

MIB Conformance Statement

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ADVA AG Optical Networking
Campus Martinsried
Fraunhoferstrasse 9a
82152 Martinsried/Munich
Germany
Phone: +49 89 89 06 65 0

ADVA Optical Networking Sp. z o.o.
Slaska 35/37
81-310 Gdynia
Poland

E-mail: info@advaoptical.com
www.advaoptical.com

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- [3] RFC 1513, Token Ring Extensions to the Remote Network Monitoring, <http://www.faqs.org/rfcs/rfc1513.html><http://www.faqs.org/rfcs/rfc1513.html>
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- [5] RFC 2579, Textual Conventions for SMIv2, <http://www.faqs.org/rfcs/rfc2579.html>
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- [14] RFC 4502, Remote Network Monitoring Management Information Base Version 2, <http://www.faqs.org/rfcs/rfc4502.html>

- [15] IEEE 802.11ab, Management Information Base module for LLDP configuration, statistics, local system data and remote systems data components
- [16] IEEE 802.11ag, Virtual Bridged Local Area Networks – Connectivity Fault Management

1 Version History

Rev.	Date	Modification reason	Author
1.00	2014-10-03	Document reached General Availability for FSP3000 R7 Release 13.2	Bartosz Dzierzynski

2 Introduction

This document specifies the MIB (*Management Information Base*) structure and dependencies between MIBs required by FSP3000 R7 product line by ADVA Optical Networking.

The FSP3000 R7 supports a subset of standard MIB files as well as a set of enterprise MIB files. It also shares some functionality from the MIB created for multiple product lines. The FSP3000 R7 software release may require updates in existing MIB files as well as it may introduce new enterprise MIB. Following MIB subsets may be defined,

- **Standard** – a set of standard MIB files – revised and draft ones
- **Shared Enterprise** – a common MIB file for all ADVA Optical Networking product lines
- **Enterprise** – set of FSP3000 R7 specific MIBs

This document lists MIBs which are in conformance or partial conformance with standards. Also the non-standard solutions are presented and described here.

3 Conformance to Standard MIB Files

This chapter presents FSP3000 R7 SNMP conformance to standardized MIB files.

3.1 RFC 1157 - A Simple Network Management Protocol - Generic V1 Traps

File Name: RFC1157-SNMP

This RFC is a re-release of RFC 1098, with a changed "Status of this Memo" section plus a few minor typographical corrections. This memo defines a simple protocol by which management information for a network element may be inspected or altered by logically remote users. In particular, together with its companion memos which describe the structure of management information along with the management information base, these documents provide a simple, workable architecture and system for managing TCP/IP-based internets and in particular the Internet.

Generic Trap	Status	Comment
coldStart	supported	
warmStart	supported	
linkDown	not supported	
linkUp	not supported	
authenticationFailure	supported	Generated when wrong community name is used in SNMPv1/SNMPv2c request or user credentials in SNMPv3 request.
egpNeighborLoss	not supported	
enterpriseSpecific	supported	Additional traps are specified in the Network Element Enterprise Specific MIB.

Table 1: Conformance table for RFC 1157

3.2 RFC 1213 - Management Information Base for Network Management of TCP/IP-based internets

File Name: RFC1213-MIB

This RFC specifies an IAB standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "IAB Official Protocol Standards" for the standardization state and status of this protocol.

Object Identifier	Status	Comment
system.sysDescr	supported	A string of characters describing the SNMP agent, for example "Fiber Service Platform 3000".
system.sysObjectID	supported	Unique OID value pointing to the beginning of FSP3000 R7 specific MIB branch.
system.sysUpTime	supported	
system.sysContact	supported	Maximum length limited to 80 characters. Only ASCII characters supported.
system.sysName	supported	Corresponds to the host name of the Network Element.
system.sysLocation	supported	Maximum length limited to 80 characters. Only ASCII characters supported.
interfaces.*	supported	Covered by RFC 2863.
at.*	not supported	
ip.*	not supported	
icmp.*	not supported	
tcp.*	not supported	
udp.*	not supported	
egp.*	not supported	
snmp.snmpEnableAuthenTraps	partially supported	Object supported in read-only mode.
snmp.*	partially supported	Some counters returns zero values.

