

# Lecture 3



# Switches

# Objectives




# Switches



# Switches

**The various types of switches contained in a network are:**

**Unmanaged switch**

**Smart managed switch**

**Managed switch**

# Unmanaged Switch

**low end**

**unmanaged switches**

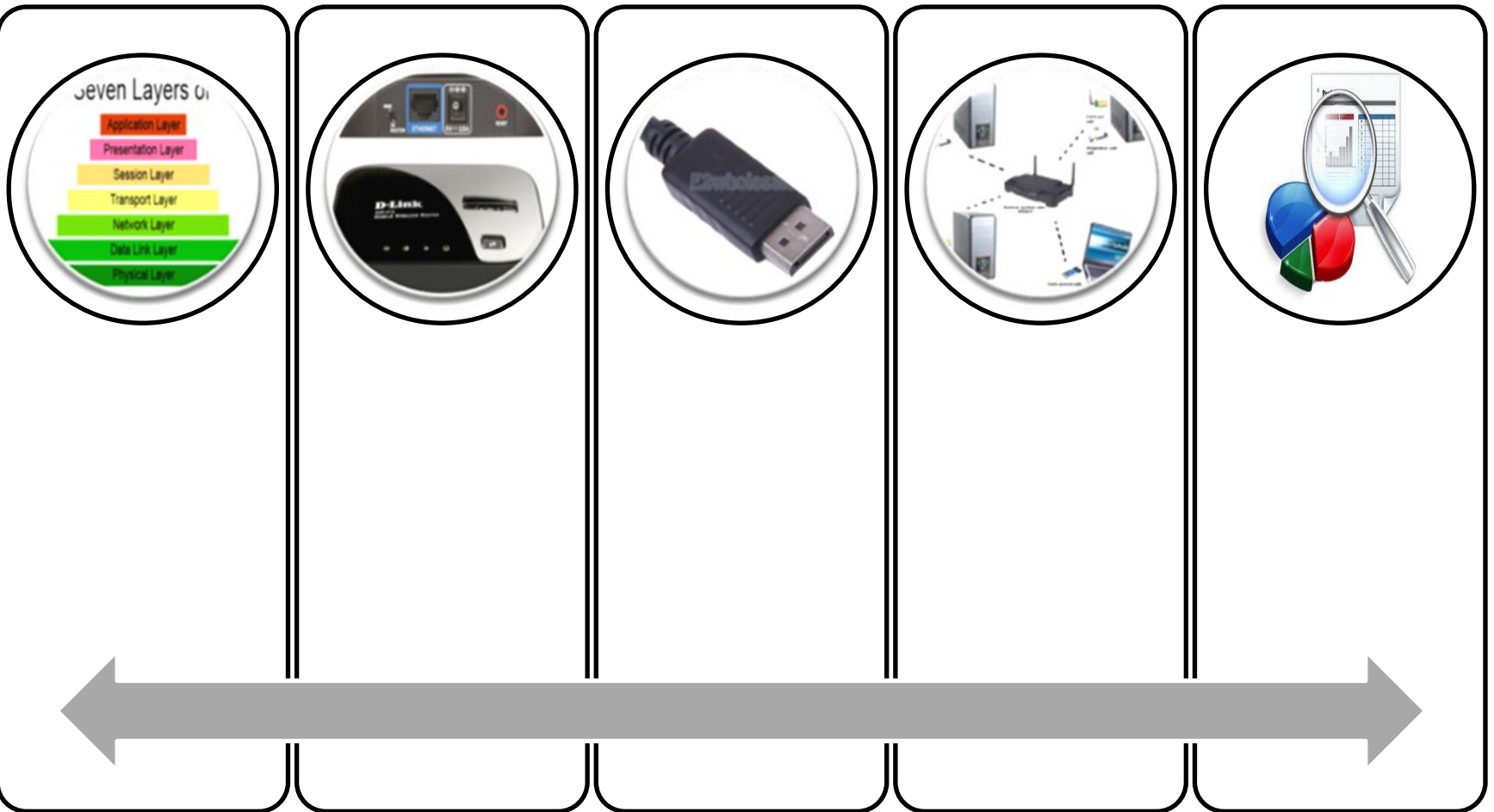


**HP 1405-5G  
Unmanaged  
desktop  
Switch**



**such as buffering traffic to avoid collisions**

# Unmanaged Switch



# Smart Managed Switch

also known as a web managed switch



**HP 1620-24G 24-PORT  
10/100/1000 Gigabit Smart  
Managed Switch**



functionality at OSI Layer 2, but a small number include some Layer 3 functionality

static routes only

can typically be deployed as plug-and-play devices

# Smart Managed Switch Advantages

Smart managed switch has **management access through a browser-based management interface**, which allows to view port statistics and manage custom configurations.

Another clear advantage is that smart managed switches **include VLAN support**.

You can also configure **link aggregation** to provide a high-bandwidth data path.



# Smart Managed Switch Limited

- Most switches of this type also have an **RJ-45 console port**. Some also have a **USB connection** that can be used to connect directly to the switch. This is similar to the console connection on managed switches, but it can typically **be used to perform the same procedures as the web interface**.
- Smart managed switches also **include limited SNMP support**. SNMP management devices can **automatically discover and remotely monitor** smart managed switches. However, smart managed switches do not support remote management from an SNMP management device.

# Managed Switch

**that connects  
devices together**

**to the device  
for which the message was  
intended.**

**using a MAC address**



**HP 7510 Switch with 2 48-port  
Gig-T PoE+ Modules and  
768Gbps MPU**

# Managed Switch functionality

## Layer 3 functionality dynamic routing

- **Support for dynamic updates to network destinations and routes to allow for changes in available routes and network conditions.**

# Managed Switch interfaces

- **CLI (console port or over the network);**
- **Menu interface (console port or over the network);**
- **Web interface (over the network only).**

# Managed Switch and SNMP

**monitored and configured through SNMP**

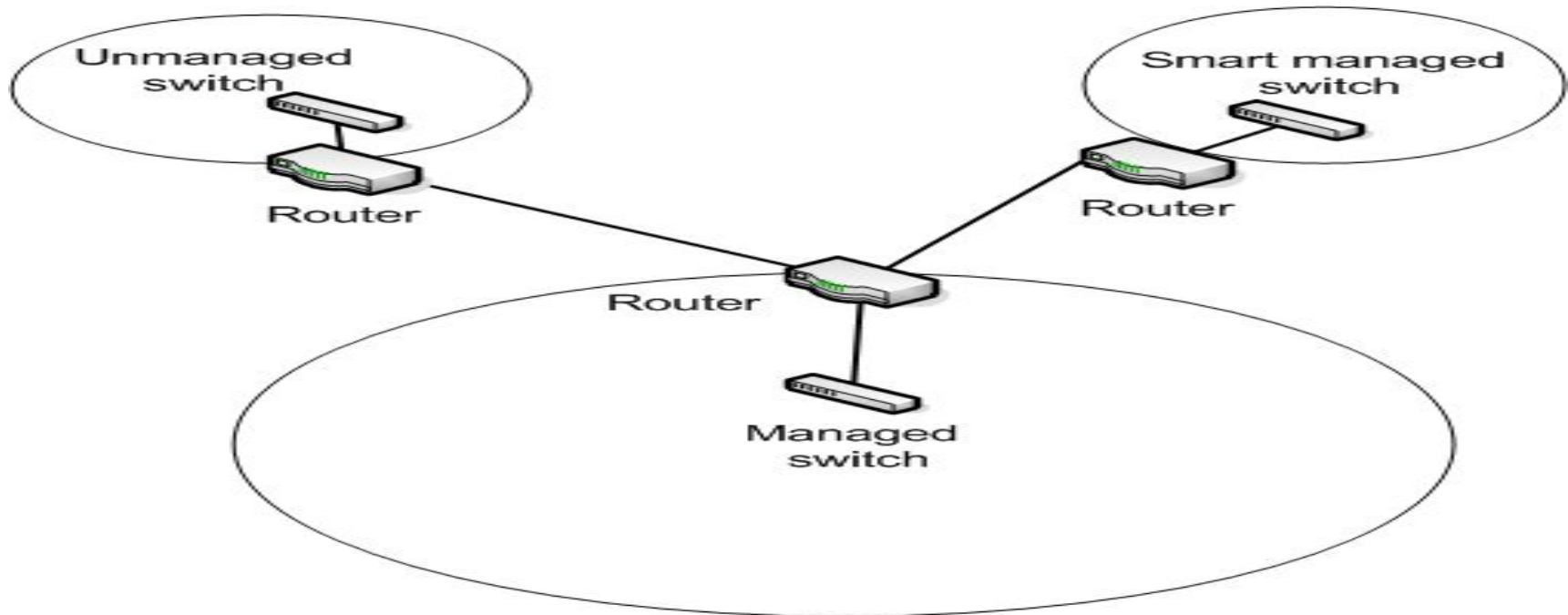
**available**

**the switch's MIB**

- **A collection of management information about a device for use with SNMP management**

# Deployment Sample

**different types of switches in different physical locations**



# Summary

- **Unmanaged switch**
- **Smart managed switch**
- **Managed switch**



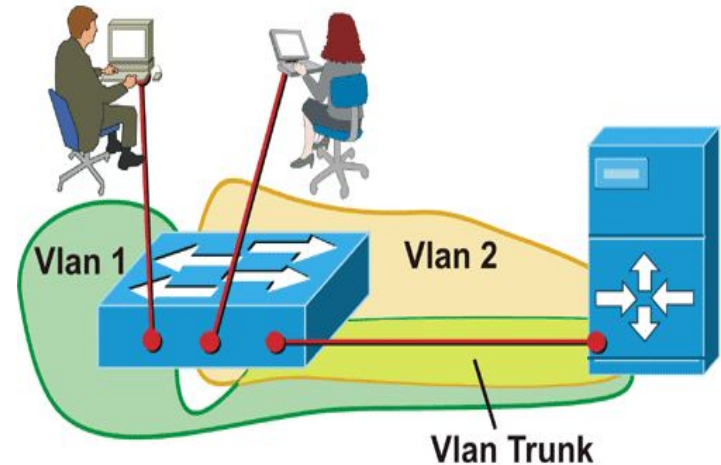
# Switches



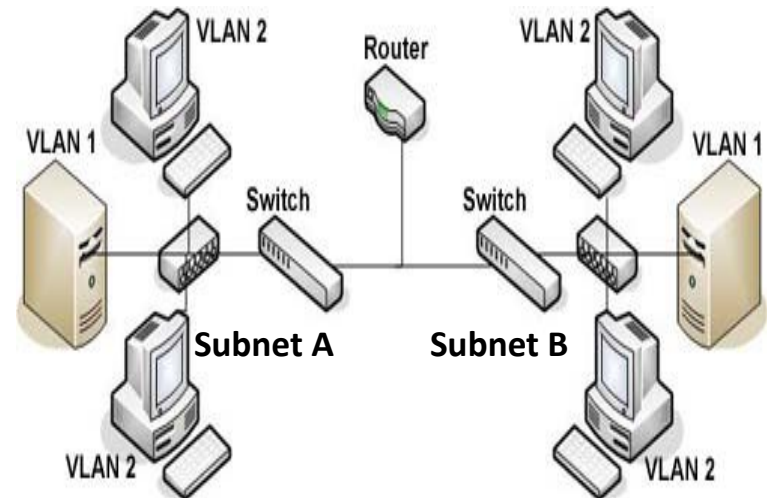


# Virtual LANs

**partitioned**  
**[pɑ: 'tɪfənd] and isolated**



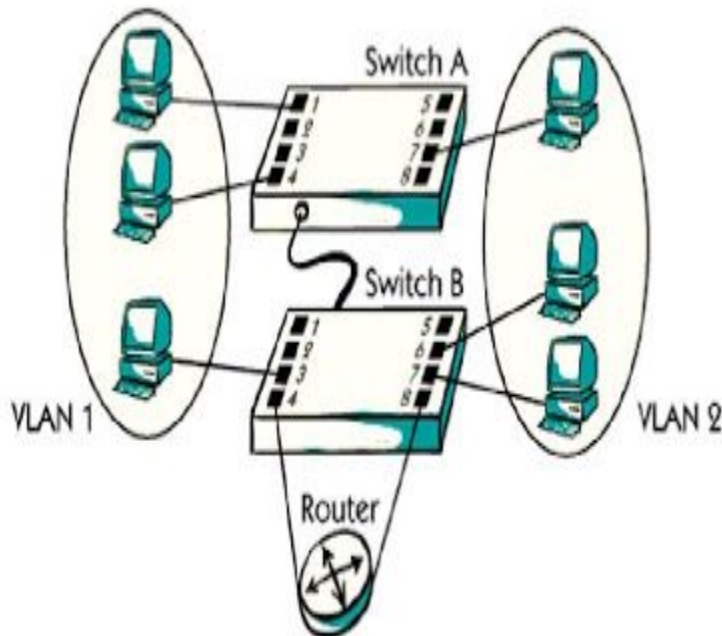
**a subnet is based on location**  
**(physical connection)**  
**is based on port configuration**  
**(logical connection)**



# Membership in Virtual LANs

**on the port to which a device is attached**

VLAN - Virtual Local Area Network



**ports located on different physical switches**

**Traffic between ports in the same VLAN**

**are propagated through the VLAN**

**Traffic between VLANs**

**does not cross VLANs**

# Virtual LANs (VLANs) Types

## Default VLAN

- Includes **all switch ports** when a switch is in its default configuration. In the default configuration, the default VLAN carries **both management traffic and standard network traffic**.

