

Network Working Group
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Light-weight Flow Accounting Protocol MIB

<[draft-calato-lfap-mib-00.txt](#)>

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Abstract

This document provides a description of MIB module that accompanies the LFAP Specifications [1][2].

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1. MIB Module

```
#condInclude "rfc1155.inc"
#condInclude "smiv2.inc"
#condInclude "rfc2851.inc"
#condInclude "rfc2571.inc"
#include "mibs/rstn/91/rstone-smi-mib.txt"
```

RIVERSTONE-LFAP-MIB DEFINITIONS ::= BEGIN

IMPORTS

```
    MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE, Integer32,
    TimeTicks, Counter32, Counter64, Gauge32
        FROM SNMPv2-SMI
    MODULE-COMPLIANCE, OBJECT-GROUP, NOTIFICATION-GROUP
FROM SNMPv2-CONF
    InetAddressType, InetAddress
        FROM INET-ADDRESS-MIB
    TEXTUAL-CONVENTION, RowStatus, TruthValue
        FROM SNMPv2-TC
    SnmpAdminString
        FROM SNMP-FRAMEWORK-MIB
    riverstoneMibs
        from RIVERSTONE-SMI-MIB
```

rsLfapMIB MODULE-IDENTITY

```
    LAST-UPDATED "200208290000Z"
    ORGANIZATION "Riverstone Networks, Inc"
    CONTACT-INFO
        "Riverstone Networks, Inc
        5200 Great America Parkway
        Santa Clara CA USA 95054
        PHONE:+1 408.878.6500
        EMAIL: nms-eng@riverstonenet.com
        WEB: http://www.riverstonenet.com"
```

DESCRIPTION

"This MIB module defines the management plane for the Lightweight Flow Accounting Protocol as defined in [draft-riverstone-lfap-01.txt](#) for devices implementing a Connection Control Entity (CCE).

A FAS mib module will provide a management view of the Flow Accounting Server (FAS).

This mib module is organized into three sections as follows:

1. CCE Diagnostics
2. CCE Configuration

3. CCE Protocol Monitoring Statistics

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Copyright (C) Riverstone Networks, Inc 2001, 2002."

REVISION "200208290000Z"

DESCRIPTION

"Updated to support LFAPv5 draft #1. Changes include adding reference clauses and improved descriptions to match terms as found in the protocol specification. Added new required counters and made three counters obsolete."

REVISION "200106150000Z"

DESCRIPTION

"Indicate rsLfapServerStaticLastChanged, rsLfapStatsSessionChangedAt and rsLfapStatsLostAt are not supported in LFAPv4 in rsLfapAgentCompliance."

REVISION "200106080000Z"

DESCRIPTION

"Add these objects MsgsUnknownTx, DropsInTxQueueWhenUp, MsgsInRxQueue, InvalidMsgsRx, MsgsUnknownRx into the StatsTable. Rename QueueDrops to DropsInTxQueue, LostPackets to TxLostPackets, LostOctets to TxLostOctets, QueuePeak to InTxQueuePeak. Changed the descriptions of the textual conventions and many of the objects. Rename ServerStatsTable to StatsTable."

REVISION "200105070000Z"

DESCRIPTION

"Change the object identity of the traps to be v1 compliant. Change the previous revision comments. Make rsLfapActiveServer a scalar. Rename rsLfapStaticServerTable to rsLfapServerStaticTable. The objects in that table have also been renamed appropriately."

REVISION "200105010000Z"

DESCRIPTION

"Move the scalars under rsLfapPerMon to a new table. rsLfapStatsTable. Add comformance. Reorganize tree. Rename some object identifiers."

REVISION "200103030000Z"

DESCRIPTION

"Add both send and receive counters, add new counter for any unknown message types, clarify what lost timestamp counters and make MIB module support both implementation at CCE and FAS"

REVISION "200102110000Z"

DESCRIPTION

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"Initial version of of Riverstone Flow Accounting MIB module
for LFAPv4."

::= { riverstoneMibs 19 }

rsLfapMIBObjects OBJECT IDENTIFIER ::= { rsLfapMIB 1 }
rsLfapAgentState OBJECT IDENTIFIER ::= { rsLfapMIBObjects 1 }
rsLfapAgentCfg OBJECT IDENTIFIER ::= { rsLfapMIBObjects 2 }
rsLfapServerCfg OBJECT IDENTIFIER ::= { rsLfapMIBObjects 3 }
rsLfapStats OBJECT IDENTIFIER ::= { rsLfapMIBObjects 4 }
rsLfapDiag OBJECT IDENTIFIER ::= { rsLfapMIBObjects 5 }

--

-- Textual conventions

--

RSLfapErrorCode ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This represents the general error states the CCE will report."

