Operations

API Additions or Changes

No changes were introduced in this release.

Log Additions or Changes

Enhancement on Logging and Logback

Feature Summary and Revision History

Table 1: Summary Data

Applicable Product(s) or Functional Area	CPS
Applicable Platform(s)	Not Applicable
Default Setting	Enabled - Always ON
Related Changes in This Release	Not Applicable
Related Documentation	Not Applicable

Table 2: Revision History

Revision Details	Release
First introduced	20.2.0

Feature Description

CPS now supports enhancements to logback xml file.

A new script `logCollector.sh` is introduced which performs the following operations:

- Provides options to enable and disable the log levels for specific components, class, and interfaces

- Collects the enabled debug logs from all VMs or Specific VMs and store provided log path.

- Displays proper error message when the user does not provide valid inputs.

- Enables alias functionality for each function which helps user to provide only the operation name which is needed to execute the script.

- Adds the timer function to ensure the collection of required logs in the amount of time passed to the script.

Logging system provides more information with exception in a user-friendly and readable format. This feature is applicable for logging messages in both Core and CustRefData modules to print the clear context of the source such as process, subsystem, and exception when occurs.

MIB Additions or Changes

No changes were introduced in this release.

SNMP Alarm Additions or Changes

The following table provides information on new/modified alarms:

Table 3: Alarm Additions or Changes

New/Modified Alarms	Release Introduced/ Modified	Applicable Product(s)/
MongoPrimaryDB fragmentation exceeded the threshold value	20.2.0	CPS
PrimaryDB fragmentation percent conforms to threshold	20.2.0	CPS
SVNnotinsync	20.2.0	CPS
SVNinsync	20.2.0	CPS
DOCKER_ENGINE_DOWN	20.2.0	vDRA

For more information, see the following sections:

- *Application Notifications* table in the *CPS SNMP, Alarms, and Clearing Procedures Guide*

- *Clearing Procedures* chapter in the *CPS SNMP, Alarms, and Clearing Procedures Guide*

- *Testing Traps Generated by CPS* in the *CPS Troubleshooting Guide*

Configuration for SNMP Gets and Walks

As CPS 20.2.0 is built on CentOS 8.1, `snmpwalk` command has limitations and hence cannot perform a direct snmpwalk on the OID such as .1.3.6.1.4.1.26878.200.3.2.70. Instead of snmpwalk, you need to use `snmpget` command along with the complete OID such as .1.3.6.1.4.1.26878.200.3.2.70.1.1. The list of OIDs for the individual machines are available in `/etc/snmp/snmpd.conf` file. The OIDs are part of the line containing the word proxy.

Here is an example:

```
proxy -e 0x0102030405060708 -v 3 -u cisco_snmpv3 -a SHA -m
0x71d8d544a7447e377fa5fc355d8f08f81f1a901c -x AES -m 0x71d8d544a7447e377fa5fc355d8f08f8
-l authPriv localhost .1.3.6.1.4.1.26878.200.3.2.70.1.1.0  .1.3.6.1.4.1.2021.11.9.0
```

Here .1.3.6.1.4.1.26878.200.3.2.70.1.1.0 is the OID and hence the `snmpget` must be triggered as follows:

```
snmpget -e 0x0102030405060708 -v 3 -u cisco_snmpv3 -a SHA -A cisco_12345
-x AES -l authNoPriv -m +/etc/snmp/mibs/BROADHOP-MIB.txt:/etc/snmp/mibs/CISCO-QNS-MIB.txt
lb01 ".1.3.6.1.4.1.26878.200.3.3.70.11.2.0"
CISCO-QNS-MIB::kpiLBPCRFProxyInternalCurrentSessions.0 = STRING: 0
```

For more information, see *Configuration for SNMP Gets and Walks* section in the *CPS SNMP, Alarms, and Clearing Procedures Guide*.

