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Reliable Server Pooling MIB Module Definition  
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Abstract

Reliable Server Pooling (RSerPool) is a framework to provide reliable

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server pooling. The RSerPool frameworks consists of the two protocols ASAP (Aggregate Server Access Protocol) and ENRP (Endpoint Handlespace Redundancy Protocol). This document defines a SMIV2 compliant Management Information Base (MIB) module providing access to managed objects in an RSerPool implementation.

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## 1. Introduction

This memo defines a Management Information Base (MIB) module which describes managed objects for RSerPool implementations.

## 2. The Reliable Server Pooling (RSerPool) Framework

For a detailed overview of the documents that describe the current Reliable Server Pooling (RSerPool) framework, please refer to [\[RFC3237\]](#), [\[RFC5351\]](#), [\[RFC5352\]](#), [\[RFC5353\]](#), [\[RFC5354\]](#), [\[RFC5355\]](#) and [\[RFC5356\]](#). A more informal introduction can be found at [\[RSerPoolPage\]](#) as well as in [\[Dre2006\]](#), [\[LCN2005\]](#) and [\[IJHIT2008\]](#).

## 3. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [\[RFC2119\]](#).

## 4. The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to [section 7 of RFC 3410](#) [\[RFC3410\]](#).

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIV2, which is described in STD 58, [RFC 2578](#) [\[RFC2578\]](#), STD 58, [RFC 2579](#) [\[RFC2579\]](#) and STD 58, [RFC 2580](#) [\[RFC2580\]](#). The textual conventions are compliant to [RFC 4001](#)

[RFC4001].

## 5. Structure of the MIB

The following diagram illustrates the structure of the MIB.

Structure of MIB

```
+--rserpoolMIB(XXX)
|
```

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```
+---rserpoolMIBObjects(1)
|
|   +---rserpoolENRPServers(1)
|   |
|   |   +---rserpoolENRPTTable(1)
|   |   |
|   |   |   +---rserpoolENRPEntry(1)
|   |   |   |
|   |   |   |   Index: rserpoolENRPIndex
|   |   |   |
|   |   |   |   +--- ---- Unsigned   rserpoolENRPIndex(1)
|   |   |   |   |   Range: 1..4294967295
|   |   |   |   +--- -R-- String     rserpoolENRPOperationScope(2)
|   |   |   |   |   Textual Conv.: RSerPoolOperationScopeTC
|   |   |   |   |   Size: 0..65535
|   |   |   |   +--- -R-- Unsigned   rserpoolENRPIdentifier(3)
|   |   |   |   |   Textual Conv.: RSerPoolENRPIdentifierTC
|   |   |   |   |   Range: 1..4294967295
|   |   |   |   +--- -RW- String     rserpoolENRPDescription(4)
|   |   |   |   |   Size: 0..255
|   |   |   |   +--- -R-- TimeTicks  rserpoolENRPUptime(5)
|   |   |   |   +--- -R-- Unsigned   rserpoolENRPPort(6)
|   |   |   |   |   Textual Conv.: InetPortNumber
|   |   |   |   |   Range: 0..65535
|   |   |   |   +--- -R-- Unsigned   rserpoolENRPASAPAnnouncePort(7)
|   |   |   |   |   Textual Conv.: InetPortNumber
|   |   |   |   |   Range: 0..65535
|   |   |   |   +--- -R-- EnumVal    rserpoolENRPASAPAnnounceAddrType(8)
|   |   |   |   |   Textual Conv.: InetAddressType
|   |   |   |   |   Values: ipv4(1), ipv6(2)
```

```

| | | +-- -R-- String      rserpoolENRPASAPAnnounceAddr(9)
| | | |      Textual Conv.: InetAddress
| | | |      Size: 4 | 16
| | | +-- -R-- Unsigned   rserpoolENRPENRPAAnnouncePort(10)
| | | |      Textual Conv.: InetPortNumber
| | | |      Range: 0..65535
| | | +-- -R-- EnumVal    rserpoolENRPENRPAAnnounceAddrType(11)
| | | |      Textual Conv.: InetAddressType
| | | |      Values: ipv4(1), ipv6(2)
| | | +-- -R-- String      rserpoolENRPENRPAAnnounceAddr(12)
| | | |      Textual Conv.: InetAddress
| | | |      Size: 4 | 16
| | | +--rserpoolENRPPoolTable(3)
| | | |
| | | | +--rserpoolENRPPoolEntry(1)
| | | | |      Index: rserpoolENRPIndex, rserpoolENRPPoolIndex
| | | | |
| | | | +-- ---- Unsigned   rserpoolENRPPoolIndex(1)

```

```

| | | |      Range: 1..4294967295
| | | +-- -R-- String      rserpoolENRPPoolHandle(2)
| | | |      Textual Conv.: RSerPoolPoolHandleTC
| | | |      Size: 0..65535
| | | +--rserpoolENRPPoolElementTable(4)
| | | |
| | | | +--rserpoolENRPPoolElementEntry(1)
| | | | |      Index: rserpoolENRPIndex, rserpoolENRPPoolIndex,
| | | | |      rserpoolENRPPoolElementIndex
| | | | |
| | | | +-- ---- Unsigned   rserpoolENRPPoolElementIndex(1)
| | | | |      Range: 1..4294967295
| | | | +-- -R-- Unsigned   rserpoolENRPPoolElementID(2)
| | | | |      Textual Conv.: RserpoolPoolElementIdentifierTC
| | | | |      Range: 1..4294967295
| | | | +-- -R-- Unsigned   rserpoolENRPASAPTransportPort(3)
| | | | |      Textual Conv.: InetPortNumber
| | | | |      Range: 0..65535
| | | | +-- -R-- Unsigned   rserpoolENRPUserTransportProto(4)
| | | | |      Range: 0..255
| | | | +-- -R-- Unsigned   rserpoolENRPUserTransportPort(5)

```

```

| | | | Textual Conv.: InetPortNumber
| | | | Range: 0..65535
| | | +-- -R-- EnumVal rserpoolENRPUserTransportUse(6)
| | | | Textual Conv.: RSerPoolTransportUseTypeTC
| | | | Values: dataOnly(0), dataPlusControl(1)
| | | +-- -R-- Unsigned rserpoolENRPPolicyID(7)
| | | | Textual Conv.: RSerPoolPolicyIdentifierTC
| | | | Range: 1..4294967295
| | | +-- -R-- String rserpoolENRPPolicyDescription(8)
| | | | Size: 0..255
| | | +-- -R-- Unsigned rserpoolENRPPolicyWeight(9)
| | | | Textual Conv.: RSerPoolPolicyWeightTC
| | | | Range: 0..4294967295
| | | +-- -R-- Unsigned rserpoolENRPPolicyLoad(10)
| | | | Textual Conv.: RSerPoolPolicyLoadTC
| | | | Range: 0..4294967295
| | | +-- -R-- Unsigned rserpoolENRPPolicyLoadDeg(11)
| | | | Textual Conv.: RSerPoolPolicyLoadTC
| | | | Range: 0..4294967295
| | | +-- -R-- TimeTicks rserpoolENRPRegistrationLife(12)
| | | +-- -R-- Unsigned rserpoolENRPHomeENRPSTServer(13)
| | | | Textual Conv.: RSerPoolENRPSTServerIdentifierTC
| | | | Range: 1..4294967295
| | | +--rserpoolENRPASAPAddrTable(5)
| | | |

```

```

| | | +--rserpoolENRPASAPAddrTableEntry(1)
| | | | Index: rserpoolENRPIndex, rserpoolENRPPoolIndex,
| | | | rserpoolENRPPoolElementIndex,
| | | | rserpoolENRPASAPAddrTableIndex
| | | +-- ---- Unsigned rserpoolENRPASAPAddrTableIndex(1)
| | | | Range: 1..4294967295
| | | +-- -R-- EnumVal rserpoolENRPASAPL3Type(2)
| | | | Textual Conv.: InetAddressType
| | | | Values: ipv4(1), ipv6(2)
| | | +-- -R-- String rserpoolENRPASAPL3Addr(3)
| | | | Textual Conv.: InetAddress
| | | | Size: 4 | 16
| | | +--rserpoolENRPUserAddrTable(6)

```

