

L I A I S O N

TITLE: Liaison on possible new work item
SOURCE*: T1E1
PROJECT: T1E1-33
DISTRIBUTION: Chairs of IEEE 802.3ah, DSL Forum Technical Committee, ETSI TM6, ATM Forum Technical Committee, Technical Committee T1M1, FS-VDSL, Metro Ethernet Forum Technical Committee & T1E1

ABSTRACT

This document contains a liaison from T1E1 to IEEE 802.3ah, DSL Forum Technical Committee, ETSI TM6, ATM Forum Technical Committee, Technical Committee T1M1, FS-VDSL, Metro Ethernet Forum Technical Committee on the status of activity in T1E1.4. At the February 2002 T1E1.4 meeting, contributions were heard regarding the development of standards to address symmetric transmission of up to about 10 Mb/s using one or more copper wire pairs. T1E1.4 agreed to address this by initiating two new work efforts: firstly a near-term DSL standards effort, and secondly a longer-term DSL standards effort. It was approved by T1E1 at the February 22, 2002 plenary.

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February 26, 2002

T1E1

Interfaces, Power
and Protection of Networks

A Technical Subcommittee of
Standards Committee T1
Telecommunications

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Chairman

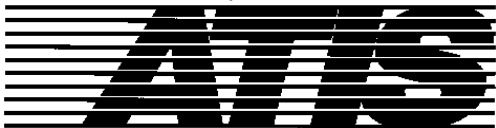
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At the February 2002 T1E1.4 meeting, contributions were heard regarding the development of standards to address symmetric transmission of up to about 10 Mb/s using one or more copper wire pairs. T1E1.4 has issued a call for papers to initiate two new work efforts: firstly a near-term DSL standards effort, and secondly a longer-term DSL standards effort.

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The short-term effort is expected to consist of enhancements to T1.422 (Committee T1 pointer to ITU Rec. G.991.2, SHDSL) and input to ITU Q4/15 to address higher bit-rates on short loops by transmitting more bits per symbol, bonding of two or more pairs of wires, and possibly other aspects.

The longer-term effort is initially called 10MDSL and is discussed in the attached paper. T1E1.4 has issued a call for papers on 10MDSL transmission methods, evaluation criteria, and working methods. The working methods may include a proposal for a new project proposal for Committee T1.

It was also agreed that both work efforts must maintain spectral compatibility as defined in T1.417.

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T1E1 intends to keep your organization informed as this work proceeds, and invites your cooperation and input to this work.

Sincerely,
(signed original on file)
Edward J. Eckert
Chairman, Technical Subcommittee T1E1

cc: Massimo Sorbara, Chair, T1E1.4
Tom Starr, Vice Chair, T1E1.4

CONTRIBUTION

TITLE: **Proposal for New Work Item in T1E1.4: 10 Mb/s DSL**
SOURCE*: **T1E1.4 Leadership ¹**
PROJECT: **VDSL or ADSL**

ABSTRACT

This contribution proposes a new work item to develop a standard for a wideband DSL that will support bit rates up to 10 Mb/s symmetric on short loops and 5 Mb/s symmetric on medium length loops, while enabling multi-megabit rates to all customers on non-loaded loops where multiple pairs of wires may be used to meet a range of rate-reach objectives.

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NOTICE

This contribution has been prepared to assist Standards Committee T1-Telecommunications. This document is offered to the committee as a basis for discussion and is not a binding proposal. The requirements are subject to change in form and numerical value after more study. Specifically, the right to add to, or amend, the statements contained herein is reserved.

INTRODUCTION

The IEEE is currently working on a project call Ethernet in the First Mile and a liaison has been sent to T1E1 reporting on the status of the activity [1]. The project has a current rate-reach objective of 10Mb/s symmetric at 750m. At their most recent meeting, the operators expressed strong interest for other rate-reach configurations that support longer loops. As expressed in the liaison, such configurations are not as yet adopted, nor is it in the charter of IEEE to design such transmission methods for the public network. Based on the activity in EFM and the liaison to T1E1 from last EFM meeting in Raleigh, the following new work item is being proposed to T1E1.4 in order to address the needs expressed by the operators for delivery of Ethernet based services via the access network. The primary target is to provide data services to business customers, but secondary use for residential customers is expected.

DESCRIPTION

Title: 10 Mb/s DSL: 10MDSL The proposed new work item is to develop a standard for a wideband DSL that will support bit rates up to 10 Mb/s symmetric, while enabling multi-megabit rates to all customers on non-loaded loops where multiple pairs of wires may be used to meet the rate-reach objectives. The proposed scope of the project is described in the following list:

- Per-pair payload bit rates on systems should exceed 5 Mb/s on medium length loops and 10 Mb/s on short length loops. (System bit rates above 10 Mb/s symmetric may be considered for multi-pair operation)
- The data rate should gracefully degrade on long loops out to the maximum length of non-loaded loops.
- Optimize for symmetric data-only service, but should provide an option for underlying POTS.
- Medium speed asymmetric operation may be considered such as 13 Mb/s downstream on medium reach.
- Provide service on a single pair, but use of multiple pairs (bonding) may be considered to achieve a higher link speed at longer loop reach. Advanced techniques to optimize the performance for transmission using multiple pairs should be considered.
- Avoid inclusion of options that could jeopardize interoperability.
- Define only one modulation format for definition of 10MDSL.
- Allow automatic rate adaptation to loop conditions within service parameters provisioned by the service provider.
- The physical layer specification should provide operation under ATM as well as Ethernet protocols. That is the physical medium dependent (PMD) should be independent of application, and transmission protocol specific transmission convergence layers may be defined in support of ATM and Ethernet applications and possibly other applications.
- Achieve the highest rate/reach performance while maintaining spectral compatibility with other services, reasonable complexity, and moderate development timeframe.
- Although many of the objectives may be driven by the application of transporting Ethernet frames, the physical layer specification should be such that other applications may be supported.

RELATIONSHIP TO PRIOR STANDARDS

The current VDSL draft trial-use standard does not address multi-pair operation and does not provide sufficient upstream performance to enable symmetric operation for loops beyond about 4 kft.

The current ADSL standard does not address symmetric transmission above 1 Mb/s, and does not address multi-pair operation.

The current SHDSL standard does not address symmetric transmission above 2.32 Mb/s per pair. While the SHDSL standard does address higher speeds via two-pair operation, it does not have the potential performance improvements due to coordinated multi-pair (N-pair bonding) transmission on more than two lines. Furthermore, SHDSL does not provide an option for operating above the voice telephony band.

PROJECT WORK

The objectives of this new project proposal falls within the scope of two current projects: the VDSL project and the ADSL project. The work for the newly proposed 10MDSL could progress under either of these projects; therefore, no new project needs to be opened.

TIME FRAME

- Agree on work item – 1Q02
- Work on Proposals – 2Q02 & 3Q02
- Selection of Modulation Method – 4Q02
- Target Letter Ballot of Draft Standard – 3Q03

One or more interim meetings may be needed to help meet the proposed time line objectives.

LAISON AND COOPERATION

This work should proceed with close cooperation with IEEE 802.3ah, ITU Q4/15, ETSI TM6, the DSL Forum, and the other Committee T1 TSCs (e.g. T1S1).

SUMMARY

We recommend starting development of a new work item under the VDSL project whose scope is defined in the 'DESCRIPTION' section above.

REFERENCES

- [1] T1E1.4/2002-XXX, Liaison from IEEE 802.3, Subject: Update on the progress of the Ethernet in the First Mile Copper sub-taskforce.

Rick Townsend, Vice Chair, T1E1