Table 2: Conformance table for RFC 1213

3.3 RFC 1513 - Token Ring Extensions to the Remote Network Monitoring

File Name: TOKEN-RING-RMON-MIB

The Remote Network Monitoring MIB , RFC 1271, defines a framework for remote monitoring functions implemented on a network probe. That MIB defines objects broken down into nine functional groups. Some of those functional groups, the statistics and the history groups, have a view of the data-link layer that is specific to the media type and require specific objects to be defined for each media type. RFC 1271 defined those specific objects necessary for Ethernet. This companion memo defines those specific objects necessary for Token Ring LANs.

The RFC 1513 is supported only indirectly by FSP3000 R7 SNMP agent. It is required by IEEE 802.11ag standard.

3.4 RFC 2572 - Message Processing and Dispatching for the Simple Network Management Protocol

File Name: **SNMP-MPD-MIB**

This document describes the Message Processing and Dispatching for SNMP messages within the SNMP architecture [RFC2571]. It defines the procedures for dispatching potentially multiple versions of SNMP messages to the proper SNMP Message Processing Models, and for dispatching PDUs to SNMP applications. This document also describes one Message Processing Model - the SNMPv3 Message Processing Model.

Object Identifier	Status	Comment
snmpUnknownSecurityModels	supported	
snmpInvalidMsgs	supported	
snmpUnknownPDUHandlers	supported	

Table 3: Conformance table for RFC 2572

3.5 RFC 2863 - The Interfaces Group Management Information Base

File Name: **IF-MIB**

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol.

Object Identifier	Status	Comment
ifTable	partially supported	Only some columns from this table are supported. Entities which are addressed by more than 31-bit are not supported at all in this table.
.ifIndex	supported	
.ifDescr	supported	
.ifType	partially supported	<p>This object has a syntax of IANAifType Textual-Convention defined in IANAifType-MIB. Following values from this Textual-Convention are supported</p> <ul style="list-style-type: none"> • other(1) • ethernetCsmacd(6) • sonet(39) • fibreChannel(56) • escon(73) • dcn(141) • sonetOverheadChannel(185) • opticalChannel(195) • opticalChannelGroup(219) • gfp(221)
.ifPhysAddress	partially supported	
.ifAdminStatus	partially supported	Read-only mode. For non-traffic interfaces, this object has a fixed value <i>Up</i> .
.ifOperStatus	partially supported	<p>Supported states are</p> <ul style="list-style-type: none"> • up(1) • down(2) • notPresent(3) <p>Where notPresent(3) indicates that SFP module is not installed.</p>
ifXTable	partially supported	Only ifAlias object is supported in that table.
.ifAlias	supported	
ifStackTable	not supported	
ifRcvAddressTable	not supported	

Table 4: Conformance table for RFC 2863

3.6 RFC 3411 - An Architecture for Describing Simple Network Management Protocol (SNMP) Management Frameworks

File Name: **SNMP-FRAMEWORK-MIB**

This document describes an architecture for describing Simple Network Management Protocol (SNMP) Management Frameworks. The architecture is designed to be modular to allow the evolution of the SNMP protocol standards over time. The major portions of the architecture are an SNMP engine containing a Message Processing Subsystem, a Security Subsystem and an Access Control Subsystem, and possibly multiple SNMP applications which provide specific functional processing of management data. This document obsoletes RFC 2571.

Object Identifier	Status	Comment
snmpEngineID	supported	
snmpEngineBoots	supported	
snmpEngineTime	supported	
snmpEngineMaxMessageSize	supported	

Table 5: Conformance table for RFC 3411

3.7 RFC 3413 - Simple Network Management Protocol (SNMP) Applications

File Name: **SNMP-TARGET-MIB**

This document describes five types of Simple Network Management Protocol (SNMP) applications which make use of an SNMP engine as described in STD 62, RFC 3411. The types of application described are Command Generators, Command Responders, Notification Originators, Notification Receivers, and Proxy Forwarders. This document also defines Management Information Base (MIB) modules for specifying targets of management operations, for notification filtering, and for proxy forwarding. This document obsoletes RFC 2573.

Object Identifier	Status	Comment
snmpTargetSpinLock	supported	
snmpUnavailableContexts	supported	
snmpUnknownContexts	supported	

Table 6: Conformance table for RFC 3413

3.8 RFC 3414 - User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)

File Name: **SNMP-USER-BASED-SM-MIB**

This document describes the User-based Security Model (USM) for Simple Network Management Protocol (SNMP) version 3 for use in the SNMP architecture. It defines the Elements of Procedure for providing SNMP message level security. This document also includes a Management Information Base (MIB) for remotely monitoring/managing the configuration parameters for this Security Model. This document obsoletes RFC 2574.

