xSeries Education

IBM @server BladeCenter Nortel GbESM Creating VLANs Lab Guide

RETURN TO INDEX

IBM @server xSeries – IBM @server BladeCenter™ Nortel GbESM Creating VLANs Lab Guide

Preface

This publication is primarily intended for use by students enrolled in the IBM @server BladeCenter™ Creating VLANs with the Nortel GbESM hands-on lab.

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Test number for this guide is:	N/A

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Please forward all comments and suggestions regarding the course material format and content to your local IBM @server xSeries Education country coordinator or contact.

Lab: GbESM Training Lab Guide

Time Required: 45 minutes

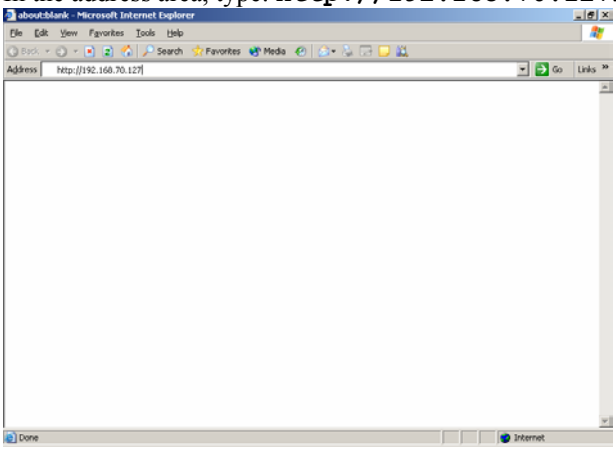
Scenario

Introduction to the Browser Based Interface (BBI) and Command Line Interface (CLI)

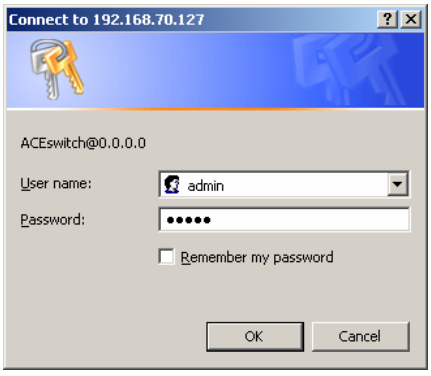
Configure Basic Switch Options

____ 1. Open Internet Explorer.

____ 2. In the address area, type: **`http://192.168.70.127`**.



____ 3. Enter **`admin`** as the user name and **`admin`** as the password.



____ 4. Click **`OK`**.

____ 5. Click Configure. 

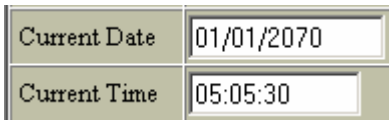
____ 6. In the left frame, Click the folder icon next to **`Nortel Networks Layer 2-7 GbE Switch Module`**

____ 7. Click the folder icon next to Switch.

____ 8. Click the "**`A`**" icon next to “General”.

____ 9. In the right frame, scroll down to the Current Date field. Enter the current date.

____ 10. Enter the correct local time in the Current Time field.



____ 11. In the Banner field enter a log on message, for example "**xSeries Education BladeCenter with Nortel Switches Training**"

