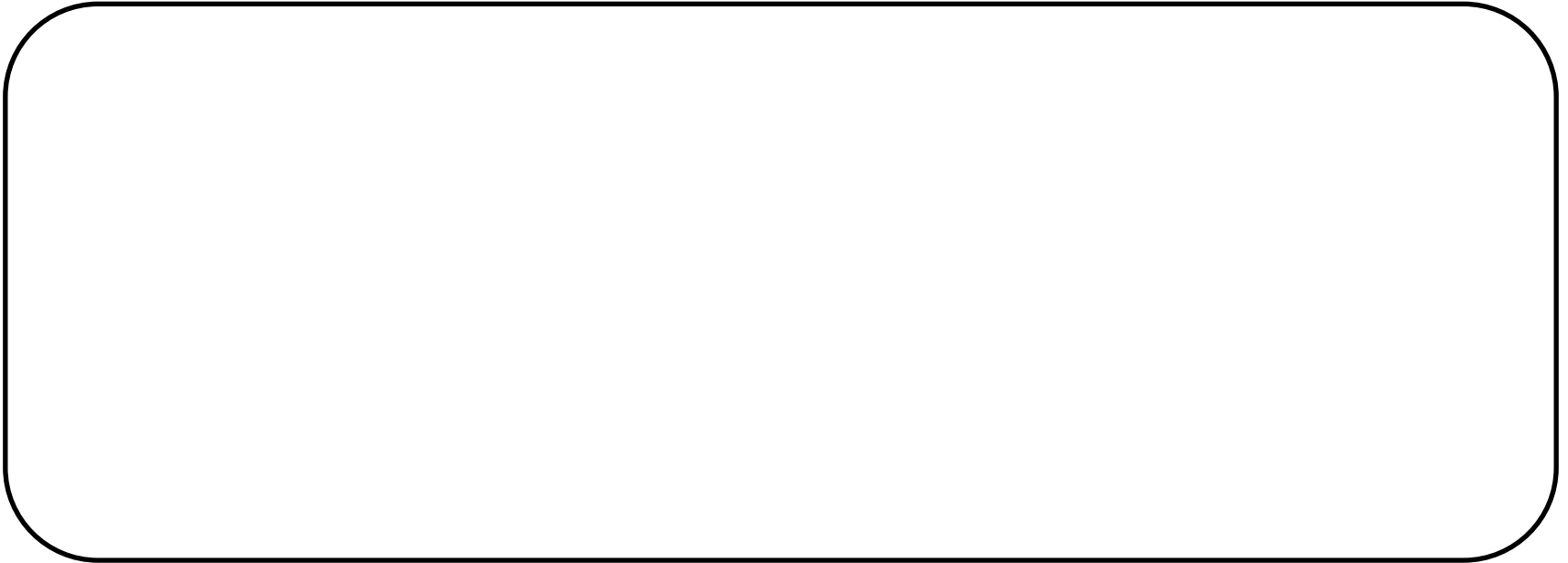


ATP. Lecture 2



Basic Switch Setup

Objectives

A large, empty rounded rectangular box with a black border, intended for writing objectives or notes.A second large, empty rounded rectangular box with a black border, identical to the one above, for additional notes or objectives.



