Speedway® Reader Application Series

Octane™ SNMP

Table of Contents

Proprietary and Confidential

Table of Tables

1 Introduction

1.1 Purpose

This document describes the SNMP capabilities of Octane software.

1.2 Scope

This document defines Octane SNMP. It provides a summary level description for system architects to validate and understand the standard SNMP features supported by Octane SNMP.It provides an overview of unique Octane SNMP behaviors which deliver added capabilities along with detailed information for developers planning to support Impinj Readers via SNMP.

This document covers Octane 4.8 software releases and Speedway Revolution product family.

1.3 References

Table 1-1 References

Document	Version
EPCglobal: Reader Management (RM)	1.01
EPCglobal: Reader Management Artifacts	1.0.1
Speedway Revolution Installation and Operations Guide	4.8

1.4 Terms

SNMP–Simple Network Management Protocol

EPCglobal RM – EPCglobal Reader Management Protocol

RO–Read Only

RW–Read Write

RZ–Reports as Zero

AFN–Accessible For Notify

MR–Modifiable via Rshell

CLI–Command Line Interface

RShell–Reader's CLI shell

MIB –Management Information Base

1.5 Overview

This document defines Octane SNMP. The summary provides interface, support descriptions for MIB-II, and management support along with considerations for use. This document details the information in the following sections:
- Section 2 describes the Octane SNMP interface.

- Section 3 describes Octane MIB-II support.
- Section 4 describes EPCglobal Reader Management support.
- Section 5 describes important considerations for using EPCglobal RM with Octane.

Octane SNMP implements the EPCglobal Reader Management Standard 1.0.1. This interface provides a standard way to collect statistical data and events from RFID readers. For a complete description of EPCglobal RM, see the EPCglobal Reader Management reference in Table 1-1.

2   Octane SNMP connections

Any SNMP manager device can connect and retrieve statistics via Octane SNMP. Octane SNMP supports SNMP V1 and V2c. See the Speedway Revolution Installation and Operations Guide for default community strings and settings via the rShell interface. SNMP service is available via UDP port 161.

3   Octane MIB-II SNMP Capabilities

Octane supports MIB-II at OID .1.3.6.1.2.1 including those listed in Table 3-1

Table 3-1 MIB-II Supported Nodes

Object	Node	Octane Support	Notes
system	1	Yes	
interfaces	2	Yes	
at	3	Yes	Address Translation MIB
ip	4	Yes	Internet Protocol MIB
icmp	5	Yes	Internet Control Message Protocol MIB
tcp	6	Yes	Transmission Control Protocol MIB
udp	7	Yes	User Datagram Protocol MIB
egp	8	**No**	Exterior Gateway Protocol MIB
cmot	9	**No**	Common Management information services and protocol Over TCP/IP MIB
transmission	10	**No**	
snmp	11	Yes	

4 Octane RM SNMP Capabilities

This section describes the capabilities of Octane SNMP. It includes a description of the parameters implemented with the EPCglobal RM MIB, and any parameter support limitations.

Octane SNMP implements the EPCglobal RM MIB version "200703080000Z". A copy of the MIB definition file is available in the EPCglobal: Reader Management Artifacts reference in Table 1-1. Note, that the specifications include an SNMP binding as well as and XML binding. Octane supports the SNMP binding of RM 1.0.1. The RM MIB, titled epcgReaderMIB lives in the MIB OID tree at node .1.3.6.1.4.1.22695.1.1.

Each subsection below describes a single table within the epcgReaderMIB. Each description includes a list of supported sub-elements and any relevant notes.

The table below describes the Octane supported objects. The "Octane Support" column reports whether the Reader will return a value when the OID is queried. See the "notes" column for any special data meanings. For example, for several objects, Octane will always report zero.

Unless otherwise noted, all objects are read-only (RO). Writeable objects display as read-write (RW). The objects modifiable via Octane rShell display as rShell (MR).

4.1 epcgReaderMIB (.1.3.6.1.4.1.22695.1.1)

The Base OID for the epcgReaderMIB display in the table below.

Table 4-1 epcgReaderMIB

Object	Node	Octane Support	Notes
epcgReaderNotifs	.0	Yes	Section 4.2
epcgReaderObjects	.1	Yes	Section 4.3
epcgReaderConformance	.2	**No**	N/A

4.2 epcgReaderNotifs (.1.3.6.1.4.1.22695.1.1.0)

This table reports notifications (traps) which are sent via Octane SNMP.

