Dell PowerConnect W-Series ArubaOS 6.2 MIB

Reference Guide

Contents

This manual is for network administrators and operators responsible for managing the controller.

NOTE: Beginning with this release, MIB module tables and OIDs are no longer documented in this guide. To view current MIB module tables and OIDs, download the standard mibs tar.gz file from download.dell-pcw.com and view each MIB using a free MIB browser. See section "MIB Browsers" on page 13 for viewing MIBs.

Contents

This guide provides information about Dell PowerConnect W-Series ArubaOS 6.2 MIBs. Unless otherwise stated in the following table, each chapter provides information about the hierarchy, OIDs, and descriptions of the statistical information the MIBs provide.

Chapter	Contents
Chapter 1 MIB Overview	Introductory information about ArubaOS MIBs—hierarchy, relationship with SNMP, and Traps.
Chapter 2 Using MIBs	Information and tips about MIB files.
Chapter 3 Modules and Traps	Information about access points (AP) and air monitors (AM). NOTE: All MIB tables and MIB OIDs in this chapter were deprecated in ArubaOS 3.0 and are no longer supported

Related Documents

The complete documentation set for ArubaOS 6.2 software release are:

- *Dell PowerConnect W-Series ArubaOS 6.2 MIB Reference Guide (this guide)*
- *Dell PowerConnect W-Series ArubaOS 6.2 Quick Start Guide*
- *Dell PowerConnect W-Series ArubaOS 6.2 User Guide*
- *Dell PowerConnect W-Series ArubaOS 6.2 CLI Reference Guide*
- *Dell PowerConnect W-Series ArubaOS 6.2 Release Notes*

Text Conventions

Table 1 presents the conventions used throughout this manual to emphasize important concepts:

Table 1 Conventions

Type Style	Description
Italics	This style is used to emphasize important terms and to mark the titles of books.
`System items`	This fixed-width font depicts the following: Sample screen output, System prompts, Filenames, software devices, and certain commands when mentioned in the text.

Table 1 Conventions

Type Style	Description
Commands	In the command examples, this bold font depicts text that the user must type exactly as shown.

Frequently Used Acronyms

Table 2 defines frequently used acronyms.

Table 2 Frequently Used Acronyms

Acronym	Definition
3DES	Triple DES
ACL	Access Control List
ADP	ArubaOS Discovery Protocol
AM	Air Monitor
AP	Access Point
ARM	Adaptive Radio Management
BSSID	Basic Service Set Identifier
CA	Certificate Authority
CAC	Call Admission Control
CHAP	Challenge Handshake Authentication Protocol
CLI	Command Line Interface
CRL	Certificate Revocation List
CSA	Channel Switch Announcement
CSR	Certificate Signing Request
CW	Contention Window
DA	Destination Address
DES	Data Encryption Standard
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Service
DOS	Denial of Service
DPD	Dead Peer Detection
DSS	Direct Spread Spectrum
EAP	Extensible Authentication Protocol
EDCA	Enhanced Distributed Channel Access
EIRP	Effective Isotropic Radiated Power
ESI	External Services Interface
ESSID	Extended Service Set Identifier
GRE	Generic Routing Encapsulation

Table 2 Frequently Used Acronyms (Continued)

Acronym	Definition
GUI	Graphical User Interface
HAT	Home Agent Table
HT	High Throughput
IAS	Internet Authentication Service
IDS	Intrusion Detection System
IGMP	Internet Group Management Protocol
IKE	Internet Key Exchange
IP	Internet Protocol
IV	Initialization Vectors
kB	Kilobyte
LAN	Local Area Network
LDAP	Lightweight Directory Access Protocol
LI	Listening Interval
MAC	Media Access Control
MB	Megabyte
MCHAP	Microsoft Challenge Handshake Authentication Protocol
MIB	Management Information Base
NAS	Network Address Server
NAT	Network Address Translation
NIC	Network Interface Card
NTP	Network Time Protocol
OFDM	Orthogonal Frequency Division Multiplexing
OID	Object Identifier
OUI	Organizational Unit Identifier
PAP	Password Authentication Protocol
PEAP	Protected EAP
PEF	Policy Enforcement Firewall
PIN	Personal Identification Number
PoE	Power over Ethernet
PPTP	Point-to-Point Tunneling Protocol
PSK	Pre-Shared Key
QoS	Quality of Service
RADIUS	Remote Authentication Dial In User Service
RAP	Remote Access Point

Table 2 Frequently Used Acronyms (Continued)

Acronym	Definition
RF	Radio Frequency
RMON	Remote Monitor
RSA	Rivest-Shamir-Aldeman (encryption algorithm)
SIP	Session Initiation Protocol
SNMP	Simple Network Management Protocol
SSH	Secure Shell
SSID	Service Set Identifier
TIM	Traffic Indication Map
TLS	Transport Layer Security
ToS	Type of Service
TSPEC	Traffic Specification
VLAN	Virtual Local Area Network
VoIP	Voice over IP
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol
VSA	Vendor Specific Attributes
WEP	Wired Equivalent Protocol
WINS	Windows Internet Naming Service
WLAN	Wireless Local Area Network
WMM	Wireless MultiMedia / Wi-Fi Multimedia
WMS	WLAN Management System
WPA	Wi-Fi Protected Access

Contacting Support

Table 3 Website Support

Web Site Support	
Main Website	dell.com
Support Website	dell.com/support
Documentation Website	dell.com/support/manuals

Chapter 1

MIB Overview

This chapter provides an overview of the ArubaOS Enterprise MIBs in the following sections:

MIB

A Management Information Base (MIB) is a virtual database that contains information that is used for network management. Each managed device contains MIBs that define the properties of that device. A separate MIB is provided for each defined property, such as the group of physical ports that are assigned to a VLAN or the statistical data of packets that are transferred at a specific rate.

