

# Installation Guide (Amazon Web Service Cloud Deployment)

# Dialogic<sup>®</sup> BorderNet<sup>™</sup> Session Border Controller (SBC)

Release 3.8.1

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## **Document History**

Version #	Version Date	Update Description
1.0	February 2017	Release 3.6.0 - Initial version
1.1	September 2017	Release 3.7.0 -Updated with the HA deployment -Management interface is used also for Utility and HA
1.2	March 2019	Revised version
1.5	April 2019	Some corrections
2.0	May 2019	Edit and update to release 3.8.1

# 1. Introduction

# **1.1 Purpose of this Document**

This document describes the BorderNet SBC's installation and deployment in the Amazon Web Services (AWS) Virtual Private Cloud (VPC), using Amazon Elastic Computing Cloud (EC2) resources and tools.

# 1.2 Glossary

For the purposes of this document the following abbreviations apply:

Abbreviation	Meaning
AMI	Amazon Machine Image
AWS	Amazon Web Services
AZ	Availability Zones
CIDR	Classless Inter-Domain Routing
EC2	Elastic Computing Cloud
IGW	Internet Gateway
SBC	Session Border Controller
SIP	Session Initiation Protocol
VPC	Virtual Private Cloud
НА	High Availability
EIP	Elastic IP
IAM	Identity and Access Management

## 1.3 Contact Us

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# 2. Overview of Network Topology

# 2.1 What is AWS?

**AWS (Amazon Web Services)** is a Cloud service belonging to Amazon, which provides services in the form of building blocks. These building blocks can be used to create and deploy any type of application in the Cloud.

These services or building blocks are designed to work with each other resulting in applications which are sophisticated and highly scalable.

# 2.2 Network Topology for Standalone Deployments

The BorderNet SBC can be deployed within an **Amazon VPC** using the **Amazon EC2 API** and tools, providing VoIP security and transcoding services towards peering entities.

In this scenario, the BorderNet SBC (Standalone or HA) is deployed in a VPC, using the following subnets:

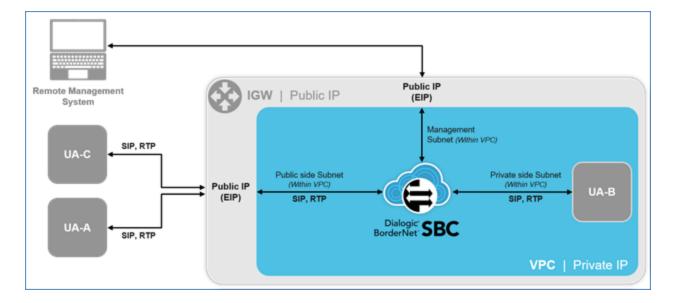
- Management subnet, used to connect the remote users to the SBC's web-based management system, through an Internet Gateway (IGW).
- One or two Private Subnets, used for signaling and media traffic between the BorderNet and two Peering User Agents.

This document describes deployment of the BorderNet SBC in the VPC according to the scenario shown below in Figure 1 (**Standalone** mode) and in Figure 2 (**High Availability** mode).

Different configurations can be implemented to match traffic needs.

In the Standalone mode, there are:

- 1 x Management Interface
- 1 x Public SIP/RTP interface with access to the Internet
- 1 x Private / Home SIP & RTP interface without access to the internet. This interface, is meant to have an internal routing element like the Dialogic ControlSwitch System (UA-B shown in Figure 1).



### Figure 1: Standalone Network Topology

The UA-A, UA-B, UA-C, can reside in:

- The same VPC as the BorderNet SBC (UA-B is in the same VPC)
- A different VPC within the same region
- A different VPC in a different region. An additional Internet Gateway (IGW) needs to be defined for Internet connectivity.
- Outside of the AWS Cloud.

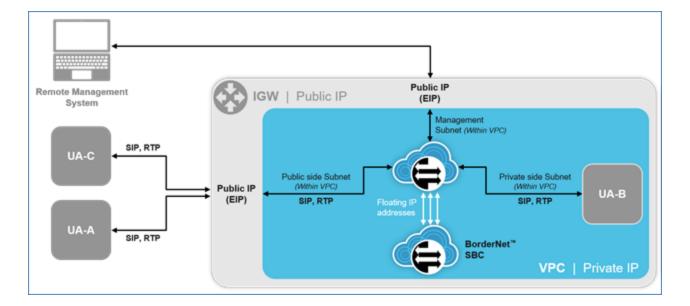
### 2.3 Network Topology for HA Deployments

For HA deployments, two BorderNet SBC instances should be defined as two standalone instances, considering the following points:

- Both instances must be from the same instance type.
- Both instances can reside in the same region and on the same VPC or a different VPC.
- The utility IP addresses (secondary IP addresses) during a failover and failback should be declared on both instances.

In this document, the deployment of the BorderNet SBC in HA mode is illustrated in the diagram shown below in Figure 2. Both instances will be installed on the same VPC.

In this scenario, there is a requirement for the set of private IP addresses illustrated below.



### Figure 2: HA Network Topology

In addition to the physical addresses, which are defined per BorderNet SBC, three additional addresses should be defined as the floating addresses:

- for management
- for signaling
- for media

These addresses are defined using the EC2à Networking à Manage IP Addresses window, as the Secondary addresses. Traffic from UA-A, UA-B and UA-C is directed to the floating addresses.

All the addresses should reside in the same subnet.

Figure 3 provides an example of the floating IP addresses:



Figure 3: Floating IP Addresses for HA (Secondary)

# 3. Introduction to AWS GUI

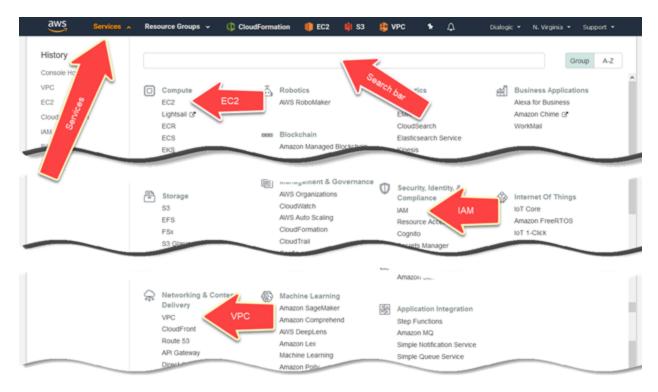
AWS divides its various features as services.

To access the services, click **Services** on the toolbar as shown below.

The following three services are used throughout this guide:

- EC2 (Elastic Cloud Computing)
- VPC (Virtual Private Cloud)
- IAM (Identity and Access Management)

See below the location of each of the 3 services. The search field can also be used to find the service.



# **4. AWS Resources Creation**

# 4.1 Regions

Select the region to install the BorderNet SBC. For example, US East (N. Virginia) is shown here.

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## 4.2 Create a New Virtual Private Cloud (VPC)

When creating a VPC, a range of IPv4 addresses in the form of a **Classless Inter-Domain Routing (CIDR)** block for the VPC should be created. For example: 192.168.0.0/16.

- $\rightarrow$  To create a new VPC:
  - 1. Click Services.
  - 2. Click **VPC** (or use the search bar).
  - 3. Click Your VPCs as shown below.

1				Service Health	
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#### 1. Click on the blue Create VPC button.

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Your VPCs						Cre	ate VPC						
Subnets													
Route Tables													
Internet Gateways						_							

- 2.
- 3. Enter the VPC information as detailed below.
- 4. The screen below is only a reference sample.
- 5. Specify the following VPC details as necessary:
- 6. Name tag.
- 7. VPC name. e.g. BorderNet\_VPC
- 8. IPv4 CIDR block. Specifies an IPv4 CIDR block for the VPC. It is recommended to specify a CIDR block from the private (non-publicly routable) IP address range as specified in <u>RFC 1918</u>. For example: `192.168.0.0/16`.

#### NOTE:

Direct access to the Internet from publicly routable CIDR blocks in a VPC is not supported!

- IPv6 CIDR block. Optionally associate an IPv6 CIDR block with your VPC by choosing an Amazon-provided IPv6 CIDR block.
- Tenancy: (User commercial choice with Amazon).
- Click on the Create VPC button.
- The Create VPC window opens.

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- Once the VPC is created, AWS reports it.
- Click on the blue Close button.

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### 4.3 Create New Subnets

When adding a new subnet to the created VPC the Availability Zone (AZ) in which you want the subnet to reside can be selected.

- An IPv4 CIDR block for the subnet from within the range of the created VPC must be specified.
- An IPv6 CIDR block for the subnet can alternately be specified if an IPv6 CIDR block is associated with the created VPC.

In this example, three subnets will be defined.

Type of Traffic	IPv4 CIDR Block	Description
Management	192.168.3.0/24	BorderNet Management
Public	192.168.2.0/24	SIP&RTP traffic - Internet
Private	192.168.1.0/24	SIP & RTP traffic - internal

 $\rightarrow$  To create a new subnet:

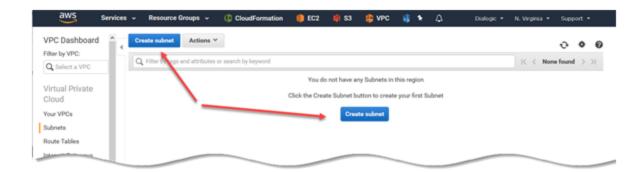
1. Select Subnets (located at the left-hand sidebar as indicated here).

aws	Services	¥	Resource Groups	*	CloudFormation	EC2	I S3	😫 VPC	c 🧃 🕯	۵	Dialogic 👻	N. Virginia 👻	Sup	port 👻	
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Virtual Private Cloud			BorderNet_VPC		vpc-099a5be9210	available			-		dopt-d9e40			rtb-03	
Your VPCs			_												
Subnets	-														
Route Tables															
Internet				_			_								

1. Click on one of the blue Create Subnet buttons.

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Subnets										
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3. The Create Subnet window opens:



- 1. Specify the following subnet details as necessary:
- 2. Name tag. Subnet name. e.g. MGMT-Subnet.
- 3. VPC: Select the pre-defined VPC for which the subnet is created, using the drop-down menu.
- 4. Availability Zone. Select an Availability Zone within the selected region.
- 5. IPv4 CIDR block: Specify an IPv4 CIDR block for your subnet. e.g. 172.16.3.0/24.
- 6. IPv6 CIDR block: If an IPv6 CIDR block is associated with your VPC, specify a custom IPv6 CIDR.
- 7. Click on the blue Create button.
- 8. Repeat the steps above to create the remaining two subnets Public and Private Traffic. See the table above.

#### Note:

This is just an example. Different configurations can be created!

1. When all three subnets are defined the following window opens.

Subnets Route Tables	^	Cres	te subnet Ar	tions	*									Ð	۰
Internet Gateways		Q,	Filter by tags and a	tributer	or search by keyword								< < 18	o 3 of 3	> >
Egress Only Internet Gateways			Name	÷	Subnet ID	•	State -	VPC				*	Pv4 CIDR ~	Availa	ble IPv
DHCP Options Sets			BN-Public		subnet-01113f75a423f750	1	available	vpc-0	85ae959a6	57d02a	6   BN_VPC		192.168.2.0/24	248	
Elastic IPs			BN-Private		subnet-071921688964t261	4	available	vpc-0	85ae959a6	57d02a	5   BN_VPC	1	192.168.1.0/24	248	
Elastic IPs			BN-MGMT		subnet-0ed38cf3566f18b6	d	available	vpc-0	85ae959a6	57d02a	5   BN_VPC		192.168.3.0/24	248	
Endpoints Endpoint Services			OF WOM I		300001000000000000000000000000000000000	v	analable	*pc+0	0.000/00/00	10128	iolon_inc		142.100.3.0/24	240	

### 4.4 Security Groups

A Security Group acts as a virtual firewall for your instance that controls the incoming and outgoing traffic.

After creating the VPC, a **Security Group** is automatically added. This **Security Group** will be used as the default Security Group changing the entries in the **Inbound Rules** table as follows:

- One entry for HTTPS traffic
- One entry for SSH traffic
- One entry for inter traffic
- One entry for SIP & RTP traffics

Different **Security Groups** can be created depending on the traffic profile and services required. For example, we could define two Security Groups as shown below:

- One Security Group for the Management traffic with a minimum of two open pinholes for HTTPS and SSH (more may be necessary depending on actions/access requirements).
- One Security Group for the other SIP & RTP traffics.

