



Signaling Delivery Controller

SNMP Guide

5.1

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About this Document

Document Name: F5 Signaling Delivery Controller SNMP Guide

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Document Objectives

This document describes the SNMP alarms executed by SDC and the Statistic data collected by SDC. The document also provides information related to Operating System statistic data collection.

This document reflects the MIB file provided with the SDC 5.1 release.



Note: This document describes F5 oriented alarms and objects. The hardware MIB files used by SDC are detailed in HW MIB Files. For information about HP/IBM oriented objects, refer to the relevant third-party documentation.

Document History

Revision Number	Change Description	Change Location
Ver. 2 – January 2017	Added, edited threshold values	Throughout document
Ver. 3 – February 2017	Added note about alarm generation when peers are disabled /enabled manually. Updated custom alarm description.	Custom (User Defined) Alarms
Ver. 4 – February 2017	Updated thresholds for sdcMachineCpuUsage alarm	<i>Machine Resource Alarms</i>
Ver 5 – March 2017	Corrected alarm thresholds for sdcMachineCpuUsage and sdcMachineLoadAverage alarms	<i>Machine Resource Alarms</i>



Revision Number	Change Description	Change Location
Ver 6 – April 2017	Updated the sdcLicenseMpsViolation alarm description	
Ver 7 – August 2017	Added description of SNMP v3 support. Updated Defining SNMP Targets for SNMP V2-Trap Forwarding Profile	<i>SNMP Supported Versions</i> <i>Defining SNMP Targets</i>
Ver 8 – September 2017	Updated description for querying the SDC MIB file	<i>Querying the SDC MIB File</i>
Ver 9 – October 2017	Removed internal statistics (sKFamilyReasonTable)	Removed SDC Transaction Results section
Ver 10 – November 2020	Removed references to Splunk	Throughout document

Conventions

The style conventions used in this document are detailed in Table 1.

Table 1: Conventions

Convention	Use
Normal Text	Regular text; style: F5_Normal
Normal Text Bold	Names of menus, commands, buttons, and other elements of the user interface; style: F5_Normal_Bold
<i>Normal Text Italic</i>	Links to figures, tables, and sections in the document, as well as references to other documents; style: <i>F5_Normal_CrossRef</i>
Script	Language scripts; style: F5_Scripts
Calibri	File names; F5_Normal_FileName
Table Heading	Table Headings; style: F5_Table Header Text
Table Text	Table Text; style: F5_Table_Text





Convention	Use
 Note:	Notes which offer an additional explanation or a hint on how to overcome a common problem
 Warning:	Warnings which indicate potentially damaging user operations and explain how to avoid them



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1. Introduction

The F5[®] Traffix[®] Signaling Delivery Controller[™] (SDC) constantly monitors the application status and performance, as well as the hardware performance. Using the monitored information, alarms indicating changes to the application status and performance are immediately raised. Once an alarm has been raised, the performance KPIs can be used to investigate performance trends leading up to the alarm, to pinpoint and understand the underlying cause.

1.1 SDC Monitoring Patterns

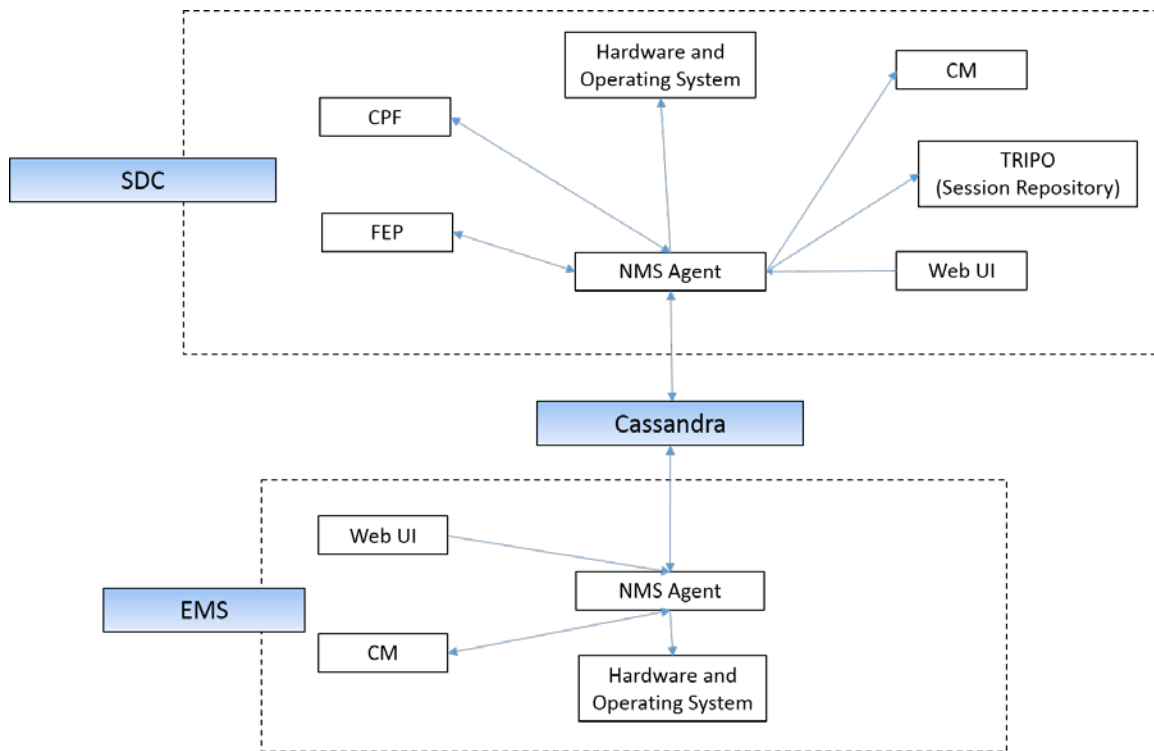
The NMS agent is responsible for querying the state and status of each site component (and underlying hardware) every minute for alarms and statistics data. In addition, the CPF and FEP components send specific event-related alarms and statistics data to the NMS agent immediately as an event occurs. The NMS agent forwards the data to the Cassandra database and to the defined SNMP targets. The NMS agent is also queried by the Web UI for this collected data. *Figure 1* illustrates these patterns.



Note: Each SDC and EMS site has two NMS agent component instances running in active-active mode. The monitored data is synced between the two instances on each site.



Figure 1: Monitoring Patterns Within and Between SDC and EMS Sites



1.2 SNMP Supported Versions

From Release 5.1 CF 9, SNMPv3 is supported for retrieving MIB file information, in addition to SNMP V2c (and SNMP V1). Both SNMPv3 and V2c coexist in the NMS Agent and dual stack is supported.

SNMPv3 provides enhanced user security protection for internal users (between the NMS Agent and SDC components) and for external users (between the NMS Agent and external SNMP applications). To communicate with an external SNMP application, the engine ID of the external Web UI is discovered. This discovery is built-in to the overall system configuration.

The following default profiles are supported:

- SNMPV3 Internal User profile for retrieving OS statistics (such as, CPU, overload per SDC component) to the SDC NMS Agent. The internal user profile includes authentication protocols and passwords.



- SNMPV2c_Default profile for retrieving SDC statistics to an external EMS Web UI. The community string (“security name”) is by default set to “public” and is editable.

In addition, an SNMP V2 Trap Forwarding profile is supported for sending alarms to an external SNMP application.

Configuring these profiles, including enabling/disabling, and editing the default profiles, is done from the relevant EMS/SDC Web UI. For more information on configuring the SNMP profiles, see the *5.1 SDC User Guide*.

1.3 About the SDC MIB File

The SDC uses a standard MIB (Management Information Base) file, to define the hierarchy of collected information and its properties. Each branch of the tree consists of logical groupings used to generate unique object ID’s. The following are the high-level MIB branches:

- The “sdcAlarms” branch (.enterprises.3375.3.1.4.3) represents SNMP stateful alarms that monitor SDC performance.
- The “sdcEvents” branch (.enterprises.3375.3.1.4.4) represents SNMP stateless alarms that monitor SDC events.
- The “sdcStatisticsGroup” branch (.enterprises.3375.3.1.4.9) represents SNMP KPIs that indicate SDC traffic processing and performance trends.

The objectID assigned to each MIB object is created by concatenating the numerical names of each of its parent branches. The branches are concatenated and separated by “.”. To avoid conflicts of object IDs, each branch of the tree must be “registered,” that is, defined through a designated organization. Enterprise-specific MIB’s are registered under the enterprises sub-tree. The Internet-standard MIB-II is registered under the mib-2 sub-tree. The mib-2 sub-tree is primarily used to manage TCP/IP-based networks through SNMP.

1.3.1 MIB File Location

The SDC MIB file is located under:

```
/opt/traffix/<sdc_version>/config/mibFiles/SDC-MIB.mib
```



1.3.2 Querying the SDC MIB File

As indicated in this document, certain MIB file objects can be queried by running the `snmpget` command on a MIB object, for example as follows.

```
snmpget -c <communitystring> -v2 <NMS_Agent_IP>:1161 <ObjectID>
```

The `snmpget` command can be used by SNMPv2c and SNMPv3 protocols to retrieve MIB file information from the NMS Agent, listening on port 1161. To retrieve MIB information from the OS SNMP agent, only the SNMPv3 protocol can be used. The OS SNMP agent listens on port 161.

In addition, the `snmpwalk` command is used to retrieve table data with an SNMPv3 profile.

The following are command examples:

- SNMPv2c `snmpget` command when specifying the OID name:
snmpget <IP address>:1161 -v2c -c public snmpEngineID.0
- SNMPv3 `snmpwalk` command when specifying the OID name:
snmpwalk -v 3 -l authPriv -u userAutomation -a SHA -A <authentication password> -x AES -X <privacy Password> Pass <IP address>:1161 usmUserTable
- SNMPv3 `snmpget` command to OS MIB information (statistics, etc.)
snmpget -v 3 -l authPriv -u traffix -a SHA -A <authentication password> -x AES -X <privacy password> <IP address>:161 snmpEngineID.0



2. SNMP Alarms and Events

An SDC alarm is a message indicating that an SDC element's state has changed, a utilization threshold has been reached or unexpected behavior has occurred.

The SDC raises SNMP alarms based on SNMP protocol version 2.

2.1 Trap Variables

Each SNMP alarm generated by the SDC is sent with alarm variables. These variables provide information about the specific scenario that triggered that particular alarm occurrence.

All SNMP alarms generated by SDC are sent with the following default SNMP alarm variables:

- **SnmConstants.sysUpTime** – the time that lapsed since the SDC element that raised the alarm was last re-initialized.
- **SnmConstants.snmpTrapOID** – the SNMP alarm identifier.

The SNMP trap variables always appear in the same position in the trap. The first two trap variables for every trap are the SNMP trap variables, in this order:

SnmConstants.sysUpTime, SnmConstants.snmpTrapOID

In addition to the SNMP variable bindings, the SDC also adds the following variables to the generated alarms:

- **siteId** – the SDC/EMS site that raised the trap.
- **Hostname** – the IP address of the SDC component that raised the trap.
- **affectedObjectType** – the type of SDC component that raised the trap.
- **eventType** – the category of events that the alarm belongs to.
- **eventId** – a unique number given to each event type.
- **detectorComponent** – the name of the SDC component that raised the alarm.
- **managedObjectInstance** – the name of the SDC component that raised the alarm.
- **eventDateAndTime** – the date and time that the alarm was raised.



- **eventDescription** – information about the alarm.
- **Severity** – the severity of the raised alarm.
- **additionalText** – additional information about the alarm and the circumstances that caused it to be raised.
- **alarmEventLogAutoCleared** – specifies if the alarm is automatically cleared or if a manual action must be taken to clear it.

