



RBFS CLI User Guide

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1. RBFS Command Line Interface

1.1. RBFS CLI Overview

RBFS command line interface is a primary user interface that enables you to interact with RBFS for monitoring, configuring, debugging, and maintaining the system. RBFS command line interface, that runs on top of the Ubuntu shell, provides a rich set of commands which allow you to execute various operations on the system.

RBFS CLI commands are organized in hierarchies based on their functionalities. Commands, which are used to execute the same type of functions, have the same hierarchy. For example, to display information, you can use commands that start with 'show'. **Delete** command, in RBFS, is used to remove an existing configuration.

The RBFS command-line interface has three modes: Configuration mode, Operation mode, and Debug mode.

Operational mode: This is the default mode of RBFS command line interface. Operational mode allows you to execute the operational commands such as show commands to view or monitor various system configuration and its current state.

Configuration mode: Configuration mode allows to execute various configurations for services or features. It also allows you to view the information for the existing configurations.

Debug mode: It allows you to execute troubleshooting or debugging operations in the RBFS system.

1.2. Using the CLI

The following are some of the utilities which help you working with the CLI faster and easier.

Complete Partially Typed Commands:

You can press **Tab** key to complete a partially typed command. It helps you work with commands faster.

Command Options and Description:

If you do not know the options available for a command and the purposes of the options, you can enter the question mark symbol (?). It displays all the available command options and descriptions for that commands.



In any of the modes, if you type the question mark symbol (?), the CLI displays a set of commands which can be executed in that particular mode.



When you execute configurations through CtrlD, and then with the Command Line Interface, it results in error when you commit the configuration through the CLI. The reason is that CtrlD directly interacts with the backend applications (BDS and CONFD) and these changes are not synced with the CLI.

1.2.1. Launch the RBFS CLI

The following example shows how to start the RBFS CLI.

```
supervisor@rtbrick>LEAF01:~$ cli
supervisor@rtbrick>LEAF01: op>
```



'op>' shows you are in operational mode.

CLI Prompt

The RBFS CLI prompt reflects the static hostname and host OS hostname. In RBFS, the static hostname is the container name and the dynamic hostname is derived from DHCP.

The format of the RBFS CLI prompt is as follows:

`<username> @ <static_hostname> > <hostname.host-os>: <mode>`

Example:

```
supervisor@rtbrick>LEAF01: op>
```

1.2.2. Switch CLI Modes

RBFS CLI has three modes: Configuration mode, Operation mode, and Debug mode.

You can enter `switch-mode` command to change the CLI mode.

For example, enter `switch-mode config` to switch to configuration mode.

The following example shows how to switch between modes.

```
supervisor@rtbrick>LEAF01: op> switch-mode
config                Enter a given mode
debug                 Enter a given mode
operation             Enter a given mode
```

The following example shows how to switch from the **operation** mode to the **config** mode.

```
supervisor@rtbrick>LEAF01: op> switch-mode config
supervisor@rtbrick>LEAF01: cfg>
```

1.2.3. Turn on/off Paging

To turn the paging on or off, use the following command:

paging [on | off]

- off - Pagination will be turned off for the commands that span more than screen length
- on - Pagination will be turned on for the commands that span more than screen length

Example:

```
supervisor@rtbrick>LEAF01: cfg> paging on
```

1.2.4. Display Command History

The **history** command enables you to view the previously executed commands. You can execute the command in any of the CLI modes.

history

Example:

```
supervisor@rtbrick>LEAF01: op> history
show config set
exit
show config set
load config test.json
load config obj.json
show config set
exit
show config set
load config test.json
switch-mode config
load config test.json
load config obj.json
exit
switch-mode config
show config set
load config test.json
load config obj
load config obj.json
exit
show config set
load config obj.json
load config test.json
exit
show bd running-status
load config test.json
show config set
exit
show bd running-status
show co
show cores
exi
show datastore confd table test index index2
exit
```

1.2.5. CLI Access Logs

RBFS supports sending command history log messages to Graylog, a log management software that enables real-time analysis of log messages.

