

GS7xxTR – Configuring static routing

Key Need:

- Efficient bandwidth management and greater network control - Inter-VLAN routing currently handled by Router
- VLAN traffic can be off-loaded from Router to GS7xxTR for high performance and bandwidth efficiency

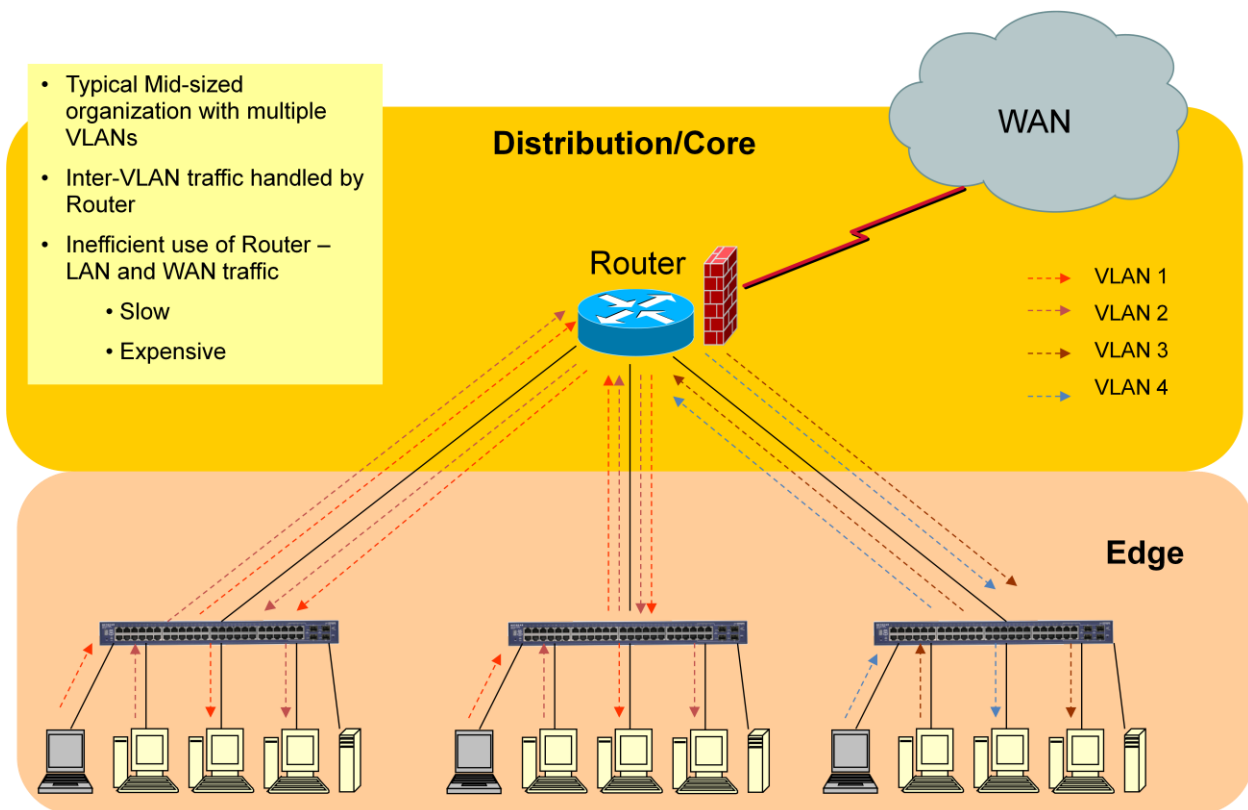


Figure 1 - Current SMB Networks Suffer Bottlenecks at Core

Figure 1 represent a typical mid-size organization with multiple VLANs routed through a single router. It can lead to a bottle network at the router and cause performance issues.