 $\rightarrow$  To access the Security Group:

- 1. Select Services.
- 2. Select VPC.
- 3. Select Security Groups.
- 4. Select the existing Security Group created by the VPC.

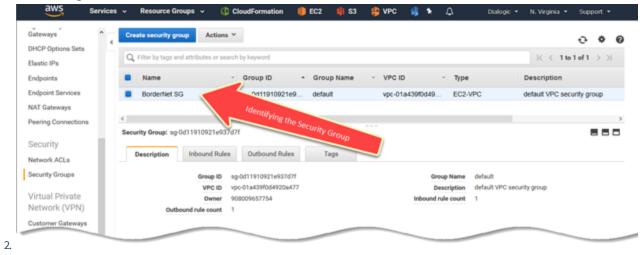
### 4.4.1 Naming the Security Group

Naming resources is a good practice which assists resource creation and also troubleshooting.

 $\rightarrow$  To name Security Groups:

- 1. Place the mouse on the existing row, on the Name column. This is an empty field.
- 2. A pencil icon appears.
- 3. Click the pencil icon and enter an identifier for this Security Group.
- 4. All entries on the AWS cloud should be identified.

- 5. For example: BorderNetSG.
- 6. Save the entry.
- 1. See the image below:



### 4.4.2 Creating Inbound Rules for the Security Group

**Inbound Rules** are required to customize the traffic flows allowed through the Security Group. Different inbound or outbound rules can be created to increase security as desired.

For example, we can create the inbound rules as in the matrix below. These rules will be sufficient for the initial configuration.

 $\rightarrow$  To add Inbound Rules:

- 1. Click on the Inbound Rules tab.
- 2. Click on the Edit Rules button.

01100 0-1		Create security gro	Actions Y						0 Ø (
DHCP Options Sets Elastic IPs		Q Filter by tags an	d attributes or searc	h by keyword					lof1 > >
Endpoints		Name		Group ID	- Group Name	· VPC ID	- Туре	Description	
Endpoint Services		BorderNet SC	3	sg-0d11910921e9	default	vpc-01a439f0d4	EC2-VPC	default VPC sec	urity group
NAT Gateways Peering Connections	< Se		)d11910921e937d	л					880
Security Network ACLs		Description	Inbound Rules	Outbound Rules	Tags				
-		Description Edit rules	Inbound Rules	Outbound Rules	Tags				
Network ACLs			Inbound Rules Protocol	2				Description ()	

- 4. On the screen that opens, click on the Add Rule button.
- 5. Leave blank the row All Traffic.
- 6. This entry will permit all traffic internally to the Security Group.

1. Click on the Add Rule button and proceed adding rules according to the table below.

• Type of Traffic	Protocol	• Port Range	• Source	Description
• All traffic	• N/A	• All	• Security Group	• This entry is on the list
• HTTPS	• N/A	• N/A	Anywhere	• GUI access
• SSH	• N/A	• N/A	Anywhere	<ul> <li>SSH access for upgrade/maintenance</li> </ul>
Custom TCP     Rule	• N/A	• 5060- 5070	Anywhere	• SIP signaling ports
Custom UDP     Rule		• 7000- 65000	Anywhere	• RTP ports

See below the result with all the rules created.

aws Service	ıs 🗸 Resource Groups 🗸 🗯	CloudFormation	🌔 EC2 🛛 🕸 S3	😫 VPC 🛭 🏮	<b>*</b> ↓	Dialogic • N. Virginia •	Support +
Gateways	Create security group Actions	*					0 ¢ (
DHCP Options Sets	Q. Filter by tags and attributes or sea	rch by keyword				K < 11	olofi >>
Endpoints	Name Name	- Group ID	Group Name	- VPC ID	- Type	Description	
indpoint Services	BorderNet SG	sg-0d11910921e9	default	vpc-01a4398	0d49 EC2-VPC	c default VPC se	curity group
LAT Gateways			•				
Peering Connections	Security Group: sg-0d11910921e93.	871					880
etwork ACLs	Description Inbound Rule	Outbound Rules	Tags				
lecurity Groups	Edit rules	-2					
/irtual Private	Type () Protoco	Port Range	() Source ()			Description (i)	
letwork (VPN)	All traffic All	All	sg-0d11910	921e937d7f			
Sustomer Gateways							
Virtual Private							

# **4.5 Creating Network Interfaces**

 $\rightarrow$  To create a Network Interface:

- 1. Click on Services > C2.
- 2. On the EC2 screen click Network Interfaces at the left-hand side of the screen (indicated below).

aws s	iervices	<ul> <li>Resource Groups - D CloudFormati</li> </ul>	on 🏮 EC:2 🕴 S3 🌐 VP	c 🧃 🖈 🗘		Dialogic • N. Virginia • Support •	
Bundle Tasks	^	Resources			C	Account Attributes C	1
B ELASTIC BLOCK	4	You are using the following Amazon EC2 resources in	n the US East (N. Virginia) region:			Supported Platforms	
Volumes		0 Running Instances	0 Elastic IPs			VPC	
Snapshots		0 Dedicated Hosts	0 Snapshots			Default VPC	
Lifecycle Manager		0 Volumes	0 Load Balancers			none	
NETWORK & SECURITY		0 Key Pairs 0 Placement Groups	1 Security Groups			Resource ID length management Console experiments	
Security Groups Elastic IPs		Learn mere about the latest in AWS Compute fro	om AWS re:Invent by viewing the EC2 Vid	105.	×	Additional Information	
Placement Groups						Getting Started Guide	
Key Pairs		Create Instance				Documentation	
Network Interfaces	1	To start using Amazon EC2 you will want to launch a	virtual server, known as an Amazon EC?	instance.		All EC2 Resources	
LOAD BALANCING		Launch Instance				Forums	

1. Click on one of the blue Create Network Interface buttons.



3. Follow the instructions below relative to the appropriate deployment mode.

### 4.5.1 Creating Network Interfaces (Standalone Mode)

To create Network Interfaces in High Availability mode proceed straight to 4.5.2.

In **Standalone** mode, create three **Network Interfaces** to match the example configuration. Depending on the planned traffic profile different configurations may be created.

#### Note

As a reminder of the previous completed configuration steps use the details below for reference.

Description	Type of Traffic	Custom IP	Description
Eth0-MGMT	Management	192.168.3.100	BorderNet Management
Eth1-Public	Public	192.168.2.100	SIP&RTP traffics - external
Eth2-Private	Private	192.168.1.100	SIP&RTP traffics - internal

 $\rightarrow$  To create a Network Interface in Standalone Deployment Mode:

- 1. For the configuration example in this guide use the table above as a reference and enter the following information:
- 2. Description: Add a short description.
- 3. Subnet: Select the relevant subnet from the drop-down menu (see table above).
- 4. **Private IP**: Enter a private IP address in the range of the created subnet. Use the table above. Auto-assign or another IP range (within the subnet) can be used as well.
- 5. Security Groups: Select the Security Group (in this example, there is only one Security Group populating the list).
- 6. Click on the **Create** button.
- 7. Name the created Network Interface.
- 8. Repeat the steps above to create the remaining two Network Interfaces.
- 9. The three Network Interfaces are now created and identified (see the Name column).
- 10. In the Status column, verify that the three Network Interfaces are now available.

aws Services	ν Resource Groups ν 🔅 CloudFormation 🏮 EC2 🕴 S3 🤮 VPC 🧃 🛧 Ω. Dialogic ν	N. Virginia 👻 Support 👻
Scheduled Instances	Create Network Interface Attach Detach Delete Actions *	∆ ⊕ ♦ Ø
Capacity Reservations	Q. Filter by tags and attributes or search by keyword	
IMAGES  AMIa	Name  VPC ID  VPC ID  Instance ID	Status - IPv4 Public IP
Bundle Tasks	Eth0-MGMT eni-0739e84ed569ed0a subnet-03e330 vpc-01a4390d Eth0-MGMG	🔵 available -
ELASTIC BLOCK	Eth1-Public eni-08e60e1d0e35052e5 subnet-056da7 vpc-01a439f0d Eth1-Public	🔵 available -
	Eth2-Private eni-0c33cc4b60d6086e4 subnet-06eb4c vpc-01a43900d Eth2-Private	🔵 available -
Volumes Snapshots		

### 4.5.2 Creating Network Interfaces (High Availability Mode)

Create four **Network Interfaces** to match the example configuration. Depending on the planned traffic profile different configurations may be created.

Description	Type of Traffic	Custom IP (auto-assign)	Description
BN1-Public	Public -Primary	192.168.2.101	SIP&RTP traffics - external
BN2-Public	Public-Secondary	192.168.2.102	SIP&RTP traffics - external
BN1-Private	Private-Primary	192.168.1.101	SIP&RTP traffics - internal
BN2-Private	Private-Primary	192.168.1.102	SIP&RTP traffics - internal

 $\rightarrow$  To create a Network Interface in High Availability Deployment Mode:

1. For the configuration example in this guide use the table above as a reference and enter the following information:

- 2. **Description**: Add a short description.
- 3. Subnet: Select the relevant subnet from the drop-down menu (BN-MGMT, BN-Private, BN-Public).
- 4. IPv4 Private IP: Custom
- 5. IPv4 address: Enter the IPv4 address as per the table above.
- 6. Security Groups: Select the Security Group (BorderNet SG).
- 7. Refer to the screenshot below.

aws s	ervices	٠	Resource Grou	p1	• O	CloudForm	ation	🌔 EC:	2	🏟 នរ 👘	😫 Vi	ю 🦸	٠	4	Dialogic	•	N. Veginia	•	Suppor	t *	
Scheduled Instances	1.	Creat	te Network Inter	face	Attach			Acti	ons '	*								Δ	•	۰	4
Capacity Reservation	•	Q,	Filter by tags and	artri b	utes or searc	ch by keywor	j.										0 K <	11	3 of 3	> >	1
AMIs AMIS			Name		Network is	nterface ID	- Subr	et ID	*	VPC ID	*	Description	- 10	Instance ID		- 5	itatus	*	IPv4 Pv	blic IP	
Bundle Tasks			Eth0-MGMT		eni-0739e8	4edf569ed0a	subri	rt-03e33	)	vpc-01a4398	ы	Eth0-MGA	NG				available				
ELASTIC BLOCK	8.1		Eth1-Public		eni-08e60e	1d0+35052+5	subn	rt-056da	·	vpc-01a4398	bdbd	Eth1-Publ	c				available		-		
5 STORE Volumes			Eth2-Private		eni-0c33co	45608608644	subn	rt-05eb4		vpc-01a4398	bd	Eth2-Priva	te .				available				

8.

- 9. Click on the Create button.
- 10. The Network Interface is unnamed.
- 11. Name the Network Interface.
- 12. See the example below.

aws	Services	<ul> <li>Resource Groups</li> </ul>	<ul> <li>CloudFormation</li> </ul>	🌗 EC2 📫 S3 🚦	VPC 🌒 Amaz	🕈 🗘 Dialogia	: • N. Virginia • Su	pport •
AMIs Bundle Tasks	^ =	Create Network Interface	Attach Detach Delete	Actions ~			Δ -	o • •
ELASTIC BLOCK		Q. Filter by tags and attri	butes or search by keyword					f1 > >
Volumes		Name •	Network werface ID ~ Sub	net ID - VPC ID	- Description -	Instance ID	- Status - IPv4	Public IP
Snapshots		BN1-Public IF	en-00e4d0487b9cd92e5 subn	et-0fb4ef5 vpc-06179687	6 BN1-Public		🔵 available -	
Lifecycle Manager								

13.

- 14. Repeat the steps above to create the remaining Network Interfaces as per the table above.
- 15. The four Network Interfaces are now created and identified (see the Name column).
- 16. In the **Status** column, verify that the four **Network Interfaces** are now **available**.

