MIB Extensions for WIS Fault Isolation

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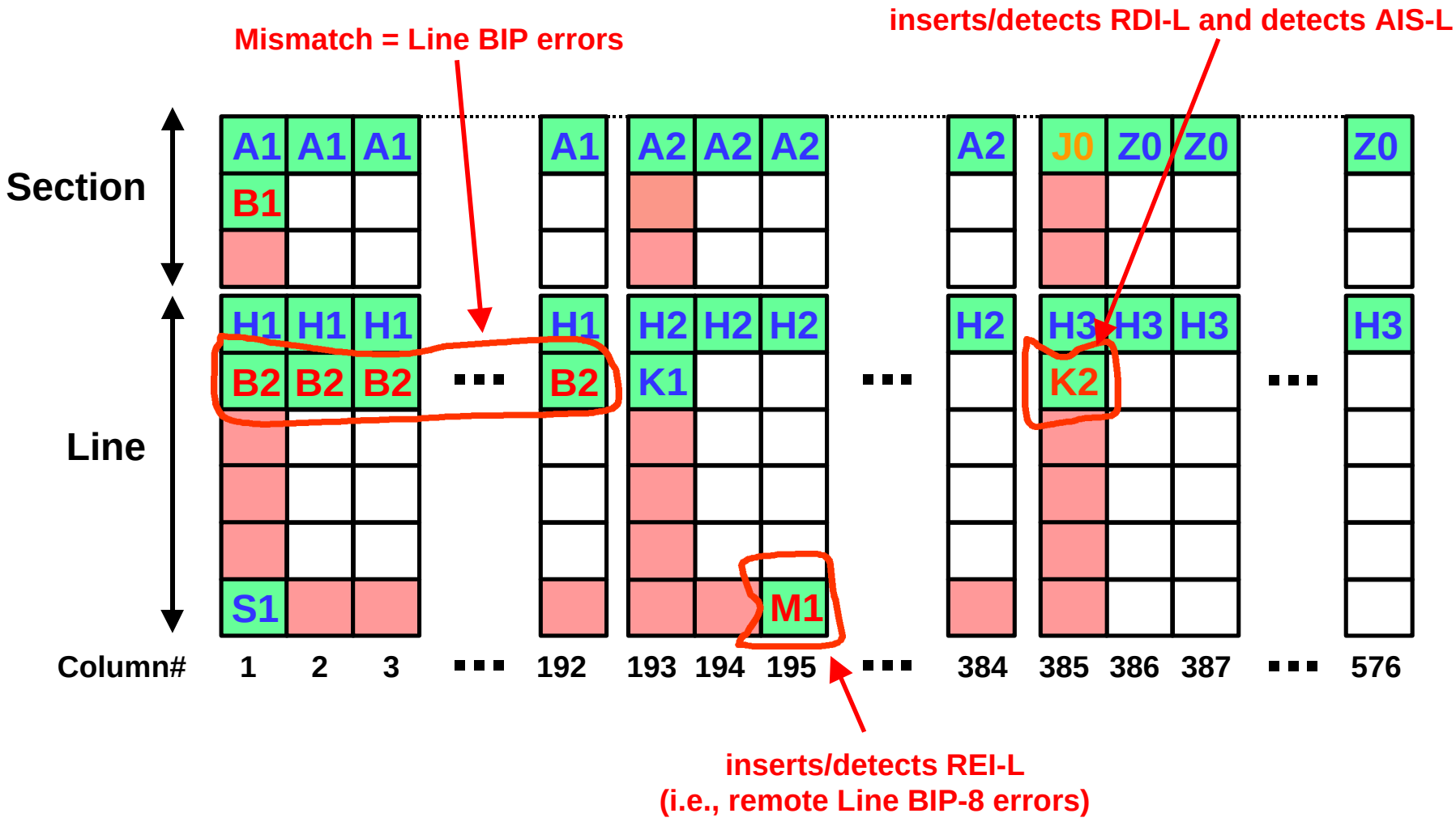
V0.2

