

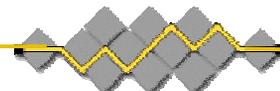
Ethernet WAN Interface Sublayer MIB Status

draft-ietf-hubmib-wis-mib-01.txt

<http://www.ietf.org/internet-drafts/draft-ietf-hubmib-wis-mib-01.txt>

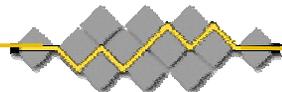
IETF Ethernet Interfaces and Hub
MIB Working Group

Dan Romascanu – Avaya Inc. (chair)



IETF Ethernet Interfaces and Hub MIB WG Charter

- The Ethernet Interfaces and Hub MIB WG is Chartered to define a set of managed objects that instrument devices, MAUs and interfaces that conform to the IEEE 802.3 standard for Ethernet. This set of objects should be largely compliant with, and even draw from IEEE 802.3, although there is no requirement that any specific object be present or absent. When objects are added that require hardware support, IEEE 802.3 shall be informed, so that they consider to add them to their draft / standard. The MIB object definitions produced will be for use by SNMP and will be adequately consistent with other SNMP objects, standards and conventions. The WG will define new MIB objects to cover the following 802.3 technologies:
 - P802.3ae - 10 Gb/s Ethernet
 - P802.3af - DTE Power via MDI



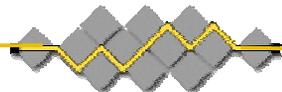
Schedules and Scope

- Schedule for completion
 - February 2002 - I-Ds for WG Last Call
 - April 2002 – Forward I-Ds to the IESG for consideration as Proposed Standards
- Next IETF meeting – 03/02, Minneapolis
- Currently left out of the Charter
 - Ethernet First Mile
 - too early and not yet defined
 - Some management issues may belong to other layers
 - 802.17 (RPR) – non-802.3 item
- General Discussion: hubmib@ietf.org
To Subscribe: hubmib-request@ietf.org
In Body: `subscribe your_email_address`



WIS MIB Issues

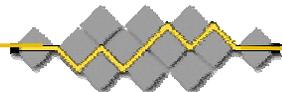
- The WAN Interface Sublayer (WIS) contains functions to perform OC-192c/VC-4-64c framing and scrambling. It resides between the PCS and PMA sublayers within a 10GBASE-W 10 Gb/s WAN-compatible PHY and may be used in conjunction with any of the sublayers that are defined in [P802.3ae] for 10GBASE-W PHYs.
- Need to conciliate the Ethernet (LAN and enterprise oriented) and SONET (WAN and SP oriented) models for managing the infrastructure. Common design team of Ethernet and SONET MIB WGs was formed
 - The Ethernet WAN Interface Sublayer was designed to be SONET-compatible. information similar to that provided by most of the members of the WIS managed object class is available from objects defined in the SONET MIB [RFC2558].The WIS MIB is a sparse augmentation of the SONET MIB
 - An interface which includes the Ethernet WIS is, by definition, an Ethernet-like interface. A WIS managed interface will support relevant parts of the Ethernet-like Interfaces and MAU MIBs



Team Charter

The WIS MIB Design Team was chartered after the London IETF meeting to propose a solution for managing the IEEE P802.3ae 10 Gb/s Ethernet WAN Interface Sublayer (WIS), and specifically to answer the following questions:

- What is the layering model for an Ethernet interface that employs the WIS, and how does this model map to the IF-MIB?
- How do the proposed SNMP objects map to the GDMO objects in the oWIS managed object class defined in P802.3ae Clause 30?
- How does the proposed solution accommodate users/applications that expect traditional Ethernet/RMON performance monitoring methods based on rollover counters and users/applications that expect SONET performance monitoring methods based on 15-minute interval counters?



Design Team

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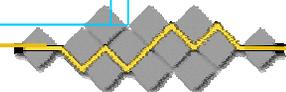
Telcordia Technologies



The Design Team's Proposal

The design team's proposed solution is a WIS-specific MIB module ETHER-WIS that supplements existing objects in the SONET-MIB, the MAU-MIB, and the EthernetLine-MIB. ETHER-WIS is structured as a sparse augmentation of the SONET-MIB. It contains NO OPTIONAL OBJECTS, and its compliance statement requires that all applicable near-end and far-end groups from the SONET-MIB be implemented as well. A compliant implementation must support the scalar object sonetSESthresholdSet and the following tables:

SONET-MIBTable	ETHER-WISTable
SonetFarEndPathCurrentTable	etherWisFarEndPathCurrentTable
sonetFarEndPathIntervalTable	
sonetPathCurrentTable	etherWisPathCurrentTable
sonetPathIntervalTable	
sonetFarEndLineCurrentTable	
sonetFarEndLineIntervalTable	
sonetLineCurrentTable	
sonetLineIntervalTable	
sonetSectionCurrentTable	etherWisSectionCurrentTable
sonetSectionIntervalTable	
sonetMediumTable	etherWisDeviceTable



The ETHER-WIS Layering Mode

Three ifTable entries, layered as shown below, are used to model a 10 Gb/s Ethernet WAN interface. The top layer is associated with EthernetLike-MIB and MAU-MIB table entries. The other two layers are associated with SONET-MIB and ETHER-WIS table entries.

LLC Layer

MAC Layer

Reconciliation Sublayer

Physical Coding Sublayer

Path Layer

Line Layer

Section Layer

Physical Medium Layer

ifEntry

ifType: ethernetCsmacd(6)

ifHighSpeed: 9294 Mb/s

ifEntry

ifType: sonetPath(50)

ifHighSpeed: 9585 Mbps

ifEntry

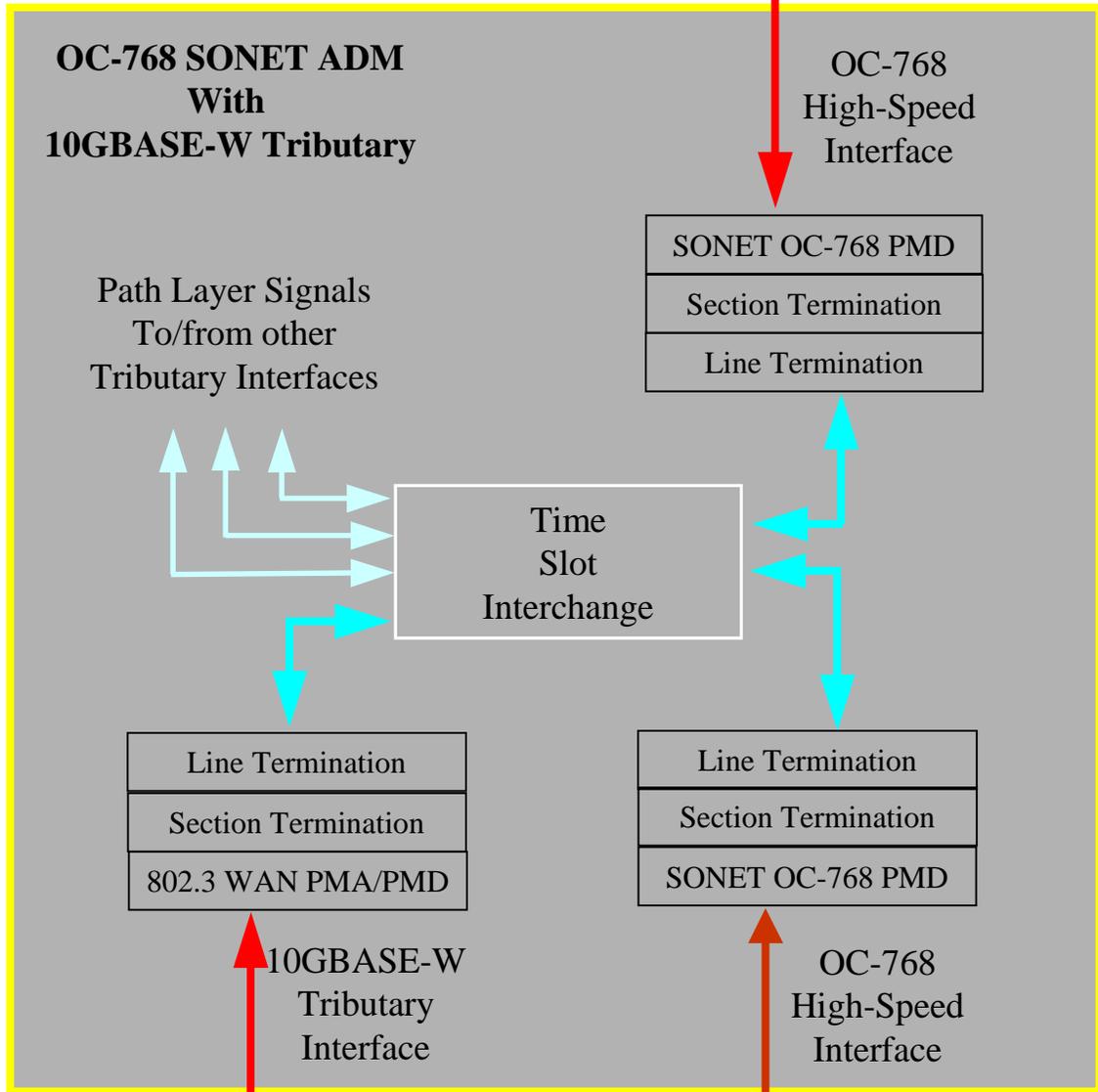
ifType: sonet(39)