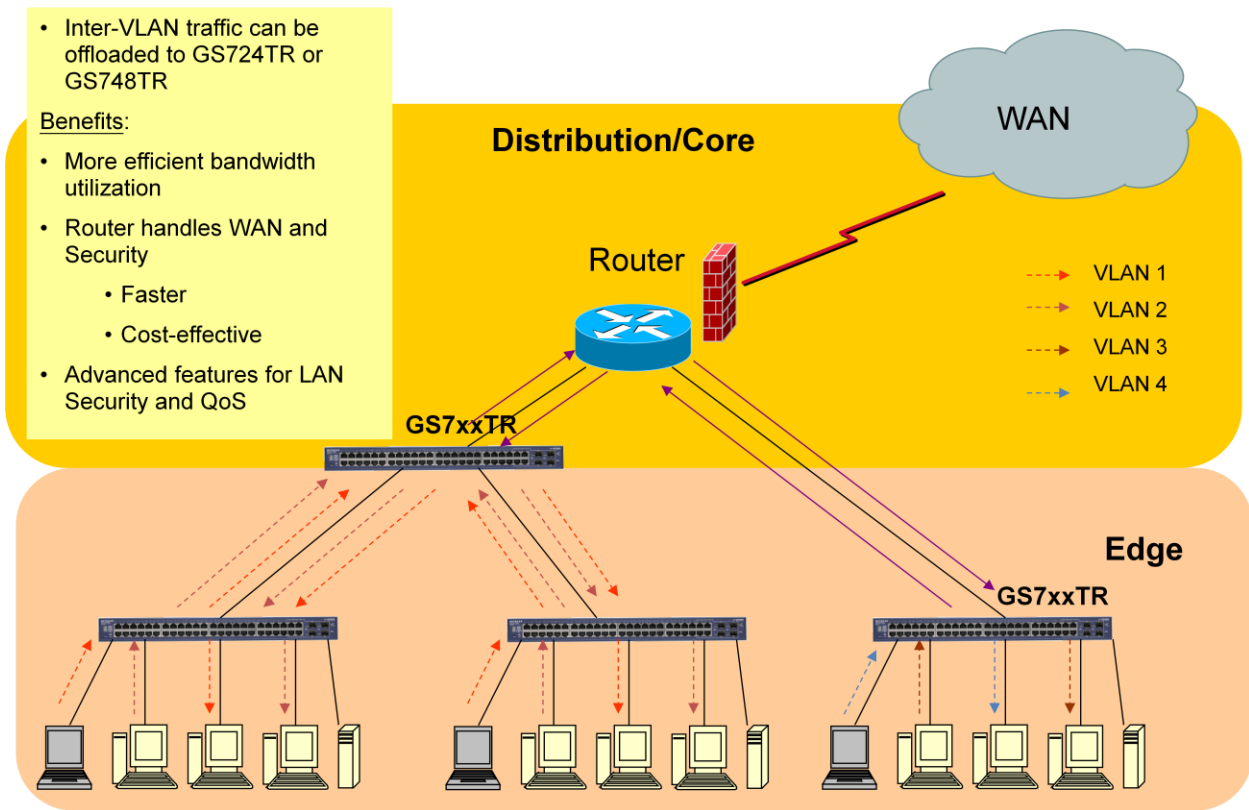


Figure 2 - GS724TR and GS748TR Provide Scalable Solution

In figure 2, two GS7xxTR are use to handle inter-VLAN routing. It provides more efficient bandwidth utilization by freeing up the main router to handle security and routing for WAN. The GS7xxTR also provides advanced features for LAN security and QoS.

Example:

ABC Company Network Topology

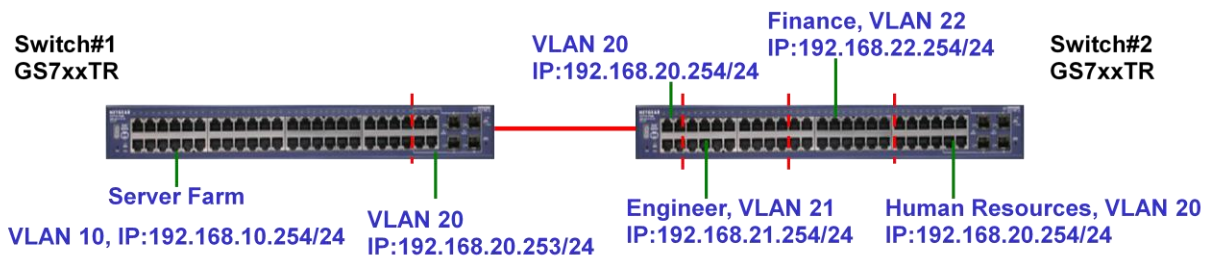


Figure 3 - Example network

1. Three departments: Engineering, Finance and Human Resources are in the same switch, but in different subnets
2. Server Farm (various servers) are connected to another switch with a different subnet
3. Each department needs to be able to communicate with each other, as well as the server farm

How to configure switch#1?

