

# How to Retrieve Sonus Enterprise MIB OIDs

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## Overview

The OIDs for a particular Sonus Enterprise MIB can be retrieved by running `snmpwalk` command in Linux. The OIDs can also be retrieved through MIB browser or any SNMP manager. SNMP uses five basic messages for communication between the manager and agent, one of which is the GET request that is used to query for information on or about a network entity. The `snmpwalk` command uses `getNext` request. SBC responds with a Get response that includes the index and the value of the next object.

The OIDs are indexes in the MIB tables, and indexes are not readable using SNMP GET requests. The SNMP GETNEXT requests are used to find out what indexes are currently present in the MIB tables. An SNMP GETNEXT request can return all rows in a MIB table, depending on what OID is requested. The `getNext` response contains the OID from that table with the index values encoded into the OID.

## Example

```
-- tagpath /system/memoryUtilIntervalStatistics
sonusSystemMemoryUtilIntervalStatisticsTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF SonusSystemMemoryUtilIntervalStatisticsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION "
The memory utilization for the
'n' number of intervals.
"
    ::= { sonusSystem 20 }

-- tagpath /system/memoryUtilIntervalStatistics
sonusSystemMemoryUtilIntervalStatisticsEntry OBJECT-TYPE
    SYNTAX      SonusSystemMemoryUtilIntervalStatisticsEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION " "
    INDEX { sonusSystemMemoryUtilIntervalStatisticsNumber,
sonusSystemMemoryUtilIntervalStatisticsCeName }
    ::= { sonusSystemMemoryUtilIntervalStatisticsTable 1 }

SonusSystemMemoryUtilIntervalStatisticsEntry ::=
    SEQUENCE {
        sonusSystemMemoryUtilIntervalStatisticsNumber Unsigned32,
        sonusSystemMemoryUtilIntervalStatisticsCeName String,
        sonusSystemMemoryUtilIntervalStatisticsIntervalValid INTEGER,
        sonusSystemMemoryUtilIntervalStatisticsTime Unsigned32,
        sonusSystemMemoryUtilIntervalStatisticsAverage Unsigned32,
        sonusSystemMemoryUtilIntervalStatisticsHigh Unsigned32,
        sonusSystemMemoryUtilIntervalStatisticsLow Unsigned32,
        sonusSystemMemoryUtilIntervalStatisticsAverageSwap Unsigned32,
        sonusSystemMemoryUtilIntervalStatisticsHighSwap Unsigned32,
        sonusSystemMemoryUtilIntervalStatisticsLowSwap Unsigned32
    }
```

The table `sonusSystemMemoryUtilIntervalStatisticsTable` has indexes `sonusSystemMemoryUtilIntervalStatisticsNumber` and `sonusSystemMemoryUtilIntervalStatisticsCeName`. Thus, there will be a row in this table for each combination of interval number and CE name. An HA pair will have two CEs or servers, each with a unique name.