Create Network Interfac	Attach Detach E	Actions Y			1 O O O
Q. Filter by tags and attr	butes or search by keyword				Q ↓ < 1 to 4 of 4 > >
Name -	Network interface ID ~	Subnet ID -	VPC ID *	Description - Ins. ce ID	Status IPv4 Public IP
BN1-Private IF	eni-001e06891becf5c20	subnet-007da7	vpc-061796876	BN1-Private	available
BN1-Public IF	eni-00e4d0487b9cd92e5	subnet-0fb4ef5	vpc-061796876	BN1-Public	available
BN2-Public IF	eni-0a98e52904a70417b	subnet-0fb4ef5	vpc-061796876	BN2-Public	<ul> <li>available</li> </ul>
BN2-Private IF	eni-0ea8aecbf810cd866	subnet-007da7	vpc-061796876	BN2-Private	analable
	Q. Filter by tags and attri Name BN1-Phate IF BN1-Public IF BN2-Public IF	Q. Filter by tags and attributes or search by keyword           Name         Network Interface ID           BN1-Pinate IF         eni-001e06891becf5c20           BN1-Public IF         eni-00440487b9cd12e5           BN2-Public IF         eni-029862904a70417b	Name         Network Interface ID         Subnet ID            BN1-Private IF         eni-001e06891bec5c20         subnet-007da7	Name         Network Interface ID         Subnet ID         VPC ID           BN1-Private IF         eni-001e06891bec56c20         subnet-007da7	Name       • Network interface ID • Subnet ID • VPC ID • Description • Meaning ID         BN1-Private IF       eni-001e06891becf5c20         BN1-Public IF       eni-00440487b9cd12e5         BN2-Public IF       eni-0048862904a70417b         BN2-Public IF       eni-0098652904a70417b

## 4.6 Creating IGW

The IGW (Internet Gateway) is a VPC component that facilitates communication between instances in your VPC and the internet.

It is necessary to create an IGW for any traffic which arrives from outside to the BorderNet SBC and vice-versa.

 $\rightarrow$  To create an IGW:

1. Click on Services > VPC.



#### 1. In the Virtual Private Cloud group click on Internet Gateways.

aws Services	🗸 Resource Groups 🖌 📫 CloudF	ormation 🍈 EC2 📫	53 😫 VP	С 🧃 🛧 斗 Dialogic	• N. Virginia • Support •
VPC Dashboard		2 Instances		Service Health	
Q Select a VPC	Note: Your Instances will launch in the US East (N. V	irginia) region.		Current Status	Details
Virtual Private Cloud	Resources by Region CR	fresh Resources		<ul> <li>Amazon EC2 - US East (N. Virginia)</li> <li>View complete service health details</li> </ul>	Service is operating normally
Your VPCs Subnets	VPCs St. Vegets 1 See all regional	NAT.Gateways See all regions	N. Virginia 🚺	Account Attributes	
Route Tables				Resource ID length management	
Internet Gateways	Subnets N. Vegela 3 See all regions th	VPC Peering Connections See all regions I	N. Virginia ()	Additional Information	

1. Click on one of the blue Create Internet Gateway buttons.

aws s	Services	<ul> <li>Resource Groups</li> </ul>	👻 🗘 Cloud	Formation	EC2	🏟 S3	😫 VPC	6	٠	۵.	Dialogie 🝷	N. Virginia 👻	• Supp	oort 👻
VPC Dashboard Filter by VPC:	î e	Create internet gatewa	Actions Y										Ð	۰
Q Select a VPC		Q. Filter by tags and the	ributes or search by k	eyword								< < No	one found	>>
Virtual Private Cloud			`_	Yo Click the Creat		,	ernet gateway utton to create				ау			
Your VPCs					-	Create int	ernet gatewa	7						
Subnets														
Route Tables					_	_			-					
2.														

3. In the Create Internet Gateway window, name the IGW and click on the Create button.

aws	Services	<ul> <li>Resource Groups</li> </ul>	<ul> <li>CloudFo</li> </ul>	rmation 🛛 🏮 EC2	🏟 S3	😫 VPC	- 🧃 🇯	Δ <b>°</b>	Dialogic •	N. Virginia	• Supp	port •	
VPC Dashboard		Create internet gateway	Actions Y								Ð	۰	6
Filter by VPC: Q. Select a VPC		Q. Filter by tags and the	butes or search by keyv	word						< < N	lone found	d >	н
Virtual Private Cloud			\	You do no Click the Create Interr		iternet gatewo outton to creat	,		way				
Your VPCs					Create in	ternet gatew	wy 🛛						
Subnets													
Route Tables													

- 1. A message indicating that the Internet Gateway has been created will appear.
- 2. Click on **Close** to proceed to the next step.

aws	Services v	Resource Groups 👻	CloudFormation	EC2	4 53	UPC 🕄	ij +	۵•	Dulogic •	N. Virginia +	Support •
No. of Contraction of Contraction	nternet ga										
• The	entre	et gateway was create gateway 10     igw-0c7/c2d7									
								Close			
C Feedback	😧 English (US)				0 2008	2019, Amazon	Web Services,	Inc. or its eff	lates. All rights reserv	ed. Privacy Poli	cy Terms of Use

The newly created Internet Gateway has a detached state as indicated in the screenshot below.

aws	Services	٠	Resource Group	×s v	Cloudf	Formation	🌔 EC2	🏥 53	😫 VPC	6	٠.	۵•	Dialogic •	N. Virginia •	Supp	ort •	
VPC Dashboard	1	Cres	ate internet gatew	≡y	Actions Y										Ð	۰	0
Filter by VPC: Q, Select a VPC		Q,	Filter by tags and a	tribut	is or search by ke	ryword								K < 11	io 1 of 1	> >	
Virtual Drivata		•	Name -	ID		- State		VPC	v	Owner	r		~				
Virtual Private Cloud			BorderNet I	ige-	)c7fc0d7f721	detached	d	-		908009	65775	4					
Your VPCs							<b>`</b>										
Subnets																	
Route Tables				-				_									

- 1. To change this state the Internet Gateway will be attached to the VPC.
- 2. Right-click on the IGW row and select Attach to VPC.

aws	Services	~ Resou	rce Groups	- 🗘 Clou	dFormation	🌔 EC2	<b>iļi</b> \$3	😫 VPC	6.	۵.	Dialogic +	N. Virginia •	Supp	ort •	
VPC Dashboard	<b>^</b>	Create inte	met gateway	Actions ~									÷	۰	•
Filter by VPC: Q Select a VPC		Q. Filter by	tags and attribu	ites or search by	keyword							< < 1	io 1 of 1	> >	
Virtual Private		Name	- ID		* State		VPC	*	Owner		*				
Cloud		Borde	rNet I igu	-0 Delete inte	rnet gateway				90800965	7754					
Your VPCs				Attach to V Detach fro											
Subnets				Add/Edit T											
Route Tables				_		-									

1. The Attach to VPC window opens.

aws	0	_			_	CloudForma			😫 VPC			Δ <b>-</b>					
VPC Dashboard	Î 4	Cres	ite internet g	ateway	Act	ions Y									•	۰	6
Filter by VPC: Q, Select a VPC		Q,	filter by tags a	and attribu	ites or s	earch by keyword								< <	1 to 1 of	$\rightarrow$	
Katual Delucto		•	Name	~ ID		- St	tate	VPC		Owne	er		*				
Virtual Private Cloud			BorderNet I	igi		elete internet gate	eway	-		90800	96577	54					
Your VPCs Subnets					C	etach from VPC	-			_							
Subnets Rout <u>e Tables</u>						dd/Edit Tags											

### 2.

- 3. Select the VPC from the drop-down menu and click on the Attach button.
- 4. The Internet Gateway state now will be *attached*.
- 5. The IGW configuration is now complete.

aws	Services	÷	Resource Group	98 v	CloudForm	mation	🌔 EC2	🏟 🕄	😫 VPC	- 6	٠	۵	Dialogic •	N. Virginia +	Supp	ort •	
VPC Dashboard		Crea	ste internet gatew	ey	Actions *										o	٥	0
Q Select a VPC		Q,	Filter by tags and a	ttributi	es or search by keywo	brd	-							< < 1 to	1 of 1	> >	
Virtual Private		•	Name ~	ID	6	State		VPC		Own	er		*				
Cloud			BorderNet I	ige-	0c7fc0d7f721	attached		vpc-0bf2	51b2c5f2	9080	09657	754					
Your VPCs						$\sim$											
				-			_			_	_				_		_

## 4.7 Modify the Route Table

 $\rightarrow$  To modify a Route Table:

1. In the Virtual Private Cloud group, select Route Tables.

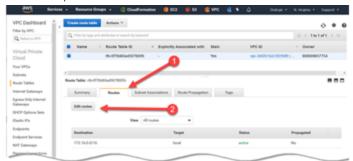
aws	Services	→ Re	source Grou	ps v	() CloudFormation	🏮 EC2	🏟 S3	😫 VPC	- <b>(</b> j - 1	۵	Dialogic 👻	N. Virginia 👻	Supp	oort •	
VPC Dashboard	Â	Create i	nternet gatev	vay	Actions ~								Ð	۰	0
Filter by VPC: Q. Select a VPC		Q, Filte	r by tags and a	rttribute	s or search by keyword							< <1 to	1 of 1	> >	
		. N	ame -	ID	- State		VPC	×	Owner		*				
Virtual Private Cloud		Bo	rderNet I	ige-0	c7fc0d7f721 attache	d	vpc-0bf2	61b2c5t2	9080096	57754					
Your VPCs															
Subnets															
Route Tables															
Internet Gateways															
				-			_								

- 1. The Route Table window opens.
- 2. Select the newly created Route Table entry (automatically created upon the creation of the VPC).
- 3. At the bottom of the screen, select the **Routes** tab and click on **Edit Routes**.

aws	Services	<ul> <li>Resource Grou</li> </ul>	ps 🗸 🌼 C	loudFormation	🌔 EC2	🕸 S3 🛛	VPC	§ 🐐	۵.	Dialogic •	N. Virginia 👻	Suppo	nt 👻
VPC Dashboard Filter by VPC:	Î	Create route table	Actions Y	by keyword							K < 1 to	•	<b>0</b>
Q Select a VPC Virtual Private Cloud		Name -	Route Table I		Explicitly Asso	ociated with	Main Yes		VPC ID vpc-0bf26	i1b2c5f25fdf0	- Owner	57754	
Your VPCs Subnets Route Tables		< Route Table: rtb-0f78c	60a4507800fc										) 8 0
Internet Gateways Egress Only Internet Gateways DHCP Options Sets		Summary Edit routes	Routes	Subnet Associa	ations Rou	ite Propagatio	n	Tags					
Elastic IPs Endpoints				View All routes		•							
Endpoint Services NAT Gateways		Destination 172.16.0.0/16			Target	I		Sta			Propagated No		
Peerine Connections													

4.

5. The Edit Routes window opens.



6.

- 7. Click on Add Route.
- 8. Enter the destination IP: 0.0.0.0/0
- 9. Click on the local drop-down list and select the IGW that has previously been created.
- 10. Click on the blue Save Routes button.

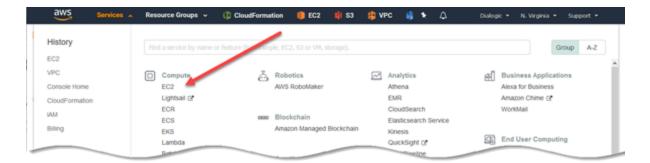
## 4.8 Allocate Elastic IP Addresses

To remotely access the BorderNet SBC for management purposes, both private and public IP addresses should be allocated to it.

The private IP address has already been allocated at the Network Interfaces step.

 $\rightarrow$  To allocate a public IP address:

- 1. Click on Services.
- 2. Click on EC2 in the Compute group.



#### 1. Select Elastic IPs (shown below).

Bundle Tasks	Resources		C	Account Attributes C
ELASTIC BLOCK STORE	You are using the following Amazon Epimesources in the U	JS East (N. Virginia) region:		Supported Platforms
Volumes	0 Running Instances	0 Elastic IPs		VPC
Snapshots	0 Dedicated wasts	0 Snapshots		Default VPC
Lifecycle Manager	0 Volumes	0 Load Balancers		none
	o Key Pairs	1 Security Groups		Resource ID length management
NETWORK & SECURITY	0 Placement Groups			Console experiments
Security Groups				
Elastic IPs	Learn more about the latest in AWS Compute from AW	S re:Invent by viewing the EC2 Videos.	×	Additional Information
Placement Groups				Getting Started Guide
Key Pairs	Create Instance			Documentation
Network Interfaces	To start using Amazon EC2 you will want to launch a virtua	Lesour langua as an Amazzan E/2 instance		All EC2 Resources
LOAD BALANCING	To start using Amazon CC2 you will want to launch a virtua	i server, known as an Amazon Cu2 Instance.		Forums

2.

