

CLI Commands

Virtual Multimedia Resource Function

User Guide

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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	7
3.4	h248interface-counters	8
3.5	compute-resource	9
3.6	context-info	10
3.7	sctp-pm-counters	12
3.8	sctp-status	13
3.9	service-pm-counters	14
3.10	status	16
3.11	internals	17
3.12	overload-control	17
4	ipp Commands	20
4.1	ipp ping	20
4.2	ipp conf	21
4.3	ipp debug-counters	21
4.4	ipp pm-counters	23
4.5	ipp discard-counters	24
4.6	ipp error-counters	25
4.7	ipp signal-counters	26
4.8	ipp ethdev-counters	28
4.9	ipp dpdk-counters	28
4.10	ipp internals	32
5	vMRF Utility Scripts	38
5.1	verify_vmrf_cluster_status.py	38
5.2	verify_vmrf_node_status.py	38
5.3	collectData.py	39
5.4	mrf_export_conf.py	39



5.5	mrf_import_conf.py	39
6	Linux Commands	40



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 counters since last restart	mrf-op
announcement-status on page 5	Displays information on announcement playing failures	mrf-op
h248-counters on page 7	Displays H.248 command statistics and information on possible command execution failures	mrf-op
h248interface-counters on page 8	Displays H.248 interface-related counters.	mrf-op
compute-resource on page 9	Displays counters related to compute-resource.	mrf-op
context-info on page 10	Displays context-related data and statistics	mrf-op
sctp-pm-counters on page 12	Displays Linux kernel SCTP ⁽¹⁾ counters	mrf-op
sctp-status on page 13	Displays the operational state of SCTP links	mrf-op
service-pm-counters on page 14	Displays Service PM counters since last restart	mrf-op
status on page 16	Command to query signalling state	mrf-op
internals on page 17	Displays application internal info	mrf-op

(1) 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	faultId	category	announcementId	language
2016-12-21T09:42:19+00:00	1	CONFIGURATION FAULT	555	en-GB
2016-12-21T09:43:05+00:00	2	INFORMATION ONLY	214	en-GB
2016-12-21T09:43:22+00:00	3	INFORMATION ONLY	216	en-GB
2016-12-21T10:40:55+00:00	4	CONFIGURATION FAULT	DATE	en-GB
2016-12-21T10:40:55+00:00	5	CONFIGURATION FAULT	TIME	en-GB
2016-12-21T10:40:55+00:00	6	CONFIGURATION FAULT	DIGITS	en-GB
2016-12-21T10:42:25+00:00	7	CONFIGURATION FAULT	NUMBER	en-GB



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
2016-12-21T09:42:19+00:00	1	CONFIGURATION FAULT	555	en-GB
2016-12-21T09:43:05+00:00	2	INFORMATION ONLY	214	en-GB
2016-12-21T09:43:22+00:00	3	INFORMATION ONLY	216	en-GB
2016-12-21T10:40:55+00:00	5	CONFIGURATION FAULT	TIME	en-GB
2016-12-21T10:40:55+00:00	6	CONFIGURATION FAULT	DIGITS	en-GB
2016-12-21T10:42:25+00:00	7	CONFIGURATION FAULT	NUMBER	en-GB

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	faultId	category	announcementId	language
2016-12-21T09:42:19+00:00	1	CONFIGURATION FAULT	555	en-GB
2016-12-21T10:40:55+00:00	5	CONFIGURATION FAULT	TIME	en-GB
2016-12-21T10:40:55+00:00	6	CONFIGURATION FAULT	DIGITS	en-GB
2016-12-21T10:42:25+00:00	7	CONFIGURATION FAULT	NUMBER	en-GB



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
  Pendencies: 0
  Pending limit exceeded: 0
  Retransmissions: 0
  Retransmission limit exceeded: 0

Service Change Request total: 6
  Pendencies: 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_0)

  2 sent with reason 905 (GCP_TERMINATION_TAKEN_OUT_OF_SERVICE)
  Originated from MRFP_APPL at location 0 (visible as ERR_LOC_0)