SYNTAX INTEGER {
 unknown(1),
 errorInConfig(2),
 resourceExhausted(3),
 errorNoServer(4)
}

RsLfapServerInst ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This number represents an external LFAP server (FAS) in the
list of LFAP servers configured on the CCE. If the value is 0,
then no FAS is indicated. While the base specification does not
define a hard maximum limit of configured FAS addresses, this

object

defines one."

SYNTAX Integer32 (1..32 | 0)

RSTaskPriority ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This represents the relative priority of the CCE
task relative to other tasks which share a common CPU resource."

SYNTAX INTEGER {
 high(1),
 medium(2),
 low(3)
}

RSOperState ::= TEXTUAL-CONVENTION
STATUS current

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DESCRIPTION

"This represents the operational state of the CCE will report.

Where no specific state below applies, the CCE may report lfapUnknown(1).

lfapNormal(2) represents the CCE is in a valid state as defined

in [section 6.4](#) State Diagrams for CCE. Should the CCE enter any

of the paths defined in (A) through (E), then it should report

lfapError(5). lfapTest(3) should be used when CCE is running self diagnostics. lfapDegraded(4) should not be used."

```
SYNTAX INTEGER {
    lfapUnknown(1),
    lfapNormal(2),
    lfapTest(3),
    lfapDegraded(4),  -- obsolete
    lfapError(5)
}
```

```
--
-- 1. CCE Diagnostics Section
--
```

rsLfapCapabilities OBJECT-TYPE

```
SYNTAX      BITS {
    rsLfapV4(0),
    rsLfapV5(1)
}
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "The protocol versions supported in this CCE implementation."
    ::= { rsLfapAgentState 1 }
```

rsLfapAdminState OBJECT-TYPE

```
SYNTAX      TruthValue
MAX-ACCESS  read-write
STATUS      current
DESCRIPTION
    "The intended administrative status of CCE. When set, the
    value true will start the CCE and false will stop
    the CCE. See rsLfapOperState for actual status"
    ::= { rsLfapAgentState 2 }
```

rsLfapOperState OBJECT-TYPE

```
SYNTAX      RSOperState
```

MAX-ACCESS	read-only
STATUS	current

DESCRIPTION

"The operational state of the CCE. See rsLfapAdminState as well."

REFERENCE "6.4 State Diagrams, CCE State Machine for Connection Setup"

::= { rsLfapAgentState 3 }

rsLfapLastError OBJECT-TYPE

SYNTAX RSLfapErrorCode

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Current error status detected by the CCE."

REFERENCE "6.4 State Diagrams, CCE State Machine for Connection Setup"

::= { rsLfapAgentState 4 }

rsLfapLastErrorReason OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Current error reason detected by the CCE."

This string is suitable for display to an operator."

::= { rsLfapAgentState 5 }

rsLfapActiveServer OBJECT-TYPE

SYNTAX RSLfapServerInst

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This indicates which FAS is currently connected to the CCE."

REFERENCE "4.1 FAS IP Address IE"

::= { rsLfapAgentState 6 }

rsRunLfapSelfTest OBJECT-TYPE

SYNTAX TruthValue

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"When set to true, CCE performs self diagnostic of accounting subsystem. Requires object rsLfapAdminState to be set to false for set

to succeed. Upon completion, rsLfapLastError will indicate test results and

rsLfapLastErrorReason may contain any additional information to report."

::= { rsLfapDiag 1 }

--

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-- 2. CCE Configuration Section
--

rsLfapPollInterval OBJECT-TYPE

SYNTAX Integer32 (1..1440)

UNITS "minutes"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The rate to send flow setup/termination accounting information to the FAS.

This value persists across system restarts."

REFERENCE "None, presently not defined in draft #01 spec."

DEFVAL { 15 }

::= { rsLfapAgentCfg 1 }

rsLfapBatchSize OBJECT-TYPE

SYNTAX Integer32 (1..2000)

UNITS "records"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The number of records sent per batch to the FAS.

This value persists across system restarts."

REFERENCE "None, presently not defined in draft #01 spec."

DEFVAL { 32 }

::= { rsLfapAgentCfg 2 }

rsLfapBatchInterval OBJECT-TYPE

SYNTAX Integer32 (1..2000)

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The time in seconds to send flow-create and flow-delete information to the FAS server.

This value persists across system restarts."

REFERENCE "None, presently not defined in draft #01 spec."

DEFVAL { 1 }

::= { rsLfapAgentCfg 3 }

rsLfapLostContactInterval OBJECT-TYPE

SYNTAX Integer32 (20..2000)

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Amount of time to wait before considering the TCP connection lost.

This value persists across system restarts."

REFERENCE "None, presently not defined in draft #01 spec."

