IP VPN On-Demand User Guide

Ordering and Disconnecting Services

Last Updated: April 2026

LUMEN®

Purpose of This Document

This document provides detailed technical guidance on configuring and deploying Lumen Network-as-a-Service IP VPN On-Demand to Amazon Web Services (AWS), Microsoft Azure, Google Cloud, and Oracle Cloud Infrastructure (OCI).

The document outlines prerequisites and step-by-step configuration procedures for deploying and decommissioning connections.

Table of contents

Lumen Network-as-a-Service IP VPN On-Demand to AWS Direct Connect

Creating an **AWS Direct Connect (DX) hosted connection** involves coordination between Lumen, AWS, and the end customer.

What is a Hosted Connection?

A **Hosted Connection** is a type of AWS Direct Connect connection provisioned by a partner who owns the physical Network-to-Network (NNI) infrastructure (e.g., port) and allocates bandwidth to customers on demand. It is different from a **Dedicated Connection**, where Lumen would provision a physical port and dedicated third-party cross-connect (3PXC) and a single customer would own the usage of the entire physical connection.

All Network-as-a-Service IP VPN On-Demand connections to AWS Direct Connect are Hosted Connections.

Customer Self-Assessment Questions

1. **About Your Use Case**
    - What will you use this connection for (e.g., cloud storage, data transfer, hybrid workloads)?
    - Do your applications require low latency or guaranteed uptime?
    - Will your connection needs change frequently?

2. **Bandwidth Planning**
    - What is the peak and average bandwidth you need?

3. **Redundancy & Resiliency**
    - Do you need a backup path in case of a failure?
    - Do you want to connect to multiple AWS regions or Availability Zones?
    - Will you need dual connections for high availability?

4. **AWS Connectivity Setup**
    - Which AWS region(s) and VPC(s) do you need to reach?

- Do you want to connect to multiple VPCs via a Transit Gateway?
- Do you already have a Direct Connect Gateway (DXGW) set up?

5. **VIF Type Selection**
    - Will you need a Private VIF, Transit VIF, or Public VIF?

      Note: *Public VIFs are not currently supported with IP VPN On-Demand*

6. **IP Addressing & Routing**
    - Do you have your IP address ranges ready?
    - Are your IP addresses overlapping with any AWS environments?

Key Considerations

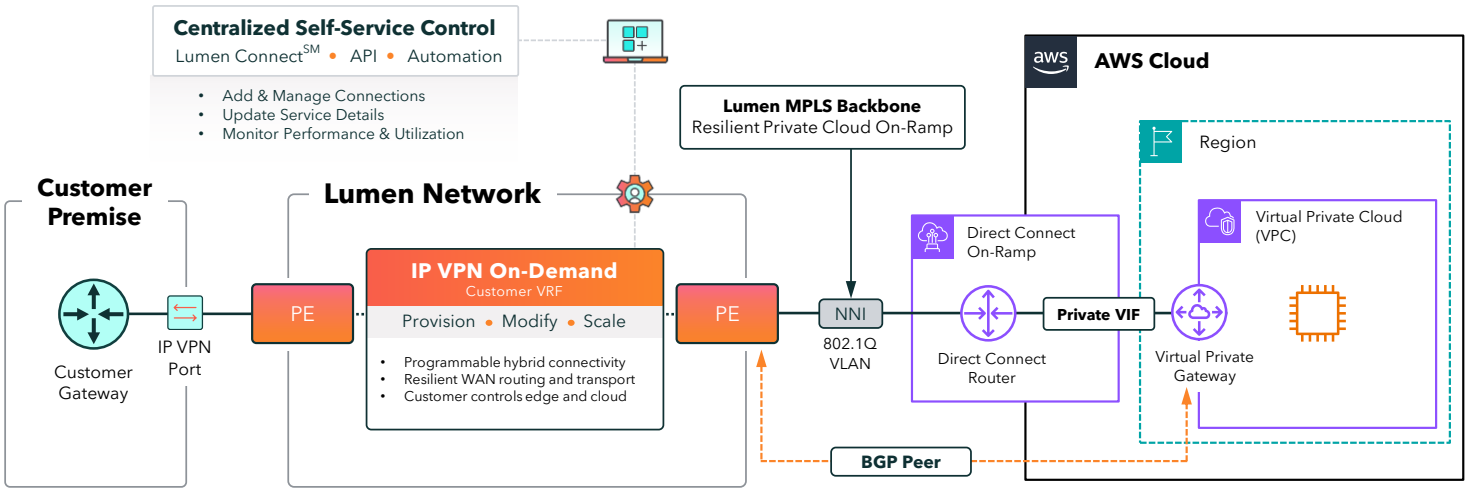
- Hosted connections cannot be resized; deleting and recreating is required for changes.
- AWS SLA applies only when redundant connections are used in separate locations.
- Lumen recommends you create a redundant connection to qualify for better SLAs.

Learn more about AWS Direct Connect SLAs

Learn more about AWS resiliency options

Deploying Lumen Network-as-a-Service IP VPN On-Demand to a Private VIF with Virtual Private Gateway

Virtual Private Gateway peering with connectivity to a single VPC



Hybrid Connectivity Responsibility Model:

Customer Edge Configuration	Lumen IP VPN On-Demand Connectivity with Self-Service Control	Customer Configuration of BGP (Lumen ⇆ AWS)	Customer AWS Cloud Network Configuration

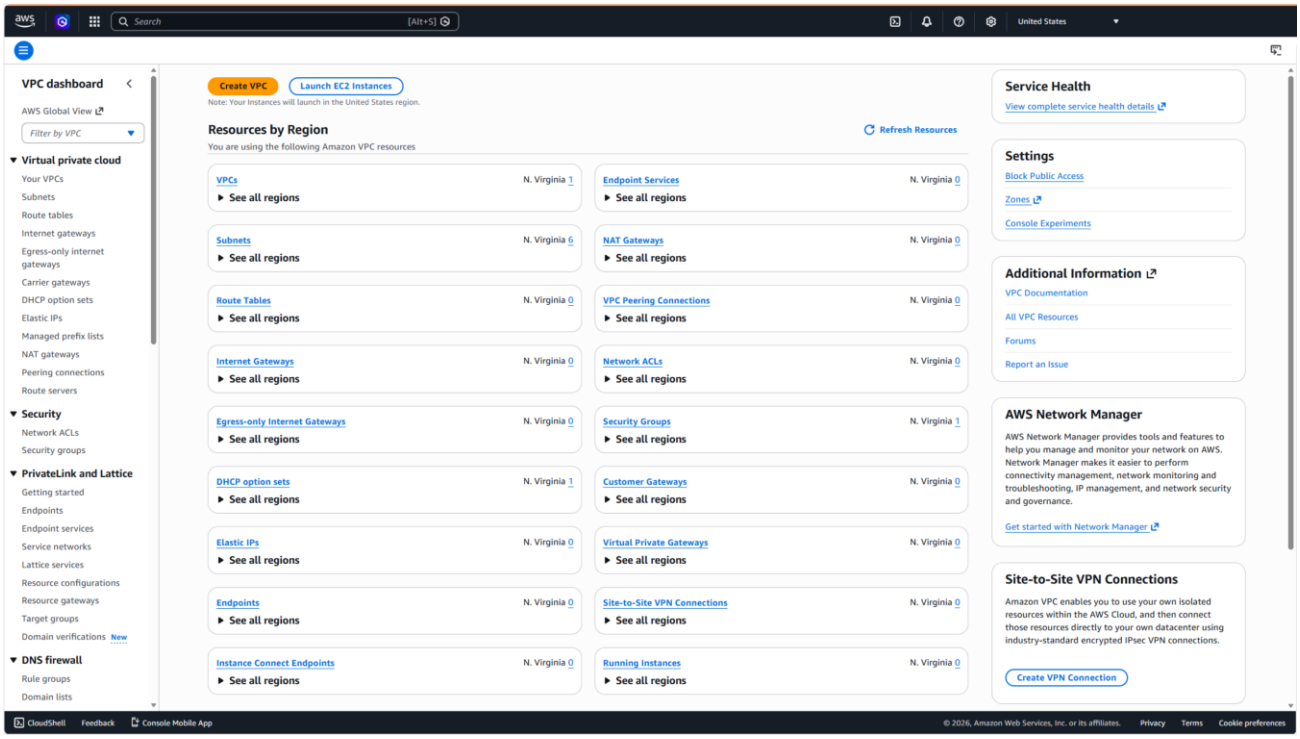
Getting Started Checklist

1. **Lumen Connect℠ Access -** Confirm you have access to Lumen Connect℠ and are entitled for the **Fabric & On-Demand Services** functionality.
2. **AWS Account Number** - Ensure you have the correct **12-digit AWS Account ID** that you intend to connect with.
3. **AWS Console Access -** Verify that you have the necessary **login credentials and permissions** to access the AWS Management Console for the target account.

