WIS MIB

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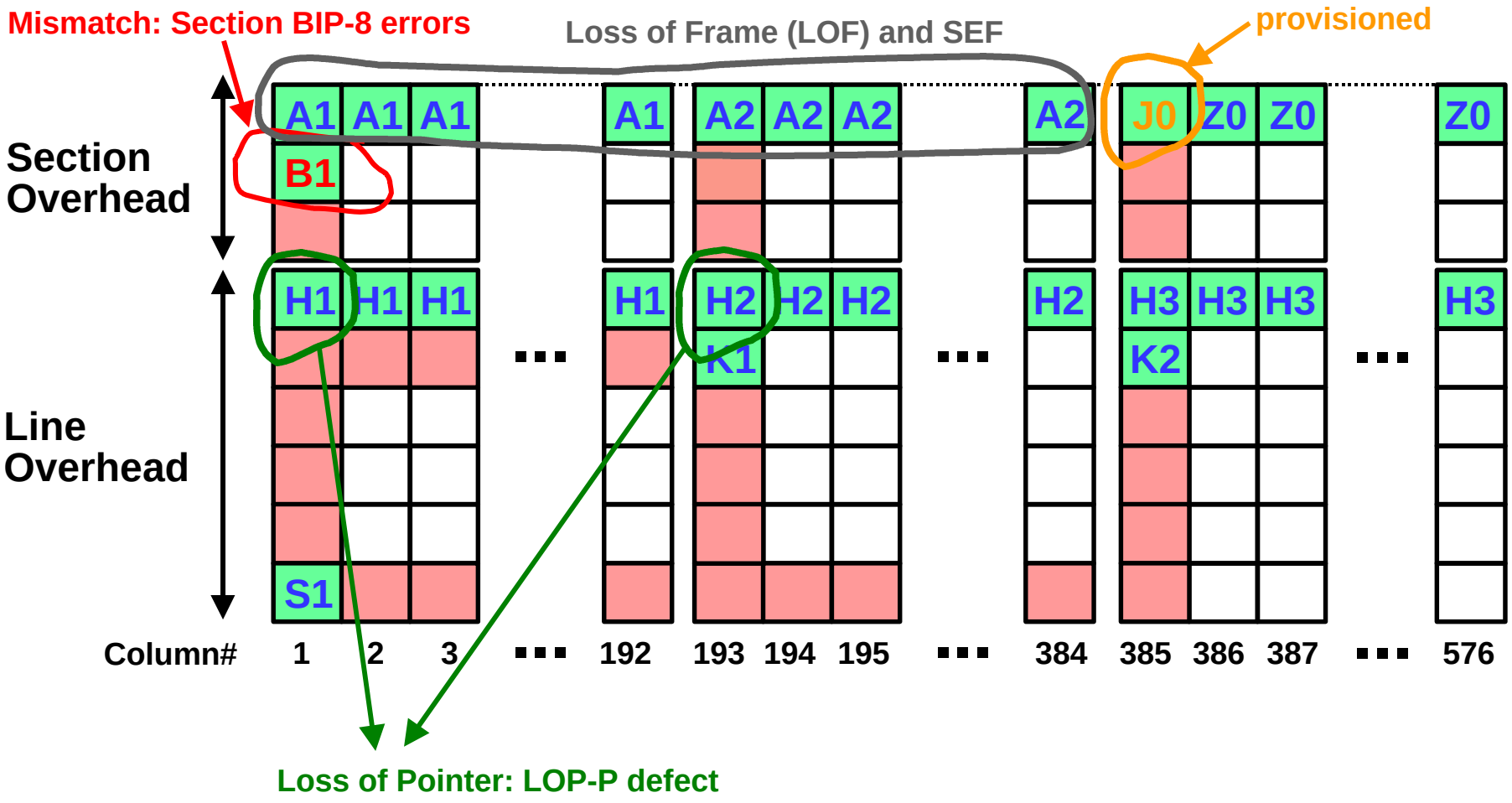
NORTEL NETWORKS

