

CLI Commands

Virtual Multimedia Resource Function

User Guide

Copyright

© Ericsson AB 2016–2018. All rights reserved. No part of this document may be reproduced in any form without the written permission of the copyright owner.

Disclaimer

The contents of this document are subject to revision without notice due to continued progress in methodology, design and manufacturing. Ericsson shall have no liability for any error or damage of any kind resulting from the use of this document.



Contents

1	Introduction	1
2	Command Access Restriction	2
3	mrf_appl Commands	3
3.1	announcement-counters	4
3.2	announcement-status	5
3.3	h248-counters	8
3.4	h248interface-counters	9
3.5	compute-resource	10
3.6	context-info	11
3.7	sctp-pm-counters	13
3.8	sctp-status	14
3.9	service-pm-counters	15
3.10	status	17
3.11	internals	18
3.12	license-info	19
3.13	overload-control	19
3.14	smms-counters	21
4	ipp Commands	22
4.1	ipp ping	22
4.2	ipp conf	23
4.3	ipp debug-counters	23
4.4	ipp discard-counters	26
4.5	ipp error-counters	30
4.6	ipp signal-counters	32
4.7	ipp ethdev-counters	34
4.8	ipp dpdk-counters	35
4.9	ipp internals	41
5	vMRF Utility Scripts	48
5.1	verify_vmrf_cluster_status.py	48
5.2	verify_vmrf_node_status.py	49
5.3	collectData.py	52



5.4	mrf_export_conf.py	52
5.5	mrf_import_conf.py	52
6	Linux Commands	53



1 Introduction

This User Guide describes the Command-Line Interface (CLI) Commands available for use only in the Virtual Multimedia Resource Function (vMRF).



2 Command Access Restriction

Users have access to CLI commands as defined by the POSIX group shown in [Table 1](#).

Table 1 POSIX Group for Command Restriction

Name	Description
mrf-op	Normal operator; Access to all vMRF CLI commands for information printing

CLI commands, by default, are run on the SC VM that the user logged on using SSH. Commands can be run on the VNF level by adding **cluster run** to the command.

It is possible to run commands on a specific PL VM for troubleshooting purposes.

Note: Commands that are defined for SC VMs (for example, commands that are used to operate MOs) cannot be run on PL VMs.



3 mrf_appl Commands

Table 2 mrf_appl Commands

Name	Description	POSIX Group(s) with Access
announcement-counters on page 4	Displays announcement PM ⁽¹⁾ counters since last restart	mrf-op
announcement-status on page 5	Displays information on announcement playing failures	mrf-op
h248-counters on page 8	Displays H.248 command statistics and information on possible command execution failures	mrf-op
h248interface-counters on page 9	Displays H.248 interface-related counters	mrf-op
compute-resource on page 10	Displays counters related to compute-resource.	mrf-op
context-info on page 11	Displays context-related data and statistics	mrf-op
sctp-pm-counters on page 13	Displays Linux kernel SCTP ⁽²⁾ counters	mrf-op
sctp-status on page 14	Displays the operational state of SCTP links	mrf-op
service-pm-counters on page 15	Displays Service PM counters since last restart	mrf-op
status on page 17	Command to query signalling state	mrf-op
internals on page 18	Displays application internal info	mrf-op
license-info on page 19	Displays licensing-related information	mrf-op
smms-counters on page 21	Displays SMMS counters	mrf-op



- (1) *Performance Management*
- (2) *Stream Control Transmission Protocol*

3.1 announcement-counters

This command displays announcement-related PM counters since the last restart. Counter values are not stored to disk, that is, counters are reset when the application is restarted.

Options without arguments:

-h, --help Prints the help message.

Example: Print Announcement Counters

```
cli_tool mrf_appl announcement-counters
```

```
Basic Announcement ID: 11 lang: en-GB  
basic/phr_annc.wav
```

```
-----  
announcementPlayReqs           : 34  
announcementPlayFails          : 0
```

```
Basic Announcement ID: 103 lang: en-GB  
basic/3.wav
```

```
-----  
announcementPlayReqs           : 2  
announcementPlayFails          : 0
```

```
Basic Announcement ID: 107 lang: en-GB  
basic/phr_7.wav
```

```
-----  
announcementPlayReqs           : 2  
announcementPlayFails          : 0
```

```
Basic Announcement ID: 111 lang: en-GB  
basic/11.wav
```

```
-----  
announcementPlayReqs           : 2  
announcementPlayFails          : 0
```

```
Variable announcement Type: TIME lang: en-GB  
variable/Time_en-GB.lua
```

```
-----  
announcementPlayReqs           : 1  
announcementPlayFails          : 0
```

```
Variable announcement Type: DIGITS lang: fr-FR  
variable/Digits_fr-FR.lua
```

```
-----
```




```
announcementPlayReqs      : 0
announcementPlayFails     : 0
```

3.2 announcement-status

This command displays information on failures in announcement playing.

Options without arguments:

- h, --help** Prints the help message.
- s, --status** Prints information on failures in announcement playing.
- j, --json** Prints information on failures in json format.

Options with mandatory arguments:

- c, --clear** Clears fault information specified in the argument.

Example: Print Information on Failures in Announcement Playing

```
cli_tool mrf_appl announcement-status --status
```

```
-----
ANNOUNCEMENT FAULTS
-----
--
time          language      description      faultId  category      announcementId
-----
2016-12-21T09:42:19+00:00    1          CONFIGURATION FAULT      555
en-GB          Missing BasicAnnouncement MO configuration.
               Announcement requested in H.248 is not configured.
2016-12-21T09:43:05+00:00    2          INFORMATION ONLY      214
en-GB          File caching failure:
               File not found: ./cache/2_JANUARY.wav
               Cache automatically recovered
2016-12-21T09:43:22+00:00    3          INFORMATION ONLY      216
en-GB          File caching failure:
               File not found: ./cache/0_MARCH.wav
               Cache automatically recovered
2016-12-21T10:40:55+00:00    4          CONFIGURATION FAULT      DATE
en-GB          Missing VariableAnnouncement MO configuration.
               Announcement requested in H.248 is not configured.
```



```
2016-12-21T10:40:55+00:00    5      CONFIGURATION FAULT    TIME    →
en-GB      Missing VariableAnnouncement MO configuration.
                                                    →
Announcement requested in H.248 is not configured.
                                                    →
2016-12-21T10:40:55+00:00    6      CONFIGURATION FAULT    DIGITS  →
en-GB      Missing VariableAnnouncement MO configuration.
                                                    →
Announcement requested in H.248 is not configured.
                                                    →
2016-12-21T10:42:25+00:00    7      CONFIGURATION FAULT    NUMBER  →
en-GB      Variable Announcement logic execution error.
                                                    →
logicFile: /announcement_storage/variable/Date_en-GB.lua
                                                    →
input data: 0
                                                    →
lua interpreter error: "ERROR in function get_play_list_adpte
r()':⇒
./cache/19_Date_en-GB.lua:103: Input length is not 8"
-----
--
```

Example: Remove Entries with a Specific <faultId>

cli_tool mrf_appl announcement-status --clear 4

```
Removed announcement fault with faultId = 4
cli_tool mrf_appl announcement-status --status
-----
--
ANNOUNCEMENT FAULTS
-----
--
time          faultId  category          announcementId  →
 language      description
-----
2016-12-21T09:42:19+00:00    1      CONFIGURATION FAULT    555    →
en-GB      Missing BasicAnnouncement MO configuration.
                                                    →
Announcement requested in H.248 is not configured.
                                                    →
2016-12-21T09:43:05+00:00    2      INFORMATION ONLY      214    →
en-GB      File caching failure:
                                                    →
File not found: ./cache/2_JANUARY.wav
                                                    →
Cache automatically recovered
                                                    →
2016-12-21T09:43:22+00:00    3      INFORMATION ONLY      216    →
en-GB      File caching failure:
                                                    →
File not found: ./cache/0_MARCH.wav
                                                    →
Cache automatically recovered
                                                    →
2016-12-21T10:40:55+00:00    5      CONFIGURATION FAULT    TIME    →
en-GB      Missing VariableAnnouncement MO configuration.
```



```

Announcement requested in H.248 is not configured.
2016-12-21T10:40:55+00:00      6      CONFIGURATION FAULT  DIGITS
en-GB      Missing VariableAnnouncement MO configuration.

Announcement requested in H.248 is not configured.
2016-12-21T10:42:25+00:00      7      CONFIGURATION FAULT  NUMBER
en-GB      Variable Announcement logic execution error.

logicFile: /announcement_storage/variable/Date_en-GB.lua

input data: 0

lua interpreter error: "ERROR in function get_play_list_adpte
r()':=>
./cache/19_Date_en-GB.lua:103: Input length is not 8"
-----
--

```

Example: Remove All Entries of Category INFORMATION ONLY

cli_tool mrf_appl announcement-status --clear info

```

Removed announcement fault with faultId = 4
cleared 2 faults
cli_tool mrf_appl announcement-status --status
-----
--
ANNOUNCEMENT FAULTS
-----
--
time          language      description      faultId  category      announcementId
-----
2016-12-21T09:42:19+00:00      1      CONFIGURATION FAULT  555
en-GB      Missing BasicAnnouncement MO configuration.

Announcement requested in H.248 is not configured.
2016-12-21T10:40:55+00:00      5      CONFIGURATION FAULT  TIME
en-GB      Missing VariableAnnouncement MO configuration.

Announcement requested in H.248 is not configured.
2016-12-21T10:40:55+00:00      6      CONFIGURATION FAULT  DIGITS
en-GB      Missing VariableAnnouncement MO configuration.

Announcement requested in H.248 is not configured.
2016-12-21T10:42:25+00:00      7      CONFIGURATION FAULT  NUMBER
en-GB      Variable Announcement logic execution error.

logicFile: /announcement_storage/variable/Date_en-GB.lua

input data: 0

lua interpreter error: "ERROR in function get_play_list_adpte
r()':=>
./cache/19_Date_en-GB.lua:103: Input length is not 8"
-----
--

```



----->

Example: Remove All Entries

```
cli_tool mrf_appl announcement-status --clear all
```

```
cleared 4 faults
cli_tool mrf_appl announcement-status --status
ANNOUNCEMENTS OK
```

3.3 h248-counters

This command displays H.248 command statistics and information on possible command execution failures.

Options without arguments:

- h, --help** Prints the help message.
- t, --timestamps** Lists H.248 command counters, with a timestamp for the last 10 error or reason message.
- c, --clear** Resets all H.248 command counters.
- j, --json** Prints the current status of SCTP link in `json` format.