The command history logs help you to understand which user has executed a specific command across multiple CLI sessions.

The log format for CLI command history logs is: *User '%s' executed command '%s'*.

System logging is implemented for RESTCONF.



For RESTCONF error logs, do not set the log level to 'info'. If you set the log level to **info**, logs are generated for all the **restconfd** requests.

1.3. Operational Commands

1.3.1. Display Core Files

You can use the `show cores` command to show a set of system core files created when the device service has been crashed. This command is used for diagnostic purposes.

Example:

```
supervisor@rtbrick>LEAF01: op> show cores
Date      Time      Filename
May 10    09:02    core.lldpd.20220510-090237.1317.zst
May 10    09:02    core.igmp.iod.1.20220510-090228.1282.zst
May 10    09:02    core.pim.iod.1.20220510-090228.1280.zst
May 10    09:01    core.lldpd.20220510-090145.984.zst
May 10    09:01    core.igmp.iod.1.20220510-090140.991.zst
May 10    09:01    core.pim.iod.1.20220510-090140.989.zst
```

1.3.2. View Hardware Resource Usage Limit Information

In RBFS, you can view the hardware resource usage limit details.

Run the following command:

```
show hardware limits
```

Example:


```

supervisor@rtbrick>rtbrick.net: op> show hardware limits
Hardware resources:
Module: fib
  ASIC                : q2c
  Role                : accessleaf
  Model               : agcva48s
  IPv4 route count   : 1200000
  IPv6 route count   : 250000
Module: fib
  ASIC                : q2c
  Role                : accessleaf
  Model               : as7946-74xkb
  IPv4 route count   : 1200000
  IPv6 route count   : 250000
Module: fib
  ASIC                : q2c
  Role                : accessleaf
  Model               : as7946-30xb
  IPv4 route count   : 1200000
  IPv6 route count   : 250000
Module: fib
  ASIC                : q2c
  Role                : accessleaf
  Model               : s9600-72xc
  IPv4 route count   : 1200000
  IPv6 route count   : 250000
Module: bgp
  ASIC                : q2c
  6PE label          : 2
Module: confd
  ASIC                : q2c
  Max MTU profile    : 8
  Max L3 MTU profile : 3
  Max subscriber MTU profile : 6
  Max physical MTU profile : 8
Module: rd
  ASIC                : q2c

```

1.3.3. Reboot Containers and Hosts

The **reboot** command allows you to restart containers and hosts.

reboot <option>

Option	Description
-	Without any option, this command allows you to reboot a container (default). You are prompted to confirm rebooting the container when you enter this command. You must answer yes or no.
container	This command allows you to reboot a container. You are prompted to confirm rebooting the container when you enter this command. You must answer yes or no.

Option	Description
container-and-confirm	This command reboots the container without prompting yes/no.
device	This command allows you to reboot a device. You are prompted to confirm rebooting the device when you enter this command. You must answer yes or no.
device-and-confirm	This command reboots the device without prompting yes/no.

Example:

```
supervisor@rtbrick>LEAF01: cfg> reboot container
```

1.3.4. Display System Version Details

To display the version details of RBFS and its various components, use the **show version** command.

show version

Example:

```
supervisor@ixr_pel>srv3.nbg1.rtbrick.net: op> show version
UUID          : 2abb4250-2a14-4e5c-84e2-6785eee158f8
Version       : 22.6.0-g4internal.20220620060710+Bfs0000bgpauthlatest.C3abc099d
Role          : spine
Platform     : virtual
Format       : lxd
Build date   : 2022-06-20 06:07:10 UTC
Component    Version
Timestamp    Branch
alertmanager 0.20.1001-
internal.20220613124702+Bdevelopment.... 2022-06-07 20:01:29
development
cligen        0.1.0-
internal.20220613140225+Bdevelopment.C9457c97b 2022-06-07 20:00:33
development
clixon        4.3.1-
internal.20220618124913+Bdevelopment.C85593b60 2022-06-13 11:48:32
development
<...>
```

1.3.5. Display Date and Time

To display system date and time, use the **date** command.

date

Example:

```
supervisor@rtbrick>LEAF01: op> date  
Thu Apr 28 09:56:32 UTC 2022
```

1.3.6. Display Routes

The **show route** command displays information of routes.

