

Cox Business

CloudPort for Amazon Web Services

Quick Reference Guide

Cox CloudPort enables you to network privately and directly to Amazon Web Services' (AWS) cloud computing platform, thereby giving you the experience of being On-Net to your organization.

Amazon Web Services can be deployed quickly and can provide scalable, integrated cloud services for critical areas such as: analytics, computing, networking, database, mobile, storage, and web services. The traditional method of connecting to these vital services has been through an Internet connection or an Internet-based VPN; however, each option poses a risk.

An alternative solution is Cox CloudPort for AWS. It offers you the same scalability and connectivity—with enterprise grade performance—that results in secure, low latency and consistent network performance, and a virtually transparent migration to the cloud. This guide instructs you on how to order CloudPort for Amazon Web Services.

There are several steps that you need to complete to order and provision a Cox CloudPort circuit to Amazon Web Services (AWS).

Before starting, familiarize yourself with the Amazon FAQ located at: <https://aws.amazon.com/directconnect/faqs/>.

You will need to perform the steps in **blue**. Cox will perform the steps in **green**.

- Step 1: Sign up for Amazon Web Services (AWS). (Figure 1)
- Step 2: Order your AWS services from the AWS Marketplace.
- Step 3: Submit AWS Direct Connect Connection Request.
- Step 4: If the hosted web connection is <1Gb, provide your AWS account ID to Cox, along with the required bandwidth and facility location. (Cox will make the request in our portal). For direct interconnect >1Gb, submit an interconnect request in the AWS portal and enter "Cox Business" as the carrier name that will fill the connection when you request the Letter of Authority.

Step 5: Cox will provision a Carrier Ethernet circuit to your AWS

Step 6: Create a Virtual Private Gateway and then create a Virtual Interface.

Step 7: Download Router Configuration.

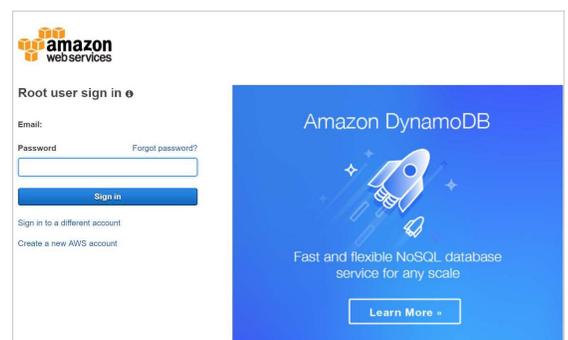
Step 8: Verify Your Virtual Interface.

Note: Details for steps 1-3, 6, and 8 are outlined below.

Step 1: Sign up for an Amazon Web Services account.

1. Before you can use AWS, open www://aws.amazon.com/ and choose **Create an AWS Account**.
2. Follow the online instructions. (**Note:** During the sign up process, you will receive a phone call and must enter a PIN using the telephone key pad. A credit card may also be required.)

Figure 1. **Create AWS Account**



Step 2: Order your AWS services from the AWS Marketplace

If required, work directly with your consultant or Amazon account team to determine which services best meet your requirements.

Step 3: Submit AWS Direct Connect Connection Request

1. You can submit a connection request using the AWS Direct Connect console (Figure 2). Provide the following information:
 - Your contact information.
 - The AWS Direct Connect location (region and facility) to which to connect. **Note:** This is your CloudPort Location.

The AWS regions that are supported by CloudPort are:

- US East (Virginia)
- US West (Oregon)
- US West (Northern California) / AWS GovCloud

2. Name your connection. (**Note:** The Location drop-down menu is composed of the facilities within that region that are supported by CloudPort. See Figure 3.) These facilities are:

- Ashburn (VA1-VA2)
- Ashburn (DC6)
- Las Vegas (SuperNAP 8)
- Dallas (DA2)
- Silicon Valley (SV5)