If we perform a `getNext` request for this table using `snmpwalk` we get the following result:

```
snmpwalk -c admin -v 2c sbx140-1:161 1.3.6.1.4.1.2879.2.8.5.1.20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.28.6.83.66.88.49.52.48 = INTEGER: 1
iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.28.6.83.66.88.49.52.51 = INTEGER: 1
iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.29.6.83.66.88.49.52.48 = INTEGER: 1
iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.29.6.83.66.88.49.52.51 = INTEGER: 1
iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.30.6.83.66.88.49.52.48 = INTEGER: 1
iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.30.6.83.66.88.49.52.51 = INTEGER: 1
iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.31.6.83.66.88.49.52.48 = INTEGER: 1
iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.31.6.83.66.88.49.52.51 = INTEGER: 1
iso.3.6.1.4.1.2879.2.8.5.1.20.1.4.28.6.83.66.88.49.52.48 = Gauge32: 365862
iso.3.6.1.4.1.2879.2.8.5.1.20.1.4.28.6.83.66.88.49.52.51 = Gauge32: 365862
iso.3.6.1.4.1.2879.2.8.5.1.20.1.4.29.6.83.66.88.49.52.48 = Gauge32: 366761
iso.3.6.1.4.1.2879.2.8.5.1.20.1.4.29.6.83.66.88.49.52.51 = Gauge32: 366761
iso.3.6.1.4.1.2879.2.8.5.1.20.1.4.30.6.83.66.88.49.52.48 = Gauge32: 367661
iso.3.6.1.4.1.2879.2.8.5.1.20.1.4.30.6.83.66.88.49.52.51 = Gauge32: 367661
iso.3.6.1.4.1.2879.2.8.5.1.20.1.4.31.6.83.66.88.49.52.48 = Gauge32: 368561
iso.3.6.1.4.1.2879.2.8.5.1.20.1.4.31.6.83.66.88.49.52.51 = Gauge32: 368561
iso.3.6.1.4.1.2879.2.8.5.1.20.1.5.28.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.5.28.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.5.29.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.5.29.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.5.30.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.5.30.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.5.31.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.5.31.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.6.28.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.6.28.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.6.29.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.6.29.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.6.30.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.6.30.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.6.31.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.6.31.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.7.28.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.7.28.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.7.29.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.7.29.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.7.30.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.7.30.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.7.31.6.83.66.88.49.52.48 = Gauge32: 20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.7.31.6.83.66.88.49.52.51 = Gauge32: 14
iso.3.6.1.4.1.2879.2.8.5.1.20.1.8.28.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.8.28.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.8.29.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.8.29.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.8.30.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.8.30.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.8.31.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.8.31.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.9.28.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.9.28.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.9.29.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.9.29.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.9.30.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.9.30.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.9.31.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.9.31.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.10.28.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.10.28.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.10.29.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.10.29.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.10.30.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.10.30.6.83.66.88.49.52.51 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.10.31.6.83.66.88.49.52.48 = Gauge32: 0
iso.3.6.1.4.1.2879.2.8.5.1.20.1.10.31.6.83.66.88.49.52.51 = Gauge32: 0
```

The snmpwalk performs getNext requests of table iso.3.6.1.4.1.2879.2.8.5.1.20, which is the OID for sonusSystemMemoryUtilIntervalStatisticsTable. It returns the values of sonusSystemMemoryUtilIntervalStatisticsNumber and sonusSystemMemoryUtilIntervalStatisticsCeName encoded in the OID.

```
snmpwalk -c admin -t 10 -v 2c sbx140-1:161 1.3.6.1.4.1.2879.2.8.5.1.20
iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.28.6.83.66.88.49.52.48 = INTEGER: 1
iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.28.6.83.66.88.49.52.51 = INTEGER: 1
```

- The iso.3.6.1.4.1.2879.2.8.5.1.20 is the OID for sonusSystemMemoryUtilIntervalStatisticsTable. The next octet in the OID is the value for sonusSystemMemoryUtilIntervalStatisticsEntry, which is ".1" in this case.
- The next octet is for the first non-index object. In this case it is ".3" for sonusSystemMemoryUtilIntervalStatisticsIntervalValid.
- The next octet is for the sonusSystemMemoryUtilIntervalStatisticsNumber index. In this case it is "28" for the 28<sup>th</sup> interval.
- The next set of octets is for sonusSystemMemoryUtilIntervalStatisticsCeName. In this case it is "6.83.66.88.49.52.51". As sonusSystemMemoryUtilIntervalStatisticsCeName is a string, it is encoded as a length followed by the ASCII characters for the CE name. In this case the length is "6" and the next 6 octets are "SBX140" encoded in ASCII.
- The second getNext response has iso.3.6.1.4.1.2879.2.8.5.1.20.1.3.28.6.83.66.88.49.52.51 for the objects sonusSystemMemoryUtilIntervalStatisticsIntervalValid, sonusSystemMemoryUtilIntervalStatisticsNumber 28, and sonusSystemMemoryUtilIntervalStatisticsCeName "SBX143". The rest of the getNext responses are for all the objects and rows in the table.