____ 12. Scroll to the bottom of the right frame and Click **Submit**.

____ 13. Click the **Diff Flash** icon to display the pending changes.

____ 14. In the upper frame, or banner frame, click the **Apply** icon.

____ 15. Click the **Save** icon.

____ 16. Close the Internet Explorer Window.

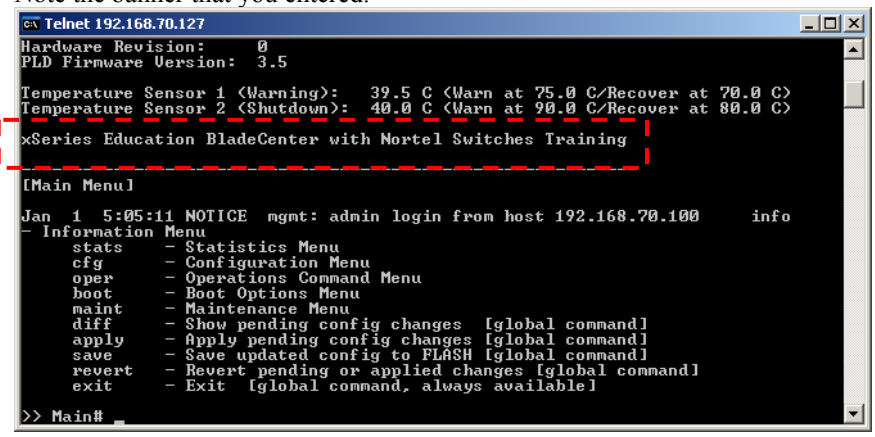
Start a telnet session

____ 17. Start → Run, Type **cmd** and press **Enter**. This opens a Command Prompt window.

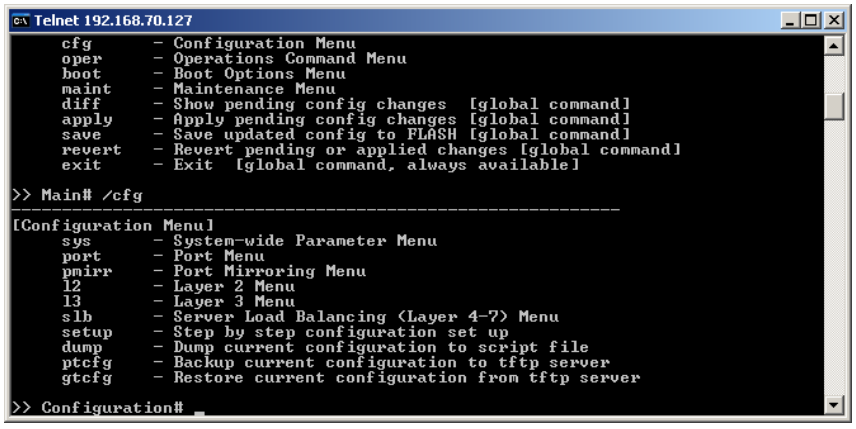
____ 18. Type **telnet 192.168.70.127**

____ 19. Enter **admin** as the password

____ 20. Note the banner that you entered.



____ 21. Type **/cfg**. This takes you to the configuration menu



____ 22. Type **sys**. This takes you to the, system-wide parameter submenu.

____ 23. Type **user** to enter the User Access Control Menu

____ 24. Type **opw** to set the operator password.

____ 25. First, you must enter the current administrator password. Type **admin**, press **Enter**.

____ 26. Type **PASSW0RD** and press Enter to set the Operator password.

____ 27. Re-type the new password and press **Enter**.

____ 28. Type **/** and press **Enter** to return to the Main menu.

____ 29. Type **Apply** to apply the change you just made.

____ 30. Type **Save** to save the configuration.

____ 31. Confirm saving to Flash by typing **y** and pressing **Enter**.

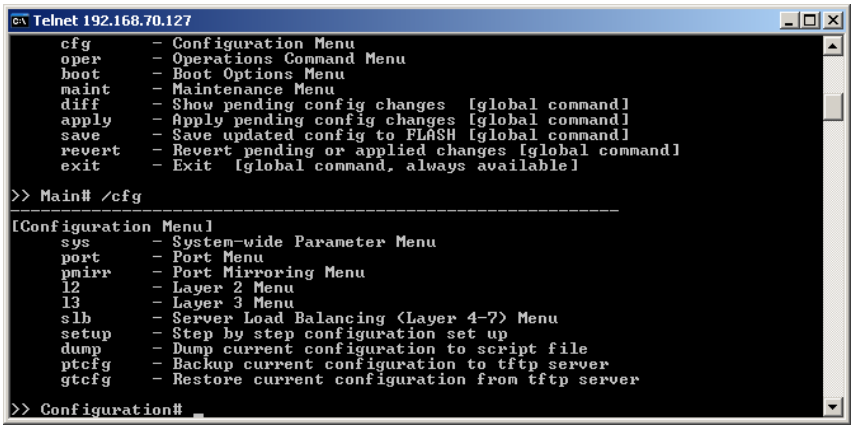
This completes this section of the lab.