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

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

Topology Request total: 0
  Pendencies: 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,MrfH248Interface=1
audioConfParticipantCreations      : 100
audioConfParticipants              : 0
audioConferenceCreations           : 18
audioConferences                   : 0
terminationReqs                   : 120
rejTerminationReqs                : 2
abnormTermTerminations             : 0
LDN = MediaResourceFunction=1,MrfH248Control=1,MrfH248Interface=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=
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
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
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
sctpAbortedds           : 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,MrfH248Interface=2, c
LDN= MediaResourceFunction=1,MrfH248Control=1,MrfH248Interface=1, c
```

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,MrfH248Interface=2, c
```

**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,MrfH248Interface=2, ope
```

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
```

```
mrsv-admin@fv-mrsv:~$ cli_tool mrf_appl status
[2016-09-20 12:41:09.308]
Signalling State:
=====
H248Interface-Id: 2 H248Interface-LDN: "MediaResourceFunction=1,MrfH2
H248Interface Service Change state: COMPLETED
Sctp operational state: ENABLED
Remote IP Address: 10.0.0.2 Remote Port: 9101
=====
H248Interface-Id: 1 H248Interface-LDN: "MediaResourceFunction=1,MrfH2
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
```

```
mrvs-admin@fv-mrvs:~$ 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 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, --setIppProcessorLoad

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, --setApplProcessorLoad

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 control: 3
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
```



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 21. 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_MULTICONTEXT_OPTIMIZATION                    : 0
UDP_IPV6_MULTICONTEXT_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 counter

Example: Clear All Counters

```

cli_tool ipp debug-counters --clear all

```

Cleared all debug counters

4.4 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 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

```

4.6 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
```

4.7 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_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_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

```

4.8 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
em1	UP	10G	279608	18	24654117	2350	0	0	rx

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
em1	UP	10G	489	0	43175	0	0	0	rx

```
cli_tool ipp ethdev-counters
```

```
rte_ethdev counters:
```

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

4.9 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:
phys_addr      virt_addr      len  hugepage_sz  socket_id  nchannel
11000000      7fb8ec800000    164M    2M           0           0
8b000000      7fb8ec400000     2M     2M           0           0
8b400000      7fb8e9e00000    36M     2M           0           0
8da00000      7fb8e9200000    10M     2M           0           0
8e800000      7fb8e8c00000     4M     2M           0           0
8ee00000      7fb8e7800000    18M     2M           0           0
90200000      7fb8e5c00000    26M     2M           0           0
91e00000      7fb8e5000000    10M     2M           0           0
92c00000      7fb8d4a00000   260M     2M           0           0
a3200000      7fb8d4600000     2M     2M           0           0
a3800000      7fb8d3c00000     8M     2M           0           0
a4200000      7fb8d2c00000    14M     2M           0           0
a5400000      7fb8d2800000     2M     2M           0           0
a5800000      7fb8d2200000     4M     2M           0           0
a6000000      7fb8d1c00000     4M     2M           0           0
a6600000      7fb8d1600000     4M     2M           0           0
a6c00000      7fb8d0400000    16M     2M           0           0
a7e00000      7fb8d0000000     2M     2M           0           0
a8200000      7fb8cf800000     6M     2M           0           0
a8a00000      7fb8cf400000     2M     2M           0           0
a9000000      7fb8cee00000     4M     2M           0           0
a9600000      7fb8ce800000     4M     2M           0           0
a9c00000      7fb8ce400000     2M     2M           0           0
aa200000      7fb8cdc00000     6M     2M           0           0
aaa00000      7fb8cd400000     6M     2M           0           0
ab400000      7fb8cce00000     4M     2M           0           0
aba00000      7fb8cca00000     2M     2M           0           0
abe00000      7fb8cb800000    16M     2M           0           0
ad000000      7fb8cb000000     6M     2M           0           0
ad800000      7fb8c6a00000    68M     2M           0           0
b2000000      7fb8c5a00000    14M     2M           0           0
b3000000      7fb8c4000000    24M     2M           0           0
b4c00000      7fb8c3200000    12M     2M           0           0
b5c00000      7fb8c2e00000     2M     2M           0           0
b6400000      7fb8c2a00000     2M     2M           0           0
b6800000      7fb8bfc00000    44M     2M           0           0
b9600000      7fb8bdc00000    30M     2M           0           0
bb800000      7fb8bd600000     4M     2M           0           0
10000000      7fb8bcc00000     8M     2M           0           0
100a0000      7fb8bbc00000    14M     2M           0           0
101c0000      7fb8ba200000    24M     2M           0           0
10360000      7fb8b8400000    28M     2M           0           0
10540000      7fb8b7a00000     8M     2M           0           0
105e0000      7fb8b7200000     6M     2M           0           0
10680000      7fb8b5c00000    20M     2M           0           0
10800000      7fb8b5600000     4M     2M           0           0
10a20000      7fb8b5200000     2M     2M           0           0
10c00000      7fb8b4e00000     2M     2M           0           0
10ca0000      7fb8b4a00000     2M     2M           0           0
10f20000      7fb8b4600000     2M     2M           0           0
10fe0000      7fb8b4200000     2M     2M           0           0
11220000      7fb8b3e00000     2M     2M           0           0
112c0000      7fb8b3a00000     2M     2M           0           0
11520000      7fb8b3600000     2M     2M           0           0
11600000      7fb8b3200000     2M     2M           0           0
```