Basic Switch Setup

Out-of-band management

physical access to the switch

console port using the serial cable

**does not require
the switch to have network connectivity**

Out-of-band management

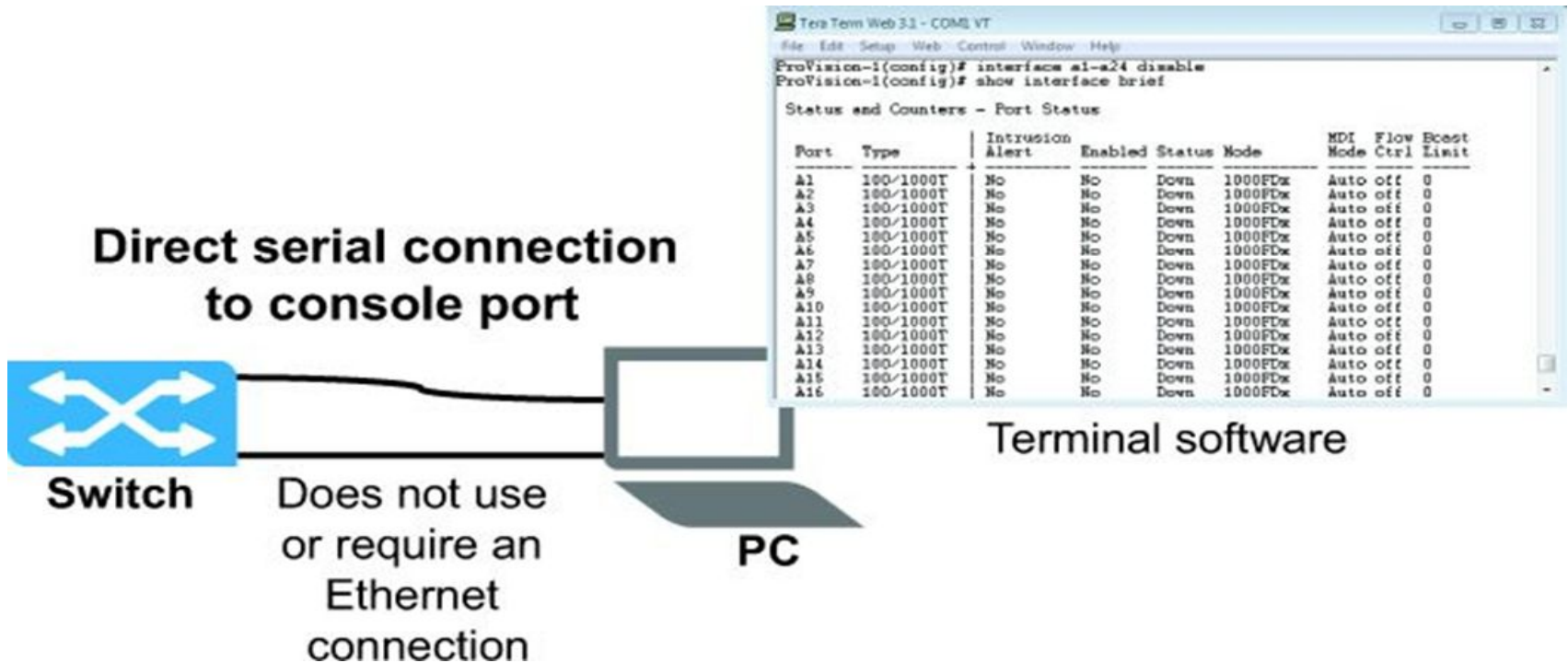
HP ProVision

Comware

Comware routers

**also support an
additional auxiliary port for a secondary CLI
access**

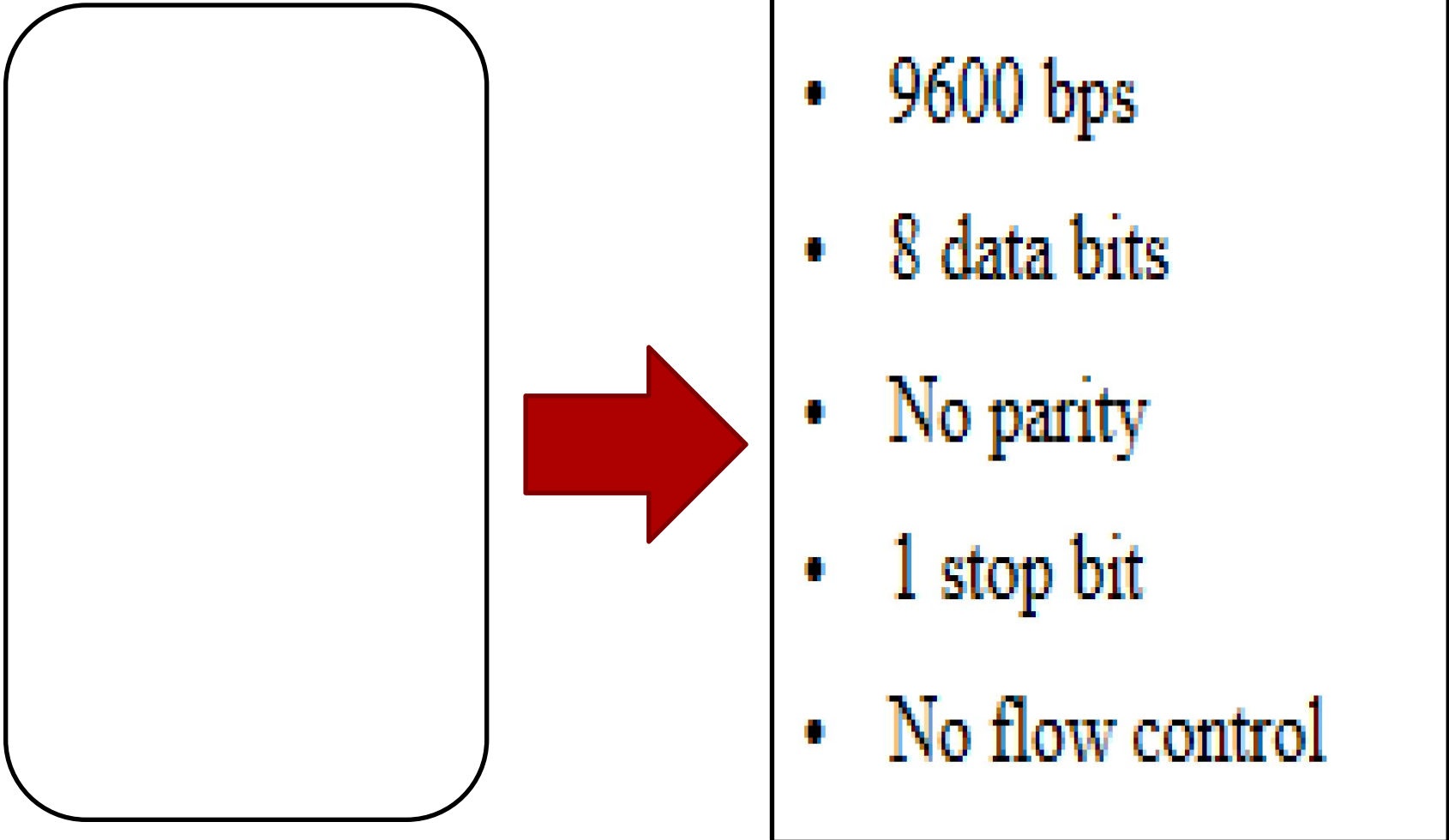
Out-of-band management



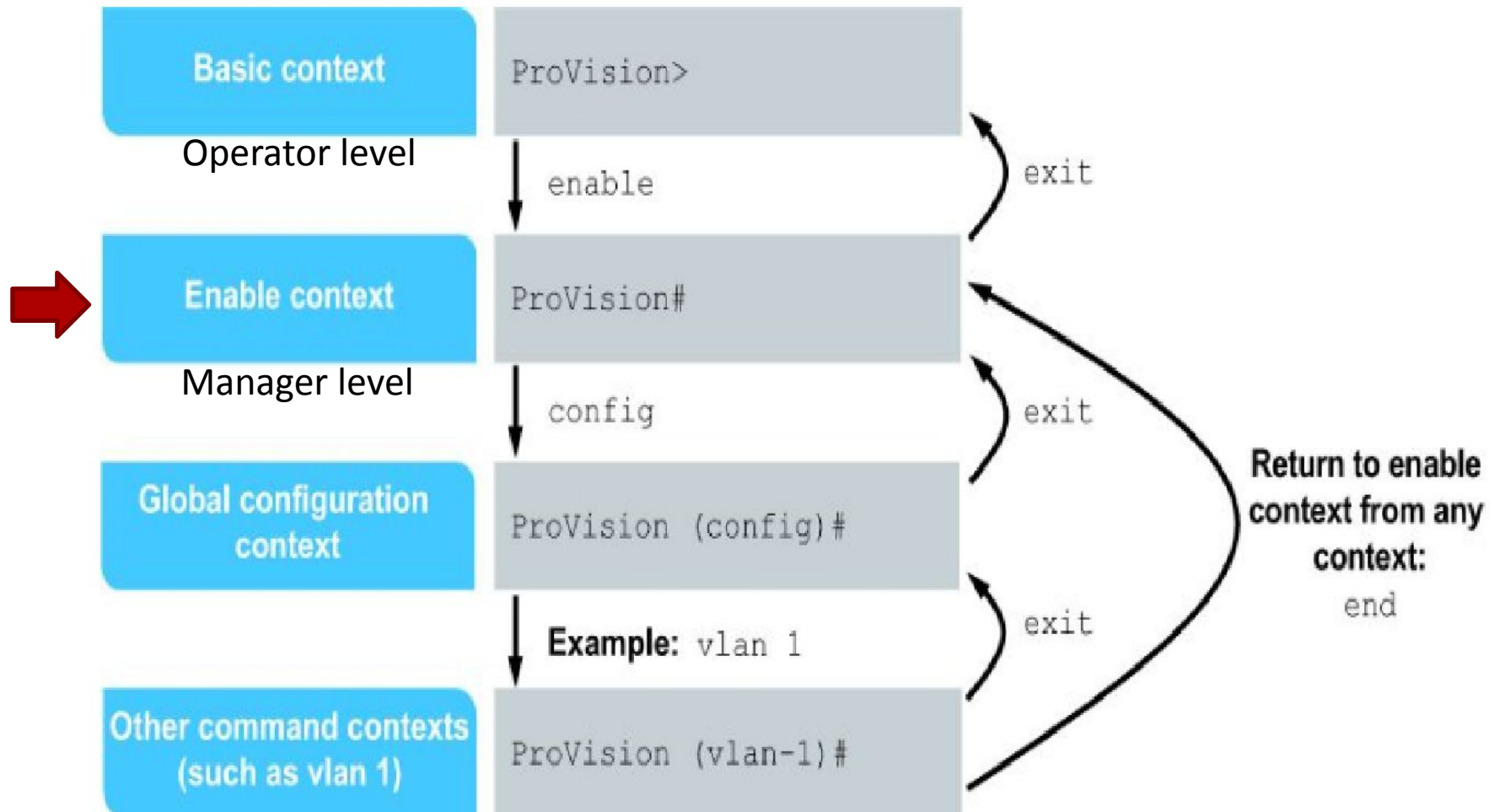
use terminal software

PuTTY

