



# How to Configure IPv6 for F-Series Firewalls in AWS

AWS supports IPv6 in selected regions for EC2 instances running in VPCs. IPv6 must be enabled for the VPC, the subnets, and the ENI attached to the firewall instance. The firewall can then retrieve the IPv6 IP address via SLAAC and DHCPv6 from AWS.

## Before You Begin

- Deploy a NextGen Firewall in an AWS region with IPv6 VPC support. E.g., us-east-2 (OHIO)

## Step 1. Enable and Assign IPv6 to VPC

1. Log into the AWS console.
2. Click **Services** and select **VPC**.
3. In the left menu, click **Your VPCs**.
4. Right-click your VPC and select **Edit CIDRs**. The **Edit CIDRs** pop-over window opens.

<input type="checkbox"/>	Name	VPC ID	State	IPv4 CIDR
<input type="checkbox"/>	bam-demo-Spoke1VPC	vpc-795e9a10	available	10.1.0.0/16
<input checked="" type="checkbox"/>	DOC-NGF-IPv6-VPC		available	10.100.0.0/16
<input type="checkbox"/>	bam-demo-HubVPC		available	10.100.0.0/16
<input type="checkbox"/>	alena-vpc-ip6		available	10.0.0.0/16
<input type="checkbox"/>	bam-demo-Spoke2VPC		available	10.2.0.0/16

Delete VPC  
 Edit CIDRs  
 Edit DHCP Options Set

5. Click **Add IPv6 CIDR**.

A /56 IPv6 network is now associated with your VPC.

### VPC IPv6 CIDRs

VPC CIDR	Status	Status reason
2600:1f16:1a2:c400::/56	associated	

Add IPv6 CIDR

## Step 2. Add IPv6 Network to VPC Subnets

Assign a /64 IPv6 network out of the /56 IPv6 VPC network to each subnet. Only one /64 can be assigned per subnet.

1. Log into the AWS console.
2. Click **Services** and select **VPC**.
3. In the left menu, click **Subnets**.
4. Right-click the subnet and select **Edit IPv6 CIDRs**.

<input type="checkbox"/>	Name	Subnet ID	State
<input checked="" type="checkbox"/>	DOC-NGF-IPv6-PublicSubnet		available
<input type="checkbox"/>	DOC-NGF-IPv6-PrivateSubnet2		available
<input type="checkbox"/>	DOC-NGF-IPv6-PrivateSubnet1		available

Delete Subnet  
 Edit IPv6 CIDRs  
 Create Flow Log  
 Modify auto-assign IP settings

5. Click **Add IPv6 CIDR**.



6. Enter the last two digits of the /64 IPv6 network.
7. Select the check mark.

Subnet IPv6 CIDRs

Subnet CIDR	Status	Status reason
2600:1f16:01a2:c401::/64	<input checked="" type="checkbox"/>	

Add IPv6 CIDR

Close

8. Click **Close**.
9. Repeat for all subnets in the VPC.

All subnets in the VPC now have both IPv4 and IPv6 networks assigned to them.

Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
DOC-NGF-IPv6-PrivateSubnet1	subnet-15479d7c	available	vpc-04b8706d   DOC-NGF-IPv6-VPC	10.100.1.0/24	250	2600:1f16:1a2:c402::/64
DOC-NGF-IPv6-PrivateSubnet2	subnet-51b3582a	available	vpc-04b8706d   DOC-NGF-IPv6-VPC	10.100.2.0/24	251	2600:1f16:1a2:c403::/64
DOC-NGF-IPv6-PublicSubnet	subnet-12479d7b	available	vpc-04b8706d   DOC-NGF-IPv6-VPC	10.100.0.0/24	250	2600:1f16:1a2:c401::/64

**Step 3. Edit the Route Table to include a default IPv6 route**

1. Log into the AWS console.
2. Click **Services** and select **VPC**.
3. In the left menu, click **Route Tables**.
4. Select the route table associated with the public subnets.
5. In the lower half of the screen click on the **Routes** tab.