Syntax:

show route <options>

Attribute	Description
-	Without any option, the command displays the information for all routes for all modules.
detail	Shows detailed route information.
instance <name>	Routing table information for a specified instance.
ipv4	Shows route information for the IPv4 routing table.
ipv6	Shows route information for the IPv6 routing table.
mpls	Shows route information for the MPLS routing table.
label <value>	Shows route information for a specified destination label.
prefix <value>	Shows route information for a specified destination prefix.
prefix-length-distribution	Shows the number of routes with the same prefix length for the sources.
source	Shows routes from a specified source.
summary	Shows the number of routes selected by RIBD for each source.

Example 1: Route information

```

supervisor@rtbrick>LEAF01: op> show route
Instance: default, AFI: ipv4, SAFI: unicast
Prefix/Label      Source           Pref   Next Hop           Interface
11.0.0.1/32       arp-nd           6      11.0.0.1           hostif-0/0/4/1
12.1.0.0/24       ospf             10     23.0.0.2           hostif-0/0/0/1
23.0.0.0/24       direct           0      23.0.0.0           hostif-0/0/0/1
25.0.1.0/24       ospf             10     23.0.0.2           hostif-0/0/0/1
25.1.1.0/24       ospf             10     23.0.0.2           hostif-0/0/0/1
34.0.3.3/32       direct           0      34.0.3.3           hostif-0/0/2/1
56.0.1.4/30       ospf             10     23.0.0.2           hostif-0/0/0/1
56.0.2.0/31       ospf             10     34.0.2.4           hostif-0/0/1/1

```

Example 2: Route summary

```

supervisor@rtbrick>LEAF01: cfg> show route summary
Instance: default
  Source           Routes
  bgp              2
  direct           4
  Total Routes     6
Instance: ip2vrf
  Source           Routes
  bgp              6
  direct           2
  Total Routes     8
Instance: li-vrf
  Source           Routes
  bgp              4
  direct           2
  Total Routes     6
Instance: mgmt-vrf
  Source           Routes
  bgp              2
  direct           2
  Total Routes     4
Instance: radius-vrf
  Source           Routes
  bgp              5
  direct           2
  Total Routes     7

```

Example 3: Routes with the same prefix length for IPv4

```

supervisor@rtbrick>LEAF01: cfg> show route prefix-length-distribution
Instance: default
  Prefix Length  Count
    /32          2
    /128         4
    Sum          6
Instance: ip2vrf
  Prefix Length  Count
    /0           2
    /24          1
    /32          2
    /64          1
    /128         2
    Sum          8
Instance: li-vrf
  Prefix Length  Count
    /0           2
    /32          2
    /128         2
    Sum          6
Instance: mgmt-vrf
  Prefix Length  Count
    /32          2
    /128         2
    Sum          4
Instance: radius-vrf
  Prefix Length  Count
    /0           2
    /24          1
    /32          2
    /128         2
    Sum          7

```

1.3.7. Show Route Resolution

The `show route-resolution` command displays the routes which were requested to be resolved for their nexthops. Otherwise, it shows the route is unresolved.

Syntax:

show route-resolution <options>

-	Without any option, the command displays the information for all requests and response tables side by side.
destination-instance	Displays the information for all requests and response for a destination instance.
look-up instance	Displays lookup instance routes.
prefix	Displays routes for prefix 4 or prefix 6.
resolved	Displays resolved routes.
source	Displays source of requested source.
unresolved	Displays unresolved routes.