V1.1

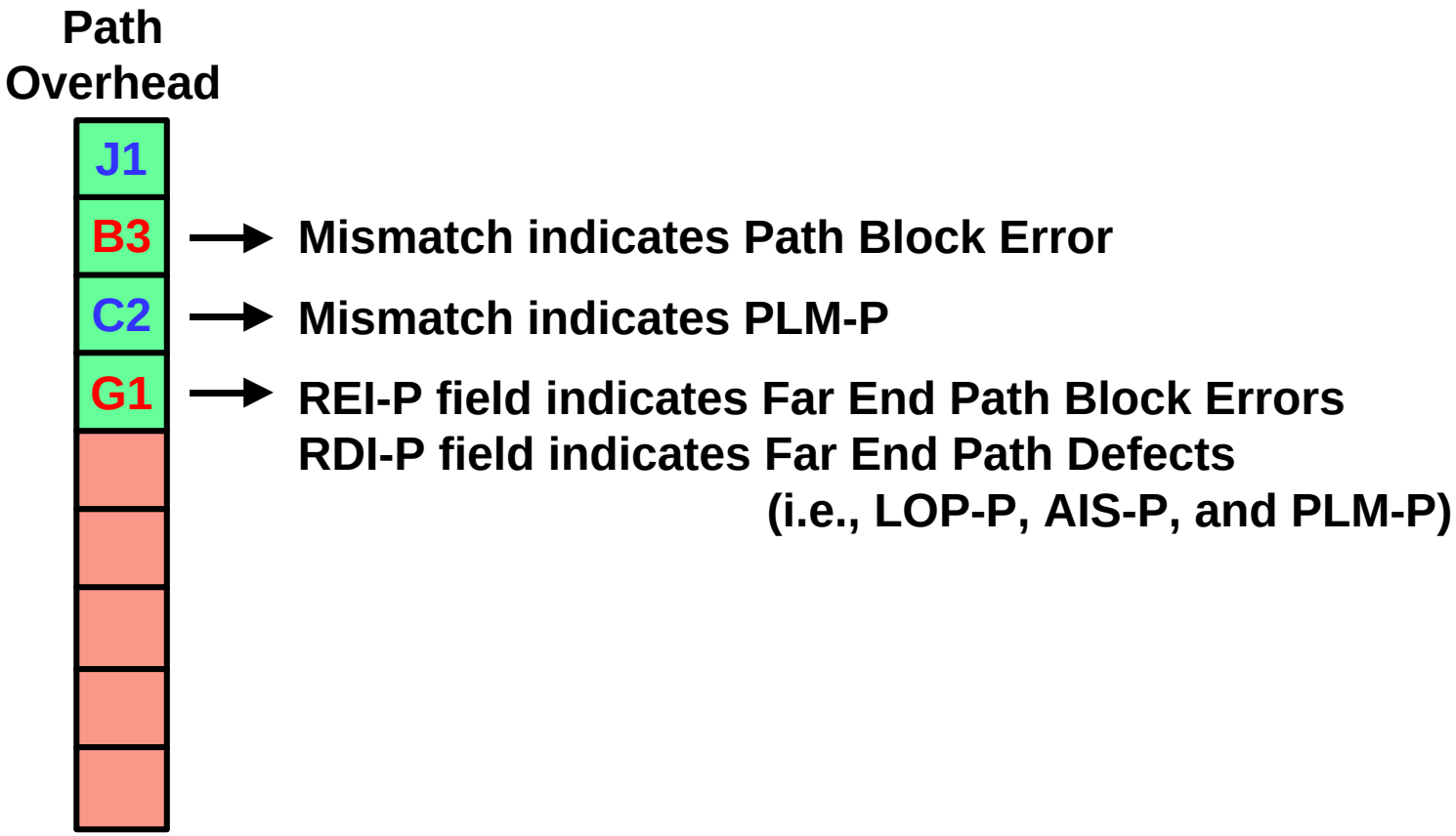
Agenda

- **MIB for the WIS as defined in “WIS Update” presentation approved for draft D1.0**
  - http://grouper.ieee.org/groups/802/3/ae/public/jul00/figueira_1_0700.pdf
- **Review of overhead bytes requiring management**
  - Section, Line, and Path overheads
- **oWIS management object class**
  - Text description
  - Capabilities table
  - Device attributes and actions

