1 Huawei VRP and Configuration Basics

1.1 Introduction

1.1.1 About This Lab

In this lab activity, you will learn the basic operations of Huawei VRP system by configuring Huawei devices.

1.1.2 Objectives

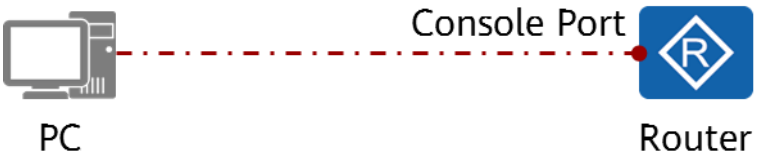
Upon completion of this task, you will be able to:

- Understand the meaning of command line views and how to access and exit command line views
- Understand common commands
- Understand how to use the command line online help
- Learn how to negate a command
- Learn how to use command line shortcut keys

1.1.3 Networking Topology

As shown in the following networking diagram, the router is a new router without any configuration. The PC is connected to the console port of the router through a serial cable. You need to initialize the router.

Figure 1-1 Lab topology for understanding the VRP operating system



1.2 Lab Configuration

1.2.1 Configuration Roadmap

1. Complete basic configurations, such as device name and router interface IP address.

2. Save the configurations.
3. Restart the device.

1.2.2 Configuration Procedure

Step 1 Log in to the CLI of the router through the console port.

The details are not provided here.

Step 2 Display the basic device information.

Display device version information.

```
<Huawei>display version
Huawei Versatile Routing Platform Software
VRP (R) software, Version 5.160 (AR651C V300R019C00SPC100)
Copyright (C) 2011-2016 HUAWEI TECH CO., LTD
Huawei AR651C Router uptime is 0 week, 0 day, 0 hour, 53 minutes
BKP 0 version information:
1. PCB      Version             : AR01BAK2C VER.B
2. If Supporting PoE            : No
3. Board    Type                : AR651C
4. MPU Slot Quantity            : 1
5. LPU Slot Quantity            : 1
```

Step 3 Complete basic device configurations.

Change the router name to **Datacom-Router**.

```
<Huawei>system-view
Enter system view, return user view with Ctrl+Z.
[Huawei]
```
You have entered the system view from the user view.
```
 [Huawei]sysname Datacom-Router
[Datacom-Router]
```
*The device name has been changed to **Datacom-Router**.*

Huawei devices provide a wide variety of functions and related configuration and query commands. The commands are available in different command views based on the functions of the commands. To use a function, enter the corresponding command view first and then run corresponding commands.

Enter the interface view and configure the IP address of the interface.

```
[Datacom-Router]inter                                    //Press Tab to complete the command.
[Datacom-Router]interface                                //"interface" is the only optional keyword.
[Datacom-Router]interface g                              //Press Tab to complete the command.
[Datacom-Router]interface GigabitEthernet          //"GigabitEthernet" is the only optional keyword.
[Datacom-Router]interface GigabitEthernet 0/0/1    //Enter the complete command.
```

Enter the first several letters of a keyword in a command and press Tab to display a complete keyword. The first several letters, however, must uniquely identify the keyword. If they do not identify a specific keyword, press Tab continuously until the desired keyword is displayed. For example:

When you enter **inter** and press Tab, only the **interface** command starts with **inter**. Therefore, the command is autocompleted as **interface**. The command does not change if you press Tab multiple times.

```
[Datacom-Router-GigabitEthernet0/0/1]
```
The GigabitEthernet0/0/1 interface view is displayed.
```
[Datacom-Router-GigabitEthernet0/0/1]i?
  icmp              <Group> icmp command group
  igmp              Specify parameters for IGMP
  ip      <Group> ip command group
  ipsec             Specify IPSec(IP Security) configuration information
```

```
  ipv6                <Group> ipv6 command group
  isis    Configure interface parameters for ISIS
```

If you enter only the first or first several characters of a command keyword, you can use the context-sensitive help function to obtain all the keywords that begin with a character or character string. The meaning of each keyword will also be displayed. For example:

In the GigabitEthernet0/0/1 interface view, enter **i** and a question mark (?) to display the options of all commands starting with **i** in the current view. You can press Tab to complete the command of manually enter the complete command based on the help information. In the preceding information, **icmp** and **igmp** are keywords, **<Group> icmp command group**, and **Specify parameters for IGMP** are the descriptions of the keywords.

```
[Datacom-Router-GigabitEthernet0/0/1]ip ?
  accounting                      <Group> accounting command group
  address                 <Group> address command group
  binding                 Enable binding of an interface with a VPN instance
  fast-forwarding                 Enable fast forwarding
  forward-broadcast       Specify IP directed broadcast information
  netstream               IP netstream feature
  verify                          IP verify
```

When you enter some keywords of a command and a question mark (?) separated by a space, all keywords associated with this command, as well as simple descriptions, are displayed. For example:

If you enter **ip**, a space, and a question mark (?), all commands containing keyword **ip** and the corresponding descriptions are displayed.

```
[Datacom-Router-GigabitEthernet0/0/1]ip address ?
  IP_ADDR<X.X.X.X>        IP address
  bootp-alloc       IP address allocated by BOOTP
  dhcp-alloc        IP address allocated by DHCP
  unnumbered              Share an address with another interface
[Datacom-Router-GigabitEthernet0/0/1]ip address 192.168.1.1 ?
  INTEGER<0-32>           Length of IP address mask
  IP_ADDR<X.X.X.X>        IP address mask
[Datacom-Router-GigabitEthernet0/0/1]ip address 192.168.1.1 24 ?
  sub    Indicate a subordinate address
  <cr>   Please press ENTER to execute command
```

<cr> indicates that no keyword or parameter exists in this position. You can press Enter to run the command.

```
[Datacom-Router-GigabitEthernet0/0/1]dis this
#
interface GigabitEthernet0/0/1
 ip address 192.168.1.1 255.255.255.0
#
```

The **display this** command displays the running configuration in the current view. Effective arguments set to their defaults are not displayed. Configured arguments that are not committed successfully are not displayed, either. This command is used to check the configuration.

You do not need to enter complete keywords if the entered characters can match a unique keyword in the current view. This function improves efficiency. For example:

The **dis this** command can be executed on an interface because only the **display this** command matches the entered characters in the current view. Similarly, the **dis cu** or **d cu** command can also be executed because they are equivalent to **display current-configuration** command.

```
[Datacom-Router-GigabitEthernet0/0/1]quit
```

The **quit** command returns a device from the current view to a lower-level view. If the current view is the user view, this command exits from the system.

Negate the IP address configuration because the IP address should be signed to interface GigabitEthernet 0/0/2.

```
[Datacom-Router]interface GigabitEthernet 0/0/1
[Datacom-Router-GigabitEthernet0/0/1]undo ip address
```

To do so, you must negate the IP address configuration of GigabitEthernet0/0/1. Otherwise, an IP address conflict occurs and the configuration fails.

To negate a command, use the **undo** keyword with the command. An undo command is generally used to restore a default configuration, disable a function, or delete a configuration. Almost each command line has a corresponding undo command.

```
[Datacom-Router]interface GigabitEthernet 0/0/2
[Datacom-Router-GigabitEthernet0/0/2]ip address 192.168.1.1 24
[Datacom-Router-GigabitEthernet0/0/2]quit
```

Display the current device configuration.

```
[Datacom-Router]display current-configuration
[V200R003C00]
#
 sysname Datacom-Router
#
 snmp-agent local-engineid 800007DB03000000000000
 snmp-agent
#
 clock timezone China-Standard-Time minus 08:00:00
#
portal local-server load portalpage.zip
#
 drop illegal-mac alarm
#
 set cpu-usage threshold 80 restore 75
#
aaa
 authentication-scheme default
 authorization-scheme default
 accounting-scheme default
 domain default
 domain default_admin
 local-user admin password cipher %$%$K8m.Nt84DZ}e#<0`8bmE3Uw}%$%$
 local-user admin service-type http
#
  ---- More ----
```

When the information cannot be completely displayed on one screen, the system will pause for you can view the information. If **---- More ----** is displayed at the bottom of the command output, you can

1. Press Ctrl+C or Ctrl+Z to stop the display or command execution.
2. Press the space bar to display the next screen.
3. Press Enter to display the next line.

