

# GajShield UPTM: Module 3

# Routing/Fail Over/Load Balancing

- In this modules, we will learn
  - Basic routing
    - Creating network objects and groups
    - Creating service objects and groups
    - Adding a route to a network
  - Source/Service based routing
    - Firewall policy
    - Firewall policy with source/service routing
  - Wan failover
  - Load Balancing of outbound traffic

# GajShield: Recap

- In the previous two modules, we have learn how to setup the GajShield UPTM using the wizard and create basic policies
- We have also learn to create URL filtering policies with user authentication

# GajShield: Routing

- To add a static route in the GajShield firewall, you need to create the necessary network objects.
  - For e.g. if I want to add a static route to my other branch, I will need to know the network address of the branch and the router ip.
    - Network of my branch: 192.168.1.0/255.255.255.0
    - Router IP: 192.168.2.221
  - Create a network object for the branch and also for the router. Since the router is a single IP, you can add a host

# GajShield: Static Route

The screenshot displays the GajShield SecureGate v5 web-based administration interface. The browser window title is "Gajshield: Web based Administration and Management Tool - Mozilla Firefox". The address bar shows the URL "https://192.168.2.176/cgi-bin/mainmenus.ggi". The interface features a navigation menu on the left with categories like NETWORK, FIREWALL, USERS, and SYSTEM. The main content area is titled "Firewall Management" and includes tabs for "Hosts", "Networks", and "Network Groups". A "Configure Networks" form is visible, containing the following data:

Configure Networks	
Network ID	myotherbranch
Network IP	192.168.1.0
Netmask	255.255.255.0

An "Add" button is located below the form. The footer of the interface contains the text "Copyright © GajShield Infotech (I) Pvt. Ltd. All rights reserved" and the IP address "192.168.2.176".

# GajShield: Static Route

The screenshot displays the GajShield SecureGate v5 Firewall Management web interface. The browser window title is "Gajshield: Web based Administration and Management Tool - Mozilla Firefox". The address bar shows the URL "https://192.168.2.176/cgi-bin/mainmenus.ggi". The interface features a navigation menu on the left with categories like NETWORK, FIREWALL, USERS, VPN, SYSTEM, ADMIN, REPORT, BROWSING, TRAFFIC CHART, IPS, and LOGOUT. The main content area is titled "Firewall Management" and includes tabs for "Hosts", "Networks", and "Network Groups". A "Configure Hosts" dialog box is open, containing a table with the following data:

Configure Hosts	
Host Id	mywanrouter
Host IP	192.168.2.221

Below the table is an "Add" button. The status bar at the bottom of the browser shows "Done" on the left and "192.168.2.176" on the right. Copyright information "Copyright © GajShield Infotech (I) Pvt. Ltd. All rights reserved" is visible in the footer.

# GajShield: Static Route

The screenshot displays the GajShield SecureGate v5 Firewall Management interface within a Mozilla Firefox browser window. The browser's address bar shows the URL `https://192.168.2.176/cgi-bin/mainmenus.cgi`. The interface features a navigation menu on the left with categories like NETWORK, FIREWALL, USERS, VPN, SYSTEM, ADMIN, REPORT, BROWSING, TRAFFIC CHART, IPS, and LOGOUT. The main content area is titled 'Firewall Management' and includes tabs for 'Interfaces', 'Aliases', 'Routes', 'Nameservers', and 'Restart Nw'. The 'Routes' tab is active, showing a 'Configure Routes' form with two rows: 'Network' set to 'myotherbranch' and 'Gateway' set to 'mywanrouter'. An 'Add' button is located below the form. The footer of the interface contains the copyright notice 'Copyright © GajShield Infotech (I) Pvt. Ltd. All rights reserved' and the IP address '192.168.2.176'.

GajShield: Web based Administration and Management Tool - Mozilla Firefox

File Edit View History Bookmarks Tools Help

`https://192.168.2.176/cgi-bin/mainmenus.cgi` Google

**GajShield SecureGate v5**

Firewall Management

Interfaces Aliases **Routes** Nameservers Restart Nw

NETWORK

- Basic
- Advanced

FIREWALL

USERS

VPN

SYSTEM

ADMIN

REPORT

BROWSING

TRAFFIC CHART

IPS

LOGOUT

**Configure Routes**

Network	myotherbranch
Gateway	mywanrouter

Add

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Done 192.168.2.176

# GajShield: Source/Service based routing

- Decision on where to forward the IP packet depends on the destination of the packet.
- If a static router is created for the destination, the packet will flow through the gateway provided
- If not, traffic will flow through the default gateway
- At times, we may want to route the traffic based on the source IP address. For example, I want to route all my bosses browsing traffic through my other ISP which is dedicated for my boss.
  - Bosses IP address – 192.168.2.116
  - Other ISP configured as ISP2

# GajShield: Source Routing

- Tasks
  - Configure the WAN interface of the firewall and connect it to ISP2.
  - Create a network object for my boss.
  - Add a policy to route http traffic through ISP2