Example: Print Command Statistics

```
cli_tool mrf_appl h248-counters
```

```
Add Request total: 1 (Emergency: 0 IEPS: 0 Priority: 0)
    Pendlings: 0
    Pending limit exceeded: 0
    Retransmissions: 0
    Retransmission limit exceeded: 0
```

```
Modify Request total: 0 (Emergency: 0 IEPS: 0 Priority: 0 →
)
    Pendlings: 0
    Pending limit exceeded: 0
    Retransmissions: 0
    Retransmission limit exceeded: 0
```

```
Move Request total: 0
    Pendlings: 0
    Pending limit exceeded: 0
    Retransmissions: 0
    Retransmission limit exceeded: 0
```

```
Subtract Request total: 1
```



```

    Pendlings: 0
    Pending limit exceeded: 0
    Retransmissions: 0
    Retransmission limit exceeded: 0

Notify Request total: 0
    Pendlings: 0
    Pending limit exceeded: 0
    Retransmissions: 0
    Retransmission limit exceeded: 0

Service Change Request total: 6
    Pendlings: 0
    Pending limit exceeded: 0
    Retransmissions: 0
    Retransmission limit exceeded: 0

    4 sent with reason 901 (GCP_COLD_BOOT)
    Originated from MRFP_APPL at location 0 (visible →
as ERR_LOC_00000 in source code)

    2 sent with reason 905 (GCP_TERMINATION_TAKEN_OUT →
_OF_SERVICE)
    Originated from MRFP_APPL at location 0 (visible →
as ERR_LOC_00000 in source code)

Audit Capability Request total: 0
    Pendlings: 0
    Pending limit exceeded: 0
    Retransmissions: 0
    Retransmission limit exceeded: 0

Audit Value Request total: 0
    Pendlings: 0
    Pending limit exceeded: 0
    Retransmissions: 0
    Retransmission limit exceeded: 0

Topology Request total: 0
    Pendlings: 0
    Pending limit exceeded: 0
    Retransmissions: 0
    Retransmission limit exceeded: 0

```

3.4 h248interface-counters

This command displays H248 interface-related counters.

Options without arguments:



-h, --help Prints the help message.

-j, --json Prints counters in `json` format.

Options with mandatory arguments:

-i, --id Prints counters of an `MrfH248Interface` specified by its ID.

Example: Print Counters

```
cli_tool mrf_appl h248interface-counters
```

```
[2016-11-01 11:41:49.019]
LDN = MediaResourceFunction=1,MrfH248Control=1,MrfH248Int →
erface=1
audioConfParticipantCreations      : 100
audioConfParticipants              : 0
audioConferenceCreations           : 18
audioConferences                   : 0
terminationReqs                   : 120
rejTerminationReqs                : 2
abnormTermTerminations             : 0
LDN = MediaResourceFunction=1,MrfH248Control=1,MrfH248Int →
erface=2
audioConfParticipantCreations      : 0
audioConfParticipants              : 0
audioConferenceCreations           : 0
audioConferences                   : 0
terminationReqs                   : 12
rejTerminationReqs                : 0
abnormTermTerminations             : 0
```

3.5 compute-resource

This command displays PM counters related to vSwitch packet loss, memory, and swap memory use, and disk space of a VM, represented by the *ComputeResource* MO.

Options without arguments:

-h, --help Prints the help message.

-c, --ClearStaticValues Clears previously set static values from counters.

Example: Print Compute Resource Counters

```
cli_tool mrf_appl compute-resource
```



```

ComputeResource=1
vSwitchTxPacketLoss [ppm]           : 0
memoryTotal [kB]                     : 4040360
memoryUsed [%]                       : 44
swapMemoryTotal [kB]                 : 0
swapMemoryUsed [%]                  : 0
diskSize [kB]                       : 3732144
diskPercentUsed [%]                 : 15

```

3.6 context-info

This command gives information on active contexts.

Options without arguments:

-h, --help Prints the help message.

-l, --list Prints active contextIDs.

Options with mandatory arguments:

-a, --alive Prints contexts that have been in use for the number of seconds specified in the argument.

-i, --id Prints detailed information on a context specified by its ID.

j, --json Prints context-related information in json format.

Example: Print Summary Context Information

```
cli_tool mrf_appl context-info
```

```
Context creation rate within last 94502s: 0 /s
```

```

Total number of active contexts 0
Normal Calls: 0
Emergency Calls: 0
Priority Calls: 0
IEPS Calls: 0

```

Example: List Contexts Alive for 2 Seconds or More

```
cli_tool mrf_appl context-info -a 2
```

```
[2016-09-14 09:55:31.898]
```

```
Context creation rate within last 1s: 1.28946 /s
```



Total number of contexts alive for 2s or more: 3

ContextId: 15 alive for 00:00:05

ContextId: 14 alive for 00:00:07

ContextId: 13 alive for 00:03:01

Example: List Active Context IDs

```
cli_tool mrf_appl context-info -l
```

[2016-03-10 08:39:49.556]

Context creation rate within last 1s: 1 /s

Total number of contexts 3

Normal Calls: 3

Emergency Calls: 0

Priority Calls: 0

IEPS Calls: 0

Active context IDs:

7 (NORMAL_CALL)

6 (NORMAL_CALL)

5 (NORMAL_CALL)

Example: List Detailed Information on One Context

```
cli_tool mrf_appl context-info -i 1
```

[2016-09-12 05:31:05.341]

Context creation rate within last 15s: 0 /s

ContextId=1

CallType=NORMAL_CALL

Alive: 00:00:16 Created: 2016-09-12T05:30:49+00:00

Command history:

2016-09-12T05:30:49+00:00 ADD transactionId=2 termId=rtp/ →
1/1 CallType=NORMAL_CALL ErrorCode=0
Stream1=AUDIO, PCMA, Send/receive

Example: List Detailed Information on All Contexts

```
cli_tool mrf_appl context-info -i all
```




```
[2016-09-12 05:38:45.996]
```

```
Context creation rate within last 460s: 0 /s
```

```
-----
```

```
ContextId=2
```

```
CallType=NORMAL_CALL
```

```
Alive: 00:00:01 Created: 2016-09-12T05:38:44+00:00
```

```
Command history:
```

```
2016-09-12T05:30:49+00:00 ADD transactionId=2 termId=rtp/ →
```

```
1/1 CallType=NORMAL_CALL ErrorCode=0
```

```
Stream1=AUDIO, PCMA, Send/receive
```

```
-----
```

```
ContextId=3
```

```
CallType=EMERGENCY_CALL
```

```
Alive: 00:00:01 Created: 2016-09-12T05:38:44+00:00
```

```
Command history:
```

```
2016-09-12T05:30:49+00:00 ADD transactionId=2 termId=rtp/ →
```

```
1/1 CallType=NORMAL_CALL ErrorCode=0
```

```
Stream1=AUDIO, PCMA, Send/receive
```

```
-----
```

3.7 sctp-pm-counters

This command displays SCTP PM counters.

Options without arguments:

-h, --help Prints the help message.

Options with mandatory arguments:

-n, --name Prints an SCTP counter specified by its name.

Example: Print the Counters

```
cli_tool mrf_appl sctp-pm-counters
```

```
[2016-03-10 09:26:21.030]
```

```
sctpCurrEstab           : 2
sctpActiveEstabs        : 10
sctpPassiveEstabs       : 0
sctpAbortedS            : 28370
sctpShutdowns          : 8
```



```
sctpOutOfBlues           : 0
sctpChecksumErrors       : 0
sctpOutCtrlChunks        : 29383
sctpOutOrderChunks       : 167
sctpOutUnorderChunks     : 0
sctpInCtrlChunks         : 29507
sctpInOrderChunks        : 63
sctpInUnorderChunks      : 0
sctpFragUsrMsgs          : 0
sctpReasmUsrMsgs         : 0
sctpOutSCTPPacks         : 29550
sctpInSCTPPacks          : 29567
```

Example: Print One Counter

```
cli_tool mrf_appl sctp-pm-counters -n sctpCurrEstab

[2016-03-10 09:27:18.521]
sctpCurrEstab           : 2
```

3.8 sctp-status

This command prints the `operationalState` attribute of an SCTP link.

Options without arguments:

-h, --help Prints the help message.

-j, --json Prints all information about the MTAS in `json` format.

Options with mandatory arguments:

-i, --id Prints the `operationalState` attribute of a given MTAS.

-o, --operationalState Prints all information about the MTAS with the specified `operationalState`.

Example: Print SCTP Link Operational State for All MTAS

```
cli_tool mrf_appl sctp-status

[2016-09-13 11:54:21.594]
LDN= MediaResourceFunction=1,MrfH248Control=1,MrfH248Inte →
rface=2, operationalState: DISABLED, administrativeState: →
UNLOCKED
LDN= MediaResourceFunction=1,MrfH248Control=1,MrfH248Inte →
```



```
rface=1, operationalState: ENABLED, administrativeState: →
UNLOCKED
```

Example: Print Disabled SCTP Links

```
cli_tool mrf_appl sctp-status -o DISABLED
```

```
[2016-09-13 11:54:21.594]
LDN= MediaResourceFunction=1,MrfH248Control=1,MrfH248Inte →
rface=2, operationalState: DISABLED, administrativeState: →
UNLOCKED
```

Example: Print SCTP Link Operational State for a MTASs

```
cli_tool mrf_appl sctp-status -i
MediaResourceFunction=1,MrfH248Control=1,MrfH248Interface
=2
```

```
[2016-09-13 11:54:21.594]
LDN= MediaResourceFunction=1,MrfH248Control=1,MrfH248Inte →
rface=2, operationalState: DISABLED, administrativeState: →
UNLOCKED
```

3.9 service-pm-counters

This command prints service PM counters since the last restart.

Options without arguments:

- h, --help** Prints the help message.
- j, --json** Prints service PM counters in `json` format.

Options with mandatory arguments:

- s, --service-name** Prints service counters specified by their name. Valid service names are: `amrnb`, `amrwb`, `dtmfr`, `dtmfs`, `pcm`, `g722`, `g729`, `announcement`, `jitter`, `audio-mixing`, `rtp`, `tsr`, `fh`.

Example: Print All Service PM Counters

```
cli_tool mrf_appl service-pm-counters
```

```
[2017-01-10 08:49:31.528]
Counters for DTMFS
```



```
pmBusyInstances      : 0
pmNormalRelease      : 0
pmTotalSeizures      : 0
pmUnsuccSeizures     : 0
-----
Counters for TSR
pmBusyInstances      : 0
pmNormalRelease      : 0
pmTotalSeizures      : 0
pmUnsuccSeizures     : 0
-----
Counters for DTMFR
pmBusyInstances      : 0
pmNormalRelease      : 0
pmTotalSeizures      : 0
pmUnsuccSeizures     : 0
-----
Counters for AMRNB
pmBusyInstances      : 0
pmNormalRelease      : 1
pmTotalSeizures      : 1
pmUnsuccSeizures     : 0
-----
Counters for FH
pmBusyInstances      : 0
pmNormalRelease      : 88
pmTotalSeizures      : 88
pmUnsuccSeizures     : 0
-----
Counters for ANNOUNCEMENT
pmBusyInstances      : 0
pmNormalRelease      : 42
pmTotalSeizures      : 42
pmUnsuccSeizures     : 0
-----
Counters for AUDIO_MIXING
pmBusyInstances      : 0
pmNormalRelease      : 2
pmTotalSeizures      : 2
pmUnsuccSeizures     : 0
-----
Counters for RTP_RTCP
pmBusyInstances      : 0
pmNormalRelease      : 88
pmTotalSeizures      : 88
pmUnsuccSeizures     : 0
-----
Counters for JITTER
pmBusyInstances      : 0
pmNormalRelease      : 88
pmTotalSeizures      : 88
pmUnsuccSeizures     : 0
```



```

-----
Counters for PCM
pmBusyInstances      : 0
pmNormalRelease      : 88
pmTotalSeizures      : 88
pmUnsuccSeizures     : 0
-----
Counters for AMRWB
pmBusyInstances      : 0
pmNormalRelease      : 16
pmTotalSeizures      : 16
pmUnsuccSeizures     : 0
-----
Counters for G729
pmBusyInstances      : 0
pmNormalRelease      : 1
pmTotalSeizures      : 1
pmUnsuccSeizures     : 0
-----

```

Example: Print DTMFR Service PM Counters

```
cli_tool mrf_appl service-pm-counters -s dtmfr
```

```

[2016-10-03 11:20:20.013]
Service counters for DTMFR:
pmBusyInstances      : 0
pmNormalRelease      : 0
pmTotalSeizures      : 5
pmUnsuccSeizures     : 0

```

3.10 status

This command prints signaling state information.

