

CPS Commands

Note If you want to save the output of any command on any of the CPS VMs, then the output should be redirected to a file.

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about.sh

This command displays:

- Core version
- Patch installed
- ISO version
- Feature version
- URLs to the various interfaces
- APIs for the deployment

Syntax

```
/var/qps/bin/diag/about.sh [-h]
```

Executable on VMs

- Cluster Manager
- pcrfclient01/02

adduser.sh

This utility adds a new user to the specified nodes that are part of the CPS deployment. These accounts will be provisioned without shell access and, as such, they're only useful for authenticating against the various web-based GUIs used to administrate CPS.

The hosts that get provisioned with these new accounts can be selected using the 'node-regex' option. The default regular expression used by the script is:

```
node-regex ::= ^(pcrfclient|qns|lb[0-9]+|sessionmgr)
```

Syntax

```
/var/qps/bin/support/adduser.sh [-h] [node-regex]
```

When prompted for the user’s group, set ‘qns-svn’ for read-write permissions or ‘qns-ro’ for read-only permissions.

To add a user with 'read/write' access to Control Center, their group should be 'qns'.

- To check if a user already exists, login in as root and enter ‘su <username>’.
- To check a user’s ‘groups’, enter ‘groups <username>’.

Executable on VMs

All

Example

```
[root@host /]# /var/qps/bin/support/adduser.sh
Enter username: username
Enter group for the user: groupname
Enter password: password
Re-enter password: password
The above example adds username to all the VMs in the cluster.
```

auditrpms.sh

This script runs in background on all VMs except Cluster Manager. This script/daemon should be always running and is monitored via monit. No intervention from end user is required. Corresponding logs are generated at individual nodes in `/var/log/broadhop/audit/audit_rpms.log`.



Note All successful attempts i.e. installation or removal are tracked in this file. In case package is upgraded there would be two entries seen in log file, one for removal of old package and one for installation of new package.

Executable on VMs

On all VMs except Cluster Manager

Example

```
[root@lb01 ~]# monsum | grep auditrpms
Process 'auditrpms.sh' Running
```

build_all.sh

This command is executed from Cluster Manager to rebuild CPS package.

Syntax

- `/var/qps/install/current/scripts/build_all.sh`
- `/var/qps/install/current/scripts/build/build_all.sh`

Executable on VMs

Cluster Manager

Example

```
[root@host /]# /var/qps/install/current/scripts/build_all.sh
Building /etc/broadhop...
Copying to /var/qps/images/etc.tar.gz...
Creating MD5 Checksum...
Copying /etc/puppet to /var/qps/images/puppet.tar.gz...
Creating MD5 Checksum...
Copying Policy Builder configuration (/var/qps/current_config/pb_config) to
/var/qps/images/svn.tar.gz...
Creating MD5 Checksum...
Updating tar from: /var/qps/env_config/ to /var/www/html/images/
Creating MD5 Checksum...
Building /var/qps/bin...
Copying /var/qps/bin to /var/qps/images/scripts_bin.tar.gz...
Creating MD5 Checksum...
Building images...
Building image: /var/qps/images/controlcenter.tar.gz
Installing from:
         file:///var/qps/.tmp/release
Installing features:
         com.broadhop.controlcenter.feature.feature.group
         com.broadhop.faultmanagement.service.feature.feature.group
         com.broadhop.infrastructure.feature.feature.group
         com.broadhop.server.runtime.product
         com.broadhop.snmp.feature.feature.group
Creating MD5 Checksum... /var/qps/images/controlcenter.tar.gz.md5chksum
Building image: /var/qps/images/diameter_endpoint.tar.gz
Installing from:
         file:///var/qps/.tmp/release
Installing features:
         com.broadhop.diameter2.service.feature.feature.group
         com.broadhop.server.runtime.product
         com.broadhop.snmp.feature.feature.group
Creating MD5 Checksum... /var/qps/images/diameter_endpoint.tar.gz.md5chksum
Building image: /var/qps/images/iomanager01.tar.gz
Installing from:
         file:///var/qps/.tmp/release
Installing features:
         com.broadhop.iomanager.feature.feature.group
         com.broadhop.notifications.service.feature.feature.group
         com.broadhop.server.runtime.product
         com.broadhop.snmp.feature.feature.group
Creating MD5 Checksum... /var/qps/images/iomanager01.tar.gz.md5chksum
Building image: /var/qps/images/iomanager02.tar.gz
Installing from:
         file:///var/qps/.tmp/release
Installing features:
         com.broadhop.iomanager.feature.feature.group
         com.broadhop.notifications.service.feature.feature.group
         com.broadhop.server.runtime.product
         com.broadhop.snmp.feature.feature.group
Creating MD5 Checksum... /var/qps/images/iomanager02.tar.gz.md5chksum
Building image: /var/qps/images/pb.tar.gz
Installing from:
         file:///var/qps/.tmp/release
Installing features:
         com.broadhop.client.feature.audit.feature.group
         com.broadhop.client.feature.balance.feature.group
         com.broadhop.client.feature.custrefdata.feature.group
```

```
         com.broadhop.client.feature.diameter2.feature.group
         com.broadhop.client.feature.notifications.feature.group
         com.broadhop.client.feature.spr.feature.group
         com.broadhop.client.feature.unifiedapi.feature.group
         com.broadhop.client.feature.vouchers.feature.group
         com.broadhop.client.feature.ws.feature.group
         com.broadhop.client.product
Creating MD5 Checksum... /var/qps/images/pb.tar.gz.md5chksum
Building image: /var/qps/images/pcrf.tar.gz
Installing from:
         file:///var/qps/.tmp/release
Installing features:
         com.broadhop.audit.service.feature.feature.group
         com.broadhop.balance.service.feature.feature.group
         com.broadhop.balance.spr.feature.feature.group
         com.broadhop.custrefdata.service.feature.feature.group
         com.broadhop.diameter2.local.feature.feature.group
         com.broadhop.externaldatacache.memcache.feature.feature.group
         com.broadhop.notifications.local.feature.feature.group
         com.broadhop.policy.feature.feature.group
         com.broadhop.server.runtime.product
         com.broadhop.snmp.feature.feature.group
         com.broadhop.spr.dao.mongo.feature.feature.group
         com.broadhop.spr.feature.feature.group
         com.broadhop.ui.controlcenter.feature.feature.group
         com.broadhop.unifiedapi.interface.feature.feature.group
         com.broadhop.unifiedapi.ws.service.feature.feature.group
         com.broadhop.vouchers.service.feature.feature.group
         com.broadhop.ws.service.feature.feature.group
Creating MD5 Checksum... /var/qps/images/pcrf.tar.gz.md5chksum
Copying portal default database to /var/qps/images/portal_dump.tar.gz
Creating MD5 Checksum for portal dump...
Copying portal to /var/qps/images/portal.tar.gz
Creating MD5 Checksum for portal.tar.gz...
Copying wispr.war to /var/qps/images/wispr.war
Output images to /var/qps/images/
```

build_etc.sh

This command is executed from Cluster Manager to rebuild etc.tar.gz in /etc/broadhop/ directory.

Syntax

```
/var/qps/install/current/scripts/build/build_etc.sh
```

Executable on VMs

Cluster Manager

Example

```
[root@host /]# /var/qps/install/current/scripts/build/build_etc.sh
Building /etc/broadhop...
Copying to /var/qps/images/etc.tar.gz...
Creating MD5 Checksum...
```

build_set.sh

This command is used to rebuild replica sets. This command is normally only run the first time the environment starts, but can be used if CPS databases must be rebuilt.

Syntax

```
/var/qps/bin/support/mongo/build_set.sh [--help]
```

Executable on VMs

All

Example

To create replica-sets for SPR:

```
[root@host /]# /var/qps/bin/support/mongo/build_set.sh --spr --create
Starting Replica-Set Creation
Please select your choice: replica sets sharded (1) or non-sharded (2):
2
```

capture_env.sh

This command collects most of the debug logs to debug an issue.

Syntax

```
/var/qps/bin/support/env/capture_env.sh
```

Executable on VMs

pcrfclient01/02

Output

This command provides the following information to collect logs:

- -h|--help: Show usage
- -q|--qns: For capturing qns logs (default is to skip qns logs)
- -t|--trap: For capturing trap logs (default is to skip trap logs)
- -m|--mongo: For capturing mongo logs (default is to skip mongo logs)
- -v|--var-log: For capturing /var/log/messages (default is to skip the log)
- -a|--age: Should be followed by maximum age of log based on last modification time (defaults to 1 day)
- -n|--host: Should be followed by common separated list of hostnames for capturing logs (defaults to all hosts)

Example

```
[root@host /]# /var/qps/bin/support/env/capture_env.sh
Creating archive of QPS environment information...
---------------------------
Capturing /etc/broadhop...
Capturing logs...
Capturing Policy Builder data...
Capturing installed software versions...
```

change_passwd.sh

Used to change the user (Linux user) password on all VMs.



Note The `change_passwd.sh` script changes the password on all the VMs temporarily. You also need to generate an encrypted password. To generate encrypted password, refer to *System Password Encryption* in *CPS Installation Guide for VMware*. The encrypted password must be added in the `Configuration.csv` spreadsheet. To make the new password persisent, execute `import_deploy.sh`. If the encrypted password is not added in the spreadsheet and `import_deploy.sh` is not executed, then after running `reinit.sh` script, the qns-svn user takes the existing default password from `Configuration.csv` spreadsheet.

Syntax

```
/var/qps/bin/support/change_passwd.sh [-h]
```

Executable on VMs

All

Example

```
Enter username whose password needs to be changed: root
Enter current password:
Enter new password:
Re-enter new password:
Trying to change password for root on
qns02,qns01,sessionmgr02,sessionmgr01,pcrfclient02,pcrfclient01,lb02,lb01, nodes

Done.
Disconnecting from pcrfclient02... done.
Disconnecting from lb01... done.
Disconnecting from lb02... done.
Disconnecting from qns01... done.
Disconnecting from sessionmgr02... done.
Disconnecting from pcrfclient01... done.
Disconnecting from qns02... done.
Disconnecting from sessionmgr01... done.
Successfully updated password on this host
```



Note Add `-f` or `--force` option to the script to reset the forgotten password only from the root user.

cleanup_license.sh

Cleans up the records related to license in the licensedfeats collection in the sharding database. This command must be run as root user when license file is updated on the OAM (pcrfclient) machine.

Syntax

```
/var/qps/bin/support/mongo/cleanup_license.sh [-h]
```

Executable on VMs

- Cluster Manager
- pcrfclient01/02

component_alarm_reports.py

This command is used to store or retrieve the open/active component alarms in CPS.

- For clear alarms, it removes the alarms matching the clear alarm.
- For active alarms, it clears old alarms if any and adds the latest alarm.

Syntax

```
component_alarm_reports.py -h
usage: component_alarm_reports.py [-h] --action {update,report}
                                  [--eventhost EVENTHOST] [--date DATE]
                                  [--name NAME] [--facility FACILITY]
                                  [--severity SEVERITY] [--info INFO]

CPS Update/Report Component Alarm(s) to/from Mongo DB
optional arguments:
  -h, --help            show this help message and exit
  --action {update,report}, -a {update,report}
                        Action value update : Update an alarm. report : Report
                        active alarms
  --eventhost EVENTHOST, -e EVENTHOST
                        Event Host Name
  --date DATE, -d DATE  Date of event
  --name NAME, -n NAME  Name of alarm
  --facility FACILITY, -f FACILITY
                        Facility of alarm
  --severity SEVERITY, -s SEVERITY
                        Severity of alarm
  --info INFO, -i INFO  Info of alarm
```

Attention The `--action update` parameter is for Cisco Internal Use Only.

Path:

On Cluster Manager: `/var/qps/install/current/scripts/modules/component_alarm_reports.py`

On pcrfclient and policy director VMs:
`/var/qps/bin/install/current/scripts/modules/component_alarm_reports.py`

Executable on VMs

Cluster Manager, Policy Director and OAM (pcrfclient) nodes

Examples

To retrieve the active alarms:

```
component_alarm_reports.py –a report
event_host=lb02 name=ProcessDown severity=critical facility=operatingsystem
date=2017-22-11,10:13:49,310329511,+00:00 info=corosync process is down
```

copytoall.sh

Prior to 7.0.5 release, in order to propagate the changes done in Cluster Manager, user used to execute `reinit.sh` which in turn triggers each CPS VM to download and install the updated VM images from the Cluster Manager and it time consuming process.

In CPS 7.0.5 and higher releases, if minor changes are made to any file in Cluster Manager, instead of executing `reinit.sh` script, use this command to synchronize the modified files from Cluster Manager to all other VMs.

Syntax

```
copytoall.sh
```

Executable on VMs

Cluster Manager



Note In case executing `copytoall.sh` command from qns-admin, prefix sudo before the command.