## Retrieving OIDs

Execute the `snmpwalk` command in the following operating system to retrieve the OIDs:

1. Linux:

```
snmpwalk -v 2c -c <community string> <sbc ip> <oid>
```

2. Solaris:

```
/usr/sfw/bin/snmpwalk -v 2c -c <community string> <sbc ip> <oid>
```



SBC SWE is running on various hardware platforms. Thus, the timeout value must be adjusted based on the hardware type if `snmpwalk` command is used for SBC SWE.

For more information on SNMP, refer to the RFC 3411 <http://www.rfc-editor.org/rfc/rfc3411.txt>.

## Retrieving OIDs Using Sonus Insight EMS

To run the `snmpwalk` command in EMS:

- Register the SBC node to the **Sonus Insight™ Web-based Element Management System**. For more information, refer to [SNMP Trap Management](#).
- Run the following command in EMS server. The 1.3.6.1.4.1.2879.2.8.5 represents the sonusSystemMIB OID.

```
/usr/sfw/bin/snmpwalk -t 10 -v 2c -c admin 10.54.153.134 1.3.6.1.4.1.2879.2.8.5
```

The following output displays:

```
# /usr/sfw/bin/snmpwalk -t 10 -v 2c -c admin 10.54.153.134 1.3.6.1.4.1.2879.2.8.5
SNMPv2-SMI::enterprises.2879.2.8.5.1.1.1.0 = INTEGER: 1
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.1.0 = INTEGER: 1
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.2.0 = INTEGER: 1
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.3.0 = STRING: "n/a"
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.4.0 = STRING: "n/a"
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.5.0 = STRING: "None"
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.6.0 = STRING: "None"
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.7.0 = INTEGER: 1
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.8.0 = STRING: "None"
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.9.0 = STRING: "None"
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.10.0 = INTEGER: 0
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.11.0 = INTEGER: 1
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.12.0 = STRING: "None"
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.13.0 = STRING: "None"
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.14.0 = STRING: "None"
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.15.0 = INTEGER: 2
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.16.0 = INTEGER: 1
SNMPv2-SMI::enterprises.2879.2.8.5.1.2.17.0 = INTEGER: 1
```

## Retrieving OIDs Using a Linux Server

Copy the MIBs to the Linux server and execute the following commands in the server to retrieve the OIDs:

### snmpwalk:

```
# snmpwalk -c <community> -v2c -M /path/to/mib/dir -mall SBC-HOST <OID>
```

### Example:

```
# snmpwalk -c admin -v2c -On -M /home/user1/mymibs/std-mibs/:/home/user1/mymibs/sonus-mibs/ -mall
10.54.170.27 sonusAddressContextTable
.1.3.6.1.4.1.2879.2.10.2.1.1.1000.7.100.101.102.97.117.108.116 = INTEGER: 0
.1.3.6.1.4.1.2879.2.10.2.1.1.1000.14.65.68.68.82.95.67.79.78.84.69.88.84.95.49 = INTEGER: 0

# snmpwalk -c admin -v2c -M /home/user1/mymibs/std-mibs/:/home/user1/mymibs/sonus-mibs/ -mall
10.54.170.27 sonusAddressContextTable
SONUS-ADDRESS-CONTEXT::sonusAddressContextDummy."default" = INTEGER: 0
SONUS-ADDRESS-CONTEXT::sonusAddressContextDummy."ADDR_CONTEXT_1" = INTEGER: 0
```

### snmpget:

```
# snmpget -c admin -v2c -M /path/to/mib/dir -mall SBC-HOST <OID>
```

### Example:

```
# snmpget -c admin -v2c -M /home/user1/mymibs/std-mibs/:/home/user1/mymibs/sonus-mibs/ -mall
10.54.170.27 sysDescr.0
RFC1213-MIB::sysDescr.0 = STRING: "Sonus SBC 5200 version sbc-V05.00.00-A233.x86_64"
```