Table 4-2 epcgReaderNotifs

Object	Node	Octane Support
epcgReaderDeviceOperationState	.1	No
epcgRdrDevMemoryState	.2	**No**

Object	Node	Octane Support
epcgReadPointOperationState	.3	No
epcgReaderAntennaReadFailure	.4	**No**
epcgReaderAntennaWriteFailure	.5	**No**
epcgReaderAntennaKillFailure	.6	**No**
epcgReaderAntennaEraseFailure	.7	**No**
epcgReaderAntennaLockFailure	.8	**No**
epcgReaderIoPortOperationState	.9	**No**
epcgReaderSourceOperationState	.10	No
epcgReaderNotificationChanOperState	.11	No

4.3   epcgReaderObjects (.1.3.6.1.4.1.22695.1.1.1)

This table describes the main RFID objects in the RM MIB.

Table 4-3 epcgReaderObjects

Object	Node	Octane Support	Notes
epcgReaderDevice	.1	Yes	Section 4.4
epcgReadPoints	.2	Yes	Section 4.9
epcgAntennaReadPoints	.3	Yes	Section 4.10
epcgIoPorts	.4	Yes	Section 4.11
epcgSources	.5	Yes	Section 0
epcgNotificationChannels	.6	Yes	Section 4.15
epcgTriggers	.7	**No**	N/A

4.4   epcgReaderDevice (.1.3.6.1.4.1.22695.1.1.1.1)

The Reader device table describes the main device objects in the RM MIB.

Table 4-4 epcgReaderDevice

Object	Node	Octane Support	Notes
epcgReaderDeviceInformation	.1	Yes	Section 4.5
epcgGlobalCountersTable	.2	Yes	Section 4.6
epcgReaderDeviceOperation	.3	Yes	Section 4.7
epcgReaderDeviceMemory	.4	**No**	N/A
epcgReaderServerTable	.5	Yes	Section 4.8

4.5   epcgReaderDeviceInformation (.1.3.6.1.4.1.22695.1.1.1.1.1)

The table below provides basic RFID Reader device information.

Table 4-5 epcgReaderDeviceInformation

Object	Node	Octane Support	Notes
epcgRdrDevDescription	.1.0	Yes	Reports the same value as mib-2.system.sysDescr
epcgRdrDevRole	.2.0	Yes	MR
epcgRdrDevEpc	.3.0	Yes	RO
epcgRdrDevSerialNumber	.4.0	Yes	RO
epcgRdrDevTimeUtc	.5.0	Yes	RO
epcgRdrDevCurrentSource	.6.0	Yes	RO
epcgRdrDevReboot	.7.0	Yes	RW
epcgRdrDevResetStatistics	.8.0	Yes	RW
epcgRdrDevResetTimestamp	.9.0	Yes	RO
epcgRdrDevNormalizePowerLevel	.10.0	Yes	RO
epcgRdrDevNormalizeNoiseLevel	.11.0	Yes	RO

4.6   epcgGlobalCountersTable (.1.3.6.1.4.1.22695.1.1.1.1.2)

The global counters table reports statistics collected on the device across all antennas since the last statistics reset.

Table 4-6 epcgGlobalCountersTable

Object	Node	Octane Support	Notes
antennaTagsIdentified	.1.2.1	Yes	RO
antennaTagsNotIdentified	.1.2.2	Yes	RO - RZ
antennaMemoryReadOperations	.1.2.18	Yes	RO
antennaMemoryReadFailures	.1.2.3	Yes	RO
antennaWriteOperations	.1.2.4	Yes	RO
antennaWriteFailures	.1.2.5	Yes	RO
antennaKillOperations	.1.2.6	Yes	RO
antennaKillFailures	.1.2.7	Yes	RO
antennaEraseOperations	.1.2.8	Yes	RO - RZ
antennaEraseFailures	.1.2.19	Yes	RO - RZ
antennaLockOperations	.1.2.9	Yes	RO
antennaLockFailures	.1.2.10	Yes	RO
sourceUnknownToGlimpsed	.1.2.11	Yes	RO - RZ
sourceGlimpsedToUnknown	.1.2.12	Yes	RO - RZ
sourceGlimpsedToObserved	.1.2.13	Yes	RO - RZ
sourceObservedToLost	.1.2.14	Yes	RO - RZ
sourceLostToGlimpsed	.1.2.15	Yes	RO - RZ
sourceLostToUnknown	.1.2.16	Yes	RO - RZ
triggerMatches	.1.2.17	Yes	RO - RZ

4.7 epcgReaderDeviceOperation (.1.3.6.1.4.1.22695.1.1.1.1.3)

The device operation table displays the current Reader operational status.