Example

1. If the user updated `/etc/broadhop/logback.xml` file in Cluster Manager.
2. Build etc directory on each cluster by executing `build_all.sh` from Cluster Manager to rebuild CPS package script.

   `/var/qps/install/current/scripts/build_all.sh`
3. Execute the following command to copy the file:

   `SSHUSER_PREFERROOT=true copytoall.sh /etc/broadhop/logback.xml /etc/broadhop/logback.xml`

diagnostics.sh

Runs a set of diagnostics and displays the current state of the system. If any components are not running, red failure messages are displayed.



Note RADIUS-based policy control is no longer supported in CPS 14.0.0 and later releases as 3GPP Gx Diameter interface has become the industry-standard policy control interface.

Syntax

```
/var/qps/bin/diag/diagnostics.sh -h
Usage: /var/qps/bin/diag/diagnostics.sh [options]
This script runs checks (i.e. diagnostics) against the various access, monitoring, and
configuration points of a running CPS system.
In HA/GR environments, the script always does a ping check for all VMs prior to any other
checks and adds any that fail the ping test to the IGNORED_HOSTS variable. This helps reduce
 the possibility for script function errors.
NOTE: See /var/qps/bin/diag/diagnostics.ini to disable certain checks for the HA/GR env
persistently. The use of a flag will override the diagnostics.ini value.
Examples:
    /var/qps/bin/diag/diagnostics.sh -q
    /var/qps/bin/diag/diagnostics.sh --basic_ports --clock_skew -v
--ignored_hosts='portal01,portal02'

Options:
    --basic_ports : Run basic port checks

        For HA/GR: 80, 11211, 7070, 8080, 8081, 8090, 8182, 9091, 9092, and Mongo DB ports
 based on /etc/broadhop/mongoConfig.cfg
    --clock_skew : Check clock skew between lb01 and all vms (Multi-Node Environment only)
    --diskspace : Check diskspace
    --get_active_alarms : Get the active alarms in the CPS
    --get_frag_status : Get fragmentation status for Primary members of DBs viz.
session_cache, sk_cache, diameter, spr, and balance_mgmt.

    --get_replica_status : Get the status of the replica-sets present in environment.
(Multi-Node Environment only)
    --get_shard_health : Get the status of the sharded database information present in
environment. (Multi-Node Environment only)
   --get_sharding_status : Get the status of the sharding information present in environment.
 (Multi-Node Environment only)
    --get_session_shard_health : Get the session shard health status information present
in environment. (Multi-Node Environment only).
    --get_peer_status: Get the diameter peers present in the environemt.
    --get_sharded_replica_status : Get the status of the shards present in environment.
(Multi-Node Environment only)
   --ha_proxy : Connect to HAProxy to check operation and performance statistics, and ports
 (Multi-Node Environment only)
        http://lbvip01:5540/haproxy?stats
        http://lbvip01:5540//haproxy-diam?stats
    --help -h : Help - displays this help

    --ignored_hosts : Ignore the comma separated list of hosts. For example
--ignored_hosts='portal01,portal02'
        Default is 'portal01,portal02,portallb01,portallb02' (Multi-Node Environment only)
    --ping_check : Check ping status for all VM
    --policy_revision_status : Check the policy revision status on all QNS,LB,UDC VMs.
```

```
    --lwr_diagnostics : Retrieve diagnostics from CPS LWR kafka processes
    --qns_diagnostics : Retrieve diagnostics from CPS java processes
    --qns_login : Check qns user passwordless login
    --quiet -q : Quiet output - display only failed diagnostics
    --radius : Run radius specific checks
    --redis  : Run redis specific checks
    --whisper  : Run whisper specific checks
    --aido : Run Aido specific checks
   --svn : Check svn sync status between pcrfclient01 & pcrfclient02 (Multi-Node Environment
 only)
    --tacacs : Check Tacacs server reachability
    --swapspace : Check swap space
   --verbose -v : Verbose output - display *all* diagnostics (by default, some are grouped
 for readability)
    --virtual_ips : Ensure Virtual IP Addresses are operational (Multi-Node Environment
only)
    --vm_allocation : Ensure VM Memory and CPUs have been allocated according to
recommendations
```



Note If IPv6 address is more than 23 characters, due to the restriction in the column width, only 23 characters are displayed in the `diagnostics.sh --get_replica_status` output for IPv6 address. The host name present in the `diagnostics.sh --get_replica_status` can be used to identify IP address.

The test for swap memory usage must have the following criteria :

- The test passes if the swap space used is less than 200 MB.
- The script issues a warning if the swap space used is between 200 MB and 1000 MB.
- The status fails if the swap memory used exceeds 1000 MB.

Executable on VMs

Cluster Manager and OAM (pcrfclient) nodes

Example

```
[root@pcrfclient01 ~]# diagnostics.sh
QNS Diagnostics
Checking basic ports (80, 7070, 27017, 27717-27720, 27749, 8080, 9091)...[PASS]
Checking qns passwordless logins on all boxes...[PASS]
Validating hostnames...[PASS]
Checking disk space for all VMs...[PASS]
Checking swap space for all VMs...[PASS]
Checking for clock skew...[PASS]
Retrieving QNS diagnostics from qns01:9045...[PASS]
Retrieving QNS diagnostics from qns02:9045...[PASS]
Checking HAProxy status...[PASS]
Checking VM CPU and memory allocation for all VMs...[PASS]
Checking Virtual IPs are up...[PASS]
[root@pcrfclient01 ~]#
```

List of Active Alarms

To get the list of active alarms, execute the `diagnostics.sh --get_active_alarms` command. Here is a sample output:

```
#diagnostics.sh --get_active_alarms

CPS Diagnostics HA Multi-Node Environment
--------------------------
Active Application Alarm Status
-------------------------------------------------------------------------------
id=1000 sub_id=3001  event_host=lb02  status=down date=2017-11-22,
10:47:34,051+0000  msg="3001:Host: site-host-gx Realm: site-gx-client.com is down"
id=1000 sub_id=3001  event_host=lb02  status=down date=2017-11-22,
10:47:34,048+0000  msg="3001:Host: site-host-sd Realm: site-sd-client.com is down"
id=1000 sub_id=3001  event_host=lb01  status=down date=2017-11-22,
10:45:17,927+0000  msg="3001:Host: site-server Realm: site-server.com is down"
id=1000 sub_id=3001  event_host=lb02  status=down date=2017-11-22,
10:47:34,091+0000  msg="3001:Host: site-host-rx Realm: site-rx-client.com is down"
id=1000 sub_id=3002  event_host=lb02  status=down date=2017-11-22,
10:47:34,111+0000  msg="3002:Realm: site-server.com:applicationId: 7:all peers are down"
Active Component Alarm Status
-------------------------------------------------------------------------------
event_host=lb02 name=ProcessDown severity=critical facility=operatingsystem
date=2017-22-11,10:13:49,310329511,+00:00 info=corosync process is down
```



Attention

- Due to the limitation of architecture of the CPS SNMP implementation, if the SNMP deamon or policy server (QNS) process on pcrfclient VM restarts, there can be gap between active alarms displayed by the `diagnostics.sh` and active alarms in NMS.
- The date printed for application alarm status is when the alarm was seen at pcrfclient VM. The time for the alarm at NMS is the time before the alarm is received from Policy Director (LB) VM. So there can be a difference in the dates for the same alarm reported in `diagnostics.sh` and in NMS.

The following table list the type of SNMP alarms:

Table 1: IDs - Type of SNMP Alarms

Alarm ID	Type
1000	Application Alarm
7100	Database Alarm
7200	Failover Alarm
7300	Process Alarm
7400	VM Alarm
7700	GR Alarm

For more information on SNMP alarms, refer to *CPS SNMP, Alarms and Clearing Procedures Guide*.

Sample Output of --get_sharding_status

```
diagnostics.sh --get_sharding_status
CPS Diagnostics HA Multi-Node Environment
--------------------------
|-------------------------------------------------------------------------------------------------------|
|                            SHARDING STATUS INFORMATION
```

```
Date : 2019-01-08 01:01:05         |
|-------------------------------------------------------------------------------------------------------------|

Shard Id    Mongo DB                              State     Backup DB    Removed    Session
Count

1           sessionmgr01:27717/session_cache    online    false        false      0

Rebalance Status: Rebalanced

|-------------------------------------------------------------------------------------------------------------|
```

Sample output of --policy_revision_status

```
diagnostics.sh --policy_revision_status
CPS Diagnostics HA Multi-Node Environment
--------------------------
Checking SVN revision status in qns nodes: [ qns01 qns02 qns03 qns04 qns05 qns06 qns07 qns08
 qns09 qns10  ]
qns01(instance=1, head_revision=41, local_revision=41)...[PASS]
qns02(instance=1, head_revision=41, local_revision=41)...[PASS]
qns03(instance=1, head_revision=41, local_revision=41)...[PASS]
qns04(instance=1, head_revision=41, local_revision=41)...[PASS]
qns05(instance=1, head_revision=41, local_revision=41)...[PASS]
qns06(instance=1, head_revision=41, local_revision=41)...[PASS]
qns07(instance=1, head_revision=41, local_revision=41)...[PASS]
qns08(instance=1, head_revision=41, local_revision=41)...[PASS]
qns09(instance=1, head_revision=41, local_revision=41)...[PASS]
qns10(instance=1, head_revision=41, local_revision=41)...[PASS]
SVN revison status complete on: [ qns01 qns02 qns03 qns04 qns05 qns06 qns07 qns08 qns09
qns10  ]...[PASS]

Checking SVN revision status in lb nodes: [ lb01 lb02  ]
lb01(instance=1, head_revision=41, local_revision=41)...[PASS]
lb01(instance=2, head_revision=41, local_revision=41)...[PASS]
lb01(instance=3, head_revision=41, local_revision=41)...[PASS]
lb01(instance=4, head_revision=41, local_revision=41)...[PASS]
lb02(instance=1, head_revision=41, local_revision=41)...[PASS]
lb02(instance=2, head_revision=41, local_revision=41)...[PASS]
lb02(instance=3, head_revision=41, local_revision=41)...[PASS]
lb02(instance=4, head_revision=41, local_revision=41)...[PASS]
SVN revison status complete on: [ lb01 lb02  ]...[PASS]
```

Sample output of --get_session_shard_health

`diagnostics.sh` output on HA setup without any shard configuration.

```
diagnostics.sh --get_session_shard_health
CPS Diagnostics HA Multi-Node Environment
--------------------------
|-------------------------------------------------------------------------------------------------------------|
| Mongo:v3.4.16                   SESSION SHARD HEALTH INFORMATION - SET TYPE : HA
            Date : 2019-01-11 03:15:26         |
|-------------------------------------------------------------------------------------------------------------|
| Total# of Session Cache Replica Set Found in mongoConfig.cfg : 2
                                                |
| Total# of Shard Configured : 1
                                                |
| Total# of Active Shards (replica-sets): 1
                                                |
| Total# of HotStandby Shards ( replica-sets): 0
```

```
                                                    |
| Default shard Configured: 1
                                                    |
| Replica-sets not part of shard configuration: set07, ( STATUS : ERR )
                                                    |
|-----------------------------------------------------------------------------------------------------------|
| setname     seed1          seed2          port      shard#              vm1_hostname
              vm2_hostname             status  |
|-----------------------------------------------------------------------------------------------------------|
| set01       sessionmgr01   sessionmgr02   27717  session_cache       sessionmgr01:27717
              sessionmgr02:27717            OK |
|-----------------------------------------------------------------------------------------------------------|
| Mongo:v3.4.16                   SESSION SHARD BUCKET INFORMATION
                                                    |
|-----------------------------------------------------------------------------------------------------------|
| { "_id" : { "shard" : 1 }, "count" : 8192 } { Status : OK }
                                                    |
|-----------------------------------------------------------------------------------------------------------|
| Mongo:v3.4.16                   SESSION SHARD INSTANCE VERSION INFORMATION
                                                    |
|-----------------------------------------------------------------------------------------------------------|
| { "_id" : "qns02-1", "version" : 10 } { Status : OK }
                                                    |
| { "_id" : "qns01-1", "version" : 10 } { Status : OK }
                                                    |
| { "_id" : "qns05-1", "version" : 10 } { Status : OK }
                                                    |
| { "_id" : "qns04-1", "version" : 10 } { Status : OK }
                                                    |
| { "_id" : "qns08-1", "version" : 10 } { Status : OK }
                                                    |
| { "_id" : "qns09-1", "version" : 10 } { Status : OK }
                                                    |
| { "_id" : "qns10-1", "version" : 10 } { Status : OK }
                                                    |
| { "_id" : "qns07-1", "version" : 10 } { Status : OK }
                                                    |
| { "_id" : "qns06-1", "version" : 10 } { Status : OK }
                                                    |
| { "_id" : "qns03-1", "version" : 10 } { Status : OK }
                                                    |
|-----------------------------------------------------------------------------------------------------------|
```