```

| | | |
| | | | +---rserpoolENRPUAddrTableEntry(1)
| | | | |   Index: rserpoolENRPIndex, rserpoolENRPPoolIndex,
| | | | |   rserpoolENRPPoolElementIndex,
| | | | |   rserpoolENRPUAddrTableIndex
| | | | |
| | | | | +--- ---- Unsigned   rserpoolENRPUAddrTableIndex(1)
| | | | | |   Range: 1..4294967295
| | | | | +--- -R-- EnumVal   rserpoolENRPUAddrL3Type(2)
| | | | | |   Textual Conv.: InetAddressType
| | | | | |   Values: unknown(0), ipv4(1), ipv6(2)
| | | | | +--- -R-- String    rserpoolENRPUAddrL3Addr(3)
| | | | | |   Textual Conv.: InetAddress
| | | | | |   Size: 0 | 4 | 16
| | | | | +--- -R-- String    rserpoolENRPUAddrL3Opaque(4)
| | | | | |   Textual Conv.: RSerPoolOpaqueAddressTC
| | | | | |   Size: 0..65535
| | | | |
| | | | +---rserpoolENRPENRPAAddrTable(7)
| | | | |
| | | | | +---rserpoolENRPENRPAAddrTableEntry(1)
| | | | | |   Index: rserpoolENRPIndex,
| | | | | |   rserpoolENRPENRPAAddrTableIndex
| | | | | |
| | | | | | +--- ---- Unsigned   rserpoolENRPENRPAAddrTableIndex(1)
| | | | | | |   Range: 1..4294967295
| | | | | | +--- -R-- EnumVal   rserpoolENRPENRPL3Type(2)
| | | | | | |   Textual Conv.: InetAddressType
| | | | | | |   Values: ipv4(1), ipv6(2)
| | | | | | +--- -R-- String    rserpoolENRPENRPL3Addr(3)
| | | | | | |   Textual Conv.: InetAddress
| | | | | | |   Size: 4 | 16
| | | | |
| | | |
| | |
| |
|

```

```

| | | | +---rserpoolENRPPeerTable(8)
| | | | |
| | | | | +---rserpoolENRPPeerEntry(1)
| | | | | |   Index: rserpoolENRPPeerIndex
| | | | | |
| | | | | | +--- ---- Unsigned   rserpoolENRPPeerIndex(1)
| | | | | | |   Range: 1..4294967295
| | | | | | +--- -R-- Unsigned   rserpoolENRPPeerIdentifier(2)
| | | | |
| | | |
| | |
| |
|

```

```

| | | | Textual Conv.: RSerPoolENRPServerIdentifierTC
| | | | Range: 1..4294967295
| | | +-- -R-- Unsigned rserpoolENRPPeerPort(3)
| | | | Textual Conv.: InetPortNumber
| | | | Range: 0..65535
| | | +-- -R-- TimeTicks rserpoolENRPPeerLastHeard(4)
| | | |
| | | +--rserpoolENRPPeerAddrTable(9)
| | | |
| | | | +--rserpoolENRPPeerAddrTableEntry(1)
| | | | | Index: rserpoolENRPPeerIndex,
| | | | | rserpoolENRPPeerAddrTableIndex
| | | | |
| | | | | +-- ---- Unsigned rserpoolENRPPeerAddrTableIndex(1)
| | | | | | Range: 1..4294967295
| | | | | +-- -R-- EnumVal rserpoolENRPPeerL3Type(2)
| | | | | | Textual Conv.: InetAddressType
| | | | | | Values: ipv4(1), ipv6(2)
| | | | | +-- -R-- String rserpoolENRPPeerL3Addr(3)
| | | | | | Textual Conv.: InetAddress
| | | | | | Size: 4 | 16
| | | |
| | | +--rserpoolPoolElements(2)
| | | |
| | | | +--rserpoolPETable(1)
| | | | |
| | | | | +--rserpoolPEEntry(1)
| | | | | | Index: rserpoolPEIndex
| | | | | |
| | | | | | +-- ---- Unsigned rserpoolPEIndex(1)
| | | | | | | Range: 1..4294967295
| | | | | | +-- -R-- String rserpoolPEOperationScope(2)
| | | | | | | Textual Conv.: RSerPoolOperationScopeTC
| | | | | | | Size: 0..65535
| | | | | | +-- -RW- String rserpoolPEPoolHandle(3)
| | | | | | | Textual Conv.: RSerPoolPoolHandleTC
| | | | | | | Size: 0..65535
| | | | | | +-- -R-- Unsigned rserpoolPEIdentifier(4)
| | | | | | | Textual Conv.: RSerpoolPoolElementIdentifierTC
| | | | | | | Range: 1..4294967295

```

```

| | | +-- -RW- String rserpoolPEDescription(5)

```





```
|
|
|   +--rserpoolPEUserAddrTableEntry(1)
|   |   Index: rserpoolPEIndex, rserpoolPEUserAddrTableIndex
|   |
|   |   +-- ---- Unsigned   rserpoolPEUserAddrTableIndex(1)
|   |   |       Range: 1..4294967295
|   |   +-- -R-- EnumVal   rserpoolPEUserL3Type(2)
|   |   |       Textual Conv.: InetAddressType
|   |   |       Values: unknown(0), ipv4(1), ipv6(2)
|   |   +-- -R-- String    rserpoolPEUserL3Addr(3)
|   |   |       Textual Conv.: InetAddress
|   |   |       Size: 0 | 4 | 16
|   |   +-- -R-- String    rserpoolPEUserL3Opaque(4)
|   |   |       Textual Conv.: RSerPoolOpaqueAddressTC
|   |   |       Size: 0..65535
|   |
|   +--rserpoolPoolUsers(3)
|   |
|   |   +--rserpoolPUTable(1)
|   |   |
|   |   |   +--rserpoolPUEntry(1)
|   |   |   |   Index: rserpoolPUIndex
|   |   |   |
|   |   |   |   +-- ---- Unsigned   rserpoolPUIndex(1)
|   |   |   |   |       Range: 1..4294967295
|   |   |   |   +-- -R-- String    rserpoolPUOperationScope(2)
|   |   |   |   |       Textual Conv.: RSerPoolOperationScopeTC
|   |   |   |   |       Size: 0..65535
|   |   |   |   +-- -RW- String    rserpoolPUPoolHandle(3)
|   |   |   |   |       Textual Conv.: RSerPoolPoolHandleTC
|   |   |   |   |       Size: 0..65535
|   |   |   |   +-- -RW- String    rserpoolPUDescription(4)
|   |   |   |   |       Size: 0..255
|   |   |   |   +-- -R-- TimeTicks rserpoolPUUptime(5)
|   |   |
|   |   +--rserpoolMIBConformance(2)
|   |   |
|   |   |   +--rserpoolMIBCompliances(1)
|   |   |   |
|   |   |   |   +--rserpoolMIBCompliance(1)
|   |   |   |
|   |   +--rserpoolMIBGroups(2)
|   |   |
|   |   |   +--rserpoolENRPGGroup(1)
|   |   |   +--rserpoolPEGGroup(2)
|   |   |   +--rserpoolPUGGroup(3)
```

As the figure shows, the MIB consists of three main branches: "rserpoolENRP", "rserpoolPoolElements" and "rserpoolPoolUsers". The first branch, "rserpoolENRP" is used to access managed objects in the set of ENRP servers running on a given host. While it is assumed that it does not make much sense to run multiple ENRP servers for the same operation scope on one host, running multiple ENRP servers for different operation scopes is very likely when the ENRP server processes run on routers. Therefore, the MIB has to be able to manage multiple ENRP servers on the same host. "rserpoolPoolElements" is used to access managed objects in the set of Pool Elements that are running on a given host. The third branch, "rserpoolPoolUsers" is used to access managed objects in the set of Pool Users that are running on a given host. Note: "rserpoolENRPServers" is filled on hosts running ENRP server instances, "rserpoolPoolElements" is filled on hosts running Pool Element instances and "rserpoolPoolUsers" is filled on hosts running Pool User instances. Of course, multiple different components may run on the same host, which leads to filling of multiple different branches. In fact, the structure of the three branches is very similar. Because the two branches are so similar, we describe only the first branch in detail, and provide a summary description of the second and third branch. We now proceed with a description of the branches.

### 5.1. Access to managed objects on ENRP servers

The first branch describes managed objects at a set of ENRP servers. Any given ENRP server of this set will, at a certain moment in time, have registration information for a set of active pools. Each of these pools in turn may have a list of pool elements that are registered under that pool. To allow this information to be retrieved via SNMP, the ENRP server branch of the RSerPool MIB uses the table-in-table technique described in [[SNMPMIBS](#)]. Specifically, the ENRP servers branch creates four levels of nesting, as indicated in the following diagram:

### Nesting of the ENRP Server Branch

#### Nesting Structure:

Level 1: rserpoolENRPTable

Level 2: rserpoolENRPPoolTable

Level 3: rserpoolENRPPoolElementTable

Level 4: rserpoolENRPASAPAddrTable  
rserpoolENRPUserAddrTable

Level 2: rserpoolENRPENRPAddrTable

Level 2: rserpoolENRPPeerTable

Level 3: rserpoolENRPPeerAddrTable

### [5.2.](#) Access to managed objects on Pool Elements

The construction of the Pool Elements branch is very similar to the pool elements table of the ENRP servers branch. But instead of grouping the pool elements into pools (which does not make sense here), the pool elements table is the top of the hierarchy and each pool element entry specifies its operation scope and pool handle. That is, the nesting structure is as follows:

#### Nesting of the Pool Elements Branch

Level 1: rserpoolPETable

Level 2: rserpoolPEASAPAddrTable  
rserpoolPEUserAddrTable

### [5.3.](#) Access to managed objects on Pool Users

For the pool users branch, it is only necessary to list the pool user instances, including their operation scope and pool handle.

### [5.4.](#) Persistency Behavior

Upon changes of writable objects, an implementation SHOULD store the new values in a persistent manner if it has the capability to do this. An implementation SHOULD use these stored values upon reset or reinitialization.

## [6.](#) Definitions

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RSERPOOL-MIB DEFINITIONS ::= BEGIN

IMPORTS

MODULE-IDENTITY, OBJECT-TYPE, experimental,  
TimeTicks, Unsigned32  
FROM SNMPv2-SMI  
TEXTUAL-CONVENTION  
FROM SNMPv2-TC  
MODULE-COMPLIANCE, OBJECT-GROUP  
FROM SNMPv2-CONF  
InetAddressType, InetAddress, InetPortNumber  
FROM INET-ADDRESS-MIB;

-- ## Module definition #####

rserpoolMIB MODULE-IDENTITY

LAST-UPDATED

"200903071111Z" -- March 07, 2009

ORGANIZATION

"IEM-TdR, UNIVERSITY OF DUISBURG-ESSEN"

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#### DESCRIPTION

"The MIB module for managing an RSerPool implementation.

Copyright (c) 2009 IETF Trust and the persons identified as  
authors of RFC XXXX.

This version of this MIB module is part of RFC XXXX; see the

RFC itself for full legal notices."

#### REVISION

"200903071111Z" -- March 07, 2009

#### DESCRIPTION

"This version of the MIB module is published as RFC XXXX"  
::= { experimental XXX } -- To be IANA Assigned!!!

