Interpreting Switch Configuration Commands

Introduction

This task explains how to execute CLI commands on a Cisco switch and how to use search and filtering commands to filter out a specific part of the configuration. The configuration on a device can be long and it can be difficult to find the information that you are interested in. It is important to be familiar with output modifiers and specific commands.

Searching and Filtering CLI Output

The Cisco CLI provides multiple ways of filtering through a large amount of CLI output. You can also filter out the information that you do not need. The commands that are used for filtering are applied to **show** commands. **Show** commands display data, that may represent the running configuration, interface configurations, or another part of a device's configuration.

Note: Searching and filtering features are executed in EXEC mode.

Interpreting show Commands

Show commands are used to retrieve information. The following table displays some of the commonly used show commands:

Command	Purpose
Switch# **show interfaces** *interface name*	The **show interfaces** command displays the status and statistical information for the network interfaces of the switch.
Switch# **show version**	The **show version** command verifies the Cisco IOS Software version and releases numbers of the Cisco IOS Software that is running on a Cisco switch.
Switch# **show running-config**	The **show running-config** command displays the current running (active) configuration file of the switch. This command requires privileged EXEC mode access.

Searching and Filtering *show* Commands

To search through the device configuration, you should use the **show** command. This command displays specific information about a configuration. This table displays the options that are commonly used to filter specific information from the device configuration.

To display filtering options that are supported on a specific command, issue the **switch# show** *any-command* | *?* command.

The following example shows the filtering options that you have with the **show running-config** command.

```
switch#show running-config | ?
  append    Append redirected output to URL (URLs supporting append operation
            only)
  begin     Begin with the line that matches
  count     Count number of lines which match regexp
  exclude   Exclude lines that match
  format    Format the output using the specified spec file
  include   Include lines that match
  redirect  Redirect output to URL
  section   Filter a section of output
  tee       Copy output to URL
```

Command	Purpose
Switch# show *any-command*	Command return unfiltered data, based on an entered command.
Switch# show *any-command*	**begin** regular-expression	Begin the unfiltered output with the line that matches a regular expression.
Switch# show *any-command*	**exclude** regular-expression	Exclude lines from the configuration that match a regular expression.
Switch# show *any-command*	**include** regular-expression	Include lines from the configuration that match a regular expression.

Note: A regular expression is a sequence of characters that specifies a search pattern in the text.

Task

In this task, you will be given configuration output for different commands. By using filtering options, you will filter out specific switch configuration information.

1. The configuration output displays the interface configuration for the interface FastEthernet 0/1. Which option displays only the line where the hardware address (MAC address) of the interface is specified?

```
Switch# show interfaces FastEthernet 0/1
FastEthernet0/1 is up, line protocol is up (connected)
  Hardware is Fast Ethernet, address is 001e.147c.bd01 (bia 001e.147c.bd01)
  MTU 1500 bytes, BW 100000 Kbit/sec, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is 10/100BaseTX
  input flow-control is off, output flow-control is unsupported
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:00, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 31000 bits/sec, 33 packets/sec
  5 minute output rate 28000 bits/sec, 31 packets/sec
     11369 packets input, 1326880 bytes, 0 no buffer
     Received 317 broadcasts (317 multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog, 317 multicast, 0 pause input
     0 input packets with dribble condition detected
     21701 packets output, 2538278 bytes, 0 underruns
--More--
```

    a.   show interfaces FastEthernet 0/1 | include hardware
    b.   show interfaces FastEthernet 0/1 | exclude Hardware
    c.   show interfaces FastEthernet 0/1 | begin hardware
    d.   show interfaces FastEthernet 0/1 | include MAC address
    e.   show interfaces FastEthernet 0/1 | include Hardware

2. The configuration output displays the running configuration on the switch. Which option will filter and display all VLANs configured on a switch?

```
Switch# show running-config
Building configuration...

Current configuration: 1750 bytes
!
! Last configuration change at 08:51:52 UTC Wed Jan 22 2022
! NVRAM config last updated at 06:26:14 UTC Wed Jan 22 2022
!
version 15.0
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname Switch
interface Vlan1
ip address 172.20.137.5 255.255.255.0
!
ip default-gateway 172.20.137.1
transceiver type all
 monitoring
!
vlan 101
!
vlan 102
 name BACKOFFICE
!
vlan 113
 name GUESTS
!
vlan 115
 name SERVERS
!
vlan 116
 name IPT
!
<... output omitted ...>
```

    a. show running-config | begin vlan
    b. show running-config | begin vlan id
    c. show running-config | include vlan
    d. show running-config | include vlan 101
    e. show running-config | include vlan id