`diagnostics.sh` output on on GR/dual cluster setup with shard configuration.

```
diagnostics.sh --get_session_shard_health
CPS Diagnostics HA Multi-Node Environment
---------------------------
|-----------------------------------------------------------------------------------------------------------|
| Mongo:v3.4.16              SESSION SHARD HEALTH INFORMATION - SET TYPE : Geo - SITE_ID :
 NOT_FOUND  Date : 2019-01-11 05:50:38         |
|-----------------------------------------------------------------------------------------------------------|
| Total# of Session Cache Replica Set Found in mongoConfig.cfg : 4
                                                    |
| Total# of Shard Configured : 16
                                                    |
| Total# of Active Shards (replica-sets): 12
                                                    |
| Total# of HotStandby Shards ( replica-sets): 4
                                                    |
| Default shard Configured: 1
                                                    |
| Replica-sets not part of shard configuration: set10, ( STATUS : ERR )
                                                    |
```

```
|-------------------------------------------------------------------------------------------------------------------------------|
| setname     seed1          seed2          port      shard#              vm1_hostname
             vm2_hostname             status  |
|-------------------------------------------------------------------------------------------------------------------------------|
| set01       sessionmgr01   sessionmgr02   27717  session_cache
sessionmgr01-clusterA:27717      sessionmgr02-clusterA:27717   OK |
| set01       sessionmgr01   sessionmgr02   27717  session_cache_2
sessionmgr01-clusterA:27717      sessionmgr02-clusterA:27717   OK |
| set01       sessionmgr01   sessionmgr02   27717  session_cache_3
sessionmgr01-clusterA:27717      sessionmgr02-clusterA:27717   OK |
| set01       sessionmgr01   sessionmgr02   27717  session_cache_4
sessionmgr01-clusterA:27717      sessionmgr02-clusterA:27717   OK |
| set07       sessionmgr01   sessionmgr02   27727  session_cache
sessionmgr01-clusterA:27727      sessionmgr02-clusterA:27727   OK |
| set07       sessionmgr01   sessionmgr02   27727  session_cache_2
sessionmgr01-clusterA:27727      sessionmgr02-clusterA:27727   OK |
| set07       sessionmgr01   sessionmgr02   27727  session_cache_3
sessionmgr01-clusterA:27727      sessionmgr02-clusterA:27727   OK |
| set07       sessionmgr01   sessionmgr02   27727  session_cache_4
sessionmgr01-clusterA:27727      sessionmgr02-clusterA:27727   ERR|
| Error : Mis-match found either in hostname or port# for sessionmgr01:27737 and
sessionmgr01-clusterA:MultiplePorts - shard#: session_ca|he
| Error : Mis-match found either in hostname or port# for sessionmgr01:27737 and
sessionmgr01-clusterA:MultiplePorts - shard#: session_ca|he_2
| Error : Mis-match found either in hostname or port# for sessionmgr01:27737 and
sessionmgr01-clusterA:MultiplePorts - shard#: session_ca|he_3
| Error : Mis-match found either in hostname or port# for sessionmgr01:27737 and
sessionmgr01-clusterA:MultiplePorts - shard#: session_ca|he_4
| Error : Mis-match found either in hostname or port# for sessionmgr01-site2:27727 and
:MultiplePorts - shard#: session_cache_4          |
|-------------------------------------------------------------------------------------------------------------------------------|
| Mongo:v3.4.16                    SESSION SHARD BUCKET INFORMATION
                                                  |
|-------------------------------------------------------------------------------------------------------------------------------|
| { "_id" : { "shard" : 1 }, "count" : 1024 } { Status : OK }
                                                  |
| { "_id" : { "shard" : 2 }, "count" : 1024 } { Status : OK }
                                                  |
| { "_id" : { "shard" : 3 }, "count" : 1024 } { Status : OK }
                                                  |
| { "_id" : { "shard" : 4 }, "count" : 1024 } { Status : OK }
                                                  |
| { "_id" : { "shard" : 5 }, "count" : 1024 } { Status : OK }
                                                  |
| { "_id" : { "shard" : 6 }, "count" : 1024 } { Status : OK }
                                                  |
| { "_id" : { "shard" : 7 }, "count" : 1024 } { Status : OK }
                                                  |
| { "_id" : { "shard" : 8 }, "count" : 1024 } { Status : OK }
                                                  |
|-------------------------------------------------------------------------------------------------------------------------------|
| Mongo:v3.4.16                    SESSION SHARD INSTANCE VERSION INFORMATION
                                                  |
|-------------------------------------------------------------------------------------------------------------------------------|
| { "_id" : "qns02-1", "version" : 24 } { Status : OK }
                                                  |
| { "_id" : "qns01-1", "version" : 24 } { Status : OK }
                                                  |
|-------------------------------------------------------------------------------------------------------------------------------|
```

Sample output of --get_replica_status

- If there is no issue in connectivity or network then replica-set status looks like:

```
|-------------------------------------------------------------------------------|
|-------------------------------------------------------------------------------|
| SESSION:set01                                                                 |
| Status via arbitervip:27717 sessionmgr01:27717 sessionmgr02:27717             |
| Member-1 - 27717 : 221.1.1.38 - SECONDARY - sessionmgr02 - ON-LINE - 0 sec  - 2 |
| Member-2 - 27717 : 221.1.1.37 - PRIMARY   - sessionmgr01 - ON-LINE - ------- - 3 |
| Member-3 - 27717 : 221.1.1.40 - ARBITER   - arbitervip   - ON-LINE - ------- - 0 |
|-------------------------------------------------------------------------------|
|-------------------------------------------------------------------------------|
```

Note Two horizontal line separators are added between different replica sets.

- If there is an issue in connectivity or network then replica-set status looks like:

```
|-------------------------------------------------------------------------------|
|-------------------------------------------------------------------------------|
| SESSION:set07
  |
| Status via arbitervip:27727 sessionmgr01:27727
  |
| Member-1 - 27727 : 221.1.1.37 - SECONDARY - sessionmgr01 - ON-LINE  -  0 sec     -
2 |
| Member-2 - 27727 : 221.1.1.38 - PRIMARY   - sessionmgr02 - ON-LINE  -  -------   -
3 |
| Member-3 - 27727 : 221.1.1.40 - ARBITER   - arbitervip   - ON-LINE  -  -------   -
0 |
| Member-4 - 27727 : 221.1.1.59 - UNKNOWN   - sessionmgr03 - OFF-LINE -  0 sec     -
1 |
| Member-5 - 27727 : 221.1.1.60 - UNKNOWN   - sessionmgr04 - OFF-LINE - 18015 days -
1 |
|-------------------------------------------------------------------------------|
| Status via sessionmgr02:27727 sessionmgr03:27727
  |
| Member-1 - 27727 : 221.1.1.37 - SECONDARY - sessionmgr01   - ON-LINE  -  0 sec    -
2 |
| Member-2 - 27727 : 221.1.1.38 - PRIMARY   - sessionmgr02   - ON-LINE  -  -------  -
3 |
| Member-3 - 27727 : 221.1.1.40 - ARBITER   - arbitervip     - ON-LINE  -  -------  -
0 |
| Member-4 - 27727 : 221.1.1.59 - SECONDARY - sessionmgr03   - ON-LINE  -  0 sec    -
1 |
| Member-5 - 27727 : 221.1.1.60 - UNKNOWN   - sessionmgr04   - OFF-LINE - 18015 days-
1 |
|-------------------------------------------------------------------------------|
| Status via sessionmgr04:27727 sessionmgr05:27727
  |
| Mongodb Daemon or Host is down
  |
|-------------------------------------------------------------------------------|
|-------------------------------------------------------------------------------|
```

Note One horizontal line separator is added between different members of replica-set.

Sample output of --get_frag_status

```
diagnostics.sh --get_frag_status
CPS Diagnostics HA Multi-Node Environment
--------------------------
|-------------------------------------------------------------------------------------------------------------|
| Mongo:v3.6.9                          DATABASE LEVEL FRAGMENTATION STATUS INFORMATION
            Date : 2020-05-28 12:17:58         |
|                                                 SET TYPE : HA  [MEMBER_ROLE : PRIMARY]
                                                |
|-------------------------------------------------------------------------------------------------------------|
| setname             dbName                        storageSize(MB)   datasize(MB)
indexSize(MB)   fileSize(MB)   derivedFS(MB)  frag%   |
|-------------------------------------------------------------------------------------------------------------|
| ADMIN:set06
                                                |
| Status via sessionmgr01:27721
                                                |
| set06                diameter db not found            -               -              -
             -              -            -     |
|-------------------------------------------------------------------------------------------------------------|
| BALANCE:set02
                                                |
| Status via sessionmgr01:27718
                                                |
| set02                balance_mgmt                  2.58              1.88           0.01
        64.00          0              NoFrag  |
|-------------------------------------------------------------------------------------------------------------|
| SESSION:set01
                                                |
| Status via sessionmgr01:27717
                                                |
| set01                session_cache                 0.33              0.05           0.02
        16.00          0              NoFrag  |
|-------------------------------------------------------------------------------------------------------------|
| SESSION:set01
                                                |
| Status via sessionmgr01:27717
                                                |
| set01                sk_cache                      0.02              0.00           0.01
        16.00          0              NoFrag  |
|-------------------------------------------------------------------------------------------------------------|
| SPR:set04
                                                |
| Status via sessionmgr01:27720
                                                |
| set04                spr                           0.07              0.01           0.13
        64.00          0              NoFrag  |
|-------------------------------------------------------------------------------------------------------------|
|-------------------------------------------------------------------------------------------------------------|
| SESSION:set07
                                                |
| Status via sessionmgr02:27727
                                                |
| set07                session_cache and sk_cache db not found          -               -
             -              -            -     |
|-------------------------------------------------------------------------------------------------------------|
|-------------------------------------------------------------------------------------------------------------|
[root@#localhost ~]#
```

deploy_all.py

Deploy multiple VMs in parallel.

Syntax

```
deploy_all.py - Deploy multiple VMs in Parallel
Usage:
    ./deploy_all.py
    ./deploy_all.py --vms <vms-file>
 --help             Print usage information
 -h
 --vms              Deploy VMs, which is defined in this file
 --provision        Provision VM for future deployment
 --cleanupprovision Cleanup provisioned vmdk image
 --cleanupbackup    Cleanup backed up vmdk image
 --useprovision     Restart VM using provisioned vmdk image
 --usebackup        Restart VM using backed up vmdk image
 --poweroffvm       Power off VM
 --poweronvm        Power on VM
 --nossh            Deploy VMs using VMWare Rest API

 if no option is provided then deploy all VMs
```

Executable on VMs

Cluster Manager

Example

To deploy multiple VMs in parallel:

```
python /var/qps/install/current/scripts/deployer/support/deploy_all.py
```

To deploy a selective list of VMs in parallel in the CPS deployment.

```
python /var/qps/install/current/scripts/deployer/support/deploy_all.py --vms <filename-of-vms>
```

where <*filename-of-vms*> is the name of the file containing the list of VMs such as:

```
pcrfclient01
lb01
qns01
```

To deploy VMs using VMware Rest API.

```
python deploy_all.py --nossh
```

Option to Delete VMs

Delete VM is supported in the REST API model. You must use the following command:

```
python deploy_all.py --vms=vms_file_name --nossh -deletevm
```

where, `vms_file_name` contains the list of the VMs that needs to be deleted

Attach and Detach External Disk to VM

- The following commands must be used to attach or detach the external disks to the hosts or VMs:

  ```
  python vm_utilities.py --attachDisk <hostname>
  ```

```
python vm_utilities.py --detachDisk <hostname>
```

- To use attach/detach service, you must provide the datastore details in the `Configuration.csv` as shown:

  ```
  datastore_<hostName>,datastore13
  ```

  The hostName must be same as the hosts we are planning to attach the external disk.

  When datastoreId is not provided in the `Configuration.csv`, script prompts you to enter the datastoreId manually.

vCenter password[1]. You need to add the encrypted password.

To encrypt the password,

```
cd /var/qps/bin/support
./encrypt_pass.sh vcenter <vcenter_passwd>
```

where, *<vcenter_passwd>* is the vCenter password in plain text format.



Note The `./encrypt_pass.sh vcenter <vcenter_passwd>` command must be run on every Cluster Manager and the `Configuration.csv` file should have the password generated for the respective Cluster Manager. The encrypted passwords cannot be reused on other Cluster Managers or setups.



Note The encrypted password must be added in the `Configuration.csv` spreadsheet. To make the new password persisent, execute `import_deploy.sh`.

dump_utility.py

This collection utility is used to collect standard information from the CPS system in case of issues (system, application, database). This utility collects such information from VM, depending on type of information and VMs selected in the input.

This utility can be executed from anywhere from the terminal. Logs are printed on terminal and written to a log file: `/var/tmp/dumputility-<date_time_when_executed>.log`.