Options without arguments:

- h, --help** Prints the help message.
- j, --json** Prints signaling state information in `json` format.

Example: Print Signaling State Information

```
cli_tool mrf_appl status
```

```

mrvs-admin@fv-mrvs:~$ cli_tool mrf_appl status
[2016-09-20 12:41:09.308]
Signalling State:

```



```

=====
H248Interface-Id: 2 H248Interface-LDN: "MediaResourceFunc →
tion=1,MrfH248Control=1,MrfH248Interface=2" H248Interface →
  association state: UNLOCKED
H248Interface Service Change state: COMPLETED
Sctp operational state: ENABLED
Remote IP Address: 10.0.0.2 Remote Port: 9101
=====
H248Interface-Id: 1 H248Interface-LDN: "MediaResourceFunc →
tion=1,MrfH248Control=1,MrfH248Interface=1" H248Interface →
  association state: UNLOCKED
H248Interface Service Change state: COMPLETED
Sctp operational state: ENABLED
Remote IP Address: 10.0.0.2 Remote Port: 2944
=====
LocalEndpoint Id: 3
Dscp: 40
Local port: 2944
=====
Sctp socket state: INITIATED.
DHCP assigned IP: 10.0.0.4
=====
MRF instance administrative state: UNLOCKED
=====

```

3.11 internals

This command prints application internal information.

Options without arguments:

- h, --help** Prints the help message.
- j, --json** Prints application internal information in `json` format.

Example: Print Application Internal Information

```
cli_tool mrf_appl internals
```

```

mrsv-admin@fv-mrsv:~$ cli_tool mrf_appl internals
[2016-09-09 12:38:10.111]
Timer state:
=====
  Number of running timers : 1
  Number of timer instances: 11
  Next timer expiration    : [2016-09-09 12:38:12.824]
  Last timer expiration    : [2016-09-09 12:38:12.824]
=====
IsOiImmBusy: 0

```



3.12 license-info

This command displays licensing-related information, for example, LM-NeLS connection status and token use.

Options without arguments:

- h, --help** Prints the help message.
- j, --json** Prints information about licensing in `json` format.

Example: Print Licensing-Related Information

```
cli_tool mrf_appl license-info

[2017-04-27 10:27:12.698]
LM-NeLS connection status = CONNECTED
appUsedTokens : 73
grantedTokens : 100
totalAvailableTokens : 27
totalUsedTokens : 73
```

3.13 overload-control

This command is used to check the status of overload supervision.

Options without arguments:

- h, --help** Prints the help message.
- s, --status** Prints the status of the overload supervision.

-i, --setCapacityLimitExceededPercentage

Defines the percentage of the total available capacity that is used to calculate ⇒

`capacityLimitExceededThresholdHigh`. Default value is 80%.

-m, --setMpdProcessorLoad

Sets the MPD processor load to a static value in percents (range: 0–100). Use the option `setOverloadCalcState <calcBasedLoad>` to change back to the mode where load is measured and calculated normally.

-n, --setlppProcessorLoad



Sets the IPP processor load to a static value in tenths of a percent (range: 0–1000). Use the option `setOverloadCalcState <calcBasedLoad>` to change back to the mode where load is measured and calculated normally.

-e, --setIppVSwitchLoad

Sets the IPP vSwitch load to static value in tenths of a percent (range: 0–1000). Use the option `setOverloadCalcState <calcBasedLoad>` to change back to the mode where load is measured and calculated normally.

-p, --setAppIProcessorLoad

Sets the APPLICATION processor load to static value in percent (range: 0–100). Use the option `setOverloadCalcState <calcBasedLoad>` to change back to mode where load is measured and calculated normally.

Example: Print the Current Status of the Overload Supervision

`cli_tool mrf_appl overload-control -s`

```
[2016-03-09 12:35:57.770]
Overload Control Status:
-----
Constants:
capacityForPriorityCalls:          2.0 %
capacityLimitExceededThresholdHigh: IPP: 76.4 % MPD: 76 % =>
APPL: 76 % (threshold for CapacityLimitExceeded Alarm raise)
capacityLimitExceededThresholdLow: IPP: 76.4 % MPD: 76 % =>
APPL: 76 % => (threshold for CapacityLimitExceeded Alarm cease)
overloadThresholdHigh:             IPP: 98.0 % MPD: 98 % =>
APPL: 98 % => (threshold for Overload Alarm raise and normal call rejection)
overloadThresholdLow:              IPP: 96.0 % MPD: 96 % =>
APPL: 96 % =>
(threshold for Overload Alarm cease)
loadControlInterval:               1000 ms
loadMeasurementInterval:           100 ms
loadMeasurementArrayLength:        10
-----
Load Information (used in load control):
Instance  processor load % vSwitch loss based load % resource load % allocated cores =>
(core index start from 1)
MPD       0                -                0                MPD co ->
ntrol: 3  MPD userplane: 4
IPP       5.68             0.0              0.1              1
APPLICATION 1             -                -                3
-----
Overload Status:
MPD:      NO_OVERLOAD
IPP:      NO_OVERLOAD
APPLICATION: NO_OVERLOAD
-----
Overload Calculation State:
MPD:      measurement based load
IPP:      measurement based load
APPLICATION: measurement based load
-----
```




```
CPU load on cores (based on /proc/stat):
CoreIndex:      3 (APPL, MPD control) 4 (MPD userplane)
CPU load (%):   1                      1.03
```

3.14 smms-counters

This command displays SMMS counters.

Options without arguments:

- h, --help** Prints the help message.
- j, --json** Prints counters in json format.

Example: Print SMMS Counters

```
cli_tool mrf_appl smms-counters
```

```
[2017-06-01 09:53:47.257]
LDN = MediaResourceFunction=1
smmsBaseActive           : 0
smmsBaseReqs             : 3
smmsBaseReqsRejNoLicense : 1
smmsBaseCapacityExceeded : 1
```



4 ipp Commands

Table 3 ipp commands

Name	Description	POSIX Group with Access
<i>ping</i>	Ping remote host over media link	mrf-op
<i>conf</i>	Print current network configuration for media	mrf-op
<i>debug-counters</i>	Displays debug counters	mrf-op
<i>pm-counters</i>	Displays PM counters	mrf-op
<i>discard-counters</i>	Displays discard counters	mrf-op
<i>signal-counters</i>	Displays signal counters	mrf-op
<i>ethdev-counters</i>	Displays ethdev counters	mrf-op
<i>dpdk-counters</i>	Displays various dpdk counters	mrf-op
<i>error-counters</i>	Displays error counters	mrf-op
<i>internals</i>	Print internal configuration and statistics	mrf-op

4.1 ipp ping

Mandatory parameters:

- m, --mediaipif** Specifies the host by its media IP interface ID from where the ping is sent. Acceptable values can be found in the output of `ipp conf`, as described in *ipp conf* on page 23. Either the `-m` or the `-n` option is mandatory.
- n, --network** Specifies the host on the network by its network name from where the ping is sent. Either the `-m` or the `-n` option is mandatory.
- remote_address**



The IP address of the host to ping, in dotted decimal notation.

Example: Ping a Host Specified by the Media IP Interface

```
cli_tool ipp ping -m 1 192.0.2.118
```

```
PING 192.0.2.118 64 bytes of data
64 bytes from 192.0.2.118: icmp_seq=0 ttl=64 time=9 ms
```

Example: Ping a Host Specified by the Network Name

```
cli_tool ipp ping -n default_network 10.2.0.3
```

```
PING 10.2.0.3 56 bytes of data
56 bytes from 10.2.0.3: icmp_seq=0 ttl=64 time=2 ms
```

4.2 ipp conf

Example: Faulty Configuration, Next Hop MAC Not Resolved

```
cli_tool ipp conf
```

```
Configuration:
Network (id:1)                                default_network
  VLAN ID                                     -
  UDP Port Range                             1024..65535
  Media IP IF (id:1)
    Ethdev                                    em1 (id:0)
    MAC                                       FA:16:EE:48:F9:67
    Link                                     UP
    IP                                       10.2.0.42
    Status                                   DHCP OK
  Static Route (id:4)
    IP                                       0.0.0.0/0
    Nexthop (id:4)
      MAC                                    FA:16:EE:EF:A5:49
      IP                                    10.2.0.1
```

4.3 ipp debug-counters

Example: Print the Counters

```
cli_tool ipp debug-counters
```

```
[2016-03-10 09:31:35.111]
```



Debug counters:

ARP_BROADCAST_REQUESTS_SENT	:	→
4		
ARP_BROADCAST_PROBE_REQUESTS_SENT	:	→
8		
ARP_BROADCAST_REQUESTS_RECEIVED	:	→
0		
ARP_UNICAST_REQUESTS_RECEIVED	:	→
1190		
ARP_REPLIES_RECEIVED	:	→
2		
NEXTHOP_MAC_UPDATED_AT_ARP_REPLY	:	→
2		
NEXTHOP_MAC_UPDATED_AT_ICMPV6_NEIGHBOR_SOLICITATION	:	→
2		
ICMPV4_ECHO_REQUESTS_RECEIVED	:	→
0		
ICMPV4_ECHO_REQUESTS_SENT	:	→
1		
ICMPV4_ECHO_REPLY_RECEIVED	:	→
0		
ICMPV4_ECHO_REPLY_SENT	:	→
0		
ICMPV4_UNREACHABLE_NETWORK_RECEIVED	:	→
0		
ICMPV4_UNREACHABLE_HOST_RECEIVED	:	→
0		
ICMPV4_UNREACHABLE_PORT_RECEIVED	:	→
11		
ICMPV4_FRAGMENTATION_NEEDED_RECEIVED	:	→
0		
ICMPV4_TIME_EXCEEDED_RECEIVED	:	→
0		
ICMPV6_PACKETS_RECEIVED	:	→
0		
ICMPV6_UNSUPPORTED_MESSAGES_RECEIVED	:	→
0		
ICMPV6_NEIGHBOR_SOLICITATION_RECEIVED	:	→
757		
ICMPV6_NEIGHBOR_ADVERTISEMENT_RECEIVED	:	→
2		
ICMPV6_NEIGHBOR_SOLICITATION_SENT	:	→
2		
ICMPV6_ECHO_REQUEST_SENT	:	→
0		
ICMPV6_ECHO_REQUEST_RECEIVED	:	→
0		



```

ICMPV6_ECHO_REPLY_SENT           : →
0
ICMPV6_ECHO_REPLY_RECEIVED       : →
0
ICMPV6_UNSOLICITED_NEIGHBOR_ADVERTISEMENTS_SENT : →
2
ICMPV6_UNSOLICITED_NEIGHBOR_ADVERTISEMENTS_DAD_SENT : →
2
ICMPV6_DU_NO_ROUTE_TO_DESTINATION_RECEIVED : →
0
ICMPV6_DU_COMM_ADMIN_PROHIBITED_RECEIVED : →
0
ICMPV6_DU_BEYOND_SOURCE_ADDR_SCOPE_RECEIVED : →
0
ICMPV6_DU_ADDR_UNREACHABLE_RECEIVED : →
0
ICMPV6_DU_PORT_UNREACHABLE_RECEIVED : →
0
ICMPV6_DU_SRC_ADDR_FAIL_INGRESS_POLICY_RECEIVED : →
0
ICMPV6_DU_REJECT_ROUTE_TO_DEST_RECEIVED : →
0
ICMPV6_TE_HOP_LIMIT_EXCEEDED_RECEIVED : →
0
ICMPV6_TE_FRAGMENT_REASSEMBLY_TIME_EXCEEDED_RECEIVED : →
0
ICMPV6_PACKET_TOO_BIG_RECEIVED : →
0
MPD_PACKETS_IN                   : →
0
MPD_PACKETS_OUT                   : →
0
IP_TRANSLATION_UDP_PACKETS       : →
0
IP_TRANSLATION_ICMP_PACKETS      : →
0
DHCP_ACK_RECEIVED                 : →
526
DHCP_OFFER_RECEIVED              : →
2
DHCP_NAK_RECEIVED                : →
0
DHCPV6_ADVERTISE_RECEIVED        : →
2
DHCPV6_REPLY_RECEIVED            : →
577
EXCESSIVE_TRAFFIC_THRESHOLD_EXCEEDED_ALARM_RAISE : →

```



```

0
EXCESSIVE_TRAFFIC_THRESHOLD_EXCEEDED_ALARM_CEASE      : →
0
UDP_IPV4_MULTICONTTEXT_OPTIMIZATION                   : →
0
UDP_IPV6_MULTICONTTEXT_OPTIMIZATION                   : →
0
MEDIA_STOP_SUPERVISION_DETECTED_STOP                   : →
0
MEDIA_STOP_SUPERVISION_DETECTED_START                   : →
0

```

Example: Clear One Counter

```
cli_tool ipp debug-counters --clear
MEDIA_STOP_SUPERVISION_DETECTED_START
```

Cleared MEDIA_STOP_SUPERVISION_DETECTED_START debug count →
er

Example: Clear All Counters

```
cli_tool ipp debug-counters --clear all
```

Cleared all debug counters

4.4 ipp discard-counters

Example

```
cli_tool ipp discard-counters
```

2016-03-10 09:38:07.523]

Discard counters:

```

UNSUPPORTED_ETHERTYPE                                  : →
0
IPV4_REASSEMBLY_NOT_IMPLEMENTED                       : →
0
TOO_SHORT_PACKET_FOR_IPV4                             : →
0
SEGMENTED_MBUF_NOT_IMPLEMENTED                       : →
0
TOO_SHORT_PACKET_FOR_IPV6                             : →
0

```



```

IPV4_UNSUPPORTED_NEXT_PROTO      : →
0
IPV6_UNSUPPORTED_NEXT_PROTO      : →
0
IPV6_REASSEMBLY_NOT_IMPLEMENTED  : →
0
IPV6_IPSEC_NOT_IMPLEMENTED       : →
0
IPV6_ROUTE_LOOKUP_FAILED        : →
0
IPV6_ROUTE_INVALID_NEXTHOP      : →
0
ARP_FRAME_TOO_SHORT             : →
0
TOO_SHORT_PACKET_FOR_UDP        : →
0
TTL_EXCEEDED_IN_NAPT            : →
0
METADATA_CEP_NOT_VALID          : →
0
MEDIAIP_NOT_VALID               : →
0
METADATA_CEPID_OUT_OF_RANGE     : →
0
ARP_UNSUPPORTED_OP_CODE          : →
0
IPV4_ROUTE_INVALID_OUT_MEDIAIP  : →
0
IPV4_ROUTE_INVALID_OUT_NETWORK  : →
0
IPV4_ROUTE_LOOKUP_FAILED        : →
0
IPV4_ROUTE_INVALID_NEXTHOP      : →
0
IPV4_ROUTE_INVALID_ROUTE_ENTRY  : →
0
NEXT_HOP_MAC_ADDR_NOT_SET       : →
0
ICMPV6_UNSUPPORTED_MESSAGE_TYPE  : →
0
ICMPV4_UNSUPPORTED_MESSAGE      : →
0
ICMPV4_ECHO_REQUEST             : →
0
ICMPV6_MESSAGE_FAILED_VALIDATION : →
0
ICMPV6_NDP_OPTION_NEEDED        : →
0
ICMPV6_ECHO_REQUEST             : →
0
UDP_RX_STREAM_MODE_DROP_TRAFFIC : →
4

```



```
UDP_TX_STREAM_MODE_DROP_TRAFFIC      : →
0
UDP_RX_SOURCE_FILTERING_DROP_TRAFFIC  : →
0
UDP_RX_INVALID_CHECKSUM_IPV4          : →
0
UDP_RX_INVALID_CHECKSUM_IPV6          : →
0
UDP_HEADER_EXCEEDS_MBUF               : →
0
MPD_IN_INVALID_USERPLANE_CEP_ID       : →
0
MPD_OUT_INVALID_USERPLANE_CEP_ID      : →
0
MPD_IN_MBUF_ADJUST_FAILED             : →
0
TOO_SHORT_PACKET_FOR_ICMP             : →
0
RX_BANDWIDTH_POLICING_DROP_TRAFFIC   : →
0
ICMPV6_DEST_UNREACHABLE_MSG_TOO_BIG  : →
0
TOO_SHORT_PACKET_FOR_ICMPV6          : →
0
ICMPV6_PARAM_PROB_ERRONEOUS_HEADER_FIELD : →
0
ICMPV6_PARAM_PROB_UNRECOGNIZED_NEXT_HEADER : →
0
ICMPV6_PARAM_PROB_UNRECOGNIZED_IPV6_OPTIONS : →
0
DHCP_TOO_SHORT_PACKET                : →
0
DHCP_INVALID_MAGIC_COOKIE            : →
0
DHCP_BOOTP_REQUEST                   : →
0
DHCP_UNSUPPORTED_REPLY_TYPE          : →
0
DHCP_INVALID_CLIENT_MAC_ADDRESS      : →
0
DHCP_INVALID_MEDIAIP_ID              : →
0
DHCP_AUTOCONF_NOT_ENABLED            : →
0
DHCP_OFFER_REJECTED                  : →
0
DHCP_ACK_REJECTED                    : →
0
DHCP_INVALID_STATE                   : →
0
DHCPV6_MISSING_SERVER_IDENTIFIER_OPTION : →
0
```




```

DHCPV6_MISSING_CLIENT_IDENTIFIER_OPTION      : →
0
DHCPV6_MISSING_IANA_OPTION                   : →
0
DHCPV6_MISSING_IAADDR_OPTION                 : →
0
DHCPV6_INVALID_LIFETIME_IN_IAADDR_OPTION     : →
0
DHCPV6_INVALID_DUID_IN_CLIENT_IDENTIFIER_OPTION : →
0
DHCPV6_TOO_LONG_DUID_IN_SERVER_IDENTIFIER_OPTION : →
0
DHCPV6_INVALID_MEDIAIP_ID                   : →
0
DHCPV6_INVALID_SRC_PORT                     : →
0
DHCPV6_INVALID_DST_PORT                     : →
0
DHCPV6_INVALID_IA_ID                       : →
0
DHCPV6_NO_ADDRESS_AVAILABLE                 : →
0
DHCPV6_AUTOCONF_NOT_ENABLED                 : →
0
DHCPV6_INVALID_STATE                       : →
0
DHCPV6_ERROR_CODE_IN_REPLY                  : →
0
UNSUPPORTED_IP_TRANSLATION                  : →
0

```

4.4.1 ipp pm-counters

This command displays PM counters.

Example

```
cli_tool ipp pm-counters
```

```

[2016-09-01 12:58:45.399]
PM counters:
default_network
MediaIPInterface (id:1)
    PM_MEDIA_IP_IF_RX_DISC_OCTETS_EXC      : 0      →
    PM_MEDIA_IP_IF_RX_DISC_PKTS_EXC        : 0      →
    PM_MEDIA_IP_IF_RX_DISC_PKTS_OTHER      : 0      →
    PM_MEDIA_IP_IF_RX_OCTETS                : 180300 →

```



```
PM_MEDIA_IP_IF_RX_PKTS           : 2248      →
PM_MEDIA_IP_IF_TX_DISC_PKTS_NO_NEXTHOP : 0       →
PM_MEDIA_IP_IF_TX_OCTETS         : 179524   →
PM_MEDIA_IP_IF_TX_PKTS           : 2244
```

4.5 ipp error-counters

Example

cli_tool ipp error-counters

[2016-03-10 09:39:11.283]

```
Error counters:
IP_ADDRESS_COLLISIONS_DETECTED      : →
0
CEP_ALREADY_RESERVED                : →
0
TOO_LARGE_MEDIA_IP_ID_FOR_CEP       : →
0
TOO_LARGE_NEXTHOP_ID_FOR_CEP        : →
0
CONFIGURED_NEXTHOP_ID_NOT_VALID_FOR_CEP : →
0
CONFIGURED_MEDIAIP_ID_NOT_VALID_FOR_CEP : →
0
UNSUITABLE_NETWORK_ID_FOR_CEP       : →
0
NETWORK_MISMATCH_BETWEEN_CEP_AND_NEXTHOP : →
0
NETWORK_MISMATCH_BETWEEN_CEP_AND_MEDIAIP : →
0
CONFIGURED_NETWORK_NOT_VALID_FOR_CEP  : →
0
ADD_NETWORK_FAILED_FOR_TABLE         : →
0
MODIFY_NETWORK_FAILED_FOR_TABLE      : →
0
REMOVE_NETWORK_FAILED_FOR_TABLE      : →
0
ADD_NEXTHOP_FAILED_FOR_TABLE         : →
0
DELETE_NEXTHOP_FAILED_FOR_TABLE      : →
0
ADD_MEDIA_IP_FAILED_FOR_TABLE        : →
0
REMOVE_MEDIA_IP_FAILED_FOR_TABLE     : →
0
```



```

ADD_STATIC_ROUTE_FAILED_FOR_TABLE           : →
0
REMOVE_STATIC_ROUTE_FAILED_FOR_TABLE         : →
0
RESERVE_IP_REQ_FAILED_FOR_TABLE              : →
0
MODIFY_IP_REQ_FAILED_FOR_TABLE                : →
0
RELEASE_IP_REQ_FAILED_FOR_TABLE              : →
0
CONNECT_IP_REQ_FAILED_FOR_TABLE              : →
0
DISCONNECT_IP_REQ_FAILED_FOR_TABLE           : →
0
CONNECT_IP_MPD_REQ_FAILED_FOR_TABLE          : →
0
ADD_ARP_ENTRY_FOR_MEDIA_IP_FAILED            : →
0
REMOVE_ARP_ENTRY_FOR_MEDIA_IP_FAILED         : →
0
ADD_ARP_ENTRY_FOR_NEXTHOP_FAILED             : →
0
REMOVE_ARP_ENTRY_FOR_NEXTHOP_FAILED          : →
0
CLASSIFIER_RTP_CEP_ENTRY_UPDATE_FAILED       : →
0
CLASSIFIER_RTP_CEP_ENTRY_DEL_FAILED          : →
0
CLASSIFIER_RTCP_CEP_ENTRY_UPDATE_FAILED      : →
0
CLASSIFIER_RTCP_CEP_ENTRY_DEL_FAILED         : →
0
UDP_RX_ENTRY_ADD_FAILED                      : →
0
UDP_RX_ENTRY_MOD_FAILED                     : →
0
UDP_TX_ENTRY_ADD_FAILED                     : →
0
UDP_TX_ENTRY_MOD_FAILED                     : →
0
TX_ENTRY_ADD_FAILED                         : →
0
TX_INVALID_OUTPUT_PORT                     : →
0
ARP_PACKET_INSERT_FAILED                    : →
0
NDP_PACKET_INSERT_FAILED                    : →
0
ICMPV4_ECHO_PACKET_INSERT_FAILED            : →
0
DEL_ICMPV4_ECHO_ENTRY_FAILED                : →
0