```
-- ## RSerPool type definitions #####  
RSerPoolENRPIdentifierTC ::= TEXTUAL-CONVENTION  
    DISPLAY-HINT "x"  
    STATUS      current  
    DESCRIPTION "The ID of an ENRP server"  
    SYNTAX      Unsigned32 (1..4294967295)
```

```
RSerPoolOperationScopeTC ::= TEXTUAL-CONVENTION
```

DISPLAY-HINT "1024t"  
STATUS current  
DESCRIPTION "The ID of an operation scope"  
SYNTAX OCTET STRING (SIZE (0..65535))

RSerPoolPoolHandleTC ::= TEXTUAL-CONVENTION

DISPLAY-HINT "1024t"  
STATUS current  
DESCRIPTION "The pool handle"  
SYNTAX OCTET STRING (SIZE (0..65535))

RSerPoolPoolElementIdentifierTC ::= TEXTUAL-CONVENTION

DISPLAY-HINT "x"  
STATUS current  
DESCRIPTION "The pool element ID"  
SYNTAX Unsigned32 (1..4294967295)

RSerPoolPolicyIdentifierTC ::= TEXTUAL-CONVENTION

DISPLAY-HINT "x"  
STATUS current  
DESCRIPTION "The ID of the pool policy"  
SYNTAX Unsigned32 (1..4294967295)

RSerPoolPolicyLoadTC ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"  
STATUS current  
DESCRIPTION "The load status of a pool element"  
SYNTAX Unsigned32 (0..4294967295)

RSerPoolPolicyWeightTC ::= TEXTUAL-CONVENTION

DISPLAY-HINT "d"  
STATUS current  
DESCRIPTION "The weight of a pool element"  
SYNTAX Unsigned32 (0..4294967295)

RSerPoolTransportUseTypeTC ::= TEXTUAL-CONVENTION

STATUS current  
DESCRIPTION "The transport use of a pool element"  
SYNTAX INTEGER {  
    dataOnly(0),  
    dataPlusControl(1)

```

}

RSerPoolOpaqueAddressTC ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "1024t"
    STATUS      current
    DESCRIPTION "Opaque address"
    SYNTAX      OCTET STRING (SIZE (0..65535))

-- ## Top-level definitions #####
rserpoolMIBObjects      OBJECT IDENTIFIER ::= { rserpoolMIB 1 }
rserpoolMIBConformance OBJECT IDENTIFIER ::= { rserpoolMIB 2 }

rserpoolENRPServers     OBJECT IDENTIFIER ::= { rserpoolMIBObjects 1 }
rserpoolPoolElements    OBJECT IDENTIFIER ::= { rserpoolMIBObjects 2 }
rserpoolPoolUsers       OBJECT IDENTIFIER ::= { rserpoolMIBObjects 3 }

-- #####
-- #### ENRP Servers Section #####
-- #####

-- ## Definition of the ENRP server table #####
rserpoolENRPTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF RserpoolENRPEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The table listing of ENRP servers."
    ::= { rserpoolENRPServers 1 }

rserpoolENRPEntry OBJECT-TYPE
    SYNTAX      RserpoolENRPEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An ENRP server entry in the table listing of ENRP

```

```

        servers."
    INDEX { rserpoolENRPIndex }
    ::= { rserpoolENRPTable 1 }

```



```

RserpoolENRPEnter ::= SEQUENCE {
rserpoolENRPIndex          Unsigned32,
rserpoolENRPOperationScope RSerPoolOperationScopeTC,
rserpoolENRPIdentifier      RSerPoolENRPIdentifierTC,
rserpoolENRPDescription     OCTET STRING,
rserpoolENRPUptime          TimeTicks,
rserpoolENRPPort            InetPortNumber,
rserpoolENRPASAPAnnouncePort InetPortNumber,
rserpoolENRPASAPAnnounceAddr InetAddressType,
rserpoolENRPASAPAnnounceAddr InetAddress,
rserpoolENRPENRPAnnouncePort InetPortNumber,
rserpoolENRPENRPAnnounceAddr InetAddressType,
rserpoolENRPENRPAnnounceAddr InetAddress }

```

```

rserpoolENRPIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..4294967295)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An integer to uniquely identify an ENRP server."
    ::= { rserpoolENRPEnter 1 }

```

```

rserpoolENRPOperationScope OBJECT-TYPE
    SYNTAX      RSerPoolOperationScopeTC
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The definition of the operation scope of this ENRP server."
    REFERENCE
        "Section 1.2 of RFC 3237 defines the term operation scope."
    ::= { rserpoolENRPEnter 2 }

```

```

rserpoolENRPIdentifier OBJECT-TYPE
    SYNTAX      RSerPoolENRPIdentifierTC
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The ENRP server identifier of this ENRP server."
    REFERENCE
        "Section 3.1 of RFC 5351 explains the ENRP server identifier."
    ::= { rserpoolENRPEnter 3 }

```

```

rserpoolENRPDescription OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE (0..255))

```

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"A textual description of this ENRP server, e.g. its location and a contact address of its administrator.

This object SHOULD be maintained in a persistent manner."

::= { rserpoolENRPEntry 4 }

rserpoolENRPuptime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The ENRP service uptime of this ENRP server."

::= { rserpoolENRPEntry 5 }

rserpoolENRPPort OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The SCTP port number of the ENRP protocol endpoint of this ENRP server."

REFERENCE

"[RFC 5353](#) defines the ENRP protocol."

::= { rserpoolENRPEntry 6 }

rserpoolENRPASAPAnnouncePort OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The destination UDP port number ASAP multicast announce messages are sent to."

REFERENCE

"[Section 3.2 of RFC 5351](#) explains the server discovery mechanism using ASAP announces."

::= { rserpoolENRPEntry 7 }

rserpoolENRPASAPAnnounceAddrType OBJECT-TYPE

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The network-layer protocol ASAP multicast announce messages are sent over."

"[Section 3.2 of RFC 5351](#) explains the server discovery mechanism using ASAP announces."  
 ::= { rserpoolENRPEntry 8 }

rserpoolENRPASAPAnnounceAddr OBJECT-TYPE

SYNTAX InetAddress (SIZE(4|16))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The destination IP multicast address ASAP multicast announce messages are sent to. The type of this address is given in rserpoolENRPASAPAnnounceAddrType."

REFERENCE

"[Section 3.2 of RFC 5351](#) explains the server discovery mechanism using ASAP announces."

::= { rserpoolENRPEntry 9 }

rserpoolENRPENRPAnnouncePort OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The destination UDP port number ENRP multicast announce messages are sent to."

REFERENCE

"[Section 3.1 of RFC 5353](#) explains the ENRP multicast announce mechanism."

::= { rserpoolENRPEntry 10 }

rserpoolENRPENRPAnnounceAddrType OBJECT-TYPE

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The network-layer protocol ENRP multicast announce messages are sent over."

REFERENCE

"[Section 3.1 of RFC 5353](#) explains the ENRP multicast announce mechanism."

::= { rserpoolENRPEntry 11 }