Figure 2. Set Up Direct Connect screen

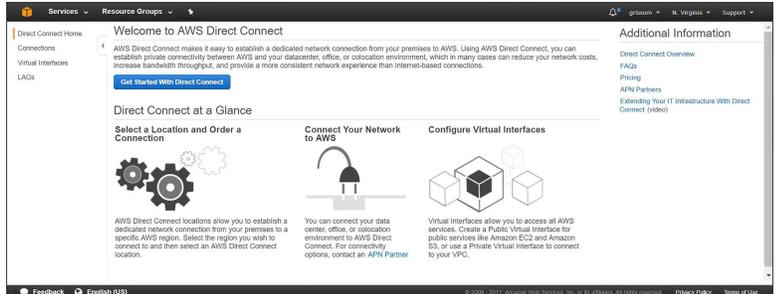
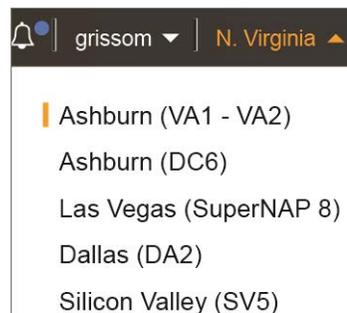


Figure 3. Location facilities



Step 6: Create a Public and Private Virtual Interface

For instructions for creating a virtual interface, please see the AWS link below for the most up to date instructions

https://docs.aws.amazon.com/en_us/directconnect/latest/UserGuide/Welcome.html



Note: Cox does not warranty or support the instructions shown below. They are provided as a general guide only.

Provision your virtual interfaces. Each virtual interface must be marked with a customer-provided tag that complies with the Ethernet 802.1Q standard. This tag is required for any traffic traversing the AWS Direct Connect connection. You can provision virtual interface (VLAN) connections to the AWS cloud, Amazon VPC, or both. To begin using your virtual interface, advertise at least one prefix using BGP, up to a maximum of 100 prefixes.

We provide appropriate Amazon prefixes to you so you can reach either your VPCs or other AWS products. You can access all Amazon Web Services prefixes in your region through this connection; for example, Amazon Elastic Compute Cloud (Amazon EC2), Amazon Simple Storage Service (Amazon S3), and Amazon.com. You do not have access to non-AWS prefixes or prefixes outside of your region.

Use the following steps to **Set Up a Public Virtual Interface**.

1. After you have placed an order for an AWS Direct Connect connection, create a virtual interface to connect to AWS Direct Connect. Public virtual interfaces are used by services such as Amazon S3 and Amazon Glacier that aren't in a VPC. Before you begin, you need the following information:
 - A new, unused VLAN tag that you select.
 - A public or private Border Gateway Protocol (BGP) Autonomous System Number (ASN). If you are using a public ASN, you must own it. If you are using a private ASN, it must be in the 64512 to 65535 range. Autonomous System (AS) prepending will not work if you use a private ASN.
 - A unique CIDR for your interface IP addresses that does not overlap another CIDR announced via AWS Direct Connect.
 - A unique CIDR range to announce via AWS Direct Connect that does not overlap another CIDR announced via AWS Direct Connect.
2. Verify that the VLAN is not already in use on this AWS Direct Connect connection for another virtual interface.

3. Open the AWS Direct Connect console at https://docs.aws.amazon.com/en_us/directconnect/latest/UserGuide/Welcome.html.
4. In the **Connections** pane, select the connection to use, and then choose **Create Virtual Interface**.
5. In the **Create a Virtual Interface** pane, choose **Public** and follow the instructions in step 6.
6. In the **Define Your New Public Virtual Interface** dialog box, do the following:
 - a. For **Connection**, select an existing physical connection on which to create the virtual interface.
 - b. For **Interface Name**, enter a description for the virtual interface.
 - c. For **Interface Owner**, select the **My AWS Account** option if the virtual interface is for your AWS account ID.
 - d. For **VLAN #**, enter the ID number for your virtual local area network (VLAN); for example, a number between 1 and 4094.
 - e. For **Your router peer IP**, enter the IPv4 CIDR destination address where traffic should be sent.
 - f. For **Amazon router peer IP**, enter the IPv4 CIDR address you will use to send traffic to Amazon Web Services.
 - g. For **BGP ASN**, enter the Border Gateway Protocol (BGP) Autonomous System Number (ASN) of your gateway; for example, a number between 64512 to 65535.
 - h. Select the **Auto-generate BGP key** check box to have AWS generate a BGP key.