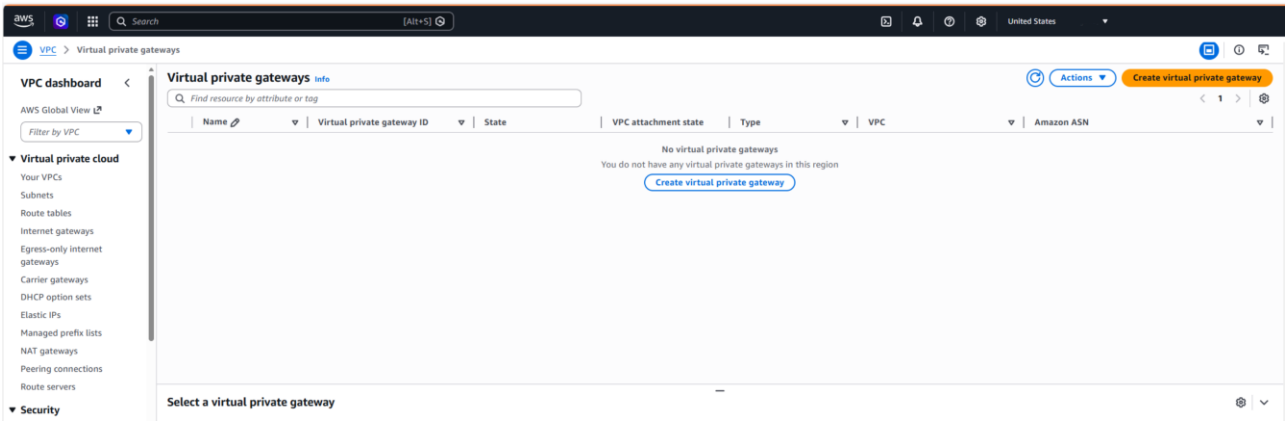
Step 1: Prepare the AWS connection

To prepare the connection in AWS:

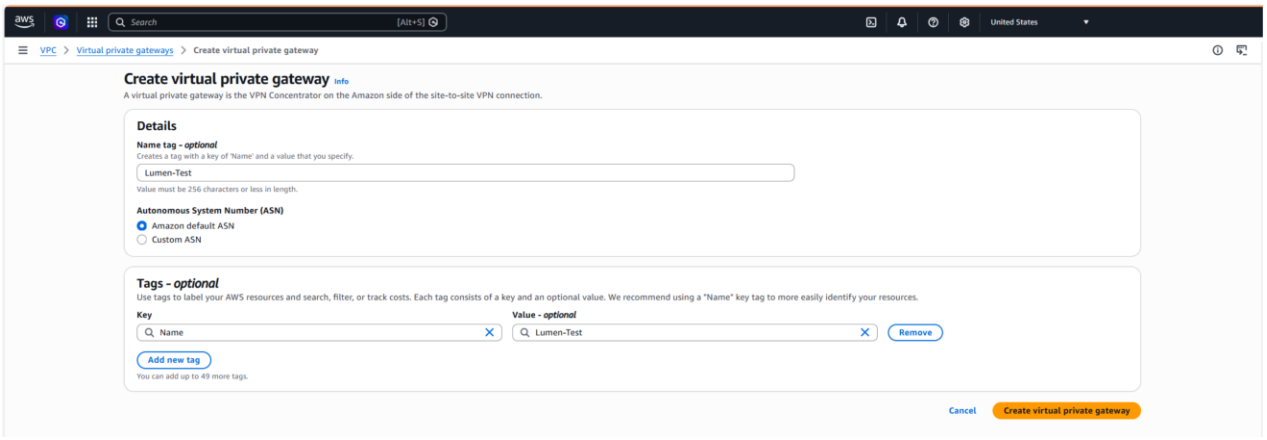
1. Sign in to the AWS Console.
2. If you do not already have a virtual private gateway open the VPC Dashboard
    1. All Services > VPC
    2. Click Virtual Private Gateways



3. Click Create virtual private gateway



4. Complete the connection details
    1. Name tag – optional – input an option name
    2. Autonomous System Number (ASN)
        a. Amazon default ASN (common choice)
        b. Custom ASN (if you modify the ASN, make note as you will need it when creating the IP VPN On-Demand Connection)
5. Click Create virtual private gateway