Layer 2 and Layer 3 configuration

VLAN Configuration (Layer 2)

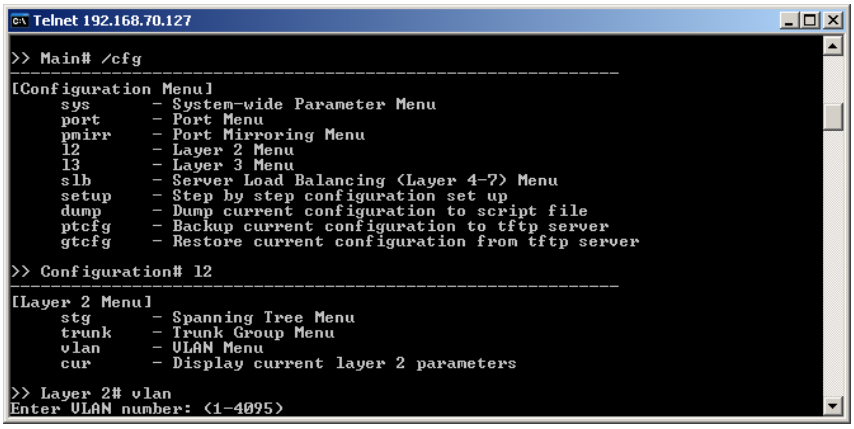
Configure a VLAN for the Server Ports (INT1-INT14)