Name	Route Table ID	Explicitly Associat	Main	VPC
<input checked="" type="checkbox"/>	rtb-f6307690	1 Subnet	No	vpc-491d1f2e   DOC-IPv6
<input type="checkbox"/>	rtb-12357374	0 Subnets	Yes	vpc-491d1f2e   DOC-IPv6

rtb-f6307690

Summary Routes Subnet Associations Route Propagation Tags

Route Table ID: rtb-f6307690 Main: no

Explicitly Associated With: 1 Subnet VPC: vpc-491d1f2e | DOC-IPv6

6. Click **Edit**.
7. Click **Add another route**.
8. Enter the IPv6 default route:
  - o **Destination** - Enter `::/0`
  - o **Target** - Enter the Internet gateway id. E.g., `igw-123456`

Cancel Save

View: All rules

Destination	Target	Status	Propagated	Remove
10.100.0.0/16	local	Active	No	
2a05:d018:c48:b200::/56	local	Active	No	
0.0.0.0/0	igw-42b77125	Active	No	<input type="button" value="x"/>
::/0	igw-42b77125	Active	No	<input type="button" value="x"/>

Add another route

9. Click **Save**.

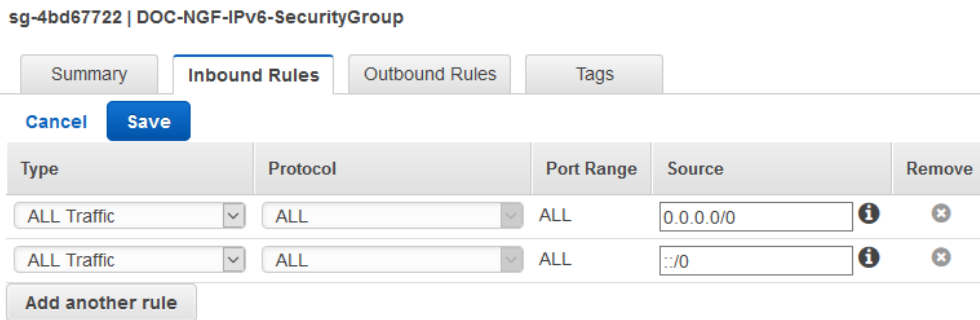


IPv6 traffic is now routed over the Internet Gateway of the VPC for the public subnets.

### Step 4. Edit Security Groups to Allow IPv6 Traffic to the Firewall

Create rules in the security group associated with your firewall for IPv6 traffic.

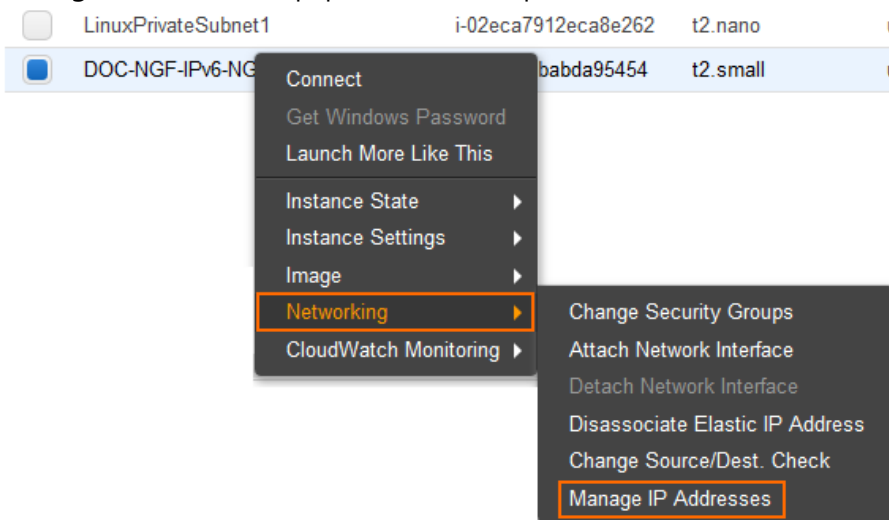
1. Log into the AWS console.
2. Click **Services** and select **VPC**.
3. In the left menu, click **Security Groups**.
4. Click on the security group associated with your firewall instance.
5. In the lower half of the screen, click the **Inbound Rules** tab.
6. Click **Edit**.
7. For each type of traffic, click **Add another rule** and enter the **Source** network. Use `::0/0` to allow this type and protocol from all IPv6 networks.



8. Click **Save**.

### Step 5. Assign IPv6 Addresses to the Firewall Instance

1. Log into the AWS console.
2. Click **Services** and select **EC2**.
3. In the left menu, click **Instances**.
4. Right-click the firewall instance, click **Networking**, and then select **Manage IP Addresses**. The **Manage IP Addresses** pop-over window opens.



