

Configuring IPv6

IPv6201411-01



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Configuring GB-OS 6.1 for IPv6

Firewalls on GB-OS version 6.0 and above support the following IP address modes:

- IPv4 only
- IPv4 and IPv6 (Dual Stack)

GB-OS 6.0 and above supports the following methods for configuring the firewall interfaces:

- Statically assigned IP address for IPv6
- DHCPv6
- Stateless Address Auto configuration (SLAAC)
- Dual Stack (IPv4 and IPv6) addresses
- IPv6 only address on an interface
- IPv4 only address on an interface
- IPv4 and IPv6 VLAN Interfaces
- IPv4 and IPv6 Link Aggregation
- IPv4 HA Interfaces
- IPv4 Bridge Mode

Enabling IPv6 Networking

To enable IPv6 support, navigate to **Configure>Network>Preferences**.

Important: To ensure proper configuration setup, a firewall reboot is required when changing between IPv4 and IPv6 modes.

1. Select **IPv4 and IPv6** in the ENABLE section under Internet Protocol. A prompt will display to reboot the firewall. Click **OK**.

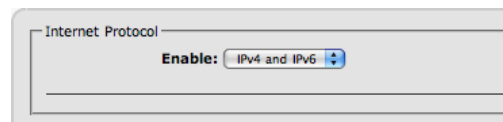


Figure 1: Enable IPv4 and IPv6

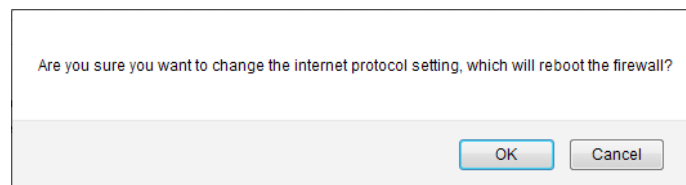


Figure 2: Reboot the Firewall

2. Once the firewall has been rebooted, navigate to **Configure>Network>Interfaces>Settings** and select the interface(s) which require IPv6 addresses to be assigned.

Using DHCPv6 to Obtain an IPv6 Address

Enabling DHCPv6 automatically enables SLAAC. If the interface will be the default IPv6 gateway, check the Gateway checkbox.

IP Address				
	DHCP	SLAAC	Gateway	IP Address
IPv4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.20.54.2/16
IPv6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Figure 3: Using DHCPv6 to Obtain IPv6 Addresses



Using Stateless Address Auto Configuration (SLAAC) to Obtain an IPv6 Address

To use Stateless Address Auto Configuration (SLAAC), enable the SLAAC option. The firewall will automatically configure the interface when connected to an IPv6 network using ICMP6. This option requires a router on the network with prefix advertisement enabled.

IP Address			
	DHCP	SLAAC	Gateway
IPv4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IPv6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Figure 4: Using SLAAC to Obtain IPv6 Addresses

Using a Static IPv6 Address

Enter the Static IP address to be assigned to the firewall interface and include the firewall prefix with the address.

IP Address			
	DHCP	SLAAC	Gateway
IPv4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IPv6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 5: Using a Static IPv6 Address

Setting the Firewall Default Route

If the firewall does not obtain its default route automatically using DHCPv6 or SLAAC, the route will need to be manually entered in the **Configure>Network>Routing>Static Routes** section.

Default Gateway	
IPv4:	<input type="text"/>
IPv6:	<input type="text"/>

Figure 6: Setting the Default Route



Router Advertisement

Router advertisement allows other hosts on the network using ICMP6 to automatically obtain IPv6 addresses. Based on options configured, the host will use Stateless Address Auto Configuration (SLAAC) or DHCPv6.



IPv6 Host or Client Issues

The MAC OS does not support DHCPv6 at this time. Only statically assigned IPv6 addresses and addresses assigned using SLAAC are currently supported.

Windows hosts do not properly obtain IPv6 DNS servers from Prefix Advertisement. It is recommended when using Windows host to enable DHCPv6 and configure the DNS server addresses and options. The Router Advertisement DHCP Override must be then set to either Non Address Information or ALL.

To configure, navigate to **Network>Interface>Settings** and edit the interface that will run Router Advertisement. Enable the Router Advertisement checkbox to display the Router Advertisement section.