118200000	7fb8b2e00000	2M	2M	0	0
118e00000	7fb8b2a00000	2M	2M	0	0
11b200000	7fb8b2600000	2M	2M	0	0
11bc00000	7fb8b2200000	2M	2M	0	0
11e400000	7fb8b1e00000	2M	2M	0	0
11ee00000	7fb8b1a00000	2M	2M	0	0
120e00000	7fb8b1600000	2M	2M	0	0
121200000	7fb8b1200000	2M	2M	0	0
121a00000	7fb8b0e00000	2M	2M	0	0
123c00000	7fb8b0a00000	2M	2M	0	0
124200000	7fb8b0600000	2M	2M	0	0
127400000	7fb8b0200000	2M	2M	0	0
127c00000	7fb8afe00000	2M	2M	0	0
128000000	7fb8afa00000	2M	2M	0	0
128400000	7fb8af600000	2M	2M	0	0
128800000	7fb8af200000	2M	2M	0	0
128e00000	7fb8aee00000	2M	2M	0	0
12c000000	7fb8aea00000	2M	2M	0	0
12c400000	7fb8ae600000	2M	2M	0	0
12f200000	7fb8ae200000	2M	2M	0	0
12f600000	7fb8ade00000	2M	2M	0	0
134600000	7fb8ada00000	2M	2M	0	0
134c00000	7fb8ad600000	2M	2M	0	0
139600000	7fb8ad000000	4M	2M	0	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	
	DPDKIPC_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_MSERI_SEND_RING	8b1ff6c0	2176	0	
	RG_MSERI_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_count
  internal_loop       1024    1024      --/--      0      1023

cli_tool ipp dpdk-counters -r all
rte_ring statistics:
  name                size  watermark  prod/cons  count  free_count
  classed_udp         2048    2048      --/--      0      2047
  classed_arp         1024    1024      --/--      0      1023
  classed_icmp         1024    1024      --/--      0      1023
  classed_icmpv6       1024    1024      --/--      0      1023
  classed_frag         1024    1024      --/--      0      1023
  classed_dhcp         1024    1024      --/--      0      1023
  classed_ipv6_ll      1024    1024      --/--      0      1023
  arpout              1024    1024      --/--      0      1023
  icmpv6out           1024    1024      --/--      0      1023
  icmpout             1024    1024      --/--      0      1023
  naptout             1024    1024      --/--      0      1023
  udp_out             1024    1024      --/--      0      1023
  udp_fwd            1024    1024      --/--      0      1023
  internal_loop       1024    1024      --/--      0      1023
  TEST_PORT_SEND_RING  128     100      --/--      0      127
  TEST_PORT_RECV_RING  64       50      --/--      0      63
  MSERI_SEND_RING     256     200      --/--      0      255
  MSERI_RECV_RING     256     200      --/--      0      255
  MEDIA_CH_IN_ALL     2048    2048      --/--      0      2047
  MEDIA_CH_OUT_0       512     512      --/--      1      510
  MEDIA_CH_OUT_1       512     512      --/--      0      511
  MEDIA_CH_OUT_2       512     512      --/--      0      511
  MEDIA_CH_OUT_3       512     512      --/--      0      511
  MEDIA_CH_OUT_4       512     512      --/--      0      511
  MEDIA_CH_OUT_5       512     512      --/--      0      511
  MEDIA_CH_OUT_6       512     512      --/--      0      511
  MEDIA_CH_OUT_7       512     512      --/--      0      511
  MEDIA_CH_OUT_8       512     512      --/--      0      511
  MEDIA_CH_OUT_9       512     512      --/--      0      511
  MEDIA_CH_OUT_10      512     512      --/--      0      511
  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	semaphore
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	0

