

# Lumen<sup>®</sup> Cloud Connect: MPLS / IP VPN to AWS

Direct, secure, private connection to AWS with dedicated cross connect

LUMEN<sup>®</sup>

# Purpose

- The purpose of this document is to provide an end-to-end walkthrough to set up Direct Connect for the first time using Lumen Cloud Connect with dedicated cross connect.
- Information contained is provided to serve as a supplement to AWS documentation linked throughout this document. Be sure to check the provided links to obtain the most up-to-date information and for more details pertaining to AWS processes.

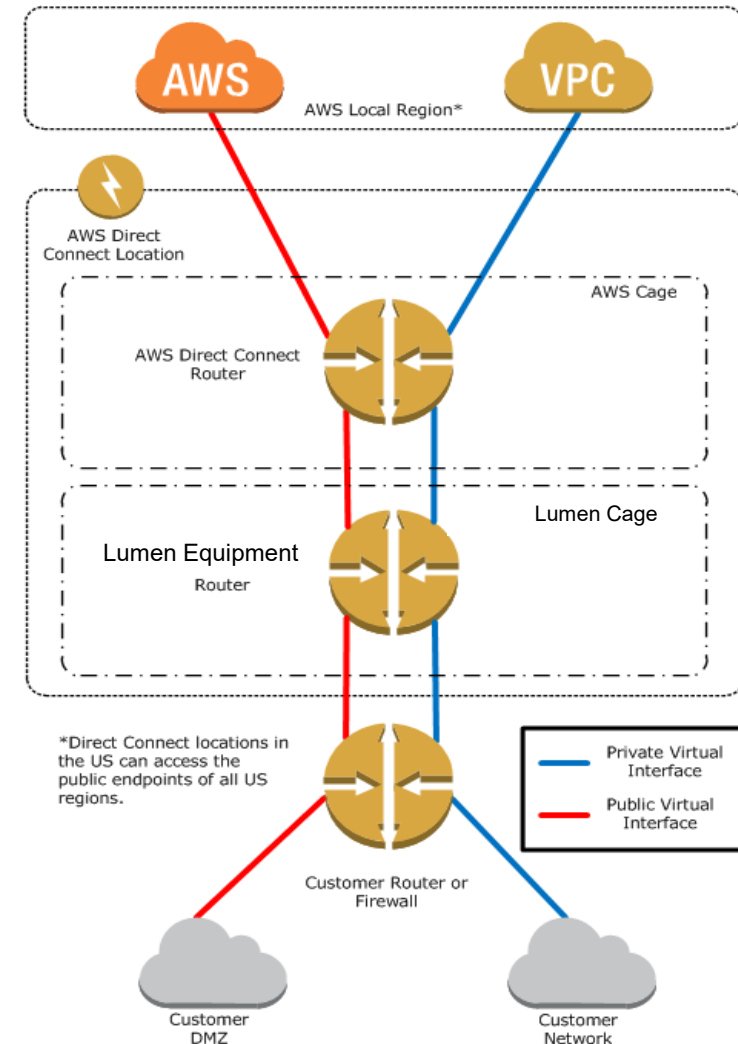
Disclaimer: The material in this guide is for informational purposes only and is taken from AWS's website material. All AWS related configuration information is based off of the AWS Console configuration instructions from the AWS website.

# Contents / steps

1. Background information: what is Direct Connect?
2. Background information: getting started with AWS Direct Connect
3. Topology: Cloud Connect for AWS Direct Connect
4. Roles and responsibilities
5. Request Lumen Cloud Connect service
6. Create the Direct Connect and generate the LOA/CFA
7. Create the AWS Direct Connect in the AWS console
8. Obtain the LOA/CFA from the AWS console
9. Lumen and you provision Cloud Connect to AWS
10. Additional AWS Direct Connect resources

# Background information

- AWS Direct Connect links your internal network to an AWS Direct Connect location.
- One end of the connection is connected to your network, the other to an AWS Direct Connect router.
- With this connection in place, you can create virtual interfaces directly to the AWS cloud services, bypassing the public internet.
- An AWS Direct Connect location provides access to Amazon Web Services in the region it is associated with, as well as access to other US regions.
- For example, you can provision connections to any AWS Direct Connect location in the US and use it to access public AWS services in all US regions.
- [Learn more about Direct Connect](#)