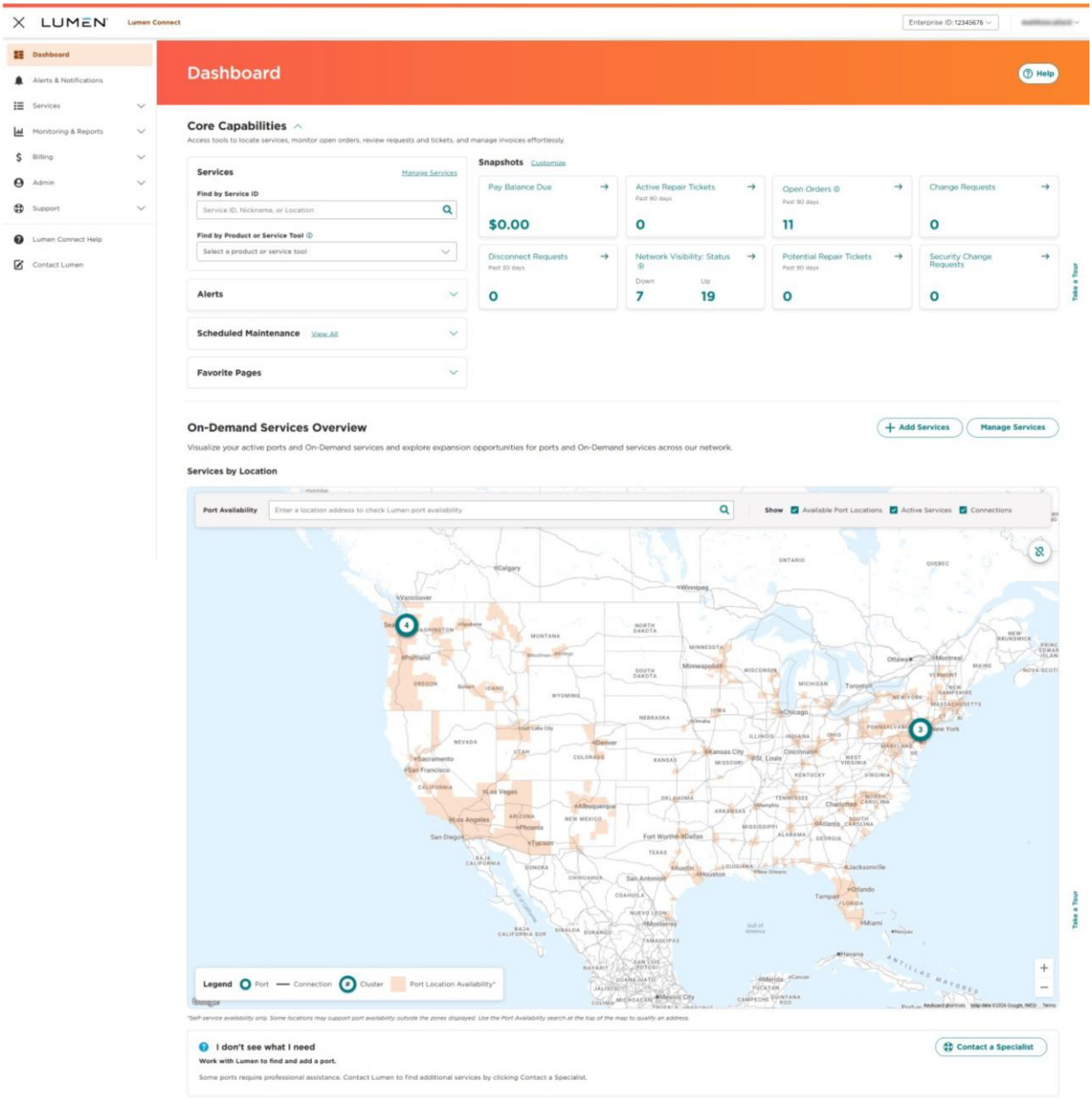


6. Copy your AWS Account ID. You will paste this into Lumen Connect℠ when creating the On-Demand connection.

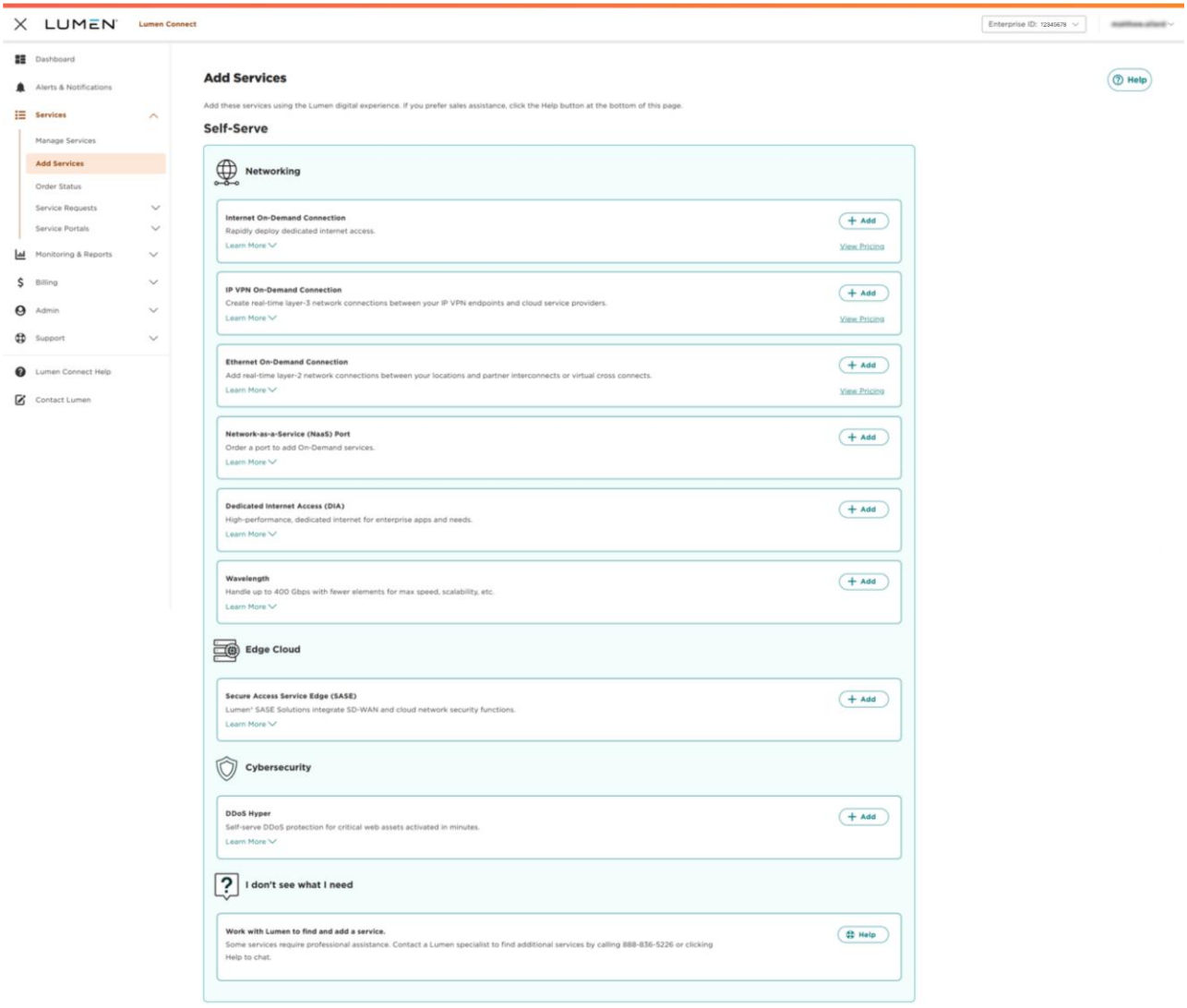
Step 2: Add the connection in Lumen Connect℠

To add the IP VPN On-Demand connection:

1. Sign in to Lumen Connect℠. (Get help retrieving your username/password.)



2. Using the left menu click **Services**, then click **Add Services**.

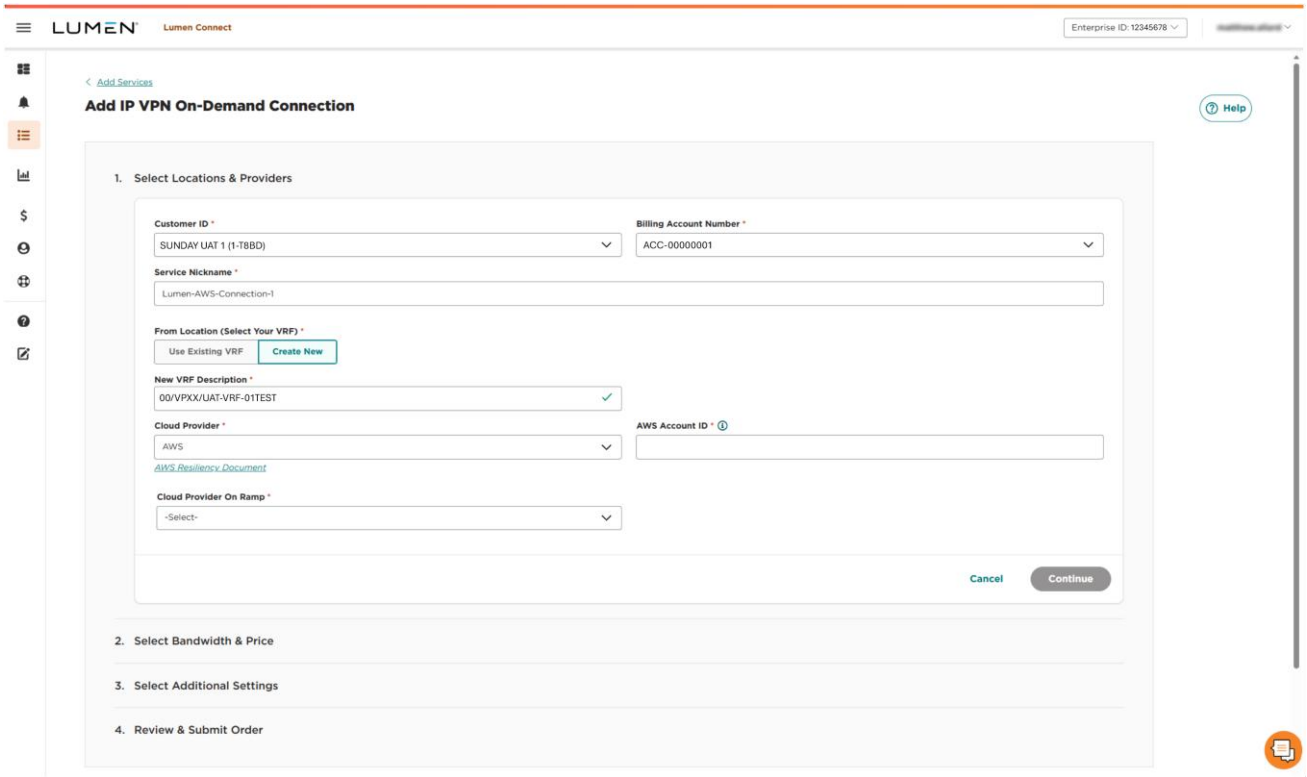


3. Click **+ Add** for IP VPN On-Demand.
4. From the **Customer ID** and **Billing Account Number** lists, select the customer number and billing account number you want to add IP VPN On-Demand to.

   Lumen Connect℠ fills in the VRF inventory based on the customer ID and billing account number you selected.

5. In the **Service Nickname** field, type a name for the connection you're creating. (Be sure to use something memorable. This name will appear on your invoice.)
6. In the **From Location (Select Your VRF)** section, select or create a VRF for the other end of your connection.

    - Select the VRF to use for the other end of your connection. Click **View Details** for a VRF to view the VRF's routes.
    - Click **Create New**, then type a description for the new VRF in the **New VRF Description** field. Lumen Connect[SM] will create the VRF and activate your VPN service once you create your connection.