4.10 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 packets
    }
}
...

```

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
,lcore = 0

```

```

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

```

pipeline	runs/flush	total in	total out	total diff	inport %	ou
tx_handler	4	480289234	480289234	0	2.57	ou
tablename	hits	misses	discarded			
table_tx	480289234	0	0			
portname	dir	max burst	total	discards	lost	queue max
arpout	in	64	0	0	0	0
udp_out	in	64	480289218	0	0	0
icmpout	in	64	0	0	0	0
icmpv6out	in	64	0	0	0	0
classed_dhcp	in	64	16	0	0	0
classed_ipv6_ll	in	64	0	0	0	0
eml	out	64	241677114	0	9720	0
internal_loop	out	64	0	0	0	0
pipeline	runs/flush	total in	total out	total diff	inport %	ou
udp_tx	4	480289340	480289340	0	1.39	ou
tablename	hits	misses	discarded			
table_udp_tx	480289340	0	0			
portname	dir	max burst	total	discards	lost	queue max
udp_fwd	in	64	480289340	0	0	0
mpdport	in	64	0	0	0	0
udp_out	out	64	480289468	0	0	0
pipeline	runs/flush	total in	total out	total diff	inport %	ou
udp_rx	4	480289596	480289596	0	0.16	ou
tablename	hits	misses	discarded			
table_udp_rx	480289596	0	0			
portname	dir	max burst	total	discards	lost	queue max
classed_udp	in	64	480289596	0	0	0
udp_fwd	out	64	480289596	0	0	0



```

mpdport out          64          0          0          0          0

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

tablename            hits        misses    discarded
table_arp_handler    0          0          0

portname dir         max burst    total     discards   lost      queue max  queue
classed_arp in       64          0          0          0          0          0
arpout out          64          0          0          0          0

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

tablename            hits        misses    discarded
table_icmpv6_handler 0          0          0

portname dir         max burst    total     discards   lost      queue max  queue
classed_icmpv6 in    64          0          0          0          0          0
icmpv6out out       64          0          0          0          0

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

tablename            hits        misses    discarded
table_icmp_handler   0          0          0

portname dir         max burst    total     discards   lost      queue max  queue
classed_icmp in     64          0          0          0          0          0
icmpout out        64          0          0          0          0

-----
pipeline             runs/flush  total in  total out  total diff  inport %  outpo
classifier            4      480289740  480289724      16          5.08

tablename            hits        misses    discarded
table_l2l3_classifier 480289740    0          0

portname dir         max burst    total     discards   lost      queue max  queue
eml in             16      238612370    0          0          0          0
internal loop in   16          0          0          0          0          0
classed_udp out    64      480289724    0          0          0          0
classed_arp out    64          0          0          0          0          0
classed_icmp out   64          0          0          0          0          0
classed_icmpv6 out 64          0          0          0          0          0
classed_frag out   64          0          0          0          0          0
classed_dhcp out   64          16         16          0          0          0
classed_ipv6 ll out 64          0          0          0          0          0
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	queue 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 cepts 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 cepts in use 2

```



5 vMRF Utility Scripts

Table 4 vMRF Utility Scripts

Name	Description	POSIX Group with Access
verify_vmrfl_cluster_status.py on page 38	Displays status of services and applications running on a vMRF VNF	mrf-op
verify_vmrfl_node_status.py on page 38	Displays status of services and applications running on a vMRF VM	mrf-op
collectData.py or dcgm	Fetches data for TR ⁽¹⁾ s or CSR ⁽²⁾ s	mrf-op and systemd-journal Linux group
mrf_export_conf.py on page 39	Exports vMRF configuration data	emergency user
mrf_import_conf.py on page 39	Imports vMRF configuration data	emergency user

(1) Trouble Report

(2) Customer Service Report

5.1 verify_vmrfl_cluster_status.py

This command displays status of services and applications running on a vMRF VNF.

Use

```
verify_vmrfl_cluster_status.py
```

5.2 verify_vmrfl_node_status.py

This command displays status of services and applications running on a vMRF VM.

Use

```
verify_vmrfl_node_status.py
```



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.