



SNMPv2 Object Descriptions

This chapter describes the individual MIB objects that comprise SNMPv2. The objects reside in the `SNMPv2-MIB.my` file.

Contents of this chapter include:

- System Group
- Object Resource Information
- SNMP Group
- Information for Notification
- Well-Known Traps
- Set Group
- SNMPv2 Conformance and Compliance Statements

System Group

The system group comprises a collection of objects that is common to all managed systems.

The following is the main object identifier for the `snmpMIBObjects`:

```
::= { mib-2 1 }
```

The object identifier for each MIB object is listed in Table 7-1. For possible values for the system group, see Table 1-8.

Table 7-1 System Group Object Identifiers


Name	Object Identifier
sysDescr	::= { system 1 }
sysObjectID	::= { system 2 }
sysUpTime	::= { system 3 }
sysContact	::= { system 4 }
sysName	::= { system 5 }
sysLocation	::= { system 6 }
sysServices	::= { system 7 }

The MIB objects are listed in Table 7-2.

Table 7-2 System Group MIB Objects

Name	Syntax	Description	Default Value
sysDescr	DisplayString (SIZE (0..255))	<p>Defines the textual description of the entity. This value includes a the full name and version identification of the system hardware type, software operating system, and networking software.</p> <p>Max-Access: read-only</p> <p>Status: current</p>	none
sysObjectID	OBJECT IDENTIFIER	<p>Specifies the vendor authoritative identification of the network management subsystem that is contained in the entity.</p> <p>This value is allocated within the Structure of Management Information (SMI) enterprise subtree 1.3.6.1.4.1. It provides an easy and unambiguous means for determining the type of box being managed. For example, if vendor Flintstones, Inc., is assigned the subtree 1.3.6.1.4.1.4242, it can assign the identifier 1.3.6.1.4.1.4242.1.1 to Fred Router.</p> <p>For the possible OID values assigned to <code>sysObjectID</code>, see Table 1-8.</p> <p>Max-Access: read-only</p> <p>Status: current</p>	none
sysUpTime	TimeTicks	<p>Determines the time (in hundredths of a second) since the network management portion of the system is last reinitialized.</p> <p>Max-Access: read-only</p> <p>Status: current</p>	none
sysContact	DisplayString (SIZE (0..255))	<p>Specifies the textual identification of the contact person for this managed node along with information on how to contact this person. If no contact information is known, the value is the zero-length string.</p> <p>Max-Access: read-write</p> <p>Status: current</p>	none
sysName	DisplayString (SIZE (0..255))	<p>Determines an administrative-assigned name for this managed node. By convention, this is the node fully-qualified domain name. If the name is unknown, the value is the zero-length string.</p> <p>Max-Access: read-write</p> <p>Status: current</p>	none

Table 7-2 System Group MIB Objects (continued)

Name	Syntax	Description	Default Value												
sysLocation	DisplayString (SIZE (0..255))	Determines the physical location of this node, for example, telephone closet, third floor. If the location is unknown, the value is the zero-length string. Max-Access: read-write Status: current	none												
sysServices	INTEGER (0..127)	Indicates the value for the set of services that this entity can potentially offer. The value is a <i>sum</i> . This <i>sum</i> initially takes the value zero. For each layer, <i>L</i> , in the range 1—7, this node performs transactions for 2 raised to (<i>L</i> - 1) is added to the sum. For example, a node that performs only routing functions, can have a value of 4 ($2^{(3-1)}$). In contrast, a node which is a host offering application services can have a value of 72 ($2^{(4-1)} + 2^{(7-1)}$). Max-Access: read-only Status: current For systems including Open System Interconnection (OSI) protocols, layers 5 and 6 can also be counted.  Note The context of the Internet suite of protocols contains values that are calculated accordingly. The following are the supported layers:	none												
		<table border="1"> <thead> <tr> <th>Layer</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Physical—Supports repeaters.</td> </tr> <tr> <td>2</td> <td>Datalink/Subnetwork—Supports bridges.</td> </tr> <tr> <td>3</td> <td>Internet—Supports Internet Protocol (IP).</td> </tr> <tr> <td>4</td> <td>End-To-End—Supports Transmission Control Protocol (TCP).</td> </tr> <tr> <td>7</td> <td>Application—Supports Simple Management Transfer Protocol (SMTP).</td> </tr> </tbody> </table>	Layer	Function	1	Physical—Supports repeaters.	2	Datalink/Subnetwork—Supports bridges.	3	Internet—Supports Internet Protocol (IP).	4	End-To-End—Supports Transmission Control Protocol (TCP).	7	Application—Supports Simple Management Transfer Protocol (SMTP).	
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Object Resource Information

The object resource information comprises a collection of objects, which describe the SNMPv2 entity either statically or dynamically configured to support various MIB modules.