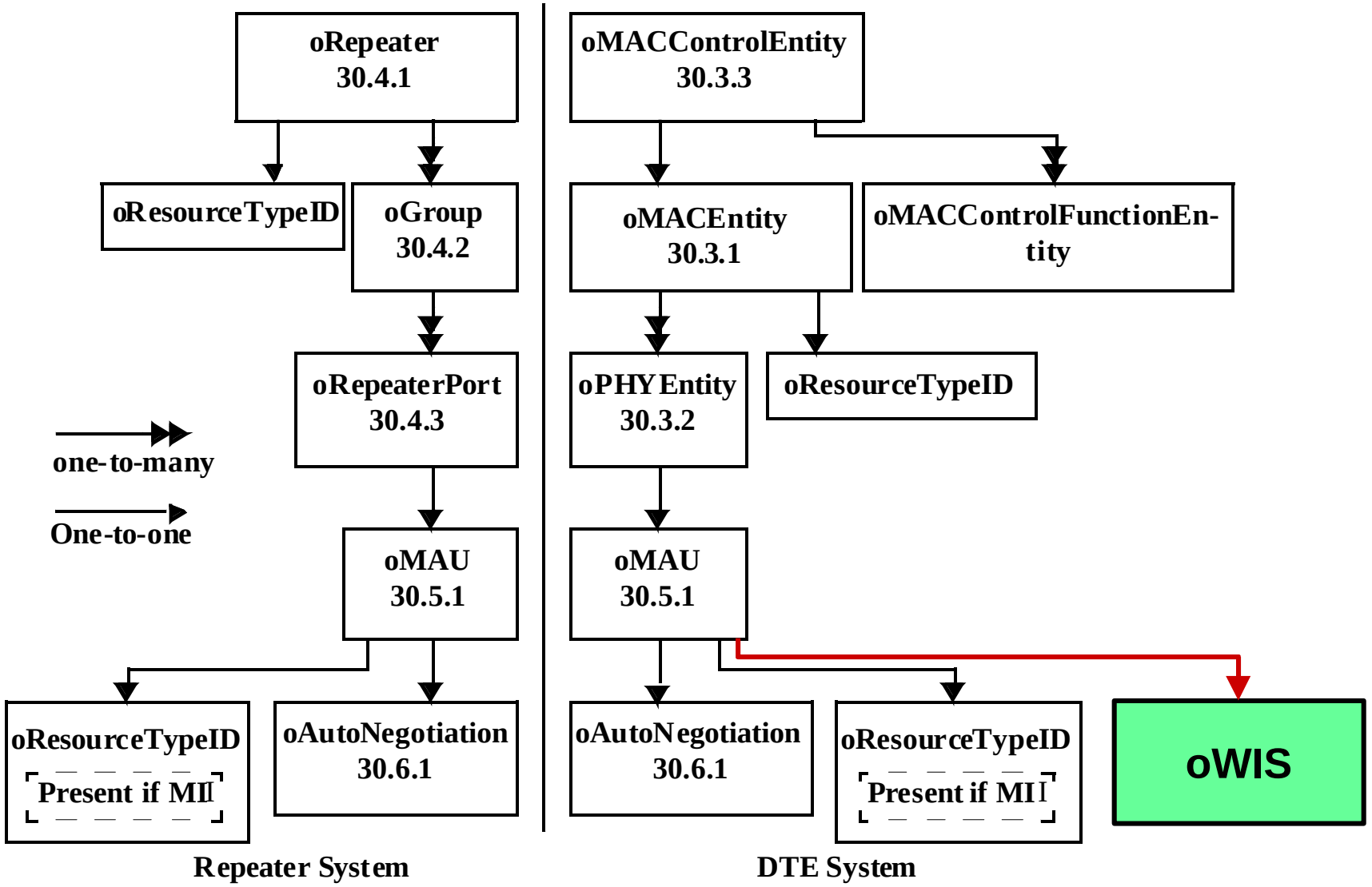
Transport Overhead and Management



Path Overhead and Management



oWIS Managed Object Class



oWIS: Text Description

- **oWIS is contained within oMAU**
  - The managed object of that portion of the containment tree (previous slide)
  - Counter values are not required to be preserved across events involving the loss of power

oWIS Capabilities

Recommended Package (optional)