To provide your own BGP key, clear the Auto-generate BGP key check box, and then for BGP Authorization Key, enter your BGP MD5 key.

 - i. For Prefixes you want to advertise, enter the IPv4 CIDR destination addresses (separated by commas) where traffic should be routed to you over the virtual interface.
7. Choose **Continue**, and then download your router configuration. For more information, see **Step 7: Download Router Configuration** on page 4.

Figure 4. Create Public Virtual Interface

Create a Virtual Interface

You may choose to create a private or public virtual interface. Select the appropriate option below.

- Private** - A private virtual interface should be used to access an Amazon VPC using private IP addresses.
- Public** - A public virtual interface can access all AWS public services (including EC2, S3, and DynamoDB) using public IP addresses.

Define Your New Public Virtual Interface

Enter the name of your virtual interface. If you're creating a virtual interface for another account, you'll need to provide the other AWS account ID. For more information about virtual interface ownership, see "Hosted Virtual Interfaces" in the [AWS Direct Connect Getting Started Guide](#).

Connection: ⓘ

Interface Name: ⓘ

Interface Owner: My AWS Account Another AWS Account ⓘ

Enter the VLAN ID, if not already supplied by your AWS Direct Connect partner, and the IP Addresses for your router interface and the AWS Direct Connect interface.

VLAN: ⓘ

Your router peer IP: ⓘ

Amazon router peer IP: ⓘ

Before you can use your virtual interface, we must establish a BGP session. You must provide an ASN for your router, and any prefixes you would like to announce to AWS. You will also need an MD5 key to authenticate the BGP session. We can generate one for you, or you can supply your own.

BGP ASN: ⓘ

Auto-generate BGP key: ⓘ

Prefixes you want to advertise: ⓘ

It may take up to 72 hours to verify that your IP prefixes are valid for use with Direct Connect.

Use the following steps to **Set Up a Private Virtual Interface**.

After you have placed an order for an AWS Direct Connect connection, you can create a virtual interface to use to connect to AWS Direct Connect. When you create a private virtual interface to a VPC, you'll need a private virtual interface for each VPC with which you want to connect. For example, you'll need three private virtual interfaces to connect to three VPCs). Before you begin, you need information shown below:

- A new, unused VLAN tag that you select.
- A public or private BGP ASN. If you are using a public ASN, you must own it. If you are using a private ASN, it must be in the 64512 to 65535 range.
- The network prefixes to advertise. Any advertised prefix must include only your ASN in the BGP AS-PATH.
- The virtual private gateway to which to connect. For more information about creating a virtual private gateway, see [Adding a Hardware Virtual Private Gateway to Your VPC in the Amazon VPC User Guide](#).

1. Verify that the VLAN is not already in use on this connection.
2. Open the **AWS Direct Connect console** at https://docs.aws.amazon.com/en_us/directconnect/latest/UserGuide/Welcome.html.
3. In the **Connections** pane, select the connection to use, and then choose **Create Virtual Interface**.
4. In the **Create a Virtual Interface** pane, select **Private**.

Figure 5. Create a Private Virtual Interface

Create a Virtual Interface

You may choose to create a private or public virtual interface. Select the appropriate option below.

- Private** - A private virtual interface should be used to access an Amazon VPC using private IP addresses.
- Public** - A public virtual interface can access all AWS public services (including EC2, S3, and DynamoDB) using public IP addresses.

Define Your New Private Virtual Interface

Enter the name of your virtual interface. If you're creating a virtual interface for another account, you'll need to provide the other AWS account ID. For more information about virtual interface ownership, see "Hosted Virtual Interfaces" in the [AWS Direct Connect Getting Started Guide](#).

