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TITLE: Discussion Areas in G.hs Terms of Reference

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Abstract:

This contribution examines some of the issues surrounding a startup/handshaking and capabilities exchange between xDSL transceivers. Scope and suggested areas to be addressed in the Terms of Reference for the proposed xDSL Handshake Signalling (G.hs) Recommendation are presented.

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1. Introduction

In July, it was proposed that SG15Q4 address the needs of a startup hand-shaking procedure for xDSL transceivers. In the preparation of the *Terms of Reference* for the proposed Recommendation (G.hs), several items should be considered including: scope, placement, modulation technique, PSD, data content, etc. Some questions to be addressed and discussed in greater detail are presented in the following sections.

2. Areas for Discussion

2.1 Scope
Which standardized or proprietary modulation schemes should be considered or excluded? Some possibilities include
- T1.413
- RADSL / CAP/QAM
- existing pre-standard equipment
- HDSL/VDSL/etc.
- ITU-T V.series data/fax/voice modems
- Other?

2.2 Relationship to other ITU-T handshaking Recommendations (V.8, V.8bis)
- Should a code point for G.hs be assigned in V.8 (or V.8bis)? This could allow traditional data call methods to take advantage of xDSL services.
- Should G.hs "fallback" to V.8 negotiation if no common xDSL modes are negotiated by G.hs?

2.3 What assumptions are being made about the Central Office (CO) termination/splitter architecture?
- The location of the "termination" (xDSL ATU-C or other device) and a possible splitter may not always be in the central office. For example a splitter, bandpass filters or the ATU-R might reside in a CLEC outside of the traditional CO (ILEC). For detailed examples, see the scenarios in the paper: "Location of the Central Office End POTS Splitter" from GTE at the September 1997 ADSL Forum (ADSLForum97.107.1.doc) Thus, it is possible that termination is on non-xDSL capable equipment.
- The possibility of a "modem pooling" architecture at the CO should be considered. It may not always be the case that a customer's ATU-R is always connected to the same (dedicated) ATU-C. Hence certain startup information may need to be negotiated for every session.
- Consideration should be given to "switched" scenarios as well as "leased line" scenarios.

2.4 Placement
- Should the handshaking completely precede the modulation schemes existing startup sequences or be coincident?

2.5 Modulation Technique
- Should it be similar to one of the xDSL modulations?

2.6 Spectrum

- Should the exchange be completely outside of the POTS band?
- Should it be "similar" to the xDSL (spectrum) bands?
- Should it respect both the upstream and downstream bands of existing modulation schemes?

2.7 Data Content
- Data capabilities exchange only?
- Preliminary line characterization to assess the suitability of the various xDSL schemes.
- Device control? Power-down/Sleep modes
- Which layers of protocol information should be communicated?

2.8 Duration
- Is there intention to keep the exchange strictly less than a prescribed amount of time?
- Should extended negotiations be allowed?
- Should G.hs be used before "short trains"?

2.9 Fallback / Reusability
- If a modulation fails to startup properly should G.hs force a reset and renegotiation based upon some type of timer mechanism?
- If an xDSL modulation catastrophically fails (after it has properly started up) should G.hs be reentered before "restarting" the modulation?
- Fallback to existing standards. - What is the meaning of this statement?

3. Conclusions

Resolution of some of the issues raised may be premature for inclusion in the terms of reference and may need to be addressed as the work towards the proposed Recommendation progresses.

4. Questions for Agreement

Can the committee agree on a *Terms of Reference* for a handshaking procedure for xDSL modems?