#### 3. Click on one of the blue Allocate new address buttons.



1. The Allocate New Address window opens.

aws	Services	<ul> <li>Resource Groups</li> </ul>	· • 0	CloudFormation	🌔 EC2	🏟 S3	😫 VPC	6	۰.	Dialogic •	N. Virginia 👻	Suppor		
Bundle Tasks	^	Allocate new address	Actions V	·								e	۰	0
B ELASTIC BLOCK		Q. Filter by tags and	ibutes or sea	rch by keyword							< < N	ione found	>	н
Volumes					You do	o not have a	ny Addresses	in this r	egion					
Snapshots Lifecycle Manager			<b>\</b>		Click the Crea	te Address	button to crea	ite your	first Address					
NETWORK &     SECURITY			`			Alloca	te new addres	s						
Carrow								_						_

2.

- 3. In the IPv4 Address Pool field, select either Amazon pool or Owned by me if your company has a public IP address.
- 4. Click on the blue Allocate button.

### 4.8.1 Standalone Deployment Mode

For High Availability deployment mode proceed straight to <u>4.8.2</u>.

In Standalone deployment mode it is necessary to have two elastic IPs (EIPs) for this example:

- 1 EIP for management
- 1 EIP for traffic from the public internet
- After clicking on the blue Allocate button, AWS reports that the new address is allocated and shows the IP address as in the following window.

aws	Services v	Resource Groups	CloudFormation	CZ ECZ	🧌 SJ	PC 😲	18. 1	Δ	Dialogic •	N. Virginia *	Support *
Addresses > All	ocate new address										
Allocate	new addr	ress									
O New	address reque	Elastic IP 3 208 5.1									
								Close			
<b>Q</b> Feedback	😧 English (US)	)			<del>0</del> 2008	2019, Amazon	Web Servicies,	ing, or its at	ilates. All rights reserve	ed. Privacy Pol	cy Terms of Use

- 1. Repeat the steps above to create another EIP.
- 2. Name the EIPs to identify them.

	aws	Servi	ces		Resource Groups		() CloudFormation	🌔 EC2	<b>işi</b> 83	UB0	🎼 Amaz	٠	۵	Dialogic •	N. Virginia	• Supp	ort •	
	Lifecycle Manager	^	4	Allo	cate new address	Actio	ns ¥		e traffic							Ð	٥	0
	NETWORK & SECURITY			Q,	Filter by tags and att	ibutes o	ElPs identif	red per type	01.0						K <	1 to 4 of 4	>>	
Ι.	Security Groups				Name		EIPs identi	on ID	-	Instance	÷	Privat	e IP ad	dress - So	ope	~ As	ociatio	on ID
1	Elastic IPs				8N-Public			eipalloc-03287						vp				
	Placement Groups				BN-MGMT	_	229.8	eipalloc-04662	723b					vp		-		
-	Key Pairs	_				_			_				_		_			_

### 4.8.2 High Availability Deployment Mode

In High Availability deployment mode it is necessary to have four elastic IPs (EIPs) for this example:

- 1 x EIP for management (floating)
- 2 x EIPs for utility (1 per instance)
- 1 x EIP for traffic from the public internet
- Name the EIPs to identify the use of the EIP.

Lifecycle Manager	Allocate new address	Actions ~				0 ¢
B NETWORK & SECURITY	Q. Filter by tags and attri	ibutes or search by keyword				< < 1 to 4 of 4 > >
Security Groups	Name	- 1 e 10	dentified per type of tra	ffic Priv	ate IP address - Scope	- Association
Elastic IPs			antified per type			
Placement Groups	BN-U612	EIPSK	10110	•	vpc	•
	BN-Ubit		00 08d2e2676		vpc	
Key Pairs	BN-Public		eipalloc-03287452a		vpc	
Network Interfaces	BN-MGMT	54.190.8	eipalloc-04662723b		vpc	
E LOAD BALANCING						

### 4.9 EIP to Network Interface Association

This facility is available only for Standalone deployments at this stage.

- $\rightarrow$  To create an EIP to Network Interface Association:
  - 1. Right-click on one of the rows of the created and named EIPs.
  - 2. A pop-up window opens.
  - 3. Select Associate Address, as shown below.

Lifecycle Manager	Â	Alloc	ate new address	Action	s ~										e	0	Þ
NETWORK & SECURITY		Q	Filter by tags and att	ibutes or	search by keyword									К <	1 to 4 of 4	>	Ы
Security Groups			Name		Elastic IP	Allocation ID		Instan	ce	- Priv	rate IP ad	dress -	Scope		- As	ociat	tion
Elastic IPs			BN-Public		34.195.37.190	eipalloc-032874	(2a						vpc				
Placement Groups		-	BN-MGMT		54.156.229.8	eipalloc-046627				_			vpc				
Key Pairs		-	Dremoni		54.150.225.0	erpanoc-ovoice/	630		Release addresse				Abc.				
Network Interfaces									Associate addres Disassociate add								
LOAD BALANCING																	
Target Groups									Add/Edit Tags								

4.

- 5. The Associate Address window opens.
- 1. Select the following:
- 2. Resource type: Network Interface.
- 3. Network Interface drop-down field: Select the Network Interface to associate the EIP to.

Since we have identified the Network Interfaces, it is much easier to associate. See the example below.

- Private IP: Click on this field and select the Network Interface IP address to be associated.
- Click on the Associate button.
- Repeat the steps above for the Public SIP & RTP traffic.

aws	Services	~ F	Resource Groups	*	CloudFormation		🌔 EC2	<b>i</b> \$3	- 6	VPC	🎼 Amaz	٠	۵	Dialogic	•	N. Virginia 👻	Supp	ort •	
Lifecycle Manager	^ -	Alloca	te new address	Action	us ~												0	•	0
SECURITY		Q, F	iter by tags and attr	butes or	search by keyword											K < 1	1 to 4 of	4 >	н
Security Groups			Name	~	Elastic IP	- 1	Allocation ID	-	Insta	ince	-	Prive	te IP a	ddress -	Scop	10	~ As	sociat	ion ID
Elastic IPs			8N-Public		34, 195, 37, 190		eipalloc-03287	452a							vpc				
Placement Groups			BN-MGMT		54.156.229.8		eipalloc-04662								vpc				
Key Pairs		-									se addresses								
Network Interfaces											iate address - sociate addres								
E LOAD BALANCING																			
Load Balancers										Resto		•							
Target Groups										Add/E	dit Tags								
				_					_	_		_							
								-	-				_	_	_				

1. The association of the EIP to the private IP can be seen in the screenshot below.

aws	Services	- Res	ource Grou	<b>H</b> -	(1) CloudFormation	n 🚺 EC2	<b>Ø</b> 53	😝 VPC	1	•	۵	Dialogie •	N. Vrgmia	Support	•
EC2 Dashboard Events	1.	Allocater	www.address	Actio	ns ~									0 0	• •
Tags		Q, Plur	by tags and a	rs tuñes o	r search by knyword								16-6	1 to 4 of 4	н. н
Reports		Nar	ne	. *	Elastic IP	- Allocation	o -	Instance		Private	IP address	- Scope	- As	sociation ID	-
Linita		B BN-	MGMT		3.210.77.64	eipafloc-00c	Hdab4	1-00a6867da4		192,168	3.68	vpc	eip	assoc-01ee0ac	
instances		10 BN	Public-Traffic		3 89 155 204	eipaticc-025	026018	+00a6367da4		192 168	2.194	vpc	eip	assoc-0694753	50ł
Launch Templates															
Spot Requests															
Reserved Instances		2 4 4 4 4 4 4 1 1 1	3.210.77.64												
Dedicated Hosts		Address.	5.210.77.54											-	
Scheduled Instances	6	Descript	ion Tag												
Capacity Reservation	ne			Elastic	P 3.210.77.64						location ID	epañoc-00c44d	043064010		
E IMAGES				ddress Po						5	Instance	1-00a6667da4e1			
AMIn			Privat	e IP addre							Scope	vpć			
Bundle Tasks				sociation							Public DNS				
S CLASTIC BLOCK	÷		Network	interface	ID eni-0ad1ec349088	Recd3			Netw	ork inter	face owner	908009657754			
C Feedback Q	English (U	JS)					0 200	E - 2019 Amazon	Web 1	Services, 1	ini, or its affili	ates All rights leser	ved. Privacy P	lolley Terms	ofUse

## 4.10 IAM Role

AWS Identity and Access Management (IAM) enables you to securely control access to AWS services and resources for your users.

Using IAM, AWS users and groups can be created and managed. Users and groups can be assigned permissions to both grant and deny access to specific AWS resources.

IAM is mandatory for HA deployments and can be used on Standalone deployments as well.

 $\rightarrow$  To create the IAM role:

1. In the Services section under the Security, Identity & Compliance group, go to IAM.

aws Services	🗙 Resource Groups 👻 🕕	CloudFormation 🏮 EC2 関 S3	🤑 VPC 🧃 🛧 🗘	Dialogic • N. Virginia • Support •
History EC2	Find a service by name or feat	ture (for example, EC2, S3 or Ve 2).ge).		Group A-Z
IAM VPC	Storage S3 EFS	Management & Governa CloudVlatch AWS Auto Scaling	Security, Identity, & Compliance	internet Of Things
CloudFormation	EFS FSx S3 Glacler	CloudFormation CloudTrail Config	Resource Access Manager Cognito Secrets Manager	Amazon FreeRTOS IoT 1-Click IoT Analytics

2.

- 3. In the left-hand sidebar click on **Policies**.
- 4. Click on the blue **Create Policy** button.

aws sen	vices ~	Resource Groups 👻	CloudFormat	ion 🏾 🏮 EC2	😫 s3	🌐 VPC	🦚 Ar	٠	۵	Dialogic •	Global 💌	Suppo	t -	
Search IAM	Crea	te policy Policy action	ns ¥									0	•	>
Dashboard	Filter	policies - Q a										8	ihowing	g 50
Groups		Policy name 💌	<b>2</b> Tyr		Used as				Description					
Roles	0		cess Job	function	None				Provides full	access to AWS s	ervices and r	esources		
Policies	0	AlexaForBusines	sDeviceSetup AW	S managed	None			1	Provide devic	e setup access t	o AlexaForBu	siness s	rvices	
Identity providers		<ul> <li>B AlexaForBusines</li> </ul>	sFullAccess AW	S managed	None			(	Grants full as	cess to AlexaFor	Business res	ources ar	nd acce	
	0	• 🙃	AX	S managed	-		_		Provide			EorBusin	*** 10	pár

5.

6. In the **Create Policy** window, **Visual Editor** field, click on the **JSON** tab.

aws	Services	<ul> <li>Resource Groups</li> </ul>	() CloudFormation	🌔 EC2	<b>iļi s</b> 3	😫 VPC	🚯 Ar	٠	۵	Dialogic • Global • Support •	
С	reate pol	icy								1 2	
Ap	colicy defines the i	AWS permissions that you can	assign to a user, group, or	role. You can	create and e	dit a policy in	the visual	editor	and usir	ng JSON. Learn more	
	This policy valid grammar, see AV	ation failed and might have on WS IAM Policies	Converting to JSON : Th	he policy must	t have at leas	it one statem	ent. For m	ore inf	ormatio	n about the IAM policy	
	Visual editor	JSON								Import managed policy	
		sion": "2012-10-17", tement": []									

1. If the IAM policy reports any error (see example below), then review each line for any unacceptable character.

	A A A A A A A A A A A A A A A A A A A
Reads, allow the or service and the service of the	1-1
That day in the	2 "Version": "2012-10-17",
Second Second Second	"Statement": [
	a- 6
	"Action": [
	6 "ec2:AssignPrivateIpAddresses",
	7 "ec2:UnassignPrivateIpAddresses"
	6 "ec2:DescribeInstances",
	1"iam:ListRoles"
	10 ],
	11 "Effect": "Allow", 12 "Resource": "*"
	12 "Resource": "*"
	10 }
	54 1

3. If there are no errors, click on the **Review Policy** button.

Visual edite	r JSON	Import managed policy
1* <b>(</b> 2 3* 5* 6 7 8	"Version": "2012-10-17", "Statement": { "Action": { "ec2(AssignPrivataIpAddresses", "ec2(DessributeIpAddresses", "ec2(DessributeIstances", "ec2(DessributeIstances",	
9 10 11 12 13 14 15	<pre>fiam:ListBoles" , "Effect": "Allow", "Resource": "#" }</pre>	

- 5. Name the new IAM, and enter a description.
- 6. Click on the blue **Create Policy** button.