2.2 Configuring the SNMP Alarms

SNMP alarm configuration includes defining the target(s) to which SNMP alarms are sent upon execution, and defining the dilution settings for the alarms to prevent the alarms from flooding the system.



Note: When the site is managed by EMS all alarms are sent to EMS by default.

2.2.1 Defining SNMP Targets

SNMP Targets define where SDC's traps are sent upon execution. Traps invoked by the local site are sent to the configured targets and to the NMS agent. SNMP alarm targets are configured as part of the SNMP V2-Trap Forwarding profile.



Note: When an SDC site is managed by an EMS site, all alarms are sent to EMS site by default. There is no need to define the EMS site as an SNMP target.

To set the SDC alarm targets:

1. Go to **Administration > Specific Site Settings > SNMP > Add**.

The Add Profile window is displayed.
2. In, the **Profile Name** field, enter a user-friendly display name.
3. In the **Protocol** field, select **V2-Trap Forwarding** from the drop-down list.
4. In the **Community** field, you can change the SNMP community that is used by the SDC to publish its trap. The default is public.
5. In the **Host** field, enter the IP address to which alarms are sent.



6. In the **Port** field, enter the port number to which alarms are sent.
7. In the **Timeout** field, enter the time (1-180 seconds, in seconds, that SDC will wait for an answer. The default is 10 seconds.
8. In the **Retry Count** field, enter the defined number of times (1-20) (after a timeout) that system will wait again for an answer. The default is 2.



Note: The V2 -Trap Forwarding profile is enabled by default. If you do not want to have the traps forwarded to your external EMS Web UI, unselect the **Enable this profile** checkbox.

9. Click Save.

2.2.2 Defining SNMP Dilution Manager Properties

The SNMP Dilution Manager is a mechanism provided by the SDC to prevent stateless alarms from flooding the system. Each alarm is assigned a maximum event occurrence number in a specified measuring interval, after which a dilution period, in which no alarms are invoked, begins. For more information about stateless alarms, see *SDC Stateless Alarms*.

To configure the SDC alarm dilution:

1. In the **Web UI**, go to **Administration** > <Specific Site Settings> > **SNMPs**.
2. Click the **SNMP Dilution Manager** tab. The table presents a list of the stateless SNMP alarms and their dilution parameters. *Table 2* details the alarm table properties:

Table 2: SNMP Dilution Manager Table

Column	Description
Event Name	The name of the alarm. e.g., Node State Change
Events in Interval	The number of event occurrences that invoke an alarm, within the specified measuring interval, after which a dilution period begins (during which alarms are not generated).
	"0" will stop the alarm generation.



Column	Description
Measuring Interval (Millis)	The interval in which the event occurrences are accumulated, after which a dilution period may begin (during which alarms are not generated).
Dilution Period (Millis)	The period in which no alarms are invoked (begins when the accumulated number of events is exceeded within the measuring interval)

3. Click on a cell in the table to set a new value.
4. Click **Submit**.

2.2.3 Defining SNMP Settings Properties

The SNMP Settings tab is provided by the SDC to prevent unnecessary stateful alarms from being sent to the defined SNMP targets. By default, all stateful alarms are sent to the defined SNMP targets. For more information about stateful alarms, see *SDC Stateful Alarms*.

To change SNMP Settings properties:

1. In the **Web UI**, go to **Administration** > **<Specific Site Settings>** > **SNMP**.
2. Select **Alarm/Event Settings** tab. The table presents a list of the stateful SNMP alarms and their default SNMP setting. *Table 3* details the SNMP settings table properties:

Table 3: SNMP Settings Table

Column	Description
Event Name	The name of the alarm. e.g., Node State Change
Sent to SNMP Targets	Indicates (true/false) whether the alarm is sent to the defined SNMP targets.

3. Click on a cell in the table to set a new value.
4. Click **Submit**.

2.3 Storing Collected SNMP Alarm Data

All the SNMP alarms generated by the SDC are forwarded to and stored in the shared Cassandra database. Each site's alarms are displayed in the local Web UI, and the EMS Web UI displays the alarms for all monitored sites.



2.3.1 SNMP Alarms Log Files

To facilitate monitoring and fault analysis in environments where SNMP traps are not supported, SNMP alarms are logged to an SDC log file.

Log messages appear in the following format: ****SNMP**** Sending SNMP alarm: <NOTIFICATION TEXT>, with properties: <ALL ALARM PROPERTIES> ****SNMP****

2.3.1.1 Setting the Syslog Daemon Addresses

To set the SDC Syslog Addresses:

1. From the Navigation pane, browse and click **Logging**.
2. Click the **Syslog Addresses** tab. The table presents a list of Syslog Daemon Addresses and *Table 4* details the Syslog Daemon addresses table properties:

Table 4: Facilities

Column	Description
Address	The IP address to which log files are sent.
Facility	Provides a rough clue from what part of a system the message originated.

3. Click **Add** to add a Syslog Daemon (log messages receiver) and set its address and facility. Repeat this step for any additional Syslog Daemon that should receive the log message output.
4. Click **Submit** to save the log settings.

2.3.1.2 Log File Size Control

Log messages are stored in the local file system of each node (under /opt/traffix/<sdc_version>/logs and under /var/log/) and can be sent to a remote server via syslog. The SDC saves up to two of each log file on a node, after which the oldest file is replaced with a new one. Each file can contain up to 10MB of data.



2.4 SDC Stateful Alarms

SDC Stateful Alarms are events that may indicate a performance trend in the SDC. These alarms are automatically raised by the SDC, and remain raised until a “cleared” alarm is generated. Stateful alarms are located in the MIB under the sdcAlarms branch.

2.4.1 License Alarms

Table 5: License Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Recovery Action	Possible Severities
sdcLicenseExpirationViolation .enterprises.3375.3.1.4.3.1.0.1	FEP	<p>The SDC license installed on the FEP will expire in the specified number of hours. Once the license has expired, traffic will not be processed by this FEP, causing possible disruptions in message processing (Severity: Major).</p> <p>Once the license has been extended, the cleared alarm will be raised, indicating the new expiration date in the following format: DD/MM/YYYY.</p>	Contact F5 Support to extend your license.	<ul style="list-style-type: none">• Major• Cleared
sdcLicenseMpsViolation .enterprises.3375.3.1.4.3.1.0.2	NMS Agent	<p>The volume of traffic processed by the SDC site has exceeded the allowed licensed volume (Severity: Major)/ the volume of traffic is within the allowed licensed volume (Severity: Cleared), for the last second.</p> <p>The alarm indicates the current MPS and the allowed MPS.</p> <p>Corresponding KPI: MPS</p>	Contact F5 Support to increase the volume of licensed MPS.	<ul style="list-style-type: none">• Major• Cleared



Alarm Name and MIB ID	Generated by	Description and System Impact	Recovery Action	Possible Severities
sdcss7LicenseViolation .enterprises.3375.3.1.4.3.1.0.3	CPF	The volume of SS7 traffic processed by the SDC site has exceeded the allowed licensed volume ((Severity: Major)/the volume of SS7 traffic is within the allowed licensed volume (Severity: Cleared). The alarm indicates the current KBpS and the allowed KBpS.	Contact F5 Support to increase the volume of licensed SS7 traffic.	<ul style="list-style-type: none"> • Major • Cleared

2.4.2 Inter-site Communication Alarms

Table 6: Inter-site Communication Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcpProxyConnection .enterprises.3375.3.1.4.3.2.0.1	FEP	The SDC site is not connected to its geo-redundant SDC site (Severity: Critical)/the SDC site is reconnected to its geo-redundant SDC site (Severity: Cleared). The alarm indicates the connection protocol and the geo peer representing the geo-redundant SDC site.	<ul style="list-style-type: none"> • Critical • Cleared
sdctripoGeoLink .enterprises.3375.3.1.4.3.2.0.3	Session Repository	One of the Tripo instances on the SDC site is not connected to one of the Tripo instances on the geo-redundant SDC site (Severity: Critical)/connection has been reestablished (Severity: Cleared).	<ul style="list-style-type: none"> • Critical • Cleared



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		The alarm indicates the SDC site name.	
geoSdcProxyNotMarked .enterprises.3375.3.1.4.3.2.0.4		A geo client connected to a non-geo virtual server. The alarm is raised when the virtual server is edited and defined as a geo-peer, or when the geo-peer from the geo-redundant SDC site is deleted or disabled.	<ul style="list-style-type: none">• Major• Cleared

2.4.3 EMS-SDC Communication Alarms

Table 7: EMS-SDC Communication Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcCmEmsConnection .enterprises.3375.3.1.4.3.3.0.3	NMS Agent	<p>The configuration between the SDC site and the EMS site is not synchronized, since the connection between the configuration manager on the SDC site and the configuration manager on the EMS site is down (Severity: Critical)/connection has been reestablished (Severity: Cleared).</p> <p>The alarm indicates the SDC site name.</p>	<ul style="list-style-type: none">• Critical• Cleared



2.4.4 Machine Resource Alarms

Table 8: Machine Resource Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcmachinePhysicalMemory .enterprises.3375.3.1.4.3.4.0.1	NMS Agent	<p>The percentage of used physical memory is:</p> <ul style="list-style-type: none">• Cleared: below the minor threshold of 70%.• Above the minor threshold of 70% and below the major threshold of 75%.• Above the major threshold of 75% and below the critical threshold of 85%.• Above the critical threshold of 85%. <p>The alarm indicates the current used physical memory, the thresholds, the previously measured usage and the previous alarm severity.</p>	<ul style="list-style-type: none">• Critical• Major• Minor• Cleared <p>(according to the exceeded threshold)</p>
sdcmachineSwapMemory .enterprises.3375.3.1.4.3.4.0.2	NMS Agent	<p>The percentage of used swap space is:</p> <ul style="list-style-type: none">• Cleared: below the minor threshold of 30%.• Above the minor threshold of 30% and below the major threshold of 70%.• Above the major threshold of 70% and below the critical threshold of 90%.	<ul style="list-style-type: none">• Critical• Major• Minor• Cleared <p>(according to the exceeded threshold)</p>



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		<ul style="list-style-type: none"> • Above the critical threshold of 90%. <p>The alarm indicates the measured percentage of used swap space, the thresholds, the previous measured percentage and the previous alarm severity.</p>	
sdcMachineCpuUsage .enterprises.3375.3.1.4.3.4.0.3	NMS Agent	<p>The percentage of used CPU is:</p> <ul style="list-style-type: none"> • Cleared: below the minor threshold of 65%. • Above the minor threshold of 65% and below the major threshold of 75%. • Above the major threshold of 75% and below the critical threshold of 80%. • Above the critical threshold of 80%. <p>The alarm indicates the current CPU, the thresholds, the previously measured usage and the previous alarm severity.</p>	<ul style="list-style-type: none"> • Critical • Major • Minor • Cleared <p>(according to the exceeded threshold)</p>
sdcMachineLoadAverage .enterprises.3375.3.1.4.3.4.0.4	NMS Agent	<p>The ratio between the Operating System's load average counter and the number of CPU cores (per minute) is:</p> <ul style="list-style-type: none"> • Cleared: below the minor threshold of 70%. • Above the minor threshold of 70% and below the major threshold of 85%. 	<ul style="list-style-type: none"> • Critical • Major • Minor • Cleared




Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		<ul style="list-style-type: none"> • Above the major threshold of 85% and below the critical threshold of 95%. • Above the critical threshold of 95%. <p>The alarm indicates the current load average counter, the number of CPU cores, the ratio between them, the thresholds, the previous ratio and the previous alarm severity.</p>	(according to the exceeded threshold)
sdcMachineDiskPartitionUsage .enterprises.3375.3.1.4.3.4.0.5	NMS Agent	<p>The percentage of used disk partition is:</p> <ul style="list-style-type: none"> • Cleared: below the minor threshold of 30%. • Above the minor threshold of 30% and below the major threshold of 70%. • Above the major threshold of 70% and below the critical threshold of 90%. • Above the critical threshold of 90%. <p>The alarm indicates the current used disk partition, the partition name, the thresholds, the previous used disk partition and the previous alarm severity.</p>	<ul style="list-style-type: none"> • Critical • Major • Minor • Cleared <p>(according to the exceeded threshold)</p>
sdcMachineNIC .enterprises.3375.3.1.4.3.4.0.6	NMS Agent	<p>The Network Interface Card (NIC) is down (Severity: Critical)/Up (Severity: Cleared)</p>	<ul style="list-style-type: none"> • Critical




Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		The alarm indicates the NIC name.	<ul style="list-style-type: none">• Cleared
sdcMachineCPUSStealUsage .enterprises.3375.3.1.4.3.4.0.7	NMS Agent	The percentage of used steal CPU on the virtual machine consistently exceeded 10% over the last twenty minutes. (Severity: Critical) / dropped below 10%. (Severity: Cleared)	<ul style="list-style-type: none">• Major• Cleared

2.4.5 Pool Status Alarms


Table 9: Pool Status Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdctimeoutPoolHealthChanged .enterprises.3375.3.1.4.3.5.0.1	CPF	<p>In the last minute, the percentage of timed out requests sent to the pool exceeded the allowed percentage (Severity: Minor) / was below the allowed percentage (Severity: Cleared).</p> <p>The alarm indicates current percentage of timed out requests, the allowed percentage, the previous measurement and the previous alarm severity.</p> <p> Note: The thresholds are configurable in the Web UI, per pool. The default value is 1%. For more information, see the F5 SDC User Guide.</p>	<ul style="list-style-type: none">• Minor• Cleared



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcErrorsPoolHealthChanged .enterprises.3375.3.1.4.3.5.0.2	CPF	<p>In the last minute, the percentage of error answers returned by the peers in the pool exceeded the allowed percentage (Severity: Critical) / was below the allowed percentage (Severity: Cleared).</p> <p>The alarm indicates the current percentage of error answers, the allowed percentage, the previous measurement and the previous alarm severity.</p> <p> Note: The thresholds are configurable in the Web UI, per pool. The default value is 1%. For more information, see the F5 SDC User Guide.</p>	<ul style="list-style-type: none">• Critical• Cleared
sdcPoolStateChanged .enterprises.3375.3.1.4.3.5.0.3	CPF	<p>The number of active peers in the pool state has changed and it:</p> <ul style="list-style-type: none">• Meets the required minimum• Meets the required minimum but is in decline (Ramp up is started)• Meets the required minimum but the pool is partially out of service• Does not meet the required minimum. The Pool is out of service.	<ul style="list-style-type: none">• Critical• Major• Minor• Cleared <p>(according to the state)</p>



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		The alarm indicates the previous state, the current state, the reason for the change, the number of active peers and whether it is below/above the required minimum.	
sdcPoolRateChanged .enterprises.3375.3.1.4.3.5.0.4	CPF	<p>In the last minute, the number of messages sent to the pool was:</p> <ul style="list-style-type: none">• Below the minor rate limit threshold.• Above the minor rate limit threshold and below the major rate limit threshold.• Above the major rate limit threshold and below the critical rate limit threshold.• Above the critical rate limit threshold. <p>The alarm indicates the number of messages measured in the last minute, the thresholds, the previous measurement and the previous alarm severity.</p> <p> Note: The thresholds are configurable in the Web UI, either globally or per pool. The default values are 90% for critical, 70% for major, and 30% for minor. For more information, see the F5 SDC User Guide.</p>	<ul style="list-style-type: none">• Critical• Major• Minor• Cleared <p>(according to the exceeded threshold)</p>



2.4.6 Peer Status Alarms

Table 10: Peer Status Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdCIOQueuePeerHealthChanged .enterprises.3375.3.1.4.3.6.0.1	FEP	<p>In the last minute, the utilization of the transport layer queue was:</p> <ul style="list-style-type: none">• Cleared: below the minor threshold of 20%.• Above the minor threshold of 20%. and below the major threshold of 40%.• Above the major threshold of 40%.and below the critical threshold of 60%.• Above the critical threshold of 60%. <p>The alarm indicates the current utilization of the transport layer queue, the thresholds, the previous measurement and the previous alarm severity.</p>	<ul style="list-style-type: none">• Critical• Major• Minor• Cleared <p>(according to the exceeded threshold)</p>
sdCOOSPeerHealthChanged .enterprises.3375.3.1.4.3.6.0.2	CPF	<p>In the last minute, the percentage of time that the peer was out of service exceeded the critical threshold of 75% (Severity: Critical)/was below the critical threshold of 75% (Severity: Cleared).</p> <p>The alarm indicates the latest measurement of the peer's out of service time percentage, the critical</p>	<ul style="list-style-type: none">• Critical• Cleared



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		threshold, the previous measurement and the previous alarm severity.	
sdcRTTPeerHealthChanged .enterprises.3375.3.1.4.3.6.0.3	CPF	<p>In the last minute, the round trip processing time (RTT) – the time it took the peer to process 99.95 percent of the requests and return an answer – was above the maximum allowed peer latency (500 milliseconds) (Severity: Major) / below it (Severity: Cleared)</p> <p>The alarm indicates the latest measurement of the RTT, the maximum allowed peer latency, the previous measurement and the previous alarm severity.</p> <p>Corresponding KPI: PeerRoundtripTimePercentile9995</p>	<ul style="list-style-type: none"> • Major • Cleared
sdcErrorsPeerHealthChanged .enterprises.3375.3.1.4.3.6.0.4	CPF	<p>In the last minute, the percentage of error answers returned from the peer was above the maximum allowed threshold (1%) (Severity: Major)/below it (Severity: Cleared).</p> <p>The alarm indicates the latest measurement of the percentage of error answers returned from the peer, the maximum allowed threshold, the previous measurement and the previous alarm severity.</p>	<ul style="list-style-type: none"> • Major • Cleared



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcTimeoutsPeerHealthChanged .enterprises.3375.3.1.4.3.6.0.5	CPF	<p>In the last minute, the percentage of error answers returned from the peer was above the maximum allowed threshold (Severity: Major)/below it (Severity: Cleared).</p> <p>The alarm indicates the latest measurement of the percentage of error answers returned from the peer, the maximum allowed threshold, the previous measurement and the previous alarm severity.</p>	<ul style="list-style-type: none">• Major• Cleared
sdcPeerOutgoingRateLimitChanged .enterprises.3375.3.1.4.3.6.0.6	FEP/CPF	<p>In the last minute, the number of messages sent to the peer was:</p> <ul style="list-style-type: none">• Below the minor threshold.• Above the minor rate limit and below the major rate limit.• Above the major rate limit and below the critical rate limit.• Above the critical rate limit. <p>The alarm indicates the number of messages sent to the peer, the thresholds, the previous measurement and the previous alarm severity.</p>	<ul style="list-style-type: none">• Critical• Major• Minor• Cleared <p>(according to the exceeded threshold)</p>



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcPeerIncomingRateLimitChanged .enterprises.3375.3.1.4.3.6.0.7	FEP/CPF	<p>In the last minute, the number of messages received from the peer was:</p> <ul style="list-style-type: none">• Below the minor threshold.• Above the minor rate limit and below the major rate limit.• Above the major rate limit and below the critical rate limit.• Above the critical rate limit. <p>The alarm indicates the number of messages received from the peer, the thresholds, the previous measurement and the previous alarm severity.</p>	<ul style="list-style-type: none">• Critical• Major• Minor• Cleared <p>(according to the exceeded threshold)</p>
sdcPendingRequestsPeerHealthChanged .enterprises.3375.3.1.4.3.6.0.8		<p>In the last minute, the number of requests waiting for processing by the CPF was:</p> <ul style="list-style-type: none">• Below the minor threshold.• Above the minor rate limit and below the major rate limit.• Above the major rate limit and below the critical rate limit.• Above the critical rate limit.	<ul style="list-style-type: none">• Critical• Major• Minor• Cleared <p>(according to the exceeded threshold)</p>



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		<p>The alarm indicates the number of messages received from the peer, the thresholds, the previous measurement and the previous alarm severity.</p>	
<p>sdcPeerStateChanged .enterprises.3375.3.1.4.3.6.0.9</p>	<p>FEP/CPF</p>	<p>The state of the peer was changed because:</p> <ul style="list-style-type: none"> • The peer has been disabled/enabled/theOOS status changed • SDC initiated disconnect/peer initiated disconnect • The pending requests queue is full/the outgoing Rate limit was exceeded/the network queue is Full • The peer connection just opened and it is in ramp up mode. • The peer state changed from open to Partially Out of Service (POOS). • The SDC/Peer initiated disconnect/the peer initiated disconnects <p>The alarm indicates the previous state, the new state, the reason for the change and additional information, such as: DPR received from peer, WDR was not answered by the peer, SDC disconnect reason.</p>	<ul style="list-style-type: none"> • Critical • Major • Minor • Cleared <p>(according to the state)</p>



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		Note: This alarm is not generated when a peer is manually removed/enabled or disabled (from the Web UI: Topology > Specific Site Settings > Peers)	
sdcSctpPeerLink .enterprises.3375.3.1.4.3.6.0.10	FEP	One of the links between the SDC site and one of its peers is down/up. The alarm indicates the remote address, the local address and the reason for the disconnection (Received Shutdown/No HB acknowledge).	<ul style="list-style-type: none"> • Major • Cleared

2.4.7 Virtual Server Alarms

Table 11: Virtual Server Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcVirtualServerStateChanged .enterprises.3375.3.1.4.3.7.0.1	FEP	The state of the Virtual Server has changed due to : <ul style="list-style-type: none"> • Binding failure. • Missing license/inability to process traffic/VS shutdown by Script API. • A successful binding/VS removal/VS disabling/license addition. 	<ul style="list-style-type: none"> • Critical • Major • Cleared (according to the exceeded threshold)



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		The alarm indicates the previous state, the new state and the reason for the change.	