## Primary VLAN

- **Initially the default VLAN. For HP switches, the primary VLAN is the only VLAN on the switch that can receive a switch-generated address via DHCP.**
- You can designate a custom VLAN as the primary VLAN and make it responsible for some management functions.

# Virtual LANs (VLANs) Types

## Management VLAN

- **Management VLAN** is used for **managing the switch from a remote location** by using protocols such as telnet, SSH, SNMP, syslog etc.
- Normally the **Management VLAN is VLAN 1**, but you can use any VLAN as a management VLAN.
- To identify a specific VLAN as the only VLAN from which users **can connect to the switch management interface**.

# Virtual LANs (VLANs) Types

## Secure Management VLAN

- When created as a custom VLAN, the secure management VLAN **is an isolated network specifically used for switch management.** Access to management functions is then limited to only those ports configured as secure management VLAN members. Traffic cannot be routed to or from this VLAN.

## Voice VLAN

- Custom VLAN that can be created to isolate VoIP traffic from other network traffic.

# Creating a VLAN

- **Define the VLAN name and ID;**
- **Transfer ports from the default VLAN to the new VLAN;**
- **Assign an IP address to the VLAN (optional).**

# VLAN links

**Untagged/Access link; Tagged/ Trunk link**

**Untagged/Access  
link**

- Port linked to a network device other than another switch.

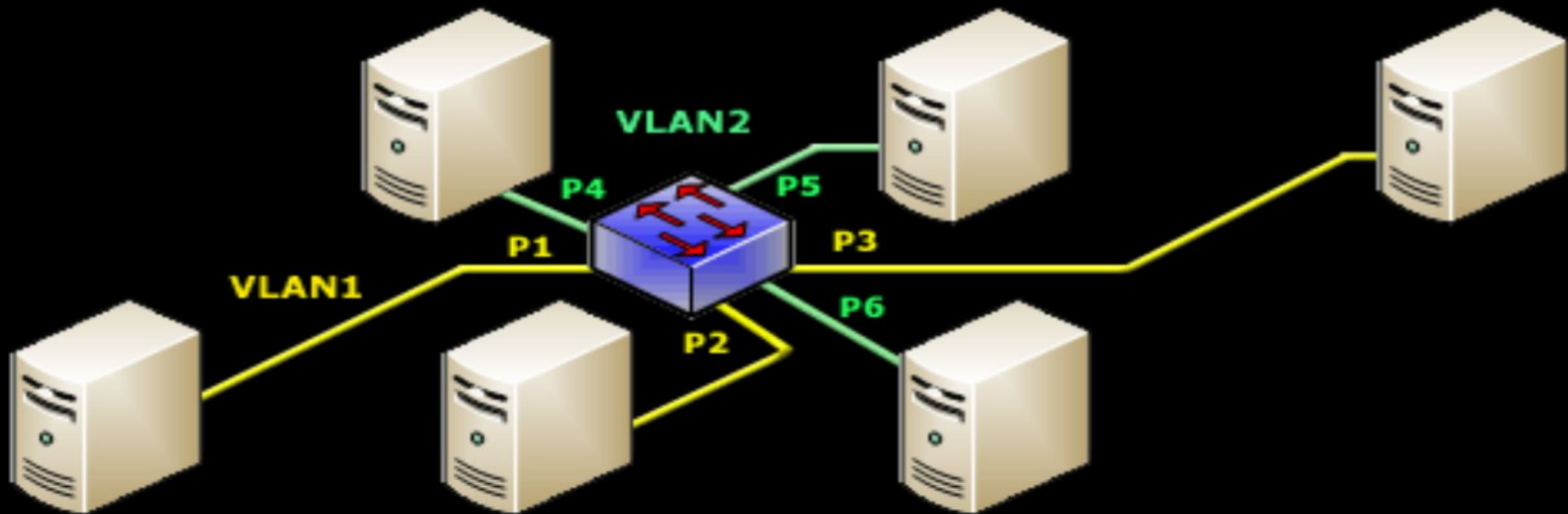
**Tagged/Trunk  
link**

- Port linked to another switch.

**Tagging is based on the 802.1Q standard.**

# Access link

Each Access Link Port Is Assigned To One VLAN

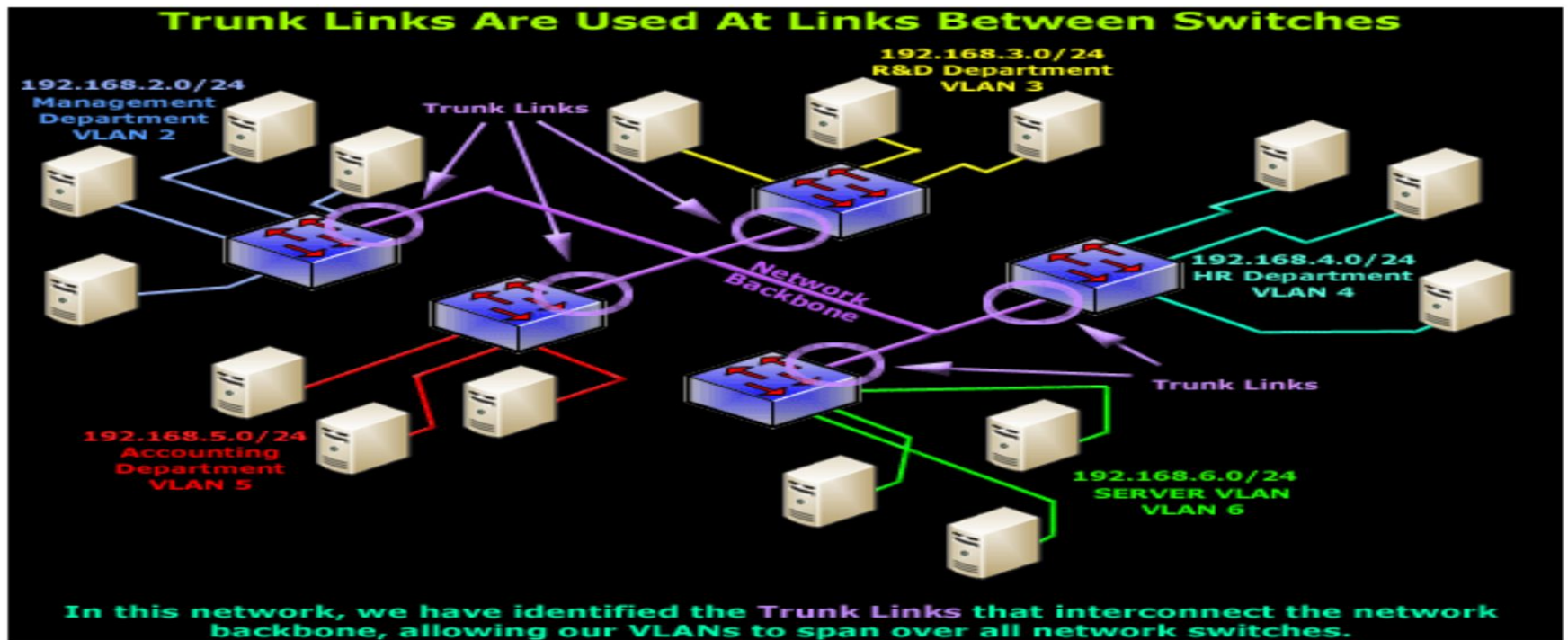


This VLAN capable switch has been configured with 2 VLANs. Each VLAN acts as a separate network!



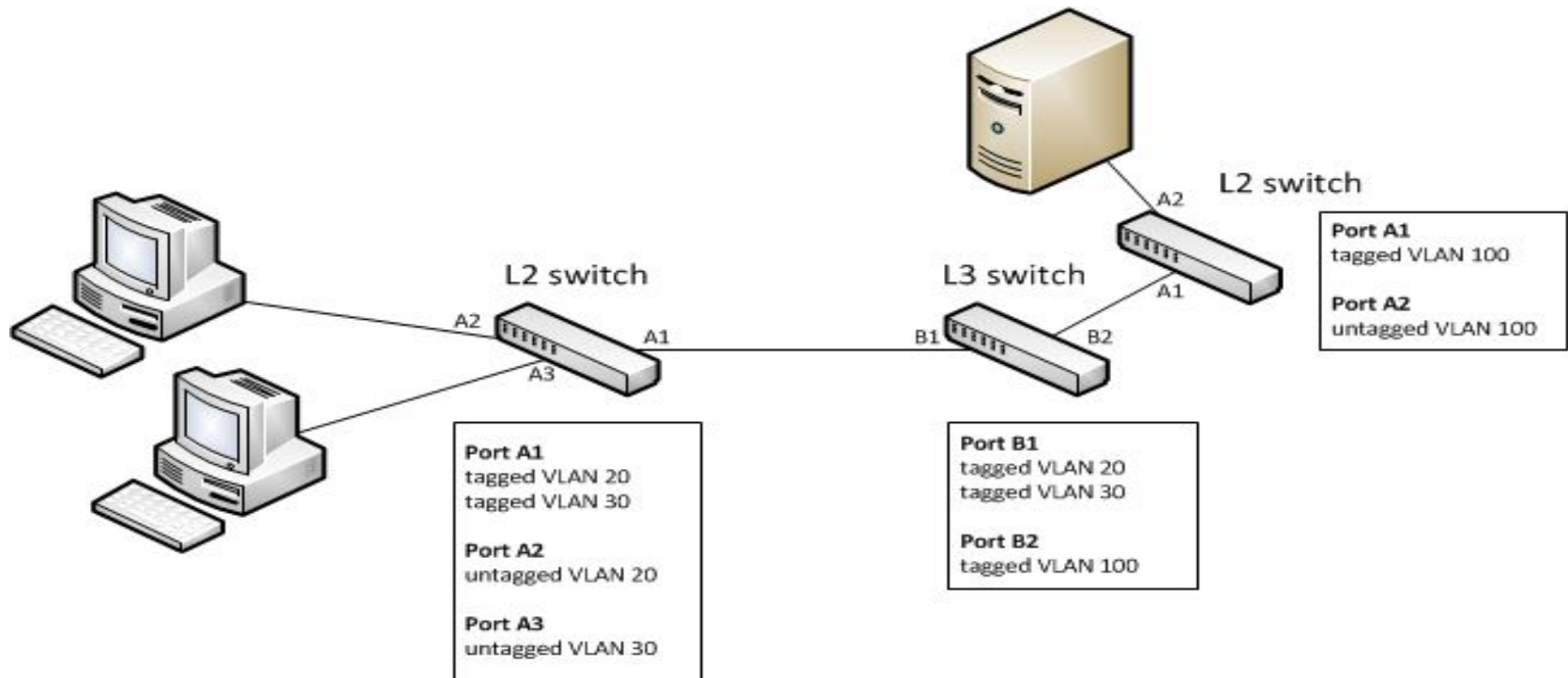
# Trunk link

These type of ports are usually found in connections between switches.



