



SYSTEMS ENGINEERS & TECHNOLOGIES

How to Segment a Local Network, While Still Giving Internet Access to Each Segment

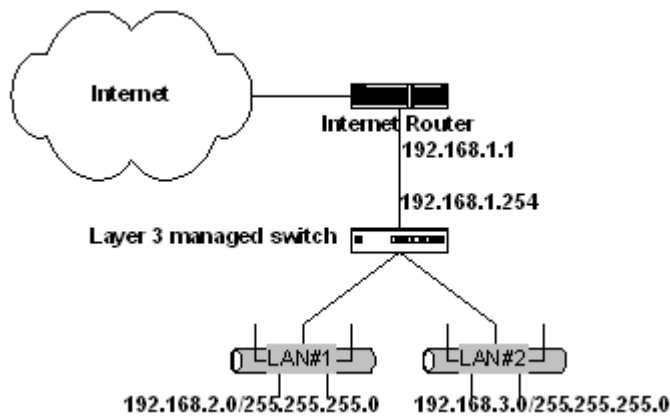
This describes two methods to segment a LAN using Layer 3 or Layer 2 switches — in such a way that both segments have Internet access.

One method, segmenting by IP address, applies to Layer 3 Switches including FSM7326P, FSM7328S, FSM7352S, GSM7312 and GSM7324. However, method will not stop the two networks from being able to access one other. For that, use the next method.

The method of segmenting by MAC address applies to all the Layer 3 Switches and Layer 2 Switches including GSM7212, GSM7224 and GSM7248. (Although the screens shown here differ, the method also applies to NETGEAR 700 series switches.)

Note: While using the Web GUI, multiple ports can be selected by holding down **CTRL** or **SHIFT**.

Segmenting by IP Address



In this solution, network is segmented into multiple IP subnets.

- Ports 1-5 connect the 192.168.2.0 / 255.255.255.0 subnet.
- Ports 6-10 connect the 192.168.3.0 / 255.255.255.0 subnet.
- Port 11 connects to the Internet router.

The easiest way to configure is the Smart Wizard in the Web admin GUI.

1. Create a route **VLAN 2**, consisting of **port 11** to connect to Internet router. Set interface IP address to **192.168.1.254**.



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Navigation

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VLAN Routing Wizard

VLAN ID: (1 to 3677)

VLAN Port Summary:

Add Selected Ports as Link Aggregation: No Yes

IP Address:

Subnet Mask:

2. Create a route **VLAN 3**, consisting of **ports 1-5** to connect to subnet **192.168.2.0 / 255.255.255.0**. Set the interface IP address to **192.168.2.1**.

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VLAN Routing Wizard

VLAN ID: (1 to 3677)

VLAN Port Summary:

Add Selected Ports as Link Aggregation: No Yes

IP Address:

Subnet Mask:

3. Create a route **VLAN 4**, consisting of **ports 6-10** to connect to subnet **192.168.3.0 / 255.255.255.0**. Set the interface IP address to **192.168.3.1**.



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Navigation

VLAN Routing Wizard

VLAN ID: 4 (1 to 3677)

VLAN Port Summary: 1/0/6, 1/0/7, 1/0/8, 1/0/9, 1/0/10

Add Selected Ports as Link Aggregation: No Yes

IP Address: 192.168.3.1

Subnet Mask: 255.255.255.0

4. Create a default route in routing table where default gateway is **192.168.1.1**.

Navigation

Router Route Entry Create

Route Type: Default

Next Hop IP Address: 192.168.1.1

When configuring VLAN routing using the wizard, RIP and OSPF are automatically enabled on the VLAN routing interface. If the Internet router supports RIP or OSPF, configure it for RIP/OSPF. Otherwise, create static routes in the Internet router to route 192.168.2.0 / 255.255.255.0 and 192.168.3.0 / 255.255.255.0 to gateway 192.168.1.254. Read the router's documentation on how to create a static route or how to enable RIP or OSPF.

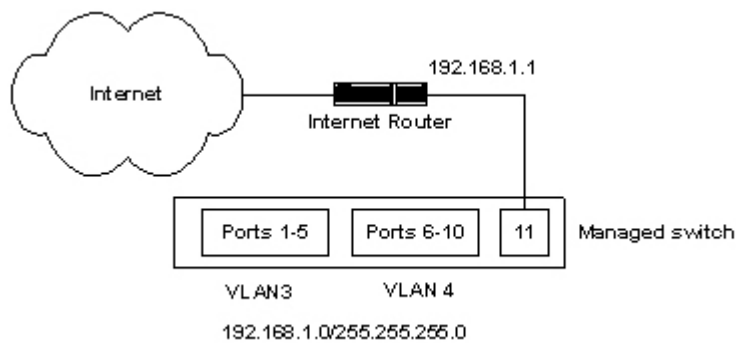


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Segmenting by IP address creates separate broadcast domains for networks 192.168.2.0 / 255.255.255.0 and 192.168.3.0 / 255.255.255.0.