2.4.8 General Process Alarms

Table 12: General Process Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcComponentStatus .enterprises.3375.3.1.4.3.8.0.1	NMS Agent	The SDC component is down/up/the status is unknown the connection with the cluster is down.	<ul style="list-style-type: none">• Critical• Major• Cleared

2.4.9 Internal Component Alarms

Table 13: Internal Component Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcCommunicationOfCmFep .enterprises.3375.3.1.4.3.9.0.1	CM	The connection between the configuration manager and the FEP is down/up. The alarm indicates the components' names.	<ul style="list-style-type: none">▪ Critical▪ Cleared



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcCommunicationOfCmCpf .enterprises.3375.3.1.4.3.9.0.2	CM	The connection between the configuration manager and the CPF is down/up. The alarm indicates the components' names.	<ul style="list-style-type: none">▪ Critical▪ Cleared▪
sdcCommunicationOfCmMateCm .enterprises.3375.3.1.4.3.9.0.3	CM	The connection between the paired configuration managers is down/up The alarm indicates the components' names.	<ul style="list-style-type: none">▪ Critical▪ Cleared
sdcCommunicationOfCmUi .enterprises.3375.3.1.4.3.9.0.4	CM	The connection between the configuration manager and the Web UI is down/up. The alarm indicates the components' names.	<ul style="list-style-type: none">▪ Critical▪ Cleared
sdcCommunicationOfCmNms .enterprises.3375.3.1.4.3.9.0.5	CM	The connection between the configuration manager and the NMS is down/up. The alarm indicates the components' names.	<ul style="list-style-type: none">▪ Critical▪ Cleared
sdcCommunicationOfFepCpf .enterprises.3375.3.1.4.3.9.0.6	FEP	The message channel between the FEP and the CPF is down/up. Correspondingly, messages cannot/can be exchanged. The alarm indicates the components' names.	<ul style="list-style-type: none">▪ Critical▪ Cleared
sdcCommunicationOfCpfTripo	CPF	The connection between the CPF and the Tripo is down/up.	<ul style="list-style-type: none">▪ Critical



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
.enterprises.3375.3.1.4.3.9.0.7		The alarm indicates the components' names and the reason for the connection break.	<ul style="list-style-type: none"> ▪ Cleared
sdcCommunicationOfNmsFep .enterprises.3375.3.1.4.3.9.0.9	NMS Agent	<p>The connection between the NMS Agent and the FEP is down/up.</p> <p>The alarm indicates the components' names.</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Cleared
sdcCommunicationOfNmsCpf .enterprises.3375.3.1.4.3.9.0.10	NMS Agent	<p>The connection between the NMS Agent and the CPF is down/up.</p> <p>The alarm indicates the components' names.</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Cleared
sdcCommunicationOfNmsUi .enterprises.3375.3.1.4.3.9.0.11	NMS Agent	<p>The connection between the NMS Agent and the Web UI is down/up.</p> <p>The alarm indicates the components' names.</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Cleared
sdcCommunicationOfNmsTripo .enterprises.3375.3.1.4.3.9.0.13	NMS Agent	<p>The connection between the NMS Agent and the Tripo is down/up.</p> <p>The alarm indicates the components' names.</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Cleared
sdcComponentHealthRequestQOverload .enterprises.3375.3.1.4.3.9.0.16	FEP/CPF	The FEP/CPF's request queue is full/no longer full. Messages may silently be discarded/messages are no longer silently discarded.	<ul style="list-style-type: none"> ▪ Critical ▪ Cleared



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		<p>The alarm indicates the component's name and the queue's type.</p> <p>Corresponding KPI: Queue Size</p>	
<p>sdcComponentHealthAnswerQOverload .enterprises.3375.3.1.4.3.9.0.17</p>	FEP/CPF	<p>The FEP/CPF's answer queue is full/no longer full. Messages may silently be discarded/messages are no longer silently discarded.</p> <p>The alarm indicates the component's name and the queue's type.</p> <p>Corresponding KPI: Queue Size</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Major ▪ Minor ▪ Cleared <p>(according to the exceeded threshold)</p>
<p>sdcComponentHealthAsynchronousQOverload .enterprises.3375.3.1.4.3.9.0.18</p>	FEP/CPF	<p>The FEP/CPF's asynchronous task queue is full/no longer full. Messages may silently be discarded/messages are no longer silently discarded.</p> <p>The alarm indicates the component's name and the queue's type.</p> <p>Corresponding KPI: Queue Size</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Major ▪ Minor ▪ Cleared <p>(according to the exceeded threshold)</p>
<p>sdcComponentHealthRequestQThreshold .enterprises.3375.3.1.4.3.9.0.19</p>	FEP/CPF	<p>The percentage of the FEP/CPF's request queue that is used is:</p> <ul style="list-style-type: none"> • Below the minor threshold of 10%. 	<ul style="list-style-type: none"> ▪ Critical ▪ Major



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		<ul style="list-style-type: none"> • Above the minor threshold of 10% and below the major threshold of 30%. • Above the major threshold of 30% and below the critical threshold of 50%. • Above the critical threshold of 50%. <p>Corresponding KPI: Queue Size</p>	<ul style="list-style-type: none"> ▪ Minor ▪ Cleared <p>(according to the exceeded threshold)</p>
sdcComponentHealthAnswerQThreshold .enterprises.3375.3.1.4.3.9.0.20	FEP/CPF	The percentage of the FEP/CPF's answer queue that is used is: <ul style="list-style-type: none"> • Below the minor threshold of 10%. • Above the minor threshold of 10% and below the major threshold of 30%. • Above the major threshold of 30% and below the critical threshold of 50%. • Above the critical threshold of 50%. <p>Corresponding KPI: Queue Size</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Major ▪ Minor ▪ Cleared <p>(according to the exceeded threshold)</p>
sdcComponentHealthAsynchronousQThreshold .enterprises.3375.3.1.4.3.9.0.21	FEP/CPF	The percentage of the FEP/CPF's asynchronous task queue that is used is: <ul style="list-style-type: none"> • Below the minor threshold of 10%. 	<ul style="list-style-type: none"> ▪ Critical ▪ Major ▪ Minor



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		<ul style="list-style-type: none"> • Above the minor threshold of 10% and below the major threshold of 30%. • Above the major threshold of 30% and below the critical threshold of 50%. • Above the critical threshold of 50%. <p>Corresponding KPI: Queue Size</p>	<ul style="list-style-type: none"> ▪ Cleared <p>(according to the exceeded threshold)</p>
sdcComponentTPSOverload .enterprises.3375.3.1.4.3.9.0.22	FEP/CPF	The traffic received by the FEP/CPF is: <ul style="list-style-type: none"> • Below the defined rate limit. • Below the defined rate limit but higher than usual. Above the defined rate limit. Some messages received by the SDC component are rejected.	<ul style="list-style-type: none"> ▪ Critical ▪ Major ▪ Cleared <p>(according to the exceeded threshold)</p>
sdcComponentRateLimit .enterprises.3375.3.1.4.3.9.0.23	FEP/CPF	In the last minute, the number of messages sent to the CPF/FEP was: <ul style="list-style-type: none"> • Below the minor threshold. • Above the minor rate limit and below the major rate limit. • Above the major rate limit and below the critical rate limit. • Above the critical rate limit. 	<ul style="list-style-type: none"> ▪ Critical ▪ Major ▪ Minor ▪ Cleared <p>(according to the exceeded threshold)</p>



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		The alarm indicates the number of messages sent to the CPF/FEP, the thresholds, the previous measurement and the previous alarm severity.	
sdcPendingRequestsOverload .enterprises.3375.3.1.4.3.9.0.24	CPF	In the last minute, the number of requests pending the CPF handling was above the defined threshold/below it. The alarm indicates the component's name and the defined threshold.	<ul style="list-style-type: none"> ▪ Critical ▪ Cleared
sdcPendingRequests .enterprises.3375.3.1.4.3.9.0.25	CPF	In the last minute, the number of requests pending the CPF handling was: <ul style="list-style-type: none"> • Below the minor threshold. • Above the minor threshold and below the major threshold. • Above the major threshold and below the critical threshold. • Above the critical threshold. <p>The alarm indicates the current measurement, the CPF name, the thresholds, the previous measurement and the previous alarm severity.</p> <p>Corresponding KPI: Pending Requests</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Major ▪ Minor ▪ Cleared <p>(according to the exceeded threshold)</p>



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
sdcComponentFailureRate .enterprises.3375.3.1.4.3.9.0.26	CPF	<p>In the last minute, the percentage of error events measured in the CPF was above the defined threshold/below it.</p> <p>The alarm indicates the component's name, the percentage of error events, the threshold, the previous measurement and the previous alarm severity.</p> <p>Corresponding KPI: SDC Discards</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Cleared
fepCpfCommunicationControl .enterprises.3375.3.1.4.3.9.0.27	FEP	<p>The control channel between FEP and CPF is unstable – (the peers' states cannot be exchanged properly and the load balancing mechanism of CPFs may be affected)/the control channel between the FEP and the CPF is normalized.</p> <p>The alarm indicates the components' names.</p>	<ul style="list-style-type: none"> ▪ Major ▪ Cleared
sdcInternalTripoConnection .enterprises.3375.3.1.4.3.9.0.28	Session Repository	<p>The connection between two Tripo instances in this site is down/up.</p> <p>The alarm indicates the instances' IP Addresses.</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Cleared ▪
sdcTripoHealth .enterprises.3375.3.1.4.3.9.0.29	Session Repository	<p>In the last minute, the number of entries stored in the Tripo was:</p> <ul style="list-style-type: none"> • Below the minor threshold of 70%. 	<ul style="list-style-type: none"> ▪ Critical ▪ Major ▪ Minor ▪ Cleared




Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
		<ul style="list-style-type: none"> • Above the minor threshold of 70% and below the major threshold of 85%. • Above the major threshold of 85% and below the critical threshold of 95%. • Above the critical threshold of 95%. <p>The alarm indicates the Tripo name, the number of stored entries, the previous measurement and the previous alarm severity.</p>	(according to the exceeded threshold)
sdcTripoQueueOverflow .enterprises.3375.3.1.4.3.9.0.30	Tripo	<p>In the last minute, the number of requests pending the Tripo handling was:</p> <ul style="list-style-type: none"> • Below the minor threshold. • Above the minor threshold and below the major threshold. • Above the major threshold and below the critical threshold. • Above the critical threshold. <p>The alarm indicates the current measurement, the Tripo name, the thresholds, the previous measurement and the previous alarm severity.</p>	<ul style="list-style-type: none"> ▪ Critical ▪ Major ▪ Minor ▪ Cleared <p>(according to the exceeded threshold)</p>



Alarm Name and MIB ID	Generated by	Description and System Impact	Possible Severities
geoSdcTripoFullReSyncStarted .enterprises.3375.3.1.4.3.9.0.31		Full session replication between two Tripo instances on two SDC sites has begun. The alarm indicates the IP addresses of the Tripo instances and the SDC sites' names.	▪ Warning
geoSdcTripoSrrReSyncStarted .enterprises.3375.3.1.4.3.9.0.32		Session replication between two Tripo instances on two SDC sites has begun. The alarm indicates the IP addresses of the Tripo instances and the SDC sites' names.	▪ Warning

2.4.10 SLRF Cluster Alarms




Table 14: SLRF Cluster Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Recovery Action	Possible Severities
slrfDbClusterIntegrity .enterprises.3375.3.1.4.3.11.0.1				
 Note: This trap is deprecated in release 5.1.				
slrfDbClusterInterconnect				




Alarm Name and MIB ID	Generated by	Description and System Impact	Recovery Action	Possible Severities
.enterprises.3375.3.1.4.3.11.0.2 <hr/>  Note: This trap is deprecated in release 5.1. <hr/>				
slrfDbNumOfClientConnections .enterprises.3375.3.1.4.3.11.0.3 <hr/>  Note: This trap is deprecated in release 5.1. <hr/>				
slrfDbTransactionQueue .enterprises.3375.3.1.4.3.11.0.4 <hr/>  Note: This trap is deprecated in release 5.1. <hr/>				
slrfDbLowReplicationQSpace .enterprises.3375.3.1.4.3.11.0.5 <hr/>  Note: This trap is deprecated in release 5.1. <hr/>				





Alarm Name and MIB ID	Generated by	Description and System Impact	Recovery Action	Possible Severities
slrfDbReplicationConnection .enterprises.3375.3.1.4.3.11.0.6 <hr/>  Note: This trap is deprecated in release 5.1. <hr/>				
slrfDbGeoReplicationLag .enterprises.3375.3.1.4.3.11.0.7 <hr/>  Note: This trap is deprecated in release 5.1. <hr/>				
slrfDbLowDiskSpace .enterprises.3375.3.1.4.3.11.0.8 <hr/>  Note: This trap is deprecated in release 5.1. <hr/>				
slrfDbLowMemory .enterprises.3375.3.1.4.3.11.0.9				





Alarm Name and MIB ID	Generated by	Description and System Impact	Recovery Action	Possible Severities
 Note: This trap is deprecated in release 5.1.				