Visual editor	JSON	Import managed poli
1 2 3 4 5 6 7 8 9	<pre>Version": "2012-10-17", "Statement": [</pre>	
10 11 12 13 14 15	], "Effect": "Allow", "Resource": "*" }	
		Carcel Redow po

- 8. The **Sample\_IAM\_Policy** is now created.
- 9. This Policy will now be assigned to a **Role**.

7.

aws service	es 👻 Resource Groups 👻	CloudFormation	🏮 EC2 🛛 🗯 S3	😫 VPC 🔹 1	t ai∆	Dialogic 👻 Global 👻	Support *	
Search IAM	Sample_IAM_Pol	icy has been created.	>					× ^
Dashboard Groups	Create policy Policy action	16 ¥					0 0	0
Users Roles	Filter policies v Q. Search						Sho	wing 5K
Policies	Policy name 💌	Туре	Used as		Description			
Identity providers	🔿 🕨 🟮 AdministratorAc	cess Job functi	n None		Provides full ac	cess to AWS services and r	esources.	
Account.eattings	Alexandream	AWS manu	iged		Provide device-	EorBa	siness servi	ces

10.

- 11. In the left-hand column of the IAM window click on Roles.
- 12. Click on the blue Create Role button.

aws	Services ~	Resource Groups 🐱	CloudFormation	🌔 EC2	<b>iļi s</b> 3	😫 VPC	🤹 🖓	٠	۵	Dialog	je ∙	Global 👻	Suppo	art •
Search IAM	Rol	65												
Dashboard Groups Users Roles Policies	1A •	That are IAM role 1 M roles or averaging the second IAM user in another account Application code running on ar An AWS service that needs to a Users from a court	act on resov 2 you	ds to perform a	ictions on A avide its fea	WS resource		t followi	ng:					×
	Cr	eate role Delete role											0 0	•
	Q	Search											Showing	3 res
		Role name 👻	Description					Tre	isted en	tities				
	0	AWSServiceRoleForOrganiza	tio Service-linked n	ole used by AW	S Organizal	ions to enab	le integrat	AW	/S servic	e: organizatio	one (Se	ervice-Linke	d rol	
		AWSServiceRoleForSupport	Enables resource	ce access for A	WS to provi	de billing, ad	ministrativ	- AW	/S servic	e: support (S	ervice	Linked role)		
		AWSServiceRoleForTrustedA	dv Access for the	AWS Trusted Ad	dvisor Servi	ce to help rec	duce cost,	AW	/S servic	e: trustedadv	isor (S	lervice-Links	dr	
	English (US)									es. All rights re		Privacy P		rms of

14. Click on AWS service and then on EC2 as shown below.

15. Click on the blue Next: Permissions button at the lower right-hand side of the window.

Search UAM	R	oles									
Dashboard Groups Users Rolas Policies	-	What are IAM role 1 IAM role	EC2 instance that need		AWS resources		swing				×
										_	-
		Create ands								0 0	
										C 0	
		Create ands	Description				Trusted enti	Xes			
		Create role Q Search	Description	ole used by AMS Organiz	ations to enable			ties 4. organizations (5		howing	
		Create role Q. Smerch Role name +	Description 6. Service-Interla			integrat	AWS service		ervice-Linked	howing	

16.

1. In the Create Role window, click on Filter Policies (shown below).

aws	Services 🗸 Resource Groups 🗸 🔅 C	loudFormation 🛛 🏮 E	C2 📫 S3	🌐 VPC 🛛 🌒	Ar 🖈 🛛	🗘 Dialogic = Global = Support =	
	Create role - Attach permissions policies	1				1 2 3 4	
	Choose one or more policies to attach to yo	new role.					
	Create policy					0	
	Filter policies v Q Search					Showing 1 result	
	Reset filters	Us	ed as		Description		
	POLICY TYPE	No	ne	5	Sample only	Policy	
	Customer managed (1) AWS managed (492)	2					
	AWS managed - job function (10)						
	POLICY USE						_

2.

3. In the Policy Type group, select Customer Managed.

4. Click outside the panes and the target policy will be shown as illustrated below.

WS Services - Resource Groups - 🕕 CloudFormation	🏮 EC2 🔋 🔋 S3	🎒 VPC 🤹 Amazon I 🔭 🗘 Dialogic 👻 Global 👻
Create role		1 2 3 4
<ul> <li>Attach permissions policies</li> </ul>		
Choose one or more policies to attach to your new role.		
Create policy		0
Filter policies v Q. Search		Showing 1 result
Policy name •	Used as	Description
BN_IAM_Policiy	None	BorderNet SBC IAM Policy

5.

- 6. Check that the Policy is visible.
- 7. Click on the blue Next: Tags button.
- 8. Tagging will not be performed.
- 9. Click on the blue Next: Review button.
- 10. Enter a Role Name and a Role Description.
- 11. Click on the blue Create Role button.

aws	Services 🗸 Resource Groups 🗸 🌐 Clou	dFormation 🏮 EC2 🧃	sa 🌐 vec	🤹 Amazon I 🐐 🗘	Dialogic •	Global • Support
	Create role			1		4
	- Attach permissions policies					
	Choose one or more policies to attach to your new	v role.				
	Create policy					0
	Filter policies 🐱 🔍 Search				Showing 1 re	flue
	Policy name *	Used as		Description		
	DN.JAM.Policiy	None		BorderNet SBC IAM Poli	cy	

12.

1. The new Role is now created.

arch SAM	The role BorderNetRe	ole has been created	
ashboard roups	Create role Delate role		0 0
sers sles	Q Search	_ >	Showing 4 resul
dicies	Role name 👻	Description	Trusted entities
ntity providers	AWSServiceRoleForOrganizat.	Service-linked role used by AWS Organization of enable inte	AWS service: organizations (Service-Linked rol.,
count settings	AWSServiceRoleForSupport	Enables resource access for AWS to pursee billing, administ	AWS service: support (Service-Linked role)
idential report	AWSServiceRoleTor Trusted	Access for the AWS Trusted Add Service to help reduce c	AWS service: trustedadvisor (Service-Linked r_
cryption keys	BorderNetRole	BorderNet SBC Role	AWS service: ec2

# 5. BorderNet SBC Installation Steps

After having successfully configured the AWS resources the next step is to install the BorderNet SBC on the AWS Cloud.

- $\rightarrow$  To install the BorderNet SBC:
- 1. Login to your AWS account, if you haven't already done so.
- 2. In the toolbar, select **Services** and choose the **EC2** option in the **Compute** menu.

aws	Services A	Resource Groups 👻 (	CloudFormation 🏮 EC2 🕴 S	53 🤑 VPC 🦚 Ar 🛧 🛽	🕽 Dialogic 🕶 Global 💌 Support	-
History	1		ture (for eggs 2) 53 or VM, storage).		Group A	-z
IAM						
EC2	4	Compute	A Robotics	Analytics	여기 Business Applications	
VPC		EC2	AWS RoboMaker	Albena	Alexa for Business	
		Lightsail (?		EMR	Amazon Chime (3	

3.

- 4. Each AWS Data Center is considered a Region, which includes one or more Availability Zones (AZ).
- 5. Click Region (top menu and right side) and select US East N. Virginia, to access the BorderNet's latest Images.

aws se	rvices		Resource Groups		CloudFormation	DEC2	🕴 S3 🚦	VPC	6	4	Dialogic •		Suppo	nt *
ocreauea instances Capacity Reservations	^	Res	ources								US East (N. Vir	ginia)		C
<ul> <li>IMAGES</li> </ul>		Your	ire using the following	ng Am	azon EC2 resources in the	US East (N. V	/irginia) region:				US East (Ohio)			
AMIs			0 Running Insta	nces			2 Elastic IPs		-		US West (N. Ca	lifornia)		
Bundle Tasks			0 Dedicated Ho	sts			0 Snapshots	1	2		US West (Orego	on)		21
			0 Volumes				0 Load Balar	ncers	-		Asia Pacific (M	umbai)		U
B ELASTIC BLOCK			0 Key Pairs	_			3 Security Gr	roups			Asia Dem		ment	

6.

7. Select the Amazon Machine Images (AMIs) in the left-hand sidebar.

aws Service	s 🗸 Resource Groups 🗸 🔱 Cloudi	Formation 🌔 EC2 🎁 S3 😫 VPC	🦸 🕈 🗘	Dialogic • N. Virginia • Supp	ort 👻
Capacity Reservations	Resources		c	Account Attributes	C
	You are using the following Amazon EC2 res	ources in the US East (N. Virginia) region:		Supported Platforms	
MAGES	0. Running Instances	2 Elastic IPs		VPC	
Bundle Tasks	0 Dedicated Hosts	0 Snapshots		Default VPC	
	0 Volumes	0 Load Balancers		none	
B ELASTIC BLOCK STORE	0 Key Pairs	3 Security Groups		Resource ID length management	
Volume	0 Placement Groups			Connella	

8.

9. Click on the drop-down menu as shown below and select Public Images.



10.

- 11. Enter **Bordernet** in the search field and hit enter to locate all BorderNet images.
- 12. See the example below this will filter and show all BorderNet SBC images in this region
- 13. Select the desired image (usually, latest version) and click Launch.
- 14. The dialogic-bordernet-3.8.0.197 image is selected in this example.

#### Note:

If required, copy the image to your region as follows:

- select the image
- click on the right button
- choose Copy AMI
- in the Copy AMI window, select the new destination.

Scheduled Instances	Launch Actions	*				Δ	0 Ø
Capacity Reservations	Public images 🗸	search : bordernet Add Iter			0	_	• • •
AMIs	Name	AMI Name	<ul> <li>AMI ID</li> </ul>	Source	Owner	Visibility	Status
Bundle Tasks		dialogic-bordemet-3.7.6-213	ami-01db51abad49512a2	752666320341/d	752666320341	Public	available
ELASTIC BLOCK		dialogic-bordernet-3.8.0-144	ami-0ecf6b2l47a839c4e	752666320341/d	752666320341	Public	available
		dialogic-bordernet-3.8.0-197	ami-02812bbe770de3d03	752666320341/d	752666320341	Public	available
Volumes		dialogic-bordemet-3.8.1-043	ami-021c71e90765fd8ce	752666320341/d	752666320341	Public	available
Snapshots		dialogic-bordemet-ec2sa-3.8.0-188	ami-077b97l0577l78e5f	752666320341/d	752666320341	Public	available
Lifecycle Manager		dialogic-bordemet-ec2sa-3.8.0-198	ami-03ae294d6ba11508c	752666320341/d	752666320341	Public	available

1.