MIB objects, such as a MIB table or a specific element of data in a MIB table, are identified with Object Identifiers (OIDs). The OIDs are designated by text strings and integer sequences.

The hardware MIBs are assigned under the Dell organization code, while all others are under the Aruba organization code. For example, *Dell* and *1.3.6.1.4.1.674* both represent the private enterprise node *Aruba*, as shown in Figure 1 on page 10.

Dell is the parent of the proprietary MIBs that are supported on Dell PowerConnect W-Series Mobility Controllers.

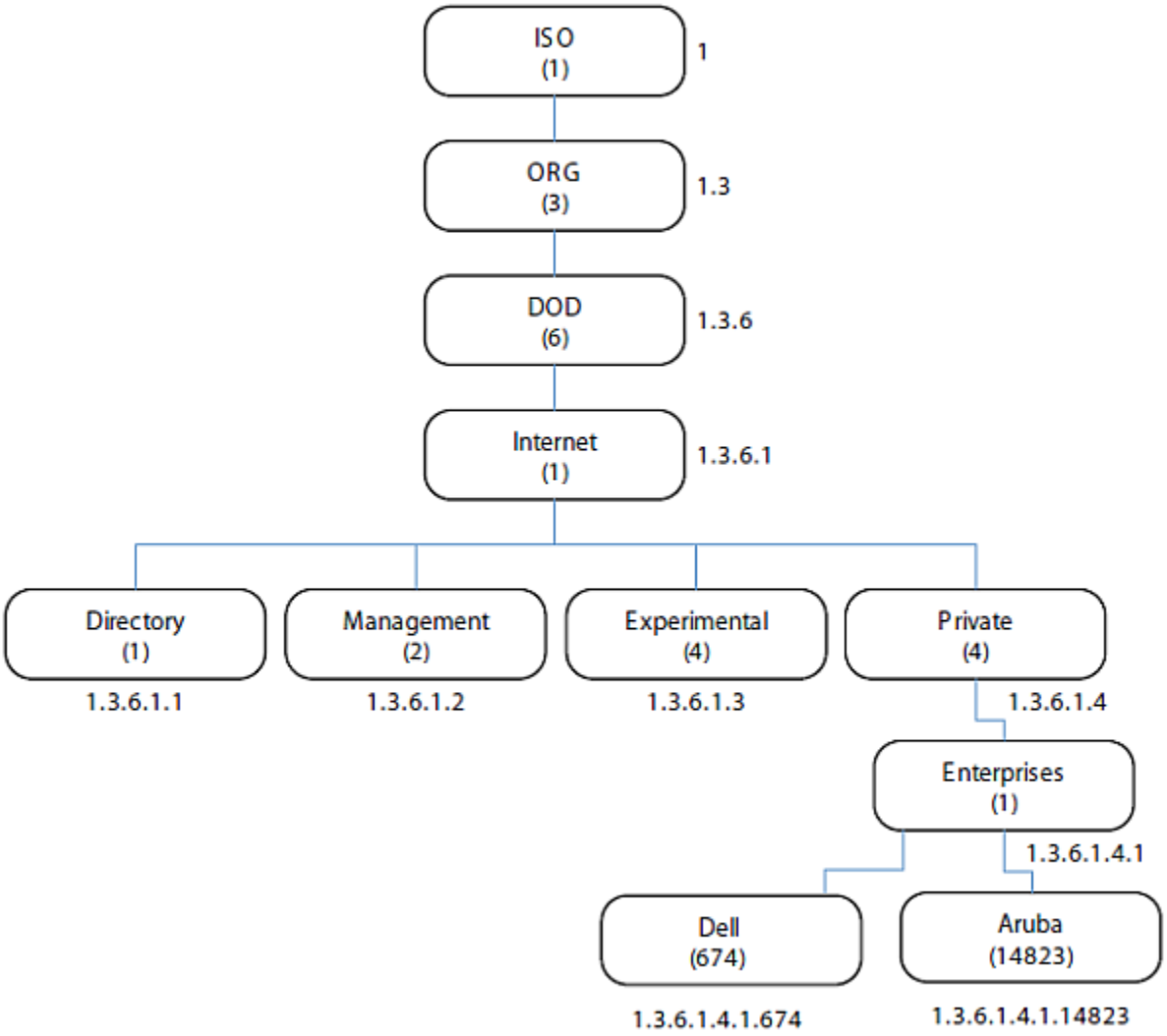
The numerical string lists the nodes of the enterprise MIB hierarchy, as shown in Table 4.

Table 4 MIB Node Identification - enterprise nodes

Integer	String	Name
1	1	OSI
3	1.3	ORG
6	1.3.6	DOD
1	1.3.6.1	Internet
4	1.3.6.1.4	Private
1	1.3.6.1.4.1	Enterprise
674	1.3.6.1.4.1.674	Dell

Figure 1 illustrates the high-level hierarchy of the MIBs. This document only covers the enterprise MIBs, objects designed to specifically support Dell devices. Standard MIBs are not covered.