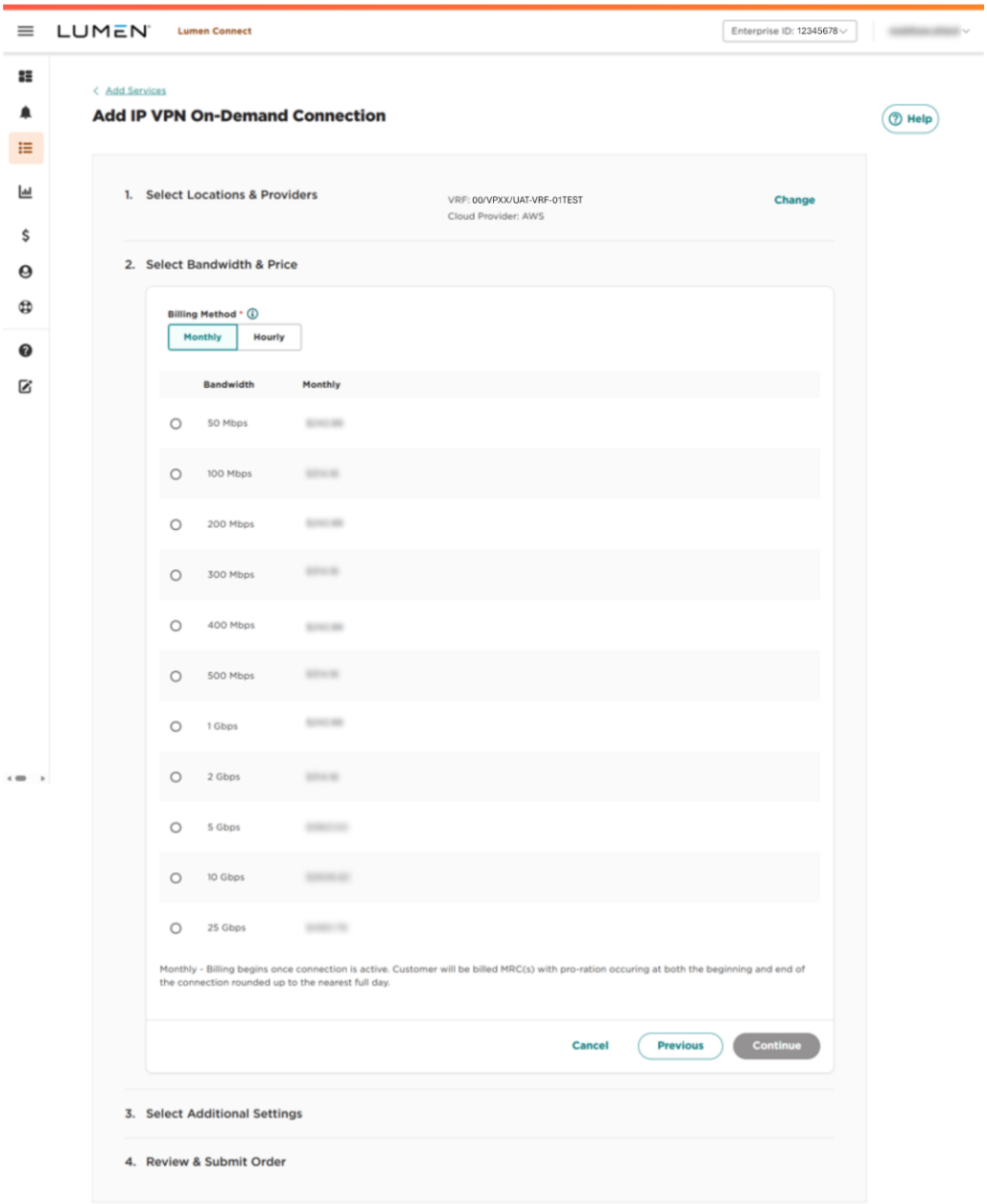


7. From the **Cloud Provider** list, select AWS.
8. Fill in the information for the AWS connection:

    a) In the **AWS Account ID** field, type your AWS account ID.
    b) From the **Cloud Provider On-Ramp** list, select an On-Ramp.

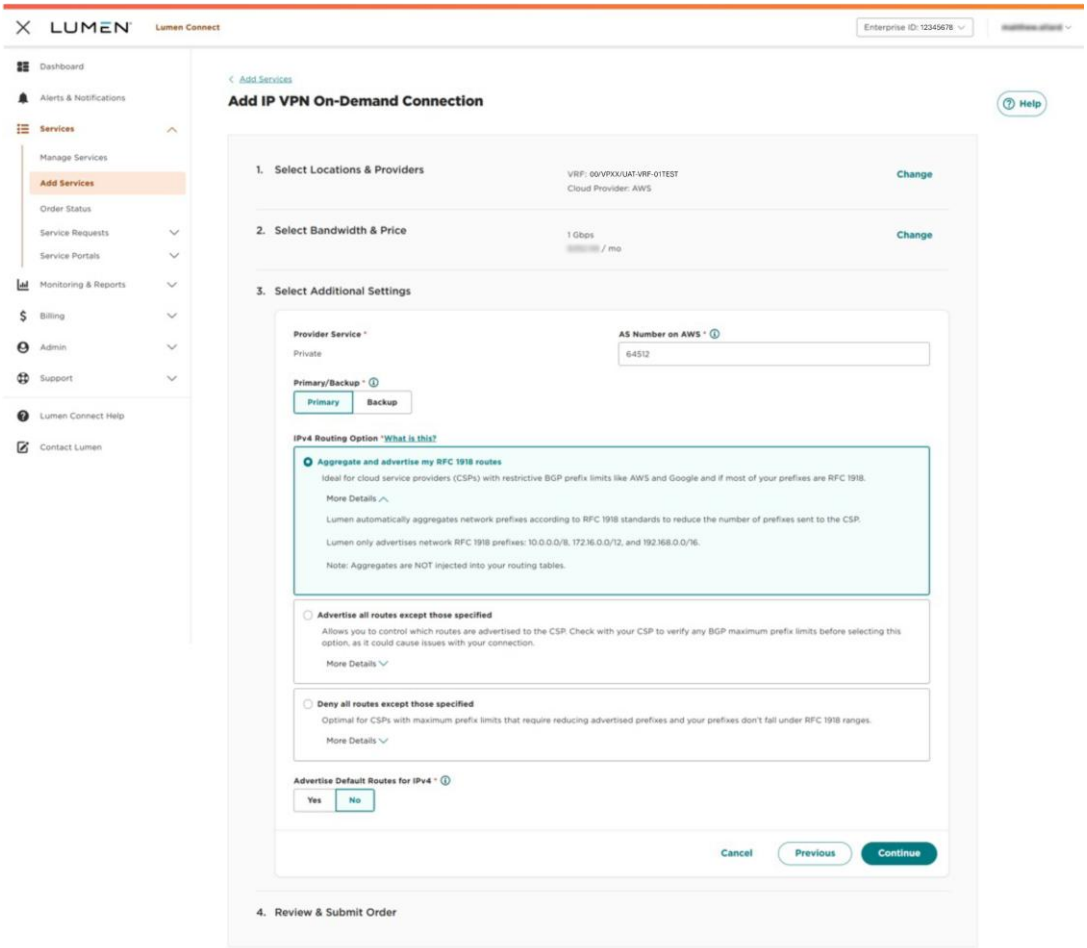
9. Click **CONTINUE**.

10. Use the **Billing Method** buttons to select whether you want monthly or hourly billing for the connection, then select the bandwidth for the connection. Bandwidth options are determined by the destination (to location). (You can't change the bandwidth once you create the connection. If you need to choose a different bandwidth after creating the connection, disconnect the connection and create a new one.)



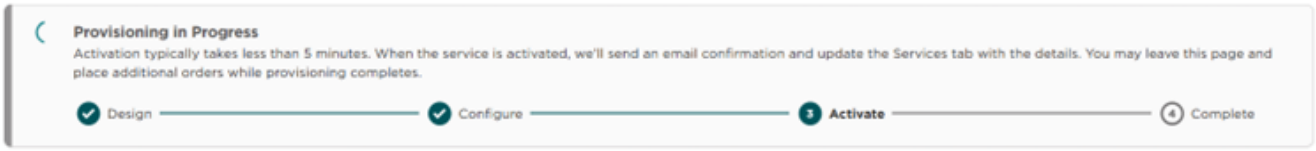
11. Click **CONTINUE**.
12. In the **Select Additional Settings** section, fill in the additional details for the connection:

- In the **AS Number on AWS** field, type the autonomous system number from Amazon (ranges from 64512 to 65534 or 4200000000 to 4294967294) used when creating the Direct Connect gateway.
- Select whether this is a primary or backup connection.
    - Primary will set the local-pref to 750
    - Backup will set the local-pref to 700
- In the **IPv4 Routing Option** field, select the radio button for the routing option you want to use for the connection. Learn more about routing options for an IP VPN connection
- Use the buttons to select whether you want to advertise default routes.