Table 4-7 epcgReaderDeviceOperation

Object	Node	Octane Support	Notes
epcgRdrDevOperStatus	.1.0	Yes	RO

Object	Node	Octane Support	Notes
epcgRdrDevOperStatusPrior	.2.0	No	AFN
epcgRdrDevOperStateEnable	.3.0	Yes	RO – Always false
epcgRdrDevOperNotifFromState	.4.0	Yes	RO
epcgRdrDevOperNotifToState	.5.0	Yes	RO
epcgRdrDevOperNotifStateLevel	.6.0	Yes	RO – Always error
epcgRdrDevOperStateSupressInterval	.7.0	Yes	RO
epcgRdrDevOperStateSuppressions	.8.0	Yes	RO

4.8 epcgReaderServerTable (.1.3.6.1.4.1.22695.1.1.1.1.5)

In Octane SNMP, this table reports the DHCP, DNS, and NTP server information.

Table 4-8 epcgReaderServerTable

Object	Node	Octane Support	Notes
epcgReaderServerAddressType	.1.3	Yes	RO
epcgReaderServerAddress	.1.4	Yes	RO
epcgReaderServerRowStatus	.1.5	Yes	RO

4.9 epcgReadPointTable (.1.3.6.1.4.1.22695.1.1.1.2.1)

The read point table reports the current Reader status of operational read points.

Table 4-9 epcgReadPointTable

Object	Node	Octane Support	Notes
epcgReadPointName	.1.2	Yes	RO
epcgReadPointDescription	.1.3	Yes	RO
epcgReadPointAdminStatus	.1.4	Yes	RO – Always enabled
epcgReadPointOperStatus	.1.5	Yes	RO – Unkown until first use
epcgReadPointOperStateNotifyEnable	.1.6	Yes	RO – Always false

Object	Node	Octane Support	Notes
epcgReadPointOperNotifyFromState	.1.7	Yes	RO – Always up, down
epcgReadPointOperNotifyToState	.1.8	Yes	RO – Always up, down
epcgReadPointOperNotifyStateLevel	.1.9	Yes	RO – Always error
epcgReadPointOperStatusPrior	.1.10	No	AFN
epcgReadPointOperStateSuppressInterval	.1.11	Yes	RO - RZ
epcgReadPointOperStateSuppressions	.1.12	Yes	RO - RZ

4.10 epcgAntennaReadPoints(.1.3.6.1.4.1.22695.1.1.1.3)

RFID operation reports and per-antenna read point statistics which display on the table below.

Table 4-10 epcgAntennaReadPointTable

Object	Node	Octane Support	Notes
epcgAntRdPntTagsIdentified	.1.1.1	Yes	RO
epcgAntRdPntTagsNotIdentified	.1.1.2	Yes	RO - RZ
epcgAntRdPntMemoryReadOperations	.1.1.25	Yes	RO
epcgAntRdPntMemoryReadFailures	.1.1.3	Yes	RO
epcgAntRdPntReadFailureNotifEnable	.1.1.4	Yes	RO – Always false
epcgAntRdPntReadFailureNotifLevel	.1.1.5	Yes	RO – Always error
epcgAntRdPntReadFailureSuppressInterval	.1.1.26	Yes	RO - RZ
epcgAntRdPntReadFailureSuppressions	.1.1.27	Yes	RO - RZ
epcgAntRdPntWriteOperations	.1.1.6	Yes	RO
epcgAntRdPntWriteFailures	.1.1.7	Yes	RO
epcgAntRdPntWriteFailuresNotifEnable	.1.1.8	Yes	RO – Always false
epcgAntRdPntWriteFailuresNotifLevel	.1.1.9	Yes	RO – Always error
epcgAntRdPntWriteFailureSuppressInterval	.1.1.28	Yes	RO - RZ
epcgAntRdPntWriteFailureSuppressions	.1.1.29	Yes	RO - RZ
epcgAntRdPntKillOperations	.1.1.10	Yes	RO
epcgAntRdPntKillFailures	.1.1.11	Yes	RO