Important Warning messages related to the files that does not exist in the system will not be displayed on the terminal but will be logged only to the log file (`/var/tmp/dumputility-<date_time_when_executed>.log`).



Caution Running the dump utility can be CPU intensive.

[1] If user misses to add vcenter_hostname, vcenter_user and vcenter_passwd in the `Configuration.csv` file, after executing `deploy_all.py` script, the user is prompted to enter the vcenter information in the command line. User has to enter the unencrypted vcenter_passwd.



Important The dump utility should be run from the Cluster Manager wherever possible.

The following types of information can be collected:

- **Common Information:** This information is common for all type of issues. Information is collected from pcrfclient01 VM. If pcrfclient01 is down, information is collected from pcrfclient02 VM. If both VMs are down, information is collected from Cluster Manager VM. The following information can be fetched:
  - `about.sh` output
  - `diagnostics.sh` output
  - `list_installed_features.sh` output
  - Facter output
  - Consolidated logs
  - Bulkstats files
  - SVN dump from PB config
- **System Information:** This information is useful in troubleshooting system related issues. The following information can be fetched:
  - `sysctl -a` output
  - Information about processes running
  - Firewall configuration
  - Netstat statistics
  - Complete lsof output
  - Total number of open files
  - `ifconfig` output
  - Routing table information
  - Disk usage
  - Monit status
  - Monit summary
  - System logs
  - Sar logs
  - Dmesg logs
  - Secure logs
  - Yum logs
  - Whisper logs

  - Puppet logs

- **Application Information:** This information is useful in troubleshooting application-related issues. The following information can be fetched:
  - Contents of `/etc/broadhop` directory
  - `/var/log/broadhop` logs
  - monit status
  - monit summary

- **Database Information:** This information is useful in troubleshooting database related issues. The following information can be fetched:
  - MongoDB logs
  - Mongostat output
  - `rs.status()` output
  - `rs.conf()` output
  - `/var/qps/bin/support/mongo/session_cache_ops.sh -count` output
  - `top_qps.sh` output for 10 seconds
  - `mongotop` output for 3 seconds

- **OAM (PCRFCLIENT) Specific Data:** The following information can be fetched from OAM (pcrfclient) VMs:
  - carbon logs
  - httpd logs
  - `pcs resource show` output

- **Policy Director (lb) Specific Data:** The following information can be fetched from policy director (load balancer) VMs:
  - SNMP trap logs
  - HAproxy logs
  - `pcs resource show` output

- **Policy Server (QNS) Specific Data:** The following information can be fetched from policy server (QNS) VMs:
  - Thread level CPU/memory usage of java process
  - `jstack` output of java process
  - Policy Server (QNS) logs
  - Policy Server service logs

Syntax

```
dump_utility.py
```

The following options are supported:

- `-v,--vm-type`: Specifies type of VM or single VM name from which information has to be fetched. Multiple VMs are separated by colon. For example, `--vm-type qns:sessionmgr01`.
- `-i,--info-type`: Specifies type of information to be collected. Possible values are application, db, system, vm_specific. Multiple values are separated by colon. For example, `--info-type application:system`.
- `-o,--output-file-name`: Name of the tar file to store fetched information.
- `-h,--help`: Displays help.

Executable on VMs

- Cluster Manager
- pcrfclient01/02

Example

- To fetch system information from Policy Director (lb) VMs:

  ```
  dump_utility.py --info-type system --vm-type lb
  ```

- To fetch application and VM specific information from qns01:

  ```
  dump_utility.py --info-type application:vm_specific --vm-type qns01
  ```

  OR

  ```
  dump_utility.py --info-type application:vm_specific --vm-type sav-qns01
  ```

  where, *sav-qns01* is hostname of qns01 VM.

- To fetch database specific information from all replica sets:

  ```
  dump_utility.py --info-type db --vm-type pcrfclient:sessionmgr
  ```

Sample output:

```
dump_utility.py --info-type application --vm-type sav-qns01
Logs are also getting stored in /var/tmp/dumputility-07-06-2016-04-07-47.log
**********************************************
Collecting information, please wait...
**********************************************
Fetching common information like about.sh/list_installed_features/diagnostics etc from
pcrfclient01
This step takes time, please wait...
Fetching command outputs from pcrfclient01
Fetching files hosts file from pcrfclient01
Fetching files consolidated logs from pcrfclient01
Fetching files Bulkstats file from pcrfclient01
Fetching command outputs from qns01
Fetching files Broadhop dir from qns01
Fetching files Broadhop logs from qns01
**********************************************
```

```
Information is collected at  : /var/tmp/07-06-2016-04-07-47.tar.gz
**********************************************
Disconnecting from pcrfclient01... done.
```



Important For non-root users, certain CPS scripts (`about.sh`, `diagnostics.sh` and so on) expects sudo password. For such scripts, output is displayed on terminal and is saved in the file. Also for some data which can only be accessed by root user, permission denied related warning is displayed.

generate_encrypted_password.sh

Used to generate encrypted passwords.

Syntax

```
/var/qps/install/current/scripts/bin/support/generate_encrypted_password.sh
```

Executable on VMs

Cluster Manager

Example

```
generate_encrypted_password.sh
[root@installer ~]#  generate_encrypted_password.sh
                       ##########################################
                       #         CISCO SYSTEMS PVT LTD          #
                       ##########################################

Hello, user! You are attempting to change your password.
Great! A few ground rules:

1. No short passwords. The longer your password is, the harder it is for someone
   to guess or figure out with brute force. Minimum password length is 8.

2. There needs to be at least: one uppercase letter, one lowercase letter, one
   digit and one special character. This increases the search space and makes
   brute force guessing more difficult.
```

grafana_update_query.sh

This script is used to update the Grafana queries. As part of Python3 upgrade activity, graphitepackage is upgraded to add an escape char ('\') before pipe ('|') for the graphs to get displayed. This script replaceds the "|" with "\|" to make the query work. The default credentials will be taken as admin:admin.

Syntax

```
/var/qps/bin/support/grafana_update_query.sh
/var/qps/bin/support/grafana_update_query.sh [-h]
/var/qps/bin/support/grafana_update_query.sh [-c]
```

Options

-h [--help] - Displays the help and exits.

-c [--credentials]- This is an optional parameter that takes user and password in the format "user:password". If credentials are not provided then, the default credentials are "admin:admin".

Executable on VMs

pcrfclient01/02

Example

```
[root@pcrfclient01 ~]# /var/qps/bin/support/grafana_update_query.sh -c admin:admin
Detail log available at /var/log/broadhop/scripts/grafana_update_query.log.
 Using admin:admin as the password for grafana dashboard as provided by the user.

 Zipping the exported dashboard
Dashboards exported in /var/tmp/grafana_export20220819_114852.tar.gz
 Successfully imported "nd5bwa5-b-cpu-load_balancers_v1-0-01.json"
Successfully imported "nd5bwa5-b-cpu-lwr_v1-0-01.json"
 The total number of dashboards updated are 2.

 INFO: All dashboards are imported successfully, syncing db from pcrfclient01 to pcrfclient02
Preparing to sync grafana dashboard and user database to pcrfclient02
Grafana database synced to pcrfclient02 successfully

[root@pcrfclient01 ~]#
 [root@pcrfclient01 ~]# /var/qps/bin/support/grafana_update_query.sh
Detail log available at /var/log/broadhop/scripts/grafana_update_query.log.
 Zipping the exported dashboard
Dashboards exported in /var/tmp/grafana_export20220819_114728.tar.gz

Successfully imported "nd5bwa5-b-cpu-load_balancers_v1-0-01.json"
Successfully imported "nd5bwa5-b-cpu-lwr_v1-0-01.json"

The total number of dashboards updated are 2.

INFO: All dashboards are imported successfully, syncing db from pcrfclient01 to pcrfclient02
Preparing to sync grafana dashboard and user database to pcrfclient02
Grafana database synced to pcrfclient02 successfully
```

list_installed_features.sh

Displays the features and versions of the features that are installed on each VM in the environment.

Syntax

```
/var/qps/bin/diag/list_installed_features.sh
```

Executable on VMs

All

Example

```
[root@host /]# /var/qps/bin/diag/list_installed_features.sh
Features installed on lb01:9045
```

```
 com.broadhop.infrastructure.feature=7.0.2.r072627
 com.broadhop.iomanager.feature=7.0.2.r072627
 com.broadhop.server.runtime.product=7.0.2.r072627
 com.broadhop.snmp.feature=7.0.2.r072627
Features installed on lb02:9045
 com.broadhop.infrastructure.feature=7.0.2.r072627
 com.broadhop.iomanager.feature=7.0.2.r072627
 com.broadhop.server.runtime.product=7.0.2.r072627
 com.broadhop.snmp.feature=7.0.2.r072627
Features installed on qns01:9045
 com.broadhop.balance.service.feature=3.4.2.r071203
 com.broadhop.balance.spr.feature=3.4.2.r071203
 com.broadhop.custrefdata.service.feature=2.4.2.r072158
 com.broadhop.diameter2.local.feature=3.4.2.r072694
 com.broadhop.externaldatacache.memcache.feature=7.0.2.r072627
 com.broadhop.infrastructure.feature=7.0.2.r072627
 com.broadhop.policy.feature=7.0.2.r072627
 com.broadhop.server.runtime.product=7.0.2.r072627
 com.broadhop.snmp.feature=7.0.2.r072627
 com.broadhop.spr.dao.mongo.feature=2.3.2.r071887
 com.broadhop.spr.feature=2.3.2.r071887
 com.broadhop.ui.controlcenter.feature=3.4.2.r070445
 com.broadhop.unifiedapi.interface.feature=2.3.2.r072695
 com.broadhop.unifiedapi.ws.service.feature=2.3.2.r072695
 com.broadhop.vouchers.service.feature=3.4.2.r071203
 com.broadhop.ws.service.feature=1.5.2.r071537
Features installed on qns02:9045
 com.broadhop.balance.service.feature=3.4.2.r071203
 com.broadhop.balance.spr.feature=3.4.2.r071203
 com.broadhop.custrefdata.service.feature=2.4.2.r072158
 com.broadhop.diameter2.local.feature=3.4.2.r072694
 com.broadhop.externaldatacache.memcache.feature=7.0.2.r072627
 com.broadhop.infrastructure.feature=7.0.2.r072627
 com.broadhop.policy.feature=7.0.2.r072627
 com.broadhop.server.runtime.product=7.0.2.r072627
 com.broadhop.snmp.feature=7.0.2.r072627
 com.broadhop.spr.dao.mongo.feature=2.3.2.r071887
 com.broadhop.spr.feature=2.3.2.r071887
 com.broadhop.ui.controlcenter.feature=3.4.2.r070445
 com.broadhop.unifiedapi.interface.feature=2.3.2.r072695
 com.broadhop.unifiedapi.ws.service.feature=2.3.2.r072695
 com.broadhop.vouchers.service.feature=3.4.2.r071203
 com.broadhop.ws.service.feature=1.5.2.r071537
Features installed on qns03:9045
 com.broadhop.balance.service.feature=3.4.2.r071203
 com.broadhop.balance.spr.feature=3.4.2.r071203
 com.broadhop.custrefdata.service.feature=2.4.2.r072158
 com.broadhop.diameter2.local.feature=3.4.2.r072694
 com.broadhop.externaldatacache.memcache.feature=7.0.2.r072627
 com.broadhop.infrastructure.feature=7.0.2.r072627
 com.broadhop.policy.feature=7.0.2.r072627
 com.broadhop.server.runtime.product=7.0.2.r072627
 com.broadhop.snmp.feature=7.0.2.r072627
 com.broadhop.spr.dao.mongo.feature=2.3.2.r071887
 com.broadhop.spr.feature=2.3.2.r071887
 com.broadhop.ui.controlcenter.feature=3.4.2.r070445
 com.broadhop.unifiedapi.interface.feature=2.3.2.r072695
 com.broadhop.unifiedapi.ws.service.feature=2.3.2.r072695
 com.broadhop.vouchers.service.feature=3.4.2.r071203
 com.broadhop.ws.service.feature=1.5.2.r071537
Features installed on qns04:9045
 com.broadhop.balance.service.feature=3.4.2.r071203
 com.broadhop.balance.spr.feature=3.4.2.r071203
 com.broadhop.custrefdata.service.feature=2.4.2.r072158
```

```
 com.broadhop.diameter2.local.feature=3.4.2.r072694
 com.broadhop.externaldatacache.memcache.feature=7.0.2.r072627
 com.broadhop.infrastructure.feature=7.0.2.r072627
 com.broadhop.policy.feature=7.0.2.r072627
 com.broadhop.server.runtime.product=7.0.2.r072627
 com.broadhop.snmp.feature=7.0.2.r072627
 com.broadhop.spr.dao.mongo.feature=2.3.2.r071887
 com.broadhop.spr.feature=2.3.2.r071887
 com.broadhop.ui.controlcenter.feature=3.4.2.r070445
 com.broadhop.unifiedapi.interface.feature=2.3.2.r072695
 com.broadhop.unifiedapi.ws.service.feature=2.3.2.r072695
 com.broadhop.vouchers.service.feature=3.4.2.r071203
 com.broadhop.ws.service.feature=1.5.2.r071537
Features installed on pcrfclient01:9045
 com.broadhop.controlcenter.feature=7.0.2.r072627
 com.broadhop.faultmanagement.service.feature=1.0.2.r071534
 com.broadhop.infrastructure.feature=7.0.2.r072627
 com.broadhop.server.runtime.product=7.0.2.r072627
 com.broadhop.snmp.feature=7.0.2.r072627
Features installed on pcrfclient02:9045
 com.broadhop.controlcenter.feature=7.0.2.r072627
 com.broadhop.faultmanagement.service.feature=1.0.2.r071534
 com.broadhop.infrastructure.feature=7.0.2.r072627
 com.broadhop.server.runtime.product=7.0.2.r072627
 com.broadhop.snmp.feature=7.0.2.r072627
Features installed on all (combined)
 com.broadhop.balance.service.feature=3.4.2.r071203
 com.broadhop.balance.spr.feature=3.4.2.r071203
 com.broadhop.controlcenter.feature=7.0.2.r072627
 com.broadhop.custrefdata.service.feature=2.4.2.r072158
 com.broadhop.diameter2.local.feature=3.4.2.r072694
 com.broadhop.externaldatacache.memcache.feature=7.0.2.r072627
 com.broadhop.faultmanagement.service.feature=1.0.2.r071534
 com.broadhop.infrastructure.feature=7.0.2.r072627
 com.broadhop.iomanager.feature=7.0.2.r072627
 com.broadhop.policy.feature=7.0.2.r072627
 com.broadhop.server.runtime.product=7.0.2.r072627
 com.broadhop.snmp.feature=7.0.2.r072627
 com.broadhop.spr.dao.mongo.feature=2.3.2.r071887
 com.broadhop.spr.feature=2.3.2.r071887
 com.broadhop.ui.controlcenter.feature=3.4.2.r070445
 com.broadhop.unifiedapi.interface.feature=2.3.2.r072695
 com.broadhop.unifiedapi.ws.service.feature=2.3.2.r072695
 com.broadhop.vouchers.service.feature=3.4.2.r071203
 com.broadhop.ws.service.feature=1.5.2.r071537
```