```

rserpoolENRPENRPAnnounceAddr OBJECT-TYPE
    SYNTAX      InetAddress (SIZE(4|16))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The destination multicast IP address ENRP multicast
        announce messages are sent to. The type of this address

```

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```

        is given in rserpoolENRPENRPAnnounceAddrType."
REFERENCE
    "Section 3.1 of RFC 5353 explains the ENRP multicast
    announce mechanism."
 ::= { rserpoolENRPEntry 12 }

```

```

-- ## Definition of the pool table #####
rserpoolENRPPoolTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF RserpoolENRPPoolEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The table listing of pools."
    ::= { rserpoolENRPServers 3 }

```

```

rserpoolENRPPoolEntry OBJECT-TYPE
    SYNTAX      RserpoolENRPPoolEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The pool entry in the table listing of pools."
    INDEX { rserpoolENRPIndex, rserpoolENRPPoolIndex }
    ::= { rserpoolENRPPoolTable 1 }

```

```

RserpoolENRPPoolEntry ::= SEQUENCE {
    rserpoolENRPPoolIndex Unsigned32,
    rserpoolENRPPoolHandle RSerPoolPoolHandleTC }

```

```

rserpoolENRPPoolIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..4294967295)
    MAX-ACCESS  not-accessible

```

STATUS current  
DESCRIPTION  
"An integer to uniquely identify a pool."  
::= { rserpoolENRPPoolEntry 1 }

rserpoolENRPPoolHandle OBJECT-TYPE  
SYNTAX RSerPoolPoolHandleTC  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
"The pool handle of this pool."  
REFERENCE  
"[Section 1.2 of RFC 3237](#) defines the term pool handle."  
::= { rserpoolENRPPoolEntry 2 }

-- ## Definition of the pool element table #####  
rserpoolENRPPoolElementTable OBJECT-TYPE

SYNTAX SEQUENCE OF RserpoolENRPPoolElementEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"The table listing of pool elements."  
::= { rserpoolENRPServers 4 }

rserpoolENRPPoolElementEntry OBJECT-TYPE  
SYNTAX RserpoolENRPPoolElementEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION

"A pool element in the table listing of pool elements."  
INDEX {  
rserpoolENRPIIndex,  
rserpoolENRPPoolIndex,  
rserpoolENRPPoolElementIndex }  
::= { rserpoolENRPPoolElementTable 1 }

RserpoolENRPPoolElementEntry ::= SEQUENCE {  
rserpoolENRPPoolElementIndex Unsigned32,  
rserpoolENRPPoolElementID RSerpoolPoolElementIdentifierTC,  
rserpoolENRPASAPTransportPort InetPortNumber,  
rserpoolENRPUserTransportProto Unsigned32,

rserpoolENRPUserTransportPort	InetPortNumber,
rserpoolENRPUserTransportUse	RSerPoolTransportUseTypeTC,
rserpoolENRPPolicyID	RSerPoolPolicyIdentifierTC,
rserpoolENRPPolicyDescription	OCTET STRING,
rserpoolENRPPolicyWeight	RSerPoolPolicyWeightTC,
rserpoolENRPPolicyLoad	RSerPoolPolicyLoadTC,
rserpoolENRPPolicyLoadDeg	RSerPoolPolicyLoadTC,
rserpoolENRPRegistrationLife	TimeTicks,
rserpoolENRPHomeENRPServer	RSerPoolENRPServerIdentifierTC }

rserpoolENRPPoolElementIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..4294967295)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An integer to uniquely identify a pool element. Note, that uniqueness of a pool element identifier in the pool is not enforced, therefore this index is required here!"

::={ rserpoolENRPPoolElementEntry 1 }

rserpoolENRPPoolElementID OBJECT-TYPE

SYNTAX RserpoolPoolElementIdentifierTC

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The pool element identifier of this pool element."

REFERENCE

"[Section 2.2 of RFC 5351](#) explains the pool element identifier usage."

::={ rserpoolENRPPoolElementEntry 2 }

rserpoolENRPASAPTransportPort OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The SCTP port number of the ASAP endpoint of this pool element."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the ASAP Transport Parameter of

which the port number is given here."  
 ::= { rserpoolENRPPoolElementEntry 3 }

rserpoolENRPUserTransportProto OBJECT-TYPE

SYNTAX Unsigned32 (0..255)

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The transport protocol number of the service endpoint  
 of this pool element."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of  
 which the transport protocol number is given here."

::= { rserpoolENRPPoolElementEntry 4 }

rserpoolENRPUserTransportPort OBJECT-TYPE

SYNTAX InetPortNumber

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The transport protocol's port number of the service  
 endpoint of this pool element."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of  
 which the port number is given here."

::= { rserpoolENRPPoolElementEntry 5 }

rserpoolENRPUserTransportUse OBJECT-TYPE

SYNTAX RSerPoolTransportUseTypeTC

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The transport use of the service endpoint of this pool  
 element."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of  
 which the transport use is given here."

::= { rserpoolENRPPoolElementEntry 6 }

rserpoolENRPPolicyID OBJECT-TYPE

SYNTAX RSerPoolPolicyIdentifierTC

MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
   "The pool policy of this pool element."  
 REFERENCE  
   "[Section 3.8 of RFC 5354](#) defines the Member Selection Policy  
   Parameter of which the policy identifier is given here."  
 ::= { rserpoolENRPPoolElementEntry 7 }

rserpoolENRPPolicyDescription OBJECT-TYPE  
 SYNTAX OCTET STRING (SIZE (0..255))  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
   "The textual description of the pool policy of this pool  
   element."  
 ::= { rserpoolENRPPoolElementEntry 8 }

rserpoolENRPPolicyWeight OBJECT-TYPE  
 SYNTAX RSerPoolPolicyWeightTC  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
   "The pool policy's weight parameter for this pool element."  
 REFERENCE  
   "[Section 3.8 of RFC 5354](#) defines the Member Selection Policy  
   Parameter of which the policy's weight parameter is given here."  
 ::= { rserpoolENRPPoolElementEntry 9 }

rserpoolENRPPolicyLoad OBJECT-TYPE  
 SYNTAX RSerPoolPolicyLoadTC  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
   "The pool policy's load status for this pool element."  
 REFERENCE

  "[Section 3.8 of RFC 5354](#) defines the Member Selection Policy  
   Parameter of which the policy's load parameter is given here."  
 ::= { rserpoolENRPPoolElementEntry 10 }

rserpoolENRPPolicyLoadDeg OBJECT-TYPE



SYNTAX       RSerPoolPolicyLoadTC  
 MAX-ACCESS read-only  
 STATUS       current  
 DESCRIPTION  
   "The pool policy's load degradation parameter for this pool element."  
 REFERENCE  
   "[Section 3.8 of RFC 5354](#) defines the Member Selection Policy Parameter of which the policy's load degradation parameter is given here."  
 ::= { rserpoolENRPPoolElementEntry 11 }

rserpoolENRPRegistrationLife OBJECT-TYPE

SYNTAX       TimeTicks  
 MAX-ACCESS read-only  
 STATUS       current  
 DESCRIPTION  
   "The registration life of this pool element."  
 REFERENCE  
   "[Section 3.10 of RFC 5354](#) defines the Registration Life."  
 ::= { rserpoolENRPPoolElementEntry 12 }

rserpoolENRPHomeENRPSEServer OBJECT-TYPE

SYNTAX       RSerPoolENRPSEServerIdentifierTC  
 MAX-ACCESS read-only  
 STATUS       current  
 DESCRIPTION  
   "The ID of the home ENRP server of this pool element."  
 REFERENCE  
   "[Section 3.10 of RFC 5354](#) defines the Home ENRP Server Identifier."  
 ::= { rserpoolENRPPoolElementEntry 13 }

-- ## Definition of the ASAP transport address list table #####

rserpoolENRPASAPAddrTable OBJECT-TYPE

SYNTAX       SEQUENCE OF RserpoolENRPASAPAddrTableEntry  
 MAX-ACCESS not-accessible  
 STATUS       current  
 DESCRIPTION  
   "A table listing of all IP addresses of the ASAP transport endpoint."  
 REFERENCE