# GajShield: Configure Interface

The screenshot shows the GajShield SecureGate v5 web interface. The browser title is "Gajshield: Web based Administration and Management Tool - Mozilla Firefox". The address bar shows the URL "https://192.168.2.176/cgi-bin/mainmenus.ggi". The interface has a blue header with the GajShield logo and the text "GajShield SecureGate v5". Below the header is a "Firewall Management" section with tabs for "Interfaces", "Aliases", "Routes", "Nameservers", and "Restart Nw". The "Interfaces" tab is selected. On the left is a navigation menu with categories: NETWORK (Basic, Advanced), FIREWALL, USERS, VPN, SYSTEM, ADMIN, REPORT, BROWSING, IPS, and LOGOUT. The main content area displays a table of network interfaces:

Select	Interface	Reset
<input type="radio"/>	int1	
<input type="radio"/>	int2	
<input checked="" type="radio"/>	int3	
<input type="radio"/>	int4	

Below the table is an "Assign IP" button. A help icon (?) is visible in the top right corner of the table area. The footer contains the text: "Copyright © GajShield Infotech (I) Pvt. Ltd. All rights reserved".

# GajShield: Configure Interface

The screenshot displays the GajShield SecureGate v5 web interface within a Mozilla Firefox browser window. The browser's address bar shows the URL `https://192.168.2.176/cgi-bin/mainmenuus.ggi`. The interface features a dark blue header with the product name and a navigation menu on the left. The main content area is titled 'Firewall Management' and includes tabs for 'Interfaces', 'Aliases', 'Routes', 'Nameservers', and 'Restart Nw'. The 'Interfaces' tab is active, showing a 'Configure Interface' form with the following fields:

Configure Interface	
Interface Name	ISP2 <input type="checkbox"/> Proxy ARP
Interface Type	Standard
IP Address	219.65.11.27
Netmask	255.255.255.0
Next HOP IP	219.65.11.21 <input type="checkbox"/> Make Default Gateway
Interface Bandwidth (KB)	
MTU	1500

Below the form is an 'Apply' button and a link labeled 'Configure Extra Next Hop'. The footer of the interface contains the copyright notice: 'Copyright © GajShield Infotech (I) Pvt. Ltd. All rights reserved'.

# GajShield: Verify Connectivity

The screenshot shows the GajShield SecureGate v5 web interface. The browser window title is "Gajshield: Web based Administration and Management Tool - Mozilla Firefox". The address bar shows the URL "https://192.168.2.176/cgi-bin/mainmenus.ggi". The page header includes "GajShield SecureGate v5" and "Firewall Management". The main navigation menu on the left includes NETWORK, FIREWALL, USERS, VPN, SYSTEM, ADMIN (with sub-items Administration, Settings, Utility, License), REPORT, BROWSING, IPS, and LOGOUT. The "Debug Network" tab is active, showing a form with the following fields and options:

Debug Network Options			
Query Interfaces	LAN		query
Ping	219.65.11.21	None	ping
Traceroute		None	traceroute
Arp		ISP1	arp

The "ISP1" dropdown menu is open, showing options: None, LAN, ISP1, and ISP2. The footer contains the text: "Copyright © GajShield Infotech (I) Pvt. Ltd. All rights reserved".

# GajShield: Source Routing

The screenshot displays the GajShield SecureGate v5 web-based administration interface. The browser window title is "Gajshield: Web based Administration and Management Tool - Mozilla Firefox". The address bar shows the URL "https://192.168.2.176/cgi-bin/mainmenus.cgi". The interface features a sidebar with navigation options: NETWORK, FIREWALL, NETWORKS, SERVICES, POLICIES, USERS, VPN, SYSTEM, ADMIN, REPORT, BROWSING, TRAFFIC CHART, IPS, and LOGOUT. The main content area is titled "Firewall Management" and has tabs for Hosts, Networks, and Network Groups. A "Configure Hosts" dialog box is open, showing fields for Host Id (myboss) and Host IP (192.168.2.116), with an "Add" button below. The footer of the interface contains the text "Copyright © GajShield Infotech (I) Pvt. Ltd. All rights reserved" and the IP address "192.168.2.176".

# GajShield: Source Routing

The screenshot displays the GajShield SecureGate v5 Firewall Management interface within a Mozilla Firefox browser window. The browser's address bar shows the URL `https://192.168.2.176/cgi-bin/mainmenus.cgi`. The interface features a navigation menu on the left with categories like NETWORK, FIREWALL, USERS, and SYSTEM. The main content area is titled "Firewall Management" and includes tabs for "Quick Setup", "Rules", "Bandwidth", "Install Policies", "Backup Rules", and "Admin Ips".