logcollector.sh

This utility can be used to:

- Enable/disable log level for application and database components.
- Collect the logs from various VMs or specific VMs and copy them to the default /user-defined directory.
- Enable log level for a user-specified duration (optional) (automatically disables after timer expires).
- Specify VM names from which logs needs to be collected (optional).

Syntax

```
/var/qps/bin/support/logCollector.sh

Usage:

The script enables/disables logs of Database and Application and also collects logs.

--component               : component name in application level.
--duration                : specifies at what duration of time user need the logs
--log-level               : specifies debug/info/warning/error
--application             : log operaration on Application level
--database                : log operaration on database level
--on-vm                   : vm name
--enable-log              : enable logs on application level or database level
--disable-log             : enable logs on application level or database level
--collect-log             : enable logs on application level or database level
--dblogdir                : log directory where DB logs are collected
--applogdir               : log directory where Applicaion logs are collected

optionals:
option1: --on-vm
option2: --dblogdir
option3: --applogdir
option4: --duration
```

Executable on VMs

- Cluster Manager
- pcrfclient01/02

Examples

- Enable log level for component in all VMs:

  ```
  logCollector.sh --enable-log --component Balance --application level debug
  ```

- Enable log level for a component in a specifed VM:

  ```
  logCollector.sh --enable-log --component Balance --application level debug --on-vm
  vmname
  ```

- Automatic enable and disable of logs for specified time interval in seconds:

  ```
  logCollector.sh --enable-log --component Balance --application level debug --time 10
  ```

- Remove component from all VMs:

  ```
  logCollector.sh --disable-log --component Balance --application
  ```

- Remove component from specified VM:

  ```
  logCollector.sh --disable-log --component Balance --application --on-vm vmname
  ```

- Collect consolidated qns and engine logs:

  ```
  logCollector.sh --collect-log --application
  ```

- Collect consolidated qns and engine logs and qns-* logs from specified VM:

  ```
  logCollector.sh --collect-log --application --on-vm vmname
  ```

- Enable log level for specifed replicaset database in specified instance:

```
logCollector.sh --enable-log --instance sessionmgr01:27017 --dbop query --database level
 debug
```

- Automatic enable and disable log level for specified replicaset database value in seconds:

```
logCollector.sh --enable-log --instance sessionmgr01:27017 --dbop query --database level
 debug --time 10
```

- Disable log level for specified database instance:

```
logCollector.sh --disable-log --instance sessionmgr01:27017 --dbop query --database
```

- Collect log from specifed database instance:

```
logCollector.sh --collect-log --instance sessionmgr01:27017 --database
```

reinit.sh

This command is executed from Cluster Manager. It SSHs to all the CPS VMs and triggers the `/etc/init.d/vm-init.sh` script on each VM to download all the Puppet scripts, CPS softwares, /etc/hosts files and updates the VM with the new software from Cluster Manager to the VM.

Refer to vm-init.sh, on page 60, to trigger this process for a single VM as opposed to all VMs.

Syntax

```
/var/qps/install/current/scripts/upgrade/reinit.sh
```

Executable on VMs

Cluster Manager

Example

```
[root@host /]# /var/qps/install/current/scripts/upgrade/reinit.sh
Running pupdate on lab
Updating /etc/hosts file from installer VM...
Updating /etc/facter/facts.d/bxb1-lb01...
Updating /etc/puppet from installer VM...
```

restartall.sh

This command is executed from Cluster Manager. It stops and restarts all of the Policy Server (QNS) services on all VMs in the CPS cluster. This command is also executed when new software is installed on VMs.



Caution `restartall.sh` should be executed only during Maintenance Window in production deployment. As the qns process in pcrfclient VM is brought down, alarms generated during this activity may not be able to reach the SNMP server. Due to this there could be some gap in active alarms list displayed in NMS which can be ignored.

Refer to restartqns.sh, on page 29 to restart Policy Server (QNS) services on a specific VM as opposed to all VMs.

Syntax

```
/var/qps/bin/control/restartall.sh
```

Executable on VMs

Cluster Manager



Note When executing restartall.sh command from qns-admin, prefix sudo before the command.



Caution Executing `restartall.sh` will cause messages to be dropped.

Example

```
/var/qps/bin/control/restartall.sh
Currently active LB: lb01

This process will restart all QPS software on the nodes in this order:

lb02 pcrfclient02 qns01 qns02 pcrfclient01 lb01
```

restartqns.sh

This command stops and restarts all Policy Server (QNS) services on the target VM.

Syntax

```
/var/qps/bin/control/restartqns.sh hostname
```

Executable on VMs

Cluster Manager



Note When executing restartqns.sh command from qns-admin, prefix sudo before the command.

Example

```
/var/qps/bin/control/restartqns.sh qns01
/var/qps/bin/control/restartqns.sh pcrfclient01
```

runonall.sh

Executes a command, as provided as an argument, on all of the VMs listed in the servers file. These commands must be run as the CPS user on the remote VMs, or they will fail to execute properly.

Syntax

```
/var/qps/bin/control/runonall.sh <executable command>
```

Executable on VMs

All

Note In case executing runonall.sh command from qns-admin, prefix sudo before the command.

Example

```
/var/qps/bin/control/runonall.sh ntpdate -u
```

service

This command is used to control individual services on each VM.

Syntax

```
service < option > | --status-all | [ service_name [ command | --full-restart ] ]
```

Caution Do not use this command for any services managed by the monit service. Use the monit summary command to view the list of services managed by monit. The list of services managed by monit is different on each CPS VM.

session_cache_ops.sh

This command provides information about, and performs operations on the session and SK databases.

Syntax

```
/var/qps/bin/support/mongo/session_cache_ops.sh <Argument1> <Argument2> <Argument3>
 <Argument1>: --count or --remove
     --count session     : Will print the number of sessions present in session_cache* db
     --count skdb        : Will print the number of sessions present in sk_cache* db
     --remove session    : Will remove the sessions from the session_cache* dbs
     --remove skdb       : Will remove the sessions from the sk_cache* dbs
     --statistics-count  : Will print the number of sessions types present in all
session_cache* db
     --add-shard session : Will support to configure session sharding and also support the
 hot standby session sharding
     --add-shard skdb    : Will support to configure session sharding and also support the
 hot standby sk_cache sharding
     --add-ringset       : Will add new set to the ring
     --db-shrink session : Will shrink session_cache* dbs data files
     --db-shrink skdb    : Will shrink sk_cache* dbs data files
```

```
 <Argument2>: session or skdb database
 <Argument3>: site1 or site2 or site3 ... siten
                This argument for GR only, in GR setup user need to pass the site
number(site1 or site2 ...) as second argument

Example for HA setup
 sh session_cache_ops.sh --count session/skdb
 sh session_cache_ops.sh --remove session/skdb
 sh session_cache_ops.sh --db-shrink session/skdb

Example for GR setup
 sh session_cache_ops.sh --count session/skdb site1
 sh session_cache_ops.sh --remove session/skdb site1
```

Options

--count session/--count skdb

`--count session`: This option prints the number of sessions present in session_cache* database.

`--count skdb`: This option prints the number of sessions present in sk_cache* database.

Example 1:

For HA setup: `session_cache_ops.sh --count session`

For GR setup: `session_cach_options.sh --count session <siteName>`

Example 2:

For HA setup: `session_cache_ops.sh --count skdb`

For GR setup: `session_cach_options.sh --count skdb <siteName>`

--remove session/--remove skdb

`--remove session`: This option removes the sessions from the session_cache* databases.

`--remove skdb`: This option removes the sessions from the sk_cache* databases.

Warning You will be prompted to confirm this action after running this command. If you proceed, this will remove existing sessions/SKDB in the replica-set.

Example1:

For HA setup: `session_cach_options.sh --remove session`

For GR setup: `session_cach_options.sh --remove session <siteName>`

Example 2:

For HA setup: `session_cach_options.sh --remove skdb`

For GR setup: `session_cach_options.sh --remove skdb <siteName>`

--statistics-count

This option prints statistics count of the sessions (types if the session Gx, Rx, and so on) in all available session_cache* databases.

Example

```
# session_cache_ops.sh --statistics-count
Session cache operation script
Tue Dec 22 02:28:38 MST 2015
-----------------------------------------------------
Sessions statistic counter on Genaral
-----------------------------------------------------
  Session Type         : Session Count
-----------------------------------------------------
ADMIN-SET1
  EDR                  : 5
  GX_SCE               : 10
-----------------------------------------------------
```

--add-shard session/--add-shard skdb

`--add-shard session`: Adds session shards to the session database, either normal shards or hot standby shards.

`--add-shard skdb`: Adds session shards to the sk_cache database, either normal shards or hot standby shards.

Example 1:

For HA setup: `session_cache_ops.sh --add-shard`

```
# session_cache_ops.sh --add-shard
Session cache operation script
Tue Dec 22 02:22:24 MST 2015
            Session Sharding
-----------------------------------------------------

Select type of session shard  Default      [*]
                              Hot Standby  [ ]

Sessionmgr pairs : sessionmgr01:sessionmgr02:27717

Session shards per pair : 4

Creating Session sharding [ Done ]


-----------------------------------------------------
Note :
- Press 'y' to select the shard type
- If sharding needed for multiple sessionmgr vms with port
  please provide sessionmge vm with port separated by ':',
  and pair separated by ','
(Ex: sessionmgr01:sessionmgr02:27717,sessionmgr03:sessionmgr04:27717)
```

For GR setup: `session_cach_options.sh --add-shard session <siteName>`



Note If sharding is required for GR setup, then add *site_id* at end of sessionmgr VM and port, separated by colon (:) in sessionmgr pairs parameter.

For example, `sessionmgr01:sessionmgr02:27717:SITE1`

Example 2:

For HA setup: `session_cach_options.sh --add-shard skdb`

For GR setup: `session_cach_options.sh --add-shard skdb <siteName>`

--add-ringset

This option adds a new set to the ring.