Object	Node	Octane Support	Notes
epcgAntRdPntKillFailuresNotifEnable	.1.1.12	Yes	RO – Always false
epcgAntRdPntKillFailuresNotifLevel	.1.1.13	Yes	RO – Always error
epcgAntRdPntKillFailureSuppressInterval	.1.1.30	Yes	RO - RZ
epcgAntRdPntKillFailureSuppressions	.1.1.31	Yes	RO - RZ
epcgAntRdPntEraseOperations	.1.1.14	Yes	RO - RZ
epcgAntRdPntEraseFailures	.1.1.15	Yes	RO - RZ
epcgAntRdPntEraseFailuresNotifEnable	.1.1.16	Yes	RO – Always false
epcgAntRdPntEraseFailuresNotifLevel	.1.1.17	Yes	RO – Always error
epcgAntRdPntEraseFailureSuppressInterval	.1.1.32	Yes	RO - RZ
epcgAntRdPntEraseFailureSuppressions	.1.1.33	Yes	RO - RZ
epcgAntRdPntLockOperations	.1.1.18	Yes	RO
epcgAntRdPntLockFailures	.1.1.19	Yes	RO
epcgAntRdPntLockFailuresNotifEnable	.1.1.20	Yes	RO – Always false
epcgAntRdPntLockFailuresNotifLevel	.1.1.21	Yes	RO – Always error
epcgAntRdPntLockFailureSuppressInterval	.1.1.34	Yes	RO - RZ
epcgAntRdPntLockFailureSuppressions	.1.1.35	Yes	RO - RZ
epcgAntRdPntPowerLevel	.1.1.22	Yes	RO
epcgAntRdPntNoiseLevel	.1.1.23	Yes	RO - RZ
epcgAntRdPntTimeEnergized	.1.1.24	Yes	RO

4.11 epcgIoPorts (.1.3.6.1.4.1.22695.1.1.1.4)

This table displays the IOPort information and status.

Table 4-11 epcgIoPortTable

Object	Node	Octane Support	Notes
epcgIoPortName	.1.1.2	Yes	RO
epcgIoPortAdminStatus	.1.1.3	Yes	RO – Always Up

Object	Node	Octane Support	Notes
epcgIoPortOperStatus	.1.1.4	Yes	RO – Always Up
epcgIoPortOperStatusNotifEnable	.1.1.5	Yes	RO – Always false
epcgIoPortOperStatusNotifLevel	.1.1.6	Yes	RO – Always error
epcgIoPortOperStatusNotifFromState	.1.1.7	Yes	RO – Always (unknown, other, up, down)
epcgIoPortOperStatusNotifToState	.1.1.8	Yes	RO – Always (unknown, other, up, down)
epcgIoPortDescription	.1.1.9	Yes	RO
epcgIoPortOperStatusPrior	.1.1.10	**No**	AFN
epcgIoPortOperStateSuppressInterval	.1.1.11	Yes	RO - RZ
epcgIoPortOperStateSuppressions	.1.1.12	Yes	RO - RZ

4.12 epcgSources (.1.3.6.1.4.1.22695.1.1.1.5)

The source table displays sources, read points, and notification channel tables.

Table 4-12 epcgSources

Object	Node	Octane Support	Notes
epcgSourceTable	.1	Yes	Section 4.13
epcgRdPntSrcTable	.3	Yes	Section 4.14
epcgNotifChanSrcTable	.4	**No**	Not Accessible

4.13 epcgSourceTable (.1.3.6.1.4.1.22695.1.1.1.5.1)

The table below reports source operational status and statistics.

Table 4-13 epcgSourceTable

Object	Node	Octane Support	Notes
epcgSrcName	.2	Yes	RO
epcgSrcReadCyclesPerTrigger	.3	Yes	RO - RZ
epcgSrcReadDutyCycle	.4	Yes	RO - RZ

Object	Node	Octane Support	Notes
epcgSrcReadTimeout	.5	Yes	RO - RZ
epcgSrcGlimpsedTimeout	.6	Yes	RO - RZ
epcgSrcObservedThreshold	.7	Yes	RO - RZ
epcgSrcObservedTimeout	.8	Yes	RO - RZ
epcgSrcLostTimeout	.9	Yes	RO - RZ
epcgSrcUnknownToGlimpsedTrans	.10	Yes	RO - RZ
epcgSrcGlimpsedToUnknownTrans	.11	Yes	RO - RZ
epcgSrcGlimpsedToObservedTrans	.12	Yes	RO - RZ
epcgSrcObservedToLostTrans	.13	Yes	RO - RZ
epcgSrcLostToGlimpsedTrans	.14	Yes	RO - RZ
epcgSrcLostToUnknownTrans	.15	Yes	RO - RZ
epcgSrcAdminStatus	.16	Yes	RO – Always Up
epcgSrcOperStatus	.17	Yes	RO – Up if RFID process is running (see Section 5.2
epcgSrcOperStatusNotifEnable	.18	Yes	RO – Always false
epcgSrcOperStatusNotifFromState	.19	Yes	RO – Always (up, down)
epcgSrcOperStatusNotifToState	.20	Yes	RO – Always (up, down)
epcgSrcOperStatusNotifyLevel	.21	Yes	RO – Always error
epcgSrcSupportsWriteOperations	.22	Yes	RO – Always true
epcgSrcOperStatusPrior	.23	Yes	AFN
epcgSrcOperStateSuppressInterval	.24	Yes	RO – RZ
epcgSrcOperStateSuppressions	.25	Yes	RO – RZ

4.14 epcgRdPntSourceTable (.1.3.6.1.4.1.22695.1.1.1.5.3)

This table provides the read point to source association.   A single source represents all Octane based products.