Out-of-band management

- 
- 9600 bps
 - 8 data bits
 - No parity
 - 1 stop bit
 - No flow control

ProVision CLI contexts



ProVision CLI contexts

ProVision>

>
(operator level).

basic level

enable context (manager level)

ProVision #

(manager level)

enable context

ProVision CLI contexts

config

```
ProVision (config) #
```

“(config)”

```
ProVision (<context>)
```

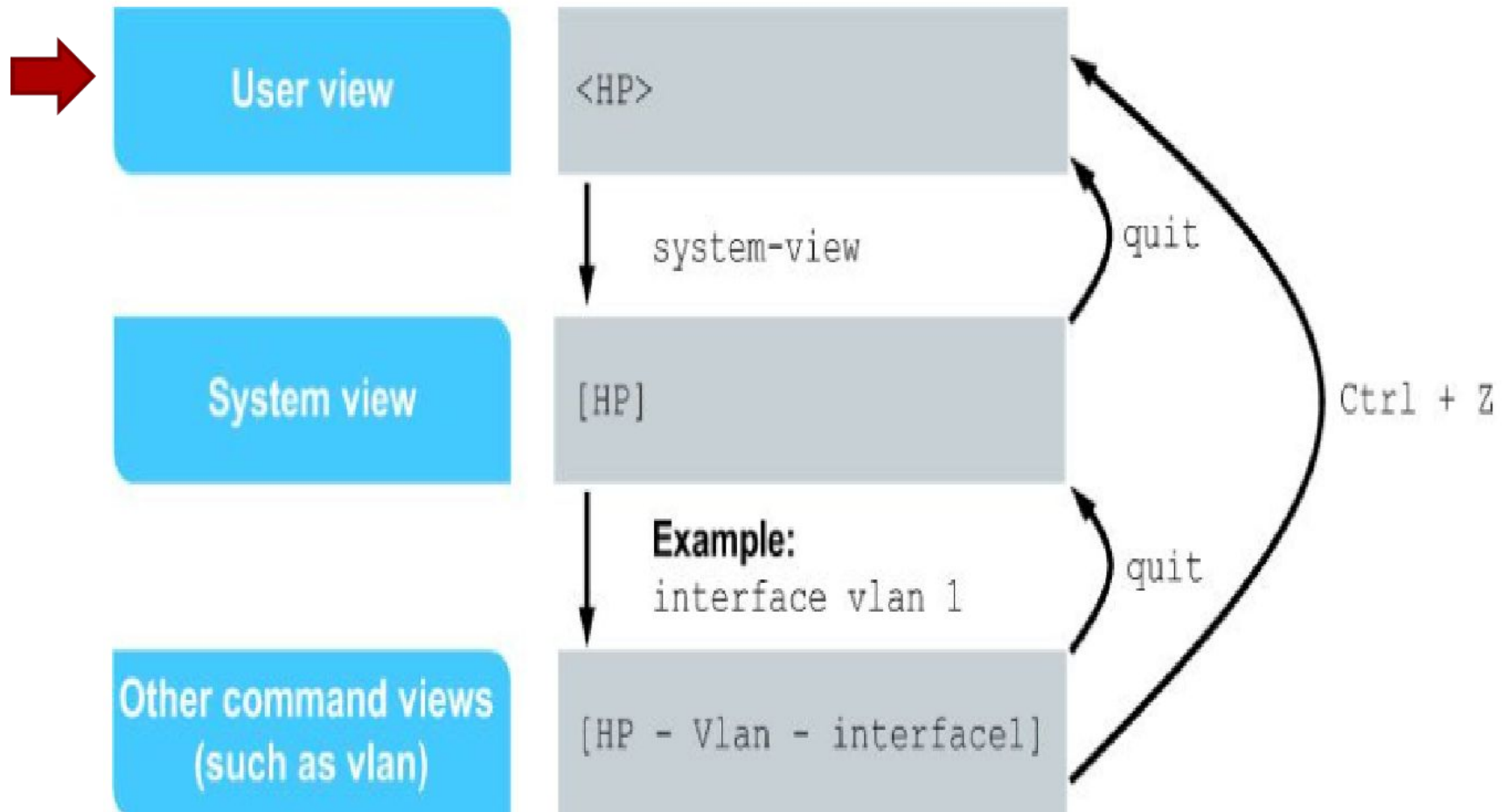
global configuration context

```
Switch (vlan-1) #    Switch (ospf) #
```

