

ESA SNMP Interface for Performance Management

Ericsson SNMP Agent 16.0

INTERFACE DESCRIPTION



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1 About This Document

1.1 Purpose

The purpose of this document is to describe the SNMP interface for Performance Management (PM) that is used in the Ericsson SNMP Agent (ESA). The interface is of interest for the Network Management System (NMS), which is the network entity reading counters and statistics data from systems.

1.2 Target Group

The target group for this document is personnel working on NMS administration and need to understand the ESA Performance Management interface.

1.3 Prerequisites

It is assumed that the user of this document fulfils the following prerequisites.

- Has knowledge about SNMP and how to read and use MIBs.
- Has knowledge about technical English.

1.4 Typographic Conventions

The typographic conventions used in this document are described in Reference [1].





2 Introduction

The ESA uses a set of MIBs for Performance Management. The MIBs as such are found in the ESA software package and the MIB content, which defines the counter data, can be read. Reading MIBs is however not always a straight forward task. The MIBs does not always clearly indicate the behavior of the counter value updates nor the relation between the counter data in the list of counters.

The Section 3 on page 5 describes the different use cases and scenarios that can be executed on the SNMP interface for Performance Management and Section 4 on page 7 describes the counter content and data in more detail.





3 Use Cases

3.1 Read Counter Data

The ESA provides the MIB ERICSSON-ESA-PM-MIB as part of the PM feature.

Reading PM data from the ESA can be done from a SNMP capable manager using standard SNMP GET and/or GETNEXT operations.

The PM data in the current version of the ESA holds counter data, which means all Counter Groups and Counter Names, that are configured to be published on SNMP, and the timestamp and the counter value of each counter.

3.2 Trigger Alarms on Breached Thresholds

The PM feature in the ESA provides the capability to monitor each counter being defined in the ESA and configure thresholds. When a threshold is being breached, an alarm is triggered and a SNMP trap is sent.

This is however not part of the PM interface. The alarm handling is part of the FM interface and thus described in Reference [2].





4 Counter Description

4.1 MIB Overview

The following MIBs contains the trap definitions.

- ERICSSON-ESA-PM-MIB

4.2 Counter Table Definition

The following definition is for the counter entries in the *Counter Table*.

```
esaPmEntry OBJECT-TYPE
    SYNTAX      EsaPmEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "One entry identifies and contains information
         about one single PM counter."
    INDEX {
        esaPmCntDefGroup,
        esaPmCntDefName }
    ::= { esaPmTable 1 }

EsaPmEntry ::= SEQUENCE {
    esaPmCntDefGroup  SnmpAdminString,
    esaPmCntDefName   SnmpAdminString,
    esaPmCntDescGroup SnmpAdminString,
    esaPmCntDescName  SnmpAdminString,
    esaPmCntDescInfo  SnmpAdminString,
    esaPmCntTimestamp DateAndTime,
    esaPmCntValue     Integer32,
    esaPmCntValue64   Counter64 }
```

The *Counter Group* and the *Counter Identity* are used as indexes.

4.3 Counter Definition

The following MIB definitions are for the *Counter Value*. One Counter is holding one value only, but there are two MIB objects representing the counter value.

The definition for `esaPmCntValue` holds a counter value of type `Integer32`. This is kept for backward compatibility. Since the PMA now handles 64 bit values, it is recommended to read counter values from `esaPmCntValue64` instead.



```

esaPmCntValue OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The counter value. Max value is 2^31-1. Is set
         to -1 if counter value is higher."
    ::= { esaPmEntry 7 }

```

The definition for `esaPmCntValue64` holds a counter value of type `Counter64`.

```

esaPmCntValue64 OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "The counter value. Max value is 2^63-1."
    ::= { esaPmEntry 8 }

```

4.4 Accessing Counter Data

The counter table holds a number of counters (counter entries). Each counter is unique with regards to Counter Group and Counter Name (Counter Identity). The counter value of each counter is always found using the indexes no matter how many counters are added to the ESA PM Agent as long as the counter group and counter name are not changed.

Let's have a look at an example. The OIDs can be found in the ESA-PM-MIB.

The ESA PM Agent counter table starts at
 OID = **.1.3.6.1.4.1.193.172.2.1.1.1**

The counter value is found at column 8.
 OID = **.1.3.6.1.4.1.193.172.2.1.1.1.8**

Assume counter group AA and counter BBB is defined.
 AA = 2 characters of ASCII 65 + 65 = **2.65.65**
 BBB = 3 characters of ASCII 66 + 66 + 66 = **3.66.66.66**

The indexes for counter group and counter name do concatenated form the unique index
 AA:BBB = **2.65.65.3.66.66.66**

The counter value for counter AA:BBB is thus found at
 OID = *<esa pma counter table>.<column value>.<cnt index>*
 OID = **.1.3.6.1.4.1.193.172.2.1.1.1.8.2.65.65.3.66.66.66**

Accessing the other counter data is done using the same procedures, but instead of using .8, which according to the MIB indicates counter value and



column 8, use the column number that represents the counter data that you want to read.