ifHighSpeed: 9953 Mbps



**OC-768 SONET ADM
With
10GBASE-W Tributary**

Higher Layers	
MAC Layer	
Reconciliation Sublayer	
Physical Coding Sublayer	
W	Path Terminataion
I	Line Termination
S	Section Termination
802.3 WAN PMA/PMD	

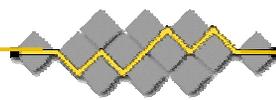


OC-768 West

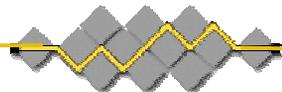
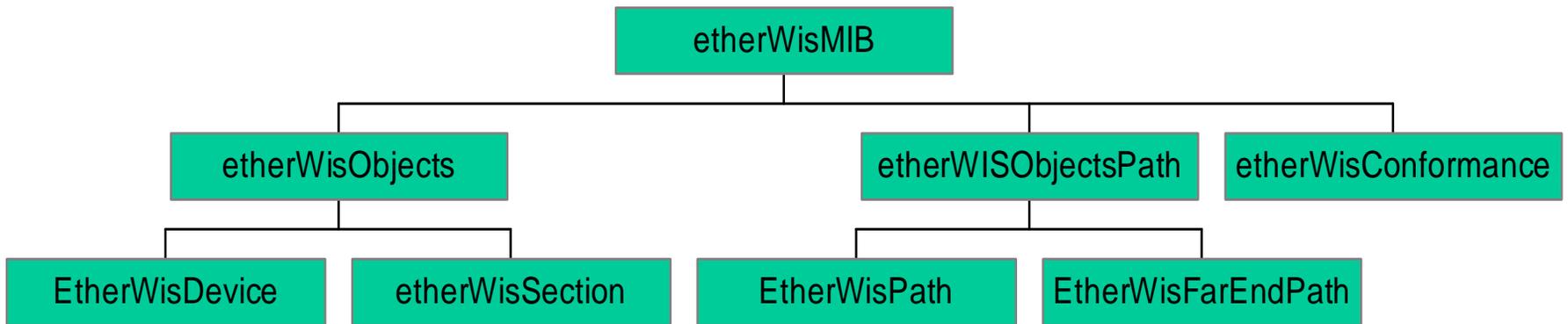
**10GBASE-W
Tributary
Interface**

**OC-768
High-Speed
Interface**

OC-768 West



WIS MIB

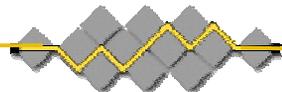


WIS Object Mapping and Performance Monitoring Methodology

➤ The ETHER-WIS managed objects, with those incorporated by reference from the IF-MIB, the SONET-MIB, and the MAU-MIB, provide exact representations of the mandatory oWIS managed objects but provide only approximate representations of the optional ones. The main discrepancy is that the SONET-MIB performance counters are 15-minute interval counters, whereas the oWIS performance counters are rollover counters.

➤ An alternative approach would have been to define new objects to exactly match the oWIS definitions. That approach was rejected because the SONET-MIB objects are already used in deployed systems to manage the SONET sublayers of ATM over SONET and PPP over SONET interfaces, and it was deemed undesirable to use a different scheme to manage the SONET sublayers of 10 Gb/s Ethernet interfaces. It was also felt that the performance counters provided by the the MAU-MIB, the IF-MIB, and the Ethernet-like-MIB would suffice for users/applications that rely upon traditional Ethernet/RMON performance monitoring techniques.

➤ Note that the proposed solution does not require hardware support beyond that mandated by P802.3ae sub-clause 50.3.10.