Example

```
# session_cache_ops.sh --add-ringset
Session cache operation script
 Wed Jun  8 18:23:15 EDT 2016
Session cache operation script: addRingSet
 The progress of this script can be monitored in the following log:
/var/log/broadhop/scripts/session_cache_ops_08062016_182315.log
Note :
 Please provide sessionmgr vm separated by ':' and pair separated by ','

 (Ex HA: sessionmgr01-lab:sessionmgr02-lab)
 (Ex GR: sessionmgr01-site1:sessionmgr02-site1,sessionmgr01-site2:sessionmgr02-site2)
Enter cache servers: sessionmgr01,sessionmgr02
Verifying Qnses processes is running
 Adding set sessionmgr01,sessionmgr02 to ring
 Executing OSGI Command> setSkRingSet 1 4 sessionmgr01:11211,
 Executing OSGI Command> setSkRingSet 1 4 sessionmgr02:11211,
 Executing OSGI Command> rebuildSkRing 1
 Ringset added successfully
```

--db-shrink session/--db-shrink skdb

This option is used after clean of all sessions from session_cache* and sk_cache* databases. It performs a synchronization operation by removing session cache database files and copying data files from primary member. This reduces the database size and compact database files and/or reclaim disk space. Currently, this operation does not support specific to replica-set.



Note Currently, this operation is supported only for HA setups.

This option must be performed in maintenance window (if required in production) and when there is no session data.

Example1:

```
session_cache_ops.sh --db-shrink session
Session cache operation script
Fri May 13 06:17:42 EDT 2016
-------------------------------------------------------
Session DB Shrink Replica-set
-------------------------------------------------------
CAUTION: This option must performed in maintenance window and no session data
Are you sure you want to continue (y/yes or n/no)? : yes
Verify log /var/log/broadhop/scripts/session_cache_ops_13052016_061742.log

DB Shrink operation completed successfully for set - SESSION-SET1
    DB File count before Shrink: 36
    DB File count after  Shrink: 16
    DB Size before Shrink: 4.2G
    DB Size after  Shrink: 256M
```

```
DB Shrink operation completed successfully for set - SESSION-SET2
    DB File count before Shrink: 28
    DB File count after  Shrink: 8
    DB Size before Shrink: 4.0G
    DB Size after  Shrink: 128M
```

Example 2:

```
session_cache_ops.sh --db-shrink skdb
```

Executable on VMs

pcrfclient01/02

set_priority.sh

This command sets the priorities of replica-sets, and replica-set members for High Availability (HA) or Geo-Redundant (GR) CPS deployments.

By default, priority of mongo databases, replica-sets, and members are set in order (with higher priority) as defined in the Mongo Config (mongoConfig.cfg).

Use the `diagnostics.sh --get_replica_status` command to view the status and current priorities of all databases replica-sets.



Note If a member is shown in an unknown state, it is likely that the member is not accessible from one of other members, mostly an arbiter. In that case, you must go to that member and check its connectivity with other members.

Also, you can login to mongo on that member and check its actual status.

Syntax

```
/var/qps/bin/support/mongo/set_priority.sh
```

The following options are supported:

- **Mandatory Options:**

  ```
  --db <db_name>
       [all|session|spr|admin|balance|report|portal|audit|bindings]
  ```

  The `set_priority --db all` command would set the priority of all replica-sets listed in mongoConfig.cfg in descending order. The member that is listed first in the configuration would be assigned the highest priority.

  The `set_priority --db session` command would set the priority of all replica-sets of db type SESSION. By default, priorities are set in descending order.

- **General Options:**

  ```
  --h [ --help ]                show syntax and usage information for this script
  --version                     show version information of this script
  --asc                         Set priority in ascending order (default is descending)
  --dsc                         Set priority in descending order
  ```

```
--priority <0|1000>           Set specific priority
--force [false|true]         forces the new priority to be applied (default is false).
```



Note The `--priority <0|1000>` option is not currently supported. Do not use.



Caution Do not use the `--force` option unless instructed by a Cisco representative. By default, the `set_priority.sh` script will only attempt to set the priorities when all members of a replica set are in a healthy state. The `--force` option can be used when the members are NOT in a healthy state.

- **Specific Replica-set Options:**

  `--replSet <setname>` specifies the replica-set name

  This option enables you to specify priority for a particular replica-set. You must provide the *<setname>*.

- **Geo-Redundancy Options:**

  `--sitename [site1|site2]` specifies the GR site to which the operation applies

  This option enables you to specify a GR site. The mongoConfig.cfg must have relevant start and end tags (like #SITE1_START and #SITE1_END).

Executable on VMs

Cluster Manager

Examples

High Availability Options:

```
set_priority.sh --db all
set_priority.sh --db session
set_priority.sh --db session --asc
set_priority.sh --db session --replSet set01
```

Geo-Redundancy Options:

```
set_priority.sh --db session --replSet set01 --sitename <site1|site2>
set_priority.sh --db session --replSet set01 --sitename <site1|site2>
set_priority.sh --db session --replSet set01 --sitename <site1|site2> --force true
```

startall.sh

This command is executed from Cluster Manager. It starts all Policy Server (QNS) services on all VMs in the CPS cluster. This command is also executed when a new software is installed on VMs.

Caution `startall.sh` should be executed only during Maintenance Window in production deployment. As the qns process in pcrfclient VM is brought down, alarms generated during this activity may not be able to reach the SNMP server. Due to this there could be some gap in active alarms list displayed in NMS which can be ignored.

Refer to startqns.sh, on page 36 to start services on a specific VM as opposed to all VMs.

Syntax

```
/var/qps/bin/control/startall.sh
```

Note When executing startall.sh command from qns-admin, prefix sudo before the command.

Executable on VMs

Cluster Manager

Example

```
/var/qps/bin/control/startall.sh
```

startqns.sh

This command is executed from Cluster Manager. It starts all Policy Server (QNS) services on the specified VM.

Syntax

```
/var/qps/bin/control/startqns.sh hostname
```

Note When executing startqns.sh command from qns-admin, prefix sudo before the command.

Executable on VMs

Cluster Manager

Example

```
/var/qps/bin/control/startqns.sh qns01
/var/qps/bin/control/startqns.sh pcrfclient01
```

statusall.sh

This command displays whether the services managed by monit are stopped or running on all VMs. This script can be executed from Cluster Manager or OAM (pcrfclient).

Syntax

```
/var/qps/bin/control/statusall.sh
```

Note When executing statusall.sh command from qns-admin, prefix sudo before the command.

Executable on VMs

- Cluster Manager
- pcrfclient01/02

Output

For each process or program, the command displays:

- **Status**
  - Running – the process/Program is healthy and running
  - Does not exist – the process id specified in the /var/run/processname-pid does not exist. This is a cause for concern if recurring.
  - Waiting – This is normal for a program /process monitored by monit
  - Status ok – This is normal for a program monitored by monit
- **Monitoring Status**
  - Monitored – The process/program is being monitored
  - Not Monitored – The process/program is not under the control of monit
  - Waiting – A transient state which reports as waiting depending upon when the statusall.sh command is run which internally uses monit status command.

Note For more details, see: https://bitbucket.org/tildeslash/monit/issue/114/.

- **Uptime**

  The number of days, hours, and minutes the process or program has been running.

Example

```
[root@host /]# /var/qps/bin/control/statusall.sh
Executing 'sudo /usr/bin/monit status' on all QNS Servers
The Monit daemon 5.5 uptime: 2h 12m
Process 'snmptrapd'
  status                            Running
  monitoring status                 Monitored
  uptime                            15h 33m
Process 'snmpd'
  status                            Running
  monitoring status                 Monitored
  uptime                            2h 12m
Process 'sessionmgr-27017'
  status                            Running
  monitoring status                 Monitored
  uptime                            15h 33m
Process 'qns-2'
  status                            Running
  monitoring status                 Monitored
  uptime                            15h 33m
Process 'qns-1'
  status                            Running
  monitoring status                 Monitored
  uptime                            15h 33m
Process 'memcached'
  status                            Running
  monitoring status                 Monitored
  uptime                            15h 33m
Process 'logstash'
  status                            Running
  monitoring status                 Monitored
  uptime                            15h 33m
Process 'elasticsearch'
  status                            Running
  monitoring status                 Monitored
  uptime                            15h 33m
Process 'collectd'
  status                            Running
  monitoring status                 Monitored
  uptime                            15h 33m
Process 'carbon-cache'
  status                            Running
  monitoring status                 Monitored
  uptime                            15h 33m
Process 'carbon-aggregator'
  status                            Running
  monitoring status                 Monitored
  uptime                            15h 33m
System 'lab'
  status                            Running
  monitoring status                 Monitored
Connection to 127.0.0.1 closed.
```

stopall.sh

This command is executed from Cluster Manager. It stops the Policy Server (QNS) services on each VMs in the CPS cluster.

Caution `stopall.sh` should be executed only during Maintenance Window in production deployment. As the qns process in pcrfclient VM is brought down, alarms generated during this activity may not be able to reach the SNMP server. Due to this there could be some gap in active alarms list displayed in NMS which can be ignored.

Refer to stopqns.sh, on page 39 to stop Policy Server (QNS) services on a specific VM as opposed to all VMs.

Syntax

```
/var/qps/bin/control/stopall.sh
```

Note When executing stopall.sh command from qns-admin, prefix sudo before the command.

Executable on VMs

Cluster Manager

Example

```
/var/qps/bin/control/stopall.sh
```

stopqns.sh

This command is executed from Cluster Manager. It stops all Policy Server (QNS) services on the specified VM.

Syntax

```
/var/qps/bin/control/stopqns.sh hostname
```

Note When executing stopqns.sh command from qns-admin, prefix sudo before the command.

Executable on VMs

Cluster Manager

Example

```
/var/qps/bin/control/stopqns.sh qns01
```

summaryall.sh

This command provides a brief status of the services managed by monit on all VMs in the CPS cluster.

Syntax

```
/var/qps/bin/control/summaryall.sh
```



Note When executing summaryall.sh command from qns-admin, prefix sudo before the command.