1. Create 2 routable VLAN interfaces – VLAN 10 and VLAN 20
2. Add IP to each VLAN interface:
 - VLAN 10: 192.168.10.254/24
 - VLAN 20: 192.168.20.253/24
3. Add port members to each VLAN

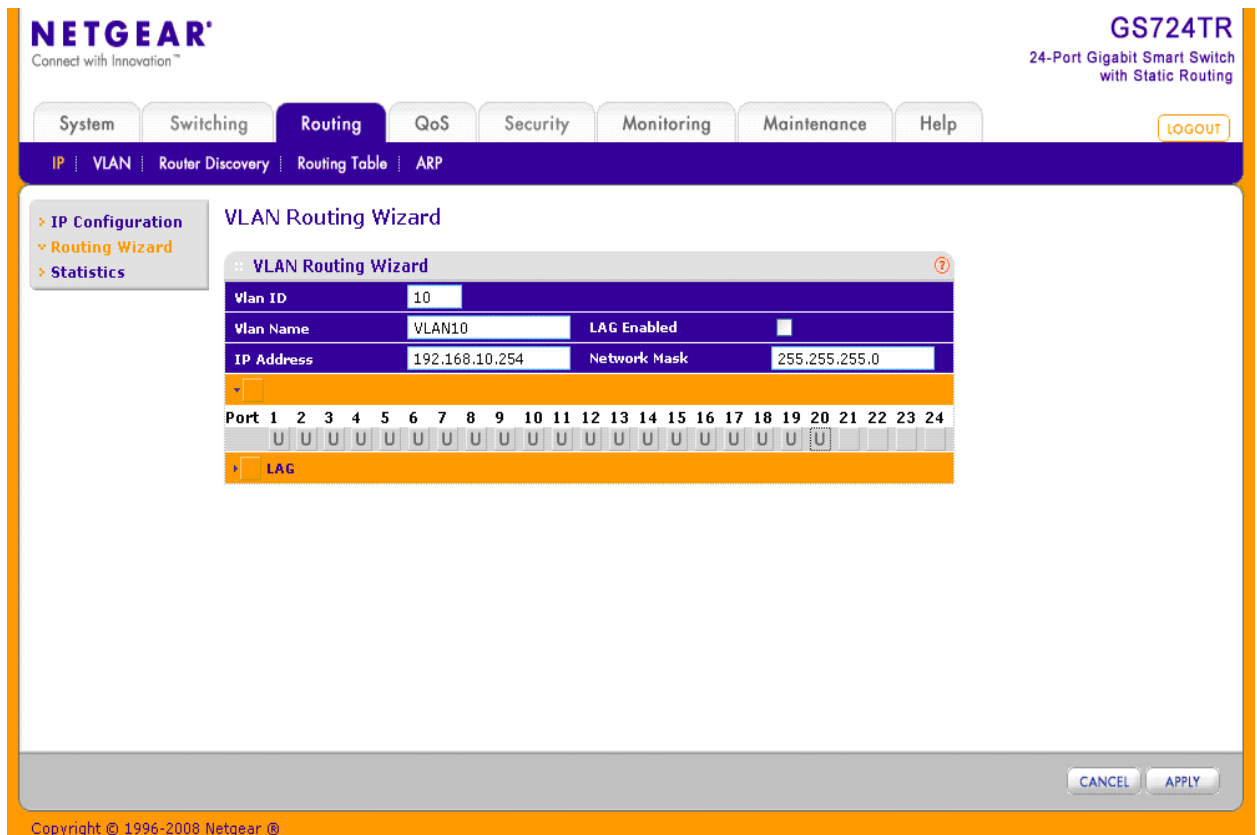


Figure 4 - Example: Creating routable VLAN 10

- Change the PVID of each VLAN port to match with their VLAN membership.