Step 4 Save the current configuration of the device.

Return to the user view.

```
[Datacom-Router]quit
<Datacom-Router>
```

In addition to the **quit** command, you can also:

1. Run the **return** command to return to the user view from any view.
2. Press Ctrl+Z to return to the user view from any view.

Save the configuration.

```
<Datacom-Router>save
 The current configuration will be written to the device.
 Are you sure to continue? .(y/n)[n]:y                    //Enter y to confirm.
 It will take several minutes to save configuration file, please wait.....
 Configuration file had been saved successfully
 Note: The configuration file will take effect after being activated
```

The current configuration is saved successfully.

Configuration changes must be saved in the configuration file to survive system restart. You can run the **save** command to save the current configuration to the default path and overwrite the original configuration file. You can also run the **save** *configuration-file* command to save the current configuration to a specified file in the storage device. This command does not affect the current startup configuration file of the system.

Compare the running configuration with the configuration in the startup configuration file.

```
<Datacom-Router>compare configuration
 The current configuration is the same as the next startup configuration file.
```

The running configuration is the same as the configuration in the startup configuration file.

Step 5 Perform operations on the file system.

List all the files in the current directory.

```
<Datacom-Router>dir
Directory of flash:/

 Idx  Attr     Size(Byte)    Date      Time(LMT)      FileName
   0  -rw-   126,538,240   Jul 04 2016 17:57:22   ar651c- v300r019c00Sspc100.cc
   1  -rw-       22,622    Feb 20 2020 10:35:18   mon_file.txt
   2  -rw-          737    Feb 20 2020 10:38:36   vrpcfg.zip
   3  drw-            -    Jul 04 2016 18:51:04   CPM_ENCRYPTED_FOLDER
   4  -rw-          783    Jul 10 2018 14:46:16   default_local.cer
   5  -rw-            0    Sep 11 2017 00:00:54   brdxpon_snmp_cfg.efs
   6  drw-            -    Sep 11 2017 00:01:22   update
   7  drw-            -    Sep 11 2017 00:01:48   shelldir
   8  drw-            -    Sep 21 2019 17:14:24   localuser
   9  drw-            -    Sep 15 2017 04:35:52   dhcp
  10  -rw-          509    Feb 20 2020 10:38:40   private-data.txt
  11  -rw-        2,686    Dec 19 2019 15:05:18   mon_lpu_file.txt
  12  -rw-        3,072    Dec 18 2019 18:15:54   Boot_LogFile

510,484 KB total available (386,456 KB free)
```

vrpcfg.zip: configuration file The filename extension of a configuration file must be .cfg or .zip.

ar651c- v300r019c00Sspc100.cc: system software The filename extension of system software must be .cc.

Save the running configuration and name the configuration file test.cfg.

```
<Datacom-Router>save test.cfg
 Are you sure to save the configuration to test.cfg? (y/n)[n]:y                    //Enter y to confirm.
 It will take several minutes to save configuration file, please wait.....
 Configuration file had been saved successfully
 Note: The configuration file will take effect after being activated
```