The "Rules" tab is active, showing a configuration form for a rule. The form is organized into several sections:

- Dir.:** A dropdown menu set to "Any".
- Src.:** A dropdown menu set to "myboss", with a sub-section for "Ignore" set to "Ignore".
- Serv.:** A dropdown menu set to "http", with a sub-section for "No NAT" set to "No NAT".
- Dest.:** A dropdown menu set to "any", with a sub-section for "No NAT" set to "No NAT".
- Action:** A dropdown menu set to "accept".
- Status:** A dropdown menu set to "active".
- Log:** A dropdown menu set to "yes".
- Queue:** A dropdown menu set to "default".
- Schedule:** A section with dropdown menus for Day, Date, Month, Year, and Time, separated by a minus sign.
- Ld. Bal.:** A section with checkboxes for "ISP1" and "ISP2".
- Route - Failover:** A section with two links: "Link 1" set to "int3-219.65.11.21" and "Link 2" set to "None".
- Comment:** An empty text input field.

An "Add" button is located at the bottom of the configuration form. The footer of the interface contains the copyright notice "Copyright © GajShield Infotech (I) Pvt. Ltd. All rights reserved" and the IP address "192.168.2.176".

# GajShield: Wan Failover

- My boss was happy that he had a dedicated line to browse. But one day, ISP2 was down and he could not browse. He screamed and yelled at me. So I decided to route his traffic through ISP1, incase ISP2 goes down

# GajShield: Wan Failover

The screenshot displays the GajShield SecureGate v5 Firewall Management interface within a Mozilla Firefox browser window. The browser's address bar shows the URL `https://192.168.2.176/cgi-bin/mainmenus.cgi`. The interface features a navigation menu on the left with categories like NETWORK, FIREWALL, USERS, and VPN. The main content area is titled "Firewall Management" and includes tabs for "Quick Setup", "Rules", "Bandwidth", "Install Policies", "Backup Rules", and "Admin Ips". The "Rules" tab is active, showing a configuration form for a rule. The form includes fields for "Dir.", "Src.", "Serv.", "Dest.", "Action", "Status", "Log", "Queue", and "Schedule". Below these fields is a table for "Route - Failover" with columns for "Ld. Bal.", "Route - Failover", and "Comment". The table contains two rows: "ISP1" with "Link 1" and IP "int3-219.65.11.21", and "ISP2" with "Link 2" and IP "int2-203.129.45.1". A text input field for "Comment" contains the text "Failover policy". An "Add" button is located below the table. The footer of the interface shows the copyright notice "Copyright © GajShield Infotech (I) Pvt. Ltd. All rights reserved" and the IP address "192.168.2.176".

**GajShield SecureGate v5**  
Firewall Management

Quick Setup | **Rules** | Bandwidth | Install Policies | Backup Rules | Admin Ips

**NETWORK**  
FIREWALL  
▶ Networks  
▶ Services  
▶ Policies  
**USERS**  
VPN  
SYSTEM  
ADMIN  
REPORT  
BROWSING  
TRAFFIC CHART  
IPS  
LOGOUT

Dir.	Src.	Serv.	Dest.
Any	myboss ↓ Ignore	http ↓ No NAT	any ↓ No NAT

Action	Status	Log	Queue
accept	active	yes	default

**Schedule**

Day | Date | Month | Year | Time | - | Day | Date | Month | Year | Time

Ld. Bal.	Route - Failover	Comment
<input type="checkbox"/> ISP1	Link 1 int3-219.65.11.21	Failover policy
<input type="checkbox"/> ISP2	Link 2 int2-203.129.45.1	

Add

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Done | 192.168.2.176

# GajShield: Load Balancing

The screenshot displays the GajShield SecureGate v5 Firewall Management interface within a Mozilla Firefox browser window. The browser title is "Gajshield: Web based Administration and Management Tool - Mozilla Firefox" and the address bar shows "https://192.168.2.176/cgi-bin/mainmenus.ggi". The interface features a navigation menu on the left with categories like NETWORK, FIREWALL, USERS, and VPN. The main content area is titled "Firewall Management" and includes tabs for "Quick Setup", "Rules", "Bandwidth", "Install Policies", "Backup Rules", and "Admin Ips". The "Rules" tab is active, showing a configuration form for a rule. The form includes sections for "Dir.", "Src.", "Serv.", "Dest.", "Action", "Status", "Log", "Queue", "Schedule", and "Route - Failover". The "Route - Failover" section is currently configured with two links, both set to "None", and a comment "Failover policy". An "Add" button is visible below this section. The footer of the interface contains the copyright notice "Copyright © GajShield Infotech (I) Pvt. Ltd. All rights reserved" and the IP address "192.168.2.176".

Dir.	Src.	Serv.	Dest.
Any	myboss ↓ Ignore	http ↓ No NAT	any ↓ No NAT

Action	Status	Log	Queue
accept	active	yes	default

Schedule										
Day	Date	Month	Year	Time	-	Day	Date	Month	Year	Time

Ld. Bal.	Route - Failover		Comment
<input checked="" type="checkbox"/> ISP1	Link 1	None	Failover policy
<input checked="" type="checkbox"/> ISP2	Link 2	None	

# GajShield: Exercise