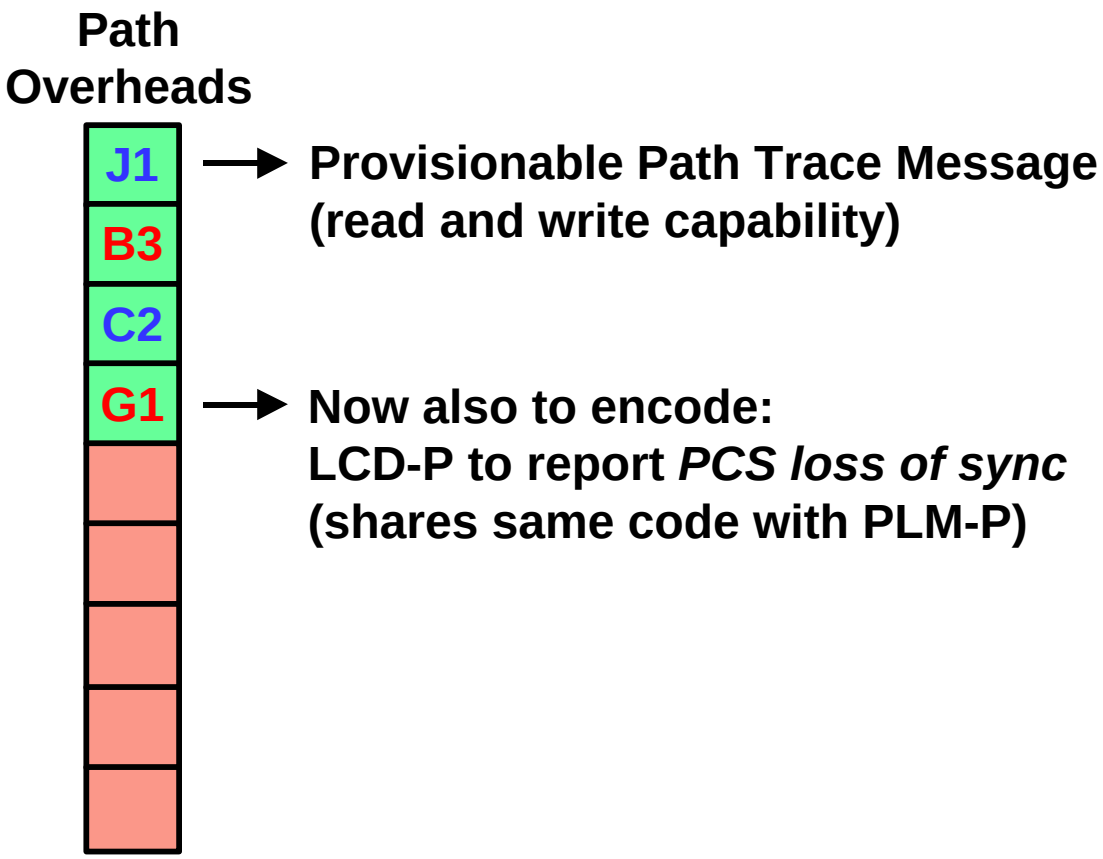
Agenda

- **MIB extension to support the “WIS Fault Isolation” presentation**
  - http://grouper.ieee.org/groups/802/3/ae/public/nov00/martin_1_1100.pdf
- **Review of new overhead bytes requiring management**
- **Additions to oWIS management object class**

New Line Overhead Support



New Path Overhead Support



New oWIS Capabilities

Recommended Package (optional)

Basic Package (Mandatory)

	oWIS managed object class				
Line	aLineStatus	ATTRIBUTE	GET	X	
	aLineSESthreshold	ATTRIBUTE	GET-SET		X
	aLineESs	ATTRIBUTE	GET		X
	aLineCVs	ATTRIBUTE	GET		X
Far End Line	aFarEndLineESs	ATTRIBUTE	GET		X
	aFarEndLineSESs	ATTRIBUTE	GET		X
	aFarEndLineCVs	ATTRIBUTE	GET		X
Path	aJ1ValueTX	ATTRIBUTE	GET-SET		X
	aJ1ValueRX	ATTRIBUTE	GET		X
	aPathStatus	ATTRIBUTE	GET	X	

← aPathStatus was already defined. This presentation adds LCD-P to previous definition.

aLineStatus

- **ATTRIBUTE**

- **APROPRIATE SYNTAX:**
  - BIT STRING [SIZE (1..2)]

- **BEHAVIOR DEFINED AS:**
  - A string of 2 bits reflecting the Line status. The first bit corresponds to the Line Alarm Indication Signal flag and maps to the AIS-L bit (33.x.x.x.x) in the WIS Line Status register. The second bit corresponds to the Line Remote Defect Indication flag and maps to the RDI-L bit (33.x.x.x.x) in the WIS Section Status register.;

    Note: AIS-L and RDI-L as detected from received K2 octet.

aLineSESthreshold

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - INTEGER
- **BEHAVIOR DEFINED AS:**
  - A GET operation returns the value for *x* for Line SES definition.
    A SET operation changes the value for *x* for Line SES definition.
    After WIS reset (or power-off, power-on cycle), *x* for Line SES returns to the default value 9835.;

    Note: 9835 is selected to reflect the number of Line BIP Errors that would occur with a random bit error rate of 1×10^{-6} (from ANSI T1.231-1997).

Other Possible Values of *x* for Line SES

- **Calculated based on Annex C of ANSI T1.231, 1997**
  - BER = 10^{-7}, x = 984 (984.19 bit errors per second)
  - BER = 10^{-8}, x = 98 (98.4 bit errors per second)
  - BER = 10^{-9}, x = 10 (9.84 bit errors per second)
  - BER = 10^{-10}, x = 1 (0.984 bit errors per second)

The information contained in this slide is for reference and illustrative purposes only, and is not intended to be included in the draft.

