presently estimated to be more than \$2 Billion/year. The following classes of applications have been identified that would benefit from the availability of higher bandwidth technology:

- High-Speed transfer of traditional data
- Client/Server Computing
- Database
- Imaging
- Computer Aided Design and Modeling

There are also emerging applications which will benefit from higher throughput with bounded latency including:

- Video and teleconferencing
- Interactive Video training
- Real time control

___ Participants have expressed interest in working on this project.

REQUIREMENT

- Multiple vendors, numerous users

RESPONSE

As stated above, the Token Ring market exceeds \$2 Billion / year. A high speed Token Ring offering will provide that user base with a technology that allows straight forward bridging and interconnect to the legacy installation with a minimal increase in network complexity.

- High Speed Token Ring's frame format compatibility with existing 802.5 Token Ring applications will ensure a large number of users of this technology
- 34 participants representing at least 100 companies indicate that they plan to participate in High Speed Token Ring standardization
NOTE: The blanks will be supplied at the November meeting if the PAR is submitted then.
- Survey of 27 fortune 1000 users showed strong support for introduction of this technology.

- Balanced costs (LAN versus attached stations)

Since High Speed Token Ring will use much of the same MAC design used in Token Ring and readily available high speed PMD hardware, the costs should be in line with these proven and accepted technologies.

2. COMPATIBILITY

REQUIREMENT:

IEEE Project 802 defines a family of standards. All standards shall be in conformance with 802.1 Architecture, Management and Interworking.

All LLC and MAC standards shall be compatible with ISO/IEC 10039, MAC Service Definition at the LLC/MAC boundary.

Within the LLC Working Group there shall be one LLC standard, including one or more LLC protocols, with a common LLC/MAC interface. Within a MAC Working Group there shall be one MAC standard and one or more Physical Layer standards with a common MAC / Physical Layer interface.

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

RESPONSE:

High Speed Token Ring will be based on the 802.5 frame format and therefore, will be compatible with the LLC/ MAC boundary, and 802.1 interworking. Its scope includes managed objects consistent with 802.1 Management.

There will be a single MAC supporting multiple physical layers. The standard will have a single medium independent physical sublayer to adapt to various media. The High Speed Token Ring proposal is conformant to 802 Functional Requirements.

It is compatible with 802.1 architecture.

3. DISTINCT IDENTITY

REQUIREMENT:

Each IEEE Project 802 standard shall have a distinct identity. To achieve this, each authorized project shall be:

- Substantially different from other 802 projects

RESPONSE:

High Speed Token Ring is distinct from other LAN solutions including FDDI, 802.12, and 802.3, because none of these also provide support for all the following capabilities:

- 8 priority levels allowing for priority differentiation in bridging and routing across the LAN for the various classes of asynchronous, synchronous, and multi-media traffic.
- Variable frame sizes exceeding 4K
- Compatibility with present applications designed for 802.5 Token Ring.

- Same Cable and pin usage as existing TR applications

REQUIREMENT:

- One unique solution per problem

RESPONSE:

High Speed Token Ring is unique since it is the only proposed technology addressing the native transport of Token Ring frames at 100 Mbit/s.

REQUIREMENT:

- Easy for document reader to select relevant specification

RESPONSE:

The PICS Proforma of the standard will clearly identify the relevant specifications supported by conformant product.

4. TECHNICAL FEASIBILITY

REQUIREMENT:

For a project to be authorized, it shall be able to show its technical feasibility. At a minimum, the proposed project shall show:

- Demonstrated system feasibility

RESPONSE:

There is no perceived technical challenge

- Token Ring MAC chips are available today and have a proven track record. DTR function is also available.
- 100 Mbit/s PMDs are available to provide transport for high speed Token Ring frames.

There are no new technologies, or technical invention required to combine these two subsystems together for High Speed Token Ring operation.

REQUIREMENT:

- Proven technology, reasonable testing

RESPONSE:

The MAC technology is the same as for Token Ring stations. The PMD hardware will be comparable to that used to deliver fast Ethernet. It is expected that no implementation “breakthroughs” will be required to implement this standard. There are MILLIONS OF END STATIONS AND PORTS IN OPERATION USING THESE TECHNOLOGIES.

REQUIREMENT:

- Confidence in reliability

RESPONSE:

There are two aspects of reliability to address: hardware and architectural

- The hardware reliability of existing token-ring adapters provides adequate confirmation that the High Speed Token Ring interface hardware will be reliable.
- High Speed Token Ring hardware will be based on technology which has evolved specifically for Local Area Networks.

5. ECONOMIC FEASIBILITY

REQUIREMENT:

For a project to be authorized, it shall be able to show economic feasibility (so far as can reasonably be estimated), for its intended applications. At a minimum, the proposed project shall show:

- Known cost factors, reliable data

RESPONSE:

Expect costs to be comparable with present Token Ring hardware.

Low cost PHYs combined with Token Ring like MACs will provide costs in line with present Token Ring technology.

High Speed Token Ring Adapters will deliver significantly increased bandwidth at comparable cost to present dedicated 16/4 Mbit/s Token Ring technology.

REQUIREMENT:

- Reasonable cost for performance

RESPONSE:

High Speed Token Ring will offer considerably better cost/performance than existing 16/4 Token Ring

REQUIREMENT:

- Consideration of installation costs

RESPONSE:

In general, migration changes will be limited to the Backbone and Wiring Center equipment and those workstations requiring High Speed Token Ring.