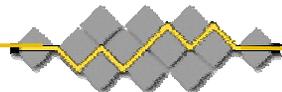
Issue #1 – ifStack Mapping

- **Issue Summary:** because the WIS payload mapping -- i.e., 64B/66B encoded Ethernet data mapped directly into the STS-192c payload capacity, with C2 set to '00011010'b -- is just one of several Ethernet over SONET payload mappings, it has been suggested that an additional ifStackTable layer in between ethernetCsmacd(6) and sonetPath(50) should be present to indicate what type of Ethernet over SONET payload mapping is being used. An alternative suggestion has been to use ifMauType (and ifMauDefaultType) for this purpose.
- **Proposed Resolution:** the interface layering model used to manage the WIS should be left as it is in the draft (i.e., ethernetCsmacd(6) over sonetPath(50) over Sonet(39)) because in end systems the WIS payload mapping can be identified without the extra interface layer (it is used whenever ifMauType is one of dot3MauType10GigBaseW, dot3MauType10GigBaseEW, dot3MauType10GigBaseLW, or dot3MauType10GigBaseSW) and because there is no need to model payload mapping information in intermediate systems (e.g. SONET ADMs) that do not terminate the path layer. Furthermore, there are no statistics that an ifTable entry could provide for the WIS adaptation layer that are not provided in the MAU-MIB already.
- **Note:** It MAY be appropriate to use a different layering model for other payload mappings (e.g., LAPS/EoS, GFP, or Ethernet MAC frames over PPP over SONET), but it is not within the scope of the WIS MIB effort to settle such questions.



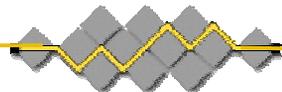
Issue #2 – Compliance Statement for 10 GBASE-W Interfaces

- **Issue Summary:** should the ETHER-WIS and SONET-MIB objects mentioned in the ETHER-WIS compliance statement be mandatory for all SNMP-managed 10GBASE-W interfaces? It has been suggested that in some circumstances the statistics and status information provided by those objects might not be required, in which case they could be made optional. In that case 10GBASE-W interfaces would require a multi-layer ifStackTable only if ETHER-WIS and SONET-MIB were supported; if not, then the usual single-layer model as would apply.
- **Proposed Resolution:** the ETHER-WIS and SONET-MIB objects mentioned in the ETHER-WIS compliance statement should be mandatory for all SNMP-managed 10GBASE-W interfaces.



Issue #3 – Relationship with the SONET MIB

- **Issue Summary:** during the discussions in the joint meeting it was asked why the ETHER-WIS compliance statements directly specify the objects incorporated by reference from the SONET-MIB but do not do so for the objects incorporated by reference from the IF-MIB, Ethernet-like MIB, and MAU-MIB -- instead, the text of the document simply states points to the compliance statements for the latter three MIB modules. The answer was that certain of the object groups that are optional in the SONET-MIB compliance statement are actually mandatory for the WIS application, and so a customized compliance statement was deemed desirable. It was then requested that this point be clarified in the text of the document.
- **Proposed Resolution:** modify the first paragraph of Section 3.1 text clarifying that the ‘compliance statement REQUIRES that an agent implementing the objects defined in this memo also implement the relevant SONET MIB objects. That includes all objects required by sonetCompliance2 as well as some that it leaves optional.’



Issue #4 – WIS MIB – MAU

MIB Relationship

- **Issue Summary:** the next MAU-MIB draft should specify what happens to the ifStackTable if ifMauDefaultType is changed from dot3MauType10GigBaseR (or any other 10GBASE-R variant) to dot3MauType10GigBaseW (or any other 10GBASE-W variant) or vice-versa.
- **Proposed Resolution:** modify the second paragraph of Section 3.5.1 of draft-ietf-hubmib-mau-v3-00.txt and add a reference to the WIS MIB document that includes the following: ‘when the interface-MAU related objects are used to manage a 10GBASE-W PHY -- i.e., when ifMauType is equal to dot3MauType10GigBaseW or any other 10GBASE-W variant -- then the agent MUST also support the Ethernet WAN Interface Sublayer (WIS) MIB [27] and must follow the interface layering model specified therein. In that case the value of the object ifMauIfIndex is the same as the value of 'ifIndex' for the layer at the top of the stack, i.e., for the ifTable entry that has 'ifType' equal to ethernetCsmacd(6). If the interface-MAU related objects are used to manage a PHY that allows the MAU type to be changed dynamically, then the agent SHALL create the ifTable, ifStackTable, and ifInvStackTable entries that pertain to the WIS when ifMauDefaultType is changed to a 10GBASE-W variant (i.e., one of dot3MauType10GigBaseW, dot3MauType10GigBaseEW, dot3MauType10GigBaseLW, or dot3MauType10GigBaseSW) from any other type, and shall destroy the WIS-related entries when ifMauDefaultType is changed to a non-10GBASE-W type. The agent SHALL also change the value of 'ifConnectorPresent' in the ifTable entry indexed by ifMauIfIndex as specified in [26] and [27] when ifMauDefaultType is manipulated in this way but SHALL NOT otherwise alter that entry.