Executable on VMs

Cluster Manager

Example

```
/var/qps/bin/control/summaryall.sh
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmptrapd'                 Running
Process 'snmpd'                     Running
Program 'vip_trap'                  Status ok
Program 'gr_site_status_trap'       Status ok
Process 'redis-2'                   Running
Process 'redis-1'                   Running
Process 'redis'                     Running
Process 'qns-4'                     Running
Process 'qns-3'                     Running
Process 'qns-2'                     Running
Process 'qns-1'                     Running
Process 'corosync'                  Running
File 'monitor-qns-4'                Accessible
File 'monitor-qns-3'                Accessible
File 'monitor-qns-2'                Accessible
File 'monitor-qns-1'                Accessible
Process 'memcached'                 Running
Process 'irqbalance'                Running
Process 'haproxy-diameter'          Running
Process 'haproxy'                   Running
Process 'cutter'                    Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'lb01'                       Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmptrapd'                 Running
Process 'snmpd'                     Running
Program 'vip_trap'                  Status ok
Program 'gr_site_status_trap'       Status ok
Process 'redis-2'                   Running
Process 'redis-1'                   Running
```

```
Process 'redis'                     Running
Process 'qns-4'                     Running
Process 'qns-3'                     Running
Process 'qns-2'                     Running
Process 'qns-1'                     Running
Process 'corosync'                  Running
File 'monitor-qns-4'                Accessible
File 'monitor-qns-3'                Accessible
File 'monitor-qns-2'                Accessible
File 'monitor-qns-1'                Accessible
Process 'memcached'                 Running
Process 'irqbalance'                Running
Process 'haproxy-diameter'          Running
Process 'haproxy'                   Running
Process 'cutter'                    Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'lb02'                       Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr01'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr02'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns01'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
```

```
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns02'                      Running
The Monit daemon 5.14 uptime: 5d 19h 19m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Program 'kpi_trap'                  Status ok
Program 'db_trap'                   Status ok
Program 'failover_trap'             Status ok
Program 'qps_process_trap'          Status ok
Program 'admin_login_trap'          Status ok
Program 'vm_trap'                   Status ok
Program 'qps_message_trap'          Status ok
Program 'ldap_message_trap'         Status ok
Process 'qns-2'                     Running
Process 'qns-1'                     Running
Process 'corosync'                  Running
Program 'monitor_replica'           Status ok
File 'monitor-qns-2'                Accessible
File 'monitor-qns-1'                Accessible
Process 'logstash'                  Running
Program 'mon_db_for_lb_failover'    Status ok
Program 'mon_db_for_callmodel'      Status ok
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'carbon-cache'              Running
Process 'carbon-aggregator'         Running
Process 'auditrpms.sh'              Running
System 'pcrfclient01'               Running
The Monit daemon 5.14 uptime: 5d 19h 52m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Program 'kpi_trap'                  Status ok
Program 'db_trap'                   Status ok
Program 'failover_trap'             Status ok
Program 'qps_process_trap'          Status ok
Program 'admin_login_trap'          Status ok
Program 'vm_trap'                   Status ok
Program 'qps_message_trap'          Status ok
Program 'ldap_message_trap'         Status ok
Process 'qns-2'                     Running
Process 'qns-1'                     Running
Process 'corosync'                  Running
Program 'monitor_replica'           Status ok
File 'monitor-qns-2'                Accessible
File 'monitor-qns-1'                Accessible
Process 'logstash'                  Running
Program 'mon_db_for_lb_failover'    Status ok
Program 'mon_db_for_callmodel'      Status ok
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'carbon-cache'              Running
Process 'carbon-aggregator'         Running
Process 'auditrpms.sh'              Running
System 'pcrfclient02'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
```

```
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns03'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns04'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr03'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr04'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns05'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
```

```
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns06'                      Running
The Monit daemon 5.14 uptime: 6d 10h 52m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns07'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns08'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns09'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns10'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns11'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m
```

```
Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns12'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr05'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr06'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr07'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr08'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
```

```
Process 'auditrpms.sh'              Running
System 'sessionmgr13'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr14'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns13'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr09'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns14'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr10'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
```

```
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns15'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr11'               Running
The Monit daemon 5.14 uptime: 6d 10h 52m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns16'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'memcached'                 Running
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'sessionmgr12'               Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
System 'qns17'                      Running
The Monit daemon 5.14 uptime: 6d 10h 51m

Process 'whisper'                   Running
Process 'snmpd'                     Running
Process 'qns-1'                     Running
File 'monitor-qns-1'                Accessible
Program 'cpu_load_monitor'          Status ok
Program 'cpu_load_trap'             Status ok
Program 'gen_low_mem_trap'          Status ok
Process 'collectd'                  Running
Process 'auditrpms.sh'              Running
```

```
System 'qns18'                      Running

● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 29532 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 4919 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 4937 (java)
   CGroup: /system.slice/qns-1.service
           └─4937 /usr/bin/java -server -XX:+PrintGCDetails -XX:+PrintGCTimeStamps
-XX:+PrintGCDateStamps -XX:+PrintTenuringDistribution -XX...
● qns-2.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-2.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 29426 ExecStop=/var/qps/bin/support/startqps stop 2 (code=exited, status=0/SUCCESS)

  Process: 4860 ExecStart=/var/qps/bin/support/startqps start 2 (code=exited,
status=0/SUCCESS)
 Main PID: 4876 (java)
   CGroup: /system.slice/qns-2.service
           └─4876 /usr/bin/java -server -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
 -XX:+TieredCompilation -XX:ReservedCodeCacheSize...
● qns-3.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-3.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 29846 ExecStop=/var/qps/bin/support/startqps stop 3 (code=exited, status=0/SUCCESS)

  Process: 4804 ExecStart=/var/qps/bin/support/startqps start 3 (code=exited,
status=0/SUCCESS)
 Main PID: 4820 (java)
   CGroup: /system.slice/qns-3.service
           └─4820 /usr/bin/java -server -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
 -XX:+TieredCompilation -XX:ReservedCodeCacheSize...
● qns-4.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-4.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 29697 ExecStop=/var/qps/bin/support/startqps stop 4 (code=exited, status=0/SUCCESS)

  Process: 4749 ExecStart=/var/qps/bin/support/startqps start 4 (code=exited,
status=0/SUCCESS)
 Main PID: 4765 (java)
   CGroup: /system.slice/qns-4.service
           └─4765 /usr/bin/java -server -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
 -XX:+TieredCompilation -XX:ReservedCodeCacheSize...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 17896 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 11745 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 11761 (java)
   CGroup: /system.slice/qns-1.service
           └─11761 /usr/bin/java -server -XX:+PrintGCDetails -XX:+PrintGCTimeStamps
-XX:+PrintGCDateStamps -XX:+PrintTenuringDistribution -X...
● qns-2.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-2.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 16763 ExecStop=/var/qps/bin/support/startqps stop 2 (code=exited, status=0/SUCCESS)

  Process: 11690 ExecStart=/var/qps/bin/support/startqps start 2 (code=exited,
status=0/SUCCESS)
```

```
 Main PID: 11706 (java)
   CGroup: /system.slice/qns-2.service
           └─11706 /usr/bin/java -server -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
 -XX:+TieredCompilation -XX:ReservedCodeCacheSiz...
● qns-3.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-3.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 15817 ExecStop=/var/qps/bin/support/startqps stop 3 (code=exited, status=0/SUCCESS)

  Process: 11888 ExecStart=/var/qps/bin/support/startqps start 3 (code=exited,
status=0/SUCCESS)
 Main PID: 11906 (java)
   CGroup: /system.slice/qns-3.service
           └─11906 /usr/bin/java -server -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
 -XX:+TieredCompilation -XX:ReservedCodeCacheSiz...
● qns-4.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-4.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 14704 ExecStop=/var/qps/bin/support/startqps stop 4 (code=exited, status=0/SUCCESS)

  Process: 11812 ExecStart=/var/qps/bin/support/startqps start 4 (code=exited,
status=0/SUCCESS)
 Main PID: 11848 (java)
   CGroup: /system.slice/qns-4.service
           └─11848 /usr/bin/java -server -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
 -XX:+TieredCompilation -XX:ReservedCodeCacheSiz...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:49 IST; 4 days ago
  Process: 30239 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 805 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited, status=0/SUCCESS)

 Main PID: 821 (java)
   CGroup: /system.slice/qns-1.service
           └─821 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -Xm...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:47 IST; 4 days ago
  Process: 10934 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 13549 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 13565 (java)
   CGroup: /system.slice/qns-1.service
           └─13565 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 9805 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 29166 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 29204 (java)
   CGroup: /system.slice/qns-1.service
           └─29204 /usr/bin/java -server -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
 -Xms512m -Xmx1024m -javaagent:/opt/broadhop/qns...
● qns-2.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-2.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 9787 ExecStop=/var/qps/bin/support/startqps stop 2 (code=exited, status=0/SUCCESS)
```

```
  Process: 28958 ExecStart=/var/qps/bin/support/startqps start 2 (code=exited,
status=0/SUCCESS)
 Main PID: 29007 (java)
   CGroup: /system.slice/qns-2.service
           └─29007 /usr/java/default/bin/java -server -XX:+UnlockDiagnosticVMOptions
-XX:+UnsyncloadClass -Xms2048m -Xmx2048m -javaagent:/op...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 16610 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 18158 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 18185 (java)
   CGroup: /system.slice/qns-1.service
          └─18185 /usr/bin/java -server -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
 -Xms512m -Xmx1024m -javaagent:/opt/broadhop/qns...
● qns-2.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-2.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 16592 ExecStop=/var/qps/bin/support/startqps stop 2 (code=exited, status=0/SUCCESS)

  Process: 17959 ExecStart=/var/qps/bin/support/startqps start 2 (code=exited,
status=0/SUCCESS)
 Main PID: 17977 (java)
   CGroup: /system.slice/qns-2.service
           └─17977 /usr/java/default/bin/java -server -XX:+UnlockDiagnosticVMOptions
-XX:+UnsyncloadClass -Xms2048m -Xmx2048m -javaagent:/op...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:49 IST; 4 days ago
  Process: 9733 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 12732 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 12748 (java)
   CGroup: /system.slice/qns-1.service
           └─12748 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:47 IST; 4 days ago
  Process: 8925 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 11537 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 11554 (java)
   CGroup: /system.slice/qns-1.service
           └─11554 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:47 IST; 4 days ago
  Process: 8352 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 11089 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 11111 (java)
   CGroup: /system.slice/qns-1.service
           └─11111 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
```

```
  Process: 6327 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 9157 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 9174 (java)
   CGroup: /system.slice/qns-1.service
           └─9174 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 596 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 3623 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 3639 (java)
   CGroup: /system.slice/qns-1.service
           └─3639 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 6463 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 9160 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 9176 (java)
   CGroup: /system.slice/qns-1.service
           └─9176 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:47 IST; 4 days ago
  Process: 2125 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 4861 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 4877 (java)
   CGroup: /system.slice/qns-1.service
           └─4877 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 3601 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 6350 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 6372 (java)
   CGroup: /system.slice/qns-1.service
           └─6372 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 32517 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 3098 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 3114 (java)
   CGroup: /system.slice/qns-1.service
           └─3114 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
```

```
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 6986 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 9788 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 9808 (java)
   CGroup: /system.slice/qns-1.service
           └─9808 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:49 IST; 4 days ago
  Process: 2578 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 5592 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 5609 (java)
   CGroup: /system.slice/qns-1.service
           └─5609 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 6041 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 8728 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 8746 (java)
   CGroup: /system.slice/qns-1.service
           └─8746 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:47 IST; 4 days ago
  Process: 32142 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 2435 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 2458 (java)
   CGroup: /system.slice/qns-1.service
           └─2458 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 2369 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 5110 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 5129 (java)
   CGroup: /system.slice/qns-1.service
           └─5129 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 2900 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 5889 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 5905 (java)
   CGroup: /system.slice/qns-1.service
           └─5905 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
```

```
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -X...
● qns-1.service - CPS Application Start Script
   Loaded: loaded (/etc/systemd/system/qns-1.service; static; vendor preset: disabled)
   Active: active (running) since Wed 2018-04-18 18:18:46 IST; 4 days ago
  Process: 27907 ExecStop=/var/qps/bin/support/startqps stop 1 (code=exited, status=0/SUCCESS)

  Process: 30489 ExecStart=/var/qps/bin/support/startqps start 1 (code=exited,
status=0/SUCCESS)
 Main PID: 30505 (java)
   CGroup: /system.slice/qns-1.service
           └─30505 /usr/bin/java -XX:+UnlockDiagnosticVMOptions -XX:+UnsyncloadClass
-XX:+TieredCompilation -XX:+DisableExplicitGC -server -...
[root@installer ~]#
```

sync_times.sh

This command synchronizes the time between all CPS VMs.

Syntax

For High Availability deployments:

```
/var/qps/bin/support/sync_times.sh ha
```

For Geographic Redundancy deployments:

```
/var/qps/bin/support/sync_times.sh gr
```

Executable on VMs

Cluster Manager

To check the current clock skew of the system, execute the following command:

```
diagnostics.sh --clock_skew -v
```

The output numbers are in seconds. Refer to the following sample output:

```
CPS Diagnostics Multi-Node Environment
--------------------------
Checking for clock skew...
Clock skew not detected between qns01 and lb01. Skew: 1...[PASS]
Clock skew not detected between qns02 and lb01. Skew: 0...[PASS]
Clock skew not detected between lb01 and lb01. Skew: 0...[PASS]
Clock skew not detected between lb02 and lb01. Skew: 0...[PASS]
Clock skew not detected between sessionmgr01 and lb01. Skew: 0...[PASS]
Clock skew not detected between sessionmgr02 and lb01. Skew: 0...[PASS]
Clock skew not detected between pcrfclient01 and lb01. Skew: 0...[PASS]
Clock skew not detected between pcrfclient02 and lb01. Skew: 0...[PASS]
```

syncconfig.sh

This command is executed to synchronize the changes to the VM nodes. The files in the `/var/qps/current_config/etc/broadhop` are zipped to a file and stored in `/var/www/html`. The Puppet scripts in VM downloads the file to the VM and applies the changes to the VM.

Syntax

```
/var/qps/bin/update/syncconfig.sh
/var/qps/install/currentfolder/scripts/bin/update/syncconfig.sh
```

where, currentfolder is version of the current installation.

For example, for CPS 7.0.5, it is 7.0.5.

```
/var/qps/install/7.0.5/scripts/bin/update/syncconfig.sh
```

Executable on VMs

All

Example

```
[root@host /]# /var/qps/bin/update/syncconfig.sh
Building /etc/broadhop...
Copying to /var/qps/images/etc.tar.gz...
Creating MD5 Checksum...
```

terminatesessions

This utility submits bulk session terminate requests.



Note For fresh installations of CPS 10.1.0, this feature is enabled by default. However, for upgrades from systems prior to CPS 10.1.0, this feature needs to be enabled as follows:

In the `/etc/broadhop/pcrf/features` file, add **`com.broadhop.policy.command.feature`**. For more information, refer to "Customize Features" in the "Deployment" section in *CPS Installation Guide for VMware*



Important To eliminate the impact of TPS and session count in the system, add the following entry in the `/etc/broadhop/qns.conf` file on the Cluster Manager VM:

```
-Ddistribution.blocked.duration=1800000
```

The entry value is in milliseconds, which converts to 30 minutes. The recommended value is multiples of 30 minutes.

After configuring the above values, run the following commands:

```
copytoall.sh /etc/broadhop/qns.conf
stopall.sh
startall.sh
```

Syntax

```
/var/qps/bin/support/command --username <USERNAME> --password <PASSWORD> terminatesessions
--criteria <criteria> [--disable_signaling <y/n - default n>] [--rate <throttling rate -
default 100>]
```

Where,

- --username and --password are the user's Control Center credentials.
- --criteria: Identifies the session. Following are some examples:
  - ALL
  - APN eq SOS
  - APN except SOS
  - IMSIRANGE A-B



Remember For the termination of sessions without any criteria (ALL) and termination of sessions with IMSI range as criteria (IMSIRANGE A-B), CPS must be configured to create sessions with **tags** field having **ImsiKey:imsi:<imsivalue>** as element. If this element is not configured, the command does not terminate sessions for ALL and IMSI range as criteria.