____ 1. Type **/cfg** and press **Enter**. This takes you to the Configuration Menu.



____ 2. Type **l2** and press Enter. This takes you to the Level 2 Menu.

____ 3. Type **vlan** and press **Enter**. This takes you to the VLAN Menu.

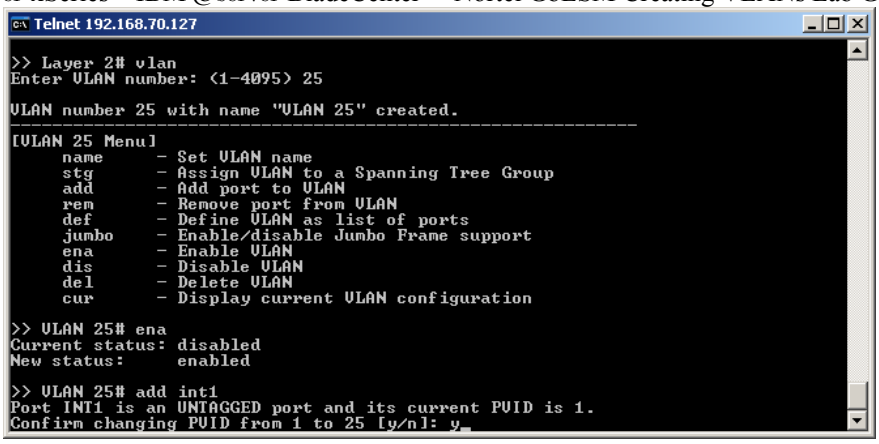


____ 4. Enter a VLAN number. "25" was used to create this document.

____ 5. Type **ena** and press **Enter**. This sets the new status of VLAN 25 to "enabled."

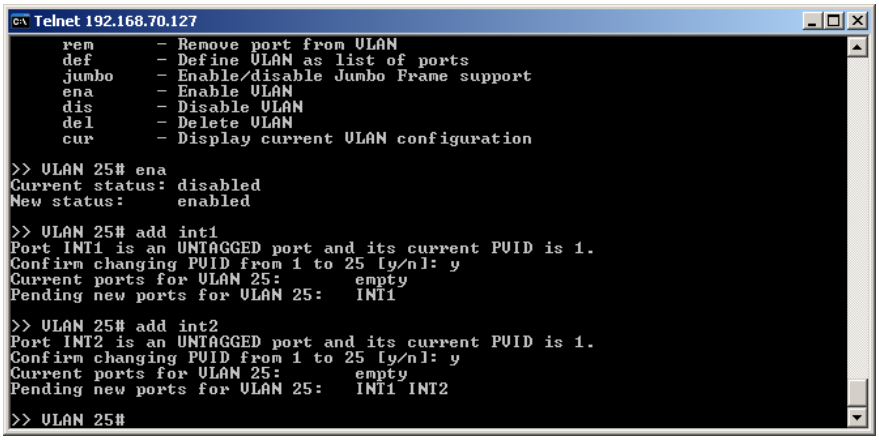
____ 6. **Type add int1** and press **Enter**. This adds Internal Port 1 to VLAN 25. Internal Port 1 is associated with blade server bay one.

____ 7. We have to confirm this change by pressing **y** and then **Enter**.



____ 8. Type **`add int2`** and press **`Enter`**. This adds Internal Port 2 to VLAN 25. Internal Port 2 is associated with blade server bay one.

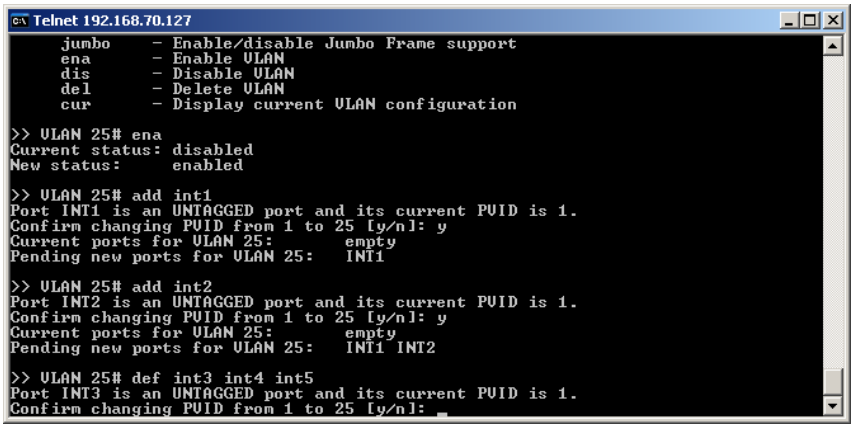
____ 9. We have to confirm this change by pressing **`y`** and then **`Enter`**.



____ 10. We can add more than one port at a time. To do this, we use a different command. **`Type def int3 int4 int5`** and press **`Enter`**. The def command defines a list of ports that are to be added to the VLAN.

____ 11. Press **`y`** and **`Enter`** to accept the change for each newly added port.

____ 12. Create and configure a VLAN for the Client Ports (EXT1-EXT4) using the def command. Type **`/cfg/l2/vlan 30/ena/def ext1 ext2 ext3 ext4`**



____ 13. What does the **`/cfg/l2/vlan 30/ena/def ext1 ext2 ext3 ext4`** command do?

This Command	Performs this action
/	
Cfg	
l2	
vlan 30	
Ena	
Def	
ext1 ext2 ext3 ext4	

____ 14. Verify by viewing the typing /**`info/l2/vlan`** command. This takes you to the Information Menu, Level 2 Menu and shows the VLANs that have been created.

Note:	VLAN 4095 is configured by default. This is the Management Module VLAN and ports can not be added to or removed from it.

This completes this section of the lab.

IP Interface Configuration (Layer 3)

____ 1. Configure an IP interface for each VLAN, and associate each interface with the appropriate VLAN. Refer to **Appendix A** for the IP address assignments for your GbESM.