Object Identifier	Status	Comment
usmStatsUnsupportedSecLevels	supported	
usmStatsNotInTimeWindows	supported	
usmStatsUnknownUserNames	supported	
usmStatsUnknownEngineIDs	supported	
usmStatsWrongDigests	supported	
usmStatsDecryptionErrors	supported	
usmUserSpinLock	supported	
usmUserSecurityName	supported	
usmUserCloneFrom	supported	
usmUserAuthProtocol	supported	
usmUserAuthKeyChange	supported	
usmUserOwnAuthKeyChange	supported	
usmUserPrivProtocol	supported	
usmUserPrivKeyChange	supported	
usmUserOwnPrivKeyChange	supported	
usmUserPublic	supported	
usmUserStorageType	supported	
usmUserStatus	supported	

Table 7: Conformance table for RFC 3414

3.9 RFC 3415 - View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)

File Name: **SNMP-VIEW-BASED-ACM-MIB**

This document describes the View-based Access Control Model (VACM) for use in the Simple Network Management Protocol (SNMP) architecture. It defines the Elements of Procedure for controlling access to management information. This document also includes a Management Information Base (MIB) for remotely managing the configu-

ration parameters for the View-based Access Control Model. This document obsoletes RFC 2575.

Object Identifier	Status	Comment
vacmContextName	supported	
vacmGroupName	supported	
vacmSecurityToGroupStorageType	supported	
vacmSecurityToGroupStatus	supported	
vacmAccessContextMatch	supported	
vacmAccessReadViewName	supported	
vacmAccessWriteViewName	supported	
vacmAccessNotifyViewName	supported	
vacmAccessStorageType	supported	
vacmAccessStatus	supported	
vacmViewSpinLock	supported	
vacmViewTreeFamilyMask	supported	
vacmViewTreeFamilyType	supported	
vacmViewTreeFamilyStorageType	supported	
vacmViewTreeFamilyStatus	supported	

Table 8: Conformance table for RFC 3415

3.10 RFC 3418 - MIB for the SNMPv2

File Name: **SNMPv2-MIB**

This document defines managed objects which describe the behavior of a Simple Network Management Protocol (SNMP) entity. This document obsoletes RFC 1907, Management Information Base for Version 2 of the Simple Network Management Protocol (SNMPv2).

The RFC 3418 is supported only indirectly by FSP3000 R7 SNMP agent. Supported are V2 Textual-Conventions referenced by other MIB files. No V2 traps defined in this RFC are supported.

3.11 RFC 4188 - Definitions of Managed Objects for Bridges

File Name: **BRIDGE-MIB**

This document defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines objects for managing MAC bridges based on the IEEE 802.1D-1998 standard between Local Area Network (LAN) segments. Provisions are made for the support of

transparent bridging. Provisions are also made so that these objects apply to bridges connected by subnetworks other than LAN segments.

The RFC 4188 is supported only indirectly by FSP3000 R7 SNMP agent. It is required by IEEE 802.11ag standard.

3.12 RFC 4363 - Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual LAN Extensions

File Name: **P-BRIDGE-MIB** and **Q-BRIDGE-MIB**

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines two MIB modules for managing the capabilities of MAC bridges defined by the IEEE 802.1D-1998 (TM) MAC Bridges and the IEEE 802.1Q-2003 (TM) Virtual LAN (VLAN) standards for bridging between Local Area Network (LAN) segments. One MIB module defines objects for managing the 'Traffic Classes' and 'Enhanced Multicast Filtering' components of IEEE 802.1D-1998 and P802.1t-2001 (TM). The other MIB module defines objects for managing VLANs, as specified in IEEE 802.1Q-2003, P802.1u (TM), and P802.1v (TM).

The RFC 4363 is supported only indirectly by FSP3000 R7 SNMP agent. It is required by IEEE 802.11ag standard.

3.13 RFC 4502 - Remote Network Monitoring Management Information Base Version 2

File Name: **RMON2-MIB**

This document defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines objects for managing remote network monitoring devices. It obsoletes RFC 2021, updates RFC 3273, and contains a new version of the RMON2-MIB module.

The RFC 4502 is supported only indirectly by FSP3000 R7 SNMP agent. It is required by IEEE 802.11ag standard.

3.14 IEEE 802.11ab - Management Information Base module for LLDP configuration, statistics, local system data and remote systems data components

File Name: **LLDP-MIB**

This document is supported only indirectly by FSP3000 R7 SNMP agent. It is required by IEEE 802.11ag standard.