"[Section 3.10 of RFC 5354](#) defines the ASAP Transport Parameter of which the addresses are listed in this table."  
 ::= { rserpoolENRPServers 5 }

rserpoolENRPASAPAddrTableEntry OBJECT-TYPE  
SYNTAX RserpoolENRPASAPAddrTableEntry  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"An IP address of the ASAP transport endpoint."  
REFERENCE  
"[Section 3.10 of RFC 5354](#) defines the ASAP Transport Parameter of which an address is contained by this entry."  
INDEX {  
rserpoolENRPIndex,  
rserpoolENRPPoolIndex,  
rserpoolENRPPoolElementIndex,  
rserpoolENRPASAPAddrTableIndex }  
 ::= { rserpoolENRPASAPAddrTable 1 }

RserpoolENRPASAPAddrTableEntry ::= SEQUENCE {  
rserpoolENRPASAPAddrTableIndex Unsigned32,  
rserpoolENRPASAPL3Type InetAddressType,  
rserpoolENRPASAPL3Addr InetAddress }

rserpoolENRPASAPAddrTableIndex OBJECT-TYPE  
SYNTAX Unsigned32 (1..4294967295)  
MAX-ACCESS not-accessible  
STATUS current  
DESCRIPTION  
"A unique identifier for the IP address of an ASAP transport endpoint."  
 ::= { rserpoolENRPASAPAddrTableEntry 1 }

rserpoolENRPASAPL3Type OBJECT-TYPE  
SYNTAX InetAddressType { ipv4(1), ipv6(2) }  
MAX-ACCESS read-only  
STATUS current  
DESCRIPTION  
"The network-layer protocol (IPv4 or IPv6) of an IP address of an ASAP transport endpoint."  
REFERENCE  
"[Section 3.10 of RFC 5354](#) defines the ASAP Transport Parameter of which the network-layer protocol number is given here."  
 ::= { rserpoolENRPASAPAddrTableEntry 2 }

rserpoolENRPASAPL3Addr OBJECT-TYPE  
SYNTAX InetAddress (SIZE(4|16))

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MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The IP address of an ASAP transport endpoint. The type of this address is given in rserpoolENRPASAPL3Type."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the ASAP Transport Parameter of which the network-layer address (IPv4 or IPv6) is given here."

::= { rserpoolENRPASAPAddrTableEntry 3 }

-- ## Definition of the user transport address list table #####

rserpoolENRPUAddrTable OBJECT-TYPE

SYNTAX SEQUENCE OF RserpoolENRPUAddrTableEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table listing of all IP addresses of the user transport endpoint."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of which the addresses are listed in this table."

::= { rserpoolENRPServers 6 }

rserpoolENRPUAddrTableEntry OBJECT-TYPE

SYNTAX RserpoolENRPUAddrTableEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An IP address of the user transport endpoint."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of which an address is contained by this entry."

INDEX {

rserpoolENRPIndex,  
rserpoolENRPPoolIndex,  
rserpoolENRPPoolElementIndex,  
rserpoolENRPUAddrTableIndex }

::= { rserpoolENRPUAddrTable 1 }

RserpoolENRPUAddrTableEntry ::= SEQUENCE {  
rserpoolENRPUAddrTableIndex Unsigned32,

rserpoolENRPUserL3Type	InetAddressType,
rserpoolENRPUserL3Addr	InetAddress,
rserpoolENRPUserL3Opaque	RSerPoolOpaqueAddressTC }

rserpoolENRPUserAddrTableIndex OBJECT-TYPE  
 SYNTAX Unsigned32 (1..4294967295)

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MAX-ACCESS not-accessible  
 STATUS current  
 DESCRIPTION  
 "A unique identifier for the IP address of an user transport endpoint."  
 ::= { rserpoolENRPUserAddrTableEntry 1 }

rserpoolENRPUserL3Type OBJECT-TYPE  
 SYNTAX InetAddressType { unknown(0), ipv4(1), ipv6(2) }  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
 "The network-layer protocol (IPv4 or IPv6) of an IP address of an user transport endpoint. Set to unknown for opaque address."  
 REFERENCE  
 "[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of which the network-layer protocol number is given here."  
 ::= { rserpoolENRPUserAddrTableEntry 2 }

rserpoolENRPUserL3Addr OBJECT-TYPE  
 SYNTAX InetAddress (SIZE(0|4|16))  
 MAX-ACCESS read-only  
 STATUS current  
 DESCRIPTION  
 "The IP address of an user transport endpoint. The type of this address is given in rserpoolENRPUserL3Type."  
 REFERENCE  
 "[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of which the network-layer address (IPv4 or IPv6) is given here."  
 ::= { rserpoolENRPUserAddrTableEntry 3 }

rserpoolENRPUserL3Opaque OBJECT-TYPE  
 SYNTAX RSerPoolOpaqueAddressTC  
 MAX-ACCESS read-only  
 STATUS current

DESCRIPTION

"The opaque address of an user transport endpoint."

REFERENCE

"[Section 3.16 of RFC 5354](#) defines the opaque transport address."

::= { rserpoolENRPUAddrTableEntry 4 }

-- ## Definition of ENRP address list table #####

rserpoolENRPENRPAAddrTable OBJECT-TYPE

SYNTAX SEQUENCE OF RserpoolENRPENRPAAddrTableEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

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"A table listing of all IP addresses of the ENRP  
transport endpoint."

::= { rserpoolENRPServers 7 }

rserpoolENRPENRPAAddrTableEntry OBJECT-TYPE

SYNTAX RserpoolENRPENRPAAddrTableEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An IP address of the ENRP transport endpoint."

INDEX {

rserpoolENRPIndex,

rserpoolENRPENRPAAddrTableIndex }

::= { rserpoolENRPENRPAAddrTable 1 }

RserpoolENRPENRPAAddrTableEntry ::= SEQUENCE {

rserpoolENRPENRPAAddrTableIndex Unsigned32,

rserpoolENRPENRPL3Type InetAddressType,

rserpoolENRPENRPL3Addr InetAddress }

rserpoolENRPENRPAAddrTableIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..4294967295)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A unique identifier for the IP address of an ENRP transport  
endpoint."

::= { rserpoolENRPENRPAAddrTableEntry 1 }

```

rserpoolENRPENRPL3Type OBJECT-TYPE
    SYNTAX      InetAddressType { ipv4(1), ipv6(2) }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The network-layer protocol (IPv4 or IPv6) of an IP address of
        an ENRP transport endpoint."
    REFERENCE
        "RFC 5353 defines the ENRP protocol."
    ::= { rserpoolENRPENRPAddrTableEntry 2 }

```

```

rserpoolENRPENRPL3Addr OBJECT-TYPE
    SYNTAX      InetAddress (SIZE(4|16))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The IP address of an ENRP transport endpoint. The type of
        this address is given in rserpoolENRPENRPL3Type."
    REFERENCE

```

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```

        "RFC 5353 defines the ENRP protocol."
    ::= { rserpoolENRPENRPAddrTableEntry 3 }

```

```

-- ## Definition of peer table #####
rserpoolENRPPeerTable OBJECT-TYPE

```

```

    SYNTAX      SEQUENCE OF RserpoolENRPPeerEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The table listing of a peer table."
    ::= { rserpoolENRPServers 8 }

```

```

rserpoolENRPPeerEntry OBJECT-TYPE
    SYNTAX      RserpoolENRPPeerEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A peer entry in the table listing of a peer table."
    INDEX { rserpoolENRPPeerIndex }
    ::= { rserpoolENRPPeerTable 1 }

```

```

RserpoolENRPPeerEntry ::= SEQUENCE {
    rserpoolENRPPeerIndex      Unsigned32,
    rserpoolENRPPeerIdentifier RSerPoolENRPServerIdentifierTC,
    rserpoolENRPPeerPort       InetPortNumber,
    rserpoolENRPPeerLastHeard  TimeTicks }

rserpoolENRPPeerIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..4294967295)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "A unique identifier for a peer entry in the table
        listing of a peer table."
    ::= { rserpoolENRPPeerEntry 1 }

rserpoolENRPPeerIdentifier OBJECT-TYPE
    SYNTAX      RSerPoolENRPServerIdentifierTC
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The ENRP identifier of this peer."
    REFERENCE
        "RFC 5353 explains the usage of the ENRP server identifier."
    ::= { rserpoolENRPPeerEntry 2 }

rserpoolENRPPeerPort OBJECT-TYPE

```

```

    SYNTAX      InetPortNumber
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The SCTP port number of the ENRP transport endpoint of
        this peer."
    REFERENCE
        "RFC 5353 defines the ENRP protocol."
    ::= { rserpoolENRPPeerEntry 3 }

```

```

rserpoolENRPPeerLastHeard OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only
    STATUS      current

```

DESCRIPTION

"The time since the reception of the last ENRP Presence message of this peer."

REFERENCE

"[Section 4.1 of RFC 5353](#) defines the last heard value."

::= { rserpoolENRPPeerEntry 4 }

-- ## Definition of peer address list table #####

rserpoolENRPPeerAddrTable OBJECT-TYPE

SYNTAX SEQUENCE OF RserpoolENRPPeerAddrTableEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table listing of the peer endpoint addresses."

::= { rserpoolENRPServers 9 }

rserpoolENRPPeerAddrTableEntry OBJECT-TYPE

SYNTAX RserpoolENRPPeerAddrTableEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table listing of all IP addresses of the ENRP transport endpoint of a peer referenced by rserpoolENRPPeerIndex."

INDEX {

rserpoolENRPPeerIndex,

rserpoolENRPPeerAddrTableIndex }

::= { rserpoolENRPPeerAddrTable 1 }

RserpoolENRPPeerAddrTableEntry ::= SEQUENCE {

rserpoolENRPPeerAddrTableIndex Unsigned32,

rserpoolENRPPeerL3Type InetAddressType,

rserpoolENRPPeerL3Addr InetAddress }

rserpoolENRPPeerAddrTableIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..4294967295)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A unique identifier for the IP address of a peer ENRP transport endpoint."