DEFVAL { 60 }

::= { rsLfapAgentCfg 4 }

rsLfapServerRetryInterval OBJECT-TYPE

SYNTAX Integer32 (1..2000)

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"The rate at which to retry a connection to a FAS."

REFERENCE "None, presently not defined in draft #01 spec."

DEFVAL { 60 }

::= { rsLfapAgentCfg 5 }

rsLfapMaxTxQueueSize OBJECT-TYPE

SYNTAX Integer32 (100..2000000)

UNITS "message count"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Number of messages that can be queued for transmit before messages are dropped.

This value persists across system restarts."

REFERENCE "None, presently not defined in draft #01 spec."

DEFVAL { 50000 }

::= { rsLfapAgentCfg 6 }

rsLfapTaskPriority OBJECT-TYPE

SYNTAX RsTaskPriority

UNITS "seconds"

MAX-ACCESS read-write

STATUS current

DESCRIPTION

"Used as a hint to the task scheduler on the CCE in scheduling the CCE relative to other tasks on the CCE.

This value persists across system restarts."

REFERENCE "None, presently not defined in draft #01 spec."

::= { rsLfapAgentCfg 7 }

-- CCE list of FAS servers to report to

rsLfapServerStaticLastChanged OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"The value of sysUpTime at the time of the last change

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to any object in rsLfapServerStaticTable is made."

::= { rsLfapServerCfg 2 }

rsLfapServerStaticTable OBJECT-TYPE

SYNTAX SEQUENCE OF RsLfapServerStaticEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"This table is used to define which FAS server(s) the CCE will connect to when the operational state of CCE is

lfapNormal(2)."

REFERENCE "4.1 FAS IP Address IE"

::= { rsLfapServerCfg 3 }

rsLfapServerStaticEntry OBJECT-TYPE

SYNTAX RsLfapServerStaticEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Each entry would represent the configuration of an external FAS on the CCE. Rows added to this table persist across system restarts."

INDEX { rsLfapServerStaticIndex }

::= { rsLfapServerStaticTable 1 }

RsLfapServerStaticEntry ::= SEQUENCE {

rsLfapServerStaticIndex RsLfapServerInst,

rsLfapServerStaticAddressType InetAddressType,

rsLfapServerStaticAddress InetAddress,

rsLfapServerStaticStatus RowStatus

}

rsLfapServerStaticIndex OBJECT-TYPE

SYNTAX RsLfapServerInst

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"A unique value to index each LFAP server instance defined in this table. "

::= { rsLfapServerStaticEntry 1 }

rsLfapServerStaticAddressType OBJECT-TYPE

SYNTAX InetAddressType

MAX-ACCESS read-create

STATUS current

DESCRIPTION

"The type of address found in rsLfapServerStaticAddress. This value

may not be modified if the rsLfapServerStaticStatus is
active(1)."

```
::= { rsLfapServerStaticEntry 2 }
```

```
rsLfapServerStaticAddress OBJECT-TYPE
```

```
SYNTAX      InetAddress
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

"The IPv4/6 address of a system acting as a FAS. This should not be a domain or hostnames but a valid IPv4 or IPv6 unicast address.

This value may not be modified if the rsLfapServerStaticStatus is active(1)."

```
::= { rsLfapServerStaticEntry 3 }
```

```
rsLfapServerStaticStatus OBJECT-TYPE
```

```
SYNTAX      RowStatus
```

```
MAX-ACCESS  read-create
```

```
STATUS      current
```

```
DESCRIPTION
```

"Install, modify, and delete rows in this table using this object. To modify

a row, set this object to notInService(2)."

```
::= { rsLfapServerStaticEntry 4 }
```

```
--
```

```
-- 3. CCE Protocol Monitoring Statistics
```

```
--
```

```
rsLfapStatsTable OBJECT-TYPE
```

```
SYNTAX      SEQUENCE OF RsLfapStatsEntry
```

```
MAX-ACCESS  not-accessible
```

```
STATUS      current
```

```
DESCRIPTION
```

"This table contains one row per FAS server. The protocol spec allows

for only one set of counters for all FAS servers. If an implementation

does not provide per FAS statistics, then this table only contains one

row for the current server being used."

