Project: **T1E1.4: Spectrum Management II**

Title: **Indication of Capability to Release of Channel Information (146)**

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Abstract:

This document proposes a channel-information-release indication capability under the dynamic-spectrum-management work item (#34) of Spectrum Management Issue 2 [1]. A DSL line modem would thus be able to indicate its level of capability to release channel-identifying information to a interrogating entity (such as a network management or provisioning system). Responses suggested are:

level-0 none (meaning no capability)
level-1 line signal-to-noise transfer characteristic
level-2 time-stamped input/output samples

Also suggested are an email list for parties interested in DSM and two conference-call times to refine/augment additional proposals for the August T1E1.4 meeting.

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 on any of the companies listed as authors. The requirements are subject to change after further study. The authors specifically reserve the right to add to, amend, or withdraw the statements contained herein.

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Abstract:

This document proposes a channel-information-release indication capability under the dynamic-spectrum-management work item (#34) of Spectrum Management Issue 2 [1]. A DSL line modem would thus be able to indicate its level of capability to release channel-identifying information to a interrogating entity (such as a network management or provisioning system). Responses suggested are:

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1. Introduction:

Item 34 of the revised Spectrum Management Issue 2 standards project living list [1] is dynamic spectrum management and contains 5 sub-items for work. This contribution addresses the second item on *transfer of channel information to a remote location for processing.* Such information can be of many productive uses, particularly improved reliability in DSL service provisioning, identification of existing or impending crosstalk problem situations, and improved data-rates and ranges for all asymmetric and symmetric services (see 99-089 [2] for example).

This proposal recognizes several levels of capability of information-release capability:

level 0 - no ability to release information (which may be a current state of many DSL systems)
level 1 - a basic levels of release that some ADSL modems and/or DSLAMs already do
level 2 - advanced-capability levels that would be desirable in future DSL modems and DSLAMs.

This contribution describes the type of information to be provided at each of the levels and suggests some draft text for DSM sub-item 2 with to-be-determined details of the exact parameter exchanges and definitions. To complete exact specification, a DSM email list for T1E1.4 is also suggested along with dates/times for two conference calls.

2. The Proposal

The following is specific text suggested for DSM sub-item 2 “transfer of channel information to remote location for processing”: (the term “modem” may apply to DSL transceivers at the subscriber end and/or in the DSLAM in the context of this proposal).

A DSM-compliant DSL modem shall indicate channel-information-release capability at level 1 or level 2. A DSL modem not capable of DSM compliance shall otherwise be assumed to operate at level 0 and therefore unable to provide channel-information to a remote location.

Level One DSM Channel-Information Release Compliance: : *The DSL modem can release its receiver’s characterization of the incoming channel in terms of signal-to-noise ratio measurements averaged and updated over interval T at regularly spaced frequencies*

$f_n = n \cdot (\Delta f), n = 1,,,N$ *where* Δf *, T and N are to be specified by the modem along with* $SNR(f_n)$ *through a* ***to-be-determined*** *interface*[1].

Level Two DSM Channel-Information Release Compliance: *The DSL line modems on the same line jointly can release corresponding packets of channel input and output samples* ***to-be-determined*** *method of indicating the time and relative sampling rates at which the packets were measured or stored****.*** *The length of the corresponding packets may vary with DSL type and is also* ***to be determined.*** *Level Two compliance does not necessarily also imply level one compliance.*

2.1 Mailing List

We here also propose an email list be created to which any interested party could subscribe, likely called dsm.t1e14@t1.org, to which active persons could post suggestions or discuss issues related to DSM and specifically to the areas of question raised in this first specific proposal for the DSM area.

2.2 Conference Calls

The author is willing to coordinate up to 2 conference calls between now and the August T1E1.4 meeting that would allow discussion of further specification of the concepts in this proposal. The suggested data and time for the first would be 8:00 am CA time on Tuesday June 12, 2001 with dial-in numbers to be posted at the above web site (or t1e14@t1.org if the above is not ready).

3. References:

[1] "Living List for Spectrum Management Standard Issue 2," C. Valenti, *T1E1.4 Contribution 2001-003, May 7, 2001*, Tampa, FL.

[2] "Example benefits of Dynamic Spectrum Management," J. Cioffi, G. Ginis, W.Yu, and C. Zeng, J, *T1E1.4 Contribution 2001-089,* February 2001, Los Angeles, CA.

[1] Not for inclusion in spectrum management standard, but for concerned parties – DSL modems employing either a DMT or Decision-Feedback Equalizer based receiver can easily both generate such information from existing signal processing quantities they use for detection of the transmitted bit sequence.