ProVision CLI contexts

Context	CLI Prompt	Description
Basic (operator level)	<code>Switch></code>	View a limited number of statistics and configuration settings.
Enable (manager level)	<code>Switch#</code>	Begin switch configuration (such as updating system software).
Global configuration	<code>Switch(config)#</code>	Make configuration changes to the system's software features.
Other command contexts	<code>Switch</code> <code>(<context>#</code> Examples: <code>Switch(vlan-1)#</code> <code>Switch(rip)#</code>	Make configuration changes within a specific context, such as to a VLAN, one or more ports, or routing protocols.

Comware CLI views (contexts)



Comware CLI views (contexts)

<H>

(<>).

system-view → [H>]

Comware CLI views (contexts)

quit

Other command views

quit

Comware CLI views (contexts)

View name	Prompt	Description
User view	<DeviceName> <HP>	View settings, perform troubleshooting, and manage configurations and files. Move to the System View by entering system-view.
System view	[DeviceName] [HP]	Make changes to the switch's configuration. Also access other command views. Move to the User View by entering quit.
Other command views	[DeviceName-<view>]	Configure settings for specific physical or virtual interfaces, user interfaces, or other features. Move back a view by entering quit. Move to the User View by pressing [Ctrl+Z].

Help keys

Both ProVision and Comware CLIs provide help keys

CLI	Description
? or help	See a brief description for all available commands at your context or view.
<string>?	See commands that start with certain letters.
<command> ?	See options for the command and a brief description of each option.
<string><Tab>	Auto complete a command or a command option: Type as many characters as necessary to identify the command uniquely and press <Tab>

Practice using CLI help commands

Help commands

- **Commands available at a certain context in the CLI**
- **Commands that begin with a certain character string**
- **Keywords associated with a particular command.**

HP ProVision switches help commands

ProVision# ?

- *show*, which enables you to examine current configuration parameters
- *copy*, which enables you to back up the switch configuration
- *ping* and *traceroute*, which are connectivity test tools

ProVision# show ?

HP Comware switches help commands

<Comware> ?

- *display*, which enables you to examine current configuration parameters
- *save*, which enables you to back up a switch configuration
- *ping* and *tracert*, which are connectivity test tools

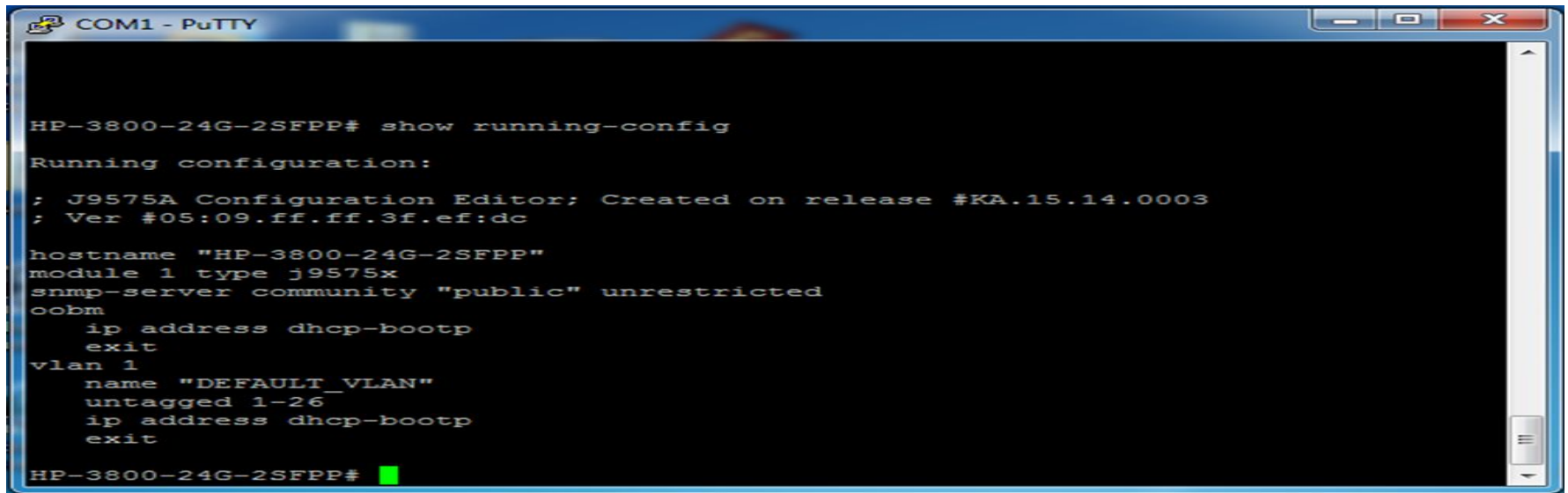
<Comware> display ?