5. In the **IPv6 Addresses** section, click **Assign new IP** for each IPv6 address you want to add.
6. (optional) Enter an explicit IPv6 address from the IPv6 network assigned to the subnet the firewall instance is in.



**IPv6 Addresses**

IP Addresses	
2600:1f16:1a2:c401:87cf:a0ad:5073:ac7	Unassign
2600:1f16:1a2:c401:fc8e:c928:c00e:e84c	Unassign
2600:1f16:1a2:c401:2ab8:36ef:95:ec8e	Unassign
Auto-assign	Undo
<a href="#">Assign new IP</a>	

Allow reassignment ⓘ

Are you sure you want to perform the following changes:

- 1 unspecified IPv6 addresses will be assigned to eni-bfe7afd6

Cancel Yes, Update

7. Click **Yes, Update**.

### Step 6. Enable IPv6 on the Firewall

Log into the firewall, enable IPv6, activate the network configuration, and then reboot the instance.

For more information, see [How to Enable IPv6](#).

### Step 7. Configure the IPv6 on the DHCP Interface of the Firewall

Configure the firewall to retrieve the IPv6 via SLAAC and DHCPv6 from AWS.

1. Go to **CONFIGURATION > Configuration Tree > Box > Network**.
2. Click **Lock**.
3. In the left menu, click **IP Configuration**.
4. In the **IPv6 Stateless Configuration** table click +.
5. Enter a **Name**.
6. Click **Other** to be able to manually enter a **Interface Name**.
7. For the **Interface Name** enter dhcp.

Interface Name   Other ⓘ

8. Click **OK**.
9. In the left menu, click **xDSL/DHCP/ISDN**.
10. In the **DHCPv6 Links** table, click +.
11. Enter a **Name**.
12. Click **OK**. The **DHCPv6 Links** window opens.
13. In the **Connection Details** section, click **Other** to be able to manually enter a **DHCP Interface**.
14. For the **DHCP Interface**, enter dhcp.
15. From the **Mode of Operation** list, select **Stateful**.
16. From the **Use Provider DNS** list, select **yes**.
17. From the **Use Provider Domain Name** list, select **yes**.



**Connection Details**

DHCP Interface:   Other

Mode of Operation:

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**DNS**

Use Provider DNS:

Use Provider Domain Name:

18. Click **OK**
19. Click **Send Changes** and **Activate**.

**Step 8. Activate the Network Configuration**

1. Go to **CONTROL > Box**.
2. In the left menu, expand the **Network** section and click **Activate new network configuration**.
3. Select **Failsafe**.

The IPv6 addresses are now listed for the dhcp interface on the **CONTROL > Network** page.

Interfaces/IPs	IPs	Interfaces	Proxy ARPs	ARPs	Statistics	OSPF	RIP	BGP	Switch Info	IPv6 ND Cache	AWS Routes
Interface/IP		Label	Ping	MAC of duplicate IP		Info					
<b>dhcp</b>											
✓	10.100.0.153/24		ok								
✓	2600:1f16:1a2:c401:2ab8:36ef:95:ec8e/64		ok								
✓	2600:1f16:1a2:c401:72ee:72b3:7f67:bbce/64		ok								
✓	2600:1f16:1a2:c401:87cf:a0ad:5073:ac7/64		ok								
✓	2600:1f16:1a2:c401:fc8e:c928:c00e:e84c/64		ok								
✓	fe80::2a:61ff:fe29:d123/64		ok								
<b>lo</b>											

The default gateway learned via IPv6 autoconfiguration is now listed in the route table on the **CONTROL > Network** page.

Table / Src Filter	State	Type	Interface	Src IP	Pref	Gateway
<b>Table dhcp1. From 10.100.0.146</b>						
<b>Table main. From all</b>						
✓	10.100.0.0/24	up	direct-kernel	dhcp	10.100.0.146	0
✓	10.100.0.1/32	up	direct-boot	dhcp	10.100.0.146	0
✓	127.0.0.0/24	up	direct-boot	lo	127.0.0.2	0
✓	2a05:d018:c48:b200::/64	up	direct-kernel	dhcp	-	256
✓	::/0	up	gateway-kernel	dhcp	-	1024
✓	fe80::/64	up	direct-kernel	dhcp	-	256
<b>Table default. From all</b>						
✓	0.0.0.0/0	up	gateway-boot	dhcp	10.100.0.146	100