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GS724TR
24-Port Gigabit Smart Switch
with Static Routing

System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help

Ports | LAG | **VLAN** | Voice VLAN | STP | Multicast | Address Table

LOGOUT

Basic
Advanced
VLAN
VLAN Membership
Port PVID
Port PVID Configuration

Port PVID Configuration

Port PVID Configuration

PORTS | LAGS | All | GO TO INTERFACE [] GO

	Interface	PVID (1 to 4078)	Acceptable Frame Types	Ingress Filtering	Port Priority (0 to 7)
<input type="checkbox"/>		10			
<input checked="" type="checkbox"/>	g1	1	Admit All	Disable	0
<input checked="" type="checkbox"/>	g2	1	Admit All	Disable	0
<input checked="" type="checkbox"/>	g3	1	Admit All	Disable	0
<input checked="" type="checkbox"/>	g4	1	Admit All	Disable	0
<input checked="" type="checkbox"/>	g5	1	Admit All	Disable	0
<input checked="" type="checkbox"/>	g6	1	Admit All	Disable	0
<input checked="" type="checkbox"/>	g7	1	Admit All	Disable	0
<input checked="" type="checkbox"/>	g8	1	Admit All	Disable	0
<input checked="" type="checkbox"/>	g9	1	Admit All	Disable	0
<input checked="" type="checkbox"/>	g10	1	Admit All	Disable	0

CANCEL APPLY

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Figure 5 - Example: assign PVID to each port

- Since Switch#1 only knows the subnets in itself and it doesn't know the subnets in Switch#2 except for VLAN 20 - 192.168.20.0/24, administrator can either
 - In the Routing Table page of Switch#1, add 3 static route entries for each subnet in Switch#2 to the routing table; and indicate the "Next Hop IP address" to each subnet, or

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System Switching **Routing** QoS Security Monitoring Maintenance Help LOGOUT

IP VLAN Router Discovery **Routing Table** ARP

Route Configuration **Route Configuration**

Configure Routes

	Route Type	Network Address	Subnet Mask	Next Hop IP Address	Preference
<input type="checkbox"/>	Static	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	Static	192.168.21.0	255.255.255.0	192.168.20.254	1
<input type="checkbox"/>	Static	192.168.22.0	255.255.255.0	192.168.20.254	1
<input type="checkbox"/>	Static	192.168.23.0	255.255.255.0	192.168.20.254	1

Route Status

Route Type	Network Address	Subnet Mask	Protocol	Next Hop Interface	Next Hop IP Address	Preference
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ADD DELETE CANCEL

Figure 6 - Option 1: Add static routes to each subnet in Switch#2 to the routing table of Switch#1

- b) Add a default route or default gateway to the routing table in Switch#1 with “Next Hop IP address” as 192.168.20.254 (VLAN 20’s IP in Switch2). This way, Switch#1 will pass all unknown destination packets to this default route