Statistics/KPI Additions or Changes

The following table provides information on new/modified statistics:

Table 4: Statistics Additions or Changes

Statistics Name	Description	Applicable Product(s)
node1.counters. total_tags_added	The total number of new tags added in overall sessions. The source of the statistics is Policy Server (QNS) VM.	CPS
node1.counters. total_tags_removed	The total number of tags removed in overall sessions. The source of the statistics is Policy Server (QNS) VM.	CPS

Statistics Name	Description	Applicable Product(s)
node1.counters.session_ count_exceeding_tag_size	The total number tags exceeding the predefined size. The source of the statistics is Policy Server (QNS) VM.	CPS
node1.counters. session_count_exceeding_ predefined_number_of_tags	The total number of sessions containing the number of tags in TagsList more than predefined size. The source of the statistics is Policy Server (QNS) VM.	CPS
node1.counters.total_ session_with_padding	The total number of sessions created with padding. The source of the statistics is Policy Server (QNS) VM.	CPS
node1.counters.total_ session_without_padding	The total number of sessions created without padding. The source of the statistics is Policy Server (QNS) VM.	CPS
indexSize	Indicates the total size of all indexes created on a database. The source of the statistics is Policy Server (QNS) VM.	CPS
storageSize	The total amount of space allocated to collections in database for document storage. The source of the statistics is Policy Server (QNS) VM.	CPS
fileSize	The total size (in bytes) of the data files that hold the database. This value includes pre-allocated space and the padding factor. The source of the statistics is Policy Server (QNS) VM.	CPS
node1.jms.PolicyEngineJmsSender. qns_jms_senders. MessagesSentCount	Number of async messages sent. The source of the statistics is Policy Server (QNS).	CPS
node1.jms.PolicyEngineJmsReceiver-Cluster.qns_jms_receivers. MessagesReceived	Number of messages received. The source of the statistics is Policy Server (QNS) VM.	CPS

Statistics Name	Description	Applicable Product(s)
node1.jms.PolicyActionJmsSender. qns_jms_receivers. MessagesSentCount	Number of PolicyAction messages sent. The source of the statistics is Policy Server (QNS) VM.	CPS
node1.jms.PolicyActionJmsReceiver- Global.qns_jms_receivers. MessagesReceived	Number of PolicyAction messages received. The source of the statistics is Policy Director (LB) VM.	CPS
node1.jms.FlowControl. qns_jms_flowcontrols. NumberOfFlowControlledMessages	Number of messages that were flow controlled. The source of the statistics is Policy Server (QNS) VM.	CPS
node1.jms.FlowControl. qns_jms_flowcontrols.QueueSize	Flow control queue size. The source of the statistics is Policy Server (QNS) VM.	CPS
node1.jms.FlowControl. qns_jms_flowcontrols.QueueSizeLimit	Flow control queue size limit. The source of the statistics is Policy Server (QNS) VM.	CPS
rcv_ttl_drop_*<fqdn>*	Number of messages discarded due to exceeding SLA in inbound direction. The source of the statistics is Policy Director (LB) VM.	CPS
send_ttl_drop_*<fqdn>*	Number of messages discarded due to exceeding SLA in outbound direction. The source of the statistics is Policy Director (LB) VM.	CPS
node1.cdr.<CDRName>.write	Number of CDRs written to the database for the CDR name The source of the statistics is Policy Server (QNS) VM.	CPS
node1.cdr.<CDRName>.drop	Number of CDRs dropped without writing to database for the CDR name. The source of the statistics is Policy Server (QNS) VM.	CPS

Statistics Name	Description	Applicable Product(s)
node1.cdr.<CDRName>. replTaskOverrun	Number of times the replication task could not be run as the previous task was still running for the CDR name. The source of the statistics is Policy Server (QNS)/Policy Director (LB) VM.	CPS
node1.cdr.<CDRName>. replSkipNearCurrentTime	Number of times the replication task was skipped as the replication time is near current time for the CDR name. The source of the statistics is Policy Server (QNS)/Policy Director (LB) VM.	CPS
node[x].classes.gauge-loaded_classes	Number of loaded classes in the JVM. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].classes.gauge-unloaded_classes	Number of unloaded classes in JVM. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].thread.gauge-daemon_thread_count	Total number of daemon threads in the JVM. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].thread.gauge-live_thread_count	Total number of live threads in the JVM. The source of the statistics is Policy Server (QNS), Policy Director (LB) VMs.	CPS
node[x].thread.gauge-peak_ live_thread_count	Peak count of the live thread in the JVM. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].thread.gauge-total_ started_thread_count	Total number of threads started by the JVM. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].gc-ConcurrentMark Sweep.invocations	Total number of times ConcurrentMarkSweep GC occurred. The source of the statistics is Policy Server (QNS) VM.	CPS
node[x].gc-ConcurrentMarkSweep.total_ time_in_ms-collection_time	Time taken in millisecods for the ConcurrentMarkSweep GC. The source of the statistics is Policy Server (QNS) VM.	CPS