Segmenting by MAC Address

With this method, three VLANs are created.



- VLAN 2 consists of ports 1-11.
 - VLAN 3 consists of ports 1-5 and 11.
 - VLAN 4 consists of ports 6-10 and 11.
 - Port 11 connects to the Internet router.
1. Create **VLAN 2**, VLAN ID is **2**. VLAN members includes ports **1-11**. All ports are untagged.



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VLAN Configuration

VLAN ID and Name:

VLAN ID: (1 to 3677)

VLAN Name:

VLAN Type:

Tagged	Untagged	Autodetect
<input type="text" value="1/0/1"/>	<input type="text" value="1/0/1"/>	<input type="text" value="1/0/1"/>
<input type="text" value="1/0/2"/>	<input type="text" value="1/0/2"/>	<input type="text" value="1/0/2"/>
<input type="text" value="1/0/3"/>	<input type="text" value="1/0/3"/>	<input type="text" value="1/0/3"/>
<input type="text" value="1/0/4"/>	<input type="text" value="1/0/4"/>	<input type="text" value="1/0/4"/>
<input type="text" value="1/0/5"/>	<input type="text" value="1/0/5"/>	<input type="text" value="1/0/5"/>

2. Create **VLAN 3**, VLAN ID is 3. VLAN members includes ports 1-5 and 11. All ports are untagged.

VLAN Configuration

VLAN ID and Name:

VLAN ID: (1 to 3677)

VLAN Name:

VLAN Type:

Tagged	Untagged	Autodetect
<input type="text" value="1/0/1"/>	<input type="text" value="1/0/1"/>	<input type="text" value="1/0/1"/>
<input type="text" value="1/0/2"/>	<input type="text" value="1/0/2"/>	<input type="text" value="1/0/2"/>
<input type="text" value="1/0/3"/>	<input type="text" value="1/0/3"/>	<input type="text" value="1/0/3"/>
<input type="text" value="1/0/4"/>	<input type="text" value="1/0/4"/>	<input type="text" value="1/0/4"/>
<input type="text" value="1/0/5"/>	<input type="text" value="1/0/5"/>	<input type="text" value="1/0/5"/>

3. Create **VLAN 4**, VLAN ID is 4. VLAN members includes ports 6-10 and 11. All ports are untagged.



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VLAN Configuration

VLAN ID and Name:

VLAN ID: (1 to 3677)

VLAN Name:

VLAN Type:

Tagged	Untagged	Autodetect
<input type="text" value="1/0/1"/>	<input type="text" value="1/0/6"/>	<input type="text" value="1/0/1"/>
<input type="text" value="1/0/2"/>	<input type="text" value="1/0/7"/>	<input type="text" value="1/0/2"/>
<input type="text" value="1/0/3"/>	<input type="text" value="1/0/8"/>	<input type="text" value="1/0/3"/>
<input type="text" value="1/0/4"/>	<input type="text" value="1/0/9"/>	<input type="text" value="1/0/4"/>
<input type="text" value="1/0/5"/>	<input type="text" value="1/0/10"/>	<input type="text" value="1/0/5"/>

4. Assign PVID 2 to port 11.

VLAN Port Configuration

Unit/Slot/Port:

Port VLAN ID: (1 to 3677)

Acceptable Frame Types:

Ingress Filtering:

Port Priority: (0 to 7)

5. Assign PVID 3 to port 1-5.



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The screenshot shows the 'VLAN Port Configuration' page for port 1/0/3. The left sidebar shows a tree view with 'VLAN' selected. The main area contains the following fields:

- Unit/Slot/Port: 1/0/3
- Port VLAN ID: 3 (1 to 3677)
- Acceptable Frame Types: Admit All
- Ingress Filtering: Disable
- Port Priority: (0 to 7)

A 'Submit' button is located at the bottom right of the configuration area.

6. Assign PVID 4 to port 6-10.

The screenshot shows the 'VLAN Port Configuration' page for port 1/0/6. The left sidebar shows a tree view with 'VLAN' selected. The main area contains the following fields:

- Unit/Slot/Port: 1/0/6
- Port VLAN ID: 4 (1 to 3677)
- Acceptable Frame Types: Admit All
- Ingress Filtering: Disable
- Port Priority: (0 to 7)

A 'Submit' button is located at the bottom right of the configuration area.

All devices must have IP addresses from the 192.168.1.0 / 255.255.255.0 network. Ports 1-5 and ports 6-10 are in separate broadcast domains, and they cannot access each other.



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