```
REFERENCE "8.1 Common Statistics, 8.2 CCE Statistics"
```

```
::= { rsLfapStats 1 }
```

```
rsLfapStatsEntry OBJECT-TYPE
```

```
SYNTAX      RsLfapStatsEntry
```

```
MAX-ACCESS  not-accessible
```

STATUS current
DESCRIPTION

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"On the CCE, each entry contains LFAP statistics collected by the CCE relating to a FAS. Each entry is indexed by the FAS server index (rsLfapServerStaticIndex)."

INDEX { rsLfapServerStaticIndex }

::= { rsLfapStatsTable 1 }

```
RsLfapStatsEntry ::= SEQUENCE {  
  --  
  -- Connection statistics  
  --  
  rsLfapStatsSessionUp          TruthValue,  
  rsLfapStatsSessionChangedAt   TimeTicks,  
  rsLfapStatsTcpConnects        Counter32,  
  rsLfapStatsTcpConnectFails    Counter32,  
  
  --  
  -- Protocol Statistics  
  --  
  rsLfapStatsTxVRs              Counter32,  
  rsLfapStatsTxVRAs             Counter32,  
  rsLfapStatsTxFARs             Counter32,  
  rsLfapStatsTxFUNs             Counter32,  
  rsLfapStatsTxARAs             Counter32,  
  rsLfapStatsTxARs              Counter32,  
  
  rsLfapStatsMsgsInTxQueue       Integer32,  
  rsLfapStatsDropsInTxQueue      Counter32,  
  rsLfapStatsDropsInTxQueueWhenUp Counter32,  
  
  rsLfapStatsRxVRs              Counter32,  
  rsLfapStatsRxVRAs             Counter32,  
  rsLfapStatsRxFARs             Counter32,  
  rsLfapStatsRxFUNs             Counter32,  
  rsLfapStatsRxARs              Counter32,  
  rsLfapStatsRxARAs             Counter32,  
  
  rsLfapStatsMsgsInRxQueue       Integer32,  
  rsLfapStatsInvalidMsgsRx       Counter32,  
  rsLfapStatsMsgsUnknownRx       Counter32,  
  
  --  
  -- Lost Accounting Information  
  --  
  rsLfapStatsTxLostPackets       Counter64,  
  rsLfapStatsTxLostOctets        Counter64,  
  rsLfapStatsLostAt              TimeTicks,  
  
  --
```

-- Micro Flow Statistics

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```

--
rsLfapStatsActiveFlows      Counter32,
rsLfapStatsFlowRate        Gauge32,

--
-- Peak
--
rsLfapStatsActiveFlowsPeak    Gauge32,
rsLfapStatsMsgsInTxQueuePeak Gauge32,
rsLfapStatsFlowsPeakTime     TimeTicks,

--
-- additional LFAPv5 protocol stats
--
rsLfapVersionMismatchErrors   Counter32,
rsLfapSessionRxFERs          Counter32, -- Session
Establishments Accepted
rsLfapStatsRxCrNs            Counter32,
rsLfapLostContacts           Counter32,
rsLfapTotalPackets           Counter32,
rsLfapTotalBytes             Counter64,
rsLfapProtocolViolations     Counter32
}

--
-- Connection statistics
--

rsLfapStatsSessionUp OBJECT-TYPE
    SYNTAX      TruthValue
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION
        "The current state of the TCP connection between the
        CCE on the CCE and an external server (FAS)
        identified by rsLfapServerStaticIndex. If a connection
        from the CCE is established with the FAS ie it has reached Send
        State,
            then its value would be true. Otherwise it would be false."
        REFERENCE "6.4 State Diagrams, CCE State Machine for Connection
        Setup"
    ::= { rsLfapStatsEntry 1 }

rsLfapStatsSessionChangedAt OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS   read-only
    STATUS      current
    DESCRIPTION

```

"The value of sysUpTime when rsLfapStatsSessionUp
last changed state."

```
::= { rsLfapStatsEntry 2 }
```

```
rsLfapStatsTcpConnects OBJECT-TYPE
```

```
    SYNTAX      Counter32
```

```
    MAX-ACCESS  read-only
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
    "This is the number of successful TCP connections the LFAP
    agent made to a FAS."
```

```
    ::= { rsLfapStatsEntry 3 }
```

```
rsLfapStatsTcpConnectFails OBJECT-TYPE
```

```
    SYNTAX      Counter32
```

```
    MAX-ACCESS  read-only
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
    "This is the number of failed TCP connections attempts the CCE
    made to connect to a FAS."
```

```
    ::= { rsLfapStatsEntry 4 }
```

```
--
```

```
-- Protocol Statistics
```

```
--
```

```
rsLfapStatsTxVRs OBJECT-TYPE
```

```
    SYNTAX      Counter32
```

```
    MAX-ACCESS  read-only
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
    "This object contains the number of Version Request(VR)
    sent by the CCE to a FAS."
```

```
    ::= { rsLfapStatsEntry 5 }
```

```
rsLfapStatsTxVRAs OBJECT-TYPE
```

```
    SYNTAX      Counter32
```

```
    MAX-ACCESS  read-only
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
    "This object contains the number of Version Request
    Acknowledge (VRA) sent."
```

```
    ::= { rsLfapStatsEntry 6 }
```

```
rsLfapStatsTxFARs OBJECT-TYPE
```

```
    SYNTAX      Counter32
```

```
    MAX-ACCESS  read-only
```

```
    STATUS      current
```

```
    DESCRIPTION
```

```
    "This object contains the number of Flow Activation Records
```

```
(FAR) sent. TBD: specify ref clause."  
::= { rsLfapStatsEntry 7 }
```

rsLfapStatsTxFUNs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the number of Flow Update Notification (FUN) sent."