```

::= { rserpoolENRPPeerAddrTableEntry 1 }

rserpoolENRPPeerL3Type OBJECT-TYPE
    SYNTAX      InetAddressType { ipv4(1), ipv6(2) }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The network-layer protocol (IPv4 or IPv6) of an IP address
        of a peer ENRP transport endpoint."
    REFERENCE
        "RFC 5353 defines the ENRP protocol."
    ::= { rserpoolENRPPeerAddrTableEntry 2 }

rserpoolENRPPeerL3Addr OBJECT-TYPE
    SYNTAX      InetAddress (SIZE(4|16))
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The IP address of a peer ENRP transport endpoint. The type
        of this address is given in rserpoolENRPPeerL3Type."
    REFERENCE
        "RFC 5353 defines the ENRP protocol."
    ::= { rserpoolENRPPeerAddrTableEntry 3 }

-- #####
-- #### Pool Elements Section #####
-- #####

-- ## Definition of the pool element table #####
rserpoolPETable OBJECT-TYPE
    SYNTAX      SEQUENCE OF RserpoolPEEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "The table listing of pool elements."
    ::= { rserpoolPoolElements 1 }

rserpoolPEEntry OBJECT-TYPE
    SYNTAX      RserpoolPEEntry

```

```

MAX-ACCESS not-accessible
STATUS      current
DESCRIPTION
    "A pool element in the table listing of pool elements."
INDEX { rserpoolPEIndex }
 ::= { rserpoolPETable 1 }

```

```

RserpoolPEEntry ::= SEQUENCE {
    rserpoolPEIndex          Unsigned32,
    rserpoolPEOperationScope RSerPoolOperationScopeTC,
    rserpoolPEPoolHandle     RSerPoolPoolHandleTC,
    rserpoolPEIdentifier     RserpoolPoolElementIdentifierTC,
    rserpoolPEDescription    OCTET STRING,
    rserpoolPEUptime         TimeTicks,
    rserpoolPEASAPTransportPort InetPortNumber,
    rserpoolPEUserTransportProto Unsigned32,
    rserpoolPEUserTransportPort InetPortNumber,
    rserpoolPEUserTransportUse RSerPoolTransportUseTypeTC,
    rserpoolPEPolicyID        RSerPoolPolicyIdentifierTC,
    rserpoolPEPolicyDescription OCTET STRING,
    rserpoolPEPolicyWeight    RSerPoolPolicyWeightTC,
    rserpoolPEPolicyLoad      RSerPoolPolicyLoadTC,
    rserpoolPEPolicyLoadDeg   RSerPoolPolicyLoadTC,
    rserpoolPERegistrationLife TimeTicks,
    rserpoolPEHomeENRPServer  RSerPoolENRPServerIdentifierTC }

```

```

rserpoolPEIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..4294967295)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "An integer to uniquely identify a pool element. Note,
         that uniqueness of a pool element identifier in the pool
         is not enforced, therefore this index is required here!"
    ::= { rserpoolPEEntry 1 }

```

```

rserpoolPEOperationScope OBJECT-TYPE
    SYNTAX      RSerPoolOperationScopeTC
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The operation scope of this pool element."
    REFERENCE
        "Section 1.2 of RFC 3237 defines the term operation scope."
    ::= { rserpoolPEEntry 2 }

```

```

rserpoolPEPoolHandle OBJECT-TYPE

```

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SYNTAX       RSerPoolPoolHandleTC

MAX-ACCESS read-write

STATUS       current

DESCRIPTION

"The pool handle of this pool element. Changing this object will update the pool element's pool handle and result in a re-registration.

This object SHOULD be maintained in a persistent manner."

REFERENCE

"[Section 1.2 of RFC 3237](#) defines the term pool handle."

::={ rserpoolPEEntry 3 }

rserpoolPEIdentifier OBJECT-TYPE

SYNTAX       RserpoolPoolElementIdentifierTC

MAX-ACCESS read-only

STATUS       current

DESCRIPTION

"The pool element identifier of this pool element."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the pool element identifier."

::={ rserpoolPEEntry 4 }

rserpoolPEDescription OBJECT-TYPE

SYNTAX       OCTET STRING (SIZE (0..255))

MAX-ACCESS read-write

STATUS       current

DESCRIPTION

"A textual description of this pool element, e.g. its location and a contact address of its administrator.

This object SHOULD be maintained in a persistent manner."

::= { rserpoolPEEntry 5 }

rserpoolPEUptime OBJECT-TYPE

SYNTAX       TimeTicks

MAX-ACCESS read-only

STATUS       current

DESCRIPTION

"The ENRP service uptime of this pool element."

::= { rserpoolPEEntry 6 }

rserpoolPEASAPTransportPort OBJECT-TYPE

SYNTAX        InetPortNumber  
MAX-ACCESS read-only  
STATUS        current  
DESCRIPTION

"The SCTP port number of the ASAP endpoint of this pool element."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the ASAP Transport Parameter of which the port number is given here."

::= { rserpoolPEEntry 7 }

rserpoolPEUserTransportProto OBJECT-TYPE

SYNTAX        Unsigned32 (0..255)  
MAX-ACCESS read-only  
STATUS        current  
DESCRIPTION

"The transport protocol number of the service endpoint of this pool element."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of which the transport protocol number is given here."

::= { rserpoolPEEntry 8 }

rserpoolPEUserTransportPort OBJECT-TYPE

SYNTAX        InetPortNumber  
MAX-ACCESS read-only  
STATUS        current  
DESCRIPTION

"The transport protocol's port number of the service endpoint of this pool element."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of which the port number is given here."

::= { rserpoolPEEntry 9 }

rserpoolPEUserTransportUse OBJECT-TYPE

SYNTAX        RSerPoolTransportUseTypeTC  
MAX-ACCESS read-only  
STATUS        current  
DESCRIPTION

"The transport use of the service endpoint of this pool element."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of which the transport use is given here."  
 ::= { rserpoolPEEntry 10 }

rserpoolPEPolicyID OBJECT-TYPE

SYNTAX RSerPoolPolicyIdentifierTC

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The pool policy of this pool element. Changing this object will update the pool element's policy and result in a re-registration."

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This object SHOULD be maintained in a persistent manner."

REFERENCE

"[Section 3.8 of RFC 5354](#) defines the Member Selection Policy Parameter of which the policy identifier is given here."  
 ::= { rserpoolPEEntry 11 }

rserpoolPEPolicyDescription OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (0..255))

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The textual description of the pool policy of this pool element."

This object SHOULD be maintained in a persistent manner."  
 ::= { rserpoolPEEntry 12 }

rserpoolPEPolicyWeight OBJECT-TYPE

SYNTAX RSerPoolPolicyWeightTC

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The pool policy's weight parameter for this pool element. Changing this object will update the pool element's policy weight setting and result in a re-registration."

This object SHOULD be maintained in a persistent manner."  
 REFERENCE

"[Section 3.8 of RFC 5354](#) defines the Member Selection Policy Parameter of which the policy's weight parameter is given here."

::= { rserpoolPEEntry 13 }

rserpoolPEPolicyLoad OBJECT-TYPE

SYNTAX RSerPoolPolicyLoadTC

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The pool policy's load status for this pool element."

REFERENCE

"[Section 3.8 of RFC 5354](#) defines the Member Selection Policy  
Parameter of which the policy's load parameter is given here."

::= { rserpoolPEEntry 14 }

rserpoolPEPolicyLoadDeg OBJECT-TYPE

SYNTAX RSerPoolPolicyLoadTC

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The pool policy's load degradation parameter for this pool

element. Changing this object will update the pool element's  
load degradation setting and result in a re-registration.

This object SHOULD be maintained in a persistent manner."

REFERENCE

"[Section 3.8 of RFC 5354](#) defines the Member Selection Policy  
Parameter of which the policy's load degradation parameter is  
given here."

::= { rserpoolPEEntry 15 }

rserpoolPERegistrationLife OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The registration life of this pool element. Changing this  
object will update the pool element's lifetime setting and  
result in a re-registration.

This object SHOULD be maintained in a persistent manner."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the Registration Life."