3. The configuration output displays the running configuration on a switch. Which option displays part of the configuration, starting with the interface Port-channel1 configuration?

```
SwitchX# show running-config
Building configuration...

Current configuration: 1750 bytes
!
! Last configuration change at 08:51:52 UTC Wed Jan 22 2022
! NVRAM config last updated at 06:26:14 UTC Wed Jan 22 2022
!
version 15.0
!
hostname Switch
!
vrf definition Mgmt-vrf
 !
 address-family ipv4
 exit-address-family
 !
 address-family ipv6
 exit-address-family
!
logging buffered 200000 informational
no logging console
enable secret 9
$14$Yx6K$tRVBAEQjDlBJoU$TgyiEmAysJ2PUg2O3SVVFeH5wnWi3VABKLXpqTcfniw
!
ip name-server 10.0.1.125
!
!
username local secret 9
$14$2Wai$3J4VqymhMKk5Q.$awqoIGmpy6rsnh5bevldpc10Ilr7gmjAIkkiphisRWk
!
interface Port-channel1
 description Link to the core switch
 switchport mode trunk
!
interface GigabitEthernet0/0
 vrf forwarding Mgmt-vrf
 no ip address
 shutdown
 negotiation auto
!
interface GigabitEthernet1/0/1
 description ACCESS-POINTS
 switchport access vlan 102
 switchport mode access
```

```
 switchport nonegotiate
 switchport voice vlan 116
 storm-control broadcast level pps 200 50
 storm-control multicast level pps 200 50
 storm-control action trap
 spanning-tree portfast
!
interface GigabitEthernet1/0/2
 switchport access vlan 102
 switchport mode access
 switchport nonegotiate
 switchport voice vlan 116
 authentication event fail action authorize vlan 113
 authentication event server dead action authorize vlan 102
 authentication event no-response action authorize vlan 113
 authentication event server alive action reinitialize
 authentication order dot1x mab
 authentication priority dot1x mab
 authentication port-control auto
 mab
 dot1x pae authenticator
 dot1x timeout tx-period 5
 dot1x max-reauth-req 3
 storm-control broadcast level pps 200 50
 storm-control multicast level pps 200 50
 storm-control action trap
 spanning-tree portfast
<... output omitted ...>
```

    a.   show running-config | begin interface Port-channel1
    b.   show running-config | exclude interface
    c.   show running-config | include interface Port-channel1
    d.   show running-config | interface Port-channel1

Answer Key

1. E
2. C
3. A

Answer Feedback:

1. The correct answer is **show interfaces FastEthernet 0/1 | include Hardware**. The output of this command is:

```
Switch# show interfaces FastEthernet 0/1 | include Hardware

  Hardware is Fast Ethernet, address is 001e.147c.bd01 (bia 001e.147c.bd01)
```

Regular expressions are case-sensitive which means that the show interfaces FastEthernet 0/1 | include hardware option will not match with the configuration.

The **show interfaces FastEthernet 0/1 | include Hardware** command filters out all the lines where the "Hardware" keyword matches with configuration. The **show interfaces FastEthernet 0/1 | begin hardware** command displays the interface configuration from the Hardware address above. The **show interfaces FastEthernet 0/1 | include MAC address** command returns an empty configuration because the "MAC address" keyword does not match the configuration output.

2. The correct answer is **show running-config | include vlan**. The output of this command is:

```
Switch# show running-config | include vlan

vlan 101
vlan 102
vlan 113
vlan 115
vlan 116
```

The **show running-config | include vlan** command filters for all the lines where the "vlan" keyword matches the configuration.

3. The correct answer is show running-config | begin interface Port-channel1. The *show running-config | begin interface Port-channel1* command filters the configuration, beginning with interface Port-channel1.

The output of this command is:

```
interface Port-channel1
 description Link to the core switch
 switchport mode trunk
!
interface GigabitEthernet0/0
 vrf forwarding Mgmt-vrf
 no ip address
 shutdown
```

```
 negotiation auto
!
interface GigabitEthernet1/0/1
 description ACCESS-POINTS
 switchport access vlan 102
 switchport mode access
 switchport nonegotiate
 switchport voice vlan 116
 storm-control broadcast level pps 200 50
 storm-control multicast level pps 200 50
 storm-control action trap
 spanning-tree portfast
!
interface GigabitEthernet1/0/2
 switchport access vlan 102
 switchport mode access
 switchport nonegotiate
 switchport voice vlan 116
 authentication event fail action authorize vlan 113
 authentication event server dead action authorize vlan 102
 authentication event no-response action authorize vlan 113
 authentication event server alive action reinitialize
 authentication order dot1x mab
 authentication priority dot1x mab
 authentication port-control auto
 mab
 dot1x pae authenticator
 dot1x timeout tx-period 5
 dot1x max-reauth-req 3
 storm-control broadcast level pps 200 50
 storm-control multicast level pps 200 50
 storm-control action trap
 spanning-tree portfast
<... output omitted ...>
```