____ 2. Enable and configure the proper configuration settings for subnet mask, broadcast, address, and associated VLAN for this interface by typing the following series of commands:

____ 3. Type **`/cfg`** This takes you to the Main Menu and then to the Configuration Menu.

____ 4. Type **`l3`** This takes you to the Layer 3 Menu.

____ 5. Type **`ip`** This takes you to the IP Menu.

____ 6. Type **`if 25`** This takes you to the Interface 25 Menu.

Note:	We used the number 25 here because it was the same as the VLAN that was going to be associated with this interface. You could use another number, but matching it to the VLAN simplifies the configuration.

____ 7. Configure the IP Address for the interface by typing **`addr 9.1.1.1`**

____ 8. Configure the subnet mask by typing mask **`255.255.255.0`**

____ 9. Set the VLAN for this interface by typing **`vlan 25`**

Note:	We used the number 25 here because it is the number of the VLAN that we created for this interface.

____ 10. Enable this interface by typing **`ena`**

Note:	Please be sure to associate the external VLAN with the external Interface, and the Internal VLAN with the Internal Interface. Refer to Appendix A for further details.

____ 11. Ensure that IP forwarding is enabled by typing the following command: **`/cfg/l3/ip/frwd on`**

Note:	Best practice is to have the instance number for the interface be equal to the VLAN number where possible. Interfaces can only be numbered up to 128

____ 12. Create an internal interface for the external ports by typing the following series of commands: **`/cfg/l3/ip/if 30 then proceed to step 17.`** If you prefer, you can enter each command individually as follows:

____ 13. **`/cfg`** This takes you to the Main Menu and then to the Configuration Menu.

____ 14. **`l3`** This takes you to the Layer 3 Menu.

____ 15. **`ip`** This takes you to the IP Menu.

____ 16. **`if 30`** This takes you to the Interface 25 Menu.

Note:	We used the number 30 here because it was the same as the VLAN that was going to be associated with this interface. You could use another number, but matching it to the VLAN simplifies the configuration.

____ 17. Enable this interface by typing **`ena`**

____ 18. Ensure that both interfaces are enabled by using the following command: **`/info/l3/ip`**

Note:	Interface 128 is also enabled and configured – this is done by the Management Module and Interface 128 is attached to the management VLAN (4095).

Verify functionality of the internal interface by pinging a server.

____ 19. From the management workstation, ping 9.1.1.10 (This is the IP Address of one the Blade Servers in your chassis. If this ping is successful, please proceed to the Configure Trunking (Advanced Layer 2) section.

This completes this section of the lab.

Configure Trunking (Advanced Layer 2)

- Configure External Ports 1-2 as a trunk.
- Create a trunk group using and assign ports EXT1 and EXT2 to the group.
- Ensure that the group is enabled.

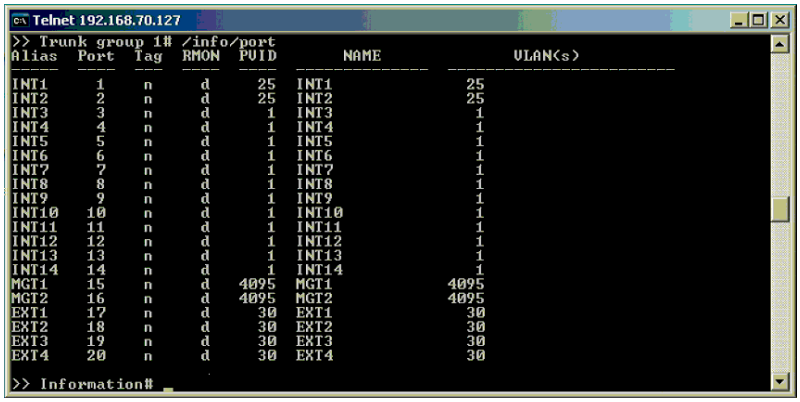
____ 1. Type **`/cfg/l2/trunk 1`** This takes you to the Configuration Menu, Level 2 Menu, Trunk