Figure 1 High Level MIB Hierarchy



MIB is one of the elements of Simple Network Management Protocol (SNMP), which is used to manage network devices. To deliver information between devices, every object referred to in an SNMP message must be listed in the MIB. If a component of a device is not described in a MIB, that component cannot be recognized by SNMP—there is no information for SNMP managers and SNMP agents to exchange.

The information provided by a MIB is a file that describes network elements with numerical strings. This information is compiled into readable text by the SNMP manager. For information about reading MIB text files, see "Reading MIB Files" on page 18.

SNMP

Three significant elements of SNMP are Managers, Agents, and MIBs.

- Managers (software application) are consoles that are used to communicate with and manage devices that support SNMP Agents. Managers collect information by polling Agents. Managers can also be used to send configuration updates or send controlling requests to actively manage a network device.
- Agents (software application) provide information from the network devices to the Managers. Network devices include workstations, routers, microwave radios, and other network components. Agents are embedded in the controller firmware, unlike some devices such as servers that require the agent to be installed separately.

- MIBs are used for communication between the Managers and the Agents. The OIDs of the MIBs enable the Managers and Agents to communicate specific data requests and data returns.
- To ensure functionality with SNMP, MIB objects must be defined with the proper *keywords*, as shown in Table 5.

ArubaOS Enterprise MIBs support SNMPv1, SNMPv2, and SNMPv3.

Table 5 MIB Keywords

Keyword	Description
Sequence	The sequence of objects of the MIB. This keyword is used mostly with entry MIB objects to list the MIB objects that exchange information.
Syntax	Textual conventions, such as Integer32.
Max-Access	Defines the object accessibility: read-only: can be retrieved but not modified read-write: can be retrieved and modified not-accessible: cannot be retrieved; it is for internal (device) use only accessible-for-notify: can be retrieved when a trap message (notification) is sent
Status	Defines the status of the object: current: up to date deprecated. obsolete, and to be phased out in the future
Description	A text string that describes the object.

NOTE: History may be included in some MIB tables—it lists in which ArubaOS release the MIB was updated or otherwise changed.

Traps

An event is a change on a network device, such as a change in value that crosses threshold. Some events are categorized as alarms, other events only provide information. When an event occurs on a network device, SNMP notifications are sent out as traps or information requests.

- Traps are unconfirmed notifications—the receiver does not acknowledge to the sender that the information was received.
- Inform requests are confirmed notifications—the receiver acknowledges to the sender that the information was received.

Following are descriptions of trap types.

- Discrete Alarm Inputs

  These traps, also known as digital inputs or contact closures, are used for monitoring equipment failures, intrusion alarms, beacons, and flood and fire detectors.
- Analog Alarm Inputs

  Analog alarms measure characteristics that can affect equipment performance—variable levels of voltage or current, temperature, humidity, and pressure.
- Ping Alarms

  Ping alarms are used to ping network devices at regular intervals. If a device fails to respond, an alarm (SNMP trap) will be sent.
- Control Relays

  Relay outputs enable operating remote site equipment.

- Terminal Server Function

  The terminal server function enables connection to remote-site serial devices. For example, device connection to serial ports enables telnet access via LAN.

Chapter 2

Using MIBs

This chapter provides information on and examples of using MIBs.

Downloading MIB Files

The most recent Dell MIB files are available for registered customers at:

download.dell-pcw.com

For assistance to set up an account and access files, please contact customer service. See "Contacting Support" on page 8.

Monitoring WLAN Health

This section lists SNMP MIBs that are frequently used to run health checks on Dell devices, which can be performed through a MIB browser application. To retrieve information from a MIB, the following information is required:

- SNMP version
- SNMP community name—*public* or *private*
- The IP Address of the Dell Mobility Controller
- The OID of the MIB value you want to monitor

In addition, MIB files can be placed in the appropriate disk location to assist the user in locating desired OID values for monitoring. If MIB files need to be acquired, see Downloading MIB Files, above.

It is assumed that the workstation is connected to the Dell controller and that a MIB browser is available. For most applications, the *root* of the MIB must be included in the OID—the OID begins with a decimal point as shown below.

```
.1.3.6.1.4.1.674.2.2.1.1.2.1
```

MIB Browsers

If using an application that is run through CLI (a *cmd* window), the command would resemble the following:

```
snmpget -v 2c -c <community name> <controller IP address><MIB OID>
```