Connection: dxcon-ffs3dp1s (Far East Offices) ⓘ

Interface Name: e.g. My Virtual Interface ⓘ

Interface Owner: My AWS Account Another AWS Account ⓘ

VGW: vgw-e01f67b2 ⓘ

Enter the VLAN ID, if not already supplied by your AWS Direct Connect partner, and the IP Addresses for your router interface and the AWS Direct Connect interface.

VLAN: e.g. 100 ⓘ

Auto-generate peer IPs: ⓘ

Before you can use your virtual interface, we must establish a BGP session. You must provide an ASN for your router. You will also need an MD5 key to authenticate the BGP session. We can generate one for you, or you can supply your own.

BGP ASN: e.g. 65000 ⓘ

Auto-generate BGP key: ⓘ

Cancel Continue

5. Under **Define Your New Private Virtual Interface**, do the following:
 - a. For **Interface Name**, enter a name for the virtual interface.
 - b. For **Interface Owner**, select the **My AWS Account** option if the virtual interface is for your AWS account ID.
 - c. For **VGW**, select the virtual gateway to which to connect.
 - d. For **VLAN #**, enter the ID number for your virtual local area network (VLAN); for example, a number between 1 and 4094.
 - e. To have AWS generate your router IP address and Amazon IP address, select **Auto-generate peer IPs**.

To specify these IP addresses yourself, clear the **Auto-generate peer IPs** check box. For **Your router peer IP**, enter the destination IPv4 CIDR address to which Amazon should send traffic. In the **Amazon router peer IP** field, enter the IPv4 CIDR address you will use to send traffic to Amazon Web Services.

- f. For **BGP ASN**, enter the Border Gateway Protocol (BGP) Autonomous System Number (ASN) of your gateway; for example, a number between 64512 to 65535.
- g. Select the **Auto-generate BGP key** check box to have AWS generate a BGP key.

To provide your own BGP key, clear the **Auto-generate BGP key** check box, and then for **BGP Authorization Key**, enter your BGP MD5 key.

6. Choose **Continue**, and then download your router configuration. For more information, see **Step 7: Download Router Configuration**.



Note: If you use the VPC wizard to create a VPC, route propagation is automatically enabled for you. With route propagation, routes are automatically populated to the route tables in your VPC. If you choose, you can disable route propagation. For more information, see [Enable Route Propagation in Your Route Table in the Amazon VPC User Guide](#).

Step 7: Download Router Configuration

After you have created a virtual interface for your AWS Direct Connect connection, you can download the router configuration file.

To download router configuration:

1. Open the AWS Direct Connect console at https://docs.aws.amazon.com/en_us/directconnect/latest/UserGuide/Welcome.html.
2. In the **Virtual Interfaces** pane, select a virtual interface, choose the arrow to show more details, and then choose **Download Router Configuration**.

Figure 6. **Create Virtual Interface**



3. In the **Download Router Configuration** dialog box, do the following:
 - a. For **Vendor**, select the manufacturer of your router.
 - b. For **Platform**, select the model of your router.
 - c. For **Software**, select the software version for your router.
4. Choose **Download**. Use the appropriate configuration for your router to confirm that you can connect to AWS Direct Connect on the following page.

Step 8: Verify Your Virtual Interface

After you have established virtual interfaces to the AWS cloud or to Amazon VPC, you can verify your AWS Direct Connect connections using the following procedures.

To verify your virtual interface connection to the AWS cloud:

1. Run traceroute and verify that the AWS Direct Connect identifier is in the network trace.

To verify your virtual interface connection to Amazon VPC:

1. Using an AMI that can be pinged, such as one of the Amazon Linux AMIs. Launch an EC2 instance into the VPC that is attached to your virtual private gateway. (**Note:** The Amazon Linux AMIs are available in the Quick Start tab when you use the instance launch wizard in the Amazon EC2 console.) For more information, see Launch an Amazon EC2 Instance in the Amazon EC2 User Guide for Linux Instances. Ensure that the security group that's associated with the instance includes a rule permitting inbound ICMP traffic (for the ping request).
2. After the instance is running, retrieve its private IP address; e.g., 10.0.0.4. The Amazon EC2 console displays the address as part of the instance details.
3. Ping the private IP address and receive a response.