```



```
ADD_ICMPV4_ECHO_ENTRY_FAILED      : →
0
ICMPV4_ECHO_REQUEST_SEND_FAILURE  : →
0
ICMPV6_ECHO_PACKET_INSERT_FAILED  : →
0
ICMPV6_ECHO_REQUEST_SEND_FAILURE  : →
0
INVALID_ICMPV4_IDENTITY_RECEIVED  : →
0
INVALID_LOCAL_PORT_FOR_CEP        : →
0
ICMPV6_PACKET_INSERT_FAILED      : →
0
ADD_STATIC_ROUTE_ENTRY_FOR_ROUTE_IPV4_FAILED : →
0
INVALID_BW_POLICING_CONFDATA_FOR_CEP : →
0
```

4.6 ipp signal-counters

Example

cli_tool ipp signal-counters

```
[2016-03-10 09:39:58.995] Signal counters:
SIG_MSP_MSE_RI_NETWORK_CREATE_REQ : →
2
SIG_MSP_MSE_RI_NETWORK_CREATE_CFM : →
2
SIG_MSP_MSE_RI_NETWORK_CREATE_REJ : →
0
SIG_MSP_MSE_RI_NETWORK_MODIFY_REQ  : →
0
SIG_MSP_MSE_RI_NETWORK_MODIFY_CFM  : →
0
SIG_MSP_MSE_RI_NETWORK_MODIFY_REJ  : →
0
SIG_MSP_MSE_RI_NETWORK_DELETE_REQ  : →
0
SIG_MSP_MSE_RI_NETWORK_DELETE_CFM  : →
0
SIG_MSP_MSE_RI_DSCP_TO_PBIT_CREATE_REQ : →
1
SIG_MSP_MSE_RI_DSCP_TO_PBIT_CREATE_CFM : →
1
SIG_MSP_MSE_RI_DSCP_TO_PBIT_CREATE_REJ : →
0
SIG_MSP_MSE_RI_DSCP_TO_PBIT_MODIFY_REQ : →
0
SIG_MSP_MSE_RI_DSCP_TO_PBIT_MODIFY_CFM : →
```



```

0
SIG_MSP_MSE_RI_DSCP_TO_PBIT_MODIFY_REJ           : →
0
SIG_MSP_MSE_RI_MEDIA_IP_INTERFACE_CREATE_REQ     : →
8
SIG_MSP_MSE_RI_MEDIA_IP_INTERFACE_CREATE_CFM     : →
4
SIG_MSP_MSE_RI_MEDIA_IP_INTERFACE_CREATE_REJ     : →
0
SIG_MSP_MSE_RI_MEDIA_IP_INTERFACE_DELETE_REQ     : →
0
SIG_MSP_MSE_RI_MEDIA_IP_INTERFACE_DELETE_CFM     : →
0
SIG_MSP_MSE_RI_MEDIA_IP_INTERFACE_DELETE_CFM     : →
0
SIG_MSP_MSE_RI_MEDIA_IP_INTERFACE_AUTOCONF_IND   : →
532
SIG_MSP_MSE_RI_PING_REQ                           : →
1
SIG_MSP_MSE_RI_PING_CFM                           : →
1
SIG_MSP_MSE_RI_PING_REJ                           : →
0
SIG_MSP_MSE_RI_NEXT_HOP_CREATE_REQ               : →
4
SIG_MSP_MSE_RI_NEXT_HOP_CREATE_CFM               : →
4
SIG_MSP_MSE_RI_NEXT_HOP_CREATE_REJ               : →
0
SIG_MSP_MSE_RI_NEXT_HOP_DELETE_REQ               : →
0
SIG_MSP_MSE_RI_NEXT_HOP_DELETE_CFM               : →
0
SIG_MSP_MSE_RI_STATICROUTE_CREATE_REQ            : →
4
SIG_MSP_MSE_RI_STATICROUTE_CREATE_CFM            : →
4
SIG_MSP_MSE_RI_STATICROUTE_CREATE_REJ            : →
0
SIG_MSP_MSE_RI_STATICROUTE_DELETE_REQ            : →
0
SIG_MSP_MSE_RI_STATICROUTE_DELETE_CFM            : →
0
SIG_MSP_MSE_RI_STATICROUTE_DELETE_CFM            : →
0
SIG_MSP_MSE_RI_RESERVE_IP_REQ                    : →
8
SIG_MSP_MSE_RI_RESERVE_IP_CFM                    : →
8
SIG_MSP_MSE_RI_RESERVE_IP_REJ                    : →
0
SIG_MSP_MSE_RI_MODIFY_IP_REQ                     : →
6
SIG_MSP_MSE_RI_MODIFY_IP_CFM                     : →
6
SIG_MSP_MSE_RI_MODIFY_IP_REJ                     : →

```



```

0
SIG_MSP_MSE_RI_RELEASE_IP_REQ      : →
8
SIG_MSP_MSE_RI_RELEASE_IP_CFM      : →
8
SIG_MSP_MSE_RI_CONNECT_IP_REQ      : →
8
SIG_MSP_MSE_RI_CONNECT_IP_CFM      : →
8
SIG_MSP_MSE_RI_CONNECT_IP_REJ      : →
0
SIG_MSP_MSE_RI_FAULT_IND           : →
0
SIG_MSP_MSE_RI_FAULT_CEASED_IND     : →
0
SIG_MSP_MSE_RI_CONNECT_IP_MPD_REQ   : →
0
SIG_MSP_MSE_RI_CONNECT_IP_MPD_CFM   : →
0
SIG_MSP_MSE_RI_CONNECT_IP_MPD_REJ   : →
0
SIG_MSP_MSE_RI_DISCONNECT_IP_REQ    : →
0
SIG_MSP_MSE_RI_DISCONNECT_IP_CFM    : →
0
SIG_MSP_MSE_RI_PM_COUNTER_REPORT_IND : →
31710
SIG_MSP_MSE_RI_PM_COUNTER_SET_REP_INTERVAL_IND : →
1
SIG_MSP_MSE_RI_IP_EVENT_IND         : →
0
SIG_MSP_MSE_RI_TRAFFIC_SUPERVISION_REQ : →
1
SIG_MSP_MSE_RI_TRAFFIC_SUPERVISION_CFM : →
1
SIG_MSP_MSE_RI_TRAFFIC_SUPERVISION_REJ : →
0
SIG_MSP_MSE_RI_MSR_CONFIG_REQ       : →
0
SIG_MSP_MSE_RI_MSR_CONFIG_CFM       : →
0
SIG_MSP_MSE_RI_MSR_CONFIG_REJ       : →
0
UNSUPPORTED_SIGNAL_TYPE_RECEIVED    : →
0

```

4.7 ipp ethdev-counters

This command displays `ethdev` counters.

Options without arguments:



- h, --help** Prints the help message.
- c, --clear** Clears all `ethdev` counters.

Example: Print the Counters

```
cli_tool ipp ethdev-counters
```

```
rte_ethdev counters:
```

name	status	speed	ipackets	opackets	ibytes	obytes	ierrors	→
	oerrors	rx_nombuf						
em1	UP	10G	279608	18	24654117	2350	0	→
	0		0					

Example: Clear the Counters

```
cli_tool ipp ethdev-counters --clear
```

```
Cleared all ethdev counters
```

```
cli_tool ipp ethdev-counters
```

```
rte_ethdev counters:
```

name	status	speed	ipackets	opackets	ibytes	obytes	ierrors	→
	oerrors	rx_nombuf						
em1	UP	10G	489	0	43175	0	0	→
	0		0					

```
cli_tool ipp ethdev-counters
```

```
rte_ethdev counters:
```

name	status	speed	ipackets	opackets	ibytes	obytes	ierrors	→
	oerrors	rx_nombuf						
em1	UP	10G	1047	0	92419	0	0	→
	0		0					

4.8 ipp dpdk-counters

This command prints the status of DPDK-related internal resources.

Options without arguments:

- h, --help** Prints the help message.
- m, --memory** Prints `rte_memseg`, `rte_memzone`, `rte_mempool`, and `rte_malloc` statistics.
- i, --ipc** Prints `dpdkipc` statistics.

Options with mandatory arguments:

- r, --ring** Prints the `rte_ring` statistics for one ring or all rings.