# Sample Network

**A port in a VLAN can be either tagged or untagged**



# Summary

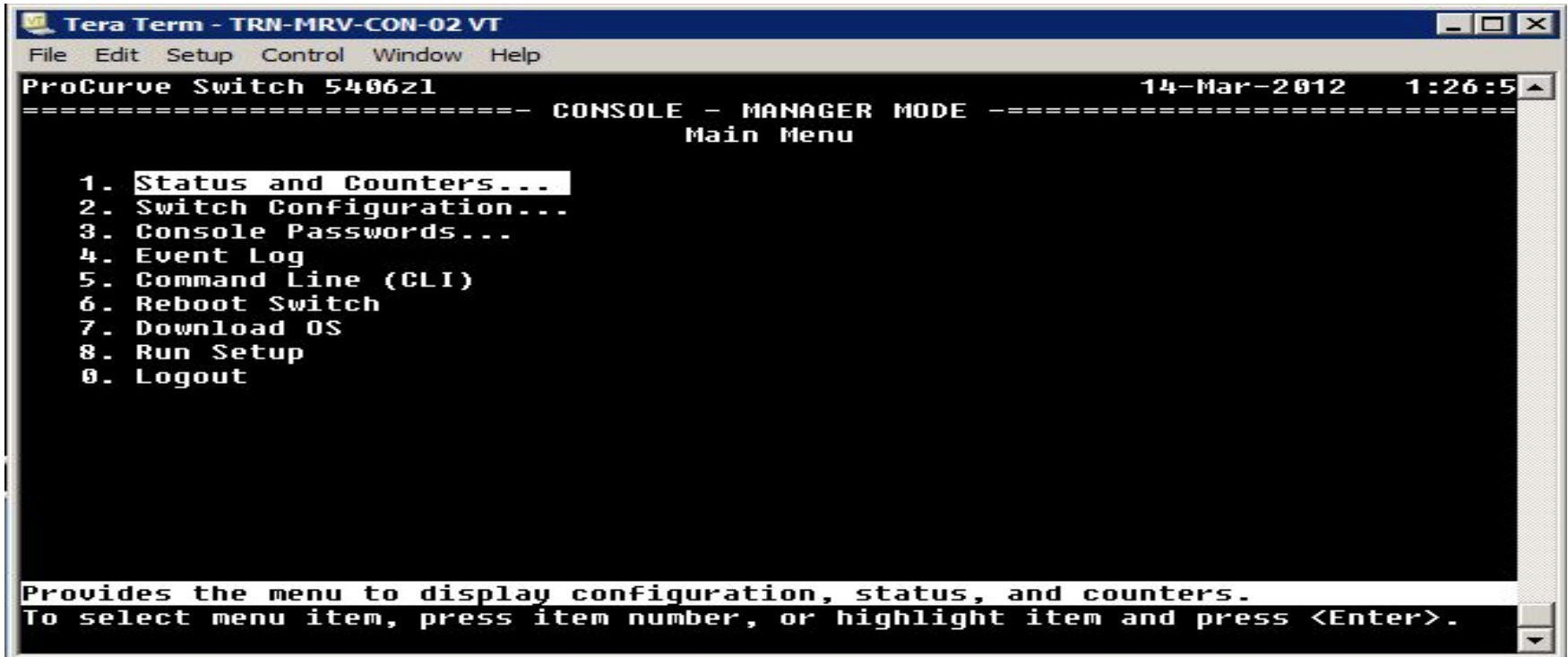


# Switches



# Main Menu

## *2. Switch Configuration*



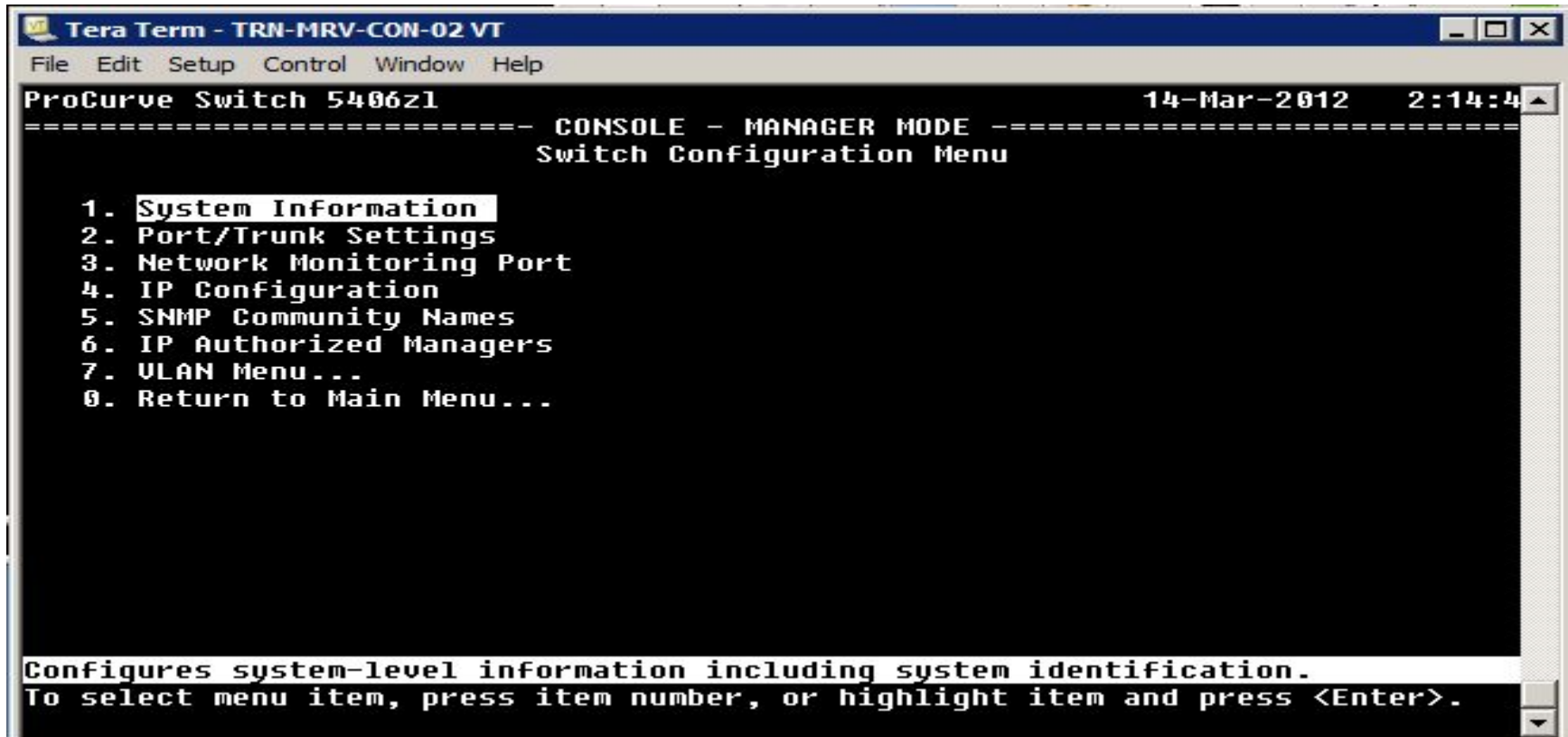
```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1 14-Mar-2012 1:26:5
----- CONSOLE - MANAGER MODE -----
Main Menu

1. Status and Counters...
2. Switch Configuration...
3. Console Passwords...
4. Event Log
5. Command Line (CLI)
6. Reboot Switch
7. Download OS
8. Run Setup
9. Logout

Provides the menu to display configuration, status, and counters.
To select menu item, press item number, or highlight item and press <Enter>.
```

# Switch Configuration Menu

## 7. VLAN Menu



```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1 14-Mar-2012 2:14:4
===== CONSOLE - MANAGER MODE =====
Switch Configuration Menu

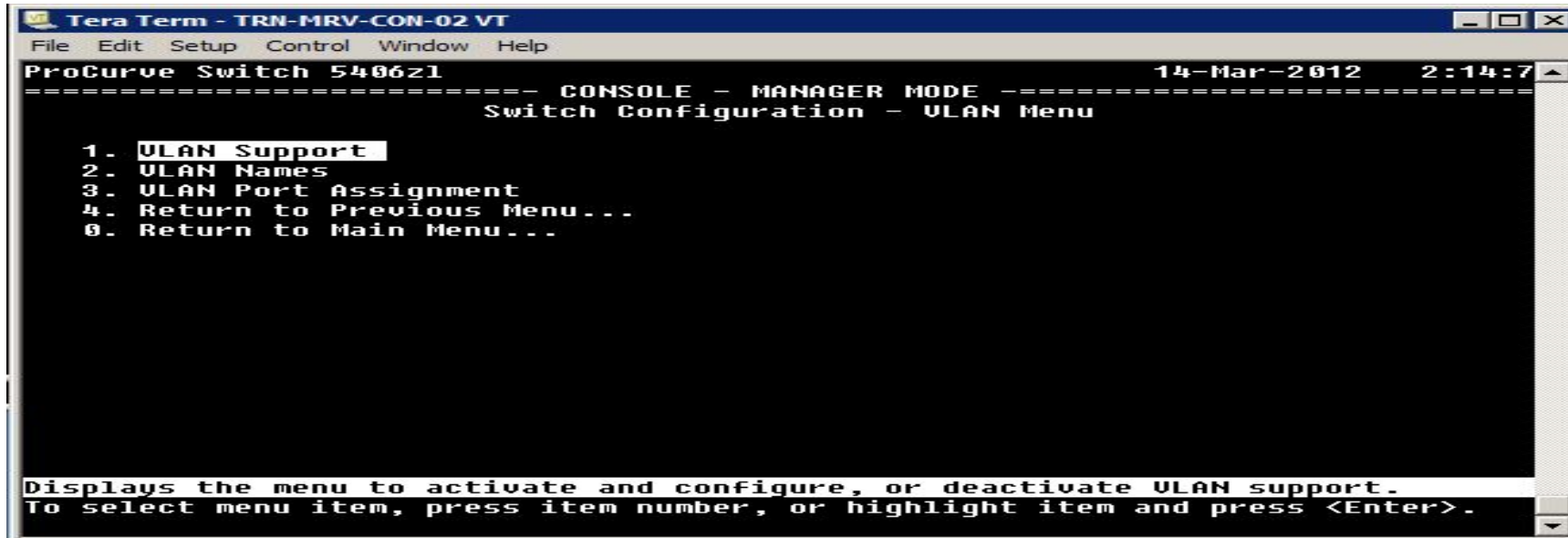
1. System Information
2. Port/Trunk Settings
3. Network Monitoring Port
4. IP Configuration
5. SNMP Community Names
6. IP Authorized Managers
7. VLAN Menu...
8. Return to Main Menu...

Configures system-level information including system identification.
To select menu item, press item number, or highlight item and press <Enter>.
```