Statistics Name	Description	Applicable Product(s)
node[x].gc-ParNew. invocations	Total number of times ParNew GC occurred. The source of the statistics is Policy Server (QNS) VM.	CPS
node[x].gc-ParNew.total_ time_in_ms-collection_time	Time taken in millisecods for the ConcurrentMarkSweep GC. The source of the statistics is Policy Server (QNS) VM.	CPS
node[x].gc-PS_MarkSweep. invocations	Total number of times PS MarkSweep GC occurred. The source of the statistics is Policy Director (LB) VM.	CPS
node[x].gc-PS_MarkSweep.total_ time_in_ms-collection_time	Time taken in millisecods for the PS MarkSweep GC. The source of the statistics is Policy Director (LB) VM.	CPS
node[x].gc-PS_Scavenge. invocations	Total number of times PS Scavenge GC occurred. The source of the statistics is Policy Director (LB) VM.	CPS
node[x].gc-PS_Scavenge.total_ time_in_ms-collection_time	Time taken in milliseconds for the PS Scavenge GC. The source of the statistics is Policy Director (LB) VM.	CPS
skdb_cache_get_total. qns_stat.success	The total number of success queries on SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_ total.qns_stat.error	The total number of error/fail queries on SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_total. qns_stat.total_time_in_ms	The total time in millisecond to query on all SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS

Statistics Name	Description	Applicable Product(s)
skdb_cache_get_ total.qns_stat.avg	The average time taken by the queries on all SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get. qns_stat.success	The number of success queries on SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_ get.qns_stat.error	The number of error/fail query on SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get.qns_ stat.total_time_in_ms	The total time in millisecond to query on SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get. qns_stat.avg	The average number of queries on SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_remote. qns_stat.success	The total number of success queries on remote SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_ remote.qns_stat.error	The total number of error/fail query on remote SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_remote.qns_ stat.total_time_in_ms	The time in millisecond to query on remote SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_ pri.qns_stat.avg	The average number of queries on primary SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS

Statistics Name	Description	Applicable Product(s)
skdb_cache_get_ pri.qns_stat.success	The total number of success queries on primary SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_ pri.qns_stat.error	The total number of error/fail query on primary SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_pri.qns_ stat.total_time_in_ms	The time in millisecond to query on primary SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_pri. qns_stat.avg	The average number of queries on primary SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_pri_ remote.qns_stat.success	The number of success queries on remote site for primary SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_pri_ remote.qns_stat.error	The number of error/fail query on remote site for primary SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_pri_remote. qns_stat.total_time_in_ms	The total time in millisecond to query on remote site for primary SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
skdb_cache_get_pri_ remote.qns_stat.avg	The average number of queries on remote site for primary SK database cache. The source of the statistics is Policy Server (QNS) VM.	CPS
parallel_query_ skdb_fail	Parallel query to get secondary key record from the local site secondary member if SK database fails. The source of the statistics is Policy Server (QNS) VM.	CPS

Statistics Name	Description	Applicable Product(s)
svn_status.records,1.0	This statistics shows that SVN is in sync on the pcrfclient VM's. **Note** New SVN KPI stats are added in `/var/broadhop/stats/ bulk-pcrfclient-*.csv`.	CPS
svn_status.records,0.0	This statistics shows that SVN is not in sync on the pcrfclient VM's. **Note** New SVN KPI stats are added in `/var/broadhop/stats/ bulk-pcrfclient-*.csv`.	CPS
node[x].actions. ISendRealTimeNotificationRequest. qns_stat.avg	Rolling 5 minute average of sending of outbound real time notifications. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].actions. ISendRealTimeNotificationRequest. qns_stat.error	Count of errors sent in outbound real time notifications. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].actions. ISendRealTimeNotificationRequest. qns_stat.success	Count of real time notifications sent out successfully. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].actions. ISendRealTimeNotificationRequest. qns_stat.total_time_in_ms	Total time in milliseconds required to sent out successful outbound realtime notifications. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].counters.r.n_ <realtime_notification_template_name> _fail.qns_count	Number of failed *<realtime_notification_template_name>* notifications sent to primary URL. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].counters.r.n.f_ <realtime_notification_template_name> _fail.qns_count	Number of failed *<realtime_notification_template_name>* notifications sent to fallback URL. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS

Statistics Name	Description	Applicable Product(s)
node[x].counters.r.n_ *<realtime_notification_template_name>* _success.qns_count	Number of successful *<realtime_notification_template_name>* notifications sent to primary URL. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
node[x].counters.r.n.f_ *<realtime_notification_template_name>* _success.qns_count	Number of successful *<realtime_notification_template_name>* notifications sent to fallback URL. The source of the statistics are Policy Server (QNS) and Policy Director (LB) VMs.	CPS
db_cpu_threshold_ breach_total	This statistics displays the total number of requests rejected/forwarded due to database CPU usage threshold breach. CCR-I requests are rejected in case of database CPU threshold breach and bindings are not marked as best effort bindings. Requests are forwarded in case of database CPU threshold breach and bindings are marked as best effort bindings. For CCR-I, bindings are not stored. For CCR-T/ Gx RAR, bindings are not deleted. Field in statistics: status = discard/forward operation = create/read/update/delete	vDRA
dra_api_binding_ sharddetails_count	Total number of shard details requests that are successful or failures. Details of field in statistics. • binding_type = session/ipv6/ipv4/imsi/msisdn • status = error_500/error_404/success	vDRA

Support to Configure Database Fragmentation Threshold

Feature Summary and Revision History

Table 5: Summary Data

Applicable Product(s) or Functional Area	CPS

Applicable Platform(s)	Not Applicable
Default Setting	Enabled – Configuration Required Default value - 40 %
Related Changes in This Release	Not Applicable
Related Documentation	CPS Operations Guide

Table 6: Revision History

Revision Details	Release
First introduced	20.2.0

Feature Description

CPS now supports configuring custom database fragmentation threshold percentage for the list of databases present in `/etc/collectd.d/dbMonitorList.cfg` file on sessionmgr VMs. By default, the threshold is set to 40 % for all the databases in `/etc/collectd.d/dbMonitorList.cfg` file.

For more information, see *Configure Custom Database Fragmentation Threshold Percentage* section in the *CPS Operations Guide*.

Support to Configure Threshold Values for Gx and LDAP Alarms

Feature Summary and Revision History

Table 7: Summary Data

Applicable Product(s) or Functional Area	CPS
Applicable Platform(s)	Not Applicable
Default Setting	Enabled – Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	CPS Installation Guide for VMware CPS Installation Guide for OpenStack

Table 8: Revision History

Revision Details	Release
First introduced	20.2.0

Feature Description

CPS now supports:

- To configure different threshold values for CCR-I/U/T response time exceeded alarms.

- To configure LDAP retry, request and result alarm threshold values using `Configuration.csv` in VMware environment and YAML file in OpenStack environment.

To support the threshold values, following parameters are added:

- Under *Configuration Parameters - HA System* section in the *CPS Installation Guide for OpenStack*:

  - gxAlarmCcrIAvgThreshold

  - gxAlarmCcrUAvgThreshold

  - gxAlarmCcrTAvgThreshold

  - ldapAlarmRetryThreshold

  - ldapAlarmCcrIReqThreshold

  - ldapAlarmResultThreshold

  - ldapAlarmRequestThreshold

- Under *General Configuration* section in the *CPS Installation Guide for VMware*:

  - gx_alarm_ccr_i_avg_threshold

  - gx_alarm_ccr_t_avg_threshold

  - gx_alarm_ccr_u_avg_threshold

  - ldap_alarm_ccr_i_req_threshold

  - ldap_alarm_request_threshold

  - ldap_alarm_result_threshold

  - ldap_alarm_retry_threshold

For more information, refer to the concerned sections in *CPS Installation Guide for OpenStack* and *CPS Installation Guide for VMware*.