# Background information, cont.

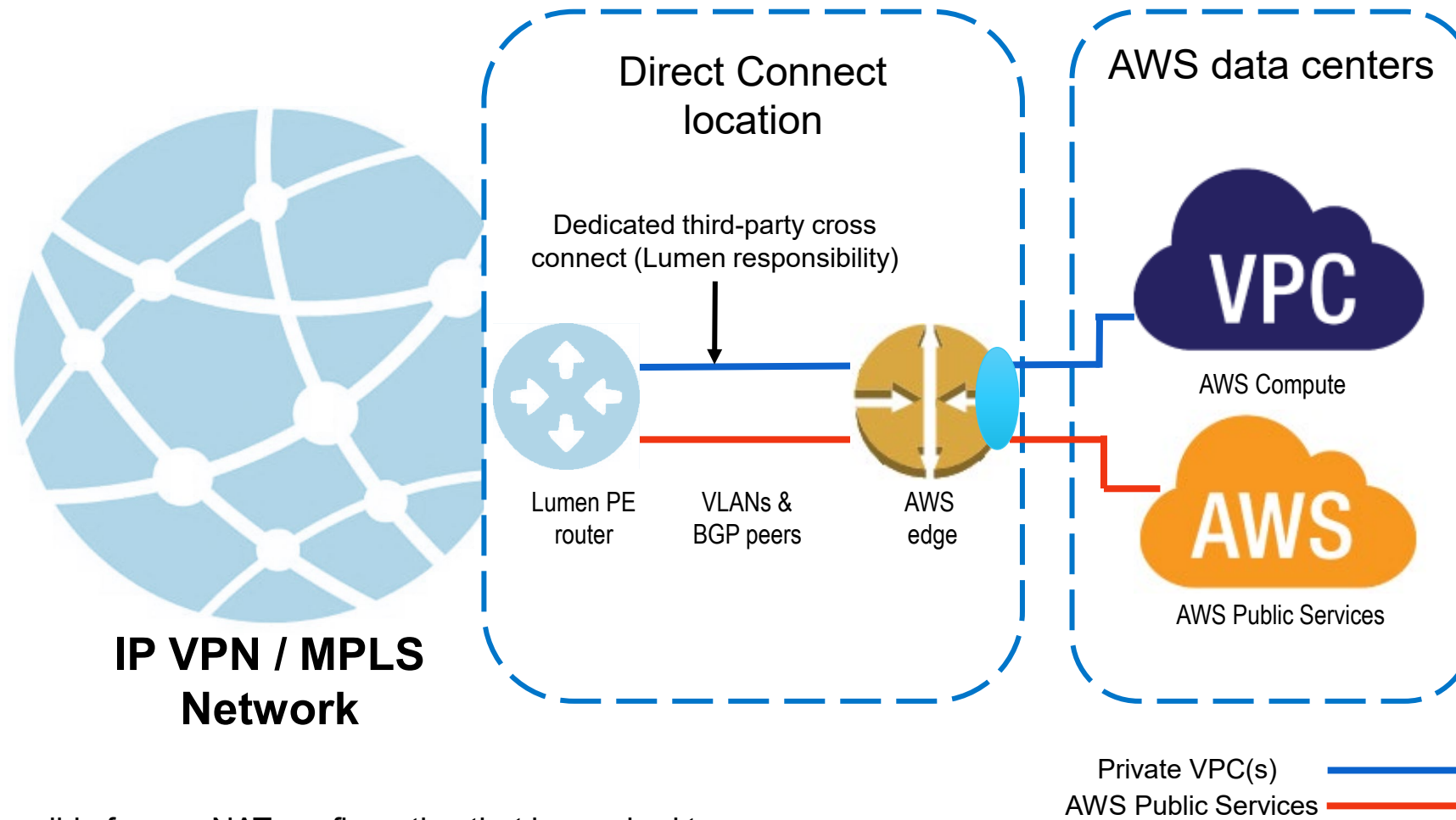
- Getting started with AWS Direct Connect: <https://aws.amazon.com/directconnect/getting-started/>
- This document is for Cloud Connect services connecting to AWS Direct Connect with a dedicated cross connect.
- The supporting service ordered from Lumen is dedicated cloud connect to AWS.
- The 2nd option in the scenarios below (screenshot from the AWS Direct Connect Getting Started webpage – link above) is applicable to this Lumen service type.

AWS Direct Connect enables you to directly interface your on-premises network with a device at an AWS Direct Connect location. The following procedures demonstrate the common scenarios to get set up with an AWS Direct Connect connection. You can also refer to the article [How do I provision an AWS Direct Connect connection?](#) in the Knowledge Center.

You can set up an AWS Direct Connect connection in one of the following ways.