13. Click **CONTINUE**.
14. Review the order information and correct any missing or invalid selections, then click **SUBMIT ORDER**.

    Lumen Connect℠ creates the request for connection, places it in *Pending Activation* status, and routes you to the Services tab so you can monitor the status of the connection. To see status updates, click 🔄. Once Lumen assigns the permanent VRF (within five minutes), the connection changes to *Active* status.



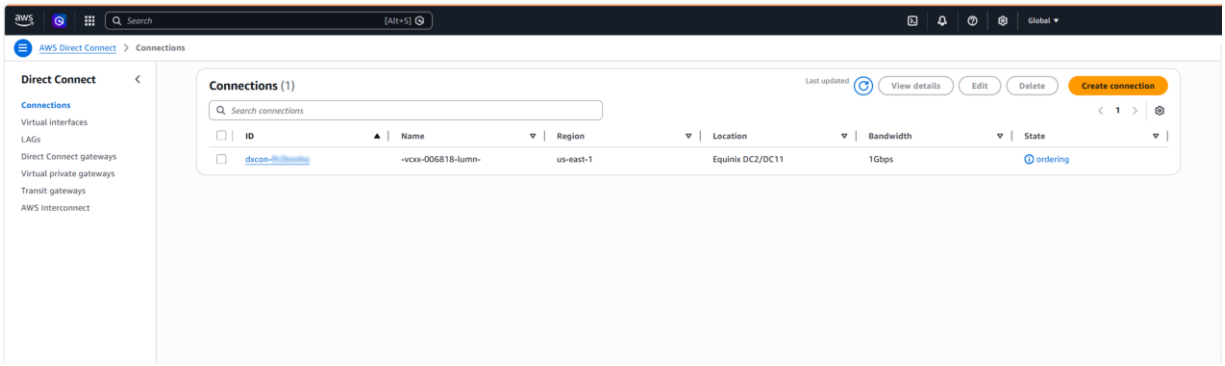
15. If you want to add High Resiliency for this connection, repeat steps 2-12 using the same VRF and a different AWS on-ramp location.

    Learn more about AWS resiliency options

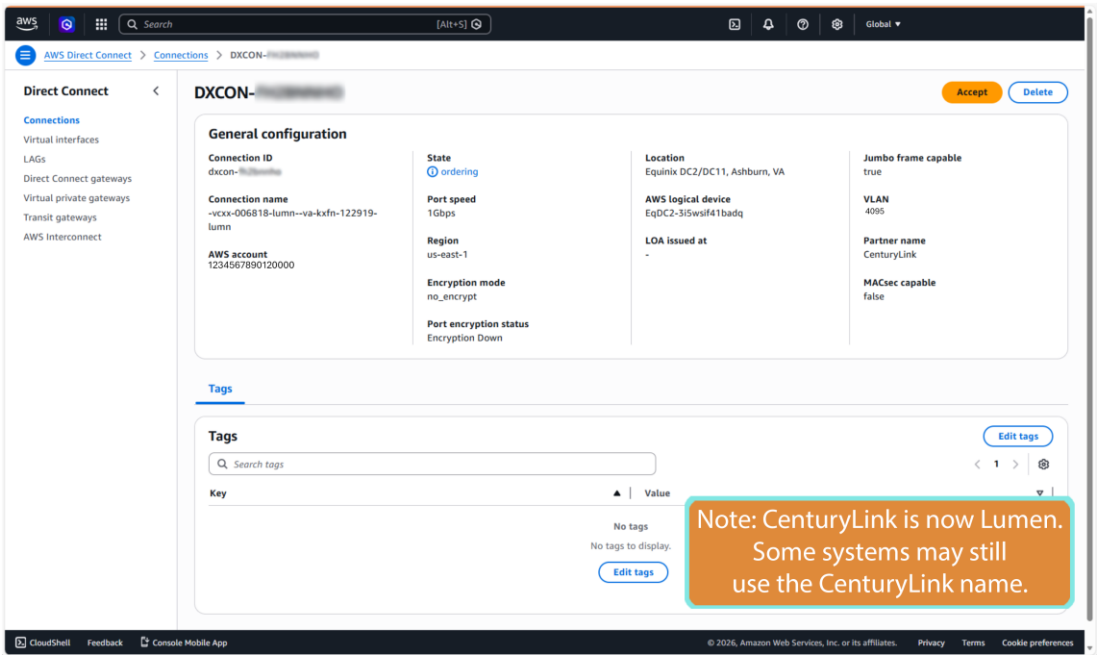
Step 3: Complete the AWS connection

To complete the connection in AWS:

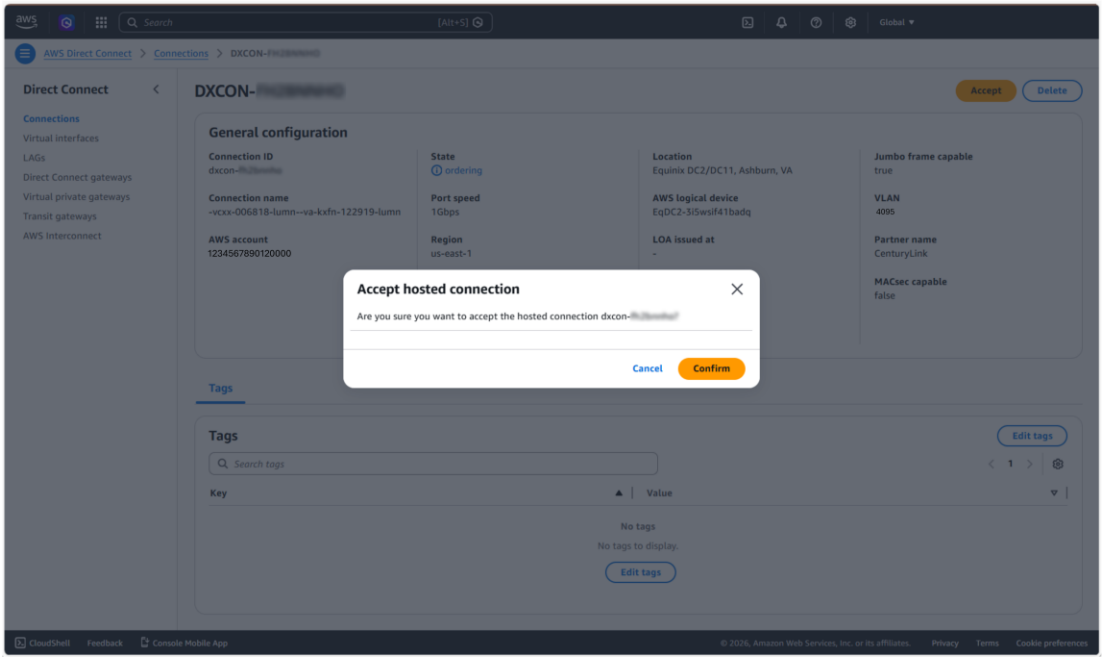
1. Go to the AWS Management Console and sign in.
2. Navigate to the the Direct Connect Console
    - AWS Console > Services > Direct Connect
3. Select the ID of the connection in the **State** showing **ordering**