Example: Print Current Memory Use by DPDK

```
cli_tool ipp dpdk-counters -m
```



```
rte_memseg statistics:
nchannel    phys_addr    virt_addr    len    hugepage_sz    socket_id    →
            nrank
0            11000000    7fb8ec800000    164M    2M            0            →
0            0            8b000000    7fb8ec400000    2M            2M            0            →
0            0            8b400000    7fb8e9e00000    36M            2M            0            →
0            0            8da00000    7fb8e9200000    10M            2M            0            →
0            0            8e800000    7fb8e8c00000    4M            2M            0            →
0            0            8ee00000    7fb8e7800000    18M            2M            0            →
0            0            90200000    7fb8e5c00000    26M            2M            0            →
0            0            91e00000    7fb8e5000000    10M            2M            0            →
0            0            92c00000    7fb8d4a00000    260M           2M            0            →
0            0            a3200000    7fb8d4600000    2M            2M            0            →
0            0            a3800000    7fb8d3c00000    8M            2M            0            →
0            0            a4200000    7fb8d2c00000    14M           2M            0            →
0            0            a5400000    7fb8d2800000    2M            2M            0            →
0            0            a5800000    7fb8d2200000    4M            2M            0            →
0            0            a6000000    7fb8d1c00000    4M            2M            0            →
0            0            a6600000    7fb8d1600000    4M            2M            0            →
0            0            a6c00000    7fb8d0400000    16M           2M            0            →
0            0            a7e00000    7fb8d0000000    2M            2M            0            →
0            0            a8200000    7fb8cf800000    6M            2M            0            →
0            0            a8a00000    7fb8cf400000    2M            2M            0            →
0            0            a9000000    7fb8cee00000    4M            2M            0            →
0            0            a9600000    7fb8ce800000    4M            2M            0            →
0            0            a9c00000    7fb8ce400000    2M            2M            0            →
0            0            aa200000    7fb8cdc00000    6M            2M            0            →
0            0            aaa00000    7fb8cd400000    6M            2M            0            →
0            0            ab400000    7fb8cce00000    4M            2M            0            →
0            0            aba00000    7fb8cca00000    2M            2M            0            →
0            0            abe00000    7fb8cb800000    16M           2M            0            →
0            0            ad000000    7fb8cb000000    6M            2M            0            →
0            0            ad800000    7fb8c6a00000    68M           2M            0            →
0            0            b2000000    7fb8c5a00000    14M           2M            0            →
0            0            b3000000    7fb8c4000000    24M           2M            0            →
0            0            b4c00000    7fb8c3200000    12M           2M            0            →
0            0            b5c00000    7fb8c2e00000    2M            2M            0            →
0            0            b6400000    7fb8c2a00000    2M            2M            0            →
0            0            b6800000    7fb8bfc00000    44M           2M            0            →
0            0            b9600000    7fb8bdc00000    30M           2M            0            →
0            0            bb800000    7fb8bd600000    4M            2M            0            →
0            0
```




0	100000000	7fb8bcc00000	8M	2M	0	→
0	0					
0	100a00000	7fb8bbc00000	14M	2M	0	→
0	0					
0	101c00000	7fb8ba200000	24M	2M	0	→
0	0					
0	103600000	7fb8b8400000	28M	2M	0	→
0	0					
0	105400000	7fb8b7a00000	8M	2M	0	→
0	0					
0	105e00000	7fb8b7200000	6M	2M	0	→
0	0					
0	106800000	7fb8b5c00000	20M	2M	0	→
0	0					
0	108000000	7fb8b5600000	4M	2M	0	→
0	0					
0	10a200000	7fb8b5200000	2M	2M	0	→
0	0					
0	10c000000	7fb8b4e00000	2M	2M	0	→
0	0					
0	10ca00000	7fb8b4a00000	2M	2M	0	→
0	0					
0	10f200000	7fb8b4600000	2M	2M	0	→
0	0					
0	10fe00000	7fb8b4200000	2M	2M	0	→
0	0					
0	112200000	7fb8b3e00000	2M	2M	0	→
0	0					
0	112c00000	7fb8b3a00000	2M	2M	0	→
0	0					
0	115200000	7fb8b3600000	2M	2M	0	→
0	0					
0	116000000	7fb8b3200000	2M	2M	0	→
0	0					
0	118200000	7fb8b2e00000	2M	2M	0	→
0	0					
0	118e00000	7fb8b2a00000	2M	2M	0	→
0	0					
0	11b200000	7fb8b2600000	2M	2M	0	→
0	0					
0	11bc00000	7fb8b2200000	2M	2M	0	→
0	0					
0	11e400000	7fb8b1e00000	2M	2M	0	→
0	0					
0	11ee00000	7fb8b1a00000	2M	2M	0	→
0	0					
0	120e00000	7fb8b1600000	2M	2M	0	→
0	0					
0	121200000	7fb8b1200000	2M	2M	0	→
0	0					
0	121a00000	7fb8b0e00000	2M	2M	0	→
0	0					
0	123c00000	7fb8b0a00000	2M	2M	0	→
0	0					
0	124200000	7fb8b0600000	2M	2M	0	→
0	0					
0	127400000	7fb8b0200000	2M	2M	0	→
0	0					
0	127c00000	7fb8afe00000	2M	2M	0	→
0	0					
0	128000000	7fb8afa00000	2M	2M	0	→
0	0					
0	128400000	7fb8af600000	2M	2M	0	→
0	0					
0	128800000	7fb8af200000	2M	2M	0	→
0	0					
0	128e00000	7fb8aee00000	2M	2M	0	→
0	0					
0	12c000000	7fb8aea00000	2M	2M	0	→
0	0					
0	12c400000	7fb8ae600000	2M	2M	0	→
0	0					
0	12f200000	7fb8ae200000	2M	2M	0	→
0	0					
0	12f600000	7fb8ade00000	2M	2M	0	→
0	0					
0	134600000	7fb8ada00000	2M	2M	0	→
0	0					
0	134c00000	7fb8ad600000	2M	2M	0	→
0	0					



```
0          139600000      7fb8ad000000      4M      2M      0      →

rte_memzone statistics:
  name          phys_addr      len      socket_id
  MALLOC_S0_HEAP_0      b4c00000      11534336      0
  RG_MP_log_history      b5700000      8320      0
  _MP_log_history      8b000000      1872064      0
  rte_eth_dev_data      8b1c90c0      72192      0
  port0_cvq      8b1db000      8192      0
  port0_cvq_hdrzone      8b1dd000      4096      0
  port1_cvq      8b1de000      8192      0
  port1_cvq_hdrzone      8b1e0000      4096      0
  RG_MP_pktbuf1      b5702080      262272      0
  _MP_pktbuf1      b6800000      39588096      0
  port0_rvq0      8b1e1000      12288      0
  port0_tvq0      8b1e4000      12288      0
  port0_tvq0_hdrzone      8b1e7000      3072      0
  port1_rvq0      8b1e8000      12288      0
  port1_tvq0      8b1eb000      12288      0
  port1_tvq0_hdrzone      8b1ee000      3072      0
  RG_classed_udp      8b1eec00      16512      0
  RG_classed_arp      8b1f2c80      8320      0
  RG_classed_icmp      8b1f4d00      8320      0
  RG_classed_icmpv6      8b1f6d80      8320      0
  RG_classed_frag      8b1f8e00      8320      0
  RG_classed_dhcp      8b1fae80      8320      0
  RG_classed_ipv6_ll      8b1fcf00      8320      0
  RG_arpout      b5742100      8320      0
  RG_icmpv6out      b5744180      8320      0
  RG_icmpout      b5746200      8320      0
  RG_naptout      b5748280      8320      0
  RG_udp_out      b574a300      8320      0
  RG_udp_fwd      b574c380      8320      0
  RG_internal_loop      b574e400      8320      0
  DPDK_IPC_SHARED_MZ      8b1fef80      64      0
  RG_MEDIA_CH_IN_ALL      b5750480      16512      0
  RG_MEDIA_CH_OUT_0      b5754500      4224      0
  RG_MEDIA_CH_OUT_1      b5755580      4224      0
  RG_MEDIA_CH_OUT_2      b5756600      4224      0
  RG_MEDIA_CH_OUT_3      b5757680      4224      0
  RG_MEDIA_CH_OUT_4      b5758700      4224      0
  RG_MEDIA_CH_OUT_5      b5759780      4224      0
  RG_MEDIA_CH_OUT_6      b575a800      4224      0
  RG_MEDIA_CH_OUT_7      b575b880      4224      0
  RG_MEDIA_CH_OUT_8      b575c900      4224      0
  RG_MEDIA_CH_OUT_9      b575d980      4224      0
  RG_MEDIA_CH_OUT_10      b575ea00      4224      0
  RG_MEDIA_CH_OUT_11      b575fa80      4224      0
  RG_MEDIA_CH_OUT_12      b5760b00      4224      0
  RG_MEDIA_CH_OUT_13      b5761b80      4224      0
  RG_MEDIA_CH_OUT_14      b5762c00      4224      0
  RG_MEDIA_CH_OUT_15      b5763c80      4224      0
  RG_TEST_PORT_SEND_RING      8b1fefc0      1152      0
  RG_TEST_PORT_RECV_RING      8b1ff440      640      0
  RG_MSERT_SEND_RING      8b1ff6c0      2176      0
  RG_MSERT_RECV_RING      b5764d00      2176      0
  MALLOC_S0_HEAP_1      a4200000      11534336      0
  MALLOC_S0_HEAP_2      b2000000      11534336      0

rte_mempool statistics:
  name          size      cache_size      ring      count
  log_history      512      0      252
  pktbuf1      16384      128      15447

rte_malloc statistics:
  socket      bytes      free_bytes      used_bytes      free_count      used_count
  0      34602816      8622528      25980288      3      245
  1      0      0      0      0      0
  2      0      0      0      0      0
  3      0      0      0      0      0
  4      0      0      0      0      0
  5      0      0      0      0      0
  6      0      0      0      0      0
  7      0      0      0      0      0
```



Example: Print the Status of a Named DPDK Ring or All Rings Known by IPP

```
cli_tool ipp dpdk-counters -r internal_loop
```

```
rte_ring statistics:
      name      size  watermark  prod/cons      count  free_c →
internal_loop   1024     1024     --/--         0         →

cli_tool ipp dpdk-counters -r all
rte_ring statistics:
      name      size  watermark  prod/cons      count  free_c →
classed_udp     2048     2048     --/--         0         →
classed_arp     1024     1024     --/--         0         →
classed_icmp     1024     1024     --/--         0         →
classed_icmpv6   1024     1024     --/--         0         →
classed_frag     1024     1024     --/--         0         →
classed_dhcp     1024     1024     --/--         0         →
classed_ipv6_ll  1024     1024     --/--         0         →
arpout          1024     1024     --/--         0         →
icmpv6out       1024     1024     --/--         0         →
icmpout         1024     1024     --/--         0         →
naptout         1024     1024     --/--         0         →
udp_out         1024     1024     --/--         0         →
udp_fwd         1024     1024     --/--         0         →
internal_loop   1024     1024     --/--         0         →
TEST_PORT_SEND_RING 128      100     --/--         0         →
TEST_PORT_RECV_RING 64        50     --/--         0         →
_MSERI_SEND_RING 256      200     --/--         0         →
_MSERI_RECV_RING 256      200     --/--         0         →
_MEDIA_CH_IN_ALL 2048     2048     --/--         0         →
_MEDIA_CH_OUT_0  512      512     --/--         1         →
_MEDIA_CH_OUT_1  512      512     --/--         0         →
_MEDIA_CH_OUT_2  512      512     --/--         0         →
_MEDIA_CH_OUT_3  512      512     --/--         0         →
_MEDIA_CH_OUT_4  512      512     --/--         0         →
_MEDIA_CH_OUT_5  512      512     --/--         0         →
_MEDIA_CH_OUT_6  512      512     --/--         0         →
_MEDIA_CH_OUT_7  512      512     --/--         0         →
_MEDIA_CH_OUT_8  512      512     --/--         0         →
_MEDIA_CH_OUT_9  512      512     --/--         0         →
_MEDIA_CH_OUT_10 512      512     --/--         0         →
_MEDIA_CH_OUT_11 512      512     --/--         0         →
```



```

511      _MEDIA_CH_OUT_12      512      512      --/--      0      →
511      _MEDIA_CH_OUT_13      512      512      --/--      0      →
511      _MEDIA_CH_OUT_14      512      512      --/--      0      →
511      _MEDIA_CH_OUT_15      512      512      --/--      0      →
511

```

Example: Print the Current Status of dpdkipc Channels

cli_tool ipp dpdk-counters --ipc

dpdkipc statistics:

	name	send count	recv count	semapho →
re				
0	_TEST_PORT_RECV_RING	0	0	→
0	_MSERI_RECV_RING	0	0	→
0	_MEDIA_CH_OUT_0	0	0	→
0	_MEDIA_CH_OUT_1	0	0	→
0	_MEDIA_CH_OUT_2	0	4	→
4	_MEDIA_CH_OUT_3	0	0	→
0	_MEDIA_CH_OUT_4	0	0	→
0	_MEDIA_CH_OUT_5	0	0	→
0	_MEDIA_CH_OUT_6	0	0	→
0	_MEDIA_CH_OUT_7	0	0	→
0	_MEDIA_CH_OUT_8	0	0	→
0	_MEDIA_CH_OUT_9	0	0	→
0	_MEDIA_CH_OUT_10	0	0	→
0	_MEDIA_CH_OUT_11	0	0	→
0	_MEDIA_CH_OUT_12	0	0	→
0	_MEDIA_CH_OUT_13	0	0	→
0	_MEDIA_CH_OUT_14	0	0	→
0	_MEDIA_CH_OUT_15	0	0	→



4.9 ipp internals

This command inspects the internals of the IP pipeline.