Completing basic configuration tasks

- **Return HP Comware and HP ProVision switches to factory default settings**
- **Configure a hostname on ProVision switches and a sysname on Comware switches**
- **Disable and enable interfaces**
- **Use CLI help commands to navigate the CLI and enter commands**

Return HP ProVision switches to factory default settings

Switch# show running-config



```
COM1 - PuTTY

HP-3800-24G-2SFPP# show running-config

Running configuration:
; J9575A Configuration Editor; Created on release #KA.15.14.0003
; Ver #05:09.ff.ff.3f.ef:dc

hostname "HP-3800-24G-2SFPP"
module 1 type j9575x
snmp-server community "public" unrestricted
oobm
  ip address dhcp-bootp
  exit
vlan 1
  name "DEFAULT_VLAN"
  untagged 1-26
  ip address dhcp-bootp
  exit
HP-3800-24G-2SFPP#
```

Return HP ProVision switches to factory default settings

ProVision# erase startup-config

press y

Return HP Comware switches to factory default settings

[Comware] display current-configuration

HP> display current-configuration

version 5.20, Release 1211P09

#sysname HP

#irf mac-address persistent timer

irf auto-update enable

undo irf link-delay

#domain default enable system

#telnet server enable

#vlan 1

#radius scheme system

server-type extended

primary authentication 127.0.0.1 1645

primary accounting 127.0.0.1 1646

user-name-format without-domain

#domain system

access-limit disable

state active

idle-cut disable

self-service-url disable

#user-group system

#interface NULL0

#interface GigabitEthernet1/0/1

<-output omitted->

interface Ten-GigabitEthernet1/0/28

#load xml-configuration

#user-interface aux 0

user-interface vty 0 15

#return

Return HP Comware switches to factory default settings

```
<HP> reset saved-configuration
```

Enter

y

```
The saved configuration file will be erased. Are you sure? [Y/N]: Y
```

```
Configuration file in flash is being cleared.
```

```
Please wait ...
```

```
MainBoard:
```

```
Configuration file is cleared.
```


Return HP Comware switches to factory default settings

n

y

Enter

Enter

```
<HP> reboot
```

```
Start to check configuration with next startup configuration file, please wait.....DONE!
```

```
This command will reboot the device. Current configuration will be lost, save current configuration? [Y/N]:n
```

```
This command will reboot the device. Continue? [Y/N]:y
```

```
#May 1 14:00:07:594 2000 Comware DEVM/1/REBOOT:
```

```
Reboot device by command.
```

```
%May 1 14:00:07:694 2000 Comware DEVM/5/SYSTEM_REBOOT: System is -rebooting now.
```

```
Starting.....
```



Basic Switch Setup

Configure a hostname or sysname

HP ProVision switches

To configure a hostname on a ProVision switch, simply access the global configuration mode by typing `configure` at the switch prompt. Then you can enter `hostname [name]` to make your changes. For example, if you wanted to assign a ProVision switch the hostname `ProVision-1`, you would enter:

```
HP-3800-24G-2SFP+ (config)# hostname ProVision-1  
ProVision-1 (config)#
```

HP Comware switches

Custom names for Comware switches are called system names, or `sysname`. To assign a system name, first access the system view. From there, enter the `sysname [name]` command. If you wanted to assign the switch a `sysname` of `Comware-1`, you would enter:

```
[HP] sysname Comware-1  
[Comware-1]
```

Disable and enable interfaces

By default, all interfaces on ProVision and Comware switches are enabled.

Accessing HP ProVision switch interfaces

ProVision(config)# *interface 1,3-6*

ProVision(eth-1,3-6)#

- **Fixed switches:**

- interface <1-24>

- **Modular switches:**

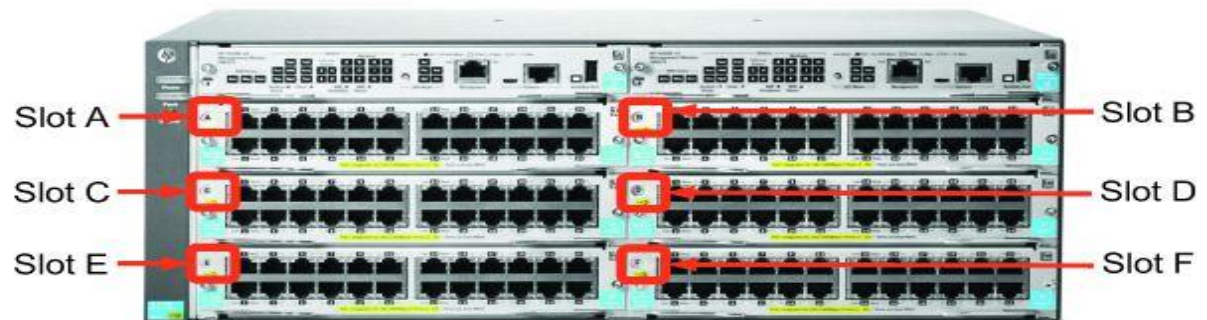
- interface <slot_letter><1-24>

- **Examples:**

- interface 19
 - interface a14

- **Configuring a range:**

- interface 1,3-6



5406R zl2 switch

Disable and enable interfaces HP ProVision switches

```
ProVision(config)# interface 2-18,20-26 disable
```

```
ProVision(config)# interface 2 enable
```

Disable and enable interfaces HP ProVision switches

```
ProVision(config)# show interfaces brief
```

```
Status and Counters - Port Status
```

Port	Type	Intrusion	Alert	Enabled	Status	Mode	MDI Mode	Flow Ctrl	Beast Limit
1	100/1000T	No	Yes	Down	1000FDx	Auto	off	0	
2	100/1000T	No	No	Down	1000FDx	Auto	off	0	
<-output omitted->									
19	100/1000T	No	Yes	Up	1000FDx	Auto	off	0	
<-output omitted->									

Disable and enable interfaces HP ProVision switches

For example, you can enter a description that indicates the device to which the interface is connected.

```
ProVision(config)# interface 1 name Server
```

```
ProVision(config)# interface 19 name Comware-1
```


Accessing HP Comware switch interfaces

```
interface <type_slot_#>/<sub_slot>/<port_#>
```

GigabitEthernet

Ten-GigabitEthernet

g

ten

<sub_slot> begins at 0

**<slot_#> begins at
ports are numbered from 1**

For example, interface g1/0/1

Creating a range of interfaces on HP Comware switches

```
[Comware] interface range name EdgePorts g1/0/1 g1/0/3 to g1/0/6
```

persists in the device configuration You can access it again by specifying the range name.

```
[Comware] interface range name EdgePorts
```

