



## Performance Improvement

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## Critical Resources Monitoring in CPS using KPIs

### Feature Summary and Revision History

**Table 1: Summary Data**

Applicable Product(s) or Functional Area	CPS
Applicable Platform(s)	Not Applicable
Default Setting	Not Applicable
Related Changes in This Release	Not Applicable
Related Documentation	CPS SNMP, Alarms, and Clearing Procedures Guide CPS Troubleshooting Guide

**Table 2: Revision History**

Revision Details	Release
First introduced	20.2.0

### Feature Description

CPS now provides support to monitor whether SVN on perfcilent VMs are in sync to ensure stable operations.

A new alarm is generated as alert when SVN is not in sync and a corresponding clear alarm is triggered when SVN is in sync.

You can use the following commands to get the SVN repos and revision number details:

```
/usr/bin/svn info http://pcrfclient01/repos
/usr/bin/svn info http://pcrfclient02/repos
```

The SVN KPI is captured using whisper .wsp in `/var/lib/carbon/whisper/cisco/quantum/qps/pcrfclient01` location and Whisper provides details of CPU, memory, and other plugins which are defined in the `collectd.conf` file.

The following new alarms has been added:

- SVNnotinsync
- SVNinsync

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*

The following new statistics has been added:

- `svn_status.records,1.0`
- `svn_status.records,0.0`

For more information on statistics, see [Statistics/KPI Additions or Changes](#).

## Enabling In-Service MongoDB Authentication

**Table 3: 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 OpenStack CPS Installation Guide for VMware

**Table 4: Revision History**

Revision Details	Release
First introduced	20.2.0

### Feature Description

CPS supports enabling in-service MongoDB authentication. In case of GR/multi-cluster setups, add:

- `remote_site_ip` in the `Configuration.csv` file for VMware setups. This parameter needs to be added in both clusters.
- `remoteSiteIp` in the `YAML` file for OpenStack setups. This parameter needs to be added in both clusters.

For more information, see the following sections:

- *General Configuration* and *MongoDB Authentication Process* sections in the *CPS Installation Guide for VMware*
- *Configuration Parameters - HA System* and *MongoDB Authentication Process* sections in the *CPS Installation Guide for OpenStack*.

Logs are available over the console and in the files:

- `/var/log/broadhop/scripts/mongo_auth_upgrade.log`
- `/var/log/sessionmgr-XXXX.log` in the respective VM

### Configuration and Restrictions

- Configurations need to be done in the `Configuration.csv` file.
- Encrypted password only needs to be updated.

### Troubleshooting

If MongoDB processes on arbitervip are not coming up when enabling/disabling the MongoDB authentication, see *MongoDB Processes not Coming Up on Arbitervip* section in the *CPS Troubleshooting Guide*.

# KPI Support to Monitor MongoDB Fragmentation and Generate an SNMP Alarm

### Feature Summary and Revision History

**Table 5: Summary Data**

Applicable Product(s) or Functional Area	CPS
Applicable Platform	Not Applicable
Default Setting	Enabled – Configuration Required
Related Changes in This Release	Not Applicable

Related Documentation	CPS Troubleshooting Guide CPS SNMP, Alarms, and Cleaning Guide CPS Operation Guide
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**Table 6: Revision History**

Revision Details	Release
First introduced	20.2.0

**Feature Description**

CPS supports new KPIs to monitor MongoDB level fragmentation in bulkstats via Grafana and to generate an SNMP alarm when MongoDB fragment percentage exceeds a specified value.

The following new alarms are added:

- MongoPrimaryDB fragmentation exceeded the threshold value
- PrimaryDB fragmentation percent conforms to threshold

For more information on alarms, see the following guides:

- *Application Notifications* table and *Clearing Procedures* chapter in the *CPS SNMP, Alarms, and Cleaning Guide*
- *Testing Traps Generated by CPS* in the *CPS Troubleshooting Guide*
- *DB Fragmentation Monitoring KPIs* and *Resync Member of a Replica Set* sections in the *CPS Operation Guide*

## Optimized Secondary Binding Lookup

**Feature Summary and Revision History****Table 7: Summary Data**

Applicable Product(s) or Functional Area	CPS
Applicable Platform	Not Applicable
Default Setting	Enabled – Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	Contact your Cisco Account representative

Table 8: Revision History

Revision Details	Release
First introduced	20.2.0

### Feature Description

CPS is enhanced to provide support to query on available secondary member of the local site replica-set and remote site replica-set available in local site simultaneously to get the secondary key record from SK DB.