# VLAN Menu

## VLAN Menu

- **Configure VLAN support parameters.**
- **Create and manage VLAN names and IDs.**
- **Assign ports to or remove ports from VLANs.**



```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1 14-Mar-2012 2:14:7
----- CONSOLE - MANAGER MODE -----
Switch Configuration - VLAN Menu

1. VLAN Support
2. VLAN Names
3. VLAN Port Assignment
4. Return to Previous Menu...
0. Return to Main Menu...

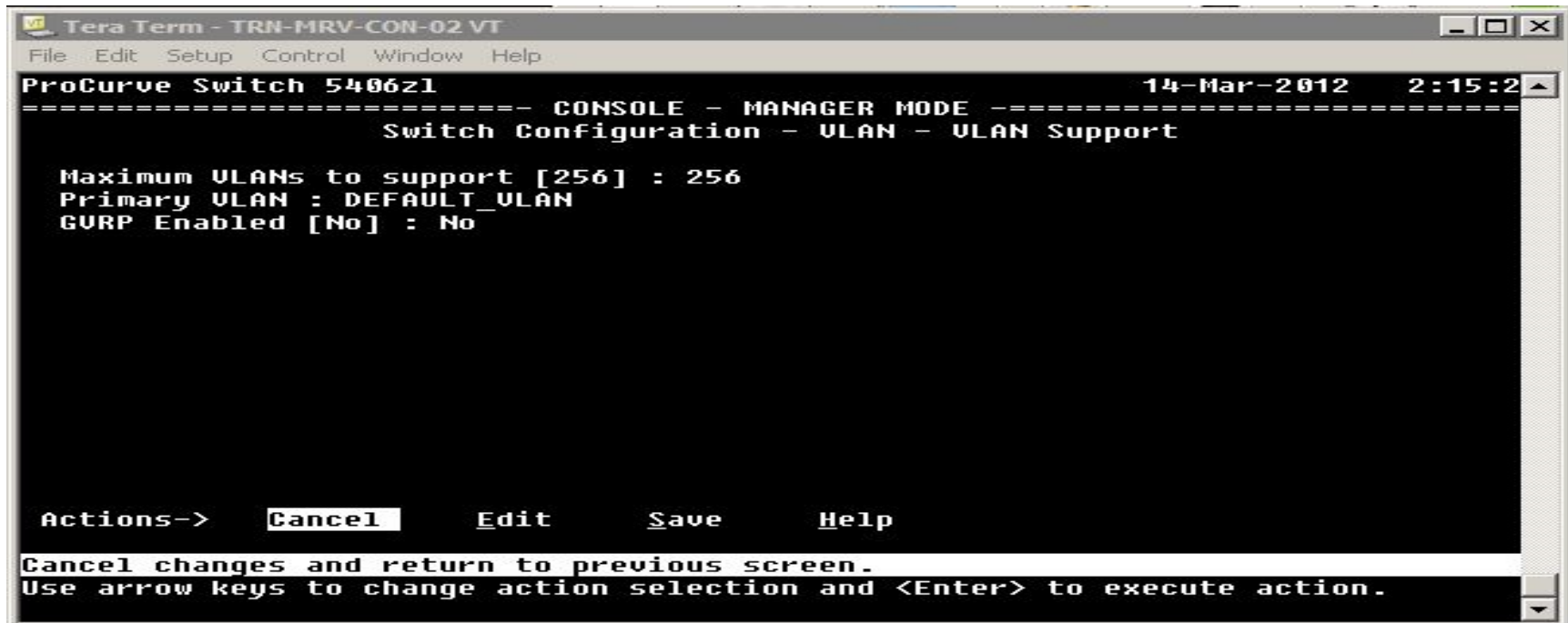
Displays the menu to activate and configure, or deactivate VLAN support.
To select menu item, press item number, or highlight item and press <Enter>.
```

# VLAN Support

**256 VLANs**

**primary VLAN is also the default VLAN  
GVRP**

**is disabled**



```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1 14-Mar-2012 2:15:2
----- CONSOLE - MANAGER MODE -----
Switch Configuration - VLAN - VLAN Support

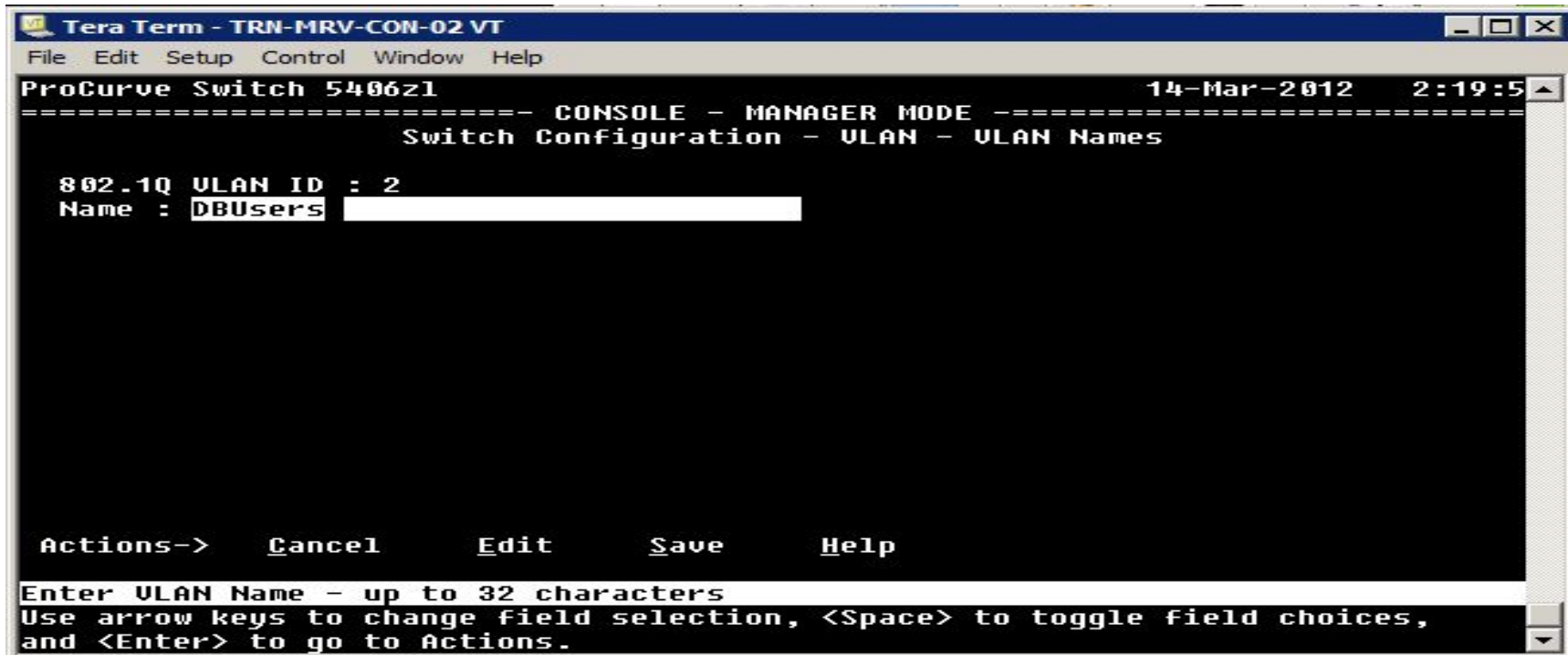
Maximum VLANs to support [256] : 256
Primary VLAN : DEFAULT_VLAN
GVRP Enabled [No] : No

Actions->  Cancel  Edit  Save  Help
Cancel changes and return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```



# VLAN Names

## 2. *VLAN Names*



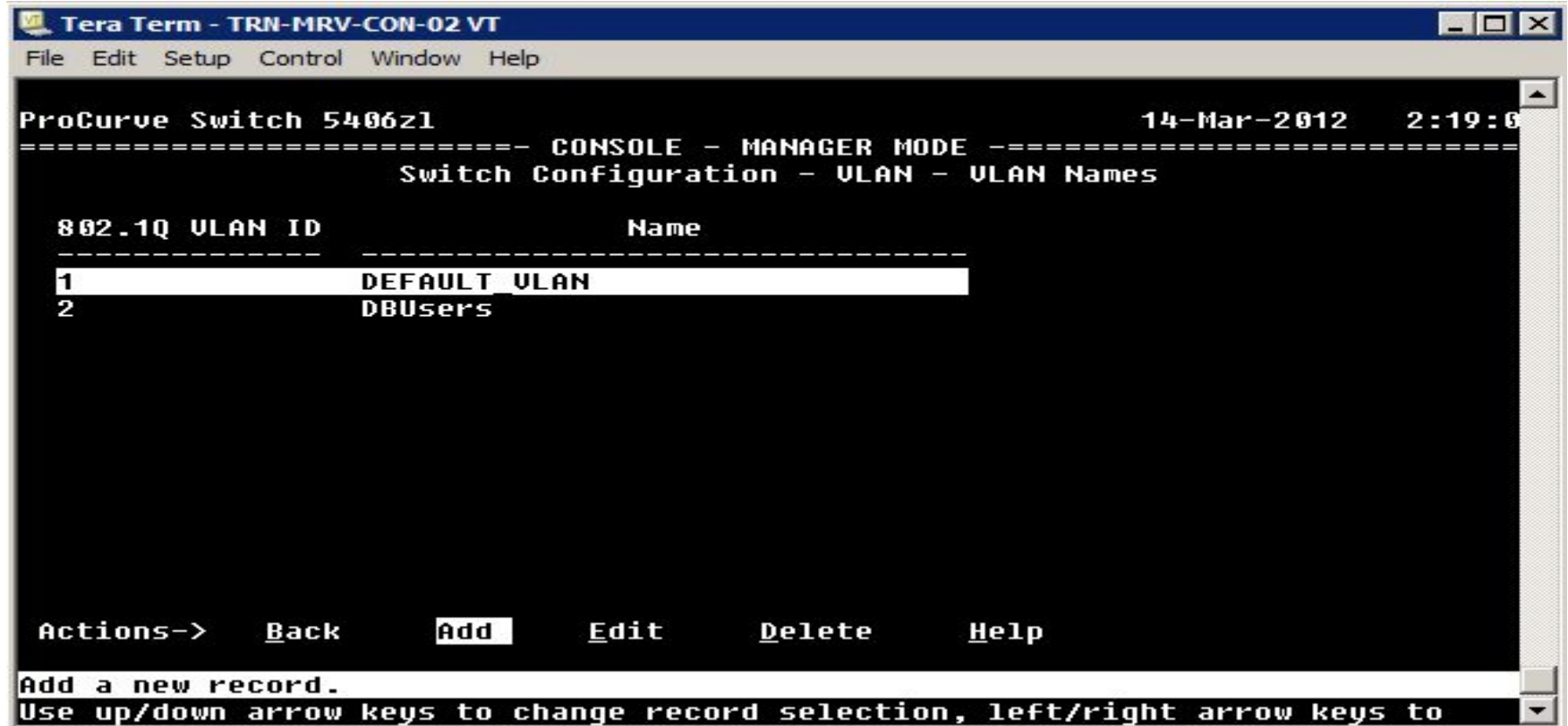
```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1 14-Mar-2012 2:19:5
===== CONSOLE - MANAGER MODE =====
Switch Configuration - VLAN - VLAN Names

802.1Q VLAN ID : 2
Name : DBUsers

Actions->  Cancel      Edit      Save      Help

Enter VLAN Name - up to 32 characters
Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.
```

# New VLAN



The screenshot shows a terminal window titled "Tera Term - TRN-MRV-CON-02 VT". The terminal output displays the configuration menu for VLANs on a ProCurve Switch 5406z1. The menu is titled "Switch Configuration - VLAN - VLAN Names" and shows a table of existing VLANs. The first entry, "1", is highlighted with a white background and is labeled "DEFAULT VLAN". The second entry is "2", labeled "DBUsers". At the bottom of the terminal, there are navigation options: "Actions-> Back Add Edit Delete Help". The "Add" option is currently selected. Below the navigation options, there is a prompt: "Add a new record. Use up/down arrow keys to change record selection, left/right arrow keys to".