____ 2. Type **`add ext1`** This adds external port 1 to trunk 1

____ 3. Type **`add ext2`** This adds external port 2 to trunk 1

____ 4. Type **`ena`** This enables Trunk 1

____ 5. Ensure that both trunk ports are members of the appropriate VLAN by typing **`/info/port`**



____ 6. Physically connect the cables to the gateway if this is not already done.

____ 7. Verify that the trunk is up and functioning by checking using the following commands:

____ 8. Type **`/info/l2/trunk`**, This shows the trunking information.

____ 9. Type **`/info/link`** This shows the link information.

____ 10. Type **`/info/l3/ip`**. This shows the IP information.

____ 11. Type **`exit`** to close the session.

Verifying the trunking information:

____ 1. Ping the external IP address of the VLAN 30 (10.10.1.1) using the following command.**`ping 10.10.1.1 –t`**

____ 2. Physically disconnect the Ethernet Cable from Port 1 of the GbESM and the ping should continue since Port 2 is still active.

____ 3. Reconncect the cable to Port 1 and remove the cable from Port 2 of the GbESM. The ping test maybe interrupted while the trunked ports re-sync.

Once you have verified that both ports 1 and 2 respond to the same IP address we have successfully:

- Created a VLAN for the Internal Ports
- Created a VLAN for the External Ports
- Assigned IP Addresses for the VLANs
- Enabled Trunking for Ports 1 and 2.

This completes this section of the lab.

Optional GbESM Training Lab Guide

Time Required: 10 minutes

Scenario

Deny all traffic other than legitimate VIP Services and Management Connectivity
NOTE: Some of these functions are inherent to the switch, and are otherwise either unnecessary or configurable via alternate "out-of-the-box" services, however this lab is intended to serve as hands-on training to familiarize the student with the basics of Access List Filtering.

Filtering

____ 1. Create allow filters for each VIP service by entering the following sequence of commands:

Type this command:	The command does:
/cfg	Takes you to the main menu and then the Configuration Menu
slb	Takes you to the Server Load Balancing (Layer 4-7) Menu
filt 10	Takes you to the Filter 10 Menu
dip 9.1.1.10	Enters the IP Address of the Destination Server. **Note:** This needs to be the IP Address of one of the Blade Servers in the Chassis.
dmask 255.255.255.25	Enters the Subnet Mask of the Destination Server.
proto tcp	Enters the protocol to be filtered.
action allow	Sets the action that the filter will have.
dport 80	Sets the Destination Port that the filter will affect. Here http traffic will be affected.
Ena	Enables the filter.
This series of commands could be entered as a single command by typing: **/cfg/slb/filt 10/dip 9.1.1.10/dmask 255.255.255.0/action allow/proto tcp/dport 23/ena**	

____ 2. Type apply

____ 3. Type save and confirm the changes by typing y.

____ 4. Create allow filter for telnet access by typing the following command:

/cfg/slb/filt 20/dip 9.1.1.10/dmask 255.255.255.0/action allow/proto tcp/dport 23/ena

If any part of the previous command is not clear, please contact your instructor for clarification.

We created filter 20, could another number be used here? _____

____ 5. Create an allow filter for gateway health checks (for interface 9.1.1.10 and z.z.z.z using PING for health checks) by entering the following command (see your instructor for ip address z.z.z.z):

Type this command:	The command does:
/cfg	Takes you to the main menu and then the Configuration Menu
slb	Takes you to the Server Load Balancing (Layer 4-7) Menu
filt 30	Takes you to the Filter 30 Menu
dip 9.1.1.10	Enters the IP Address of the Destination Server. **Note:** This needs to be the IP Address of one of the Blade Servers in the Chassis.
dmask 255.255.255.25	Enters the Subnet Mask of the Destination Server.
sip	Enters the source IP Address.
smask	Enters the subnet mask of the Source Server.
proto	Sets the protocol that the filter will affect. Here icmp traffic will be affected.
Ena	Enables the filter.
This series of commands could be entered as a single command by typing: **/cfg/slb/filt 30/dip 9.1.1.10/dmask 255.255.255.255/sip z.z.z.z/smask 255.255.255.255/proto icmp/ena**	

____ 6. Create a "deny all" filter for the remainder of traffic by entering the following command:

/cfg/slb/filt 40/ena/action deny

If any part of the previous command is not clear, please contact your instructor for clarification.