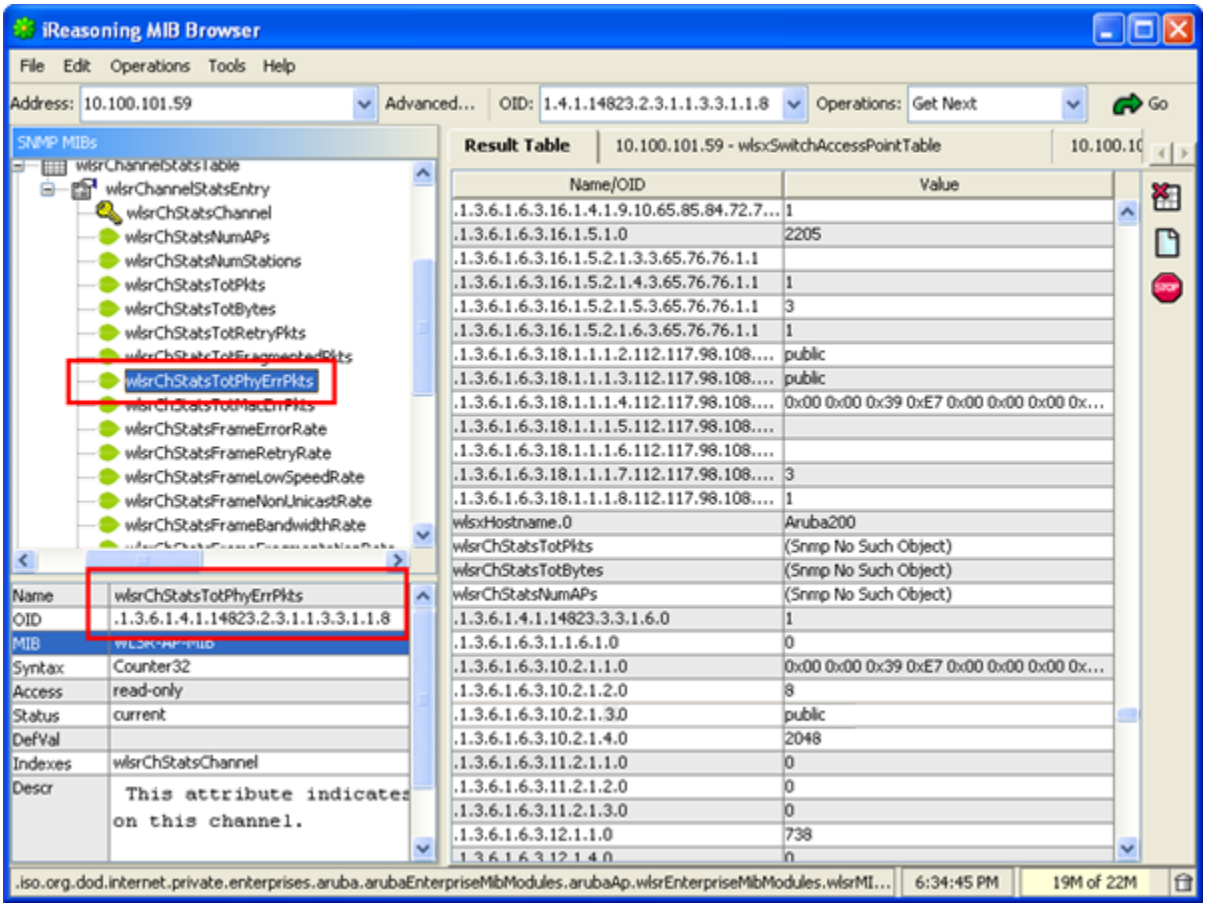
Figure 2 shows an example of submitting a command to obtain information.

Figure 2 CLI Interface

```
C:\usr\bin>snmpget -v 2c -c public 10.100.101.59 .1.3.6.1.4.1.14823.2.2.1.1.1.1
WLSX-SWITCH-MIB::wlsxHostName = GLOBALS: Aruba200
```

Figure 3 shows how information may be obtained through a graphical user interface (GUI). The user interface and the available features vary by application.

Figure 3 Graphical User Interface



WLAN Health Information

This sections lists frequently used MIBs for system health checks. Examples of executing a command via CLI are also provided. Health check information can be acquired through other MIB browsers, as described in ."MIB Browsers" on page 13

- Number of Current Authentications per AP
- Number of Current APs per Controller
- Number of Down APs per Controller
- Number of Successful 802.1x Authentications
- Number of Rogue APs per Controller—Count per Building
- Number of Interfering APs per Controller
- Noise Level per AP
- AP Information from Master Controller
- Frame Retry Rate per AP BSSID
- Frame Low-Speed Rate per AP BSSID
- Frame Receive Error Rate per AP BSSID
- Frame Retry Rate per AP Channel
- Frame Low-Speed Rate per AP Channel
- Frame Receive Errors per AP Channel
- Total Current Channel Bandwidth (kbps) per AP
- Tx Packets per AP BSSID (32-bit counter)
- Tx Bytes per AP BSSID (32-bit counter)
- Rx Packets per AP BSSID (32-bit counter)
- Rx Bytes per AP BSSID (32-bit counter)
- Total Bandwidth per AP BSSID (kbps)
- Free Memory
- SNR of APs

- SNR of Wireless Devices per AP

Number of Current Authentications per AP

wlsxSwitchUserTable	.1.3.6.1.4.1.14823.2.2.1.1.2.1

```
snmpwalk -v 2c -m ALL -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.2.1 | grep -c <AP Location ID x.y.z>
```

Number of Current APs per Controller

wlsxSwitchTotalNumAccessPoints	.1.3.6.1.4.1.14823.2.2.1.1.3.1

```
snmpget -v 2c -m ALL -c <community name> <Local controller IP>
.1.3.6.1.4.1.14823.2.2.1.1.3.1
```

Number of Down APs per Controller

globalAPState	.1.3.6.1.4.1.14823.2.2.1.1.3.4.1.6

```
snmpwalk -v 2c -m ALL -c <community name> <Master controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.4.1.6 | grep -c 'INTEGER: 2'
```