The object identifier for each MIB object is shown in Table 7-3. For the values that are used for the object resource information, see Table 1-8.

Table 7-3 Object Resource Information Object Identifiers

Name	Object Identifier
sysORLastChange	::= { system 8 }
sysORTable	::= { system 9 }
sysOREntry	::= { sysORTable 1 }
sysORIndex	::= { sysOREntry 1 }
sysORID	::= { sysOREntry 2 }
sysORDescr	::= { sysOREntry 3 }
sysORUpTime	::= { sysOREntry 4 }

The MIB objects are listed in Table 7-4.

Table 7-4 Object Resource Information MIB Objects

Name	Syntax	Description	Default Value
sysORLastChange	TimeStamp	Specifies the value of <code>sysUpTime</code> at the time of the most recent change in state or value of any instance of <code>sysORID</code> . Max-Access: read-only Status: current	none
sysORTable	SEQUENCE OF SysOREntry	Lists the capabilities of the local SNMPv2 entity that acts as an agent role with respect to various MIB modules. SNMPv2 entities, which are dynamically-configured to support MIB modules, can have a dynamically-varying number of conceptual rows. Max-Access: not-accessible Status: current	none
sysOREntry	SysOREntry	Contains an entry (conceptual row) in the <code>sysORTable</code> . Max-Access: not-accessible Status: current The index contains <code>sysORIndex</code> .	none
sysORIndex	INTEGER (1..2147483647)	Specifies the auxiliary variable that is used to identify instances of the columnar objects in the <code>sysORTable</code> . Max-Access: not-accessible Status: current	none

Table 7-4 Object Resource Information MIB Objects (continued)

Name	Syntax	Description	Default Value
sysORID	OBJECT IDENTIFIER	Specifies an authoritative identification of a capabilities statement with respect to various MIB modules. They are supported by the local SNMPv2 entity that acts as an agent role. Max-Access: read-only Status: current	none
sysORDescr	DisplayString	Defines a textual description of the capabilities identified by the corresponding instance of <code>sysORID</code> . Max-Access: read-only Status: current	none
sysORUpTime	TimeStamp	Specifies the value <code>sysUpTime</code> at the time this conceptual row is last instantiated. Max-Access: read-only Status: current	none

SNMP Group

The SNMP group comprises a collection of objects that provides the basic instrumentation and control of an SNMP entity.

The following is the main object identifier for `snmp`:

```
::= { mib-2 11 }
```

The object identifier for each MIB object is listed in Table 7-5. For values that are used for the SNMP group, see Table 1-8.

Table 7-5 SNMP Group Object Identifiers

Name	Object Identifier
snmpInPkts	::= { snmp 1 }
snmpInBadVersions	::= { snmp 3 }
snmpInBadCommunityNames	::= { snmp 4 }
snmpInBadCommunityUses	::= { snmp 5 }
snmpInASNParseErrs	::= { snmp 6 }
snmpEnableAuthenTraps	::= { snmp 30 }
snmpSilentDrops	::= { snmp 31 }
snmpProxyDrops	::= { snmp 32 }

The SNMP Group MIB objects are listed in Table 7-6.

Table 7-6 SNMP Group MIB Objects

Name	Syntax	Description	Default Value
snmpInPkts	Counter32	Specifies the total number of messages delivered to the SNMP entity from the transport service. Max-Access: read-only Status: current	none
snmpInBadVersions	Counter32	Determines the total number of SNMP messages delivered to the SNMP entity and used for an unsupported SNMP version. Max-Access: read-only Status: current	none
snmpInBadCommunityNames	Counter32	Determines the total number of SNMP messages delivered to the SNMP entity that used a SNMP community name not known to the said entity. Max-Access: read-only Status: current	none
snmpInBadCommunityUses	Counter32	Determines the total number of SNMP messages delivered to the SNMP entity that represented a SNMP operation. It is not allowed by the SNMP community named in the message. Max-Access: read-only Status: current	none
snmpInASNParseErrs	Counter32	Determines the total number of ASN.1 or Basic Encoding rules (BER) errors encountered by the SNMP entity when decoding received SNMP messages. Max-Access: read-only Status: current	none
snmpEnableAuthenTraps	INTEGER { enabled(1), disabled(2) }	Indicates whether the SNMP entity is permitted to generate authenticationFailure traps. The value of this object overrides any configuration information. It provides a means whereby all authenticationFailure traps are disabled.  Note It is strongly recommended that this object be stored in non-volatile memory so that it remains constant across reinitializations of the network management system. Max-Access: read-write Status: current	none