::= { rsLfapStatsEntry 8 }

rsLfapStatsTxARs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the number of Administrative Request(AR) sent."

::= { rsLfapStatsEntry 9 }

rsLfapStatsTxARAs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the number of Administrative Request Acknowledge (ARA) sent."

::= { rsLfapStatsEntry 10 }

rsLfapStatsMsgsInTxQueue OBJECT-TYPE

SYNTAX Integer32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the number of messages currently in the send queue."

::= { rsLfapStatsEntry 11 }

rsLfapStatsDropsInTxQueue OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object represents the number of messages dropped by the CCE in the transmitting queue for this FAS."

::= { rsLfapStatsEntry 12 }

rsLfapStatsDropsInTxQueueWhenUp OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only
STATUS current

DESCRIPTION

"This object represents the number of messages dropped by the CCE in the send queue for this FAS while the connection between the CCE and the FAS is up."

::= { rsLfapStatsEntry 13 }

rsLfapStatsRxVRs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the number of VRs received."

::= { rsLfapStatsEntry 14 }

rsLfapStatsRxVRAs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the number of VRAs received."

::= { rsLfapStatsEntry 15 }

rsLfapStatsRxFARs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the number of FARs received."

::= { rsLfapStatsEntry 16 }

rsLfapStatsRxFUNs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the number of FUNs received."

::= { rsLfapStatsEntry 17 }

rsLfapStatsRxARs OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"This object contains the number of ARs received by the CCE from a FAS."

::= { rsLfapStatsEntry 18 }

rsLfapStatsRxARAs OBJECT-TYPE
SYNTAX Counter32

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MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This object contains the number of ARAs received."

::= { rsLfapStatsEntry 19 }

rsLfapStatsMsgsInRxQueue OBJECT-TYPE

SYNTAX Integer32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This object contains the number of messages currently in the receive queue."

::= { rsLfapStatsEntry 20 }

rsLfapStatsInvalidMsgsRx OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This object is the sum of corrupt and erroneous messages received."

::= { rsLfapStatsEntry 21 }

rsLfapStatsMsgsUnknownRx OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION

"This object contains the number of unknown LFAP message types received."

::= { rsLfapStatsEntry 22 }

rsLfapStatsTxLostPackets OBJECT-TYPE

SYNTAX Counter64
MAX-ACCESS read-only
STATUS obsolete
DESCRIPTION

"The count of packets not accounted for and thus not recorded by the LFAP server."

::= { rsLfapStatsEntry 23 }

rsLfapStatsTxLostOctets OBJECT-TYPE

SYNTAX Counter64
MAX-ACCESS read-only
STATUS obsolete
DESCRIPTION

"The count of octets not accounted for and thus not

```
recorded by the LFAP server."  
::= { rsLfapStatsEntry 24 }
```

rsLfapStatsLostAt OBJECT-TYPE

SYNTAX TimeTicks

MAX-ACCESS read-only

STATUS obsolete

DESCRIPTION

"On the CCE, the sysUpTime when the LFAP agent last lost transmitted FAR/FUN messages. On the FAS, it would be the last time when the server last received FAR/FUN messages."

::= { rsLfapStatsEntry 25 }

--

-- Flow Statistics

--

rsLfapStatsActiveFlows OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of active flows being tracked per FAS."

::= { rsLfapStatsEntry 26 }

rsLfapStatsFlowRate OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of flows being setup per second. This value is calculated as an exponentially decaying average over 30 second intervals"

::= { rsLfapStatsEntry 27 }

rsLfapStatsActiveFlowsPeak OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"High water mark for number of active flows being tracked by LFAP."

::= { rsLfapStatsEntry 28 }

rsLfapStatsMsgsInTxQueuePeak OBJECT-TYPE

SYNTAX Gauge32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"High water mark for queue depth."

::= { rsLfapStatsEntry 29 }

rsLfapStatsFlowsPeakTime OBJECT-TYPE

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SYNTAX TimeTicks
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"The value of sysUpTime when max number of flows being reported on was reached."

::= { rsLfapStatsEntry 30 }

rsLfapVersionMismatchErrors OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Number of times CCE or FAS did not agree on LFAP version."