Options without arguments:

- h, --help** Prints the help message.
- f, --file** Shows the config file.

Options with mandatory arguments:

- l, --lcore** Prints `lcore` internal configuration and statistics.
- m, --measure** Shows the current load on `lcore`.
- p, --port** Prints port statistics of a pipeline port specified by its name.
- t, --tableshow** Shows information about an internal table specified by its name.

Example: Print Current IP Pipeline Configuration As a File (Format Acceptable at IPP Startup)

```
cli_tool ipp internals --file
```

```
;;; Initial configuration file of the IP pipeline
;;; hostname: 103-PL-3
;;; generated: Thu May 28 10:17:03 2015
;;;
;;; file format version 001
PIPELINECONF001{
  MEMPOOL {
    name = "pktbuf1"
    ,id = 0
    ,type = PKT_MBUF ;;; received or transmitted media pa →
ckets

  ...
}
```

Example: Print the Internal Pipeline Along with Packet Handling Statistics

```
cli_tool ipp internals -f | grep lcore
```

```
,lcore = 0
,lcore = 0
,lcore = 0
```



```
,lcore = 0
,lcore = 0
,lcore = 0
,lcore = 0
```

```
cli_tool ipp internals --lcore 0
lcore 0 has 7 pipelines:
```

-----	-----	-----	-----	-----	-----	→
inport %	pipeline outport %	runs/flush table %	total in	total out	total diff	→
2.57	tx_handler 1.69	4 0.53	480289234	480289234	0	→
	tablename table_tx	hits 480289234	misses 0	discarded 0		
ueue max	portname queue avg	dir	max burst	total	discards	lost q →
0	arpout	in	64	0	0	0 →
0	0.00					
0	udp_out	in	64	480289218	0	0 →
0	0.00					
0	icmpout	in	64	0	0	0 →
0	0.00					
0	icmpv6out	in	64	0	0	0 →
0	0.00					
0	classd dhcp	in	64	16	0	0 →
0	0.00					
0	classd_ipv6_ll	in	64	0	0	0 →
0	0.00					
0	eml	out	64	241677114	0	9720 →
0	0.00					
0	internal loop	out	64	0	0	0 →
0	0.00					
-----	-----	-----	-----	-----	-----	→
inport %	pipeline outport %	runs/flush table %	total in	total out	total diff	→
1.39	udp_tx 11.46	4 0.96	480289340	480289340	0	→
	tablename table_udp_tx	hits 480289340	misses 0	discarded 0		
queue max	portname queue avg	dir	max burst	total	discards	lost q →
0	udp_fwd	in	64	480289340	0	0 →
0	0.00					
0	mpdport	in	64	0	0	0 →
0	0.00					
0	udp_out	out	64	480289468	0	0 →
0	0.00					
-----	-----	-----	-----	-----	-----	→
inport %	pipeline outport %	runs/flush table %	total in	total out	total diff	→
0.16	udp_rx 7.04	4 4.07	480289596	480289596	0	→
	tablename table_udp_rx	hits 480289596	misses 0	discarded 0		
ueue max	portname queue avg	dir	max burst	total	discards	lost q →
0	classd udp	in	64	480289596	0	0 →
0	0.00					
0	udp_fwd	out	64	480289596	0	0 →
0	0.00					
0	mpdport	out	64	0	0	0 →
0	0.00					
-----	-----	-----	-----	-----	-----	→



```

-----
inport %      pipeline      runs/flush      total in      total out      total diff      →
              arp_handler    table %        4              0              0              0              →
0.00          0.00          0.00

              tablename      hits      misses      discarded
              table_arp_handler      0              0              0

ueue max      portname dir      max burst      total      discards      lost      q →
              queue avg
              classed_arp in      64              0              0              0              →
0              0.00
              arpout out      64              0              0              0              →
0              0.00

-----
inport %      pipeline      runs/flush      total in      total out      total diff      →
              icmpv6_handler    table %        4              0              0              0              →
0.00          0.00          0.00

              tablename      hits      misses      discarded
              table_icmpv6_handler      0              0              0

ueue max      portname dir      max burst      total      discards      lost      q →
              queue avg
              classed_icmpv6 in      64              0              0              0              →
0              0.00
              icmpv6out out      64              0              0              0              →
0              0.00

-----
inport %      pipeline      runs/flush      total in      total out      total diff      →
              icmp_handler    table %        4              0              0              0              →
0.00          0.00          0.00

              tablename      hits      misses      discarded
              table_icmp_handler      0              0              0

ueue max      portname dir      max burst      total      discards      lost      q →
              queue avg
              classed_icmp in      64              0              0              0              →
0              0.00
              icmpout out      64              0              0              0              →
0              0.00

-----
inport %      pipeline      runs/flush      total in      total out      total diff      →
              classifier    table %        4      480289740      480289724              16              →
5.08          12.79          1.29

              tablename      hits      misses      discarded
              table_l2l3_classifier      480289740              0              0

ueue max      portname dir      max burst      total      discards      lost      q →
              queue avg
              em1 in      16      238612370              0              0              →
0              0.00
              internal_loop in      16              0              0              0              →
0              0.00
              classed_udp out      64      480289724              0              0              →
0              0.00
              classed_arp out      64              0              0              0              →
0              0.00
              classed_icmp out      64              0              0              0              →
0              0.00
              classed_icmpv6 out      64              0              0              0              →
0              0.00
              classed_frag out      64              0              0              0              →
0              0.00
              classed_dhcp out      64              16              16              0              →

```



```

0          0.00
  classed_ipv6_ll out          64          0          0          0 →
0          0.00
lcore 0 has 7 pipelines:

packet handling %: 49.04
timer handling %: 0.09
control handling %: 1.01
bw policing %: 0.09
measurement period: 155.23ms

```

Example: Measure Current Load on lcore 0

```
cli_tool ipp internals -m 0
```

Load measure for lcore 0:

```

total: 45.09%
actions: 43.81% (774647 calls)
control: 1.01% (1708 signals)
timers: 0.14%
policing: 0.13%
measurement period: 200.02ms

4.86% (187378 calls) tx_handler
12.50% (187406 calls) udp_tx
8.75% (187406 calls) udp_rx
0.00% (0 calls) arp_handler
0.00% (0 calls) icmpv6_handler
0.00% (0 calls) icmp_handler
17.69% (212457 calls) classifier

```

Example: Update "queue max" and "queue avg" in the lcore Output and Print Queue Size Per Port

```
cli_tool ipp internals --port mpdport
```

```

portname dir    max burst    total    discards    lost    queue max    que →
ue avg
mpdport out      64          0          0          0          9          →
0.36
historical queue data (time/max/avg):
1161.226132265622/ 3/ 0.246
1161.226561461927/ 3/ 0.262
1161.226979298287/ 3/ 0.137
1161.227408225793/ 2/ 0.066
1161.227826191752/ 3/ 0.258
1161.228244024913/ 3/ 0.242
1161.228672685220/ 3/ 0.262
1161.229094903959/ 3/ 0.242
1161.229525140258/ 3/ 0.266
1161.229942760619/ 0/ 0.000
1161.230371643326/ 3/ 0.246
1161.230789511686/ 3/ 0.262
1161.231207682444/ 3/ 0.234
1161.231637091548/ 3/ 0.258
1161.232054691109/ 3/ 0.242
1161.232483709814/ 3/ 0.148
1161.232911366927/ 2/ 0.074
1161.233328960088/ 3/ 0.250
1161.233761914774/ 3/ 0.262