Example:

```

supervisor@L1-STD-2-2008>bm08-tst.hel.rtbrick.net: op> show route-resolution
192:1::1, Source: bgp
  Destination instance: default, AFI: ipv4, SAFI: vpn-unicast
  Lookup      instance: default, AFI: ipv6, SAFI: labeled-unicast
  Covering Prefix: 192:1::1/128
    Interface      MAC Address      Nexthop
    hostif-0/0/1/10  7a:11:21:c0:00:03  fe80::7811:21ff:fec0:3
192:1::1, Source: bgp
  Destination instance: default, AFI: ipv4, SAFI: vpn-multicast
  Lookup      instance: default, AFI: ipv6, SAFI: labeled-unicast
  Covering Prefix: 192:1::1/128
    Interface      MAC Address      Nexthop
    hostif-0/0/1/10  7a:11:21:c0:00:03  fe80::7811:21ff:fec0:3
<...>

```

Example:

```

supervisor@rtbrick>ufi07.q2c.u21.r4.nbg.rtbrick.net: cfg> show route-resolution
unresolved
192.168.16.128, Source: radius
  Lookup      instance: inband_mgmt, AFI: ipv4, SAFI: unicast
  Covering Prefix: None, 7 resolution attempts
198.18.73.251, Source: pim
  Lookup      instance: ip2, AFI: ipv4, SAFI: unicast
  Covering Prefix: None, 7 resolution attempts

```

1.4. Viewing Configuration

1.4.1. View Configuration

To view configurations, enter the **show config** command.

Example:

```

supervisor@rtbrick>LEAF01: cfg> show config

```

1.4.2. Display Configurations in a Specific Format

The **show config** command displays the current committed configurations of the system. By default, this command displays the configurations in a **json** format.

show config <format>

You can also specify the format explicitly, if needed. The available display formats are:

- **json**: Display configurations in JSON format
- **set**: Display configurations in CLI format (similar to commands executed)
- **netconf**: Display configurations in XML format
- **text**: Display configurations in textual format (similar to YANG definition)

The following example shows how configurations are displayed in the text format.

```
supervisor@rtbrick>LEAF01: op> show config text
daemon-options {
  instance-name *;
  afi *;
  safi *;
  bd-type bgp.appd;
  bd-name bgp.appd.1;
}
daemon-options {
  instance-name *;
  afi *;
  safi *;
  bd-type bgp.iod;
  bd-name bgp.iod.1;
}
interface {
  name lo-0/0/0;
  unit {
    unit-id 0;
    address {
      ipv4 {
        prefix4 198.51.100.75/24;
      }
      ipv6 {
        prefix6 2001:db8:0:110::/32;
      }
    }
  }
}
<...>
```

To view configurations in the set format, use the **show config set** command.

Example:

```
supervisor@rtbrick>LEAF01: cfg> show config set
set interface ifp-0/0/1
set interface ifp-0/0/1 ifp-id 1
set interface ifp-0/0/2
set interface ifp-0/0/2 ifp-id 2
set instance blue
set instance blue protocol bgp address-family ipv4 multicast
set instance blue protocol bgp address-family ipv6 unicast
set instance red
set instance red protocol bgp address-family ipv4 unicast
set instance red protocol bgp address-family ipv6 unicast
```

1.4.3. View Configuration in a Specified Hierarchy

To view configuration in a specified hierarchy, use the following command:

```
supervisor@rtbrick>LEAF01: cfg> show config set instance red protocol bgp
set instance red protocol bgp address-family ipv4 unicast
set instance red protocol bgp address-family ipv6 unicast
```

1.4.4. Commit CLI Configurations

To commit the configurations, use the **commit** command.