2.4.11 SLRF Client Alarms

Table 15: SLRF Client Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Recovery Action	Possible Severities
slrfDbClientConnection . .enterprises.3375.3.1.4.3.12.0.1				
 Note: This trap is deprecated in release 5.1.				
slrfDbClientOpLatency . .enterprises.3375.3.1.4.3.12.0.2				
 Note: This trap is deprecated in release 5.1.				
slrfDbClientOpErrors				



Alarm Name and MIB ID	Generated by	Description and System Impact	Recovery Action	Possible Severities
.enterprises.3375.3.1.4.3.12.0.3 <hr/>  Note: This trap is deprecated in release 5.1. <hr/>				
slrfDbClientSchemaError .enterprises.3375.3.1.4.3.12.0.4 <hr/>  Note: This trap is deprecated in release 5.1. <hr/>				



2.5 Viewing the Stateful Alarms

A list of all active stateful alarms in the last minute is provided in the Active Alarms table.

The Active Alarm table includes the following columns for each active alarm entry:

- **alarmSourceComponent** - the name of the SDC component that raised the alarm.
- **alarmedManagedObject** - the name of the SDC component that raised the alarm.
- **activeAlarmIndex** – the serial number indicating the position of the alarm entry in the active alarms table.
- **Hostname** – the host name of the machine running the SDC component that raised the trap.
- **affectedObjectType** – the type of SDC component that raised the trap.
- **eventType** – the category of events that the alarm belongs to.
- **eventId** – a unique number given to each event type.
- **detectorComponent** – the name of the SDC component that raised the alarm.
- **managedObjectInstance** – the name of the SDC component that raised the alarm.
- **eventDateAndTime** – the date and time that the alarm was raised.
- **eventDescription** – information about the alarm.
- **Severity** – the severity of the raised alarm.
- **additionalText** – additional information about the alarm and the circumstances that caused it to be raised.
- **alarmEventLogAutoCleared** – specifies if the alarm is automatically cleared or if a manual action must be taken to clear it.
- **siteId** – the SDC/EMS site that raised the trap.

2.5.1 Viewing the Active Alarms Table using SNMP

A table of all active stateful alarms can be retrieved from the MIB using the **snmpwalk** command on MIB object **activeAlarmTable** (OID: .enterprises.3375.3.1.4.6.1).



2.5.2 Viewing the Active Alarms Table in the Web UI

The active alarms and events may also be viewed using the SDC Web UI (**Alarms > Active Alarms**), as seen in *Figure 2*. The flag bar at the top of the screen indicates the number of critical, major and minor active alarms.

Figure 2: Active Alarms

Severity	Date and Time	Event Name	Message	Affected Object Type	Affected Object
Minor	09/10/2016 19:56:46	machineDiskPartition	This machine is using 31% of its disk partition /, which is above the defined "Minor" threshold of 30% and below the defined "Major"...	machine	Disk Partition: /
Minor	09/10/2016 10:32:48	machineDiskPartition	This machine is using 31% of its disk partition /, which is above the defined "Minor" threshold of 30% and below the defined "Major"...	machine	Disk Partition: /
Critical	25/08/2016 07:39:26	sdComponentStatus	The component on the SDC site is down.	nms	vdra015-vs-09 mmoder_t,manager@1
Critical	17/08/2016 00:45:46	machineCpuUsage	This machine is using 92% of its CPU, which is above the defined "Critical" threshold of 80%. The previously measured percentage w...	machine	CPU
Critical	17/08/2016 09:39:42	machineCpuUsage	This machine is using 100% of its CPU, which is above the defined "Critical" threshold of 80%. The previously measured percentage ...	machine	CPU
Critical	17/08/2016 09:39:42	machineCpuUsage	This machine is using 100% of its CPU, which is above the defined "Critical" threshold of 80%. The previously measured percentage ...	machine	CPU
Critical	17/08/2016 09:39:42	machineCpuUsage	This machine is using 100% of its CPU, which is above the defined "Critical" threshold of 80%. The previously measured percentage ...	machine	CPU
Critical	17/08/2016 09:38:36	machineCpuUsage	This machine is using 80% of its CPU, which is above the defined "Critical" threshold of 80%. The previously measured percentage w...	machine	CPU
Critical	17/08/2016 00:38:36	machineCpuUsage	This machine is using 85% of its CPU, which is above the defined "Critical" threshold of 80%. The previously measured percentage w...	machine	CPU
Critical	17/08/2016 09:38:33	geoSdCTrpConnection	The connection between the Session Repository on this SDC site vdra015_x1_09 and the Session Repository on the geo-redundant S...	trpgo	vdra015-vs-09 trpgo2_trpgo1
Critical	17/08/2016 09:38:33	geoSdCTrpConnection	The connection between the Session Repository on this SDC site vdra015_x1_09 and the Session Repository on the geo-redundant S...	trpgo	vdra015-vs-09 trpgo1_trpgo1

2.5.3 Viewing the Active Alarms using the Web Service API

Use the **getPeer** Web Service API method to view all active alarms currently associated with a specific peer. For more information, see the *F5 SDC Web Service API Guide*.

2.6 SDC Stateless Alarms

SDC Stateless Alarms are events that do not indicate a performance trend. Rather, they are notifications that report in real-time about a specific event that occurred in the SDC. Stateless alarms do not have multiple severities. Instead all stateless alarms are issued as a “warning”. Stateless alarms are located in the MIB under the `sdcEvents` branch.

2.6.1 Basic Event Alarms


Table 16: Basic Event Alarms

Alarm Name and MIB ID	Generated by	Description and System Impact	Severity
<code>sdcPeerAclRejected</code> <code>.enterprises.3375.3.1.4.4.1.0.1</code>	FEP	There is no rule in the Access Control List allowing this peer connection.	Warning



Alarm Name and MIB ID	Generated by	Description and System Impact	Severity
		The alarm indicates the peer's IP and port.	
sdcPeerCapacityRejected .enterprises.3375.3.1.4.4.1.0.2	FEP	The SDC site is already configured with the maximum allowed number of peers, therefore this peer cannot be added. The alarm indicates the SDC site name and the maximum allowed number of peers.	Warning
sdcScriptInvocationFailed .enterprises.3375.3.1.4.4.1.0.4	CPF/FEP	The script failed.	Warning
sdcUserAuthenticationFailure .enterprises.3375.3.1.4.4.1.0.6	UI	The user is not authorized to access the system.	Warning
sdcMaxTracePerDayReached .enterprises.3375.3.1.4.4.1.0.7	CPF	The number of traced transactions has reached the maximum allowed number of traced transactions per day. The alarm indicates the maximum allowed number of traced transactions per day.	Warning
sdcMaxTraceTPSReached .enterprises.3375.3.1.4.4.1.0.8	CPF	The number of traced TPS has reached the maximum allowed volume of traced TPS per day. The alarm indicates the maximum allowed number of traced TPSs per day.	Warning
sdcDnsResolvingSuccess .enterprises.3375.3.1.4.4.1.0.9	FEP	The DNS resolving of a given destination has succeeded.	Warning
sdcFileServerDirectory .enterprises.3375.3.1.4.4.1.0.15	FS	A new directory creation attempt has failed.	Warning



Alarm Name and MIB ID	Generated by	Description and System Impact	Severity
sdcFileServerFileCreate .enterprises.3375.3.1.4.4.1.0.16	FS	A new degraded file creation attempt has failed.	Warning
sdcFileServerCloseFile .enterprises.3375.3.1.4.4.1.0.17	FS	A degraded file closing attempt has failed.	Warning
sdcFileServerRenameFile .enterprises.3375.3.1.4.4.1.0.18	FS	A degraded file renaming attempt has failed.	Warning
sdcFileServerSplitFile .enterprises.3375.3.1.4.4.1.0.19	FS	A file split attempt has failed.	Warning
sdcComponentGcLoop .enterprises.3375.3.1.4.4.1.0.20	FEP/CPF	Garbage Collector loop detected, old generation heap size after GC is above the defined threshold.	Warning
sdcProcessRestart .enterprises.3375.3.1.4.4.1.0.25	Monit	An SDC process is restarted by Monit or any other agent (such as cluster engine). Note: This also applies to ELK components.	Warning
vipAppStateChange .enterprises.3375.3.1.4.4.1.0.26	Monit	The state of a Vip Application instance changed.	Warning
slrfPmFailedToAddRecords .enterprises.3375.3.1.4.4.1.0.27			
 Note: This trap is deprecated in release 5.1.			
slrfPmFailedToUpdateRecords .enterprises.3375.3.1.4.4.1.0.28			



Alarm Name and MIB ID	Generated by	Description and System Impact	Severity
Note: This trap is deprecated in release 5.1.			
slrfPmFailedToDeleteRecords	.enerprises.3375.3.1.4.4.1.0.29		
Note: This trap is deprecated in release 5.1.			

2.7 Viewing the Alarms History in the Web UI

A history of all generated alarms – stateful and stateless – may be viewed using the SDC Web UI (**Alarms > Alarms History Log**), as seen in *Figure 3*.

Figure 3: Alarms History Log

Severity	Date and Time	Event Name	Message	Affected Object Type	Affected Object	More Details
Minor	30/08/2016 08:37:45	machineDiskPartition	This machine is using 31% of its disk partition i, which is above the defined "Minor" threshold of 30% and below the defined "Major"...	machine	Disk Partition: i	More
Minor	30/08/2016 04:47:46	machineDiskPartition	This machine is using 31% of its disk partition i, which is above the defined "Minor" threshold of 30% and below the defined "Major"...	machine	Disk Partition: i	More
Cleared	28/08/2016 07:23:40	machineDiskPartition	This machine is using 23% of its disk partition i, which is below the defined "Minor" threshold of 30%. The previously measured perc...	machine	Disk Partition: i	More
Cleared	28/08/2016 04:23:48	machineDiskPartition	This machine is using 24% of its disk partition i, which is below the defined "Minor" threshold of 30%. The previously measured perc...	machine	Disk Partition: i	More
Minor	27/08/2016 19:49:45	machineDiskPartition	This machine is using 31% of its disk partition i, which is above the defined "Minor" threshold of 30% and below the defined "Major"...	machine	Disk Partition: i	More
Minor	27/08/2016 16:59:45	machineDiskPartition	This machine is using 31% of its disk partition i, which is above the defined "Minor" threshold of 30% and below the defined "Major"...	machine	Disk Partition: i	More
Cleared	27/08/2016 13:44:48	machineDiskPartition	This machine is using 28% of its disk partition i, which is below the defined "Minor" threshold of 30%. The previously measured perc...	machine	Disk Partition: i	More
Minor	27/08/2016 04:23:46	machineDiskPartition	This machine is using 31% of its disk partition i, which is above the defined "Minor" threshold of 30% and below the defined "Major"...	machine	Disk Partition: i	More
Cleared	25/08/2016 13:54:48	machineDiskPartition	This machine is using 23% of its disk partition i, which is below the defined "Minor" threshold of 30%. The previously measured perc...	machine	Disk Partition: i	More
Cleared	25/08/2016 13:08:45	machineDiskPartition	This machine is using 23% of its disk partition i, which is below the defined "Minor" threshold of 30%. The previously measured perc...	machine	Disk Partition: i	More
Cleared	25/08/2016 07:30:38	sdComponentStatus	The component on the SDC site is up.	machine	vsrd15-ws-09-master1_sdmCB-1	More
Cleared	25/08/2016 07:30:38	sdComponentStatus	The component on the SDC site is up.	configManager	vsrd15-ws-09-master1_sdm-1	More
Critical	25/08/2016 07:30:25	sdComponentStatus	The component on the SDC site is down.	configManager	vsrd15-ws-09-master1_sdm-1	More
Critical	25/08/2016 07:30:25	sdComponentStatus	The component on the SDC site is down.	machine	vsrd15-ws-09-master1_sdmCB-1	More
Critical	25/08/2016 07:30:25	sdComponentStatus	The component on the SDC site is down.	mtms	vsrd15-ws-09-master1_rmsagent:1	More
Minor	25/08/2016 05:23:46	machineDiskPartition	This machine is using 31% of its disk partition i, which is above the defined "Minor" threshold of 30% and below the defined "Major"...	machine	Disk Partition: i	More
Minor	25/08/2016 02:17:46	machineDiskPartition	This machine is using 31% of its disk partition i, which is above the defined "Minor" threshold of 30% and below the defined "Major"...	machine	Disk Partition: i	More
Cleared	24/08/2016 20:47:46	machineDiskPartition	This machine is using 23% of its disk partition i, which is below the defined "Minor" threshold of 30%. The previously measured perc...	machine	Disk Partition: i	More
Minor	24/08/2016 12:12:48	machineDiskPartition	This machine is using 31% of its disk partition i, which is above the defined "Minor" threshold of 30% and below the defined "Major"...	machine	Disk Partition: i	More

2.8 Custom (User Defined) Alarms

A user can define a custom stateless SNMP alarm by calling the sendTrap method from any script in SDC Management Console. All custom alarms are considered events and have a severity level of Warning.