- 2. Select an instance type.
- 3. This window lists various resources groups (virtual instances of varying CPU, memory, storage and networking capacity combinations) that run the selected BorderNet SBC image.
- 4. Browse and select the Compute optimized c4.xlarge option (4 CPU cores, 7.5 GB, 750 Mbps) for this example.
- 5. Since the list is very large and in order to locate the correct image, you can use control+F.
- 6. See the screenshot below for reference and click on the Next Configure Instance Details button.

aws Services	👻 Resource Gro	ups 🗸 🌐 CloudFormation	🌔 EC2	<b>iļi</b> 53	😫 VPC	6 1	4	Dialogic •	N. Virginia 👻	Support •	
Scheduled Instances	Launch Actions	*							Δ	0 ¢	0
Capacity Reservations	Public images v	search : bordernet Add Iter							0 K < 11	o 10 of 10 $\Rightarrow$	н
AMIs	Name	AMI Name		AMI ID		Sou	rce	Owner	Visibility	Status	
Bundle Tasks		dialogic-bordemet-3.7.6-213		ami-01d	61abad49512a	7620	66320341/d	752666320341	Public	available	
B ELASTIC BLOCK		dialogic-bordemet-3.8.0-144		ami-0ect	6b2l47a839c4e	7526	66320341/d	752666320341	Public	available	
		dialogic-bordemet-3.8.0-197		ami-028	12bbe770de3d03	7526	66320341/d	752666320341	Public	available	
Volumes		dialogic-bordemet-3.8.1-043		ami-021	:71e90765M8ce	7526	66320341/d	752666320341	Public	available	
Snapshots		dialogic-bordemet-ec2sa-3.8.0-188		ami-077	b9710577178e5f	7526	66320341/d	752666320341	Public	available	
Lifecycle Manager		dialogic-bordemet-ec2sa-3.8.0-198		ami-03a	294d6ba11508c	7526	66320341/d	752666320341	Public	available	
		2.8.0.219				752	6632034114			available	-

- 8. The Configure Instance Details window opens.
- 9. Configure Instance Details (see screenshot on the following page).
- 10. Enter the following values for the parameters:
- 11. Number of Instances: 1 for Standalone, 2 for HA.
- 12. Purchasing option: Remains unchecked.
- 13. Network: Click on the drop-down list and select the VPC created on AWS resources.
- 14. Subnet: Click on the drop-down list and select the Management subnet created on AWS resources.
- 15. Auto-assign Public IP: Disable.
- 16. Placement group. No placement groups.
- 17. Capacity Reservation: Open.
- 18. IAM role: Select the IAM role created previously: BorderNetRole.
- 19. CPU options: None.
- 20. Shutdown behavior. Stop.
- 21. Stop Hibernate behavior: Unchecked.
- 22. Enable termination protection: Checked (prevents accidental termination of the instance).
- 23. Monitoring. Unchecked.
- 24. EBS-optimized instance: Unchecked.
- 25. Tenancy: User's commercial choice with Amazon.
- 26. Elastic Inference: Unchecked.
- 27. Network Interfaces:
- 28. For Standalone only:

#### o On eth0:

- Network Interface: Select the management network interface
- Subnet: disabled
- Primary IP: disabled

o Click on the Add device button.

Eth1 interface will be added to the list.

o On eth1:

- Network Interface: Select the public interface
- Subnet: disabled
- Primary IP: disabled
- For High Availability:

o Leave empty. This will be filled later.

1. Click the Next:Add Storage button.

aws services -	Resource Groups 🐱	CloudFormation	🏮 EC2 🛛 😫 S3	😫 VPC 🛛	🖡 🖈 🕼	Cassio-Dialogic 💌	N. Virginia 💌	Support •
1. Choose AMI 2. Choose Instance Type	e 3. Configure Instance	4. Add Storage 5. Add	Tags 6. Configure Ser	urity Group 7. R	eview			
Step 3: Configure Instar	nce Details							
No default VPC found. Select anoth	ter VPC, or create a new	default VPC.						×
Configure the instance to suit your requi the instance, and more.	irements. You can launci	h multiple instances from th	e same AMI, requ		lone deployem	ients	an access man	agement role to
Number of instance	s (i) 1	Laure	ch Thto Auto Scalin,	2 for High Ava	ailabilty Deploy	ments		
Purchasing option	n (i) 🗌 Request	Spot instances						
Networ	the output	910d4920a477   BorderNet V /PC found. Create a new de	-	Vinde no. VIDO	Select the	e VPC		
Subne		b4cfec75da028d   Home Su esses available	bnet   us-east 🗸 🤇	reate new subnet	Select th	e Management		
Auto-assign Public II	P (j) Disable		v		Select the I	Disabled		
Placement grou	p (j) □Add inst	ance to placement group						
Capacity Reservation	n (j) Open		~ C (	reate new Capacit	ty Reservation			
LAM rob	le (i) BorderNetS	tole	~ C (	reate new IAM rok	e Sel	ect the IAM	)	
CPU option	s (j) □ Specify 0	PU options						
Shutdown behavio	er (j) Stop		~		Ste	op		
Stop - Hibernate behavio	r () □Enable hi	bernation as an additional s	top behavior		Checkmark th	his field		
Enable termination protection	n 🕕 🗹 Protect a	gainst accidental terminatio	0					
Monitoring		loudWatch detailed monitor harges apply.	ing					
EBS-optimized instance	• 🛈 🛛 🖾 Launch a	s EBS-optimized instance						
Tenanc		n a shared hardware instan harges will apply for dedica						
Elastic Inference		lastic Inference accelerator harges apply.						
▼ Network interfaces ④								
Device Network Interface	Subnet	Primary IP	Secondary IP addres	ses	IPv6 II	Ps		
eth0 eni-0739e84edf569ed v	subnet-03e330d2 ~	Auto-assign						
We can no longer assi The auto-assign public IP ad assigned to new network inter	dress feature for this ins	tance is disabled because y						
Add Device  Advanced Details								
<ul> <li>Advanced Details</li> </ul>								v
					Cancel Pre	evious Review an	d Launch N	ext: Add Storage
🗨 Feedback 🔇 English (US)			© 2008	2019, Amazon Web	Services, Inc. or its af	filates. All rights reserved	i. Privacy Polic	y Terms of Use

1. The Add Storage window opens.

1. Choose AMI 2	Choose Instance Type	3. Configure Instance 4.	Add Storage	6. Configure Security Group	7. Review		
	e launched with the fo he root volume. You c			ch additional EBS volumes and instance aunching an instance, but not instance s			
Volume Type (i)	Device ()	Snapshot ()	Size (GiB)	Volume Type ()	IOPS ()	Throughput (MB/s) ()	Delete or Terminat
Root	/dev/sda1	snap-031c371c70f8b640b	25	General Purpose SSD (gp2)	- 100 / 3000	N/A	Ø
EBS Add New Volume	✓ /dev/sdb ✓	snap-Offda0bcbf6a8b	100	General Purpose SSD (gp2)	300.700	N/A	Ø
				3			
C				Cancel Previous	Review and I	-	t: Add Tag

3. Check the **Delete on Termination** check-box to remove any leftovers.

- 4. Click on the blue Next: Add Tags button.
- 5. The Add Tags window opens.

aws se	ervices ~ Re	isource Groups 👻 🔇	CloudFormatio	n 🌔 EC2	* A	Dialog	ic • N. V	Irginia • Sup	port •
1. Choose AMI 2. Cho	ose Instance Type	3. Configure Instance	Add Storage 5	Add Tage 6.	Configure Securit	y Group	7. Review		
	nched with the fol oot volume. You co	lowing storage device settir an also attach additional EB							
Volume Type (j)	Device ()	Snapshot (i)	Size (GiB)	Volume Type	1		IOPS ()	Throughput (MB/s) ()	Delete on Terminati
Root	/dev/sda1	snap-031c371c70f8b6408	25	General Purpo	se SSD (gp2)	v	100 / 3000	N/A	Ø
EBS v	/dev/sdb ~	snap-Offda0bcbf6a8b	100	General Purpo	se SSD (gp2)	0	300.425.2	N/A	Ø
<					Cancel PI	evious	Review and	Launch Net	rt: Add Tags
Feedback Q E	inglish (US)		© 2008 - 2019, A					Privacy Policy	Terms of Use

7. No actions are required on this screen.

8. Click on the blue Next: Configure Security Group button.

1. The Configure Security Group window opens.

6.

Step 6: Configure Sec A security group is a set of frewall n and allow internet traffic to reach yo about Amazon EC2 security groups.	les that control the traffic for you					
Assign a secu	rity group: OCreate a new secu	thy group				
	Select on existing	security group				
Security Group ID		Name	Description			Actions
sg-0ebe66a201d5a0999	-	default	default VPC securit	y group		Copy to new
Inbound rules for sg-Debeti6e20fd	5a9999 (Selected security group	s: sg-0exee (118,0009)	2			
Туре ()	Protocol (j)	Port Range	2	Source (j)	Description	0
All traffic	All	All		sg-Debe66a20fd5a9999 (	default)	
SSH	TCP	22		0.0.0.0/0		
SSH	TCP.	22		=/0		
Custom UOP Rule	UDP	7000 - 65000		0.0.0.0/0		
Oustom UOP Rule	UDP	7000 - 65000		∴/0	(3)	
Custom TCP Rule	TCP	5060 - 5070		0.0.0.0/0		
Custom TCP Rule	TCP	5060 - 5070		=/0		
HTTPS	TCP	443		0.0.0.0/0		
HTTPS	TCP	443		=1 <sup>0</sup>		
inters.	107					

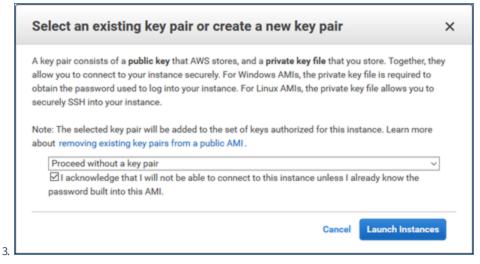
3. Select the existing **Security Group**.

4. Click on the blue **Review and Launch** button.

5. The Review Instance Launch window opens.

1. Choose AME 2. Cho	cor Instance Type	1. Configure Ins			nfgure Security Group	7. Baylew	Dialogic •	N. Virginia *	Support *
Step 7: Review Nease review your insta			ck to edit changes for e	sch section. Click Launch	h to assign a key pair t	o your instance and compl	ete the launch pro	oceas.	
	instance that's el		igible for the free u susage tier, check your		ype, configuration opt	ons, or storage devices. Le	am more about 1	free usage tier ei	lgibility and
								Borh allow	ine this again
<ul> <li>AMI Details</li> </ul>									
A dialogic Root Device	-bordernet-3,8.1 e Type: eta Umuat		812bbe770de3d03					Edit	t instance ty
A dialogic			812bbe770de3d03 Memory (GiB)	Instance Storage (	(GQ) E1	15-Optimized Available	Ne	Edit	t instance ty
dialogic Rest Deve Instance Type	e Type eta Vinuat	Clation type: Iturs		Instance Storage ( EBS only	(38) EI Yu		No	itwork Performa	
dialogic sout Device     instance Type     instance Type	e Type eta Umuat ECUs 16	vCPUs	Memory (08)	10000				itwork Performa	nce
dialogic Ran Deve Instance Type Instance Type c4.vlarge	ECUs 16	vCPUs	Memory (08)	10000				itwork Performa	nce
dialogic set Devic Instance Type instance Type c4.xlarge     Security Groups	e Type rite Would ECUs 16 5	vCPUs	Memory (Gill) 7.5	10000			-	itwork Performa	nce
dialogic set Devic Instance Type c4 xlarge     Security Groups Security Group I	e Type rite Would ECUs 16 5	vCPUs	Memory (Gill) 7.5 Name	10000		Description	-	etwork Performa gh Edit s	

- 1. Assure all configurations were properly completed and click on the blue Launch button.
- 2. The Select an existing key pair window opens.



- 4. Select Proceed without a key pair.
- 5. Check the acknowledgement clause.
- 6. Click on the blue Launch Instances button.
- 7. The Launch Status window opens.

Select an existing key pair or create a new key pair	×
A key pair consists of a <b>public key</b> that AWS stores, and a <b>private key file</b> that you store. allow you to connect to your instance securely. For Windows AMIs, the private key file is obtain the password used to log into your instance. For Linux AMIs, the private key file al securely SSH into your instance.	required to
Note: The selected key pair will be added to the set of keys authorized for this instance. about removing existing key pairs from a public AMI.	Learn more
Proceed without a key pair	~
☐ I acknowledge that I will not be able to connect to this instance unless I already k password built into this AMI.	now the
Cancel	ch Instances

8.

- 9. The new instance is created.
- 10. Click on the blue View Instances button to follow the deployment.

us-east-Tc	pending	8	Initializing.	None	>
us-east-1c	<ul> <li>pending</li> </ul>	÷	Indializing	None	

# 6. Attaching Network Interfaces

This procedure is pertinent to HA deployments only.

For Standalone deployments refer to First Access.

In this step the Public and Private traffic network interfaces will be attached to the BorderNet SBC.

### 6.1 Identifying the Instances

As stated previously, identifying resources is a good practice to follow at this point in the configuration.

 $\rightarrow$  To identify the instances:

- 1. Click on Services > EC2 and select Instances in the left-hand sidebar menu.
- 2. Identify the newly created instances and note that there is no difference between each instance at this point.
- 3. Make note of the Instance ID for primary and secondary.
- 4. These IDs will be used in the following steps.