Table 7-6 SNMP Group MIB Objects (continued)

Name	Syntax	Description	Default Value
snmpSilentDrops	Counter32	Determines the total number of <code>GetRequest-PDU</code> , <code>GetNextRequest-PDU</code> , <code>GetBulkRequest-PDU</code> , <code>SetRequest-PDU</code> , and <code>InformRequest-PDU</code> delivered to the SNMP entity. The <code>snmpSilentDrops</code> object is silently dropped because the size of a reply that contains an alternate <code>Response-PDU</code> with an empty <code>variable-bindings</code> field, which is greater than either a local constraint or the maximum message size associated with the originator of the request. Max-Access: read-only Status: current	none
snmpProxyDrops	Counter32	Determines the total number of <code>GetRequest-PDU</code> , <code>GetNextRequest-PDU</code> , <code>GetBulkRequest-PDU</code> , <code>SetRequest-PDU</code> , and <code>InformRequest-PDU</code> delivered to the SNMP entity. The <code>snmpProxyDrops</code> object is silently dropped because the transmission of the (possibly translated) message to a proxy target failed in a manner (other than a time-out) that no <code>Response-PDU</code> is returned. Max-Access: read-only Status: current	none

Information for Notification

The notification information comprises a collection of objects, which allow the SNMPv2 entity, when acting as an agent role, to be configured to generate the SNMPv2-Trap-PDU.

The following is the main object identifier for the `snmpTrap`:

```
::= { snmpMIBObjects 4 }
```

The object identifier for each MIB object is listed in Table 7-7. For values that are used for the information for notification, see Table 1-8.

Table 7-7 Information for Notification Object Identifiers

Name	Object Identifier
snmpTrapOID	::= { snmpTrap 1 }
snmpTrapEnterprise	::= { snmpTrap 3 }

The MIB objects are listed in Table 7-8.

Table 7-8 Information for Notification MIB Objects

Name	Syntax	Description	Default Value
snmpTrapOID	OBJECT IDENTIFIER	Specifies the authoritative identification of the notification currently being sent. This variable occurs as the second <code>varbind</code> in every <code>SNMPv2-Trap-PDU</code> and <code>InformRequest-PDU</code> . Max-Access: accessible-for-notify Status: current	none
snmpTrapEnterprise	OBJECT IDENTIFIER	Specifies the authoritative identification of the enterprise associated with the trap currently being sent. When a <code>SNMPv2</code> proxy agent is mapping an <code>RFC1157Trap-PDU</code> into a <code>SNMPv2-Trap-PDU</code> , this variable occurs as the last <code>varbind</code> . Max-Access: accessible-for-notify Status: current	none

Well-Known Traps

The following is the main object identifier for the `snmpTraps`:

```
::= { snmpMIBObjects 5 }
```



Note

Both **linkDown** (`::= { snmpTraps 3 }`) and **linkUp** (`::= { snmpTraps 4 }`) traps are defined in RFC 1573. RFC 1213 defines **egpNeighborLoss** (`::= { snmpTraps 6 }`).

The object identifier for each MIB object is listed in Table 7-9. For possible values for the traps, see Table 1-8.

Table 7-9 Well-Known Traps Object Identifiers

Name	Object Identifier
coldStart	<code>::= { snmpTraps 1 }</code>
warmStart	<code>::= { snmpTraps 2 }</code>
authenticationFailure	<code>::= { snmpTraps 5 }</code>

The MIB objects are listed in Table 7-10.

Table 7-10 Well-Known Traps MIB Objects

Name	Syntax	Description	Default Value
coldStart	none	Signifies the SNMPv2 entity acts as an agent role. This trap reinitializes itself so the configuration is altered. Status: current	none
warmStart	none	Signifies the SNMPv2 entity acts as an agent role. This trap reinitializes itself so the configuration is unaltered. Status: current	none
authenticationFailure	none	Signifies the SNMPv2 entity acts as an agent role. This trap receives a protocol message that is not properly authenticated. While all implementations of the SNMPv2 must be capable of generating this trap, the <code>snmpEnableAuthenTraps</code> object indicates whether this trap is generated. Status: current	none

Set Group

The set group comprises a collection of objects, which allow several cooperating SNMPv2 entities, all acting as a manager role, to coordinate their use of the SNMPv2 set operation.