Column	Definition
1	Counter Group <i>[Index]</i>
2	Counter Name <i>[Index]</i>
3	Counter Group Description
4	Counter Name Description
5	Counter Group Information
6	Counter Timestamp (last update of counter value)
7	Counter Value
8	Counter Value (64 bit)

To read the timestamp for counter AA:BBB the column 6 is read by using the following OID.

OID = .1.3.6.1.4.1.193.172.2.1.1.1.6.2.65.65.3.66.66.66





5 Counter Details

5.1 Overview

The counter content is in detail specified in the PM MIBs, which are found in the ESA directories on the file system where the ESA is installed. The following information is a textual overview giving an introduction of what data is found on the SNMP interface.

The following counter attributes and data are found for each counter.

- **Group Name**
- **Counter Name**
- **Group Description**
- **Counter Description**
- **Counter Information**
- **Counter Timestamp**
- **Counter Value**
- **Counter Value (64 bit)**

The following chapters describes the data in more detail.

5.2 Data: Group Name

The PM *counter group name* is in fact the group identity in the PM Agent. The group identity must be unique within an ESA PM Agent instance. One group can contains multiple counters.

The group name is limited to 2-32 characters and *should* contain alphabetical characters only.

5.3 Data: Counter Name

The PM *counter name* is in fact the *counter identity* in the PM Agent. The counter identity must be unique within a counter group in an ESA PM Agent instance.

The counter name is limited to 2-32 characters and *should* contain alphabetical characters only.



5.4 Data: Group Description

The PM *counter group description* is a title/slogan for the counter group.

5.5 Data: Counter Description

The PM *counter description* is a title/slogan for the counter.

5.6 Data: Counter Information

The PM *counter information* is a more detailed textual string that describes the counter by indicating the purpose of it and what kind of values it may hold.

5.7 Data: Counter Timestamp

The alarm parameter *counter timestamp* is in a date and time format and indicates the time when the counter was last updated.

The format of the date and time is according to the MIB SNMPv2-TC.

```
DateAndTime ::= TEXTUAL-CONVENTION
    DISPLAY-HINT "2d-1d-1d,1d:1d:1d.1d,1a1d:1d"
    STATUS current
    DESCRIPTION
        "A date-time specification.
```

field	octets	contents	range
-----	-----	-----	-----
1	1-2	year	0..65536
2	3	month	1..12
3	4	day	1..31
4	5	hour	0..23
5	6	minutes	0..59
6	7	seconds	0..60
		(use 60 for leap-second)	
7	8	deci-seconds	0..9
8	9	direction from UTC	'+' / '-'
9	10	hours from UTC	0..11
10	11	minutes from UTC	0..59

For example, Tuesday May 26, 1992 at 1:30:15 PM EDT would be displayed as:

```
1992-5-26,13:30:15.0,-4:0
```

Note that if only local time is known, then timezone information (fields 8-10) is not present."



SYNTAX OCTET STRING

Please note that the first digit in the OID string representing the data and time is a length indicator. It shows the length of the date and time data.

The Date and Time parameter is created at the trigger time of triggering an alarm in the ESA.

5.8 Data: Counter Value

The PM *counter value* represents the value of a defined counter within a counter group.

The definition for `esaPmCntValue` holds a counter value of type `Integer32`. Maximum value is $2^{31}-1$.

Please note that this MIB object is kept for backward compatibility. Since the PMA now supports 64 bit counters, it is recommended to read counter values from `esaPmCntValue64` instead. If the counter value is higher than maximum value, this MIB object is set to “-1”.

5.9 Data: Counter Value (64 bit)

The PM *counter value* represents the value of a defined counter within a counter group.

The definition for `esaPmCntValue64` holds a counter value of type `Counter64`. Maximum value is $2^{63}-1$.





6 Counter Behavior

The ESA supports counters in a generic manner. A counter is a value that is updated by either having the ESA harvesting data from system entities or by having applications writing counter data to the ESA using an API.

The counter value found on the SNMP interface is the last updated value read by or given to the ESA. As soon as the counter value is updated in the ESA, the old values are lost. The last value handled by the ESA is always the value seen on SNMP.

Please note that during startup of the ESA all counters are set to zero. All counters are zero until the very first update operation occur for each counter.





Glossary

Glossary

ESA Glossary of Terms and Acronyms,
0033-CSH 109 532





Reference List

- [1] *ESA Library Overview*
DIRECTIONS FOR USE, 1/1553-CSH 109 532
- [2] *ESA SNMP Interface for Fault Management*
INTERFACE DESCRIPTION, 4/155 19-CSH 109 532