### snmpgetnext:

```
# snmpgetnext -c admin -v2c -M /path/to/mib/dir -mall SBC-HOST <OID>
```

### Example:

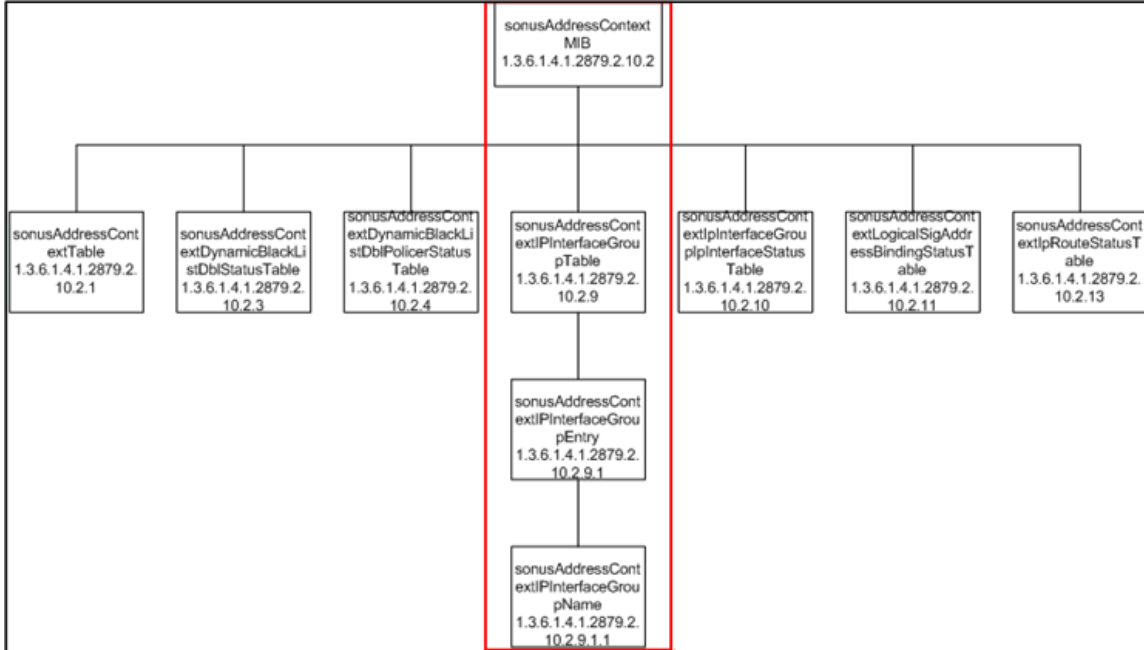
```
# snmpgetnext -c admin -v2c -M /home/user1/mymibs/std-mibs/:/home/user1/mymibs/sonus-mibs/ -mail
10.54.170.27 sysObjectID
RFC1213-MIB::sysObjectID.0 = OID: SONUS-SMI::sonusSBC5200
```

## Retrieving OIDs Using SNMP Browser

SNMP browser is used to retrieve the OIDs. Following are the few examples showing the OIDs for Sonus Enterprise MIBs.

### Example 1

**Figure 1:** Retrieving the OIDs for Address Context MIB



Most of the Sonus Enterprise MIB tables use strings for their indexes. A string in SNMP is a series of OID values. The first OID is the length of the string. The following OIDs are the characters encoded in ASCII. Therefore, a string is encoded as a length followed by ASCII characters. To decode the values, refer to ASCII table.

To retrieve the OID further, the GETNEXT request is used in SNMP browser. By using this request, the following OIDs can be retrieved:

