COMMITTEE T1 – TELECOMMUNICATIONS
Working Group T1E1.4 (DSL Access) **T1E1.4/2001-188**
Location; Meeting Dates

CONTRIBUTION

TITLE: **Proposed Scope and Mission for Dynamic Spectrum Management**

SOURCE*: **DSM Editor, J. Cioffi**[1]

PROJECT: **Insert Project Here**

ABSTRACT

This contribution is a proposed scope and mission for the work on Dynamic Spectrum Management.

---

[1] CONTACTS:

J. Cioffi; email: cioffi@stanford.edu; Tel: 650-723-2150; Fax: 650-724-3652

M. Sorbara; email: msorbara@globespan.net; Tel: 732-345-7535; Fax: 732-345-7592

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.

Mission Statement:

Dynamic Spectrum Management (DSM) shall enhance spectrum-management value by improving reliability and increasing data rates through measurement and/or dynamic management of DSL spectral compatibility.

Scope:

Dynamic Spectrum Management (DSM) specifications shall address methods and requisite accuracies for identification of crosstalk and channel information. Such specifications shall also address the format for transfer of said channel and crosstalk information to DSL maintenance locations possibly separate from the DSL line, as well as format for optional specification and control of DSL line spectra where permitted by the DSL line modems and allowed by the associated service operator(s). DSM may also specify methods for coordination, ***or spectral balancing,*** of line spectra for a common global-binder benefit and possibly also specify methods for coordination of line signals, or ***DSL vectoring,*** also for a common global-binder benefit.

Liaison to the following bodies, possibly involving consequent joint work, appears beneficial:

T1M1, specifically T1M1.5, in the area of "CORBA Based TMN Performance Management Service" and in particular the format of channel and crosstalk information specified in ATIS Standard T1.231.

DSL Forum, specifically the Operations and Network Management Group, and its possible future interests and work.

ITU SG15/Q4 G.997.1 (G.ploam) future revisions.

Examples of Potential Work Product:

1. specification of means to mitigate or eliminate the remote-terminal-based ADSL into CO-based ADSL xtalk problem
2. specification of means to mitigate or eliminate the VDSL into ADSL crosstalk problem
   3. specification of means to reduce the problem with T1, HDSL into ADSL problem substantially
   4. Allow mutually collaborative and improved mixture of symmetric services (like SDSL, SHDSL, and Symmetric VDSL) with asymmetric services like ADSL and Asymmetric VDSL
5. specification of means to simplify pair selection, both manual and possibly automatic
6. specification of methods to enhance the utility and the upper-frequency quality of loops
7. Establishment of better understand and guidelines to maximize binder data "volume"

   (sometimes called "Shannon volume) and in particular

   a. allow normalized understanding and use of multiuser methods where possible and permitted for improved spectrum management

b. specification of methods for determination of rate regions for binders and specification of globally acceptable operation point

c. establish sharing and routing mechanisms to adaptive to customer requirements in evolving DSL

Terms of Reference:

See Figure 1. A *DSL maintenance center* accepts channel and crosstalk information in a specified format across an interface *DSM-U*. The DSL maintenance center can process the information received and provide such processed data results for the use of DSL service providers according to specified criteria and format at interface *DSM-S*. The DSL maintenance center can also dynamically specify downstream and upstream DSL line spectra recommendations across an interface *DSM-D*, that is implement *spectrum balancing.* The DSL modems at line termination and network termination may share line information in a specified format across interface *DSL*. *Vectored DSL* systems can also allow joint specification of multiple DSL line signals in the downstream direction of the *DSL* interface, while also allowing specification of methods to coordinate DSL receivers in the upstream direction of the DSL interface. It is recognized that DSM data may be transmitted through interfaces that are specified by other standards groups or the DSL forum. However, the format and nature of the data is pertinent to the DSL line and therefore the purview of T1E1.4, specifically the existing spectrum-management project.

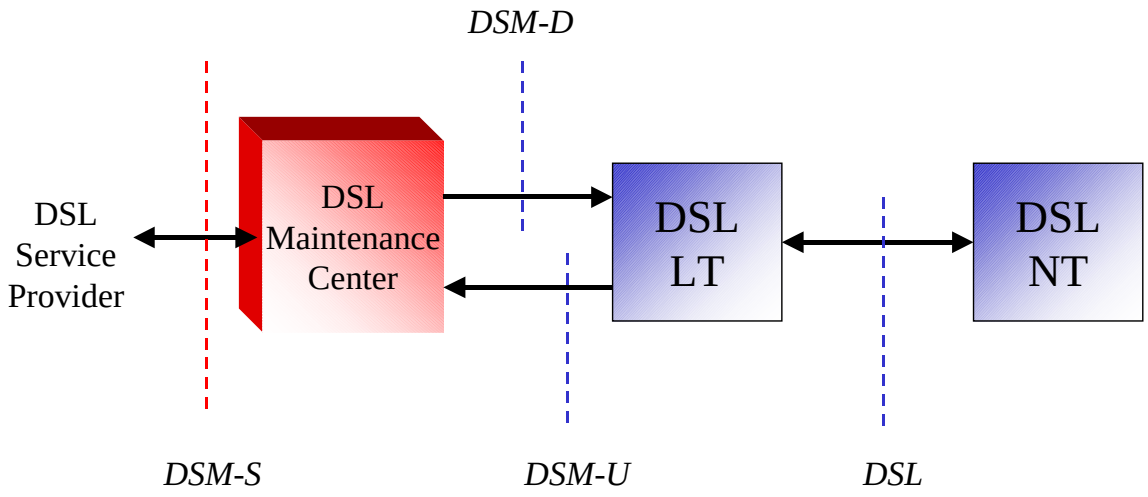


Figure 1 – DSM Reference Diagram.