The following is the main object identifier for `snmpSet`:

```
::= { snmpMIBObjects 6 }
```

The object identifier for the MIB object is listed in Table 7-11. For values that are used for the set group, see Table 1-8.

Table 7-11 Set Group Object Identifier

Name	Object Identifier
snmpSetSerialNo	::= { snmpSet 1 }

One MIB object is listed in Table 7-12 for the set group.

Table 7-12 Set Group MIB Object

Name	Syntax	Description	Default Value
snmpSetSerialNo	TestAndIncr	Specifies an advisory lock used to allow several cooperating SNMPv2 entities, which all act as a manager role, to coordinate their use of the SNMPv2 set operation. This object is used for coarse-grain coordination. To achieve fine-grain coordination, one or more similar objects are appropriately defined within each MIB group. Max-Access: read-write Status: current	none

SNMPv2 Conformance and Compliance Statements

The information on conformance is specific to SNMPv2. Table 7-13 lists the groups.

Table 7-13 SNMPv2 Conformance Groups

Name	Object Identifier
snmpMIBConformance	::= { snmpMIB 2 }
snmpMIBCompliances	::= { snmpMIBConformance 1 }
snmpMIBGroups	::= { snmpMIBConformance 2 }

SNMPv2 Compliance Statements

The compliance statement is used to support SNMPv2. The following are the mandatory groups:

- snmpGroup
- snmpSetGroup
- systemGroup
- snmpBasicNotificationsGroup

The compliance object identifier is listed in Table 7-14.

Table 7-14 SNMPv2 Compliance Object Identifier

Name	Object Identifier
snmpCommunityGroup	::= { snmpMIBCompliances 2 }

A list of the MIB objects is listed in Table 7-15.

Table 7-15 *SNMPv2 Compliance MIB Objects*

Name	Syntax	Description	Default Value
snmpBasicCompliance	none	Specifies the compliance statement for the SNMPv2 entities that implement the SNMPv2 MIB. Status: current	none
snmpCommunityGroup	none	Supports community-based authentication. This group is mandatory for SNMPv2 entities.	none

SNMPv2 Units of Conformance

The object identifiers for each MIB object is listed in Table 7-16.

Table 7-16 *SNMPv2 Units of Conformance Object Identifiers*

Name	Object Identifier
snmpGroup	::= { snmpMIBGroups 8 }
snmpCommunityGroup	::= { snmpMIBGroups 9 }
snmpSetGroup	::= { snmpMIBGroups 5 }
systemGroup	::= { snmpMIBGroups 6 }
snmpBasicNotificationsGroup	::= { snmpMIBGroups 7 }

The SNMPv2 units of conformance objects are listed in Table 7-17.

Table 7-17 *SNMPv2 Objects Used for Units of Conformance*

Name	Objects	Description	Default Value
snmpGroup	snmpInPkts, snmpInBadVersions, snmpInASNParseErrs, snmpSilentDrops, snmpProxyDrops, snmpEnableAuthenTraps	Specifies a collection of objects that provides instrumentation and control of an SNMPv2 entity. Status: current	none
snmpCommunityGroup	snmpInBadCommunityNames, snmpInBadCommunityUses	Specifies a collection of objects that provides basic instrumentation of a SNMPv2 entity that supports community-based authentication. Status: current	none
snmpSetGroup	snmpSetSerialNo	Specifies a collection of objects that allows several cooperating SNMPv2 entities, which all act as a manager role to coordinate their use of the SNMPv2 set operation. Status: current	none

Table 7-17 SNMPv2 Objects Used for Units of Conformance (continued)

Name	Objects	Description	Default Value
systemGroup	sysDescr, sysObjectID, sysUpTime, sysContact, sysName, sysLocation, sysServices, sysORLastChange, sysORID, sysORUpTime, sysORDescr	Defines objects that are common to all managed systems for the system group. Status: current	none
snmpBasicNotifications Group	coldStart, authenticationFailure	Specifies the two notifications that an SNMPv2 entity is required to implement. Status: current	none