3.15 IEEE 802.11ag - Virtual Bridged Local Area Networks - Connectivity Fault Management

File Name: IEEE8021-CFM-MIB

Object Identifier	Status	Comment
dot1agCfmStackTable	not supported	
dot1agCfmPbbSfmStackTable	not supported	
dot1agCfmDefaultMdDefLevel	not supported	
dot1agCfmDefaultMdDefMhfCreation	not supported	
dot1agCfmDefaultMdDefIdPermission	not supported	
dot1agCfmDefaultMdTable	not supported	
dot1agPbbCfmDefaultMdTable	not supported	
dot1agCfmVlanTable	not supported	
dot1agPbbCfmBsiTable	not supported	
dot1agCfmConfigErrorListTable	not supported	
dot1agPbbCfmConfigErrorListTable	not supported	
dot1agCfmMdTableNextIndex	supported	
dot1agCfmMdTable	partially supported	
dot1agCfmMdIndex	supported	
dot1agCfmMdFormat	supported	
dot1agCfmMdName	supported	
dot1agCfmMdMdLevel	supported	
dot1agCfmMdMaNextIndex	supported	
dot1agCfmMdRowStatus	supported	
dot1agCfmMaNetTable	supported	
dot1agCfmMaCompTable	partially supported	
dot1agCfmMaComponentId	supported	
dot1agCfmMaCompPrimaryVlanId	supported	
dot1agCfmMaCompRowStatus	supported	
dot1agCfmMaMepListTable	supported	
dot1agPbbCfmMaCompTable	not supported	
dot1agCfmMepTable	partially supported	
dot1agCfmMepIdentifier	supported	
dot1agCfmMepIfIndex	supported	
dot1agCfmMepDirection	supported	
dot1agCfmMepPrimaryVid	supported	
dot1agCfmMepActive	supported	

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Object Identifier	Status	Comment
dot1agCfmMepCciEnabled	supported	
dot1agCfmMepCcmLtmPriority	supported	
dot1agCfmMepMacAddress	supported	
dot1agCfmMepDefects	supported	
dot1agCfmMepErrorCcmLastFailure	supported	
dot1agCfmMepXconCcmLastFailure	supported	
dot1agCfmMepRowStatus	supported	
dot1agCfmLtrTable	not supported	
dot1agCfmMepDbTable	partially supported	
dot1agCfmMepDbRMepIdentifier	supported	
dot1agCfmMepDbRMepState	supported	
dot1agCfmMepDbRMepFailedOkTime	supported	
dot1agCfmMepDbMacAddress	supported	
dot1agCfmMepDbRdi	supported	
dot1agCfmMepDbPortStatusTlv	supported	
dot1agCfmMepDbInterfaceStatusTlv	supported	

Table 9: Conformance table for IEEE 802.11ag

The FSP3000 R7 modeling of a Maintenance End Point entity introduces six states

- unassigned (UAS)
- in service (IS)
- automatic in service (AINS)
- management (MGT)
- maintenance (MT)
- disabled (DSBLD)

which must be encapsulated by TruthValue TEXTUAL-CONVENTION defined in SNMPv2-TC MIB (RFC 2579) and referenced by dot1agCfmMepActive OBJECT-TYPE.

MEPs in UAS state are not reported by dot1agCfmMepTable (only assigned MEPs are present). The SNMP set-request on dot1agCfmMepActive is defined as follows

- disabled refers to dot1agCfmMepActive = TruthValue::false(2)
- in service refers to dot1agCfmMepActive = TruthValue::true(1)

3.16 TEXTUAL-CONVENTIONS MIB for IEEE 802.1

File Name: IEEE8021-TC-MIB

Textual conventions used throughout the various IEEE 802.1 MIB modules.

This document is supported only indirectly by FSP3000 R7 SNMP agent. It is required by IEEE 802.11ag standard.

4 Conformance To ADVA Common MIB File

The ADVA Common MIB file (ADVA-MIB) is defined for following platforms

- fsp3000
- fsp2000
- fsp1500
- fsp1000
- fsp1000adm
- fsp150
- fsp150cm
- fspR7
- fspNm

The fspR7 sub-branch is defined for FSP3000 R7 platform. All Enterprise-Specific MIB files defined for FSP3000 R7 are defined under this sub-branch (OID prefix 1.3.6.1.2544.11).

Some objects defined in ADVA-MIB are not supported by FSP3000 R7 . Please see the table below for details.