To support the user defined alarm, two parameters can be added to the SDC MIB file (located under `/opt/traffix/<sdc_version>/config/mibFiles/SDC-MIB.mib`) with the following arguments:

- **OID** - The OID of the alarm (.1.3.6.1.4.1.3375.3.1.4.5 is the recommended prefix so that the custom alarm OID structure is similar to all other SDC alarms).
- **Description** - The description of the alarm. Encoded under `additionalText`.

The following is an example of a user defined alarm:

```
sendTrap(".1.3.6.1.4.1.3375.3.1.4.5.2", " Indicates that the SDC  
License is about to expire", AlarmSeverity.Warning);
```



3. SNMP KPIs

The F5 SDC includes a set of Key Performance Indicators (KPIs) for system monitoring. These KPIs reflect the SDC performance status and health, as well the status of the SDC connections.

KPIs help operators to better evaluate the success of an SDC activity, to plan system expansion, and to identify bottlenecks in the network.

The KPIs are collected per minute. KPIs can be queried in real time using the SNMP protocol. The SDC MIB defines the KPIs and KPI tables that are retrievable via SNMP. The information presented in these tables corresponds to the average value measured in the last minute.

3.1 Storing and Exporting Collected SNMP Statistics Data

All the SNMP statistics data generated by the SDC is stored in the shared Cassandra database. These reports can be viewed per site in the local Web UI, or for all monitored sites in the EMS Web UI **Dashboard**, and in the **Reports** tab.

The collected data is stored by the NMS Agent in the following files:

- **KPIs.log** files – the SDC saves up to ten KPIs.log files, after which the oldest file is replaced with a new one. The files are located in the `/opt/traffix/<site_name>/logs/nmsagent/statistics/CpfRawStatistic/` folder.

While the file is being written to, it appears as **kpis.log**, and is not accessible. A **kpis.log** file is accessible once it appears with a number from 1-10 appended to its file name, for example, **kpis.log.3**. The appended number is increased per file as new files are saved, and the higher the appended number, the older the file. The **kpis.log** file is saved in the JSON format, where each collected KPI is displayed with the following information:

- `aggregatedIndexList`: The name of the monitored component.
- `kpiName`: The collected KPI.
- `value`: The value recorded for the monitored component.







- **rawStatistics.csv** file – the file’s maximum size is 50MB, and only one rawStatistics.csv file is saved. The file is located in the /opt/traffix/<site_name>/logs/nmsagent/statistics/CpfRawStatistic/ folder.
- **statistics.log** file – the file’s maximum size is 50MB, and only one statistics.log files is saved. The file is located in the /opt/traffix/<site_name>/logs/nmsagent/statistics/CpfRawStatistic/ folder.

3.2 Standalone KPIs

KPI Name and MIB OID	Collected per	Description
MIB Name: sKNewMasterSessions OID: .enterprises.3375.3.1.4.9.10.51	SDC Site	Counts the new master sessions created per SDC site during the previous measurement period.
New Slave Sessions MIB Name: sKNewSlaveSessions OID: .enterprises.3375.3.1.4.9.10.52	SDC Site	Counts the new slave sessions created per SDC site during the previous measurement period.
MIB Name: sKNumberOfSessionRepositoryEntries OID: .enterprises.3375.3.1.4.9.10.54	SDC Site, Tripo Instance	Counts the number of entries stored in the Session Repository - the total number of stored sessions multiplied by the number of stored keys per session. The KPI is collected separately for each SDC site. As each SDC site has two Session Repository instances, both instances are queried for the KPI, and the Session Repository instance with the higher number of entries is reflected by the KPI. The threshold reflects the maximum amount of Session Repository entries and presents the percentage of the Session Repository utilization.
MIB Name: sKLicenseMps OID: .enterprises.3375.3.1.4.9.10.55	SDC Site, FEP, CPF	Counts the incoming requests, outgoing requests, incoming answers and outgoing



KPI Name and MIB OID	Collected per	Description
		answers sent between the SDC and its connected peers. Messages exchanged between two SDC sites, as well as peer connection establishment messages, are not counted.
MIB Name: sKSlrfMaxRoundtripTime OID: .enterprises.3375.3.1.4.9.10.56 <hr/>  Note: This KPI is deprecated in release 5.1.		
MIB Name: sKSlrfAverageRoundtripTime OID: .enterprises.3375.3.1.4.9.10.57 <hr/>  Note: This KPI is deprecated in release 5.1.		
MIB Name: sKSlrfQueries OID: .enterprises.3375.3.1.4.9.10.58 <hr/>  Note: This KPI is deprecated in release 5.1.		
MIB Name: sKSlrfHit OID: .enterprises.3375.3.1.4.9.10.59 <hr/>  Note: This KPI is deprecated in release 5.1.		
MIB Name: sKSlrfMiss OID: .enterprises.3375.3.1.4.9.10.60		



KPI Name and MIB OID	Collected per	Description
Note: This KPI is deprecated in release 5.1.		
MIB Name: sKSlrfSentQueries OID: .enterprises.3375.3.1.4.9.10.61		
Note: This KPI is deprecated in release 5.1.		

3.3 Provisioning Manager Related KPIs

KPI Name and MIB OID	Collected per	Description
MIB Name: pMAddRecordSuccessCounter OID: .enterprises.3375.3.1.4.9.50.50	Provisioning Manager	Counts the successfully added records.
MIB Name: pMUpdateRecordSuccessCounter OID: .enterprises.3375.3.1.4.9.50.51	Provisioning Manager	Counts the successfully updated records.
MIB Name: pMDeleteRecordSuccessCounter OID: .enterprises.3375.3.1.4.9.50.52	Provisioning Manager	Counts the successfully deleted records.

3.4 SDC Related KPIs

The KPIs presented in these tables reflect the SDC-based performance and processing of sent and received messages.

3.4.1 SDC Latency

The sKNodeNameTable table presents information about the transaction latency per FEP.



KPI Name and MIB OID	Description	Retrieved By
MIB Name: sKNodeNameTable OID: .enterprises.3375.3.1.4.9.10.2 Collected per: FEP	The object that returns a table containing the information described below in this table, presenting information about the transaction latency, per FEP.	snmpwalk
MIB Name: sKNodeNameEntry OID: .enterprises.3375.3.1.4.9.10.2.1	A column in the sKNodeNameTable. Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	N/A
MIB Name: sKNNNodeName OID: .enterprises.3375.3.1.4.9.10.2.1.1	A column in the sKNodeNameTable. Indicates the site and FEP for which the information is collected.	snmpwalk , run on the sKNodeNameTable object.
MIB Name: sKNNAnswerLatency OID: .enterprises.3375.3.1.4.9.10.2.1.4	A column in the sKNodeNameTable. Indicates the average latency of answers processed by the SDC. Answer latency is measured from the moment an answer is received by the SDC until the answer is sent to the remote peer that initiated the transaction.	snmpwalk , run on the sKNodeNameTable object.
MIB Name: sKNNRequestLatency OID: .enterprises.3375.3.1.4.9.10.2.1.5	A column in the sKNodeNameTable. Indicates the average latency of requests processed by the SDC. Request latency is measured from the moment a request is received by the SDC until the request is sent to the designated destination.	snmpwalk , run on the sKNodeNameTable object.
MIB Name: sKNNNE2ELatency	A column in the sKNodeNameTable. Indicates the average latency of transactions processed by the SDC. Transaction latency is	snmpwalk , run on the



KPI Name and MIB OID	Description	Retrieved By
OID: .enterprises.3375.3.1.4.9.10.2.1.6	measured from the moment a request is received by the SDC until the answer is sent to the remote peer that initiated the transaction.	sKNodeNameTable object.

3.4.2 Discarded MPS

The sKFamilyTable table presents the transactions discarded and the reason for the discard.

KPI Name and MIB OID	Description	Retrieved By
MIB Name: sKFamilyTable OID: .enterprises.3375.3.1.4.9.10.3 Collected per: SDC Site	The object that returns a table containing the information described below in this table, presenting all collected information about the results classification of the processed messages.	snmpwalk
MIB Name: sKFamilyEntry OID: .enterprises.3375.3.1.4.9.10.3.1	A column in the sKFamilyTable. Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	N/A
MIB Name: sdcKpisFamilyEntryFamily OID: .enterprises.3375.3.1.4.9.10.3.1.1	A column in the sKFamilyTable. Indicates the family of the reasons for message discard.	snmpwalk , run on the sKFamilyTable object.
MIB Name: sKFDiscardedMps OID: .enterprises.3375.3.1.4.9.10.3.1.5	A column in the sKFamilyTable. Counts the number of discarded messages, per discard reason, including: <ol style="list-style-type: none"> 1. The SDC is overloaded 2. Application error 3. User input error 4. No destination found 	snmpwalk , run on the sKFamilyTable object.



3.5 Peers and Pools Performance

3.5.1 Peer Latency and Message Handling

The pAPKMessageTypePeerNameTable table presents information about peer latency and message handling.

KPI Name and MIB OID	Description	Retrieved By
MIB Name: pAPKMessageTypePeerNameTable OID: .enterprises.3375.3.1.4.9.20.1 Collected per: Peer	The object that returns a table containing the information described below in this table, presenting information about peer latency and message handling.	snmpwalk
MIB Name: pAPKMessageTypePeerNameEntry OID: .enterprises.3375.3.1.4.9.20.1.1	A column in the pAPKMessageTypePeerNameTable. Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	N/A
MIB Name: pAPKMTPNMessageType OID: .enterprises.3375.3.1.4.9.20.1.1.1	A column in the pAPKMessageTypePeerNameTable. Indicates the message type for which information is collected.	snmpwalk, run on the pAPKMessageTypePeerNameTable object.
MIB Name: pAPKMTPNPeerName OID: .enterprises.3375.3.1.4.9.20.1.1.2	A column in the pAPKMessageTypePeerNameTable. Indicates the peer for which information is collected.	snmpwalk, run on the pAPKMessageTypePeerNameTable object.