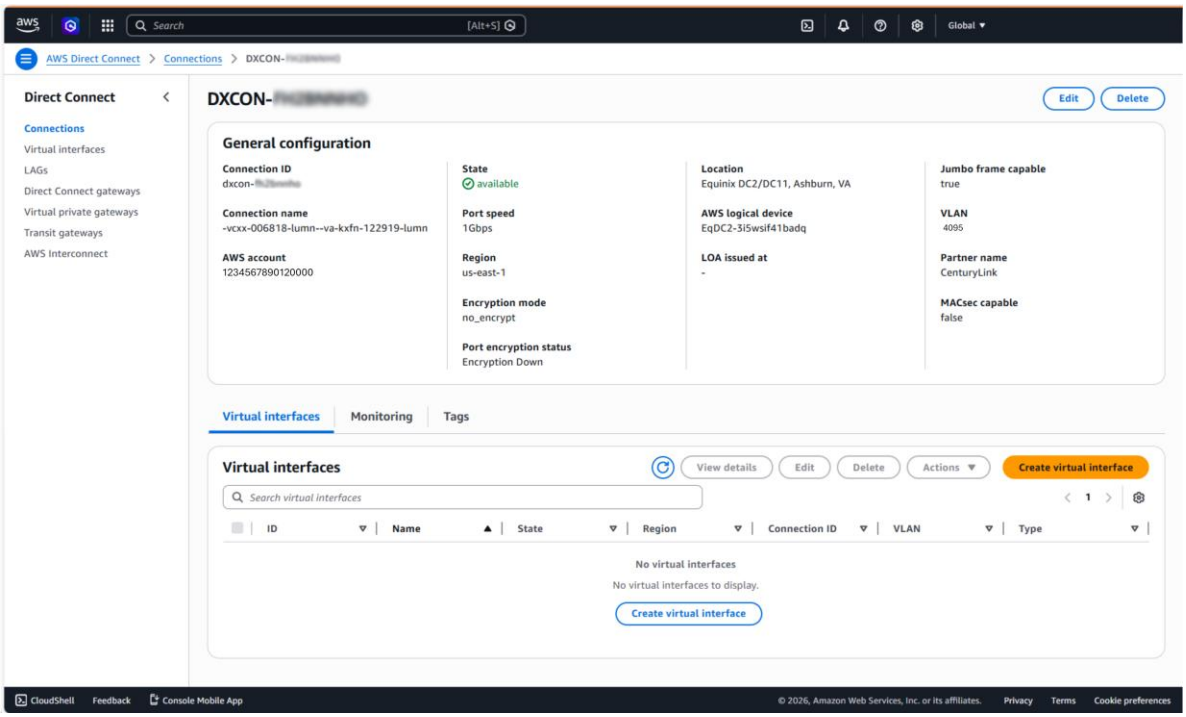
4. Click **Accept**



5. A pop-up will ask you to confirm a second time. Click **Confirm**

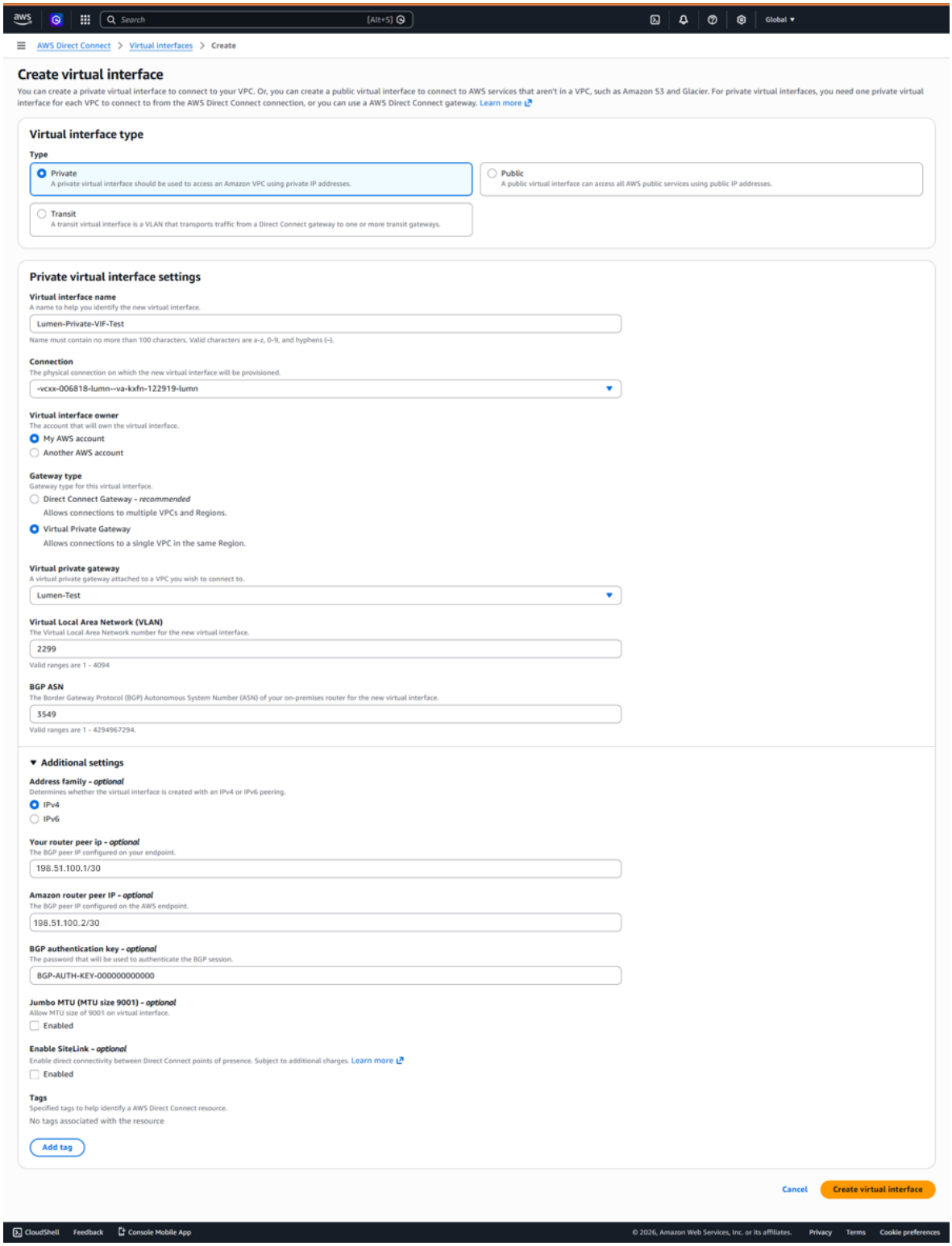


6. Once the connection State is **available**, Click **Create virtual interface**

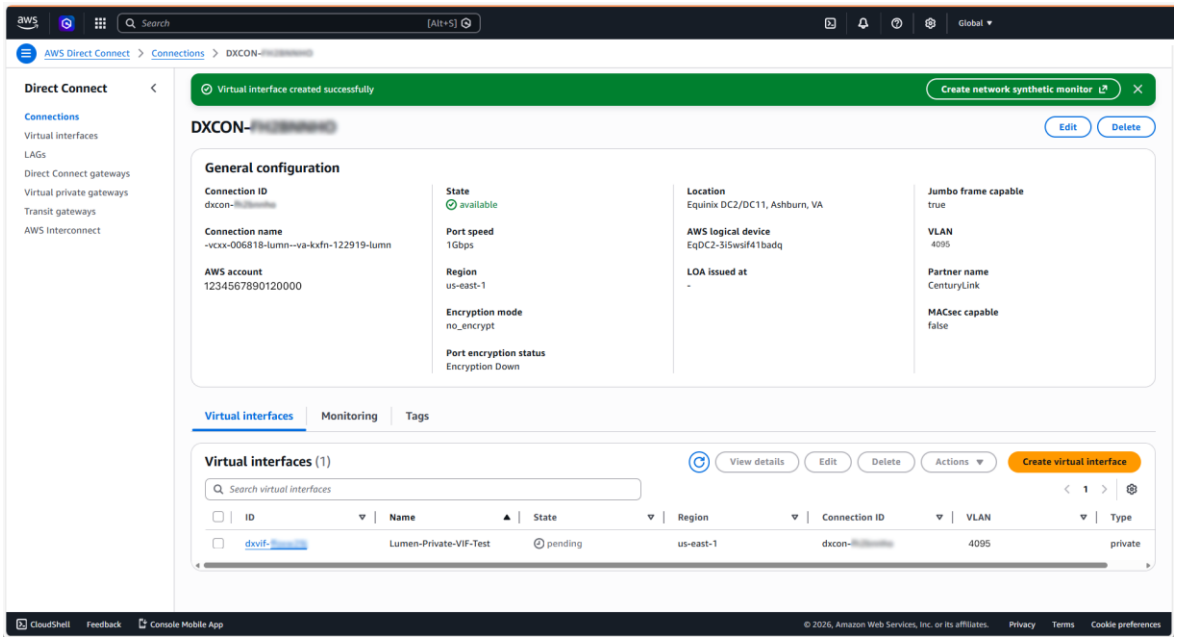


7. Complete the connection details (you will need to expand Additional settings)
    - Virtual interface type - select Private
    - Virtual interface name – name the interface
    - Connection – select the connection that was just accepted
    - Virtual interface owner
        - My AWS Account if connecting to your own VPC
        - Another AWS Account if sharing with a 3rd Party Partner/Vendor
    - Gateway Type – Virtual Private Gateway
    - Virtual Local Area Network (VLAN) – do not change
    - BGP ASN – 3549
    - Your router peer IP – Lumen Router Peer IP from Lumen Connect℠
    - Amazon router peer IP – Cloud Provider Router Peer IP from Lumen Connect℠
    - BGP authentication key – BGP Auth Key from Lumen Connect℠