Object Identifier	Status	Comment
neMibVariant	supported	
neManufacturer	supported	
neDateAndTime	supported	
neMemorySizeTotal	not supported	
neMemorySizeFree	not supported	
neStorageTable	supported	
neAlarmStatus	not supported	
admin	not supported	
neEventsLogged	supported	
neEventLogTable	supported	
neEventLogVarTable	supported	
neTrapsinkTable	supported	
swVersionTable	partially supported	
swVersionActiveOperatingSw	not supported	
swVersionInactiveOperatingSw	not supported	

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Object Identifier	Status	Comment
swVersionInactiveNextBoot	not supported	
neSoftwareUpgrade	partially supported	
neSwUpgradeNeDirectory	not supported	
provContainerTable	not supported	
neBackupRestore	supported	
neAutoBackup	not supported	
transportStandards	supported	
inventoryMib	supported	
updateBackupRestoreMib	supported	
snmpAgent	supported	

Table 10: Conformance table for ADVA-MIB

5 Enterprise Specific MIB Files

The FSP3000 R7 platform introduces Enterprise Specific MIB files described here in short.

5.1 ADVA-MIB

Shared Enterprise MIB file with Network Element specific attributes. In general it is used for events logging, trapsink/trapsess management, backup and restore operations, inventory data viewing.

5.2 FspR7-MIB

Main FSP3000 R7 MIB file with entity tables, entity creation and configuration objects, performance monitoring data, condition data and feature-specific MIB objects. Currently it covers both, data and control plane functionality.

5.3 FspR7-LAYER2-MIB

Main FSP3000 R7 MIB for Layer 2 entity management. It covers functionality delivered with i.e. 10PCA10G and 2PCA10G cards.

5.4 FspR7-SPEQ-MIB

Feature-oriented MIB module with objects needed for configuring and managing the Span Equalization functionality.

5.5 ADVA-FSPR7-CFM-EXTENSION-MIB

Enterprise specific MIB file defined as a vendor-based extension to IEEE 802.11ag standard (IEEE8021-CFM-MIB).

5.6 ADVA-FSPR7-MODULE-ENCRYPTION-MIB

Feature-oriented MIB module with objects required to manage cryptographic cards such as 5TCE10GAES.

5.7 ADVA-FSPR7-TC-MIB

The MIB file with TEXTUAL-CONVENTIONs defined for ADVA-FSPR7-MIB, ADVA-FSPR7-CAP-MIB and ADVA-FSPR7-DEF-MIB.

5.8 ADVA-FSPR7-MIB

Main FSP3000 R7 MIB file with multi-indexed entity support. From functional perspective this MIB module duplicates content of FspR7-MIB, but extends support to entities for which address uses more than 31 bits.

5.9 ADVA-FSPR7-PM-MIB

The Performance Monitoring extension to ADVA-FSPR7-MIB module.

5.10 ADVA-FSPR7-CAP-MIB

The capability extension to ADVA-FSPR7-MIB module.

5.11 ADVA-FSPR7-DEF-MIB

The defaults extension to ADVA-FSPR7-MIB module.

6 Enterprise Specific MIB Dependencies

6.1 MIB Dependencies and Relationship

On figure 1 MIBs used directly and indirectly by FSP3000 R7 are presented with relationship between them. Following notation is used

- an arrow points the MIB module from which objects are imported
- dashed arrow line points deprecating/obsoliting MIB module
- MIB module filled white indicates deprecation/obsolition