Basic Package (Mandatory)

	oWIS managed object class				
	aWISID	ATTRIBUTE	GET	X	
	aSectionStatus	ATTRIBUTE	GET	X	
	aSectionSESthreshold	ATTRIBUTE	GET-SET		X
	aSectionESs	ATTRIBUTE	GET		X
Section	aSectionSESs	ATTRIBUTE	GET		X
	aSectionSEFSs	ATTRIBUTE	GET		X
	aSectionCVs	ATTRIBUTE	GET		X
	aJ0ValueTX	ATTRIBUTE	GET-SET		X
	aJ0ValueRX	ATTRIBUTE	GET		X
	aPathCStatus	ATTRIBUTE	GET	X	
	aPathSESthreshold	ATTRIBUTE	GET-SET		X
Path	aPathESs	ATTRIBUTE	GET		X
	aPathSESs	ATTRIBUTE	GET		X
	aPathCVs	ATTRIBUTE	GET		X
	aFarEndPathStatus	ATTRIBUTE	GET	X	
	aFarEndPathESs	ATTRIBUTE	GET		X
Far End Path	aFarEndPathSESs	ATTRIBUTE	GET		X
	aFarEndPathCVs	ATTRIBUTE	GET		X
	acWISReset	ACTION			X

aWISID

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - INTEGER
- **BEHAVIOR DEFINED AS:**
  - The value of aWISID is assigned so as to uniquely identify a WIS among the subordinate managed objects of the containing object.;

aSectionStatus

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - BIT STRING [SIZE (1..2)]
- **BEHAVIOR DEFINED AS:**
  - A string of 2 bits reflecting the Section status. The first bit corresponds to the Loss of Signal flag and maps to the LOS bit (33.x.x.x.x) in the WIS Section Status register. The second bit corresponds to the Loss of Frame flag and maps to the LOF bit (33.x.x.x.x) in the WIS Section Status register.;

aSectionSESthreshold

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - INTEGER
- **BEHAVIOR DEFINED AS:**
  - A GET operation returns the value for *x* for Section SES definition. A SET operation changes the value for *x* for Section SES definition. After WIS reset (or power-off, power-on cycle), *x* for Section SES returns to the default value 8554.;

    Note: 8554 is selected to reflect the number of Section BIP-8 Errors that would occur with a random bit error rate of 1×10^{-6} (from ANSI T1.231-1997)

About Proposed Definition for *x*

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

- **This MIB proposal is based on ANSI T1.231, 1997**

Other possible values of *x* for Section SES
(Calculated based on Annex C of ANSI T1.231-1997)
BER = 10^{-7}, *x* = 493 (493.8141 bit errors per second)
BER = 10^{-8}, *x* = 49 (49.7277 bit errors per second)
BER = 10^{-9}, *x* = 4 (4.9763 bit errors per second)
BER = 10^{-10}, *x* = 1 (0.4977 bit errors per second)

- **Other possible definitions for *x* (all different)**
  - ITU 1995
    - ITU G.826, 1995
  - ANSI 1993
    - ANSI T1.231, 1993 or Telcordia GR-253-CORE, Issue 2, 1995
  - Telcordia 1991
    - Telcordia TR-NWT-000253, 1991 or ANSI T1M1.3/93-005R2, 1993

aSectionESs

- **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 Section BIP-8 Errors or one or more Section Defects (i.e., any of the bits of aSectionStatus is equal to 1).;

    Note: Each bit of B1 indicating error counts as one Section BIP-8 Error, i.e., one can detect from 0 to 8 Section BIP-8 Errors per received B1 octet.

aSectionSESs

- **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 Section BIP-8 Errors or one or more Section Defects (i.e., any of the bits of aSectionStatus is equal to 1), where *x* is the Section SES threshold defined by aSectionSESthreshold.;

aSectionSEFSs

- **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 Framing Second” (SEFS), i.e., a second containing one or more SEF events.;

aSectionCVs

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - Generalized nonresetable counter. This counter has a maximum increment rate of 64000 counts per second.
- **BEHAVIOR DEFINED AS:**
  - For every received B1 octet, increment counter by the number of detected Section BIP-8 Errors.;

aJ0ValueTX

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - INTEGER
- **BEHAVIOR DEFINED AS:**
  - A single octet value defining the transmitter's Section Trace message. A SET operation changes the Section Trace message value. A GET operation returns the current Section Trace message value. The default transmitter's Section Trace message is 0x01.;