Table 4-14 epcgRdPntSourceTable

Object	Node	Octane Support	Notes
epcgRdPntSrcRowStatus	.1.1	Yes	RO – Always active

4.15 epcgNotificationChannels (.1.3.6.1.4.1.22695.1.1.1.6)

The RFID control and notification channels status reports in the table below.

Table 4-15 epcgNotificationChannels

Object	Node	Octane Support	Notes
epcgNotifChanName	.1.1.2	Yes	RO
epcgNotifChanAddressType	.1.1.3	Yes	RO – Always ipv4
epcgNotifChanAddress	.1.1.4	Yes	RO
epcgNotifChanLastAttempt	.1.1.5	Yes	RO
epcgNotifChanLastSuccess	.1.1.6	Yes	RO
epcgNotifChanAdminStatus	.1.1.7	Yes	RW, MR
epcgNotifChanOperStatus	.1.1.8	Yes	RO
epcgNotifChanOperNotifEnable	.1.1.9	Yes	RO – Always false
epcgNotifChanOperNotifLevel	.1.1.10	Yes	RO – Always error
epcgNotifChanOperNotifFromState	.1.1.11	Yes	RO – Always (up, down)
epcgNotifChanOperNotifToState	.1.1.12	Yes	RO – Always (up, down)
epcgNotifChanOperStatusPrior	.1.1.13	No	AFN
epcgNotifChanOperStateSuppressInterval	.1.1.14	Yes	RO – RZ
epcgNotifChanOperStateSuppressions	.1.1.15	Yes	RO – RZ

5 Octane SNMP Usage Notes

This section describes unique characteristics of Octane SNMP.

5.1 Notification Channels

Octane supports two different notification channels listed in Table 5-1. Only a single notification channels can be operationally active or "up" at any one time. An administratively disabled

notification channel cannot be activated. Note that in Octane 4.8, administratively disabling a notification channel does not affect the operational status: if the channel is operationally "up", administratively disabling it will not disable the channel or take it "down".

Table 5-1 Notfiication Channels

Notification Channel Name	Description	Operational Status	Administrative Status
LLRP Client	A client (remote) initiates LLRP connection (includes on-Reader applications that connect through LLRP).	Reports as operationally enabled (up) when a remote application connects to the Reader via LLRP.	Client initiated LLRP connections are allowed only when this notification channel is administratively enabled (up).
LLRP Reader	A Reader (locally) initiates LLRP connection.	Reports as operationally up when a remote application connects to the Reader via LLRP.	Reader initiated LLRP connections are allowed only when this notification channel is administratively enabled (up).

5.2 Sources

An Octane Reader contains a single static source. Octane SNMP always reports zero because no source statistics are supported via LLRP. The administrative status of the source always reports 'enabled' if the internal RFID software device processes are running properly and ready for application input. An operational failure indicates an internal HW or SW fault of the device.

5.3 ReadPoints

An Octane Reader contains a single static read point/antenna read point for each antenna. Each read point is always administratively enabled. The antenna displays operationally enabled when the antenna successfully completed its previous inventory attempt. If the antenna malfunctions, or become disconnected, it is marked as operationally disabled. Note: If the antenna is not used by the application, it remains operationally unknown.

6 Impinj Root Registration MIB

The Impinj Root Registration MIB, IMPINJ-ROOT-REG-MIB.mib, defines the set of object IDs for various Impinj products, as referenced by SNMPv2-MIB::sysObjectID. For example an Impinj SpeedwayRevolution R420 Reader for FCC region advertises its sysObjectID as SNMPv2-SMI::enterprises.25882.2.1.2.2.1000.

Octane 4 documentation bundle contains the latest version of IMPINJ-ROOT-REG-MIB.txt.file called *Speedway Revolution Octane 4.#.# Doc*, and is available via the Impinj support portal.

7 Revision History

Date	Revision	Comments
08/27/2009	4.2	Initial release
03/18/2010	4.4	Added reference to Impinj Root Registration MIB
10/28/2010	4.6	Re-released for Octane 4.6, no changes
4/25/2011	4.8	Removed Octane 3.X, document now covers Octane 4.X on Speedway Revolution products only

Notices:

The "Powered by Impinj" shield is your assurance of RFID integrity