::= { rsLfapStatsEntry 31 }

rsLfapSessionRxFERs OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Number of times either a CCE or FAS reached the Send State as indicated in the state diagrams. In summary, a CCE receives a

FER

message or a FAS sends an FER message."

::= { rsLfapStatsEntry 32 }

rsLfapStatsRxCRNs OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Number of times a CCE has received a CRN message or a FAS has sent

a CRN message."

::= { rsLfapStatsEntry 33 }

rsLfapLostContacts OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current

DESCRIPTION

"Number of times a CCE or FAS lost the session while in the Send

State. For a CCE, this includes Message timeout, Lost TCP session,

or KA timeout. For a FAS, it includes Message timeout and Lost

```
TCP."  
  ::= { rsLfapStatsEntry 34 }
```

rsLfapTotalPackets OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of packets excluding written to TCP session since TCP
session
was opened."
::= { rsLfapStatsEntry 35 }

rsLfapTotalBytes OBJECT-TYPE
SYNTAX Counter64
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of bytes excluding written to TCP session since TCP
session
was opened. FAS keeps this counter per CCE."
::= { rsLfapStatsEntry 36 }

rsLfapProtocolViolations OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"A count of valid messages received but considered invalid in
the
current CCE or FAS state."
::= { rsLfapStatsEntry 38 }

-- scalars

rsLfapEstablishSessFailures OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"A count of the number of times the CCE attempted to connect to
each
of the FAS it was configured with in succession without
success. It
includes cases where a DR with an alternate FAS was also
tried."
REFERENCE "8.2 CCE Statistics - Failed to establish a session to
any server"
::= { rsLfapStats 2 }

rsLfapDroppedMessages OBJECT-TYPE
SYNTAX Counter32

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```
MAX-ACCESS    read-only
STATUS        current
DESCRIPTION
    "A count of the number of FAR or FUN messages the CCE could not
be
    transmitted to the FAS while not in Send State."
REFERENCE "8.2 CCE Statistics - Number of bytes not accounted for
due to dropped messages"
::= { rsLfapStats 3 }
```

```
rsLfapDroppedBytes OBJECT-TYPE
    SYNTAX      Counter64
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Number of bytes not accounted for due to dropped messages
        A count of the number of bytes accounted for in FUN messages being
        dropped that CCE could not transmit to the FAS while in Send
State."
    REFERENCE "8.2 CCE Statistics - Number of packets not accounted
for due to dropped messages"
    ::= { rsLfapStats 4 }
```

```
rsLfapLastDroppedBytes OBJECT-TYPE
    SYNTAX      TimeTicks
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "Value of sysUpTime when last message whas dropped while not in
Send State."
    REFERENCE "8.2 CCE Statistics - Time of last dropped message"
    ::= { rsLfapStats 5 }
```

```
--
-- CCE Notifications
--
```

```
rsLfapMIBEvents      OBJECT IDENTIFIER ::= { rsLfapMIB 2 }
rsLfapMIBEventsPrefix OBJECT IDENTIFIER ::= { rsLfapMIBEvents 0 }
```

```
rsLfapNoServer NOTIFICATION-TYPE
    OBJECTS {
        rsLfapStatsSessionChangedAt,
        rsLfapStatsTcpConnectFails
    }
    STATUS current
    DESCRIPTION
        "The CCE has tried to connect to all servers in
```

rsLfapStatsServerStaticTable
and has failed."

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```
::= { rsLfapMIBEventsPrefix 1 }
```

```
rsLfapLostMessage NOTIFICATION-TYPE
```

```
  OBJECTS {
```

```
    rsLfapStatsSessionChangedAt,  
    rsLfapStatsLostAt,  
    rsLfapStatsSessionUp  
  }
```

```
  STATUS current
```

```
  DESCRIPTION
```

"When a CCE first drops messages due to no connected server, send this event. No more additional events are sent until the value of rsLfapStatsSessionChangedAt value has changed."

```
  ::= { rsLfapMIBEventsPrefix 2 }
```

```
rsLfapQueueFull NOTIFICATION-TYPE
```

```
  OBJECTS {
```

```
    rsLfapStatsDropsInTxQueue,  
    rsLfapMaxTxQueueSize,  
    rsLfapStatsSessionUp  
  }
```

```
  STATUS current
```

```
  DESCRIPTION
```

"Accounting data may be lost when the CCE's message queue reaches capacity as defined by rsLfapMaxTxQueueSize.

rsLfapStatsSessionUp can indicate if this is happening due to no FAS to send to currently.