Scenario	Method
Present at AWS Direct Connect Location	Connect directly to an AWS device from your router at an AWS Direct Connect location using 1Gbps or 10Gbps connection.
Connect from your premises	Work with a partner in the <a href="#">AWS Partner Network (APN)</a> or a network provider that will help you connect a router from your data center, office, or colocation environment to an AWS Direct Connect location. The network provider does not have to be a member of the APN to connect you.
Connection via AWS Direct Connect Partner	Work with a partner in the <a href="#">AWS Partner Network (APN)</a> who will create a hosted connection for you. Sign up for AWS, and then follow the instructions to <a href="#">accept your hosted connection</a> .

# Topology: Dedicated Cloud Connect for AWS Direct Connect



You are responsible for any NAT configuration that is required to use any AWS public services.



# Roles and responsibilities

Steps required to set up AWS Direct Connect Connectivity	End customer	Lumen	AWS
<b>Set up connectivity to AWS Direct Connect location</b>			
Order Lumen Dedicated Cloud Connect service(s) to AWS Direct Connect	X		
Provide the LOA/CFA to your Lumen representative	X		
Create the virtual circuit to AWS		X	
Monitor the virtual circuit to AWS		X	
<b>Set up BGP peering between Lumen provided edge and AWS edge device</b>			
Configure BGP peering on Lumen PE router facing AWS		X	
Configure BGP peering on AWS side using console facing Lumen	X		
<b>Link services on AWS to the dedicated circuit</b>			
Create and link virtual interface, virtual private gateway, VPC, Direct Connect gateway, etc. as applicable using the AWS console	X		

# Request Lumen Cloud Connect service

To order Lumen Cloud Connect to AWS Direct Connect, contact your Lumen representative. Information needed by Lumen to complete the connection:

- AWS service(s) you are connecting to
- Public virtual interface (VIF) requirements
- VPC / VIF / Direct Connect gateway requirements
  - Identify how many VPCs/VIFs etc you need connectivity to. (Each VPC/VIF requires a separate logical connection with Dedicated Cloud Connect IP VPN/MPLS from Lumen.)
  - Determine the amount of bandwidth needed to each VPC/VIF
- Which AWS region and/or Direct Connect location you want to connect to
- What contractual term length you need: 1 year, 3 years, 5 years, etc.
- Confirm you will be providing the LOA/CFA to Lumen for connection at the Direct Connect location



# Create the Direct Connect and generate the LOA/CFA

- AWS Direct Connect Get Started Guide:  
[https://docs.aws.amazon.com/directconnect/latest/UserGuide/getting\\_started.html](https://docs.aws.amazon.com/directconnect/latest/UserGuide/getting_started.html)
- For Dedicated Cloud Connect to AWS Direct Connect service, you will need to obtain LOA/CFA from AWS via your AWS user console. To do this you first need to create an AWS Direct Connect, then select the appropriate Direct Connect location, which will then generate an LOA/CFA.
- Once you obtain the LOA/CFA, email it to your Lumen representative so they can submit your order for services to be provisioned.
- Before you create the Direct Connect via the AWS user console, please ensure you have the following information:
  - The port speed that you require. You cannot change the port speed after you've created the connection request. This port speed will match that of the Lumen Cloud Connect port speed (either 1Gbps or 10Gbps).
  - The AWS Direct Connect location where the connection is to be terminated. (If you are not sure what these are, please consult with your Lumen sales engineer.)
- To complete the above steps, please see instructions on the next two pages.

# Create the AWS Direct Connect in the AWS console

- AWS Direct Connect Get Started Guide:

[https://docs.aws.amazon.com/directconnect/latest/UserGuide/getting\\_started.html](https://docs.aws.amazon.com/directconnect/latest/UserGuide/getting_started.html)

## To create a new AWS Direct Connect connection

1. Open the AWS Direct Connect console at <https://console.aws.amazon.com/directconnect/>.
2. In the navigation bar, select the Region for the connection.
3. On the **Welcome to AWS Direct Connect** screen, choose **Get Started with Direct Connect**.
4. In the **Create a Connection** dialog box, do the following:
  - a. For **Connection Name**, type a name for the connection.
  - b. For **LAG Association**, specify whether the connection is standalone, or if it should be associated with a link aggregation group (LAG) in your account. This option is only available if you have a LAG in your account. To associate the connection with a LAG, select the LAG ID. The connection is created with the same port speed and location as specified in the LAG. For more information, see [Link Aggregation Groups](#).
  - c. For **Location**, select the appropriate AWS Direct Connect location.
  - d. If applicable, for **Sub Location**, choose the floor closest to you or your network provider. This option is only available if the location has meet-me rooms (MMRs) in multiple floors of the building.
  - e. Select the appropriate port speed, and then choose **Create**.

Only if applicable



It can take up to 72 hours for AWS to review your request and provision a port for your connection. During this time, you may receive an email with a request for more information about your use case or the specified location. The email is sent to the email address that you used when you signed up for AWS. You must respond within 7 days or the connection is deleted.