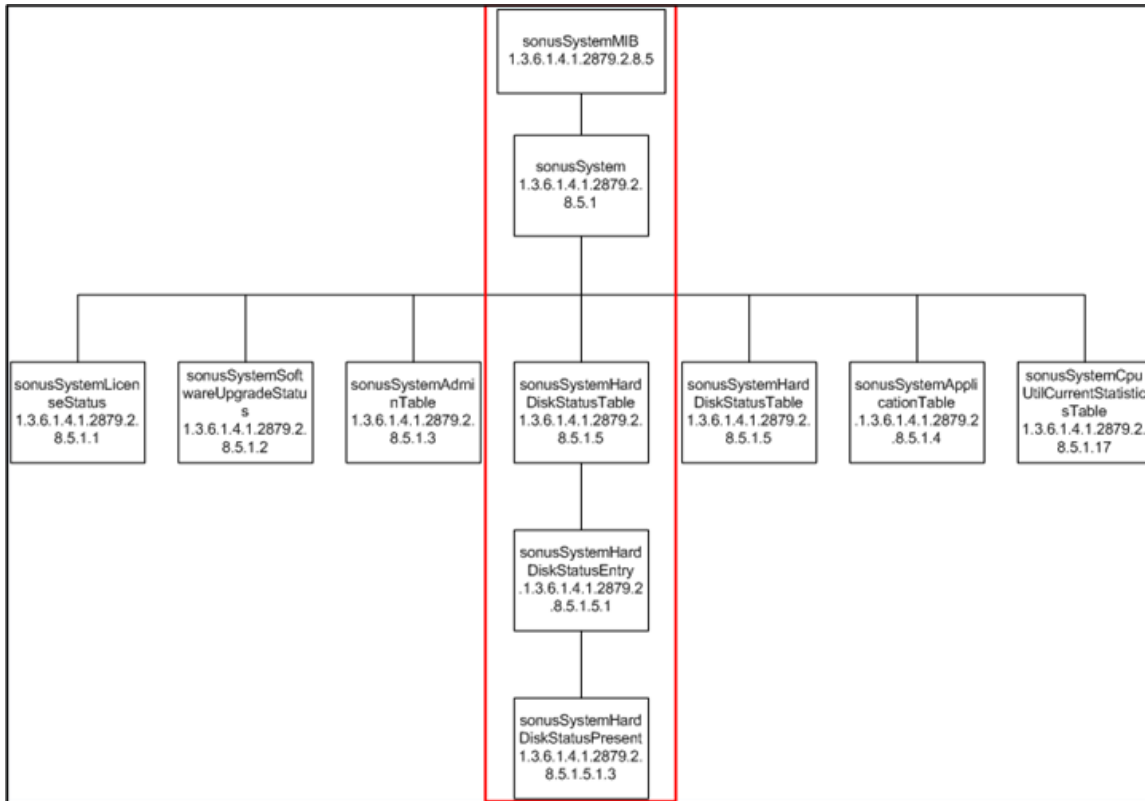
- 1.3.6.1.4.1.2879.2.10.2.9.1.1.7.100.101.102.97.117.108.116.4.76.73.70.49
- 1.3.6.1.4.1.2879.2.10.2.9.1.1.7.100.101.102.97.117.108.116.4.76.73.70.50

By using the ASCII table, the OIDs can be decoded as follows:

- 1.3.6.1.4.1.2879.2.10.2.9.1.1.7(length of 7).100(d).101(e).102(f).97(a).117(u).108(l).116(t).4(length of 4).76(L).73(l).70(F).49(1)
- 1.3.6.1.4.1.2879.2.10.2.9.1.1.7(length of 7).100(d).101(e).102(f).97(a).117(u).108(l).116(t).4(length of 4).76(L).73(l).70(F).50(2)

### Example 2

**Figure 2:** Retrieving the OIDs for System MIB



Most of the Sonus Enterprise MIB tables use strings for their indexes. A string in SNMP is a series of OID values. The first OID is the length of the string. The following OIDs are the characters encoded in ASCII. Therefore, a string is encoded as a length followed by ASCII characters. To decode the values, refer to ASCII table.

To retrieve the OIDs further, the GETNEXT request is used to retrieve the OID.

- 1.3.6.1.4.1.2879.2.8.5.1.5.1.3.5.72.111.110.100.97.0

By using the ASCII table, the OID can be decoded as follows:

- 1.3.6.1.4.1.2879.2.8.5.1.5.1.3.5(length of 5).72(H).111(o).110(n).100(d).97(a).0(NUL)