A second case is where the rate of inserts into the queue exceeds the rate at which the FAS is processing them. This can be caused by flow control of the underlying TCP session. Send only one rsLfapStatsQueueFull notification per every 1000 dropped messages or after a change in the value of rsLfapStatsSessionUp for the current FAS."

```
  ::= { rsLfapMIBEventsPrefix 3 }
```

```
-- Conformance Information
```

```
rsLfapConformance OBJECT IDENTIFIER ::= { rsLfapMIB 3 }
```

```
rsLfapCompliances OBJECT IDENTIFIER ::= { rsLfapConformance 1 }
```

```
rsLfapGroups      OBJECT IDENTIFIER ::= { rsLfapConformance 2 }
```

```
-- Compliance Statements
```

```
rsLfapAgentCompliance MODULE-COMPLIANCE
```

```
  STATUS obsolete
```

```
  DESCRIPTION
```

"This compliance statement for implementing this MIB on

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the CCE. Some objects also do not need to be implemented if the CCE is v4."

MODULE -- this module

MANDATORY-GROUPS {

 rsLfapAgentStateGroup,

 rsLfapAgentCfgGroup,

 rsLfapServerStaticGroup,

 rsLfapStatsGroup

}

GROUP rsLfapDiagGroup

DESCRIPTION

"The diag object in this group is new. Implementation of this group for version 4 is not necessary."

GROUP rsLfapNotificationGroup

DESCRIPTION

"These notifications are new. Implementation of this group for version 4 is not necessary."

OBJECT rsLfapStatsTxVRAs

MIN-ACCESS not-accessible

DESCRIPTION

"This object is not supported by the CCE on the CCE. The CCE would not send a Version Request Acknowledge(VRA) message to a FAS."

OBJECT rsLfapStatsRxVRs

MIN-ACCESS not-accessible

DESCRIPTION

"This object is not supported by the CCE on the CCE. A FAS does not send Version Request(VR) messages to the CCE."

OBJECT rsLfapStatsRxFARs

MIN-ACCESS not-accessible

DESCRIPTION

"This object is not supported by the CCE on the CCE. A FAS does not send FAR messages to the CCE."

OBJECT rsLfapStatsRxFUNs

MIN-ACCESS not-accessible

DESCRIPTION

"This object is not supported by CCE on the CCE. The FAS does not send FUN messages to the CCE."

OBJECT rsLfapServerStaticLastChanged

MIN-ACCESS not-accessible

DESCRIPTION

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"This object is not supported in LFAP v4."

OBJECT rsLfapStatsSessionChangedAt

MIN-ACCESS not-accessible

DESCRIPTION

"This object is not supported in LFAP v4."

OBJECT rsLfapStatsLostAt

MIN-ACCESS not-accessible

DESCRIPTION

"This object is not supported in LFAP v4."

OBJECT rsLfapStatsFlowsPeakTime

MIN-ACCESS not-accessible

DESCRIPTION

"This object is not supported in LFAP v4."

OBJECT rsLfapStatsFlowRate

MIN-ACCESS not-accessible

DESCRIPTION

"This object is not supported in LFAP v4."

::= { rsLfapCompliances 1 }

rsLfapV5Compliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"This compliance statement for implementing this MIB module on
for a v5 CCE."

MODULE -- this module

MANDATORY-GROUPS {

rsLfapAgentStateGroup,

rsLfapAgentCfgGroup,

rsLfapServerStaticGroup,

rsLfapV5StatsGroup

}

::= { rsLfapCompliances 2 }

-- object grouping clauses for compliant implementations

rsLfapAgentStateGroup OBJECT-GROUP

OBJECTS {

rsLfapCapabilities,

rsLfapAdminState,

rsLfapOperState,

rsLfapLastError,

rsLfapLastErrorReason,


```
}
```

```
STATUS current
```

```
DESCRIPTION
```

```
"The collection of objects used to represent the desired and  
actual operational state of the CCE."
```

```
::= { rsLfapGroups 1 }
```

```
rsLfapAgentCfgGroup OBJECT-GROUP
```

```
OBJECTS {
```

```
    rsLfapPollInterval,  
    rsLfapBatchSize,  
    rsLfapBatchInterval,  
    rsLfapLostContactInterval,  
    rsLfapServerRetryInterval,  
    rsLfapMaxTxQueueSize,  
    rsLfapTaskPriority
```

```
}
```

```
STATUS current
```

```
DESCRIPTION
```

```
"The collection of objects used to represent the configuration  
of LFAP protocol in a given CCE."
```

```
::= { rsLfapGroups 2 }
```

```
rsLfapServerStaticGroup OBJECT-GROUP
```

```
OBJECTS {
```

```
    rsLfapServerStaticLastChanged,  
    rsLfapServerStaticAddressType,  
    rsLfapServerStaticAddress,  
    rsLfapServerStaticStatus
```

```
}
```

```
STATUS current
```

```
DESCRIPTION
```

```
"The collection of objects used to represent the configuration of  
the address of FAS in CCE."
```

```
::= { rsLfapGroups 3 }
```

```
rsLfapStatsGroup OBJECT-GROUP
```

```
OBJECTS {
```

```
    rsLfapStatsSessionUp,  
    rsLfapStatsSessionChangedAt,  
    rsLfapStatsTcpConnects,  
    rsLfapStatsTcpConnectFails,
```

```
    rsLfapStatsTxVRs,  
    rsLfapStatsTxVRAs,  
    rsLfapStatsTxFARs,  
    rsLfapStatsTxFUNs,
```