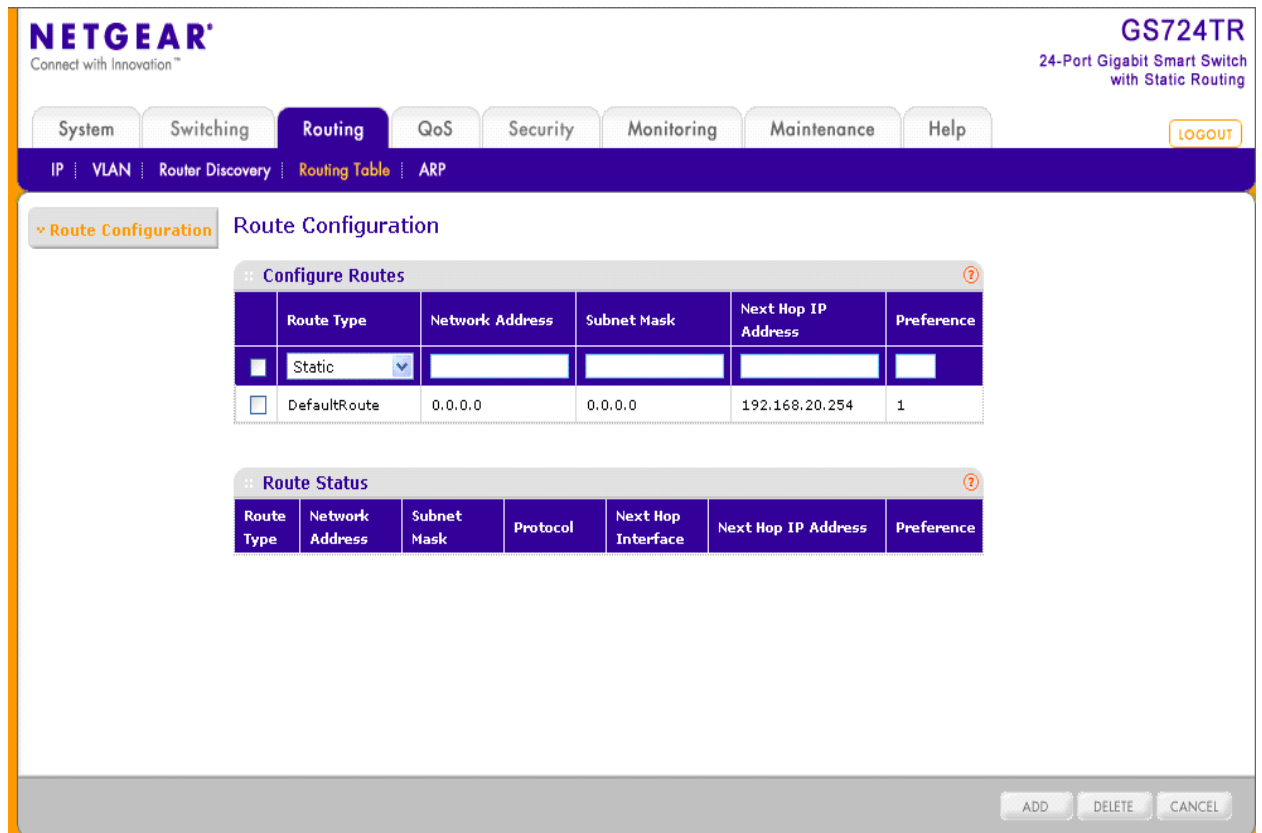


Figure 7 - Option 2: Configure a default Route In switch#1

How to configuration switch#2?

- 1) Create 4 routable VLAN interfaces – VLAN 20, 21, 22, and 23
- 2) Add IP address to each VLAN interface:
 - VLAN 20: 192.168.20.254/24
 - VLAN 21: 192.168.21.254/24
 - VLAN 22: 192.168.22.254/24
 - VLAN 23: 192.168.23.254/24
- 3) Add port members to each VLAN

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GS748TR
48-Port Gigabit Smart Switch
with Static Routing

System Switching **Routing** QoS Security Monitoring Maintenance Help LOGOUT

IP | VLAN | Router Discovery | Routing Table | ARP

> IP Configuration
 > **Routing Wizard**
 > Statistics

VLAN Routing Wizard

VLAN Routing Wizard

Vlan ID:

Vlan Name: LAG Enabled:

IP Address: Network Mask:

Port 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

U U

25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

LAG

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Figure 8 - Example: Create routable VLAN 20

- 4) Change the PVID of each VLAN port to match with their VLAN membership.

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System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help LOGOUT

Ports | LAG | **VLAN** | Voice VLAN | STP | Multicast | Address Table

Basic

Advanced

- > VLAN
 - Configuration
 - VLAN Membership
 - Port PVID Configuration

Port PVID Configuration

PVID Configuration ?

PORTS | LAGS | All | GO TO INTERFACE GO

	Interface	PVID (1 to 4078)	Acceptable Frame Types	Ingress Filtering	Port Priority (0 to 7)
<input checked="" type="checkbox"/>	g1	20	Admit All	Disable	0
<input checked="" type="checkbox"/>	g2	1	Admit All	Disable	0
<input type="checkbox"/>	g3	1	Admit All	Disable	0
<input type="checkbox"/>	g4	1	Admit All	Disable	0
<input type="checkbox"/>	g5	1	Admit All	Disable	0
<input type="checkbox"/>	g6	1	Admit All	Disable	0
<input type="checkbox"/>	g7	1	Admit All	Disable	0
<input type="checkbox"/>	g8	1	Admit All	Disable	0
<input type="checkbox"/>	g9	1	Admit All	Disable	0
<input type="checkbox"/>	g10	1	Admit All	Disable	0

CANCEL | APPLY

Figure 9 - Example: assign PVID to each port

- 5) Since Switch#2 only knows the subnets in itself and it doesn't know the subnet in Switch#1 except for VLAN 20 - 192.168.20.0/24, administrator can either
 - a) In the Routing Table page of Switch2, add a static route entry with Switch1's server farm subnet to the routing table; and indicate the "Next Hop IP address" to that subnet, or