Figure 7: DHCPv6 Router Advertisement

Table 3.12c: DHCPv6 Router Advertisement

Field	Description
DHCPv6 Override	Enable by selecting NON-ADDRESS INFORMATION or ALL. NON-ADDRESS INFORMATION selection will enable Stateless Address Auto configuration (SLAAC), DHCPv6 Address assignment and DHCPv6 options. It is recommended that a DHCPv6 sever be enabled on the firewall. Selecting ALL will assign IP address based on the range defined in the DHCPv6 configuration, with DHCPv6 options. The DHCPv6 server must be enabled on the firewall, or have the DHCP Relay server configured. If disabled, clients will use SLAAC for addresses.
Domain	Enter the domain assigned to the hosts using prefix advertisement. Windows hosts will require a statically assigned or DHCPv6 assigned domain.
Name Server IP Address	Enter the DNS Server IP address. Up to two (2) may be defined. Windows hosts require statically assigned or DHCPv6 assigned DNS servers.
Preference	Select the preference in which the firewall will be used as a gateway. Selecting HIGH will define the firewall as the preferred gateway. Under MEDIUM, the firewall will only be a gateway if no router is advertising as high. With Low selected, the firewall will only be a gateway if no router is advertising as high or medium. Windows gateway metric for Low is 4096, for Medium is 256, and for High is 16.
Advanced	
Maximum Interval	Define the maximum time allowed between sending unsolicited multicast router advertisements from the interface, in seconds. Valid range is 4-1800 seconds.
MTU	Enter the maximum transmission unit to ensure that all nodes on a link use the same MTU. Must not be greater than the MTU specified on the interface.
Preferred Lifetime	Enter the length of time that addresses generated from the prefix via Stateless Address Auto configuration (SLAAC) remain preferred.
Valid Lifetime	Enter the length of time the prefix will be valid.

IPv6 Network Monitoring

IPv6 Routing information can be found at **Monitor>Activity> Network>Routing>Neighbor Discovery**.

Neighbors

Displays all the firewall IPv6 Neighbor IP Addresses, Associated MAC address, Time to Live, Type and Interface.

Neighbors				
IP Address	MAC Address	Time to Live	Type	Interface
fe80::290:fbff:fe33:6e3e%v1	00:90:fb:33:6e:43	forever	vlan	DMZ
fe80::290:fbff:fe33:6e43%em5	00:90:fb:33:6e:43	forever	ethernet	em5
fe80::290:fbff:fe33:6e40%em2	00:90:fb:33:6e:40	forever	ethernet	PROTECTED-181
fdbe:9a8d:397d:81ca::c0a8:b519	00:90:fb:33:6e:40	forever	ethernet	PROTECTED-181
2620:3f:8000:1::80	00:90:fb:10:be:0a	00:00:14	ethernet	EXTERNAL
2620:3f:8000:1::541	00:90:fb:33:6e:3f	forever	ethernet	EXTERNAL
fe80::290:fbff:fe33:6e3f%em1	00:90:fb:33:6e:3f	forever	ethernet	EXTERNAL
fe80::290:fbff:fe33:6e3e%em0	00:90:fb:33:6e:3e	forever	ethernet	PROTECTED

Figure 8: Firewall IPv6 Neighbors

Prefixes

Displays all Prefixes IP addresses learned or statically assigned to the firewall, the physical Interface the prefix is on, Time to Live and Router Advertising for the prefix.

Prefixes			
IP Address	Interface	Time to Live	Advertised By
fdbe:9a8d:397d:81ca::/64	PROTECTED-181	forever	
2620:3f:8000:1::/64	EXTERNAL	forever	
fe80::%v1/64	DMZ	forever	
fe80::%em2/64	PROTECTED-181	forever	
fe80::%em0/64	PROTECTED	forever	
fe80::%em1/64	EXTERNAL	forever	
fe80::%em5/64	em5	forever	

Figure 9: Prefix IP Addresses

Routers

Displays all routers learned via ICMP6, the interface the router is on, the expiration time for the router and the priority of the gateway. The highest priority router is usually the gateway. Routers only display when using SLAAC or DHCPv6.

Routers - [Monitor -> Activity -> Networks -> Routing -> Neighbor Discovery -> Routers]			
IP Address	Interface	Expires	Priority
fe80::290:fbff:fe33:6e32%v1	EXTERNAL	00:29:92	high

Figure 10: Routers Learned via ICMP6



Frequently Asked Questions

Q: I cannot open the firewall administration using Firefox and SSL when using an IPv6 address. For example: `https://[2620:3f:8000:2::f]`

This is a known issue with Firefox and not the GB-OS. GTA recommends using an alternate browser if using an IPv6 address to administer the firewall and not a name, checking for a patch from Mozilla.org for Firefox, or using a name to administer the firewall on an IPv6 network.

Additional Services and Features with IPv6 Support

- BGP
- DHCPv6
- DHCP Relay
- Site to Site IPv6 to IPv6 IPsec Tunnels
- SNMP
- Remote Logging
- DNS Server
- DNS Proxy
- Reporting
- Email Proxy
- Inbound tunnels
- Static Address Maps
- NTP



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