#### Note

- This feature provides improvement for secondary key lookups happening on secondary sessions initiate requests in the current site and their primary sessions present in the remote site.
- In case there is any latency between the primary and secondary sites, the latency time is reduced while finding the secondary key records for secondary session initiate call processing.
- There are two parts of this feature. Both of them are optimized to reduce the processing time to match the latency between the sites.

The current feature implementation covers the following to reduce the processing time to match the latency between the sites:

- Optimization in existing serial or sequential query for secondary key lookup.
- Introduction of parallel query for secondary key lookup.

The following is the list of new `qns.conf` file parameters added:

- `enable.primary.parallel.queries`
- `mongo.skdb.query.pool.size`
- `mongo.skdb.query.thread.pool.queue.size`

For more information on `qns.conf` file parameters, contact your Cisco Account representative.

The following new statistics are added:

- `skdb_cache_get_total.qns_stat.success`
- `skdb_cache_get_total.qns_stat.error`
- `skdb_cache_get_total.qns_stat.total_time_in_ms`
- `skdb_cache_get_total.qns_stat.avg`
- `skdb_cache_get.qns_stat.success`
- `skdb_cache_get.qns_stat.error`
- `skdb_cache_get.qns_stat.total_time_in_ms`
- `skdb_cache_get.qns_stat.avg`
- `skdb_cache_get_remote.qns_stat.success`

- skdb\_cache\_get\_remote.qns\_stat.error
- skdb\_cache\_get\_remote.qns\_stat.total\_time\_in\_ms
- skdb\_cache\_get\_pri.qns\_stat.avg
- skdb\_cache\_get\_pri.qns\_stat.success
- skdb\_cache\_get\_pri.qns\_stat.error
- skdb\_cache\_get\_pri.qns\_stat.total\_time\_in\_ms
- skdb\_cache\_get\_pri.qns\_stat.avg
- skdb\_cache\_get\_pri\_remote.qns\_stat.success
- skdb\_cache\_get\_pri\_remote.qns\_stat.error
- skdb\_cache\_get\_pri\_remote.qns\_stat.total\_time\_in\_ms
- skdb\_cache\_get\_pri\_remote.qns\_stat.avg
- parallel\_query\_skdb\_fail

For more information on statistics, see [Statistics/KPI Additions or Changes](#).

### Memory and Performance Impact

When the feature is enabled, additional threads are invoked to process the parallel operation to fetch the Secondary Key records from SK DB which increases the CPU consumption by 3-4 %.

## Support CPS on ESXi 6.7

### Feature Summary and Revision History

**Table 9: 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	CPS Installation Guide for VMware

**Table 10: Revision History**

Revision Details	Release
First introduced	20.2.0

### Feature Description

CPS is now supported on ESXi 6.7. To support CPS on ESXi 6.7, you need to install OVF tool 4.3.0 version.

Version 4.3.0 for VMware 6.5/6.7: `vmware-ovftool-4.3.0-13981069-linux.x86_64.bundle`

You can download the OVF tool from <https://code.vmware.com/web/tool/4.3.0/ovf>.

# Upgrade CentOS to 8.1

### Feature Summary and Revision History

**Table 11: 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 12: Revision History**

Revision Details	Release
First introduced	20.2.0

### Feature Description

In CPS 20.2.0 release, CentOS is upgraded to 8.1 version. With CentOS 8.1, kernel is upgraded to 4.18.0-147.5.1.el8\_1.x86\_64. Also, all the packages are upgraded to be compatible with CentOS 8.1.