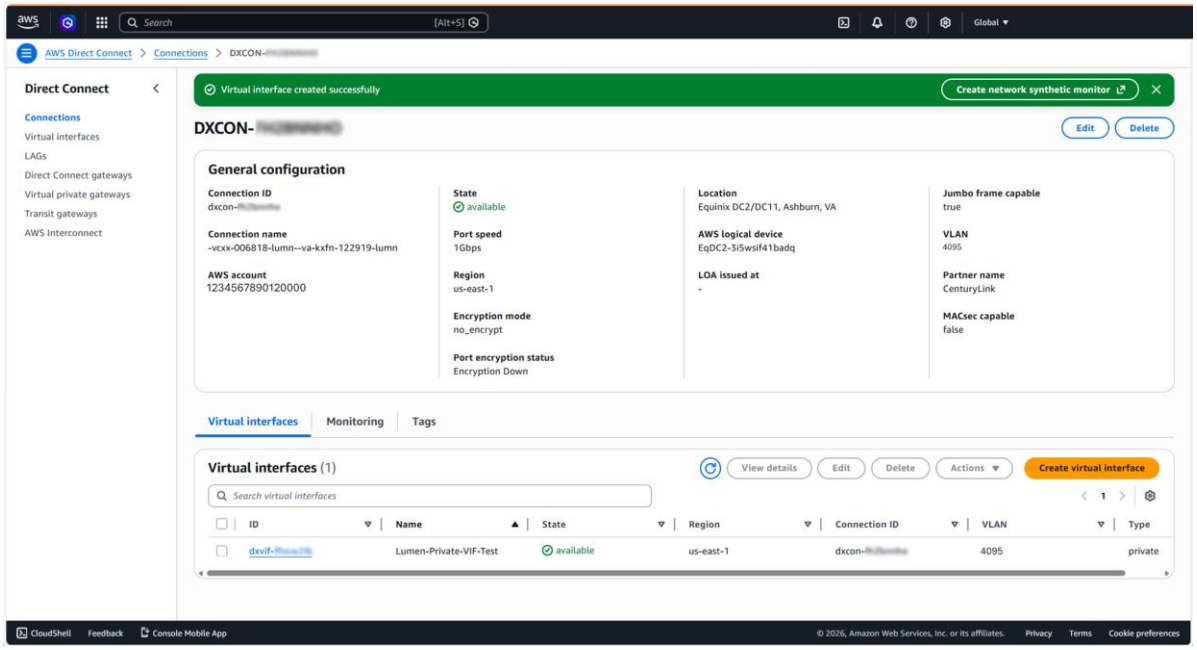
8. Click **Create virtual interface**



9. A new window will be shown and a message will display **Virtual interface create successfully**. The connection **State** will show as **pending**.



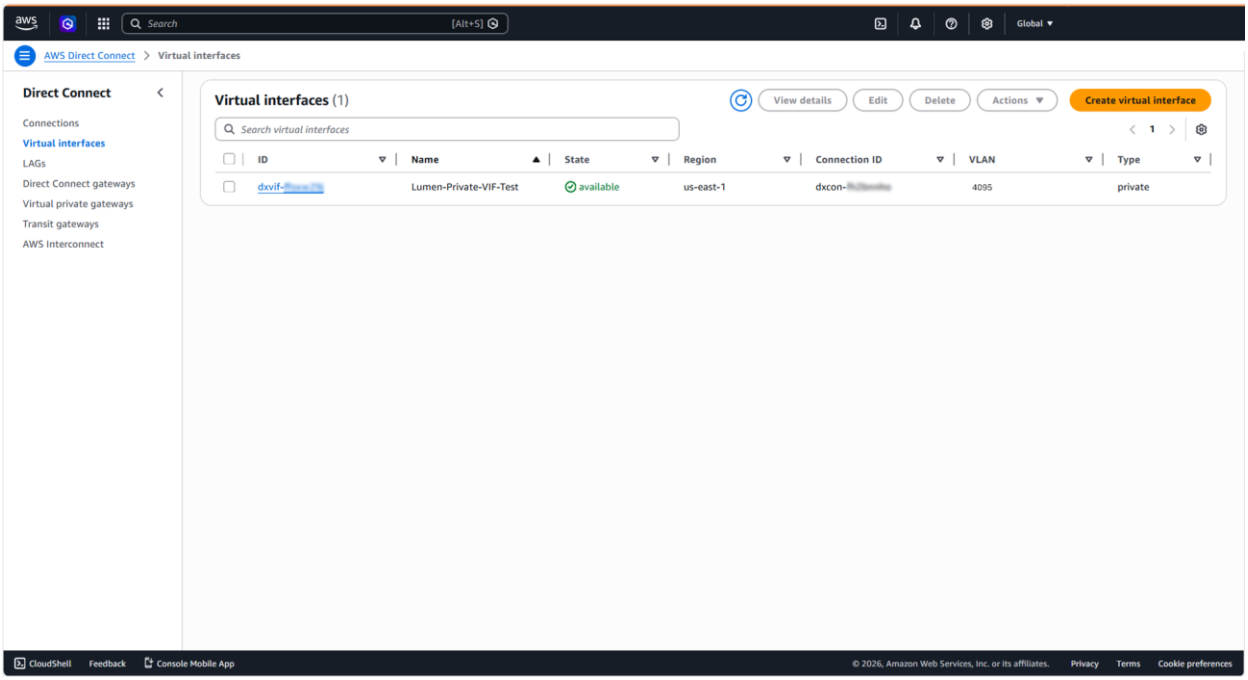
10. After a few minutes, the connection **State** will show as **available** meaning the BGP peer between Lumen and AWS is now active.



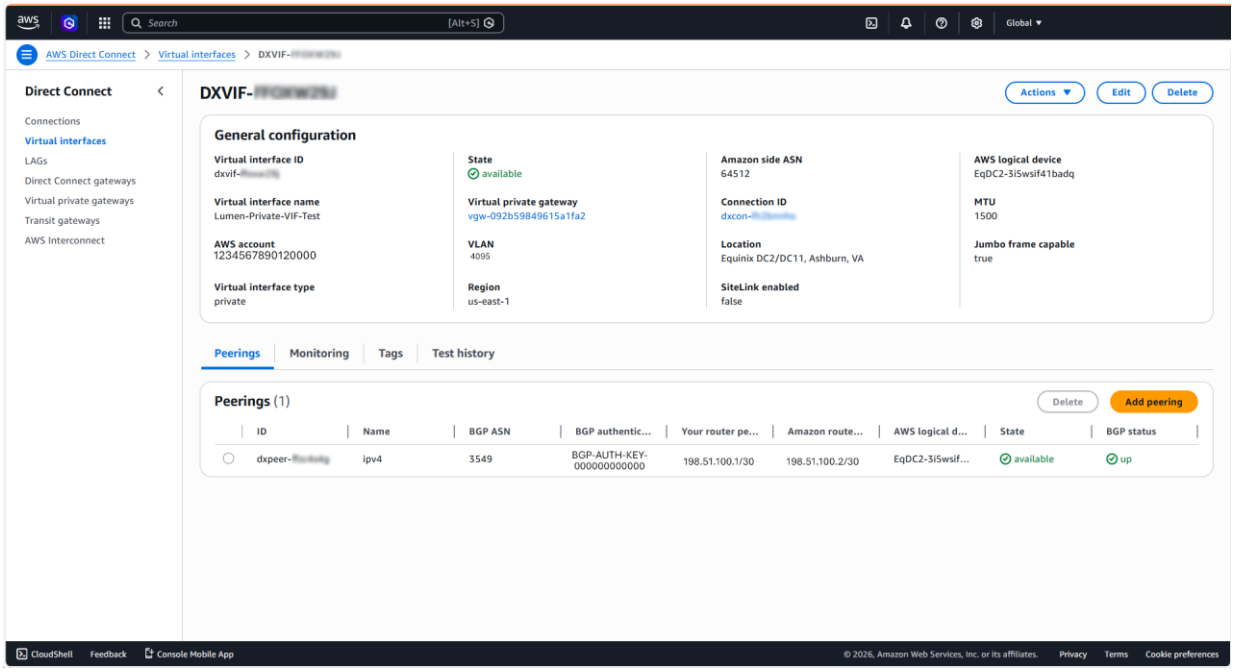
Note: For detailed guidance on configuring your AWS networking, refer to the AWS Direct Connect Documentation. If you'd like personalized support, please contact your Lumen Account Team to explore our professional services for AWS management.