Number of Successful 802.1x Authentications

wlsxSwitchUserTable	.1.3.6.1.4.1.14823.2.2.1.1.2.1

To list the current dot1x users, enter:

```
snmpwalk -v 2c -m ALL -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.2.1 | grep -c "<dot1x>"
```

Number of Rogue APs per Controller—Count per Building

wlsrAmRAPType	.1.3.6.1.4.1.14823.2.3.1.1.4.1.1.6

```
snmpwalk -v 2c -m ALL -c <community name> <AP IP addr>
.1.3.6.1.4.1.14823.2.3.1.1.4.1.1.6 | grep -c "unsecure"
```

Number of Interfering APs per Controller

wlsrAmRAPType	.1.3.6.1.4.1.14823.2.3.1.1.4.1.1.6

```
snmpwalk -v 2c -m ALL -c <community name> <AP IP addr>
.1.3.6.1.4.1.14823.2.3.1.1.4.1.1.6 | grep -c "interfering"
```

Noise Level per AP

apChannelNoise	.1.3.6.1.4.1.14823.2.2.1.1.3.3.1.13

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.3.1.13 | grep "<ap bssid in decimal format>"
```

AP Information from Master Controller

wlsxSwitchGlobalAPTable	.1.3.6.1.4.1.14823.2.2.1.1.3.4

The following command retrieves the BSSIDs and local controller IP of each AP.

```
snmpwalk -v 2c -m ALL -c <community name> <Master controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.4
```

Frame Retry Rate per AP BSSID

apBSSFrameRetryRate	.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.13

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.13 | grep "<ap bssid in decimal format>"
```

Frame Low-Speed Rate per AP BSSID

apBSSFrameLowSpeedRate	.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.14

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.14 | grep "<ap bssid in decimal format>"
```

Frame Receive Error Rate per AP BSSID

apBSSFrameReceiveErrorRate	.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.17

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.17 | grep "<ap bssid in decimal format>"
```

Frame Retry Rate per AP Channel

apChannelFrameRetryRate	.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.3

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.3 | grep "<ap bssid in decimal format>"
```

Frame Low-Speed Rate per AP Channel

apChannelFrameLowSpeedRate	.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.4

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.4 | grep "<ap bssid in decimal format>"
```

Frame Receive Errors per AP Channel

This information is available from any Dell controller.

apChannelFrameReceiveErrorRate	.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.7

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.7 | grep "<ap bssid in decimal format>"
```

Total Current Channel Bandwidth (kbps) per AP

apChannelBwRate .1.3.6.1.4.1.14823.2.2.1.1.3.5.1.2

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.2 | grep "<ap bssid in decimal format>"
```

Tx Packets per AP BSSID (32-bit counter)

apBSSTxPackets .1.3.6.1.4.1.14823.2.2.1.1.3.5.1.8

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.8 | grep "<ap bssid in decimal format>"
```

Tx Bytes per AP BSSID (32-bit counter)

apBSSTxBytes .1.3.6.1.4.1.14823.2.2.1.1.3.5.1.9

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.9 | grep "<ap bssid in decimal format>"
```

Rx Packets per AP BSSID (32-bit counter)

apBSSRxPackets .1.3.6.1.4.1.14823.2.2.1.1.3.5.1.10

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.10 | grep "<ap bssid in decimal format>"
```

Rx Bytes per AP BSSID (32-bit counter)

apBSSRxBytes .1.3.6.1.4.1.14823.2.2.1.1.3.5.1.11

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.11 | grep "<ap bssid in decimal format>"
```

Total Bandwidth per AP BSSID (kbps)

apBSSBwRate .1.3.6.1.4.1.14823.2.2.1.1.3.5.1.12

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.5.1.12 | grep "<ap bssid in decimal format>
```

Free Memory

sysXMemoryFree .1.3.6.1.4.1.14823.2.2.1.1.1.11.1.4

```
snmpget -v 2c -m ALL -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.1.11.1.4.1
```

SNR of Wireless Devices per AP

staSignalToNoiseRatio .1.3.6.1.4.1.14823.2.2.1.1.2.2.1.7

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.2.2.1.7 | grep "<ap bssid in decimal format>"
```

SNR of APs

apSignalToNoiseRatio	.1.3.6.1.4.1.14823.2.2.1.1.3.3.1.14

```
snmpwalk -v 2c -c <community name> <controller IP addr>
.1.3.6.1.4.1.14823.2.2.1.1.3.3.1.14 | grep "<ap bssid in decimal format>"
```

Reading MIB Files

This section describes how to interpret the basic components of a MIB file. To determine the OIDs, viewing the file snmp.h may be necessary, which is described in "SNMP File" on page 21. For additional information about MIB files, see "MIB" on page 9.

MIB files describe a specific component of a network device. The files are numerical strings that are converted to ASCII text by the compiler of the SNMP manager. A word processor or text editor can be used to open the ASCII file. The contents of an example ArubaOS enterprise MIB file, *aruba-cts.my*, are described below.