Errata: Table of values of *x* for Section SES

- **The following presentation reported incorrect values in the note "Other possible values of *x* for Section SES"**
  - http://grouper.ieee.org/groups/802/3/ae/public/sep00/figueira_1_0900.pdf

Correct Values

Other possible values of *x* for Section SES
(Calculated based on Annex C of ANSI T1.231-1997)
BER = 10^{-7}, *x* = 980 (980.008 bit errors per second)
BER = 10^{-8}, *x* = 99 (99.378 bit errors per second)
BER = 10^{-9}, *x* = 10 (9.95 bit errors per second)
BER = 10^{-10}, *x* = 1 (0.995 bit errors per second)

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aLineESs

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - Generalized nonresetable counter. This counter has a maximum increment rate of 1 count per second.
- **BEHAVIOR DEFINED AS:**
  - Increment counter by one in an “Errored Second” (ES), i.e., a second that had one or more Line BIP Errors or an AIS-L defect was present (i.e., the AIS-L bit of aLineStatus was equal to 1).;

aLineSESs

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - Generalized nonresetable counter. This counter has a maximum increment rate of 1 count per second.
- **BEHAVIOR DEFINED AS:**
  - Increment counter by one in a “Severely Errored Second” (SES), i.e., a second that had *x* or more Line BIP Errors or an AIS-L defect was present (i.e., the AIS-L bit of aLineStatus was equal to 1), where *x* is the Line SES threshold defined by aLineSESthreshold.;

    Note: Each B2 octet can detect up to 8 errors. Since there are 192 B2 octets per WIS frame, one can detect up to 1536 Line BIP Errors per received WIS frame.

aLineCVs

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - Generalized nonresetable counter. This counter has a maximum increment rate of 12288000 counts per second.
- **BEHAVIOR DEFINED AS:**
  - For every received WIS frame, increment counter by the number of detected Line BIP Errors.;

aFarEndLineESs

- **ATTRIBUTE**

- **APROPRIATE SYNTAX:**
  - Generalized nonresetable counter. This counter has a maximum increment rate of 1 count per second.

- **BEHAVIOR DEFINED AS:**
  - Increment counter by one in an “Errored Second” (ES), i.e., a second that had one or more Far End Line BIP Errors or an RDI-L defect was present (i.e., the RDI-L bit of aLineStatus was equal to 1).;

    Note: The number of Far End Line BIP Errors is indicated by M1.

aFarEndLineSESs

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - Generalized nonresetable counter. This counter has a maximum increment rate of 1 count second.
- **BEHAVIOR DEFINED AS:**
  - Increment counter by one in a “Severely Errored Second” (SES), i.e., a second that had *x* or more Far End Line BIP Errors or an RDI-L defect was present (i.e., the RDI-L bit of aLineStatus was equal to 1), where *x* is the Line SES threshold defined by aLineSESthreshold.;

aFarEndLineCVs

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - Generalized nonresetable counter. This counter has a maximum increment rate of 2040000 counts per second.
- **BEHAVIOR DEFINED AS:**
  - For every received M1 octet, increment counter by the number of reported Far End Line BIP Errors.;

aJ1ValueTX

- **ATTRIBUTE**

- **APROPRIATE SYNTAX:**
  - OCTET STRING [SIZE (1..16)]

- **BEHAVIOR DEFINED AS:**
  - A 16-octet string defining the transmitter's Path Trace message. A SET operation changes the Path Trace message value. A GET operation returns the current Path Trace message value. The default transmitter's Path Trace message is 15 NULL characters, i.e., 0x00, followed by 0x89.;

    Note: Octet 16 contains the delineation byte.

aJ1ValueRX

- **ATTRIBUTE**

- **APROPRIATE SYNTAX:**
  - OCTET STRING [SIZE (1..16)]

- **BEHAVIOR DEFINED AS:**
  - A 16-octet value indicating the received Path Trace message.;

    Note: Octet 16 contains the received delineation byte.

aPathStatus (Changes Previous Definition)

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - BIT STRING [SIZE (1..4)]
- **BEHAVIOR DEFINED AS:**
  - A string of 3 bits reflecting the Path status. The first bit corresponds to the Loss of Pointer flag, the second bit corresponds to the Alarm Indication Signal flag, the third bit corresponds to the Path Label Mismatch flag, and the fourth bit corresponds to the Path Loss of Cell Delineation flag. These bits map to the LOP-P (33.x.x.x.x), AIS-P (33.x.x.x.x), PLM-P (33.x.x.x.x), and LCD-P (33.x.x.x.x) bits in the WIS Path Status register, respectively.;

Summary

- **Additions to the WIS MIB to support the new overheads proposed in the “WIS Fault Isolation” presentation.**
  - http://grouper.ieee.org/groups/802/3/ae/public/sep00/martin_1_0900.pdf

- **Additional oWIS management objects support:**
  - Line: B2, M1, and K2 (AIS-L and RDI-L)
  - Path: J1 provisionable and LCP-P (for PCS loss of sync)