Creating a port group on HP Comware switches

manual port groups

```
[Comware] port-group manual EdgePorts
```

```
[Comware-port-group-manual-EdgePorts] group-member g1/0/1 g1/0/3 to g1/0/6
```

does not persist in the config

Disable and enable interfaces HP Comware switches

myports

```
[Comware] port-group manual myports
[Comware-port-group-manual-myports] group-member g1/0/1 to ten1/0/28
[Comware-port-group-manual-myports] shutdown
[Comware-port-group-manual-myports] quit
```

```
[Comware] interface g1/0/19
[Comware-GigabitEthernet1/0/19] shutdown
```

Disable and enable interfaces HP Comware switches

```
[Comware] display interface brief
```

The brief information of interface(s) under route mode:

Link: ADM - administratively down; Stby - standby

<-output omitted->

Speed or Duplex: (a)/A - auto; H - half; F - full

Type: A - access; T - trunk; H - hybrid

Interface	Link	Speed	Duplex	Type	PVID	Description
GE1/0/1	ADM	auto	A	A	1	

<-output omitted->

GE1/0/19	UP	1G(a)	F(a)	A	1	Comware-2
GE1/0/20	ADM	auto	A	A	1	
GE1/0/21	UP	1G(a)	F(a)	A	1	ProVision-1

<-output omitted->

Disable and enable interfaces HP Comware switches

*undo shutdown
command*

```
[Comware] interface g1/0/19
```

```
[Comware-GigabitEthernet1/0/19] undo shutdown
```

descriptions **to add**

```
[Comware-GigabitEthernet1/0/19] description Connection to Comware-2
```

```
[Comware-GigabitEthernet1/0/19] quit
```

Save configuration settings

HP ProVision switches

To save the configuration on a ProVision switch, enter the following command: *ProVision(config)# write memory*

HP Comware switches

To save the configuration on a Comware switch, enter:

[Comware] save

When prompted if you are sure you want to save the config, press y. When prompted to input a filename, accept the default and press <Enter>.

```
The current configuration will be written to the device. Are you sure? [Y/N]: y
Please input the file name(*.cfg)[flash:/config.cfg]
(To leave the existing filename unchanged, press the enter key): <Enter>
Validating file. Please wait....
Saved the current configuration to mainboard device successfully
```

View commands previously executed on the switch

HP ProVision switches

On a ProVision switch, enter: *ProVision-1# show history*. You will see output similar to the following:

```
6    configure
5    hostname ProVision-1
4    show interfaces brief
3    interface 2-18,20-26 disable
2    interface 1 name Server
1    interface 19 name Comware-1
```

HP Comware switches

On a Comware switch, enter: *[Comware-1] display history*. You will see output such as:

```
system-view
sysname Comware-1
port-group manual myports
group-member g1/0/1 to ten1/0/28
shutdown
quit
```


Configuring IP addresses on HP ProVision switches

```
ProVision# configure
```

```
ProVision(config)# vlan 1 ip address 10.1.1.3/24
```

```
ProVision(config)# exit
```

Configuring IP addresses on HP ProVision switches

```
ProVision# show ip
```

```
Internet (IP) Service
```

```
IP Routing : Disabled
```

```
Default Gateway :
```

```
Default TTL : 64
```

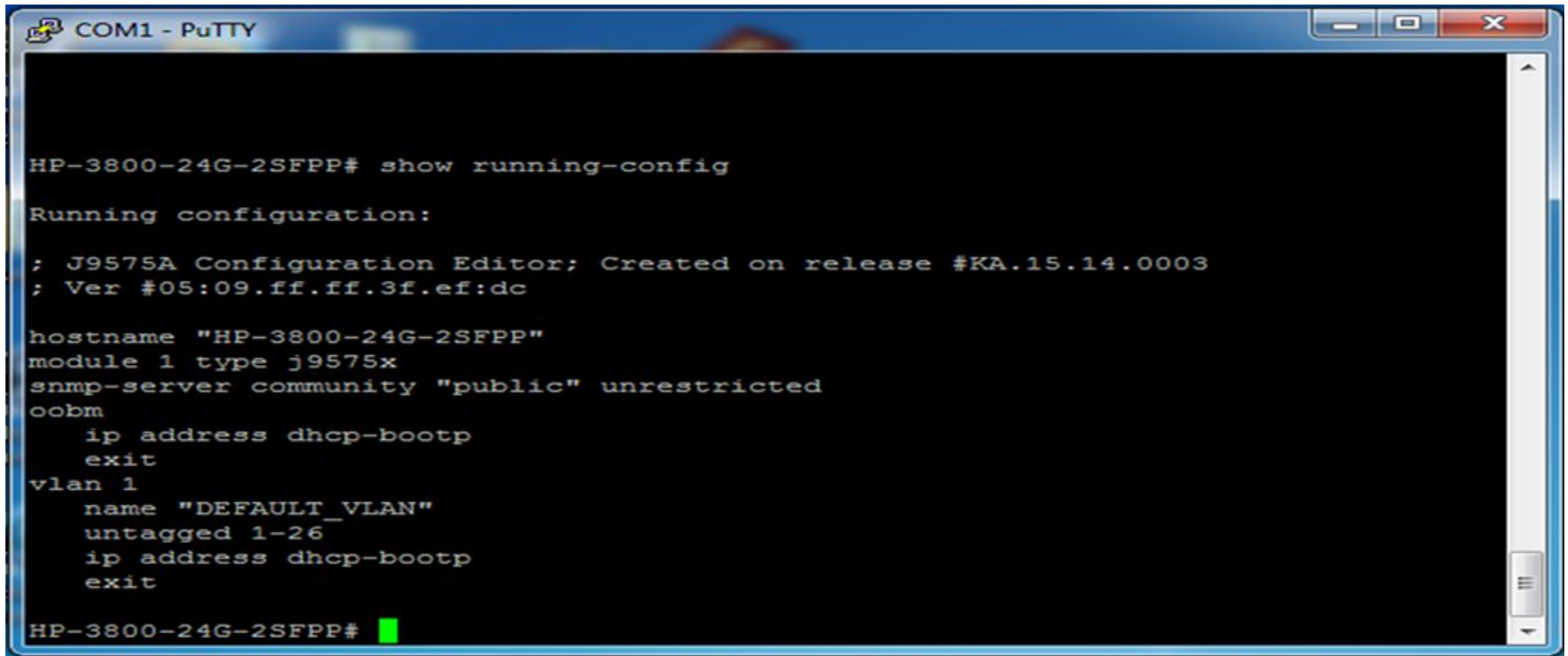
```
Arp Age : 20
```

```
Domain Suffix :
```

```
DNS server :
```