Opening Line

Following is the opening line, the beginning of the MIB file.

```
WLSX-CTS-MIB DEFINITIONS ::= BEGIN
```

Imports

The `Imports` section lists the objects that are defined in external ASN.1 files and are used in the current MIB file.

```
IMPORTS
    TEXTUAL-CONVENTION,
    MODULE-IDENTITY,
    OBJECT-TYPE,
    snmpModules,
    Integer32,
    Unsigned32,
    Counter32,
    IpAddress,
    NOTIFICATION-TYPE
        FROM SNMPv2-SMI

    TDomain,
    DisplayString,
    PhysAddress,
    TAddress,
    TimeInterval,
    RowStatus,
    StorageType,
    TestAndIncr,
    MacAddress,
    TruthValue
        FROM SNMPv2-TC

    OBJECT-GROUP
        FROM SNMPv2-CONF
```

Inheritance

This section shows the vendor of the MIB and the inheritance, and provides an overall description.

A significant part of inheritance is the OID. The entire OID is not listed for each MIB object—instead, the parent of the object is shown. The tree for the CTS MIB is illustrated in Figure 4 on page 21. The OID can be determined from the parent object as follows.

`wlsxEnterpriseMibModules` is the parent object of the CTS MIB—its OID is `1.3.6.1.4.1.14823.2.2.1.`

`wlsxCtsMIB MODULE-IDENTITY` shows `wlsxEnterpriseMibModules` **`11`**, which indicates `11` is appended to the OID of `wlsxEnterpriseMibModules`. The resultant OID is `1.3.6.1.4.1.14823.2.2.1.11.`

`wlsxCtsOpGroup OBJECT IDENTIFIER ::= { wlsxCtsMIB 1 }` indicates the OID is `1.3.6.1.4.1.14823.2.2.1.11.1.`

`wlsxCtsRequestTable OBJECT-TYPE` shows `wlsxCtsOpGroup` **`1`**, which indicates the OID is `1.3.6.1.4.1.14823.2.2.1.11.1.1.`

All MIBs and their related OIDs are listed in the snmp file of ArubaOS. For more information, see "SNMP File" on page 21.

```
wlsxEnterpriseMibModules
FROM ARUBA-MIB;
```

Identity

Identity is the opening description of the MIB. The information includes contact information for the vendor and a general description of the MIB.

```
wlsxCtsMIB MODULE-IDENTITY
    LAST-UPDATED "0609240301Z"
    ORGANIZATION "Aruba Wireless Networks"
    CONTACT-INFO
         "Postal:    1322 Crossman Avenue
                     Sunnyvale, CA 94089
         E-mail:     dl-support@arubanetworks.com
         Phone:      +1 408 227 4500"
    DESCRIPTION
        "This MIB module defines MIB objects which provide
         information about the Controller Transport Service (Cts) in the
         Dell controller."
    REVISION        "0609240301Z"
    DESCRIPTION
        "The initial revision."
    ::= { wlsxEnterpriseMibModules 11 }
```

MIB Modules

MIB objects can be placed in logical groups, Group and Table. One MIB file can consist of multiple groups. A group typically contains at least one table. The table lists the MIB objects that contain the information that is exchanged.

The first object of a table is an Entry. The keyword SEQUENCE lists the objects of the table that contain device information. Each subsequent object inherits the OID of the Entry, and contains information sorted by keywords: Syntax, Access, Status, Description. For details about keywords, see "MIB" on page 9.

The OID of the Entry is `wlsxCtsRequestEntry` is `wlsxCtsRequestTable 1`, which represents `1.3.6.1.4.1.14823.2.2.1.11.1.1.1`. The OIDs of the subsequent objects of this table are appended increments of the Entry OID. For example, the OID of **`wlsxCtsIndex`** is `wlsxCtsRequestEntry 1`, which represents `1.3.6.1.4.1.14823.2.2.1.11.1.1.1.1.`

Group

```
   wlsxCtsOpGroup     OBJECT IDENTIFIER ::= { wlsxCtsMIB 1 }
```

Table

```
wlsxCtsRequestTable OBJECT-TYPE
SYNTAXSEQUENCE OF WlsxCtsRequestEntry
MAX-ACCESSnot-accessible
STATUScurrent
DESCRIPTION
"
"
::= { wlsxCtsOpGroup 1 }
```

Entry

```
wlsxCtsRequestEntry OBJECT-TYPE
SYNTAX WlsxCtsRequestEntry
MAX-ACCESS not-accessible
STATUScurrent
DESCRIPTION
""
INDEX { wlsxCtsIndex }
::= { wlsxCtsRequestTable 1 }

WlsxCtsRequestEntry ::=
SEQUENCE
{
wlsxCtsIndexInteger32,
wlsxCtsOpcodeDisplayString,
wlsxCtsCookieDisplayString,
wlsxCtsURLDisplayString,
wlsxCtsFlagsBITS,
wlsxCtsStatusRowStatus
}
```

Informative MIB Objects

```
wlsxCtsIndex OBJECT-TYPE
SYNTAX Integer32
MAX-ACCESS not-accessible
STATUScurrent
DESCRIPTION
"
CTS transport index
0 - Config Sync
1 - Counters Sync
2 - RF Plan Sync
"
::= { wlsxCtsRequestEntry 1 }

wlsxCtsOpcode OBJECT-TYPE
SYNTAX DisplayString
MAX-ACCESS read-write
STATUScurrent
DESCRIPTION
"
CTS operation opcode
"
::= { wlsxCtsRequestEntry 2 }
```

```
wlsxCtsStatus OBJECT-TYPE
SYNTAX RowStatus
MAX-ACCESS read-write
STATUScurrent
DESCRIPTION
"
CTS row status
"
::= { wlsxCtsRequestEntry 6 }
```