About Proposed Definition for aJ0ValueTX

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

- **This MIB proposal uses ANSI*/Telcordia* definition**
  - i.e., J0 is used to repetitively transmit a 1-octet message
  - As defined in the “WIS Update” presentation approved for draft D1.0
- **Alternative definition: ITU***
  - Either 1-octet or 16-octet messages (provisioned)
- **Why use 1-octet message?**
  - It is compatible with ITU definition
  - 1-octet message seems enough (Section Trace message is not end-to-end)
  - Length options (as in ITU definition) forces provisioning requirement

(*) References: ANSI T1.105-1995, GR-1377-CORE (issue 5, Dec 1996), and ITU G.707 (3/96)

aJ0ValueRX

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - INTEGER
- **BEHAVIOR DEFINED AS:**
  - A single octet value indicating the received Section Trace message.;

aPathStatus

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - BIT STRING [SIZE (1..3)]
- **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, and the third bit corresponds to the Path Label Mismatch flag. These bits map to the LOP-P (33.x.x.x.x), AIS-P (33.x.x.x.x), and PLM-P (33.x.x.x.x) bits in the WIS Path Status register, respectively.;

aPathSESthreshold

- **ATTRIBUTE**

- **APROPRIATE SYNTAX:**
  - INTEGER

- **BEHAVIOR DEFINED AS:**
  - A GET operation returns the value for *x* for Path SES definition.
    A SET operation changes the value for *x* for Path SES definition.
    After reset (or power-off, power-on cycle), *x* for Path SES is
    set to the default value 2400.;

    Note: *x* = 2400 is defined in ANSI T1.231-1997. This threshold is set at the point where 30% of all SPEs have a Path Block Error. A single Path Block Error is detected for each B3 octet with one or more bits indicating error, i.e., one can detect up to one Path Block Error per received B3 octet.

aPathESs

- **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 Path Block Errors or one or more Path Defects (i.e., any of the bits of aPathStatus is equal to 1).;

aPathSESs

- **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 Path Block Errors or one or more Path Defects (i.e., any of the bits of aPathStatus is equal to 1), where *x* is the Path SES threshold defined by aPathSESthreshold.;

aPathCVs

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - Generalized nonresetable counter. This counter has a maximum increment rate of 8000 counts per second.
- **BEHAVIOR DEFINED AS:**
  - Increment counter by one for every received B3 indicating a Path Block Error.;

aFarEndPathStatus

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - BIT STRING [SIZE (1..8)]
- **BEHAVIOR DEFINED AS:**
  - A string of 8 bits corresponding to the value of received G1 octet. The value corresponds to the contents of the WIS G1 register (33.x.x.x).;

aFarEndPathESs

- **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 Path Block Errors or one or more Far End Path Defects.;

    Note: Each received G1 octet with REI-P field indicating 1 to 8 errors counts as a single Far End Path Block Error. Far End Path Defects are reported in the RDI-P field of the received G1 octet.

aFarEndPathSESs

- **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 Path Block Errors or one or more Far End Path Defects, where *x* is the Path SES threshold defined by aPathSESthreshold.;

aFarEndPathCVs

- **ATTRIBUTE**
- **APROPRIATE SYNTAX:**
  - Generalized nonresetable counter. This counter has a maximum increment rate of 8000 counts per second.
- **BEHAVIOR DEFINED AS:**
  - Increment counter by one for each received G1 indicating a Far End Path Block Error.;

acResetWIS

- **ACTION**
- **APROPRIATE SYNTAX:**
  - None required
- **BEHAVIOR DEFINED AS:**
  - Resets the WIS in the same manner as would a power-off, power-on cycle.;

Summary

- **Proposed MIB for the WIS as defined in “WIS Update” presentation approved for draft D1.0**

- **Proposed oWIS management object class including:**
  - Text description, capabilities table, device attributes, and device actions