```
ProCurve Switch 5406z1                               14-Mar-2012   2:19:06
===== CONSOLE - MANAGER MODE =====
                Switch Configuration - VLAN - VLAN Names

 802.1Q VLAN ID                Name
-----
 1  DEFAULT VLAN
 2  DBUsers

Actions->  Back  Add  Edit  Delete  Help

Add a new record.
Use up/down arrow keys to change record selection, left/right arrow keys to
```

# Default Port Assignments

## 3. VLAN Port Assignment

```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1 14-Mar-2012 2:22:8
----- CONSOLE - MANAGER MODE -----
Switch Configuration - VLAN - VLAN Port Assignment

Port  DEFAULT_VLAN  DBUsers  |  Port  DEFAULT_VLAN  DBUsers
-----+-----  -----  |  -----+-----  -----
A1   | Untagged  No      |  A13   | Untagged  No
A2   | Untagged  No      |  A14   | Untagged  No
A3   | Untagged  No      |  A15   | Untagged  No
A4   | Untagged  No      |  A16   | Untagged  No
A5   | Untagged  No      |  A17   | Untagged  No
A6   | Untagged  No      |  A18   | Untagged  No
A7   | Untagged  No      |  A19   | Untagged  No
A8   | Untagged  No      |  A20   | Untagged  No
A9   | Untagged  No      |  A21   | Untagged  No
A10  | Untagged  No      |  A22   | Untagged  No
A11  | Untagged  No      |  A23   | Untagged  No
A12  | Untagged  No      |  A24   | Untagged  No

Actions->  Cancel  Edit  Save  Help

Select the tagging mode for the port/VLAN combination.
Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.
```

# Selected Port

**Edit**  
**select the port**

```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1 14-Mar-2012 2:22:8
===== CONSOLE - MANAGER MODE =====
Switch Configuration - VLAN - VLAN Port Assignment

Port  DEFAULT_VLAN  DBUsers  |  Port  DEFAULT_VLAN  DBUsers
-----+-----  -+-----  |  -----+-----  -+-----
A1   | Untagged  No      |  A13  | Untagged  No
A2   | Untagged  No      |  A14  | Untagged  No
A3   | Untagged  No      |  A15  | Untagged  No
A4   | Untagged  No      |  A16  | Untagged  No
A5   | Untagged  No      |  A17  | Untagged  No
A6   | Untagged  No      |  A18  | Untagged  No
A7   | Untagged  No      |  A19  | Untagged  No
A8   | Untagged  No      |  A20  | Untagged  No
A9   | Untagged  No      |  A21  | Untagged  No
A10  | Untagged  No      |  A22  | Untagged  No
A11  | Untagged  No      |  A23  | Untagged  No
A12  | Untagged  No      |  A24  | Untagged  No

Actions->  Cancel  Edit  Save  Help

Select the tagging mode for the port/VLAN combination.
Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.
```

# Configured Port

No  
Untagged

```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1 14-Mar-2012 2:22:6
===== CONSOLE - MANAGER MODE =====
Switch Configuration - VLAN - VLAN Port Assignment

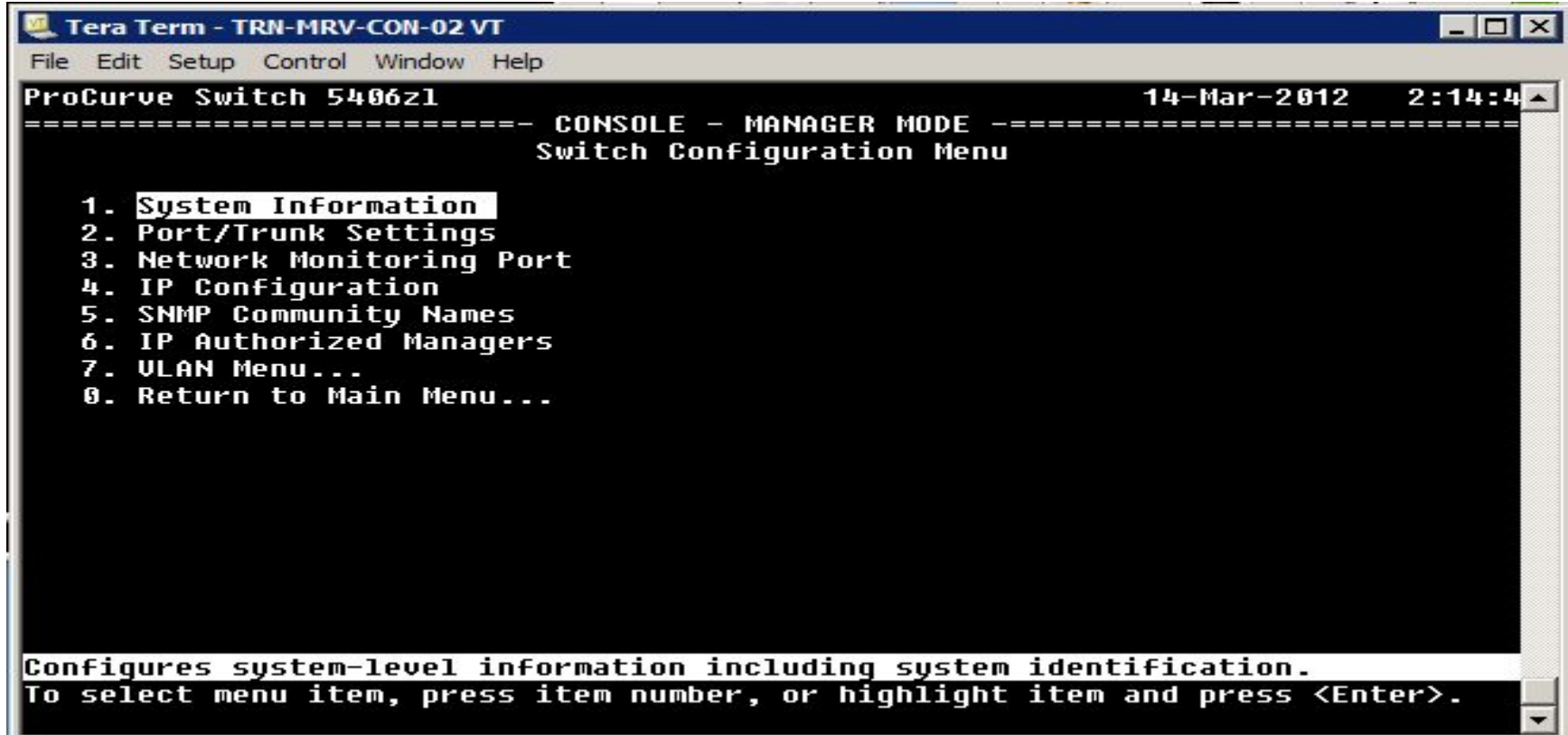
Port  DEFAULT_VLAN  DBUsers  |  Port  DEFAULT_VLAN  DBUsers
-----+-----  -
A1   | Untagged  No      |  A13   | No          No
A2   | Untagged  No      |  A14   | Untagged   No
A3   | Untagged  No      |  A15   | Untagged   No
A4   | Untagged  No      |  A16   | Untagged   No
A5   | Untagged  No      |  A17   | Untagged   No
A6   | Untagged  No      |  A18   | Untagged   No
A7   | Untagged  No      |  A19   | Untagged   No
A8   | Untagged  No      |  A20   | Untagged   No
A9   | Untagged  No      |  A21   | Untagged   No
A10  | Untagged  No      |  A22   | Untagged   No
A11  | Untagged  No      |  A23   | Untagged   No
A12  | Untagged  No      |  A24   | Untagged   No

Actions->  Cancel  Edit  Save  Help

Select the tagging mode for the port/VLAN combination.
Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.
```

# Switch Configuration Menu

## *4. IP Configuration*



```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1                               14-Mar-2012  2:14:4
=====  CONSOLE - MANAGER MODE  =====
                          Switch Configuration Menu

  1. System Information
  2. Port/Trunk Settings
  3. Network Monitoring Port
  4. IP Configuration
  5. SNMP Community Names
  6. IP Authorized Managers
  7. ULAN Menu...
  8. Return to Main Menu...

Configures system-level information including system identification.
To select menu item, press item number, or highlight item and press <Enter>.
```

# IP Configuration

**DHCP/Bootp**

**Manual**

```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1 14-Mar-2012 2:42:5
===== CONSOLE - MANAGER MODE =====
Switch Configuration - Internet (IP) Service

IP Routing : Disabled

Default Gateway :
Default TTL    : 64
Arp Age       : 20

-----+-----+-----+-----
      ULAN      | IP Config   | IP Address  | Subnet Mask |
-----+-----+-----+-----
DEFAULT_ULAN   | Manual     | 10.12.1.2   | 255.255.255.0
DBUsers        | Disabled   |              |              |

Actions->  Cancel  Edit  Save  Help

Select the method to enable IP access for switch management.
Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.
```



# Assigned IP Address

**static IP address**

```

Telnet 192.168.1.14
HP ProCurve Switch 5304XL                               2-Jan-1990  11:08:00
----- TELNET - MANAGER MODE -----
                Switch Configuration - Internet <IP> Service

IP Routing : Disabled

Default Gateway :
Default TTL    : 64
Arp Age       : 20

-----+-----
  ULAN      | IP Config | IP Address | Subnet Mask |
-----+-----
DEFAULT_ULAN | Manual   | 192.168.1.14 | 255.255.255.0 |
DBUsers     | Manual   | 192.168.1.99 | 255.255.255.0 |

Actions->   Cancel   Edit   Save   Help

Save changes and return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.

```



# Summary

- **Define the VLAN name and ID;**
- **Transfer ports from the default VLAN to the new VLAN;**
- **Assign an IP address to the VLAN (optional).**



# Switches



# VLAN Summary

*show vlans*

```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help

ProCurve Switch 5406z1(config)# show vlans

Status and Counters - VLAN Information

Maximum VLANs to support : 256
Primary VLAN : DEFAULT_VLAN
Management VLAN :

VLAN ID Name | Status Voice Jumbo
-----+-----+-----+-----
1 DEFAULT_VLAN | Port-based No No
2 DBUsers | Port-based No No

ProCurve Switch 5406z1(config)#
```

# Create a new VLAN

To create a new VLAN, run the *vlan command* followed by the VLAN ID.