Closing Line

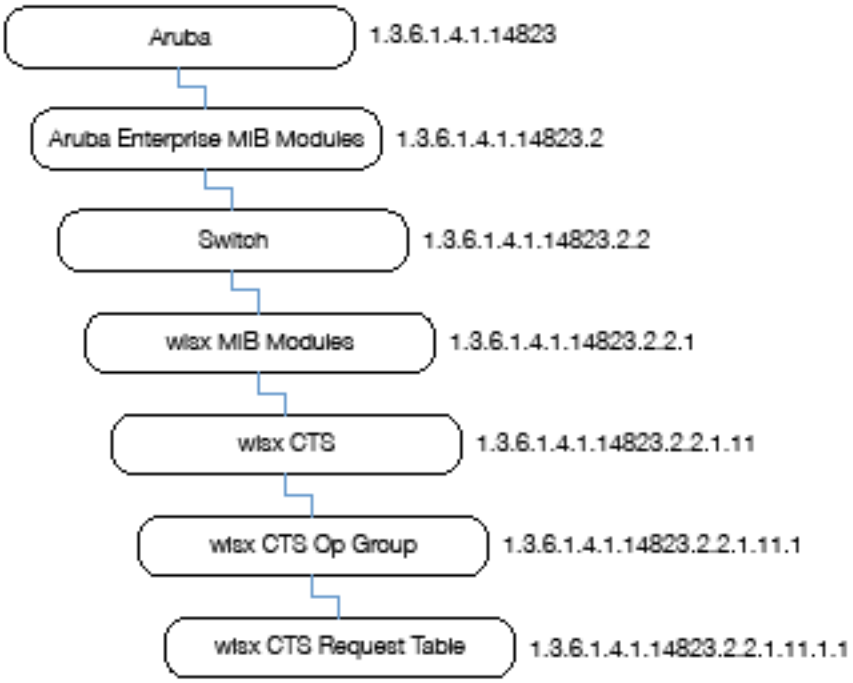
Following is the closing line—the end of the MIBs file.

```
END
```

OID Flow Chart

Figure 4 illustrates the tree of the CTS MIB, relative to the Dell MIB.

Figure 4 CTS OIDs Relative to Dell



SNMP File

The snmp.h file lists the OIDs of all MIBs. Following are sections from snmp.h that show the complete OID of each of the Controller Transport Service (CTS) MIB elements. The list starts from the ancestral parent *iso*.

All ArubaOS MIBs inherit their OIDs from the Dell MIB node. The following rows list the MIBs that precede CTS, starting from iso.

```
{ "iso",                          HASHNEXT("1") },
```

```
{ "org",                          HASHNEXT("1.3") },

{ "dod",                          HASHNEXT("1.3.6") },

{ "internet",                     HASHNEXT("1.3.6.1") },

{ "private",                      HASHNEXT("1.3.6.1.4") },

{ "enterprises",                  HASHNEXT("1.3.6.1.4.1") },

{ "aruba",                        HASHNEXT("1.3.6.1.4.1.14823") },

{"arubaEnterpriseMibModules",     HASHNEXT("1.3.6.1.4.1.14823.2") },

{ "switch",                       HASHNEXT("1.3.6.1.4.1.14823.2.2") },

{ "wlsxEnterpriseMibModules",     HASHNEXT("1.3.6.1.4.1.14823.2.2.1") },
```

The following rows list the CTS MIB OIDs.

```
{ "wlsxCtsMIB",                   HASHNEXT("1.3.6.1.4.1.14823.2.2.1.11") },

{ "wlsxCtsOpGroup",               HASHNEXT("1.3.6.1.4.1.14823.2.2.1.11.1") },

{ "wlsxCtsRequestTable",          HASHNEXT("1.3.6.1.4.1.14823.2.2.1.11.1.1") },

{ "wlsxCtsRequestEntry",          HASHNEXT("1.3.6.1.4.1.14823.2.2.1.11.1.1.1") },

{ "wlsxCtsIndex",                 HASHNEXT("1.3.6.1.4.1.14823.2.2.1.11.1.1.1.1")},

{ "wlsxCtsOpcode",                HASHNEXT("1.3.6.1.4.1.14823.2.2.1.11.1.1.1.2")},

{ "wlsxCtsCookie",                HASHNEXT("1.3.6.1.4.1.14823.2.2.1.11.1.1.1.3")},

{ "wlsxCtsURL",                   HASHNEXT("1.3.6.1.4.1.14823.2.2.1.11.1.1.1.4")},

{ "wlsxCtsFlags",                 HASHNEXT("1.3.6.1.4.1.14823.2.2.1.11.1.1.1.5")},

{ "wlsxCtsStatus",                HASHNEXT("1.3.6.1.4.1.14823.2.2.1.11.1.1.1.6")},
```

HP OpenView

To install the Dell module for HP OpenView, log in as the root user and execute the following script:

```
# $OV_CONTRIB/NNM/Dell/install
```

MIB Limitations

Following are the known limitations and constraints of ArubaOS MIBs.