rsLfapStatsTxARs,
rsLfapStatsTxARAs,

```
rsLfapStatsMsgsInTxQueue,  
rsLfapStatsDropsInTxQueue,  
rsLfapStatsDropsInTxQueueWhenUp,
```

```
rsLfapStatsRxVRs,  
rsLfapStatsRxVRAs,  
rsLfapStatsRxFARs,  
rsLfapStatsRxFUNs,  
rsLfapStatsRxARs,  
rsLfapStatsRxARAs,
```

```
rsLfapStatsMsgsInRxQueue,  
rsLfapStatsInvalidMsgsRx,  
rsLfapStatsMsgsUnknownRx,
```

```
rsLfapStatsTxLostPackets,  
rsLfapStatsTxLostOctets,  
rsLfapStatsLostAt,
```

```
rsLfapStatsActiveFlows,  
rsLfapStatsFlowRate,
```

```
rsLfapStatsActiveFlowsPeak,  
rsLfapStatsMsgsInTxQueuePeak,  
rsLfapStatsFlowsPeakTime
```

```
}
```

```
STATUS obsolete
```

```
DESCRIPTION
```

```
"The collection of objects for LFAPv4/CCE"
```

```
::= { rsLfapGroups 4 }
```

```
rsLfapDiagGroup OBJECT-GROUP
```

```
OBJECTS {
```

```
    rsRunLfapSelfTest
```

```
}
```

```
STATUS current
```

```
DESCRIPTION
```

```
"The collection of objects used to represent CCE/LFAP diagnostics."
```

```
::= { rsLfapGroups 5 }
```

```
rsLfapNotificationGroup NOTIFICATION-GROUP
```

```
NOTIFICATIONS {
```

```
    rsLfapNoServer,
```

```
    rsLfapLostMessage,
```

```
    rsLfapQueueFull
```

```
}
```

```
STATUS current
```

DESCRIPTION

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"The collection of notifications for LFAP MIB."
::= { rsLfapGroups 6 }

rsLfapV5StatsGroup OBJECT-GROUP

OBJECTS {

rsLfapStatsSessionUp,
rsLfapStatsSessionChangedAt,
rsLfapStatsTcpConnects,
rsLfapStatsTcpConnectFails,

rsLfapStatsTxVRs,
rsLfapStatsTxVRAs,
rsLfapStatsTxFARs,
rsLfapStatsTxFUNs,
rsLfapStatsTxARs,
rsLfapStatsTxARAs,

rsLfapStatsMsgsInTxQueue,
rsLfapStatsDropsInTxQueue,
rsLfapStatsDropsInTxQueueWhenUp,

rsLfapStatsRxVRs,
rsLfapStatsRxVRAs,
rsLfapStatsRxFARs,
rsLfapStatsRxFUNs,
rsLfapStatsRxARs,
rsLfapStatsRxARAs,

rsLfapStatsMsgsInRxQueue,
rsLfapStatsInvalidMsgsRx,
rsLfapStatsMsgsUnknownRx,

rsLfapStatsActiveFlows,
rsLfapStatsFlowRate,

rsLfapStatsActiveFlowsPeak,
rsLfapStatsMsgsInTxQueuePeak,
rsLfapStatsFlowsPeakTime,
rsLfapVersionMismatchErrors,
rsLfapSessionRxFERs,
rsLfapStatsRxCRNs,
rsLfapLostContacts,
rsLfapTotalPackets,
rsLfapTotalBytes,
rsLfapProtocolViolations,

rsLfapEstablishSessFailures,
rsLfapDroppedMessages,

rsLfapDroppedBytes,

```
    rsLfapLastDroppedBytes  
}
```

```
STATUS    current
```

```
DESCRIPTION
```

```
"The collection of objects used to represent the statistics of  
a CCE for Version 5 of LFAP."
```

```
::= { rsLfapGroups 7 }
```

```
END
```


2. References

- [1] "Light-weight Flow Accounting Protocol Specification Version 5.0" [draft-riverstone-lfap-01.txt](#), June 2002
- [2] "LFAP Data Definition Specification", [draft-riverstone-lfap-data-01.txt](#). June 2002

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