```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help

ProCurve Switch 5406z1(config)# show vlans

Status and Counters - VLAN Information

Maximum VLANs to support : 256
Primary VLAN : DEFAULT_VLAN
Management VLAN :

VLAN ID Name | Status Voice Jumbo
-----|-----|-----|-----
1 DEFAULT_VLAN | Port-based No No
2 DBUsers | Port-based No No

ProCurve Switch 5406z1(config)# vlan3
```

# Adding a Port

**tagged <port>**

**untagged <port>**

# Default VLAN Name

**Work1**

- **5406zl (vlan-3)#  
name Work1**
- **5406zl (config)#  
vlan VLAN3 name  
Work1**

# IP Configuration

```
5406zl (vlan-3)# ip address  
192.168.1.14/24
```

**The number after the “/” specifies the number of bits in the subnet mask**

# Port management

**context**

**vlan**

*show interface*

*show interface 1*



# Show interface a1

- Link status.
- Total bytes, unicasts, and broadcasts received and transmitted.
- Transmit and receive rates.

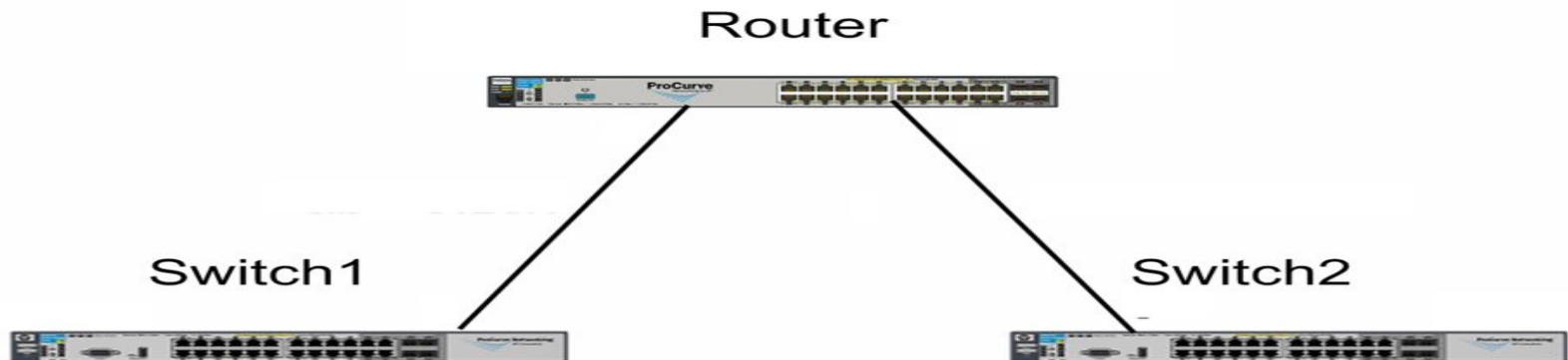
```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help

Status and Counters - Port Counters for port A1

Name :
MAC Address      : 0026f1-1d1aff
Link Status      : Down
Totals (Since boot or last clear) :
  Bytes Rx       : 0
  Unicast Rx     : 0
  Bcast/Mcast Rx : 0
  Bytes Tx       : 0
  Unicast Tx     : 0
  Bcast/Mcast Tx : 0
Errors (Since boot or last clear) :
  FCS Rx        : 0
  Alignment Rx  : 0
  Runt Rx       : 0
  Giants Rx     : 0
  Total Rx Errors : 0
  Drops Tx      : 0
  Collisions Tx : 0
  Late Colln Tx : 0
  Excessive Colln : 0
  Deferred Tx   : 0
Others (Since boot or last clear) :
  Discard Rx    : 0
  Unknown Protos : 0
  Out Queue Len : 0
Rates (5 minute weighted average) :
  Total Rx (bps) : 0
  Unicast Rx (Pkts/sec) : 0
  B/Mcast Rx (Pkts/sec) : 0
  Total Tx (bps) : 0
  Unicast Tx (Pkts/sec) : 0
  B/Mcast Tx (Pkts/sec) : 0
- MORE --, next page: Space, next line: Enter, quit: Control-C
```

# Layer 3 Management

**use a switch as a router**



**enable routing**

**Router(config)# ip routing**

# Configure default gateway

**The default gateway must be in same subnet as the management IP address of the Router**

```
Switch1(config)# ip default-gateway 192.168.10.1
```

```
Router# ping 192.168.1.108
```

# Configure) ip helper-address

**This command must be run separately for each VLAN**

```
Router(vlan-1)# ip helper-address <ip_address>
```

```
Router(vlan2)# ip helper-address 10.10.5.2
```

# Summary

A large, empty rounded rectangular box with a black border, intended for writing a summary.A large, empty rounded rectangular box with a black border, intended for writing a summary.A large, empty rounded rectangular box with a black border, intended for writing a summary.



# Switches



# Link Aggregation

**multiple physical ports as a single logical communication channel**

## **Port trunking**

- **Also known as link aggregation. Combining physical ports to create a single communication channel to provide higher bandwidth communication.**

## **Link Aggregation Control Protocol (LACP)**

- **Protocol used to control combining physical ports for use as a single communication channel. LACP is defined in RFC 802.3ad.**

# Configured Link Aggregation

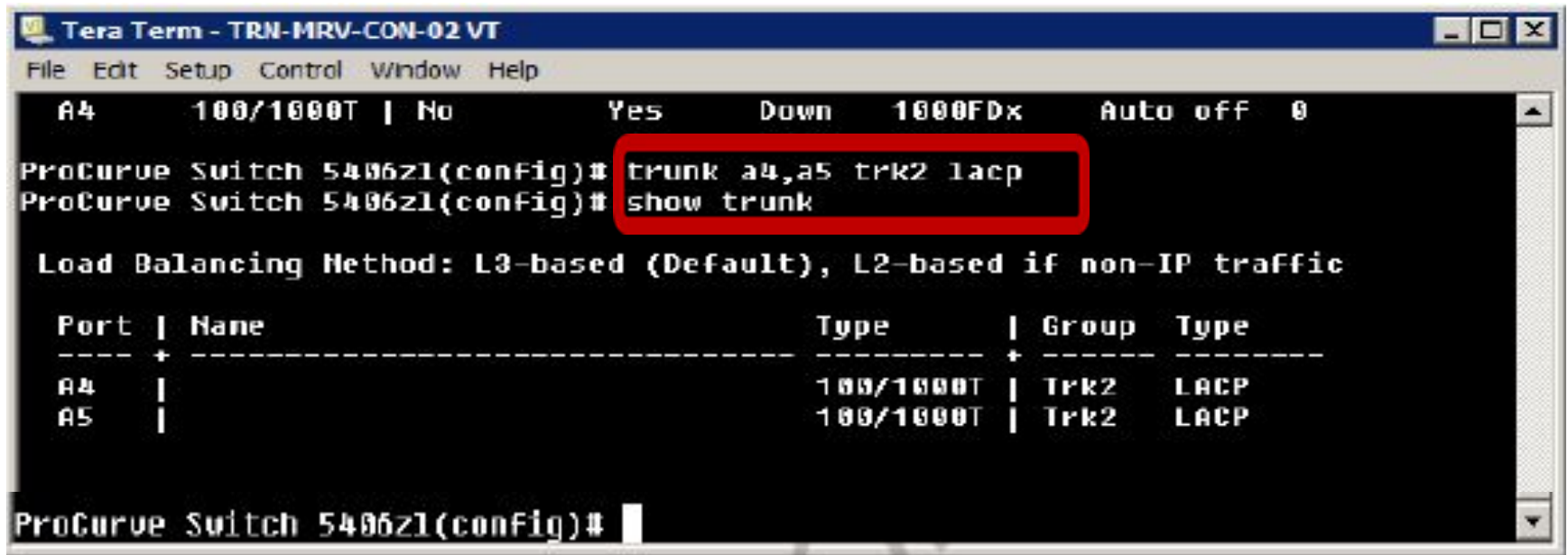
```
trunk <port_id,port_id> trk<id> lacp
```

```
trunk 4,5 trk2 lacp
```



# Show trunk

*show trunk*



The screenshot shows a terminal window titled "Tera Term - TRN-MRV-CON-02 VT". The terminal displays the following configuration and output:

```
A4      100/1000T | No      Yes      Down      1000FDx      Auto off  0
ProCurve Switch 5406z1(config)# trunk a4,a5 trk2 lacp
ProCurve Switch 5406z1(config)# show trunk

Load Balancing Method: L3-based (Default), L2-based if non-IP traffic

Port  | Name                | Type          | Group | Type
-----+-----
A4    |                    | 100/1000T    | Trk2  | LACP
A5    |                    | 100/1000T    | Trk2  | LACP

ProCurve Switch 5406z1(config)#
```

The commands `trunk a4,a5 trk2 lacp` and `show trunk` are highlighted with a red box.

**Load Balancing**

# Port Status Summary

**show interface brief 4-5**

```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
ProCurve Switch 5406z1(config)# show interface brief a4-a5
Status and Counters - Port Status
```

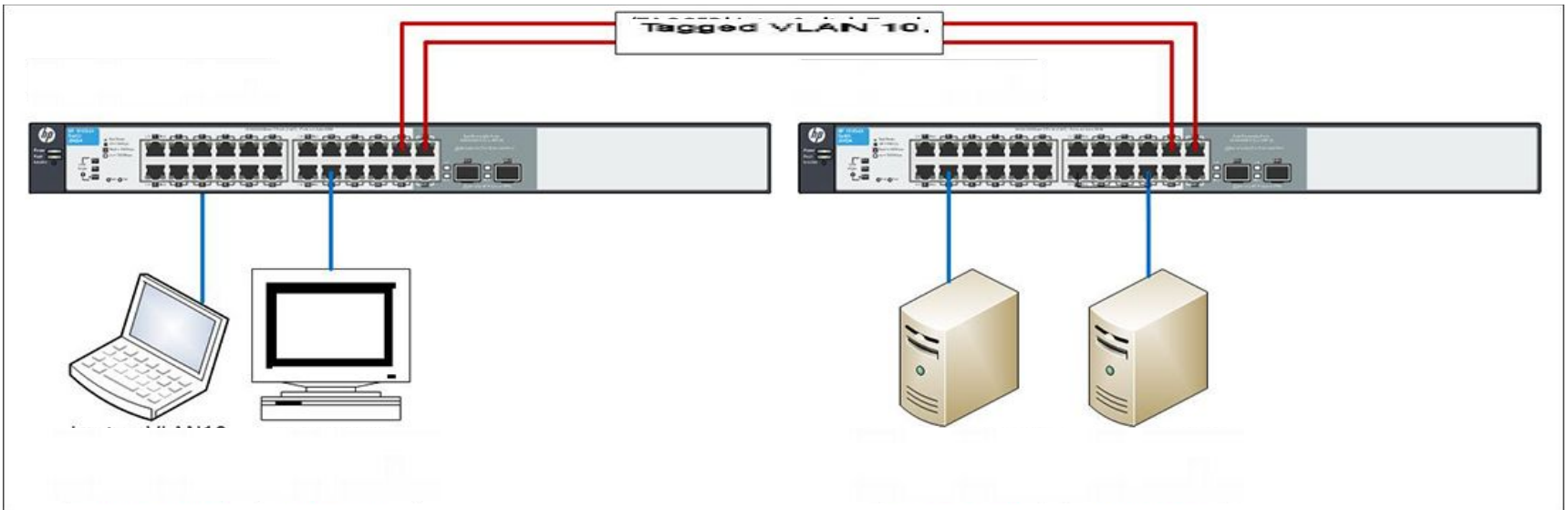
Port	Type	Intrusion Alert	Enabled	Status	Mode	MDI Mode	Flow Ctrl	Bcast Limit
A4-Trk2	100/1000T	No	Yes	Down	1000FDx	Auto	off	0
A5-Trk2	100/1000T	No	Yes	Down	1000FDx	Auto	off	0