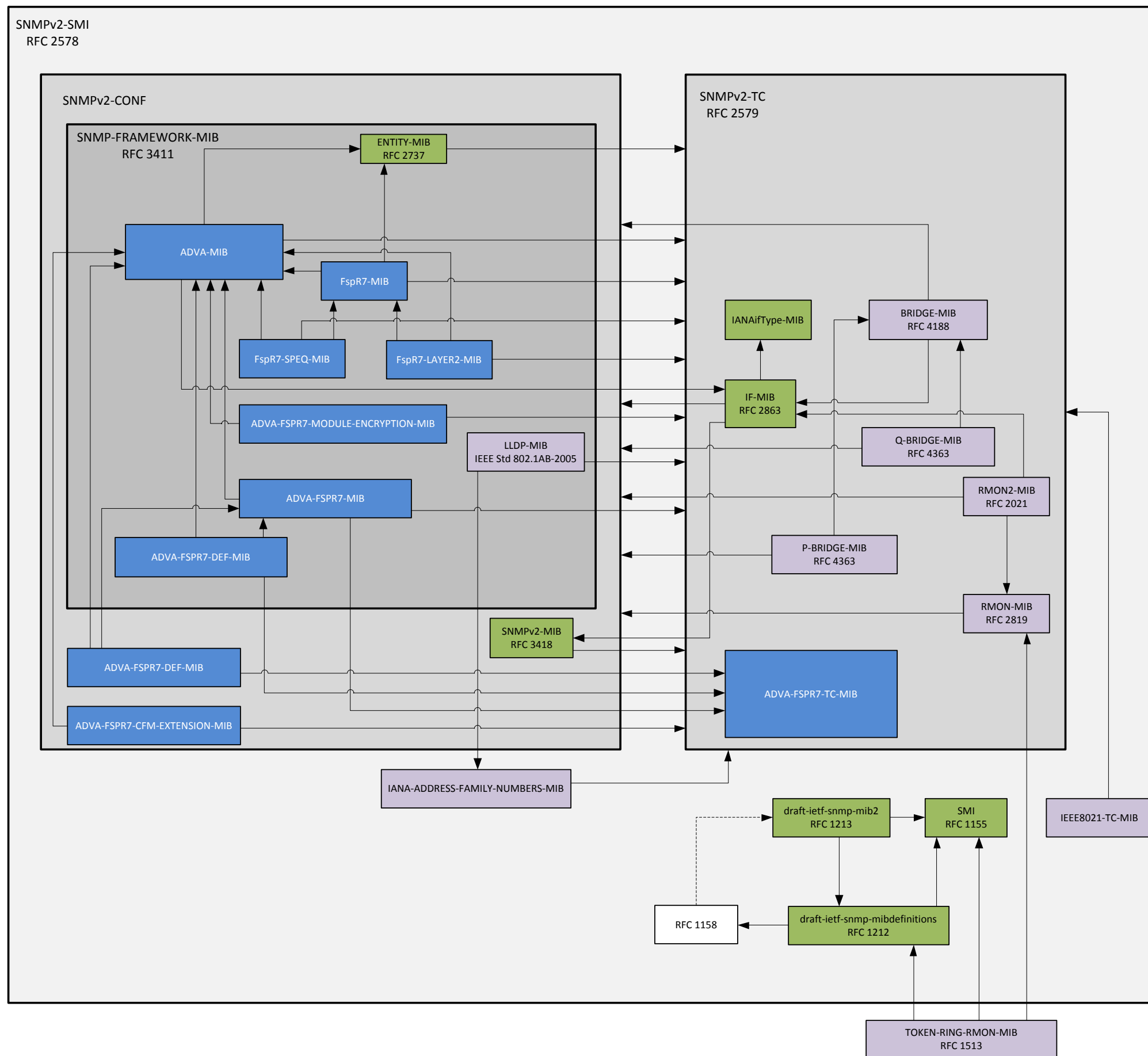


Figure 1: The MIB Module dependency diagram

6.2 MIB Loading Sequence

Delivered MIBs may be loaded into different MIB browsers or SNMP managers. The MIB files have to be loaded in correct order which is needed for successful resolvment of an import section per loaded module. Following loading sequence is required for ADVA Optical Networking MIB files (bolded):

1. SNMPv2-SMI
2. SNNPv2-CONF
3. SNMPv2-TC
4. SNMP-FRAMEWORK-MIB
5. ENTITY-MIB
6. IANAifType-MIB
7. SNMPv2-MIB
8. IF-MIB
9. **ADVA-MIB**
10. **ADVA-FSPR7-TC-MIB**
11. **FspR7-MIB**
12. **FspR7-LAYER2-MIB** - optional
13. **FspR7-SPEQ-MIB** - optional
14. **ADVA-FSPR7-CFM-EXTENSION-MIB** - optional; IEEE8021-related MIB files have to be loaded first (see CFMmib directory)
15. **ADVA-FSPR7-MODULE-ENCRYPTION-MIB** - optional
16. **ADVA-FSPR7-MIB**
17. **ADVA-FSPR7-PM-MIB**
18. **ADVA-FSPR7-CAP-MIB** - optional; support for capability tables from ADVA-FSPR7-MIB
19. **ADVA-FSPR7-DEF-MIB** - optional; support for default tables from ADVA-FSPR7-MIB

7 Appendix A - Glossary

Acronym/Term	Expansion/Definition
FSP3000	Fiber Service Platform 3000
MIB	Management Information Base
SNMP	Simple Network Management Protocol