KPI Name and MIB OID	Description	Retrieved By
<p>MIB Name: peerMessagesEntrySent</p> <p>OID: .enterprises.3375.3.1.4.9.20.1.1.4</p>	<p>A column in the pAPKMessageTypePeerName Table.</p> <p>Indicates the number of received requests that were sent to a destination peer.</p>	<p>snmpwalk, run on the pAPKMessageTypePeerName Table object.</p>
<p>MIB Name: pAPKMTPNRequestsReceivedFromPeer</p> <p>OID: .enterprises.3375.3.1.4.9.20.1.1.5</p>	<p>A column in the pAPKMessageTypePeerName Table.</p> <p>Counts the messages received by the SDC from a specific peer. The KPI is measured per message type and indicates the number of messages (per type, i.e. ULRs) received from a peer per SDC site. The Requests Rejected by Rate Limit are not counted by this KPI.</p>	<p>snmpwalk, run on the pAPKMessageTypePeerName Table object.</p>
<p>MIB Name: pAPKMTPNDestinationPeerAverageLatency</p> <p>OID: .enterprises.3375.3.1.4.9.20.1.1.10</p>	<p>A column in the pAPKMessageTypePeerName Table.</p> <p>Indicates the average latency of the destination peer handling the request.</p> <p>The latency is the total time elapsed, from the time a request is sent from the SDC to its destination peer until the answer is received by the SDC.</p>	<p>snmpwalk, run on the pAPKMessageTypePeerName Table object.</p>



KPI Name and MIB OID	Description	Retrieved By
	The KPI is counted per SDC site.	

3.5.2 Pool Latency and Message Handling

The pAPKPoolNameTable table presents information about pool latency and message handling.

KPI Name and MIB OID	Description	Retrieved By
MIB Name: pAPKPoolNameTable OID: .enterprises.3375.3.1.4.9.20.2 Collected per: SDC Site, Pool	The object that returns a table containing the information described below in this table, presenting information about pool latency and message handling.	snmpwalk
MIB Name: pAPKPoolNameEntry OID: .enterprises.3375.3.1.4.9.20.2.1	A column in the pAPKPoolNameTable. Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	N/A
MIB Name: pAPKPNPoolName OID: .enterprises.3375.3.1.4.9.20.2.1.1	A column in the pAPKPoolNameTable. Indicates the pool for which the information is collected.	snmpwalk , run on the pAPKPoolNameTable object.
MIB Name: pAPKPNRequestsSentToDestinationPool OID: .enterprises.3375.3.1.4.9.20.2.1.4	A column in the pAPKPoolNameTable. Indicates the average number of requests routed by the CPF	snmpwalk , run on the pAPKPoolNameTable object.



KPI Name and MIB OID	Description	Retrieved By
	per destination pool. The KPI is counted per message type.	
MIB Name: pAPKPNPoolSentMessagesTotal OID: .enterprises.3375.3.1.4.9.20.2.1.5	A column in the pAPKPoolNameTable. Counts the total number of messages send per pool.	snmpwalk , run on the pAPKPoolNameTable object.
MIB Name: pAPKPNDestinationPool99PercentileLatency OID: .enterprises.3375.3.1.4.9.20.2.1.6	A column in the pAPKPoolNameTable. Counts the latency of 99 percent of the requests sent to the destination pool.	snmpwalk , run on the pAPKPoolNameTable object.
MIB Name: pAPKPNDestinationPoolAvgLatency OID: .enterprises.3375.3.1.4.9.20.2.1.7	A column in the pAPKPoolNameTable. Indicates the average latency of a pool handling requests sent by the SDC, per message type. The latency is the total time elapsed, from the time a request is sent from the SDC to the designated pool until the answer is received by the SDC. The KPI is measured per SDC site.	snmpwalk , run on the pAPKPoolNameTable object.
MIB Name: pAPKPNPoolSentMessagesTotal OID: .enterprises.3375.3.1.4.9.20.2.1.5	A column in the pAPKPoolNameTable. Indicates the average latency of a pool handling requests sent by the SDC, per message type.	snmpwalk , run on the pAPKPoolNameTable object.



KPI Name and MIB OID	Description	Retrieved By
	The latency is the total time elapsed, from the time a request is sent from the SDC to the designated pool until the answer is received by the SDC. The KPI is measured per SDC site.	

3.5.3 Peer Traffic

The APKPeerNameTable table presents information about peer traffic (in bytes).

KPI Name and MIB OID	Description	Retrieved By
MIB Name: pAPKPeerNameTable OID: .enterprises.3375.3.1.4.9.20.3 Collected per: Peer	The object that returns a table containing the information described below in this table, presenting information about peer latency and message handling.	snmpwalk
pAPKPeerNameEntry OID: .enterprises.3375.3.1.4.9.20.3.1	A column in the pAPKPeerNameTable. Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	N/A
MIB Name: pAPKPNPeerName OID: .enterprises.3375.3.1.4.9.20.3.1.1	A column in the pAPKPeerNameTable.	snmpwalk , run on the pAPKPeerNameTable object.



KPI Name and MIB OID	Description	Retrieved By
	Indicates the peer for which the information is collected.	
<p>MIB Name: pAPKPNRequestsBytesReceivedFromPeer</p> <p>OID: .enterprises.3375.3.1.4.9.20.3.1.4</p>	<p>A column in the pAPKPeerNameTable.</p> <p>Counts the request bytes received by the SDC from a specific peer. The KPI indicates the number of bytes received from a peer per SDC site. The KPI reflects the number of messages in Message Received from Peer KPI * Message Size. The threshold reflects the rate limit.</p>	<p>snmpwalk, run on the pAPKPeerNameTable object.</p>
<p>MIB Name: pAPKPNAnswersBytesReceivedFromPeer</p> <p>OID: .enterprises.3375.3.1.4.9.20.3.1.5</p>	<p>A column in the pAPKPeerNameTable.</p> <p>Counts the answer bytes received by the SDC from a specific peer. The KPI indicates the number of bytes received from a peer per SDC site. The KPI reflects the number of messages in Message Received from Peer KPI * Message Size. The threshold reflects the rate limit.</p>	<p>snmpwalk, run on the pAPKPeerNameTable object.</p>
<p>MIB Name: pAPKPNDestinationPeer99PercentilLatency</p> <p>OID: .enterprises.3375.3.1.4.9.20.3.1.6</p>	<p>A column in the pAPKPeerNameTable.</p>	<p>snmpwalk, run on the pAPKPeerNameTable object.</p>



KPI Name and MIB OID	Description	Retrieved By
	Counts the latency of 99 percent of the requests sent to the destination peer. The KPI is measured per SDC site, and is available per message type and per transaction result.	
MIB Name: pAPKPNPeerSentRequestsTotal OID: .enterprises.3375.3.1.4.9.20.3.1.7	A column in the pAPKPeerNameTable. Counts the latency of 99 percent of the requests sent to the destination peer. The KPI is measured per SDC site, and is available per message type and per transaction result.	snmpwalk , run on the pAPKPeerNameTable object.

3.5.4 Peer Transaction Results

The pAPKPeerNameFamilyReasonTable table presents the transaction results returned from the Peer in the measured interval.

KPI Name and MIB OID	Description	Retrieved By
MIB Name: pAPKPeerNameFamilyReasonTable OID: .enterprises.3375.3.1.4.9.20.4 Collected per: Peer	The object that returns a table containing the information described below in this table, presenting all collected information about the results classification of the processed messages.	snmpwalk
MIB Name: pAPKPeerNameFamilyReasonEntry OID: .enterprises.3375.3.1.4.9.20.4.1	A column in the pAPKPeerNameFamilyReasonTable.	N/A



KPI Name and MIB OID	Description	Retrieved By
	Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	
MIB Name: peerRneReasonEntryPeerName OID: .enterprises.3375.3.1.4.9.20.4.1.1	A column in the pAPKPeerNameFamilyReasonTable. Indicates the peer for which the information is collected.	snmpwalk , run on the pAPKPeerNameFamilyReasonTable object.
MIB Name: peerRneReasonEntryFamily OID: .enterprises.3375.3.1.4.9.20.4.1.2	A column in the pAPKPeerNameFamilyReasonTable. The value in this column is the high level result “family” to which the corresponding transaction result, described in the peerRneReasonEntryReason column, belongs.	snmpwalk , run on the pAPKPeerNameFamilyReasonTable object.
MIB Name: peerRneReasonEntryReason OID: .enterprises.3375.3.1.4.9.20.4.1.3	A column in the pAPKPeerNameFamilyReasonTable. The value in this column is one of the transaction results in the high level “family”, described in the peerRneReasonEntryFamily column.	snmpwalk , run on the pAPKPeerNameFamilyReasonTable object.



KPI Name and MIB OID	Description	Retrieved By
<p>MIB Name: pAPKPNFRPeerRequestsRejectsByIncomingRateLimit</p> <p>OID: .enterprises.3375.3.1.4.9.20.4.1.5</p>	<p>A column in the pAPKPeerNameFamilyReasonTable.</p> <p>Counts the messages (from a specific peer) rejected by the SDC due to one of the following rate limit rejection reasons:</p> <ol style="list-style-type: none"> 1. Peer Rate Limit Rejects 2. SDC Rate Limit Rejects 3. Peer Bytes Rate Limit Rejects 4. SDC Bytes Rate Limit Rejects 	<p>snmpwalk, run on the pAPKPeerNameFamilyReasonTable object.</p>

3.6 Transaction Related KPIs

The tkPeerNameFamilyMessageTypeTable table presents information about transaction results per peer.

KPI Name and MIB OID	Description	Retrieved By
<p>MIB Name: tkPeerNameFamilyMessageTypeTable</p> <p>OID: .enterprises.3375.3.1.4.9.30.1</p> <p>Collected per: Peer</p>	<p>The object that returns a table containing the information described below in this table, presenting all collected information about the results classification of the processed messages.</p>	<p>snmpwalk</p>
<p>MIB Name: tkPeerNameFamilyMessageTypeEntry</p>	<p>A column in the tkPeerNameFamilyMessageTypeTable.</p>	<p>N/A</p>



KPI Name and MIB OID	Description	Retrieved By
OID: .enterprises.3375.3.1.4.9.30.1.1	Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	
MIB Name: tKPNFMTPeerName OID: .enterprises.3375.3.1.4.9.30.1.1.1	A column in the tKPeerNameFamilyMessageTy peTable. Indicates peer for which the information is collected.	snmpwalk , run on the KPeerNameFamilyMessageTy peTable object.
MIB Name: tKPNFMTFamily OID: .enterprises.3375.3.1.4.9.30.1.1.2	A column in the tKPeerNameFamilyMessageTy peTable. The value in this column is the high level result “family” to which the corresponding result belongs.	snmpwalk , run on the KPeerNameFamilyMessageTy peTable object.
MIB Name: tKPNFMTMessageType OID: .enterprises.3375.3.1.4.9.30.1.1.3	A column in the tKPeerNameFamilyMessageTy peTable. Indicates the message type.	snmpwalk , run on the KPeerNameFamilyMessageTy peTable object.
MIB Name: tKPNFMTOriginPeerRemoteNodeEvents OID: .enterprises.3375.3.1.4.9.30.1.1.5	A column in the tKPeerNameFamilyMessageTy peTable. The number of transaction events (the type of the event is indicated by the returned result code): <ul style="list-style-type: none"> • Successful events 	snmpwalk , run on the KPeerNameFamilyMessageTy peTable object.



KPI Name and MIB OID	Description	Retrieved By
	<ul style="list-style-type: none">• Error events• Informational events• Protocol events• Transient Failures• Permanent Failures• SDC Timeouts• SDC User Input Errors• SDC Overloads• SDC No Destination Found Errors• SDC Application Errors	

3.7 Resource Related KPIs

3.7.1 Resource Consumption

This rKNodeName table presents information about the resource consumption per node.