```
::= { rserpoolPEEntry 16 }
```

```
rserpoolPEHomeENRPSEntry OBJECT-TYPE
```

```
SYNTAX      RSerPoolENRPSEntryIdentifierTC
```

```
MAX-ACCESS  read-only
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"The ID of the home ENRP server of this pool element."
```

```
REFERENCE
```

```
"Section 3.10 of RFC 5354 defines the Home ENRP Server Identifier."
```

```
::= { rserpoolPEEntry 17 }
```

```
-- ## Definition of the ASAP transport address list table #####
```

```
rserpoolPEASAPAddrTable OBJECT-TYPE
```

```
SYNTAX      SEQUENCE OF RserpoolPEASAPAddrTableEntry
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"A table listing of all IP addresses of the ASAP transport endpoint."
```

```
REFERENCE
```

```
"Section 3.10 of RFC 5354 defines the ASAP Transport Parameter of which the addresses are listed in this table."
```

```
::= { rserpoolPoolElements 2 }
```

```
rserpoolPEASAPAddrTableEntry OBJECT-TYPE
```

```
SYNTAX      RserpoolPEASAPAddrTableEntry
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

```
DESCRIPTION
```

```
"An IP address of the ASAP transport endpoint."
```

```
REFERENCE
```

```
"Section 3.10 of RFC 5354 defines the ASAP Transport Parameter of which an address is contained by this entry."
```

```
INDEX {
```

```
    rserpoolPEIndex,
```

```
    rserpoolPEASAPAddrTableIndex }
```

```
::= { rserpoolPEASAPAddrTable 1 }
```

```
RserpoolPEASAPAddrTableEntry ::= SEQUENCE {
```

```
rserpoolPEASAPAddrTableIndex Unsigned32,
rserpoolPEASAPL3Type          InetAddressType,
rserpoolPEASAPL3Addr          InetAddress }
```

rserpoolPEASAPAddrTableIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..4294967295)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A unique identifier for the IP address of an ASAP transport endpoint."

::= { rserpoolPEASAPAddrTableEntry 1 }

rserpoolPEASAPL3Type OBJECT-TYPE

SYNTAX InetAddressType { ipv4(1), ipv6(2) }

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The network-layer protocol (IPv4 or IPv6) of an IP address of an ASAP transport endpoint."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the ASAP Transport Parameter of which the network-layer protocol number is given here."

::= { rserpoolPEASAPAddrTableEntry 2 }

rserpoolPEASAPL3Addr OBJECT-TYPE

SYNTAX InetAddress (SIZE(4|16))

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The IP address of an ASAP transport endpoint. The type of this address is given in rserpoolPEASAPL3Type."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the ASAP Transport Parameter of which the network-layer address (IPv4 or IPv6) is given here."

::= { rserpoolPEASAPAddrTableEntry 3 }

-- ## Definition of the user transport address list table #####

rserpoolPEUserAddrTable OBJECT-TYPE

SYNTAX SEQUENCE OF RserpoolPEUserAddrTableEntry



MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A table listing of all IP addresses of the user transport endpoint."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of which the addresses are listed in this table."

::= { rserpoolPoolElements 6 }

rserpoolPEUserAddrTableEntry OBJECT-TYPE

SYNTAX RserpoolPEUserAddrTableEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An IP address of the user transport endpoint."

REFERENCE

"[Section 3.10 of RFC 5354](#) defines the User Transport Parameter of which an address is contained by this entry."

INDEX {

rserpoolPEIndex,

rserpoolPEUserAddrTableIndex }

::= { rserpoolPEUserAddrTable 1 }

RserpoolPEUserAddrTableEntry ::= SEQUENCE {

rserpoolPEUserAddrTableIndex Unsigned32,

rserpoolPEUserL3Type InetAddressType,

rserpoolPEUserL3Addr InetAddress,

rserpoolPEUserL3Opaque RSerPoolOpaqueAddressTC }

rserpoolPEUserAddrTableIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..4294967295)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A unique identifier for the IP address of an user transport endpoint."

::= { rserpoolPEUserAddrTableEntry 1 }

rserpoolPEUserL3Type OBJECT-TYPE

SYNTAX InetAddressType { unknown(0), ipv4(1), ipv6(2) }

```

MAX-ACCESS read-only
STATUS      current
DESCRIPTION
    "The network-layer protocol of an IP address of an user transport
    endpoint. Set to unknown for opaque address."
REFERENCE
    "Section 3.10 of RFC 5354 defines the User Transport Parameter of
    which the network-layer protocol number is given here."
::= { rserpoolPEUserAddrTableEntry 2 }

rserpoolPEUserL3Addr OBJECT-TYPE
    SYNTAX      InetAddress (SIZE(0|4|16))
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The IP address of an user transport endpoint. The type of
        this address is given in rserpoolPEUserL3Addr."
    REFERENCE
        "Section 3.10 of RFC 5354 defines the User Transport Parameter of
        which the network-layer address (IPv4 or IPv6) is given here."
    ::= { rserpoolPEUserAddrTableEntry 3 }

rserpoolPEUserL3Opaque OBJECT-TYPE
    SYNTAX      RSerPoolOpaqueAddressTC
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The opaque address of an user transport endpoint."
    REFERENCE
        "Section 3.16 of RFC 5354 defines the opaque transport address."
    ::= { rserpoolPEUserAddrTableEntry 4 }

-- #####
-- #### Pool Users Section #####
-- #####

-- ## Definition of the pool user table #####
rserpoolPUTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF RserpoolPUEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "The table listing of pool users."
    ::= { rserpoolPoolUsers 1 }

```

## rserpoolPUEntry OBJECT-TYPE

SYNTAX RserpoolPUEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A pool user in the table listing of pool users."

INDEX { rserpoolPUIndex }

::= { rserpoolPUTable 1 }

## RserpoolPUEntry ::= SEQUENCE {

rserpoolPUIndex Unsigned32,

rserpoolPUOperationScope RSerPoolOperationScopeTC,

rserpoolPUPoolHandle RSerPoolPoolHandleTC,

rserpoolPUDescription OCTET STRING,

rserpoolPUUptime TimeTicks }

## rserpoolPUIndex OBJECT-TYPE

SYNTAX Unsigned32 (1..4294967295)

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"An integer to uniquely identify a pool user."

::= { rserpoolPUEntry 1 }

## rserpoolPUOperationScope OBJECT-TYPE

SYNTAX RSerPoolOperationScopeTC

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The operation scope of this pool user."

REFERENCE

"[Section 1.2 of RFC 3237](#) defines the term operation scope."

::= { rserpoolPUEntry 2 }

## rserpoolPUPoolHandle OBJECT-TYPE

SYNTAX RSerPoolPoolHandleTC

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The pool handle of this pool user. Changing this object will update the pool user's pool handle for all future sessions.

This object SHOULD be maintained in a persistent manner."

REFERENCE

"[Section 1.2 of RFC 3237](#) defines the term pool handle."

```
::={ rserpoolPUEntry 3 }
```

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rserpoolPUDescription OBJECT-TYPE

SYNTAX OCTET STRING (SIZE (0..255))

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"A textual description of this pool user, e.g. its location  
and a contact address of its administrator.

This object SHOULD be maintained in a persistent manner."

```
::= { rserpoolPUEntry 4 }
```

rserpoolPUUptime OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The ENRP service uptime of this pool user."

```
::= { rserpoolPUEntry 5 }
```

```
-- ## MIB conformance and compliance #####
```

```
rserpoolMIBCompliances OBJECT IDENTIFIER ::= {  
    rserpoolMIBConformance 1  
}
```

```
rserpoolMIBGroups OBJECT IDENTIFIER ::= {  
    rserpoolMIBConformance 2  
}
```

rserpoolMIBCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"The compliance statement for SNMP entities which implement  
RSerPool."