```
ProCurve Switch 5406z1(config)#
```

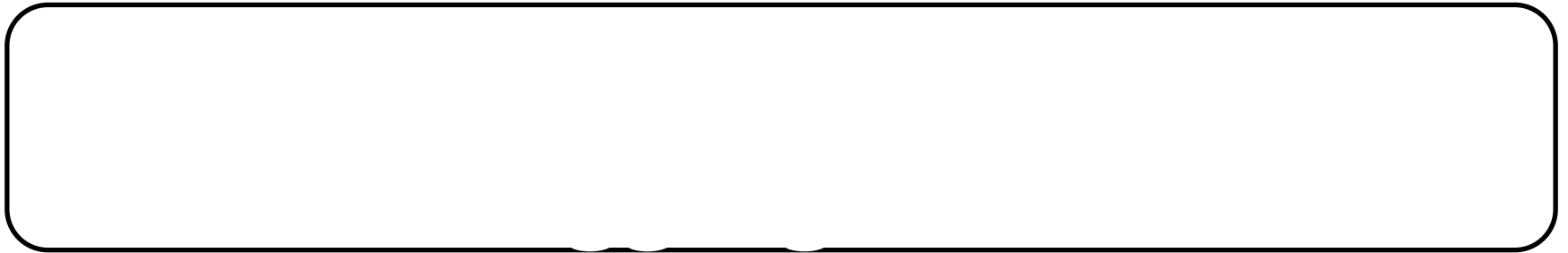
# Associate a trunk

**vlan <id> tagged trk<id>**

**vlan 10 tagged trk2**



# Summary

A large, empty rounded rectangular box with a black border, intended for writing a summary point.A large, empty rounded rectangular box with a black border, intended for writing a summary point.A large, empty rounded rectangular box with a black border, intended for writing a summary point.



# Switches



# Configuration management

*show running-config*

*show running-config status*

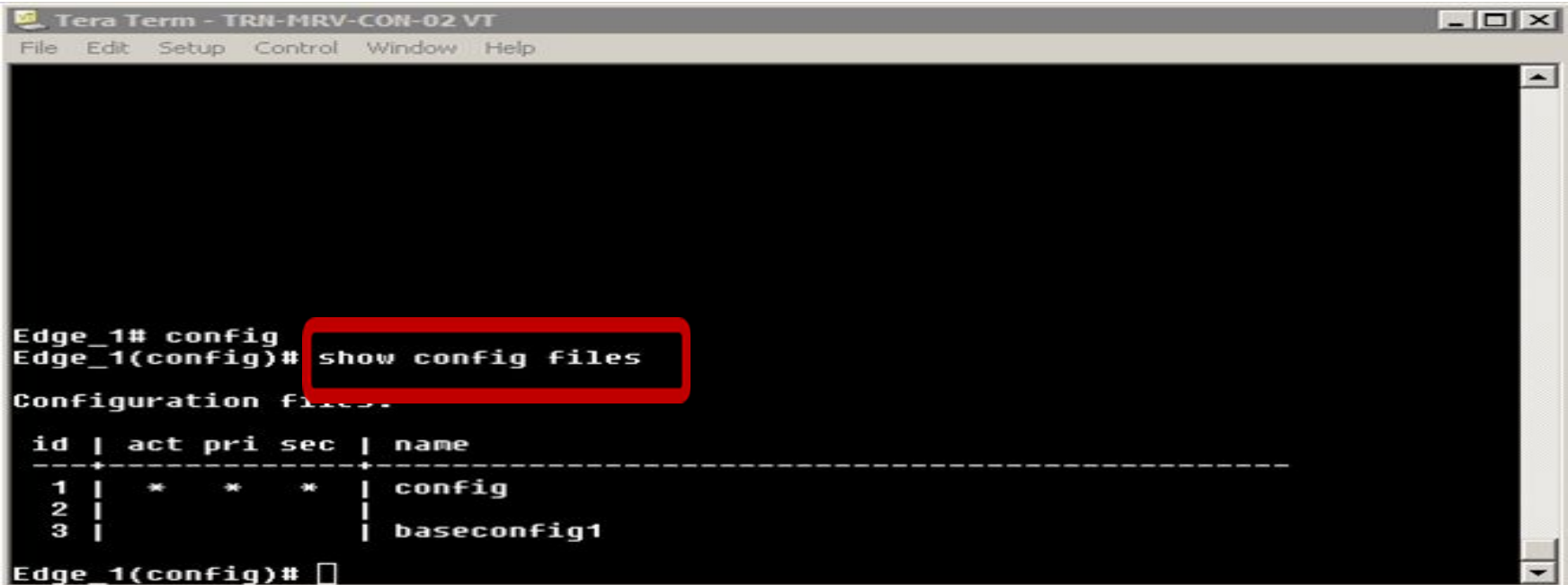
*write memory*

# Configuration management

**Actually, the switch has two software images: the primary and secondary.**

*show config files*

# Show config files



The screenshot shows a terminal window titled "Tera Term - TRN-MRV-CON-02 VT". The terminal prompt is "Edge\_1# config". The user has entered the command "show config files", which is highlighted with a red box. The output of the command is:

```
Edge_1# config
Edge_1(config)# show config files
Configuration files:
id | act pri sec | name
-----+-----+-----+-----+-----
 1 | *  *  *  | config
 2 |          |
 3 |          | baseconfig1
Edge_1(config)#
```



# Configuration Files

**act**

- **This is the active configuration, that is, the configuration used to boot the switch.**

**pri**

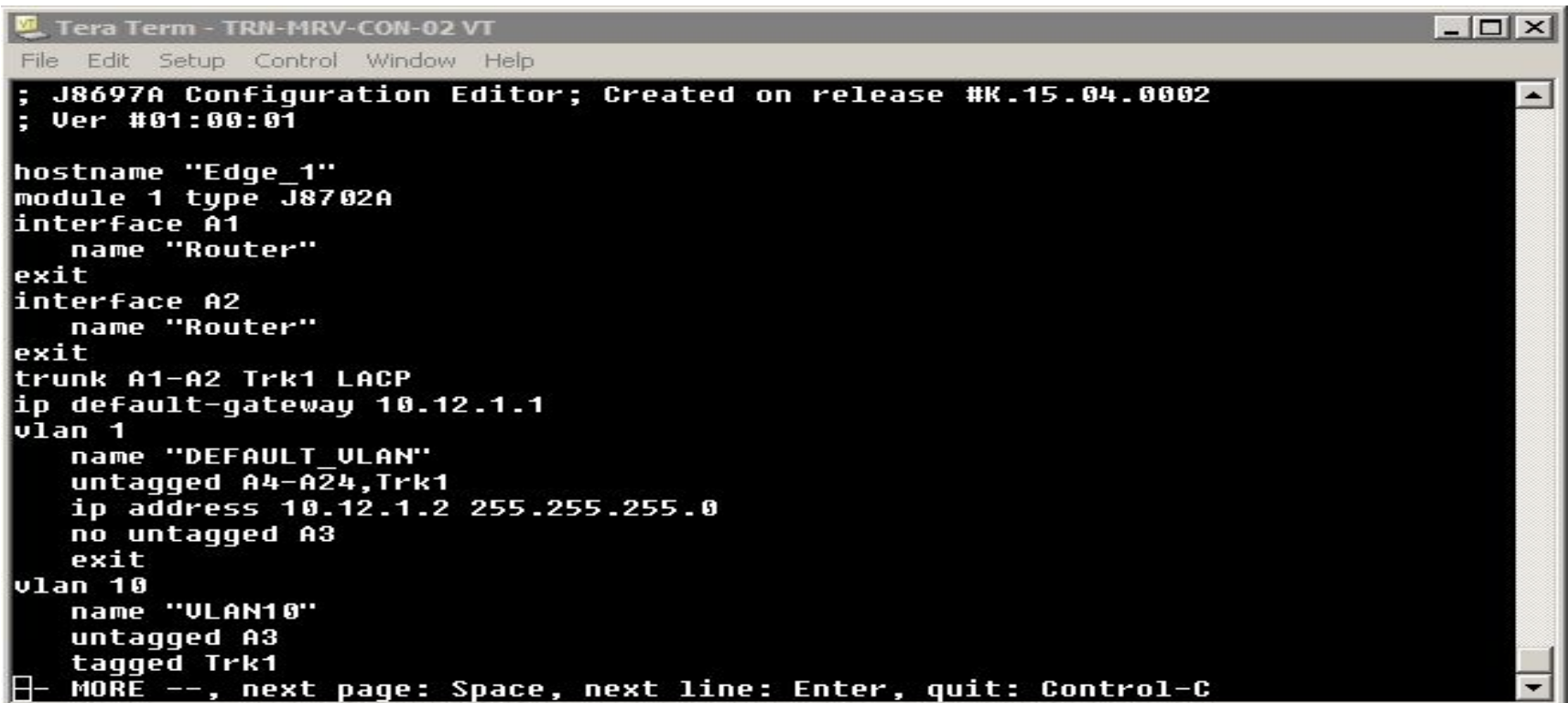
- **The configuration associated with the primary software image.**

**sec**

- **The configuration associated with the secondary software image.**

# Configuration File Content

**show config config**



```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
; J8697A Configuration Editor; Created on release #K.15.04.0002
; Uer #01:00:01

hostname "Edge_1"
module 1 type J8702A
interface A1
  name "Router"
exit
interface A2
  name "Router"
exit
trunk A1-A2 Trk1 LACP
ip default-gateway 10.12.1.1
vlan 1
  name "DEFAULT_ULAN"
  untagged A4-A24,Trk1
  ip address 10.12.1.2 255.255.255.0
  no untagged A3
  exit
vlan 10
  name "ULAN10"
  untagged A3
  tagged Trk1
[ ]- MORE --, next page: Space, next line: Enter, quit: Control-C
```

# Backing up configuration files

```
copy startup-config usb <filename>.<ext>
```

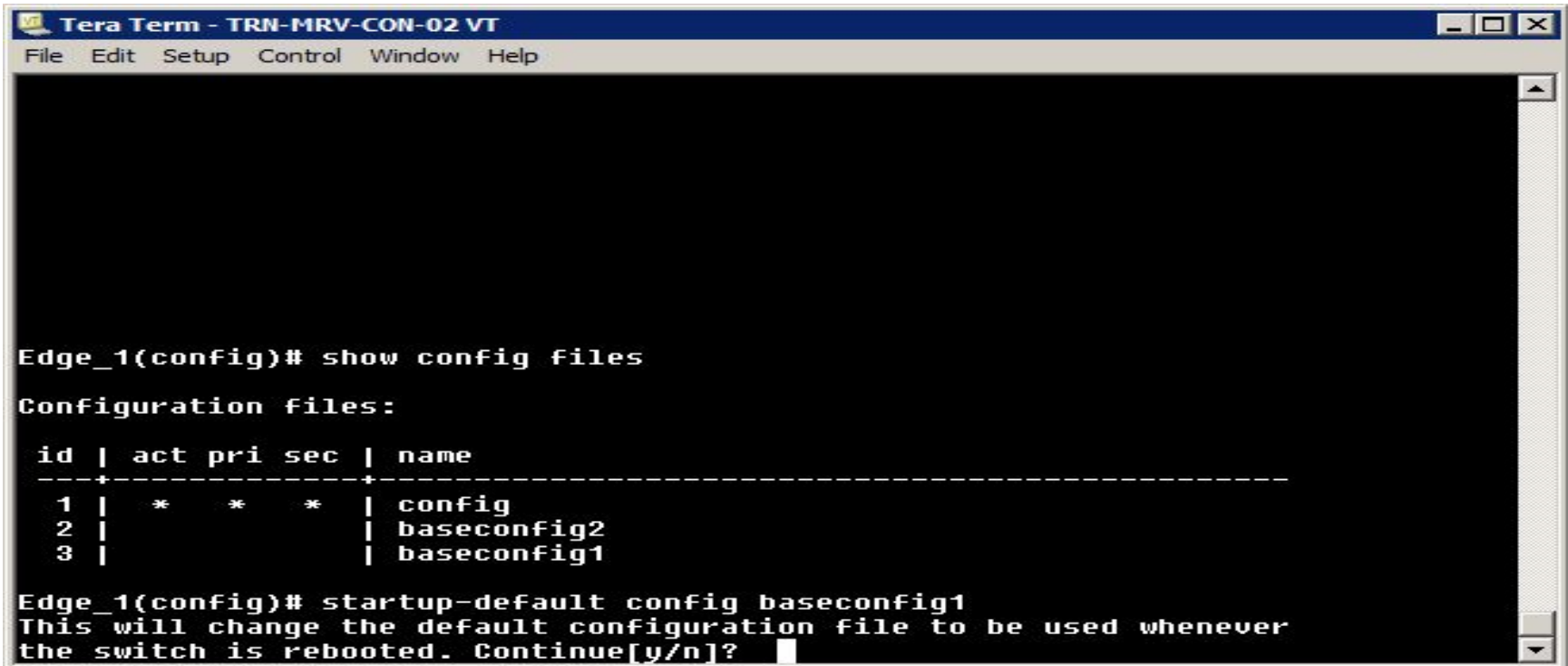
```
copy startup-config usb switch1.cfg
```

```
copy startup-config tftp <ip_address> <filename>.<ext>
```

# Copy Configuration File

multiple configuration files

`copy config baseconfig1 config baseconfig2`



```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help

Edge_1(config)# show config files
Configuration files:

id | act pri sec | name
---+-----+-----+-----+-----
 1 | * * * | config
 2 | | | | baseconfig2
 3 | | | | baseconfig1