____ 7. Assign the filters to the client ports by entering the following series of commands:

____ 8. Type **/cfg/sbl/port ext1/add 10**

____ 9. Type **add 20**

____ 10. Type **add 30**

____ 11. Type **add 40**

____ 12. Type **fil** and type **e** to enable these filters on the external port 1.

____ 13. Since external ports 1 and 2 are part of the same trunking group, port 2 must be configured exactly as port 1 by entering the following commands:

____ 14. Type **`/cfg/sbl/port ext2/add 10`**

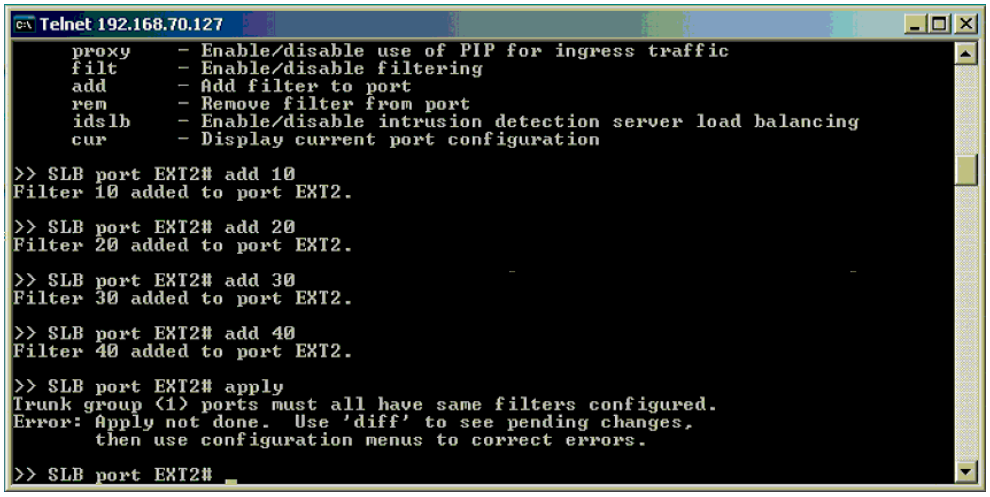
____ 15. Type **`add 20`**

____ 16. Type **`add 30`**

____ 17. Type **`add 40`**

____ 18. Type **`apply`** to apply the changes.

The interface indicates that the Apply was not done. The configuration of external port 1 is not the same as external port 2.



____ 19. Use the diff command to see the pending changes. Type **`diff.`**

____ 20. Notice that the filter for external port 1 is enabled (filt ena) and the filter for external port 2 is disabled (filt dis).

____ 21. Enable filtering on external port 2 by typing **`filt`** and **`e`** to enable the filters.

Notes:	The filter numbers (10, 20…) are arbitrary but filters are applied in sequence. It is good practice to leave space between the numbers you use to make it easier to add additional filters later on. Once a filter is matched the specified action is taken and no further filters are checked for the current packet.

This lab is complete.

Answers to questions

From page 9.

This command	Performs this action
/	Returns to the Main Menu
cfg	Takes you to the Configuration Menu
l2	Takes you to the Level 2 Menu
vlan 30	Creates a VLAN named “VLAN 30"
ena	Enables the VLAN that you just created.
def	Defines a list of ports that will be added to the VLAN
ext1 ext2 ext3 ext4	Adds External Ports 1 through 4 to the VLAN.

From page 14.

We created filter 20, could another number be used here? _____YES _____