Table 6 Limitations and Constraints

MIB	Module	Limitation
Switch Module	wlsxSwitchListTable	Information can only be queried from the master switch—only the table of the master switch is populated. If a local switch is queried, an empty table will be returned.

Table 6 Limitations and Constraints (Continued)

MIB	Module	Limitation
Switch Module	wlsxSwitchGlobalAPTable	Information can only be queried from the master switch—only the table of the master switch is populated. If a local switch is queried, an empty table is returned.
Textual Conventions	All objects	Textual conventions objects do not include object identification (OID).

Chapter 3

Modules and Traps

This chapter provides an overview of the ArubaOS MIB modules and traps. It all includes textual conventions.For information about downloading Dell MIB files, see "Downloading MIB Files" on page 13. This chapter includes the following sections:

AP and AM Module

NOTE: All MB tables and MIB OIDs in the AP and AM module were deprecated in ArubaOS 3.0 and are no longer supported.

The AP and AM module provides information about access points and air monitors. The access point (AP) is a device or an application that connects the wireless client to a local area network (LAN). APs continually poll the network and report information to the controllers. This feature can be used to enhance the security of wireless communication and to extend the range of a wireless user by connecting to a wireless device through a wired LAN.

The Dell AP can also function as an air monitor (AM), which scans the RF spectrum, and can be used to enhance the performance of the AP.

The AP and AM MIBs are listed in the file *aruba-ap.my*.

Authentication Module

The Authentication module provides information about the authentication server, as well as entities that are attempting to access the network.Authentication is used to verify the entity that is communicating to a device.

The Authentication MIBs are listed in the file *aruba-auth.my*.

Controller Service Transport

NOTE: All MIB tables and MIB OIDs in the Controller Transport Service were deprecated in ArubaOS 5.0 and are no longer supported.

This module provides information about the Controller Transport Service. The Controller Transport Service (CTS) is used with the Mobility Manager for synchronizing configuration, database, and data sections. The CTS MIBs are used for triggering the data synchronization event with the MMS, such as *config update*.

CTS is not intended to be used with other applications.

The CTS MIBs are listed in the file *aruba-cts.my*.

External Services Interface (ESI) Module

The External Services Interface (ESI) module provides information about the Wireless Management System (WMS) in the Dell controller. ESI is used for redirecting traffic to a virus scanner, context filter, or other third party network appliances.

The ESI MIBs are listed in the file *aruba-esi.my*.

IF External (IF EXT)

IF External (IF EXT) MIB objects provide system-level information about the Dell controller—physical ports, configured VLANs, the port memberships, and the interfaces that define the VLANs.

The IF External MIBs are listed in the file *aruba-ifext.my*.

Mesh Module

The Mesh module provides information about Mesh portal and topology in the Dell controller.

The Mesh MIBs are listed in the file *aruba-mesh.my*.

Mobility Module

The Mobility module provides information about the subsystem in the Dell controller, such as the home agent (HA) or foreign agent (FA) of a roaming agent.

The Mobility MIBs are listed in the file *aruba-mobility.my*.

Monitor Module

The Monitor module provides information about network traffic. Monitoring access points can be used to observe network traffic, such as the number of packets transferred at a specific rate, the number of errors per access point, and so on.

The Monitor MIBs are listed in the file *aruba-mon.my*.

Signal Noise Ratio (SNR) Module

The Signal Noise Ratio (SNR) module provides information about signal quality and packets. One value of SNR is the signal quality during a sample period. The signal quality affects the quality of the transmitted packets. The available SNR values include signal strength (total, maximum, minimum). Additional information is the number of packets that were transmitted during the sample time.

The SNR MIBs are listed in the file *aruba-snr.my*.

Switch Module

The Switch module provides statistical information about Dell controllers, including storage and memory utilization, and the wireless stations associated with the access points.

The Switch MIBs are listed in the file *aruba-switch.my*.

System External Module

The System External module provides information about resource usages such as memory and CPU.

The System External MIBs are listed in the file *aruba-systemext.m*y.

Textual Conventions

Textual conventions define the data structures of Dell object types. Textual Conventions are found in the file *aruba-tc.my.*

NOTE: Textual Conventions do not have OIDs.

Traps Module

This module defines the Traps that can be generated by the controller. Traps are MIB objects (variables) that transmit information to the SNMP Manager when an event occurs. Traps are included as varbinds (variable bindings) in the trap protocol data unit (PDU). Varbinds are defined in the *Description* section below.

The Traps are listed in the file *aruba-trap.my MIB file*.

User Module

The User module provides information about the *user*, the party connected to the controller. Information includes the total number of users, name and access-level of the user, the physical location of the user's station, and so on. *User* MIBs support IPv4.

The User MIBs are listed in the file *aruba-user.my*.

User6 module

The User6 module supports IPv6 users. This module provides information about the users, the party connected to the controller. Information includes the total number of users, name and access-level of the user, the physical location of the user's station, and so on.

The User MIBs are listed in the file *aruba-user6.my*.

Voice Module

The Voice module provides information about Voice call status and call detail reporting.

The Voice MIBs are listed in the file *aruba-voice.my*.

Wireless Local Area Network Module

The wireless local area network (WLAN) module provides information about the Wireless Management System (WMS) in the Dell controller.

The WLAN MIBs are listed in the file *aruba-wlan.my*.

Index