# Obtain the LOA/CFA from the AWS console

- AWS Direct Connect Getting Started guide: [https://docs.aws.amazon.com/directconnect/latest/UserGuide/getting\\_started.html](https://docs.aws.amazon.com/directconnect/latest/UserGuide/getting_started.html)

After you request a connection, AWS makes a Letter of Authorization and Connecting Facility Assignment (LOA-CFA) available to you to download, or emails you with a request for more information. The LOA-CFA is the authorization to connect to AWS, and is required by the colocation provider or your network provider to establish the cross-network connection (cross-connect).

## To download the LOA-CFA

1. Open the AWS Direct Connect console at <https://console.aws.amazon.com/directconnect/>.
2. In the navigation pane, choose **Connections**.
3. Select the connection and choose **Actions, Download LOA-CFA**.

### Note

If the link is not enabled, the LOA-CFA is not yet available for you to download. Check your email for a request for more information. If it's still unavailable, or you haven't received an email after 72 hours, contact [AWS Support](#).

4. Optionally type the name of your provider to have it to appear with your company name as the requester in the LOA-CFA. Choose **Download**. The LOA-CFA is downloaded to your computer as a PDF file.
5. After you've downloaded the LOA-CFA, do one of the following:
  - If you're working with an APN member or network provider, send them the LOA-CFA so that they can order a cross-connect for you at the AWS Direct Connect location. If they cannot order the cross-connect for you, you can [contact the colocation provider](#) directly.

AWS Direct Connect locations that are listed as multiple sites (for example, Equinix DC1-DC6 & DC10-DC11) are set up as a campus. If your or your network provider's equipment is located in any of these sites, you can request a cross connect to your assigned port even if it resides in a different campus building.

### Important

A campus is treated as a single AWS Direct Connect location. To achieve high availability, configure connections to different AWS Direct Connect locations.

**Important:** Once you have the LOA/CFA, email it to your Lumen representative so they can place your order.

# Lumen and you provision Cloud Connect to AWS

- Upon network order submission, Lumen provisions a layer-3 IP VPN/MPLS connection to the requested interconnect point
  - Lumen configures VLAN tagging and layer-3 BGP routing on the Lumen PE router(s).
- Lumen completes configuration, and you with information you need to configure the layer-3 turnup on the AWS side using the AWS console:
  - IP subnet(s)
  - autonomous system number (ASN) info for BGP peering
  - BGP authorization key
  - VLAN ID
- Upon provisioning completion by Lumen, you will receive the configuration information from the Lumen provisioning with instructions as to order completion, activation scheduling, etc. as applicable to your order.

# Additional AWS Direct Connect resources

<b>Overview</b>	<a href="https://aws.amazon.com/directconnect/">https://aws.amazon.com/directconnect/</a>
<b>Details</b>	<a href="http://docs.aws.amazon.com/directconnect/latest/UserGuide/Welcome.html">http://docs.aws.amazon.com/directconnect/latest/UserGuide/Welcome.html</a>
<b>VPC endpoints</b>	<a href="http://docs.aws.amazon.com/AmazonVPC/latest/UserGuide/vpc-endpoints.html">http://docs.aws.amazon.com/AmazonVPC/latest/UserGuide/vpc-endpoints.html</a>
<b>Pricing</b>	<a href="https://aws.amazon.com/directconnect/pricing/">https://aws.amazon.com/directconnect/pricing/</a> <ul style="list-style-type: none"><li>• There are different price rates for traffic to the local AWS region and remote AWS regions</li></ul>
<b>FAQ</b>	<a href="https://aws.amazon.com/directconnect/faqs/">https://aws.amazon.com/directconnect/faqs/</a>
<b>Getting started</b>	<a href="https://docs.aws.amazon.com/directconnect/latest/UserGuide/getting_started.html">https://docs.aws.amazon.com/directconnect/latest/UserGuide/getting_started.html</a>
<b>AWS Direct Connect limits</b>	<a href="https://docs.aws.amazon.com/directconnect/latest/UserGuide/Welcome.html#directconnect_limits">https://docs.aws.amazon.com/directconnect/latest/UserGuide/Welcome.html#directconnect_limits</a>
<b>Notes</b>	<ul style="list-style-type: none"><li>• A single Lumen Dedicated IP VPN/MPLS Cloud Connect service supports connectivity to a single virtual interface (VIF) / VPC or a single Direct Connect gateway. To support additional VIFs/VPCs/Direct Connect gateways, order additional Cloud Connect logical connections. For more information, contact your Lumen representative.</li></ul>