VLAN	IP Config	IP Address	Subnet Mask	Proxy ARP	
				Std	Local
-----	+	-----	-----	-----	-----
DEFAULT_VLAN	Manual	10.1.1.3	255.255.255.0	No	No

Using DHCP to assign IP address on ProVision switches



```
COM1 - PuTTY

HP-3800-24G-2SFPP# show running-config

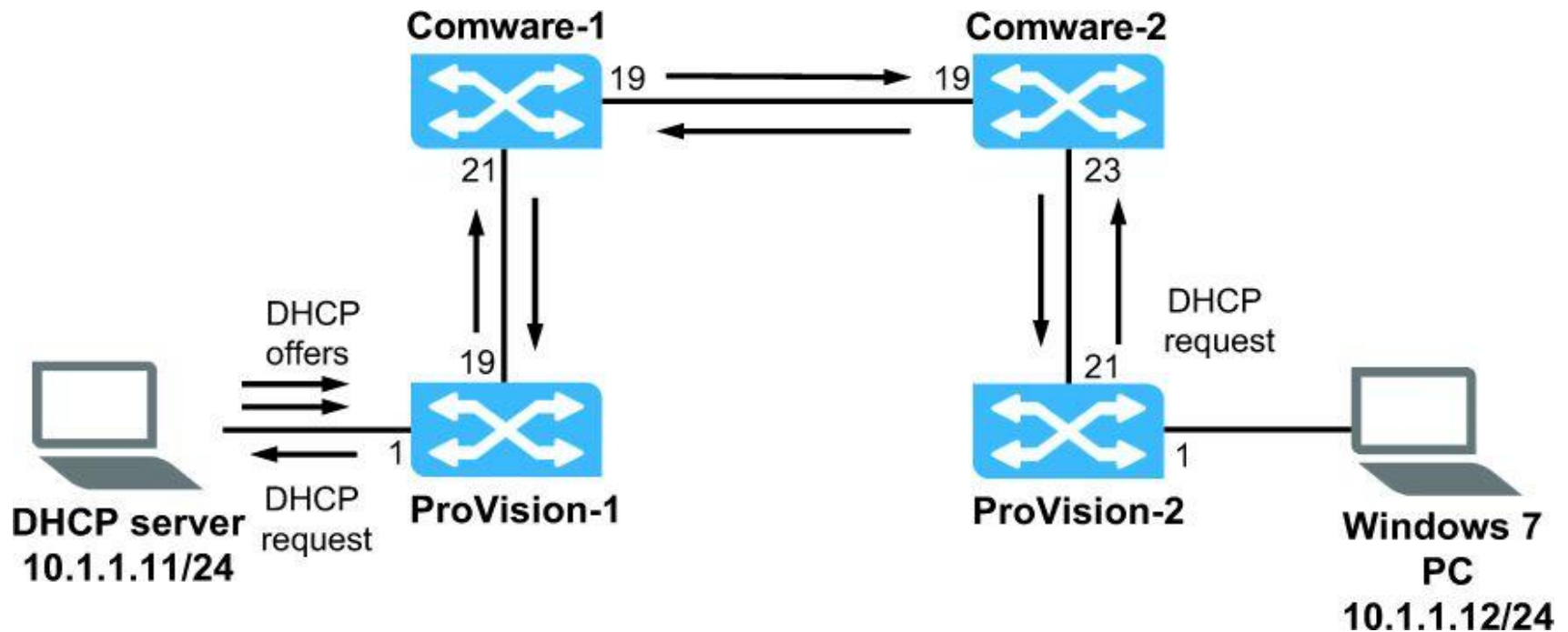
Running configuration:

; J9575A Configuration Editor; Created on release #KA.15.14.0003
; Ver #05:09.ff.ff.3f.ef:dc

hostname "HP-3800-24G-2SFPP"
module 1 type j9575x
snmp-server community "public" unrestricted
oobm
    ip address dhcp-bootp
    exit
vlan 1
    name "DEFAULT_VLAN"
    untagged 1-26
    ip address dhcp-bootp
    exit

HP-3800-24G-2SFPP#
```

Using DHCP to assign IP address on ProVision switches



Configuring IP addresses on HP Comware switches

IP address command

```
<Comware> system-view  
System View: return to User View with Ctrl+Z.  
[Comware] interface vlan 1  
[Comware-Vlan-interface1] ip address 10.1.1.1 24
```

display this command

```
[Comware-Vlan-interface1] display this
```

Configuring IP addresses on HP Comware switches

```
interface Vlan-interface1  
ip address 10.1.1.1 255.255.255.0
```

```
[Comware] display interface brief
```

The brief information of interface(s) under route mode:

Interface	Link	Protocol-link	Protocol type	Main IP
NULL0	UP	UP (spoofing)	NULL	--
Vlan1	UP	UP	ETHERNET	10.1.1.1

<-output omitted->

Link Layer Discovery Protocol (LLDP)

To enable this exchange of information, the Internet Engineering Task Force (IETF) defined LLDP in IEEE 802.1AB.

With LLDP, devices exchange local device information such as its major functions, management IP address, device ID, and port ID.