- 1. Click on Network Interfaces (path: Services > EC2 > Network Interfaces).
- 2. Notice that there are two new interfaces on the list.
- 3. They will be attached to each instance of the BorderNet SBC:

Launch Templates	Crea	te Network Inter	face	Attach Detach I	Actions 1					₫	Ð	٥
Spot Requests	Q,	Filter by tags and	attrib	utes or search by keyword					0 K <	1 to (	5 of 6	> >
Reserved Instances Dedicated Hosts		Name	•	Network interface ID ~	Subnet ID +	VPC ID ~	Description ~	Instance 10 -	Status	- IP	r4 Publi	c IP
Scheduled Instances		BN1-Private IF		eni-001e06891becf5c20	subnet-007da7	vpc-061796876	BN1-Private		🔵 available			
Capacity Reservations		BN1-Public IF		eni-00e4d0487b9cd92e5	subnet-0fb4ef6	vpc-061796876	BN1-Public		🔵 available	-		
IMAGES		BN2-Private IF		eni-0ea8aecb/810cd866	subnet-007da7	vpc-061796876	BN2-Private		🔵 available	-		
AMIs		BN2-Public IF		eni-0a98e52904a70417b	subnet-0fb4ef5	vpc-061796876	BN2-Public		🔵 available			
Bundle Tasks				eni-0080c67fca1b8d46d	subnet-0b18af	vpc-061796876	Primary net	i-022a45c4f505edb6a	🥥 in-use			
ELASTIC BLOCK STORE				eni-0a902cd9/5ca799#	subnet-0b18af	vpc-061796876	Primary net	i-0b153b2343c2d281e	in-use			

### 6.2 Identifying the New Interfaces

 $\rightarrow$  To identify the new interfaces:

- 1. Identify the two new Network Interfaces the Utility and Management interfaces.
- 2. Use the instance ID created previously to determine which Network Interface is associated to which instance.
- 3. See the interfaces identified below.

SECURITY Security Groups	î a	Creat	e Network Inter	face	Attach Dotach I	Delete Actions	*				≛	• •	•
Elastic IPs		Q, F	liter by tags and	attrib	ites or search by keyword					0 K <	1 to 6	of 6 >	$\geq$
Placement Groups			Name	w	Network interface ID ~	Subnet ID ~	VPC ID v	Description ~	Instance ID -	Status	- IPv	4 Public	IP
Key Pairs			BN1-Private IF		eni-001e06891becf5c20	subnet-007da7	vpc-061796876	BN1-Private		available			
Network Interfaces			BN1-Public IF		eni-00e4d0487b9cd92e5	subnet-0fb4ef6	vpc-061796876	BN1-Public		available	-		
LOAD BALANCING			BN2-Public IF		eni-0a98e52904a70417b	subnet-0fb4ef6	vpc-061796876	BN2-Public		available	-		
Load Balancers			BN2-Private IF		eni-DeaBaecbf810cd866	subnet-007da7	vpc-061796876	BN2-Private		available			
Target Groups		0	BN1-Utility IF		eni-0080c67fca1b8646d	subnet-0b18af	vpc-061796876	Primary net	i-022a45c4f505edb6a	in-use			
AUTO SCALING			BN2-Utility IF		eni-0a902cd9/5ca799#	subnet-0b18af	vpc-061796876	Primary net	i-0b153b2343c2d281e	in-use			

### 6.3 Attaching the Network Interfaces

Public and Private interfaces created previously need to be attached to the appropriate instances.

- $\rightarrow$  To attach the Network Interfaces:
  - 1. Select one of the interfaces.
  - 2. Open the right-click menu of options.
  - 3. Select Attach.
  - 4. In the window that opens, select the instance to attach the Network Interface to.

Atta	hch Networ	rk Interface	×
Netv	vork Interface:	eni-08e60e1d0e35052e5	
	Instance ID:	Select Instance	1
		Select Instance	_
		i-07c98e9c85e534e15 (running)	6
		Cancel Attach	

- 6. Click on the blue Attach button.
- 7. Repeat the step for the remaining Network Interfaces.
- 8. At this point, the Network Interfaces are attached to the respective instance.

B SECURITY Security Groups	1	Crea	te Network Inter	face	Attach Detach D	Actions Y	*				∆ ⊙ ♦
Elastic IPs		Q,	Filter by tags and	attrib	utes or search by keyword					0 K <	1 to 6 of 6 > >
Placement Groups			Namo	•	Network interface ID ~	Subnet ID ~	VPC ID ~	Description ~	Instance ID ~	Status	<ul> <li>IPv4 Public IP</li> </ul>
Key Pairs			BN1-Private IF		eni-001e06891becf5c20	subnet-007da7	vpc-061796876	BN1-Private	i-022a45c4f505edb6a	in-use	
Network Interfaces			BN1-Public IF		eni-00e4d0487b9cd92e5	subnet-0fb4ef6	vpc-061796876	BN1-Public	i-022a45c4f505edb6a	in-use	
LOAD BALANCING			BN1-Utility IF		eni-0080c67fca1b8d46d	subnet-0b18af	vpc-061796876	Primary net	i-022a45c4f505edb6a	in-use	
Load Balancers			BN2-Private IF		eni-Dea8aecb/810cd866	subnet-007da7	vpc-061796876	BN2-Private	i-0b153b2343c2d281e	in-use	
Target Groups			BN2-Public IF		eni-0a98e52904a70417b	subnet-0fb4ef6	vpc-061796876	BN2-Public	i-0b153b2343c2d281e	in-use	
AUTO SCALING			BN2-Utility IF		eni-0a902cd965ca799#	subnet-0b18af	vpc-061796876	Primary net	i-0b153b2343c2d281e	in-use	

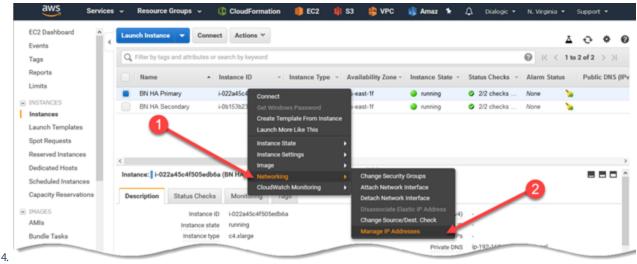
# 7. Adding IP Addresses to Primary Instance

This procedure is pertinent to HA deployments only.

As machines must be able to switch traffic on failures, additional private IP addresses on the Primary instance are required.

→ To create additional IP addresses:

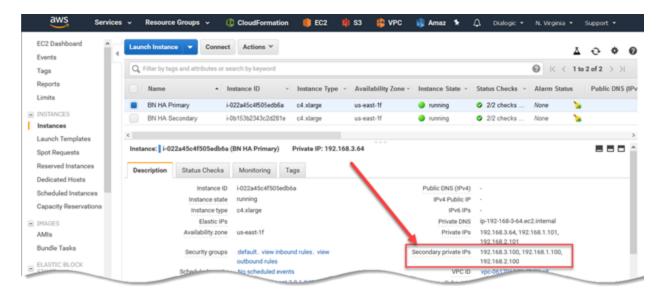
- 1. Go to the instances at Services > EC2 > Instances.
- 2. Right-click on the primary instance and select Networking > Manage IP Addresses.
- 3. See below.



5. In the Manage IP Addresses window that opens, add a new IP address on each eth (0, 1, 2).

6.

- 1. IP addresses can be auto-assigned by AWS or manually entered as follows:
- 2. Eth0 192.168.3.100
- 3. Eth1 192.168.1.100
- 4. Eth2 192.168.2.100
- 5. Notice the Secondary IPs added to the Primary instance:



# 8. Attaching EIPs to Each Instance

This procedure is pertinent to HA deployments only.

 $\rightarrow$  To associate the EIPs created previously to each instance:

- 1. In the left-hand sidebar under the Network & Security group, click Elastic IPs.
- 2. Notice that the EIPs are not associated to any instance nor do they have Private IPs.

Launch Templates	Alk	ocate new address	Action	s ~						4	e •	•
Reserved Instances	Q	Filter by tags and at	tributes or	search by keyword					- I< - <	1 to 4 d	of 4 >	>
Dedicated Hosts		Name	×	Elastic IP	- Allocation ID -	Instance	<ul> <li>Priv</li> </ul>	ate IP address 👻	Scope	-	Associati	ion I
Scheduled Instances Capacity Reservations		BN-U6i2		3.210.188.180	eipalloc-0a079d1129	•			vpc			
		BN-Util1		18.211.52.84	eipalloc-0dd2e2676	·			vpc		-	
IMAGES AMIa		BN-Public		34.195.37.190	eipalloc-03287452a	1			vpc			
Bundle Tasks		BN-MGMT		54.156.229.8	eipalloc-04662723b				vpc			

- 1. Select one of the EIPs in the row.
- 2. Open the right-click menu and select Associate.
- 3. The Associate Address window opens.
- 4. Use the table below to create the association.

Network Interface	Private IP	Comments
BN1-Utility	192.168.3.100	Management floating IP
BN1-Utility	192.168.3.64	Utility IP to SSH to Primary instance
BN Public	192.168.2.100	Traffic floating IP
BN2-Utility	192.168.3.24	Utility IP to SSH to Secondary instance

- 1. Click on the blue Associate button after each association.
- 2. See the sample association screen below.

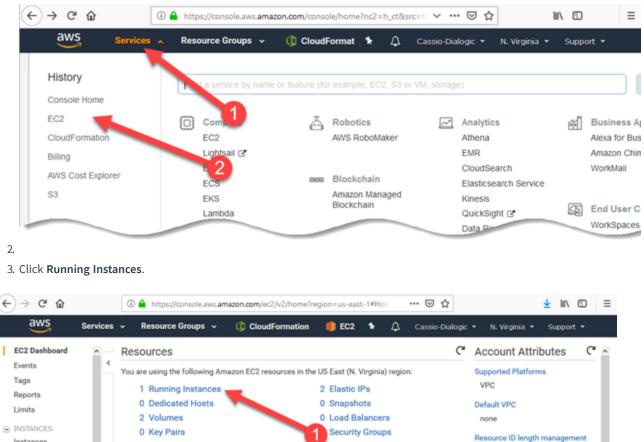
aws	Services	*	Resource Groups	*	CloudFormation	🌔 EC2	🏟 53	😫 VPC	🚯 Amaz	٠	۵.	Dialogic	• N	. Virginia 🔹	Sug	port -	
Launch Templates Spot Requests	î e	Alloca	ete new address	Action	us *										<	•	0
Reserved Instances		Q,	litter by tags and att	ributes o	r search by keyword									IK <	1 to 4 o	4 >	Н
Dedicated Hosts			Name		Elastic IP	Allocation I	D -	Instance		Private	IP ad	dress -	Scope		- 1	ssociat	ion ID
Scheduled Instances			BN-UN2		3 210 188 180	eipalloc-0a07	541129						195				
Capacity Reservation	15		BN-UNI1		18.211.52.84	eipañoc-0662							100				
B IMAGES			<b>BN-Public</b>		34.195.37.190	eipalloc-0321	7452a						196				
AMIs Bundle Tasks			BN-MGMT		54.156.229.8	eipalloc-0466	27236						vpc				

Console experiments

# 9. First Access to the BorderNet SBC

You can now access the BorderNet SBC. The IP address is therefore required. This address is provided by AWS and can be determined by following the steps below.

- $\rightarrow$  To access the BorderNet SBC:
- 1. Click Services > EC2.



### 9.1 Locating the Management IP Address

### 9.1.1 Standalone Instances

On Standalone deployments the Utility and Management IP addresses are the same.

0 Placement Groups

See the screenshot below for further reference.