- --disable_signaling: Disables signaling on external interface.
- --rate: Defines the throttling rate.

`/var/qps/bin/support/command terminatesessions -h` shows help related to the command option.

Executable on VMs

pcrfclient01/02

Example

```
/var/qps/bin/support/command -u testuser -p cisco123 terminatesessions -c "ALL" -d y
Do you want to proceed with delete command? [y]|n: y
 deleteBulkSession testuser "ALL" false 100
User is : testuser
Criterion is : ALL
Command Criteria type   : ALL
Command Criteria value   : null
Signalling is set to : false
Rate-Limiter value is set to : 100
CommandId submitted successfully : 1471941788159
```

show

This utility shows the status of the submitted command(s).

Syntax

```
/var/qps/bin/support/command --username <USERNAME> --password <PASSWORD> show [--all <All>]
[--id <ID>]
```

Where,

- --username and --password are the user's Control Center credentials.

- --all: Shows the status of all the command requests submitted.
- --id: Shows the status of the submitted command.

Executable on VMs

pcrfclient01/02

Example

```
/var/qps/bin/support/command -u testuser -p cisco123 show
 getCommands
BulkTerminateCommand(1471492548449)- state: COMPLETED submitted: Thu Aug 18 09:25:48 IST
2016 status:
[Eligible for Deletion = 1, Submitted For Deletion = 1, Not Submitted Due To Later Creation
 = 0]
BulkTerminateCommand(1471492739896)- state: COMPLETED submitted: Thu Aug 18 09:28:59 IST
2016 status:
[Eligible for Deletion = 1, Submitted For Deletion = 1, Not Submitted Due To Later Creation
 = 0]
BulkTerminateCommand(1471493146320)- state: COMPLETED submitted: Thu Aug 18 09:35:46 IST
2016 status:
[Eligible for Deletion = 1, Submitted For Deletion = 1, Not Submitted Due To Later Creation
 = 0]
BulkTerminateCommand(1471494348267)- state: COMPLETED submitted: Thu Aug 18 09:55:48 IST
2016 status:
[Eligible for Deletion = 1, Submitted For Deletion = 1, Not Submitted Due To Later Creation
 = 0]
BulkTerminateCommand(1471494588431)- state: COMPLETED submitted: Thu Aug 18 09:59:48 IST
2016 status:
[Eligible for Deletion = 1, Submitted For Deletion = 1, Not Submitted Due To Later Creation
 = 0]


/var/qps/bin/support/command -u testuser -p cisco123 show --id 1471494588431
 getCommand 1471494588431
BulkTerminateCommand(1471494588431)- state: COMPLETED submitted: Thu Aug 18 09:59:48 IST
2016 status:
[Eligible for Deletion = 1, Submitted For Deletion = 1, Not Submitted Due To Later Creation
 = 0]
```

cancel

This utility cancels the further execution of the submitted command.

Syntax

```
/var/qps/bin/support/command --username <USERNAME --password <PASSWORD> cancel --id <ID>
```

Where,

- --username and --password are the user's Control Center credentials.
- --id: ID of the submitted command.

Executable on VMs

pcrfclient01/02

Example

```
/var/qps/bin/support/command -u testuser -p cisco123 cancel --id 1471941788159
Do you want to proceed with cancel command? [y]|n: y
 cancelCommand 1471941788159
Command Already completed: 1471941788159
```

top_qps.sh

This command displays performance statistics of CPS VMs.

Syntax

```
/var/qps/bin/control/top_qps.sh <time>
```

where <time> is the number of seconds for which the statistics are to be captured.



Note When executing top_qps.sh command from qns-admin, prefix sudo before the command.

Executable on VMs

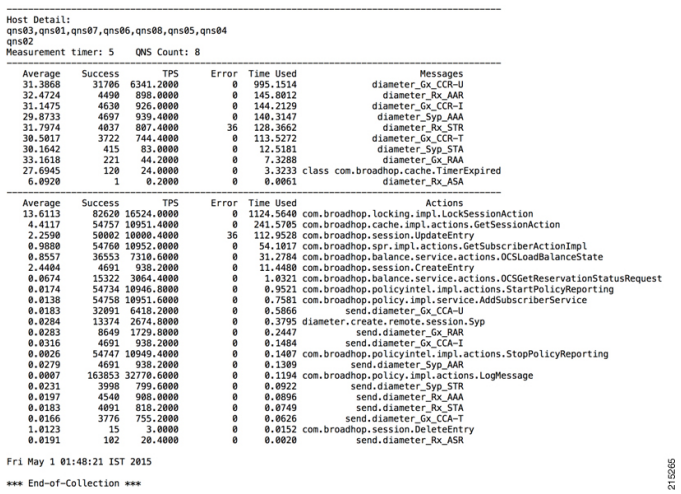
pcrfclient01/02

Output

- Average time in ms.
- Number of message transactions processed during n seconds, where n is an integer value in seconds.
- Transactions per second (TPS) is messages/n.
- Error shows any error occurred during execution on the Policy Server (QNS) VM. It could be database error, authentication failure and so on. Details of the error can be seen in the consolidated engine or in the consolidated Policy Server (QNS) log.
- Times used is how much total time it took to process the message.

Example

Figure 1: Example for top_qps.sh



```
------------------------------------------------------------------------------------------------
Host Detail:
qns03,qns01,qns07,qns06,qns08,qns05,qns04
qns02
Measurement timer: 5    QNS Count: 8
------------------------------------------------------------------------------------------------
   Average    Success        TPS      Error  Time Used                      Messages
   31.3868      31706  6341.2000          0   995.1514             diameter_Gx_CCR-U
   32.4724       4490   898.0000          0   145.8012              diameter_Rx_AAR
   31.1475       4630   926.0000          0   144.2129             diameter_Gx_CCR-I
   29.8733       4697   939.4000          0   140.3147              diameter_Syp_AAA
   31.7974       4037   807.4000         36   128.3662              diameter_Rx_STR
   30.5017       3722   744.4000          0   113.5272             diameter_Gx_CCR-T
   30.1642        415    83.0000          0    12.5181              diameter_Syp_STA
   33.1618        221    44.2000          0     7.3288              diameter_Gx_RAA
   27.6945        120    24.0000          0     3.3233 class com.broadhop.cache.TimerExpired
    6.0920          1     0.2000          0     0.0061              diameter_Rx_ASA
------------------------------------------------------------------------------------------------
   Average    Success        TPS      Error  Time Used                      Actions
   13.6113      82620 16524.0000          0  1124.5640 com.broadhop.locking.impl.LockSessionAction
    4.4117      54757 10951.4000          0   241.5705 com.broadhop.cache.impl.actions.GetSessionAction
    2.2590      50002 10000.4000         36   112.9528 com.broadhop.session.UpdateEntry
    0.9880      54760 10952.0000          0    54.1017 com.broadhop.spr.impl.actions.GetSubscriberActionImpl
    0.8557      36553  7310.6000          0    31.2784 com.broadhop.balance.service.actions.OCSLoadBalanceState
    2.4404       4691   938.2000          0    11.4480 com.broadhop.session.CreateEntry
    0.0674      15322  3064.4000          0     1.0321 com.broadhop.balance.service.actions.OCSGetReservationStatusRequest
    0.0174      54734 10946.8000          0     0.9521 com.broadhop.policyintel.impl.actions.StartPolicyReporting
    0.0138      54758 10951.6000          0     0.7581 com.broadhop.policy.impl.service.AddSubscriberService
    0.0183      32091  6418.2000          0     0.5866         send.diameter_Gx_CCA-U
    0.0284      13374  2674.8000          0     0.3795 diameter.create.remote.session.Syp
    0.0283       8649  1729.8000          0     0.2447           send.diameter_Gx_RAR
    0.0316       4691   938.2000          0     0.1484         send.diameter_Gx_CCA-I
    0.0026      54747 10949.4000          0     0.1407 com.broadhop.policyintel.impl.actions.StopPolicyReporting
    0.0279       4691   938.2000          0     0.1309          send.diameter_Syp_AAR
    0.0007     163853 32770.6000          0     0.1194 com.broadhop.policy.impl.actions.LogMessage
    0.0231       3998   799.6000          0     0.0922          send.diameter_Syp_STR
    0.0197       4540   908.0000          0     0.0896          send.diameter_Rx_AAA
    0.0183       4091   818.2000          0     0.0749          send.diameter_Rx_STA
    0.0166       3776   755.2000          0     0.0626        send.diameter_Gx_CCA-T
    1.0123         15     3.0000          0     0.0152 com.broadhop.session.DeleteEntry
    0.0191        102    20.4000          0     0.0020          send.diameter_Rx_ASR

Fri May 1 01:48:21 IST 2015

*** End-of-Collection ***
```

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Diameter Synchronization Message Behavior

Some Diameter messages (like UDR) are synchronous Diameter calls, which means that the Policy Server (QNS) will be waiting for a response after sending the Diameter request.

Response of these Diameter message is not captured in top_qps as those message are not processed in policy engine separately.

Average time 3.3676 shown below is round trip time (from UDR sent to UDA received)

Sample Top_Qns

```
------------------------------------------------------------------------------------------------

   Average    Success        TPS      Error  Time Used                      Messages
    9.7211       2910   727.5000          0    28.2883             diameter_Gx_CCR-I
------------------------------------------------------------------------------------------------

   Average    Success        TPS      Error  Time Used                       Actions
    3.6854       2924   731.0000          0    10.7761
com.broadhop.cache.impl.actions.GetSessionAction
    3.3676       2922   730.5000          0     9.8400     send.sync.diameter_Sh_UDR
    0.7908       2919   729.7500          0     2.3083 com.broadhop.session.CreateEntry
    0.1981       2924   731.0000          0     0.5793
com.broadhop.locking.impl.LockSessionAction
    0.0480       2919   729.7500          0     0.1400         send.diameter_Gx_CCA-I
    0.0126       2924   731.0000          0     0.0370 diameter.create.remote.session.Sh
```

Average time is not applicable for these response messages. However, number of response messages (UDA) received can be seen from Grafana.

vmutilities.py

This utility is used to:

- Attach the external disk to the VM.

- Detach the external disk from the VM.
- Display the VM power state

Syntax

```
[root@installer ~]# cd /var/qps/install/current/scripts/deployer/support/
[root@installer support]# python vm_utilities.py --help
usage: vm_utilities.py [-h] [--attachDisk ATTACHDISK]
                       [--detachDisk DETACHDISK] [--vmPowerstate]

Additional VM Services

optional arguments:
  -h, --help            show this help message and exit

required named arguments:
  --attachDisk ATTACHDISK
                        Attach the external disk to the VM
  --detachDisk DETACHDISK
                        Detach the external disk to the VM
  --vmPowerstate        Display the VM Power state
```

Executable on VMs

Cluster Manager

Example

The following is an example to display the VM power state.



Note `python vm_utilities.py --vmPowerstate` works only with vCenter 6.5 or 6.7.

```
[root@localhost support]# python vm_utilities.py --vmPowerstate
esxi-host-1.cisco.com is reachable
esxi-host-2.cisco.com is reachable
Found a valid certificate file [/var/tmp/combined.crt] to establish a secure communication
Validated the hostname/username/password of the vCenter
Host                        Vmname                        Status
qns01                     ssh-qns01                     POWERED_ON
sessionmgr02              ssh-sessionmgr02              POWERED_ON
qns02                     ssh-qns02                     POWERED_ON
sessionmgr01              ssh-sessionmgr01              POWERED_ON
lb02                      ssh-lb02                      POWERED_ON
lb01                      ssh-lb01                      POWERED_ON
pcrfclient02              ssh-pcrfclient02              POWERED_ON
pcrfclient01              ssh-pcrfclient01              POWERED_ON
```

Attach and Detach External Disk to VM

- The following commands must be used to attach or detach the external disks to the hosts or VMs:

  ```
  python vm_utilities.py --attachDisk <hostname>

  python vm_utilities.py --detachDisk <hostname>
  ```

- To use attach/detach service, you must provide the datastore details in the `Configuration.csv` as shown:

`datastore_<hostName>,datastore13`

The hostName must be same as the hosts we are planning to attach the external disk.

When datastoreId is not provided in the `Configuration.csv`, script prompts you to enter the datastoreId manually.

vm-init.sh

This command is executed from the VM nodes from `/etc/init.d`, (starts up automatically if VM reboots too). It downloads all the Puppet script, CPS software, /etc/hosts files and updates the VM with the new software.

This command only updates the software and does not restart the CPS software. The new software will be run only after process restart (for example, by executing `/var/qps/bin/control/restartall.sh` script from Cluster Manager).



Caution Executing `restartall.sh` will cause messages to be dropped.

Syntax

```
/etc/init.d/vm-init.sh
```

Executable on VMs

Any CPS VM

Example

```
/etc/init.d/vm-init.sh
```