List all the files in the current directory again.

```
<Datacom-Router>dir
Directory of flash:/
```

```
Idx  Attr     Size(Byte)      Date    Time(LMT)    FileName
  0  -rw-    126,538,240     Jul 04 2016 17:57:22          ar651c- v300r019c00Sspc100.cc
  1  -rw-     22,622         Feb 20 2020 10:35:18          mon_file.txt
  2  -rw-       737          Feb 20 2020 10:38:36          vrpcfg.zip
  3  drw-        -           Jul 04 2016 18:51:04          CPM_ENCRYPTED_FOLDER
  4  -rw-       783          Jul 10 2018 14:46:16          default_local.cer
  5  -rw-         0          Sep 11 2017 00:00:54          brdxpon_snmp_cfg.efs
  6  drw-        -           Sep 11 2017 00:01:22          update
  7  drw-        -           Sep 11 2017 00:01:48          shelldir
  8  drw-        -           Sep 21 2019 17:14:24          localuser
  9  drw-        -           Sep 15 2017 04:35:52          dhcp
 10  -rw-      1,404         Feb 20 2020 11:55:17          test.cfg
 11  -rw-       509          Feb 20 2020 11:55:18          private-data.txt
 12  -rw-     2,686          Dec 19 2019 15:05:18          mon_lpu_file.txt
 13  -rw-     3,072          Dec 18 2019 18:15:54          Boot_LogFile

510,484 KB total available (386,452 KB free)
```

The configuration file is saved successfully.

Set the file as the startup configuration file.

```
<Datacom-Router>startup saved-configuration test.cfg
This operation will take several minutes, please wait.....
Info: Succeeded in setting the file for booting system
```

Display the startup configuration file.

```
<Datacom-Router>display startup
MainBoard:
  Startup system software:                flash:/ ar651c- v300r019c00Sspc100.cc
  Next startup system software:           flash:/ ar651c- v300r019c00Sspc100.cc
  Backup system software for next startup:          null
  Startup saved-configuration file:                 flash:/vrpcfg.zip
  Next startup saved-configuration file:            flash:/test.cfg
  Startup license file:                             null
  Next startup license file:              null
  Startup patch package:                  null
  Next startup patch package:             null
  Startup voice-files:                    null
  Next startup voice-files:               null
```

The **display startup** command displays the system software and configuration, license, patch, and voice files.

Clear the configuration file.

```
<Datacom-Router>reset saved-configuration
This will delete the configuration in the flash memory.
The device configuratio
ns will be erased to reconfigure.
Are you sure? (y/n)[n]:y                    //Enter y to confirm.
 Clear the configuration in the device successfully.
```

Step 6 Restart the device.

```
<Datacom-Router>reboot
Info: The system is comparing the configuration, please wait.
System will reboot! Continue ? [y/n]:y                    //Enter y to confirm.
Info: system is rebooting ,please wait...
```

The system is restarting.

```
<Datacom-Router>
```

The device is restarted.

----End

1.3 Verification

The details are not provided here.

1.4 Configuration Reference

The details are not provided here.

1.5 Quiz

1. Familiarize yourself with the function keys of Huawei VRP system according to section 2.6.
2. In step 5, the **reset saved-configuration** command is executed to clear the configuration. Why is the configuration still retained after the device is restarted?

1.6 Appendix

Table 1-1 System function keys

Key	Function
<Ctrl+A>	Moves the cursor to the beginning of the current line.
<Ctrl+B>	Moves the cursor back one character.
<Ctrl+C>	Stops performing current functions.
<Ctrl+D>	Deletes the character where the cursor is located at.
<Ctrl+E>	Moves the cursor to the end of the last line.
<Ctrl+F>	Moves the cursor forward one character.
<Ctrl+H>	Deletes the character to the left of the cursor.
<Ctrl+K>	Terminates the connection of an outgoing call during connection establishment.
<Ctrl+N> or the down arrow key	Displays the next command in the command history.
<Ctrl+N> or the up arrow key	Displays the previous command in the command history.
<Ctrl+T>	Enters a question mark (?).
<Ctrl+W>	Deletes the character string (word) to the left of the cursor.
<Ctrl+X>	Deletes all characters on the left of the cursor.
<Ctrl+Y>	Deletes the character at the cursor and all characters to the right of the cursor.
<Ctrl+Z>	Returns to the user view.
<Ctrl+]>	Stops or redirects incoming connections.
<Esc+B>	Moves the cursor back one character string (word).

<Esc+D>	Deletes one character string (word) to the right of the cursor.
<Esc+F>	Moves the cursor forward one character string (word).