Technical Report
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TR-070

SCM Specific Managed Objects In VDSL Network Element

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1 Introduction

The Operations and Network Management Working Group of DSL Forum developed the "VDSL Network Element Management" (WT-68, now TR-057). TR-57 defines the line-code-independent parameters required for managing VDSL lines.

This document defines SCM line-code-specific managed objects that can be optionally used in certain cases such as for diagnostics and per band management, if preferred.

2 SCM Specific VDSL Configuration Parameters

The following line-code-specific parameters may be used for configuring an SCM VDSL line. The parameters are defined per each provisioned SCM carrier in a line configuration. It is assumed that line-code-specific configuration will be used only in special cases such as for testing and may not be consistent with parameters configured through the Configuration Parameters of VDSL Network Element Management as described in TR-057[1].
If used, this set of parameters should supercede VDSL Configuration Parameter configurations previously requested for Deployment Scenario and Spectrum Management and may not be consistent with configurations for Data Rate Management.

2.1 Configuration Carrier Identity
An enumerated index that identifies the carrier associated with the set of configuration parameters.
The *Configuration Carrier Identity* may have one of the following values:
- o *Optional Band* (range from 25 kHz to 138 kHz. See TR-057, section 2.3.3)
- o *1D* (transmission from VTU-C in first downstream band)
- o *1U* (transmission from VTU-R in first upstream band)
- o *2D* (transmission from VTU-C in second downstream band)
- o *2U* (transmission from VTU-R in second upstream band)

Note that use and direction of the *Optional Band* is determined by Spectral Management Configuration Parameters of VDSL Network Element Management as described in TR-057.

2.2 Configuration Carrier Usage
This parameter specifies if the carrier, referred by *Configuration Carrier Identity*, is used. The values may be:
- o *Used*
- o *Not Used*

When referencing the *Optional Band* this parameter should reflect the *Optional Band Usage* as determined by Spectral Management Configuration Parameters that is described in TR-057.

2.3 Configuration Center Frequency Factor
The integer ratio of the center frequency to 16.875 kHz, for the carrier referred by *Configuration Carrier Identity*.

2.4 Configuration Symbol Rate Factor
The integer ratio of the symbol rate to 33.75 kbaud, for the carrier referred by *Configuration Carrier Identity*.

2.5 Configuration Constellation Size

The number of bits per symbol modulated onto the carrier, referred by *Configuration Carrier Identity*.

2.6 Configuration PSD Level

The PSD level of the carrier, referred by *Configuration Carrier Identity*, in the range: -38 dBm/Hz to -140 dBm/Hz using steps of 0.25 dBm/Hz.

3 SCM Specific VDSL Actual Parameters

The following parameters indicate the actual working parameters of an SCM VDSL line. The parameters are defined per each provisioned SCM carrier in a line configuration.

These parameters may be the result of configuration through VDSL Network Element Management - Data Rate Management with either Manual or Rate Adaptation mode or the result of line-code-specific configurations as described above.

3.1 Actual Carrier Identity

A set of Current Configuration Parameters is recorded for the carrier identified by *Actual Carrier Identity*.
This is an enumerated index that may have one of the following values:
  o *Optional Band* (range from 25 kHz to 138 kHz. See TR-057, section 2.3.3)
  o *1D* (transmission from VTU-C in first downstream band)
  o *1U* (transmission from VTU-R in first upstream band)
  o *2D* (transmission from VTU-C in second downstream band)
  o *2U* (transmission from VTU-R in second upstream band)

3.2 Carrier Usage

This parameter specifies if the carrier, referred by *Actual Carrier Identity*, is currently in use. The values may be:
  o *Used*
  o *Not Used*

3.3 Center Frequency Factor

The integer ratio of the actual center frequency to 16.875 kHz, for the carrier indicated by the *Actual Carrier Identity*.

3.4 Symbol Rate Factor

The integer ratio of the actual symbol rate to 33.75 kbaud, for the carrier indicated by the *Actual Carrier Identity*.

3.5 Constellation Size

The number of bits per symbol modulated onto the carrier indicated by the *Actual Carrier Identity*.

3.6 Carrier PSD Level

PSD level in the range: -38 dBm/Hz to -140 dBm/Hz in 0.25 dBm/Hz steps, of the carrier indicated by the *Actual Carrier Identity*.

4 SCM Specific VDSL Band Measurements

The following parameters indicate measurements per each provisioned carrier in an SCM VDSL line configuration.

4.1 Carrier Identity

A set of physical measurements parameters associated with the carrier identified by *Carrier Identity*.

This is an enumerated index that may have one of the following values:

- o *Optional Band* (range from 25 kHz to 138 kHz. See TR-057, section 2.3.3)
- o *1D* (transmission from VTU-C in first downstream band)
- o *1U* (transmission from VTU-R in first upstream band)
- o *2D* (transmission from VTU-C in second downstream band)
- o *2U* (transmission from VTU-R in second upstream band)

4.2 SNR Margin

The SNR margin measured on the carrier indicated by the *Carrier Identity* having values in the range: -31.75 dB to +31.75 dB in steps of 0.25 dB.

4.3 Attenuation

The line attenuation measured on the carrier indicated by the *Carrier Identity* having values in the range: 0 dB to 63.75 dB in steps of 0.25 dB.

5 References

[1]   DSL Forum TR-057: "VDSL Network Element Management", February 2002.