Instances

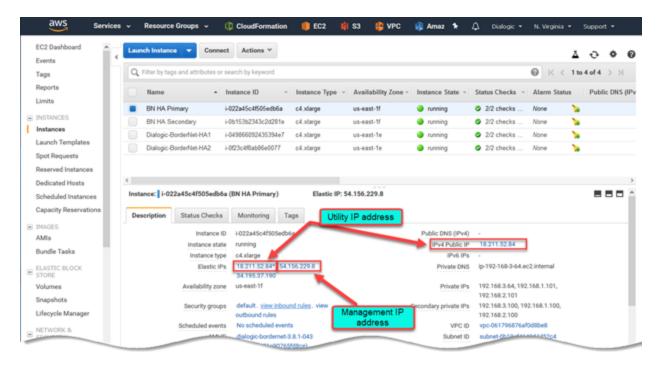
#### 9.1.2 HA Instances

On High Availability deployments there are three EIPs for managing the BorderNet SBC:

- two EIPs are used for the Utilities (one per instance)
- one EIP is used for Management (GUI)

 $\rightarrow$  To locate the public IP addresses:

- 1. Go to the instances at Services > EC2 > Instances.
- 2. Select one of the instances.
- 3. Notice at the bottom half of the screen Elastic IPs and the IPv4 Public IP shown below.
- 4. The Utility IP address will be presented in both the **Elastic IPs** and the **IPv4 Public IP** fields.
- 5. Only the active instance will have the Management IP address and the standby instance/platform will only have the Utility IP address.
- 6. Note and document the Management IP address at this point.



## 9.2 Accessing the GUI

- 1. Open your preferred browser.
- 2. For Standalone deployments, enter the Management/Utility IP address (they are the same for Standalone) using the following format: https://<BorderNet SBC Management IP address>.
- 3. For HA deployments, enter the Utility IP address using the following format: https://<BorderNet SBC Management IP address>.
- 4. The browser may alert to a potential security risk.
- 5. This is due to the SSL with an unknown certificate.
- 6. Each browser may show different types of alert screens.

1. For example, when using Firefox, click on Advanced and on Accept the Risk and Continue.

aws s	lervices	<ul> <li>Resource</li> </ul>	Groups ~	CloudFormation	EC2	🏟 S3 🏥 VPC	🎲 Amaz 🤸	Chalogie •	N. Veginia	•	Support	•
EC2 Dashboard	ĵ,	Launch Instance	• • Con	nect Actions *						Δ	0	• •
Tags		Q, Filter by tag	s and attributes	or search by keyword					0 K K	1 10	4 of 4	> >
Reports	1.1	Name		Instance ID -	Instance Type	- Availability Zone -	Instance State +	Status Checks +	Alarm State		Palle	DNS (P
Limits		BN HA.Pr	(man)	1-022a45c4505edb6a	c4 xlarge	un-east-T	nunning	Ø 22 checks	None	~		
R INSTANCES		EN HA Se		+02284504505460088	c4.xlarge	us-east-1	<ul> <li>running</li> </ul>	<ul> <li>22 checks</li> <li>22 checks</li> </ul>	None	5		
Instances				104906609243539447				<ul> <li>22 checks</li> <li>22 checks</li> </ul>		_		
Launch Templates			korderfilet-HA.1		o4.xlarge	us-east-1e	running			2		
Spot Requests		Daloge-8	orderNet HA2	i-023c4/8a686e0077	c4.xlarge	us-east-1e	<ul> <li>running</li> </ul>	Ø 2/2 checks	None	2		
Reserved Instances												
		(										
Dedicated Hosts			2+45-4F505ed	Infa (IN HA Primary)	Easte R	54 156 229.8						
Scheduled Instances			2#45c4/505ed	Bda (BN HA Primary)	Eastic #	54.156.229.8					-	
			2a45c4F505ed Status Chec		_						-	
Scheduled Instances Capacity Reservation		Instance: 1-02	Status Chec	ks Monitoring Ta	101 UN	t 54.156.229.8						
Scheduled Instances Capacity Reservation		Instance: 1-02	Status Chec	ks Monitoring To	101 UN		Public DNS (IPv4)					
Scheduled Instances Capacity Reservation		Instance: 1-02	Status Chec Instance Instance e	ka Monitoring Ta e 10 i-022a45c4f505edbr tate running	101 UN		PHENDICP	18 211 52 84			-	
Scheduled Instances Capacity Reservation © DALCES AMIs Bundle Tasks		Instance: 1-02	Status Chec Instance s Instance s	ks Monitoring Ta e ID i-022a45c4f305edb tate running tpe of.starge	-		PHPARP PAPARP	18 211 52 84	c2 internal		-	
Scheduled Instances Capacity Reservation © MINGES AMIs Bundle Tasks		Instance: 1-02	Status Chec Instance Instance e	ks Monitoring Ta e ID i-022a45c4f305edb tate running tpe of.starge	-		PHENDICP	18 211 52 84	c2 internal		-	
Scheduled Instances Capacity Reservation © MINGES AMIs Bundle Tasks		Instance: 1-02	Status Chec Instance s Instance s	ka Monitoring Tz et D i 022a45c4505edb numing npc c4.starge ars 1821132360 54 3419537190	-		PHPARP PAPARP	18.211.52.84			-	
Scheduled Instances Capacity Reservation © INACES AMIs Bundle Tasks © ELASTIC PLOCK STOTE		Instance: 1-02	Status Chec Instance Instance I Instance I Elastic Availability 2	ks Monitoring Ta e 0 i-022a45c4/505edb tate running type c4.alarge this 1829115258/ 64 34195327190 cree us-east til			Pv4 Public P Pv4 Public P Pv4 Ps Private Dv5 Private Ps	18,211,52,84 - ip-192,168,3,64,ee 192,168,3,64,192, 192,168,2,101	168.1.101,			
Scheduled Instances Capacity Reservation (E) MAGES AMIs Bundle Tasks (E) ELASTIC BLOCK STORE Volumes		Instance: 1-02	Status Chec Instance s Instance s Elastic	ka         Monitoring         Ta           # D         i-022a45c4505edb         f           # D         i-022a45c4505edb         f           # S         i-022a45c4505edb         f           # B         127152147         f           # H2 21552147         f         f           # H2 21552147         f         f           # H2 21552147         f         g           # H2 21552147         f         g           # H2 21552147         f         g           # H2 21552147         g         g		ity IP address	Pv4 Public IP IPv6 IPs Private DNS	18.211.52.84 - ip-192.168.3-64.ex 192.168.3.64,192 192.168.2.101 192.168.3.100,198	168.1.101,		-	
Scheduled Instances Capacity Reservation (Compactly Reservation (Compact Reservation) (Compact Reservation) (C		Instance: 1-02	Status Chec Instance Instance I Instance I Elastic Availability 2	Ass         Monitoring         Ta           I=022+45c4505e8b         noning         p           I=022+45c4505e8b         noning         p           I=02115224F=04         p         1424527.190           I=04345527.190         un-exeb 15         none           I=04464         interxttpst         1425275224F=04           I=04464         interxttpst         141           I=045         interxttpst         141	194.7271.8 194.7271.8 194.7271.8		Pv4 Public P Pv4 Public P Pv4 Ps Private Dv5 Private Ps	18,211,52,84 - ip-192-168-3-64.ec 192-168-3.64,192 192-168-2.101 192-168-3.100,192 192-168-2.100	2.168.1.101,		-	

## 9.3 Deploying your Instance

Deploying the BorderNet SBC in AWS requires much less information compared to bare metal or other types of virtualized deployments, since most of the IP address are already linked to AWS resources (created in previous steps).

### 9.3.1 Standalone Deployment

When deploying a Standalone BorderNet SBC, only a hostname is required. All other fields are already filled and cannot be changed.

See the screenshot below:

Platform 5 License Re	erial Number : V4254219592 isuest ID : IE3803551203F0368F30A8	NEDFORAFITE BESERVICEDER IFCEIDE	STCEADECTE
	Provide tollowing information to	complete the designment	-
	Counter the state of the state of	contrast out extended on a	
	Deployment Type :	Standalone •	
	Designated Role :	Primary	-
	License File:	Choose File No t. sen	
1	Enter Primary Pla	rhum Detaile	13
	Platform Hostname :		
	Unity IP :	192 168 3 200	-
	Netmask :	24 *	4
	Gateway IP I	192,168.3.1	
	System Management IP :	192.168.3.200	
	Inter-Task/HA-Link IP :	192.168.3.200	
	Inter Task HA Link Netmask :	24 .	

- Deployment Type: Standalone
- Designated Role: Primary (read-only in SA mode)
- License File: Optional.
- License can be added on the screen or provided later. Two different licensing modes exist.
- Platform Hostname: Enter a name to identify the instance.

#### Note:

Spaces and special characters are not allowed.

### 9.3.2 High Availability Deployment

You should first open two pages in the web browser:

- One page for the Primary Utility IP address
- One page for the Secondary Utility IP address

 $\rightarrow$  To deploy the Primary Instance in HA:

- 1. Select the Primary Platform on the browser.
- 2. Deployment Type: HA
- 3. Designated Role: Primary.
- 4. Additional fields open up in the window.
- 5. License File: can be added later.
- 6. On the **Primary Platform** section, only the hostname can be entered.
- 7. Enter a hostname.
- 8. Primary Utility Platform IP address: document this IP address, since it will be used for the Secondary instance configuration.
- 9. Enter the following on the Secondary Platform section:
- 10. Hostname: Enter a hostname for the second platform.
- 11. Utility IP: Will be entered later.
- 12. Inter-Task/HA-Link Netmask: Will be entered later.

- 13. Document the Primary Utility IP address for use later.
- 14. Proceed to the secondary instance deployment.
- $\rightarrow$  To deploy the Secondary Instance in HA:

The process to deploy the Secondary platform is similar to the Primary but requires less information.

Select the web browser page that contains the Secondary instance.

- 1. In the BorderNet System Deployment screen select Secondary Platform.
- 2. Deployment Type: HA
- 3. Designated Role: Secondary
- 4. Notice only the Primary platform Inter-Task can be added.
- 5. Enter the Utility private IP address of the Primary platform (documented in the previous step).
- 6. Document the Secondary Inter-Task IP address.
- 7. This IP address will be used to finish the Primary platform deployment (see below).
- 8. DO NOT click on Start Deployment just yet!

#### 1. The Primary Instance configuration must be completed first.

	Welcome to BorderNet SBC (v3.8	.1-043 ) System	Deployment	
	Platform Serial Number : V4284219592 License Request ID : 1E39D3551203F03	68F3DA998DF3F4FF	BF5F9F9F8FEF1FCF3BC91CEA08D	78FA9
	Provide following information to	complete the deplo	yment	
	Deployment Type :	HA.	•	
Note: Before starting th Following info	Designated Role : his platform deployment, make sure that prin prmation is used to connect to primary platf	Secondary mary platform is u orm. Make sure t	p and connected to this platf	orm on HA lini mask.
Note: Before starting th Following infe	is platform deployment, make sure that prin	nary platform is t orm. Make sure t	p and connected to this platf	orm on HA lini mask.
Note: Before starting th Following info	is platform deployment, make sure that pri ormation is used to connect to primary platf	nary platform is u	p and connected to this platf	orm on HA lini mask.
Note: Before starting th Following info	his platform deployment, make sure that prin formation is used to connect to primary platf	nary platform is t orm. Make sure t	p and connected to this platf	orm on HA lini mask.

 $\rightarrow$  To Continue Deployment of the Primary Instance

- 1. Select the **Primary Instance** page in the web browser and complete the missing information (**Utility** and **Inter-Task IP** addresses of the Secondary Instance).
- 2. They are the same public IP address and can be seen in the screenshot above.
- 3. Fill in the Secondary Utility IP address and Inter-Task IP address.
- 4. Read and confirm that the information entered is correct.
- 5. Click on the blue **Start Deployment** button.
- 6. This step takes some time to complete, so wait about three minutes for the Primary Instance deployment to complete.

- $\rightarrow$  To Continue Deployment of the Secondary Instance
  - 1. The Secondary Platform/Instance screen should be complete.
  - 2. Confirm that the entered Primary Inter-Task Utility IP address is correct.
  - 3. Click on the blue **Start Deployment** button.

# 10. Access the Management GUI

## **10.1 Standalone Deployments**

The same Public IP address can be used for both Management and Utility.

This IP address will also be used to access the GUI.

### **10.2 HA Deployments**

The Public IP address used to deploy the BorderNet SBC in HA mode is the IP address used to populate the Utility IP address fields.

Once the deployment process is complete, the BorderNet SBC can be accessed in HA mode by locating the Public IP address assigned to the **Management** service.

The Public Management IP address was previously determined in step 9.3.2 above.

Use ONLY this IP address to access the GUI.

END OF DOCUMENT