Edge_1(config)# startup-default config baseconfig1
This will change the default configuration file to be used whenever
the switch is rebooted. Continue[y/n]?
```

# Associating Images with Configuration Files

*startup-default config <configname>*

*startup-default config baseconfig1*

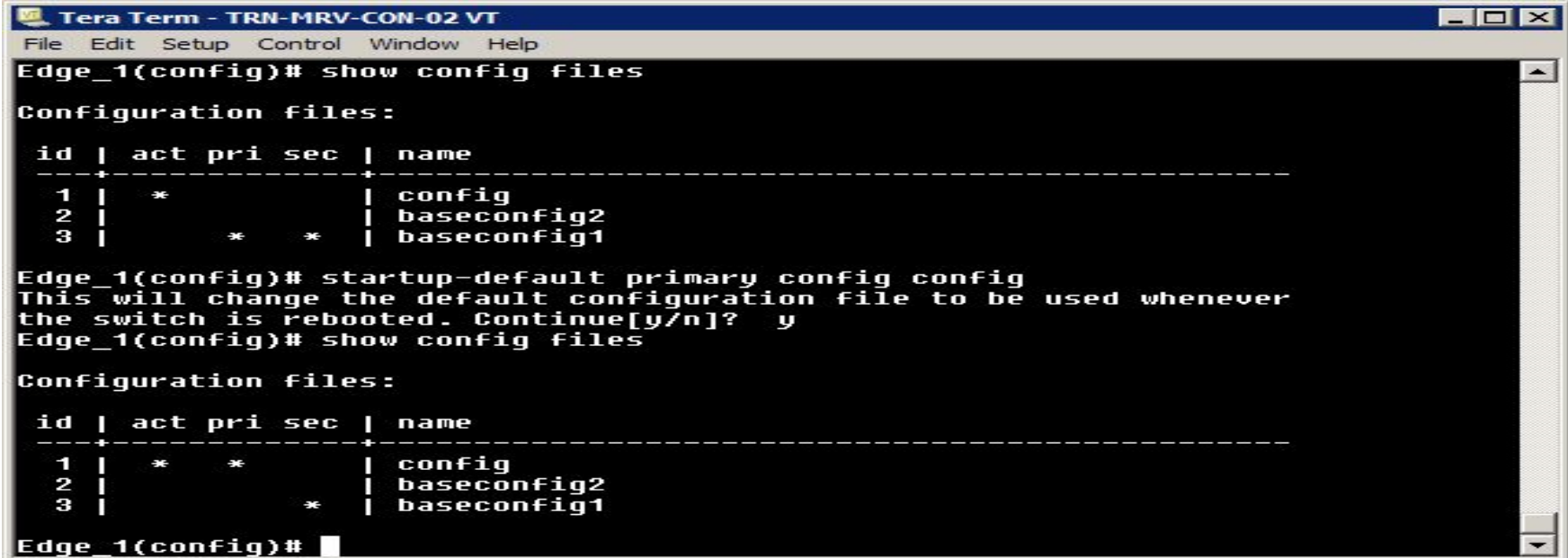


```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
Edge_1(config)# show config files
Configuration files:
  id | act pri sec | name
-----+-----+-----+-----+-----
  1  | *  *  *  | config
  2  |          | baseconfig2
  3  |          | baseconfig1
Edge_1(config)# startup-default config baseconfig1
This will change the default configuration file to be used whenever
the switch is rebooted. Continue[y/n]? y
Edge_1(config)# show config files
Configuration files:
  id | act pri sec | name
-----+-----+-----+-----+-----
  1  | *          | config
  2  |          | baseconfig2
  3  |          *  * | baseconfig1
Edge_1(config)#
```

# Separate Images – Separate Configurations

config with the primary  
baseconfig1 with the secondary

*startup-default primary config config*



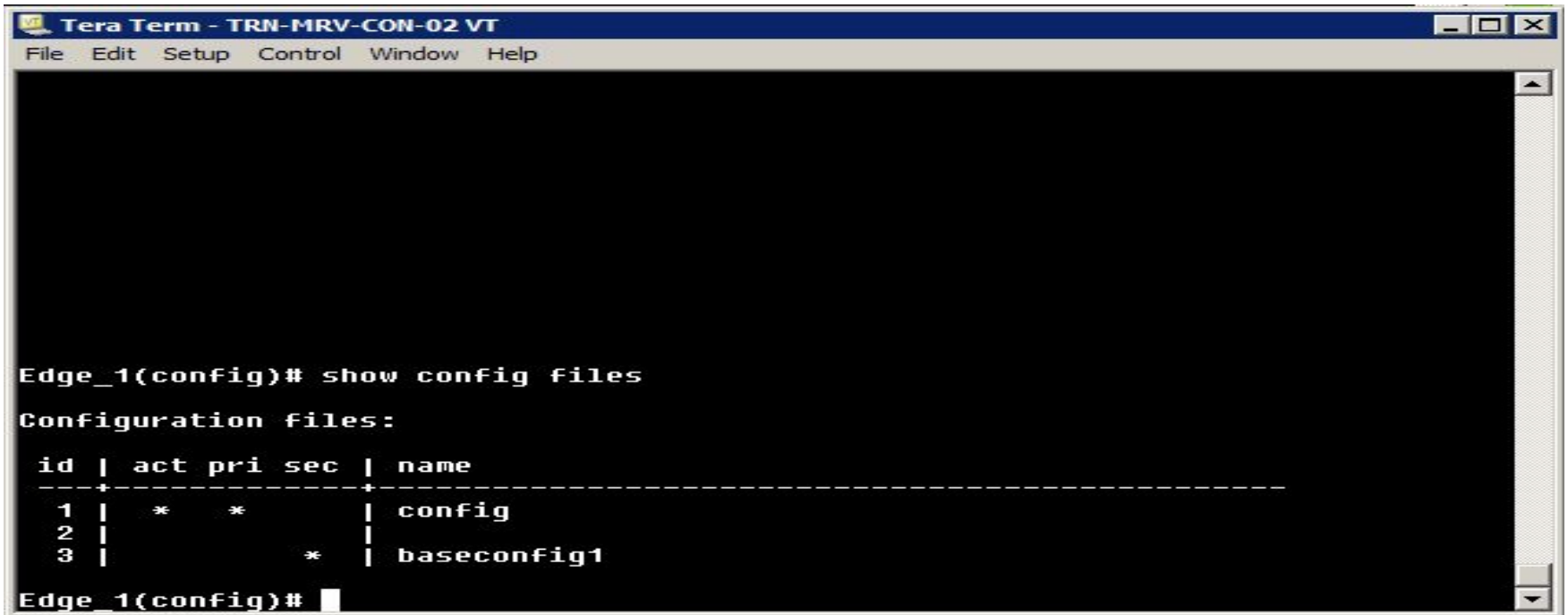
```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help
Edge_1(config)# show config files
Configuration files:
id | act pri sec | name
---+-----+-----+-----+-----
 1 | *      | config
 2 |        | baseconfig2
 3 |        * * | baseconfig1

Edge_1(config)# startup-default primary config config
This will change the default configuration file to be used whenever
the switch is rebooted. Continue[y/n]? y
Edge_1(config)# show config files
Configuration files:
id | act pri sec | name
---+-----+-----+-----+-----
 1 | * *      | config
 2 |        | baseconfig2
 3 |        * | baseconfig1

Edge_1(config)#
```

# Erased Image

*erase config baseconfig2*



```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help

Edge_1(config)# show config files
Configuration files:
id | act pri sec | name
---+-----+-----
 1 | *  *   | config
 2 |          |
 3 |          * | baseconfig1
Edge_1(config)#
```

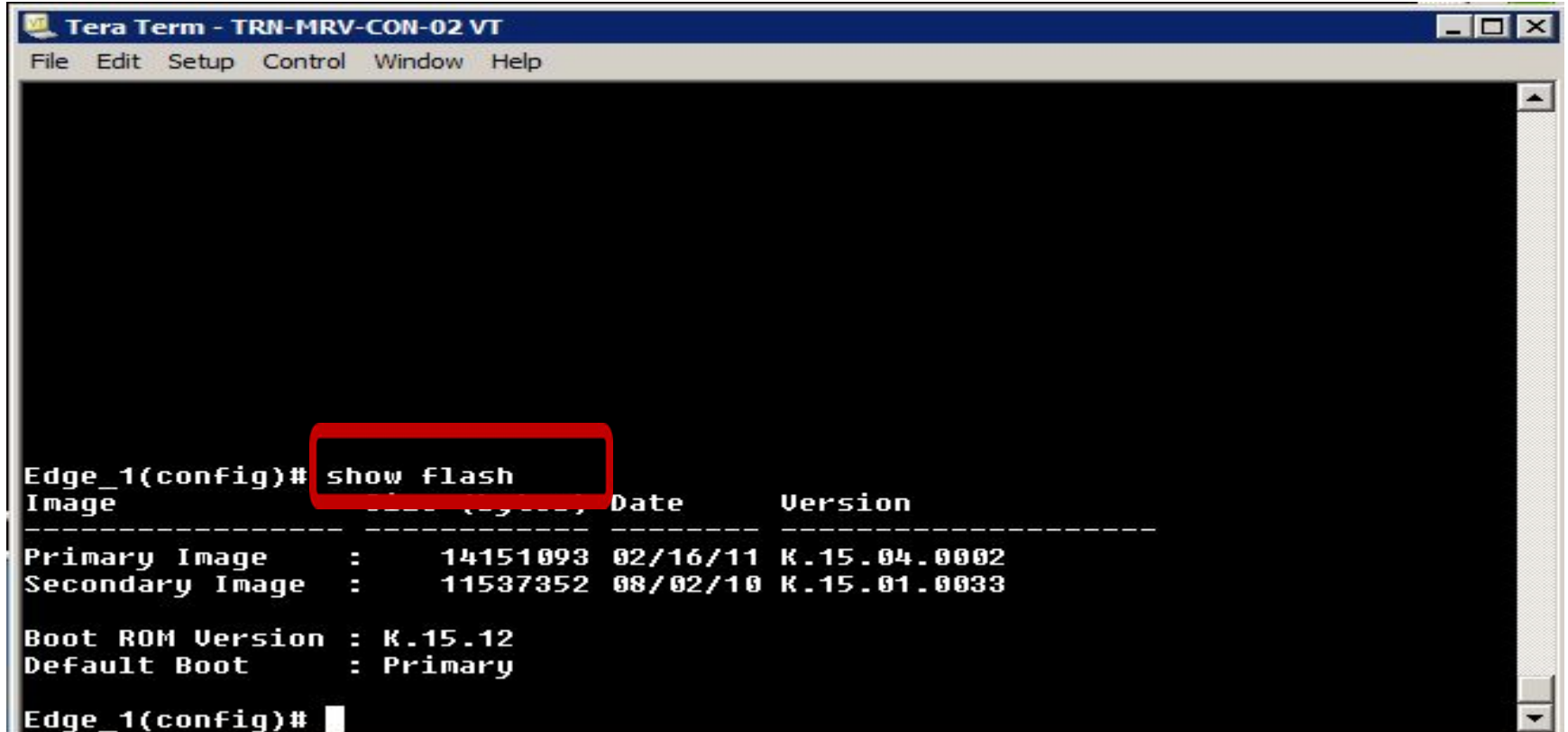
# Erased Image

**active configuration file**



# Show flash

to boot from the primary image



```
Tera Term - TRN-MRV-CON-02 VT
File Edit Setup Control Window Help

Edge_1(config)# show flash
Image                               Address (hex)   Date           Version
-----
Primary Image      :      14151093  02/16/11  K.15.04.0002
Secondary Image    :      11537352  08/02/10  K.15.01.0033

Boot ROM Version  : K.15.12
Default Boot      : Primary

Edge_1(config)#
```

# Using the secondary image

*copy usb flash <filename> secondary*

*boot system flash secondary*

# Summary