KPI Name and MIB OID	Description	Retrieved By
MIB Name: rKNodeNameTable OID: .enterprises.3375.3.1.4.9.40.1 Collected per: SDC Component	The object that returns a table containing the information described below in this table, presenting all collected information about the results classification of the processed messages.	snmpwalk
MIB Name: rKNodeNameEntry OID: .enterprises.3375.3.1.4.9.40.1.1	A column in the rKNodeNameTable. Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	N/A



KPI Name and MIB OID	Description	Retrieved By
MIB Name: rKNNNodeName OID: .enterprises.3375.3.1.4.9.40.1.1.1	A column in the rKNodeNameTable. Indicates the node for which the information is collected.	snmpwalk , run on the rKNodeNameTable object.
MIB Name: rKNNUsedMemory OID: .enterprises.3375.3.1.4.9.40.1.1.5	A column in the rKNodeNameTable. Reflects the memory usage per specific component percentage.	snmpwalk , run on the rKNodeNameTable object.
MIB Name: rKNNCpuUsage OID: .enterprises.3375.3.1.4.9.40.1.1.6	A column in the rKNodeNameTable. Reflects the CPU usage per specific component percentage.	snmpwalk , run on the rKNodeNameTable object.

3.7.2 Machine Consumption

This rKMachineName table presents information about the resource consumption per machine.

KPI Name and MIB OID	Description	Retrieved By
MIB Name: rKMachineNameTable OID: .enterprises.3375.3.1.4.9.40.2 Collected per: SDC Component	The object that returns a table containing the information described below in this table, presenting all collected information about resource consumption per machine.	snmpwalk
MIB Name: rKMachineNameEntry OID: .enterprises.3375.3.1.4.9.40.2.1	A column in the rKMachineName. Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	N/A
MIB Name: rKMNMachName OID: .enterprises.3375.3.1.4.9.40.2.1.1	A column in the rKMachineName. Indicates the machine for which the information is collected.	snmpwalk , run on the rKMachineName object.



KPI Name and MIB OID	Description	Retrieved By
MIB Name: rKMNMachFreeMemory OID: .enterprises.3375.3.1.4.9.40.2.1.5	A column in the rKMachineName. Indicates the amount of free memory available on the machine.	snmpwalk , run on the rKMachineName object.
MIB Name: rKMNMachAvailableSwap OID: .enterprises.3375.3.1.4.9.40.2.1.6	A column in the rKMachineName. Indicates the amount of available swap memory on the machine.	snmpwalk , run on the rKMachineName object.
MIB Name: rKMNMachCPUUsage OID: .enterprises.3375.3.1.4.9.40.2.1.7	A column in the rKMachineName. Indicates the amount of CPU used by the machine.	snmpwalk , run on the rKMachineName object.
MIB Name: rKMNMachLoadAverage OID: .enterprises.3375.3.1.4.9.40.2.1.8	A column in the rKMachineName. Indicates the average load on the machine.	snmpwalk , run on the rKMachineName object.

3.7.3 Machine Partitioning

This rKMachineNamePartitionName table presents information about the machine partitioning and the usage for each partition.

KPI Name and MIB OID	Description	Retrieved By
MIB Name: rKMachineNamePartitionNameTable OID: .enterprises.3375.3.1.4.9.40.3 Collected per: SDC Component	The object that returns a table containing the information described below in this table, presenting all collected information about partition usage per partition per machine.	snmpwalk



KPI Name and MIB OID	Description	Retrieved By
<p>MIB Name: rKMachineNamePartitionNameEntry</p> <p>OID: .enterprises.3375.3.1.4.9.40.3.1</p>	<p>A column in the rKMachineNamePartitionName.</p> <p>Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.</p>	<p>N/A</p>
<p>MIB Name: rKMNPNMachineName</p> <p>OID: .enterprises.3375.3.1.4.9.40.3.1.1</p>	<p>A column in the rKMachineNamePartitionName.</p> <p>Indicates the machine for which the information is collected.</p>	<p>snmpwalk, run on the rKMachineNamePartitionName object.</p>
<p>MIB Name: rKMNPNPartitionName</p> <p>OID: .enterprises.3375.3.1.4.9.40.3.1.2</p>	<p>A column in the rKMachineNamePartitionName.</p> <p>Indicates the partition for which the information is collected.</p>	<p>snmpwalk, run on the rKMachineNamePartitionName object.</p>
<p>MIB Name: rKMNPNPartitionUsage</p> <p>OID: .enterprises.3375.3.1.4.9.40.3.1.5</p>	<p>A column in the rKMachineNamePartitionName.</p> <p>Indicates the amount of partitioning used by the machine, for the partition described in the rKMNPNPartitionName column.</p>	<p>snmpwalk, run on the rKMachineNamePartitionName object.</p>



3.7.4 Machine Disk

This rKMachineNameDiskName table presents information about the disk usage per machine.

KPI Name and MIB OID	Description	Retrieved By
MIB Name: rKMachineNamePartitionDiskNameTable OID: .enterprises.3375.3.1.4.9.40.4 Collected per: SDC Component	The object that returns a table containing the information described below in this table, presenting all collected information about disk usage per machine.	snmpwalk
MIB Name: rKMachineNameDiskNameEntry OID: .enterprises.3375.3.1.4.9.40.4.1	A column in the rKMachineNameDiskName . Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	N/A
MIB Name: rKMNDNMachineName OID: .enterprises.3375.3.1.4.9.40.4.1.1	A column in the rKMachineNameDiskName . Indicates the machine for which the information is collected.	snmpwalk, run on the rKMachineNameDiskName object.
MIB Name: rKMNDNDiskName OID: .enterprises.3375.3.1.4.9.40.4.1.2	A column in the rKMachineNameDiskName .	snmpwalk, run on the rKMachineNameDiskName object.



KPI Name and MIB OID	Description	Retrieved By
	Indicates the disk for which the information is collected.	
MIB Name: rKMNDNDiskIoBytesIn OID: .enterprises.3375.3.1.4.9.40.4.1.5	A column in the rKMachineNameDiskName . Indicates the amount of received IO bytes by the disk.	snmpwalk , run on the rKMachineNameDiskName object.
MIB Name: rKMNDNDiskIoBytesOut OID: .enterprises.3375.3.1.4.9.40.4.1.6	A column in the rKMachineNameDiskName . Indicates the amount of sent IO bytes by the disk.	snmpwalk , run on the rKMachineNameDiskName object.

3.7.5 Machine Networks

This rKMachineNameNetworkName table presents information about networks usage and performance per machine.

KPI Name and MIB OID	Description	Retrieved By
MIB Name: rKMachineNameNetworkNameTable OID: .enterprises.3375.3.1.4.9.40.5 Collected per: SDC Component	The object that returns a table containing the information described below in this table, presenting all collected information the network usage and performance.	snmpwalk
MIB Name: rKMachineNameNetworkNameEntry	A column in the rKMachineNameNetworkName.	N/A



KPI Name and MIB OID	Description	Retrieved By
OID: .enterprises.3375.3.1.4.9.40.5.1	Each row in the retrieved table is given a dedicated, consecutive number. The value in this column is the number associated with this row.	
MIB Name: rKMNNNMachineName OID: .enterprises.3375.3.1.4.9.40.5.1.1	A column in the rKMachineNameNetworkName. Indicates the machine for which the information is collected.	snmpwalk , run on the rKMachineNameNetworkName Table object.
MIB Name: rKMNNNNetworkName OID: .enterprises.3375.3.1.4.9.40.5.1.2	A column in the rKMachineNameNetworkName. Indicates the network for which the information is collected.	snmpwalk , run on the rKMachineNameNetworkName Table object.
MIB Name: rKMNNNNetworkInterfaceBytesReceived OID: .enterprises.3375.3.1.4.9.40.5.1.5	A column in the rKMachineNameNetworkName. Indicates the amount of bytes received by the network for which the information is collected.	snmpwalk , run on the rKMachineNameNetworkName Table object.
MIB Name: rKMNNNNetworkInterfaceBytesSent OID: .enterprises.3375.3.1.4.9.40.5.1.6	A column in the rKMachineNameNetworkName. Indicates the amount of bytes sent by the network	snmpwalk , run on the rKMachineNameNetworkName Table object.



KPI Name and MIB OID	Description	Retrieved By
	for which the information is collected.	
MIB Name: rKMNNNNetworkInterfaceInErrors OID: .enterprises.3375.3.1.4.9.40.5.1.7	A column in the rKMachineNameNetworkName. Indicates the amount of errors resulting from incoming transactions processed by the network.	snmpwalk , run on the rKMachineNameNetworkName Table object.
MIB Name: rKMNNNNetworkInterfaceOutErrors OID: .enterprises.3375.3.1.4.9.40.5.1.8	A column in the rKMachineNameNetworkName. Indicates the amount of errors resulting from outgoing transactions processed by the network.	snmpwalk , run on the rKMachineNameNetworkName Table object.



Glossary

The following tables list the common terms and abbreviations used in this document.

Table 17: Common Terms

Term	Definition
Answer	A message sent from one Client/Server Peer to the other following a request message
Client Peer	A physical or virtual addressable entity which consumes AAA services
Data Dictionary	Defines the format of a protocol's message and its validation parameters: structure, number of fields, data format, etc.
Destination Peer	The Client/Server peer to which the message is sent
Geo Redundancy	A mode of operation in which more than one geographical location is used in case one site fails
Master Session	The session for which the routing selection is performed based on the routing rules (Slave Sessions are applied with routing rules inherited from the Master Session)
Orchestrator	A workflow management solution to automate the creation, monitoring, and deployment of resources in your environment
Origin Peer	The peer from which the message is received
Pool	A group of Server Peers
QCOW2	A file format for disk image files
RADIUS	Remote Authentication Dial In User Service
REST	Representation of a resource between a client and server (Representational State Transfer)
Request	A message sent from one Client/Server peer to the other, followed by an answer message
RPM	RPM Package Manager



Term	Definition
Salt-API	Manages and communicates between an Orchestrator and network master and minion servers
SDC Site	The entire list of entities working in a single site
Server Peer	A physical or virtual addressable entity which provides AAA services
Session	An interactive information interchange between entities
Slave (Bound) Session	A session which inherits properties from a master session
SLRF Site	An SLRF site including the Provisioning Manager
Transaction	A request message followed by an answer message
Tripo	Session data repository
vCenter	Vmware Virtual Infrastructure tool for centralized management of multiple hypervisors and enabling functionalities
Virtual Server	A binding point used by SDC to communicate with the Remote Peers (Clients and Servers)

Table 18: Abbreviations

Term	Definition
AAA	Authentication, Authorization and Accounting
ACL	Access Control List
AF	Application Function
API	Application Programming Interface
AVP	Attribute Value Pair
CLI	Command Line Interface
CPF	Control Plane Function
DEA	Diameter Edge Agent



Term	Definition
DRA	Diameter Routing Agent
EMS Site	Element Management System Site
FEP-In	In-Front End Proxy
FEP-Out	Out-Front End Proxy
HA	High Availability
HSS	Home Subscriber Server
HTTP	Hypertext Transfer Protocol
IaaS	Infrastructure as a Service
IMS	IP Multimedia Subsystem
JMS	Java Message Service
KPI	Key Performance Indicator
LDAP	Lightweight Directory Access Protocol
LTE	Long Term Evolution
MME	Mobility Management Entity
NGN	Next Generation Networking
Node	Physical or virtual addressable entity
OAM	Operation, Administration and Maintenance
OCS	Online Charging System
OVF	Open Virtualization Format
PCEF	Policy and Charging Enforcement Function
PCRF	Policy and Charging Rules Function
PLMN	Public Land Mobile Network
SCCP	Signaling Connection Control Part
SCTP	Stream Control Transmission Protocol



Term	Definition
SDC	Signaling Delivery Controller
SLRF	Subscriber Location and Routing Function
SNMP	Simple Network Management Protocol
SS7	Signaling System No. 7
TCP	Transmission Control Protocol
TLS	Transport Layer Security
UDP	User Datagram Protocol
UE	User Equipment
URI	Universal Resource Identification.
VIP	Virtual IP
VM	Virtual Machine
VNFC	Virtualized Network Function Component
VPLMN	Visited Public Land Mobile Network
Web UI	Web User Interface
WS	Web Service