MODULE

MANDATORY-GROUPS {

rserpoolENRPGroup,

```
    rserpoolPEGroup,  
    rserpoolPUGroup }  
 ::= { rserpoolMIBCompliances 1 }
```

```
rserpoolENRPGROUP OBJECT-GROUP  
OBJECTS {  
    rserpoolENRPOperationScope,  
    rserpoolENRPIentifier,  
    rserpoolENRPDescription,
```

```
    rserpoolENRPUptime,  
    rserpoolENRPPort,  
    rserpoolENRPASAPAnnouncePort,  
    rserpoolENRPASAPAnnounceAddr,  
    rserpoolENRPASAPAnnounceAddrType,  
    rserpoolENRPENRPAnnounceAddrType,  
    rserpoolENRPENRPAnnouncePort,  
    rserpoolENRPENRPAnnounceAddr,
```

```
    rserpoolENRPPoolHandle,  
    rserpoolENRPPoolElementID,
```

```
    rserpoolENRPASAPTransportPort,  
    rserpoolENRPUserTransportProto,  
    rserpoolENRPUserTransportUse,  
    rserpoolENRPUserTransportPort,  
    rserpoolENRPPolicyID,  
    rserpoolENRPPolicyDescription,  
    rserpoolENRPPolicyWeight,  
    rserpoolENRPPolicyLoad,  
    rserpoolENRPPolicyLoadDeg,  
    rserpoolENRPRegistrationLife,  
    rserpoolENRPHomeENRPSTServer,
```

```
    rserpoolENRPASAPL3Type,  
    rserpoolENRPASAPL3Addr,
```

```
    rserpoolENRPUserL3Type,  
    rserpoolENRPUserL3Addr,  
    rserpoolENRPUserL3Opaque,
```

```
    rserpoolENRPENRPL3Type,
```

```

    rserpoolENRPENRPL3Addr,

    rserpoolENRPPeerIdentifier,
    rserpoolENRPPeerPort,
    rserpoolENRPPeerLastHeard,
    rserpoolENRPPeerL3Type,
    rserpoolENRPPeerL3Addr }
STATUS current
DESCRIPTION
    "The group contains all ENRP server instances
    running on the system"
 ::= { rserpoolMIBGroups 1 }

rserpoolPEGroup OBJECT-GROUP
OBJECTS {
    rserpoolPEOperationScope,

```

```

    rserpoolPEPoolHandle,
    rserpoolPEIdentifier,
    rserpoolPEDescription,
    rserpoolPEUptime,
    rserpoolPEASAPTransportPort,
    rserpoolPEUserTransportProto,
    rserpoolPEUserTransportPort,
    rserpoolPEUserTransportUse,
    rserpoolPEPolicyID,
    rserpoolPEPolicyDescription,
    rserpoolPEPolicyWeight,
    rserpoolPEPolicyLoad,
    rserpoolPEPolicyLoadDeg,
    rserpoolPERegistrationLife,
    rserpoolPEHomeENRP Server,

    rserpoolPEASAPL3Type,
    rserpoolPEASAPL3Addr,

    rserpoolPEUserL3Type,
    rserpoolPEUserL3Addr,
    rserpoolPEUserL3Opaque }
STATUS current
DESCRIPTION
    "The group contains all pool element instances

```

```

        running on the system"
 ::= { rserpoolMIBGroups 2 }

rserpoolPUGroup OBJECT-GROUP
  OBJECTS { rserpoolPUOperationScope,
            rserpoolPUPoolHandle,
            rserpoolPUDescription,
            rserpoolPUUptime }
  STATUS current
  DESCRIPTION
    "The group contains all pool user instances
    running on the system"
 ::= { rserpoolMIBGroups 3 }

END

```

## [7.](#) Operational Considerations

The RSerPool MIB is an experimental track MIB module, since the RSerPool documents are Experimental RFCs.

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## [8.](#) Security Considerations

There are a number of management objects defined in this MIB module with a MAX-ACCESS clause of read-write and/or read-create. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations. These are the tables and objects and their sensitivity/vulnerability:

rserpoolENRPDescription (textual description change)

rserpoolPEPoolHandle (pool handle of pool element change, similar to ASAP)

rserpoolPEDescription (textual description change)

rserpoolPEPolicyID (pool element ID change, similar to ASAP)

rserpoolPEPolicyDescription (textual description change)

rserpoolPEPolicyWeight (policy weight change, similar to ASAP)

rserpoolPEPolicyLoadDeg (policy load degradation change, similar to ASAP)

rserpoolPERegistrationLife (registration lifetime change, similar to ASAP)

rserpoolPUPoolHandle (pool handle of accessed pool change, similar to ASAP)

rserpoolPUDescription (textual description change)

The security implications of changing these items are similar to changes via ASAP; the corresponding security implications are described in the threats document [[RFC5355](#)]. Modifying the textual descriptions of components may result in wrong administrator decisions upon malicious information.

Some of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) may be considered sensitive or vulnerable in some network environments. It is thus important to control even GET and/or NOTIFY access to these objects and possibly to even encrypt the values of these objects when sending them over the network via SNMP. Read access reveals the same information which is also available by ASAP and ENRP access. The security implications of these two protocols are explained in detail by the threats

document [[RFC5355](#)].

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB module.

It is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [[RFC3410](#)], [section 8](#)), including full support for the SNMPv3 cryptographic mechanisms (for



authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

## [9.](#) IANA Considerations

The MIB module in this document uses the following IANA-assigned OBJECT IDENTIFIER values recorded in the SMI Numbers registry:

Descriptor	OBJECT IDENTIFIER Value
-----	-----
rserpoolMIB	{ experimental XXX }

Editor's Note (to be removed prior to publication): the IANA is requested to assign a value for XXX under the experimental subtree and to record the assignment in the SMI Numbers registry. When the assignment has been made, the RFC Editor is asked to replace XXX (here and in the MIB module) with the assigned value and to remove this note.

## [10.](#) Acknowledgments

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## [11.](#) References

### [11.1.](#) Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2578] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Structure of Management Information Version 2 (SMIv2)", STD 58, [RFC 2578](#), April 1999.
- [RFC2579] McCloghrie, K., Ed., Perkins, D., Ed., and J. Schoenwaelder, Ed., "Textual Conventions for SMIv2", STD 58, [RFC 2579](#), April 1999.
- [RFC2580] McCloghrie, K., Perkins, D., and J. Schoenwaelder, "Conformance Statements for SMIv2", STD 58, [RFC 2580](#), April 1999.
- [RFC4001] Daniele, M., Haberman, B., Routhier, S., and J. Schoenwaelder, "Textual Conventions for Internet Network Addresses", [RFC 4001](#), February 2005.
- [RFC5352] Stewart, R., Xie, Q., Stillman, M., and M. Tuexen, "Aggregate Server Access Protocol (ASAP)", [RFC 5352](#), September 2008.
- [RFC5353] Xie, Q., Stewart, R., Stillman, M., Tuexen, M., and A. Silverton, "Endpoint Handlespace Redundancy Protocol (ENRP)", [RFC 5353](#), September 2008.
- [RFC5354] Stewart, R., Xie, Q., Stillman, M., and M. Tuexen, "Aggregate Server Access Protocol (ASAP) and Endpoint Handlespace Redundancy Protocol (ENRP) Parameters", [RFC 5354](#), September 2008.
- [RFC5356] Dreibholz, T. and M. Tuexen, "Reliable Server Pooling Policies", [RFC 5356](#), September 2008.

## 11.2. Informative References

- [RFC3237] Tuexen, M., Xie, Q., Stewart, R., Shore, M., Ong, L., Loughney, J., and M. Stillman, "Requirements for Reliable Server Pooling", [RFC 3237](#), January 2002.
- [RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Management Framework", [RFC 3410](#), December 2002.

- [RFC5351] Lei, P., Ong, L., Tuexen, M., and T. Dreibholz, "An Overview of Reliable Server Pooling Protocols", [RFC 5351](#), September 2008.
- [RFC5355] Stillman, M., Gopal, R., Guttman, E., Sengodan, S., and M. Holdrege, "Threats Introduced by Reliable Server Pooling (RSerPool) and Requirements for Security in Response to Threats", [RFC 5355](#), September 2008.
- [Dre2006] Dreibholz, T., "Reliable Server Pooling -- Evaluation, Optimization and Extension of a Novel IETF Architecture", Ph.D. Thesis University of Duisburg-Essen, Faculty of Economics, Institute for Computer Science and Business Information Systems, URL: <http://duepublico.uni-duisburg-essen.de/servlets/DerivateServlet/Derivate-16326/Dre2006-final.pdf>, March 2007.
- [LCN2005] Dreibholz, T. and E. Rathgeb, "On the Performance of Reliable Server Pooling Systems", Proceedings of the 30th IEEE Local Computer Networks Conference, November 2005.
- [IJHIT2008] Dreibholz, T. and E. Rathgeb, "An Evalulation of the Pool Maintenance Overhead in Reliable Server Pooling Systems", International Journal of Hybrid Information Technology (IJHIT) Volume 1, Number 2, April 2008.
- [RSerPoolPage] Dreibholz, T., "Thomas Dreibholz's RSerPool Page", URL: <http://tdrwww.iem.uni-due.de.de/dreibholz/rserpool/>.
- [SNMPMIBS] Perkins, D. and E. McGinnis, "Understanding SNMP MIBs", 1997.

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