The following example shows how to commit your changes.

```
supervisor@rtbrick>LEAF01:~$ cli
supervisor@rtbrick>LEAF01: op> switch-mode config
supervisor@rtbrick>LEAF01: cfg> <cli command goes here>
supervisor@rtbrick>LEAF01: cfg> commit
```

When you exit CLI configuration with uncommitted changes, a reminder text appears saying that you have changes to commit, as shown in the following example:

```
supervisor@rtbrick>LEAF01: cfg> exit
Uncommitted changes are present
1. Discard the changes and exit
2. Commit the changes and exit
3. Keep the changes and exit [Default behavior]
Enter one of the above choice to proceed :
```

1.4.5. Add a Configuration Description

An in-line description or comment can be added to a system configuration to describe it.

set system config-description <description>

Example:


```
supervisor@rtbrick>LEAF01: cfg> set system config-description "This is sample test
configuration"
supervisor@rtbrick>LEAF01: cfg> commit
supervisor@rtbrick>LEAF01: cfg> show config
{
  "ietf-restconf:data": {
    "rtbrick-config:system": {
      "config-description": "This is sample test configuration"
    }
  }
}
```

1.4.6. View Uncommitted Changes

To view the uncommitted changes, use the `show diff` command:

```
supervisor@rtbrick>LEAF01: cfg> show diff

supervisor@rtbrick>LEAF01: cfg> set interface ifp-0/0/3 ifp-id 3
supervisor@rtbrick>LEAF01: cfg> set interface ifp-0/0/4 ifp-id 4
supervisor@rtbrick>LEAF01: cfg> show diff set
+set interface ifp-0/0/3
+set interface ifp-0/0/3 ifp-id 3
+set interface ifp-0/0/4
+set interface ifp-0/0/4 ifp-id 4
supervisor@rtbrick>LEAF01: cfg> show diff
}
+interface {
+  name ifp-0/0/3;
+  ifp-id 3;
+}
+interface {
+  name ifp-0/0/4;
+  ifp-id 4;
+}
instance {
```

1.4.7. Save Configuration

To save configurations, enter the following command:

```
supervisor@rtbrick>LEAF01: cfg> save config my_config.json
```



- Ensure that you use `.json` at the end of the filename.
- The configuration will be saved to the current working directory of CLI executable.

1.4.8. Delete the Entire Running Configuration at a Time

To delete the entire running configurations at a time, use the `discard all` command.

Example:

```
supervisor@rtbrick>LEAF01: cfg> discard all
```

1.4.9. View the Configuration Differences in the Current and Previous Versions

In RBFS, you can view the configuration differences between the current and the previous versions.

show diff <number>

```
supervisor@rtbrick>LEAF01: cfg> show diff 2
system {
-   secure-management-status false;
+   secure-management-status true;
}
```

1.4.10. Rollback to a Previously Committed Configuration

To rollback to a specific configuration prior to the most recently committed one, use the following command:

rollback <number>

number: Specifies the rollback ID. Range: 1 through 49. 0 refers to the active configuration, 1 refers to the most recent previous configuration. Default: 1

For example, to rollback to rollback ID 2, use the following command:

```
supervisor@rtbrick>LEAF01: cfg> rollback 2
```

1.4.11. Rollback to a Specific Version of Software Configuration

To rollback to a specific version of the software configuration, use the following command:

rollback commit-id <commit-hash>

Example:

```
supervisor@rtbrick>LEAF01: cfg> rollback commit-id
29d5db038c1920fddsdsdsdsdsd323232
```

1.4.12. Load Configuration

To load configurations, enter the following command:

load config <filename> <option>

The options include **merge** and **replace**. You can specify **merge** after the file name to merge the configuration with the running configuration. Specify **replace** to replace the running configuration with the new one. Without any option, it replaces the running configuration, by default.

```
supervisor@rtbrick>LEAF01: cfg> load config <filename>
```



- Ensure that you use '.json' at the end of the filename.
- Remember to commit your changes after loading.

1.4.13. Discard the Uncommitted Configuration

To discard the uncommitted configuration, enter the following command:

```
supervisor@rtbrick>LEAF01: cfg> discard
```

1.5. Supported Platforms

Not all features are necessarily supported on each hardware platform. Refer to the *Platform Guide* for the features and the sub-features that are or are not supported by each platform.