```




1161.234179664735/	3/ 0.230
1161.234609475437/	3/ 0.262
1161.235027034998/	3/ 0.242
1161.235456248903/	1/ 0.004
1161.235874122063/	3/ 0.230
1161.236292025622/	3/ 0.242
1161.236720885929/	3/ 0.250
1161.237143266267/	3/ 0.234
1161.237573020969/	3/ 0.270
1161.237990722929/	3/ 0.191
1161.238419810434/	1/ 0.023
1161.238837629195/	3/ 0.258
1161.239254883158/	3/ 0.234
1161.239684050662/	3/ 0.262
1161.240101767023/	3/ 0.234
1161.240530489730/	3/ 0.258
1161.240953030067/	1/ 0.004
1161.241382248772/	3/ 0.230
1161.241799997132/	3/ 0.262
1161.242218006292/	3/ 0.234
1161.242647042597/	3/ 0.262
1161.243064517359/	3/ 0.246
1161.243493707264/	3/ 0.195
1161.243911380425/	1/ 0.031
1161.244329279185/	3/ 0.234
1161.244757971491/	3/ 0.254
1161.245185591804/	3/ 0.254
1161.245618111292/	3/ 0.266
1161.246035731654/	3/ 0.246
1161.246465054358/	2/ 0.031
1161.246882916318/	3/ 0.180
1161.247300789478/	3/ 0.234
1161.247730089782/	3/ 0.273
1161.248148054141/	3/ 0.242
1161.248577271246/	3/ 0.258
1161.249000451580/	3/ 0.230
1161.249430743879/	0/ 0.000
1161.249848412240/	3/ 0.266
1161.250266283800/	3/ 0.246
1161.250695707304/	3/ 0.262
1161.251113625263/	3/ 0.234
1161.251542909567/	3/ 0.258
1161.251960745928/	2/ 0.023
1161.252389452635/	3/ 0.180
1161.252811444175/	3/ 0.254
1161.253229238935/	3/ 0.250
1161.253658569639/	3/ 0.266
1161.254076508398/	3/ 0.238
1161.254505719103/	3/ 0.234
1161.254924280260/	1/ 0.004
1161.255342316619/	3/ 0.258
1161.255771266525/	3/ 0.258
1161.256189072485/	3/ 0.242
1161.256617844792/	3/ 0.254
1161.257045604303/	3/ 0.227
1161.257478098192/	3/ 0.109
1161.257895788953/	2/ 0.102
1161.258313479713/	3/ 0.219
1161.258743290415/	3/ 0.230
1161.259161209975/	3/ 0.219
1161.259590523079/	3/ 0.238
1161.260008329039/	3/ 0.223
1161.260437173346/	0/ 0.000
1161.260859384085/	3/ 0.230
1161.261277239644/	3/ 0.242
1161.261706687148/	3/ 0.262
1161.262124625908/	3/ 0.234
1161.262553526214/	3/ 0.258
1161.262971042575/	3/ 0.082
1161.263399688483/	2/ 0.113
1161.263817513643/	3/ 0.254
1161.264234918005/	3/ 0.238
1161.264663688712/	3/ 0.266
1161.265088797036/	3/ 0.246
1161.265519414134/	3/ 0.266
1161.265937114495/	0/ 0.000
1161.266366333200/	3/ 0.242
1161.266783795161/	3/ 0.258
1161.267201740321/	3/ 0.234
1161.267631119025/	3/ 0.258



```

1161.268048622587/      3/ 0.246
1161.268477684492/      3/ 0.121
1161.268906029601/      2/ 0.098
1161.269323984360/      3/ 0.250
1161.269756681448/      3/ 0.266
1161.270173986611/      3/ 0.238
1161.270603694913/      3/ 0.258
1161.271021395273/      3/ 0.242
1161.271450345179/      0/ 0.000
1161.271867933541/      3/ 0.250
1161.272285846700/      3/ 0.234
1161.272715006205/      3/ 0.270
1161.273137194544/      3/ 0.246
1161.273568339639/      3/ 0.262
1161.273989529583/      3/ 0.180
1161.274422082671/      1/ 0.016
1161.274843152616/      3/ 0.258
1161.275264323360/      3/ 0.238
1161.275696769248/      3/ 0.254
1161.276117856793/      3/ 0.242
1161.276550086682/      3/ 0.258
1161.276975449406/      3/ 0.109
1161.277408295293/      2/ 0.086
1161.277829518836/      3/ 0.262
1161.278250662380/      3/ 0.238
1161.278683079469/      3/ 0.250
1161.279103715816/      3/ 0.242
1161.279536081705/      3/ 0.258
1161.279957110049/      1/ 0.008
1161.280388805542/      3/ 0.207
1161.280819686638/      3/ 0.246
1161.281240833382/      3/ 0.250
1161.281676658454/      3/ 0.262
1161.282097861198/      3/ 0.238
1161.282530716685/      3/ 0.258
1161.282951639430/      1/ 0.004
1161.283384395717/      3/ 0.227
1161.283816308809/      3/ 0.496
1161.284237225154/      3/ 0.223
1161.284670872637/      3/ 0.234
1161.285096305760/      3/ 0.246
1161.285529332446/      3/ 0.270
1161.285950010392/      0/ 0.000
1161.286382222682/      3/ 0.234
1161.286803436626/      3/ 0.262
1161.287224704969/      3/ 0.230
1161.287761324749/      2/ 0.527
1161.288193666639/      3/ 0.859
1161.288633610091/      3/ 0.465
1161.289060065609/      2/ 0.359
1161.289495316284/      4/ 1.184
1161.289913091844/      3/ 2.008
1161.290330878605/      5/ 3.012
1161.290764081290/      6/ 3.867
1161.291182903245/      7/ 4.645
1161.291613232344/      8/ 5.527
1161.292031244703/      9/ 6.281
1161.292929805117/      7/ 3.445
1161.294074244330/      0/ 0.000
1161.295112176862/      0/ 0.000
1161.296258854464/      0/ 0.000
1161.297456232619/      0/ 0.000
1161.297873353782/      0/ 0.000
1161.298290022148/      0/ 0.000
1161.298725164024/      0/ 0.000
...

```

Example: Print Active CEP Table (All Active Half-calls):

```
cli_tool ipp internals -t cep
```

```

      validity      id network mediaip udpport  connectcep  clientcep  servercep
total cepts in use 0

```



```
cli_tool ipp internals -t cep
```

validity	id	network	mediaip	udpport	connectcep	clientcep	servercep
0x000018ff	4	2	2	1026	5	-	-
0x000018ff	5	1	1	1026	4	-	-
0x000018ff	6	2	2	1028	7	-	-
0x000018ff	7	1	1	1028	6	-	-

```
total ceps in use 4
```

```
cli_tool ipp internals -t cep
```

validity	id	network	mediaip	udpport	connectcep	clientcep	servercep
0x000109ff	8	2	2	1030	-	8191	2
0x000109ff	9	1	1	1030	-	8189	4

```
total ceps in use 2
```



5 vMRF Utility Scripts

Table 4 vMRF Utility Scripts

Name	Description	POSIX Group with Access
verify_vmrf_cluster_status.py on page 48	Displays status of services and applications running on a vMRF VNF	mrf-op
verify_vmrf_node_status.py on page 49	Displays status of services and applications running on a vMRF VM	mrf-op
collectData.py or dcm	Fetches data for TR ⁽¹⁾ s or CSR ⁽²⁾ s	mrf-op and systemd-journal Linux group
mrf_export_conf.py on page 52	Exports vMRF configuration data	emergency user
mrf_import_conf.py on page 52	Imports vMRF configuration data	emergency user

(1) Trouble Report

(2) Customer Service Report

5.1 verify_vmrf_cluster_status.py

This command displays status of services and applications running on a vMRF VNF. If all VMs operate normally, the OK status is displayed in the printout.

If there are abnormally operating VMs, the following information is displayed:

- A list of normally operating VMs
- A list of abnormally operating VMs
- Detailed component information on abnormally operating VMs

Options without arguments:

-h, --help Prints the help message.

Options with mandatory arguments:

-s, --size <number_of_VMs>



Verifies if the cluster contains the number of VMs specified in the argument.

Example: Cluster Status Verification with One Faulty VM

`verify_vmrf_cluster_status.py`

The following hosts are successfully up:

IP Address	Hostname	Role	UUID	Administrative State	Operational State
192.168.0.3	fv-mrsv	ACTIVE	d8cb6553-172e-436f-9b	UNLOCKED	OK
192.168.0.4	fv-mrsv-1	QUIESCED	2e4c1019-d971-435a-94	UNLOCKED	OK
192.168.0.5	fv-mrsv-2	STANDBY	c0951947-1bcf-45bd-a3	UNLOCKED	OK

The following hosts are not up correctly:
fv-mrsv-0

Running command: "verify_vmrf_node_status.py" on host: 19 → 2.168.0.6 (fv-mrsv-0)

```

eth0: OK
eth1: OK
eth2: OK
SC role: not_available
CoreMW: ERROR
COM: OK, NOT RUNNING
MrfDirector: OK, NOT RUNNING
CliDaemon: ERROR
IpPipeline: ERROR
TC-MPD: ERROR
MrfAgent: ERROR
CloudInit: OK
ConfigImport: CONFIGURATION_NOT_IMPORTED_AT_DEPL →
OYMENT
SEC-CERT: ERROR
neighbourdetection: OK
LM: OK

```

5.2 `verify_vmrf_node_status.py`

This command displays the status of services and applications running on a vMRF VM, VM network interfaces, and information about vMRF configuration import. [Table 5](#) summarizes the information displayed in the command printout.

Options without arguments:



- h, --help** Prints the help message.
- q, --quiet** Executes the command as if without option specified but does not return with a printout.

Options with mandatory arguments:

- check** Checks and prints VM network configuration. Possible arguments: `network`, `coremw`, `com`, `nodetype`, `mrf_director`, `cli`, `lpp`, `mpd`, `mrf_agent`, `cloud_init`, `sec-cert`, `neighbourdetection`.
- interface** Checks and prints information on the specified `eth` interface and default VM services and applications. Possible arguments: `eth0`, `eth1`, `eth2`.

Table 5 Status Verification Summary

Service or Component	Description
eth0, eth1, eth2	Displays the status of the cluster internal network, O&M, and the signaling ports, respectively.
SC role	Displays the role of the VM in the cluster.
CoreMW	Displays the status of the CoreMW component.
COM	The component is in the <code>OK</code> , <code>RUNNING</code> state only for the active SC VM. In all other VMs, it is in the <code>OK</code> , <code>NOT RUNNING</code> state.
MrfDirector	Displays the status of the MrfDirector service.
CliDaemon	Displays the status of the CliDaemon service.
IpPipeline	Displays the status of the IpPipeline service.
TC-MPD	Displays the status of TC-MPD.
MrfAgent	Displays the status of the MrfAgent service.
CloudInit	Displays the status of the CloudInit service.
ConfigImport	<p>Shows information about the configuration import process both if configuration was imported during deployment, using HOT files, or after deployment, using the <code>mrf_import_conf.py</code> command. Possible values:</p> <ul style="list-style-type: none">• <code>OK</code>: Configuration was imported successfully, but the user has to verify if it has the correct values.• <code>FAILED</code>: Configuration import failed.



Service or Component	Description
	<ul style="list-style-type: none"> CONFIGURATION_NOT_IMPORTED_AT_DEPLOYMENT: Configuration was imported using other methods, or not imported at all.
SEC-CERT	Shows information about the status of the SEC-CERT process, used for certificate management and other security-related services.
neighbourdetection	Shows information about the status of the neighbourdetection service, used for sharing neighbor information through all the VMs in the cluster.
LM	Shows the status of License Management process. If the process is running, the OK status is shown, otherwise ERROR is displayed.

Example: Verify VM Status of the Active SC VM

`verify_vmrf_node_status.py`

```
eth0: OK
eth1: OK
eth2: OK
SC role: ACTIVE
CoreMW: OK
COM: OK, RUNNING
MrfDirector: OK, RUNNING
CliDaemon: OK
IpPipeline: OK
TC-MPD: OK
MrfAgent: OK
CloudInit: OK
ConfigImport: CONFIGURATION_NOT_IMPORTED_AT_DEPL →
OYMENT
SEC-CERT: OK
neighbourdetection: OK
LM: OK
```

Example: Verify a Specific VM Component

Note: In the `--check` option printout, the SC role of the VM is also displayed.

`verify_vmrf_node_status.py --check mrf_director`

```
SC role: ACTIVE
MrfDirector: OK, RUNNING
```



5.3 collectData.py

This command collects troubleshooting data.

Note: To collect the logs file generated by this command, the user must be a member of both the `mrf-op` POSIX group and the `systemd-journal` group.

For more information on `collectData.py`, refer to *Data Collection Guideline for vMRF*.

5.4 mrf_export_conf.py

This command exports vMRF configuration data into a file. For more information on configuration export, refer to *vMRF Configuration Management*.

5.5 mrf_import_conf.py

This command imports vMRF configuration data from a file. For more information on configuration import, refer to *vMRF Configuration Management*.



6 Linux Commands

OS restrictions—based on preconfigured access rights for each command—apply to Linux commands, that is, commands in `/bin`, `/sbin`, `/usr/bin`, and `/usr/sbin`. Additional rights can be granted based on `sudo` configuration.