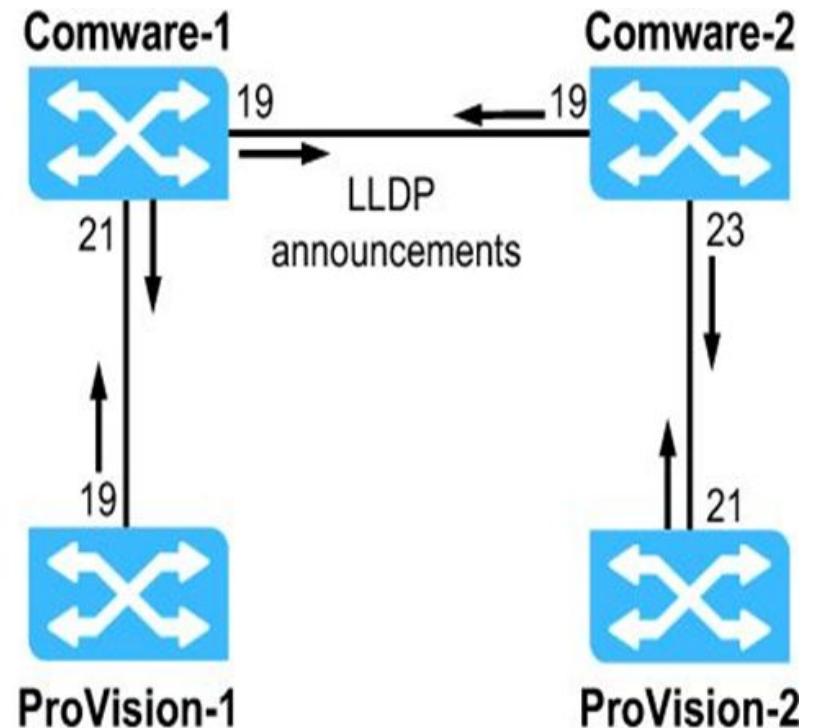
Each device sends this information as type, length, and value (TLV) in LLDP data units (LLDPDUs) to directly connected devices.

Simple Network Management Protocol (SNMP) programs can use the LLDP information stored in MIBs to quickly detect Layer 2 network topology changes and identify each change.

Link Layer Discovery Protocol (LLDP)

support LLDP.

- Devices use this Layer 2 protocol to send periodic announcements about:
 - Major device functions (such as bridging and routing)
 - Management IP address
 - Device identifier (such as sysname, MAC address, and chassis ID)
 - Port identifier (port ID and description)
- How do you think you could use LLDP in a lab environment?
- What are other uses for LLDP?



Verify connectivity HP ProVision switches

```
ProVision(config)# show lldp info remote-device
```

LLDP Remote Devices Information

LocalPort		ChassisId	PortId	PortDescr	SysName
-----	+	-----	-----	-----	-----
21		d07e28-ced31e	Gig...	Gigabi...	Comware-2

Verify connectivity HP ProVision switches

```
ProVision# show lldp info remote-device 21
LLDP Remote Device Information Detail
Local Port      : 21
ChassisType     : mac-address
ChassisId       : d07e28-ced31e
PortType        : inte...
PortId          : GigabitEthernet1/0/23
SysName         : Comware-2
System Descr    : HP Comware Platform Software, Software Version 5.20,
Rele...
PortDescr       : GigabitEthernet1/0/23 Interface
Pvid            : 1
System Capabilities Supported : bridge, router
System Capabilities Enabled   : bridge, router
Remote Management Address
  Type           : ipv4
  Address        : 10.1.1.2
<-output omitted->
```

Verify connectivity HP ProVision switches

show arp

```
ProVision# show arp
```

```
IP ARP table
```

IP Address	MAC Address	Type	Port
-----	-----	-----	----
15.255.128.1	00000c-07ac00	dynamic	B1
15.255.131.19	00a0c9-b1503d	dynamic	B1
15.255.133.150	000bcd-3cbeec	dynamic	B1

Verify connectivity HP Comware switches

```
<Comware> display lldp neighbor-information list
```

System Name	Local Interface	Chassis ID	Port ID
Comware-2	GE1/0/19	d07e-28ce-d31e	GigabitEthernet1/0/19
ProVision-1	GE1/0/21	d4c9-ef85-1680	19

Verify connectivity HP Comware switches

```
<Comware> display lldp neighbor-information interface g1/0/21
```

```
LLDP neighbor-information of port 21[GigabitEthernet1/0/21]:
```

```
Neighbor index      : 1
```

```
Update time        : 0 days,2 hours,37 minutes,0 seconds
```

```
Chassis type       : MAC address
```

```
Chassis ID         : d4c9-ef85-1680
```

```
Port ID type       : Locally assigned
```

```
Port ID            : 19
```

```
Port description   : 19
```

```
System name        : ProVision-1
```

```
System description : HP J9575A 3800-24G-2SFP+ Switch, revision KA.15.10.0011, ROM KA.15.09  
(/ws/swbuildm/KA_rel_irvine_qaoff/code/build/tam(swbuildm_KA_rel_irvine_qaoff_rel_irvine))
```

Verify connectivity HP Comware switches

```
System capabilities supported : Bridge,Router
System capabilities enabled   : Bridge
Management address type      : ipv4
Management address           : 10.1.1.3
Management address interface type : IfIndex
Management address interface ID  : Unknown
Management address OID        : 0
Port VLAN ID (PVID) : 1
<-output omitted->
```

Verify connectivity HP Comware switches

```
[Switch] display arp
```

```
Type: S-Static D-Dynamic O-Openflow M-Multiport I-Invalid
```

```
10
```

```
IP address MAC address VLAN Interface Aging Type
```

```
192.168.1.1 00e0-fc01-0000 10 N/A N/A M
```

To verify that a switch can ping other devices

HP ProVision switches

To verify that a ProVision switch can ping other devices, use the ping command. For example, you might want to see if the ProVision switch can reach another switch that has the IP address 10.1.1.2.

ProVision# ping 10.1.1.2

HP Comware switches

Return to the Comware CLI and verify it can ping its neighbors.

<Comware> ping 10.1.1.2

**Спасибо
за внимание!**