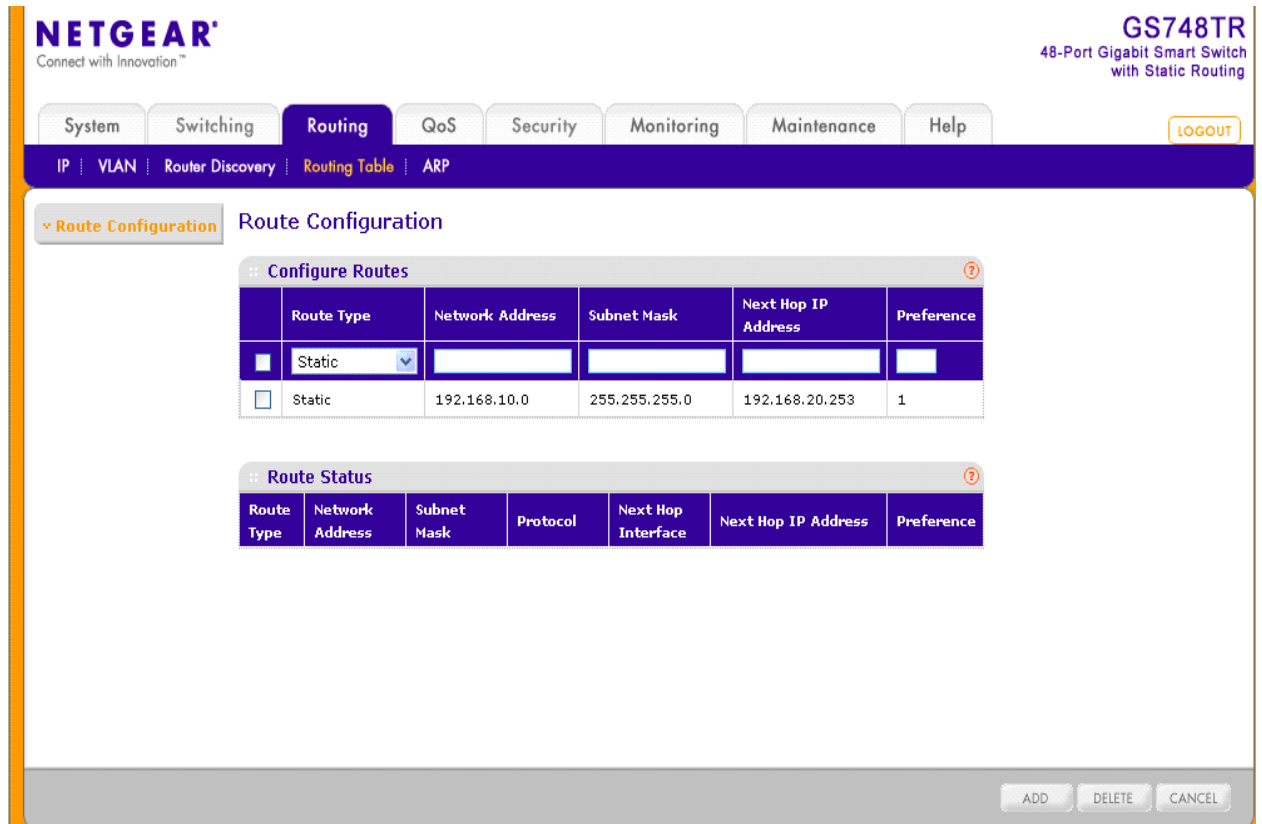


Figure 10 - Option 1: Add route to each subnet in Switch1 to the routing table of Switch#2

- b) Add a default route or default gateway to the routing table in Switch2 with “Next Hop IP address” as 192.168.20.253 (VLAN 20’s IP in Switch1). This way, Switch2 will pass all unknown destination packets to this default route

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System Switching **Routing** QoS Security Monitoring Maintenance Help LOGOUT

IP | VLAN | Router Discovery | **Routing Table** | ARP

Route Configuration **Route Configuration**

Configure Routes

	Route Type	Network Address	Subnet Mask	Next Hop IP Address	Preference
<input type="checkbox"/>	Static				
<input type="checkbox"/>	DefaultRoute	0.0.0.0	0.0.0.0	192.168.20.253	1

Route Status

Route Type	Network Address	Subnet Mask	Protocol	Next Hop Interface	Next Hop IP Address	Preference
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ADD DELETE CANCEL

Figure 11 - Option 2 add a default route in switch#2

To test the configuration

- 1) Connect Switch1 and Switch2 through VLAN 20
- 2) Traffic can now pass among the servers and each department