- Network Time Protocol (NTP) is implemented using Chronyd daemon in Centos 8.1. Chronyd daemon replaces NTPD daemon. To check if the system time is synchronized, use the following commands:
  - `chronyc sources`: Displays information about the current time sources that chronyd is accessing.
  - `chronyc tracking`: Provides information about time sync status.
  - `chronyc sourcestats`: Displays information about the drift rate and offset estimation process for each of the sources currently being examined by chronyd.

For more information on Chrony, see Red Hat documentation.




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**Note** In this release, automatic installation and configuration of NTP is added for Cluster Manager.

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- Corosync package has been upgraded. Current corosync version isn't compatible with previous release corosync version. Due to corosync version incompatibility, during in-service migration (ISSM) Set1 and Set 2 VMs won't be able to form the cluster. This leads to split brain scenario during ISSM. This is transient and system recovers automatically once both Set 1 and Set 2 VMs are upgraded to new corosync version. In-service migration has been designed to migrate customer system with minimal disruption of traffic.

Transport protocol is changed for Corosync from **udpu** to **knit**

- Puppet is upgraded from 3.6.2-3 to 5.5.19 version. Puppet code has been modified to adapt to this change. Customers are also required to test and adapt custom puppet code before applying same to CPS.
- Grafana package is upgraded from 6.2.2-1 to 6.7.1-1.
- MongoDB is upgraded to 3.6.17.
- Memcache is upgraded to 1.5.9-2.

### Memory and Performance Impact

The boot time for VM has marginally increased. Also, there's a moderate increase in puppet run time during fresh installation and ISSM. For subsequent puppet runs there's no change in execution time.

### Deployment Considerations

It's required to have ESXi Hosts upgraded to minimum 6.5. Controller location should be set to IDE or SCSI. For SCSI, select the SCSI Controller to VMware Paravirtual.



**Note** It is recommended to use SCSI controller.

The following is a sample configuration:

▼ Hard disk 1	100	GB	✕
Maximum Size	253.33 GB		
Type	Thin provisioned		
Disk File	[datastore13] final_issm_testing/newbase.vmdk		
Shares	Normal	1000	
Limit - IOPs	Unlimited		
Controller location	IDE controller 0	Master	
Disk mode	Dependent		

### Upgrade/Migration/Backward Compatibility Considerations

CPS 20.2.0 is built on a newer version of CentOS. Previous versions of the CPS platform used CentOS 7; however CPS 20.2.0 uses CentOS 8.1. Because of this change, an in-service software upgrade (ISSU) is not



possible. If customers want to move to CPS 20.2.0, they must perform an in-service migration which has been designed to migrate their system with minimal disruption of traffic.

In CPS 20.2.0, puppet is upgraded from 3.6.2-3 to 5.5.19 version. Puppet code has been modified to adapt to this change. Previous release puppet code is not compatible with the current puppet version (5.5.19). Customer specific puppet code must be adapted to current release puppet version (5.5.19) before applying it to CPS 20.2.0.

VMware ESXI server must be updated to 6.5 or more.

### Backup/Restore Considerations

`config_br.py` script isn't supported for backup and restoring users.

### Geo-Redundancy/HA Consideration

As Corosync version is incompatible with previous release, there is traffic loss during ISSM.

`guestNic` value must be configured for standalone arbiter. For more information, refer to the *CPS Geographic Redundancy Guide*.

## Upgrade MongoDB from 3.6.9 to 3.6.17

In CPS 20.2.0, MongoDB has been upgraded from 3.6.9 to 3.6.17. To verify mongod is running the latest RPMs, execute the command:

```
runonall.sh 'grep "db version" /var/log/mongo* | tail -1' 2>&1 | grep 'CONTROL'
[pcrfclient02] out: /var/log/mongodb-27727.log:2018-04-09T06:28:28.207+0000 I CONTROL
[initandlisten] db version v3.6.17
[sessionmgr01] out: /var/log/mongodb-27727.log:2018-04-09T06:30:57.810+0000 I CONTROL
[initandlisten] db version v3.6.17
[sessionmgr02] out: /var/log/mongodb-27727.log:2018-04-09T06:31:43.853+0000 I CONTROL
[initandlisten] db version v3.6.17
```