Disconnect Lumen Network-as-a-Service IP VPN On-Demand to a Private VIF with Virtual Private Gateway

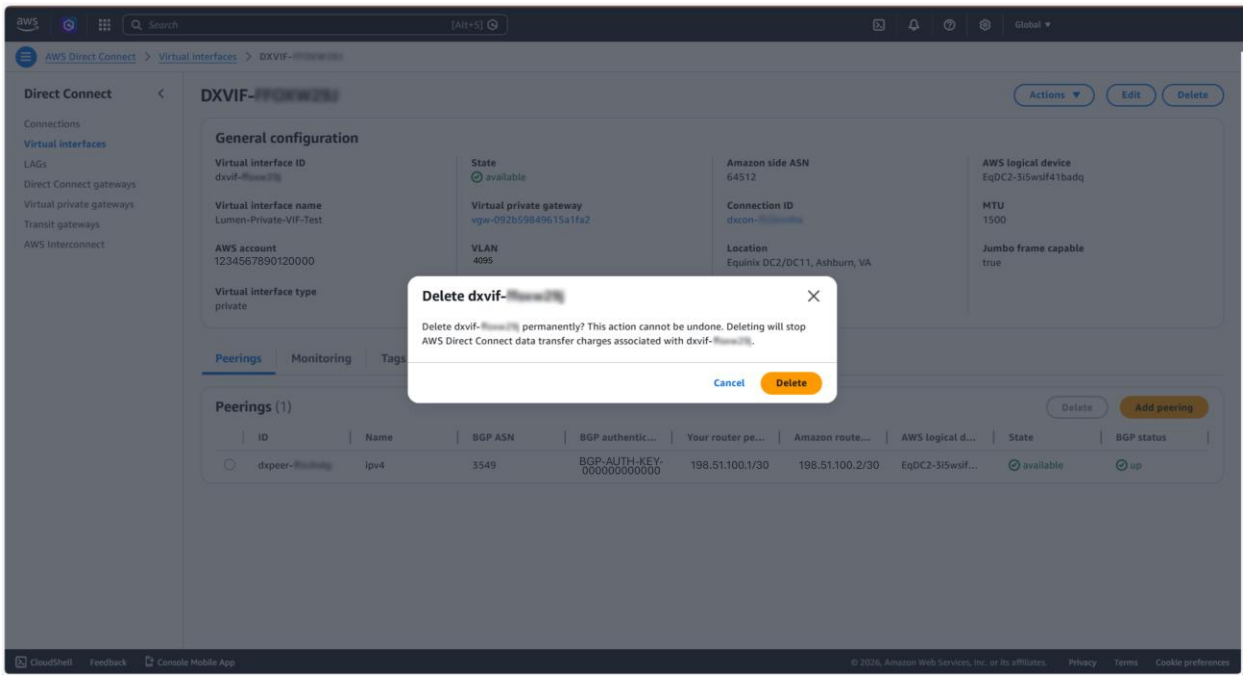
1. Sign in to the AWS Console.
2. Navigate to AWS Direct Connect > Virtual Interfaces
3. Select the Virtual Interface associated with the IP VPN On-Demand service that is being disconnected.



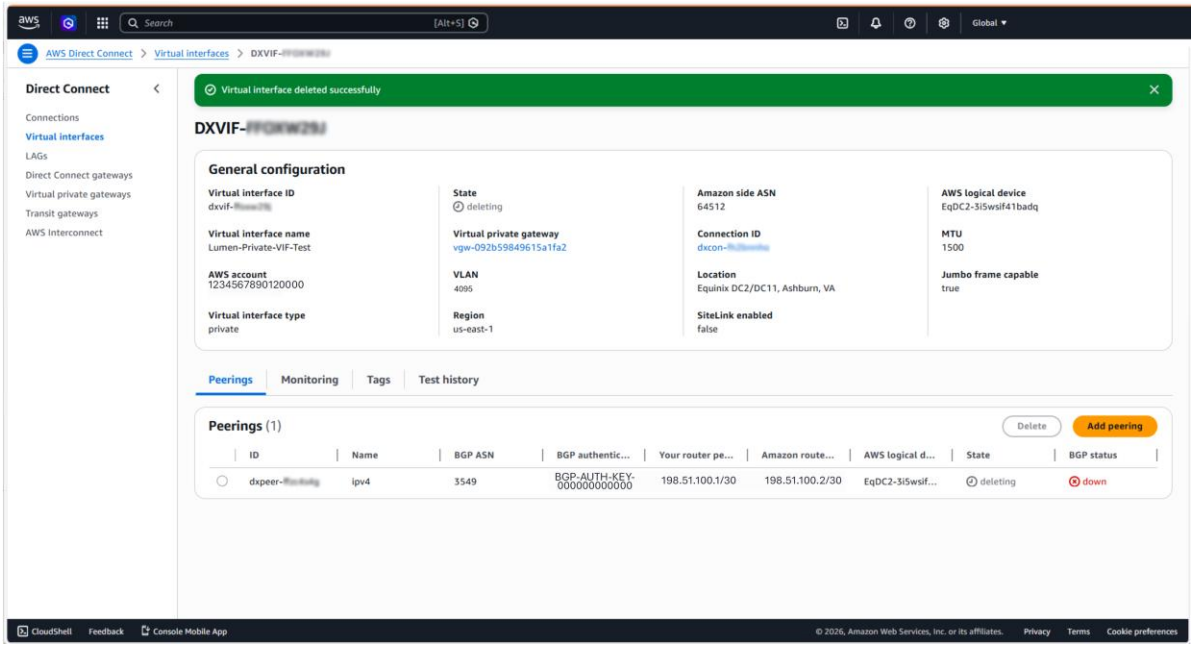
4. In the upper right-hand corner, click **Delete**



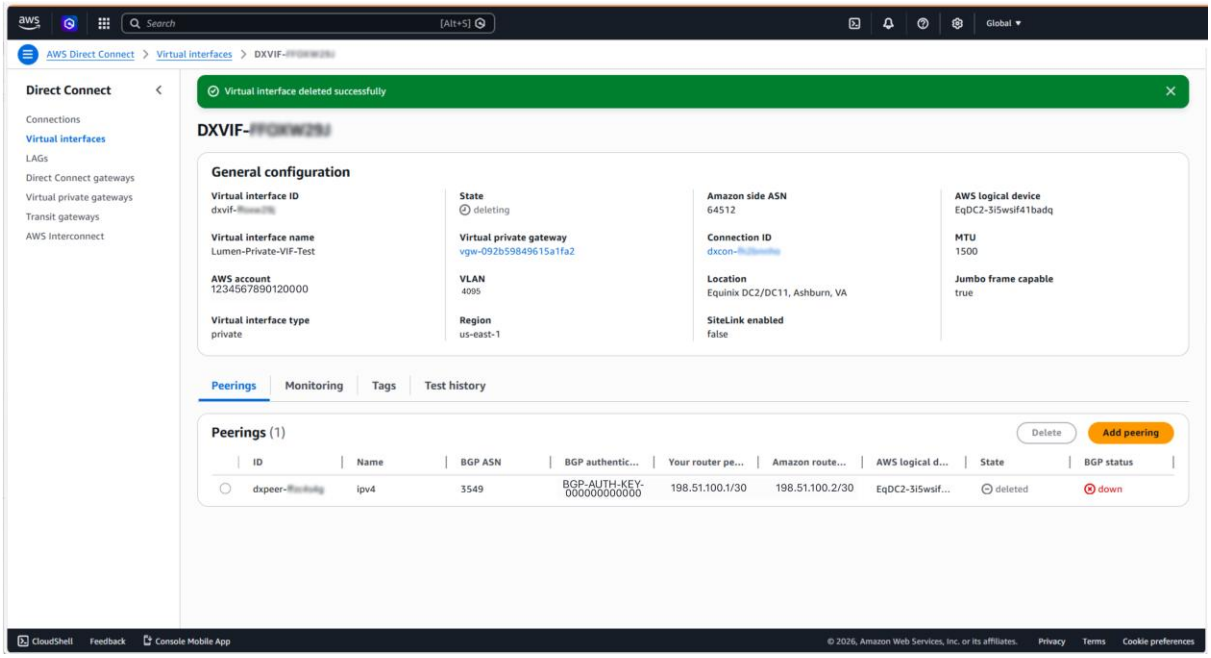
5. A pop-up will appear asking to confirm. Click **Delete** again.



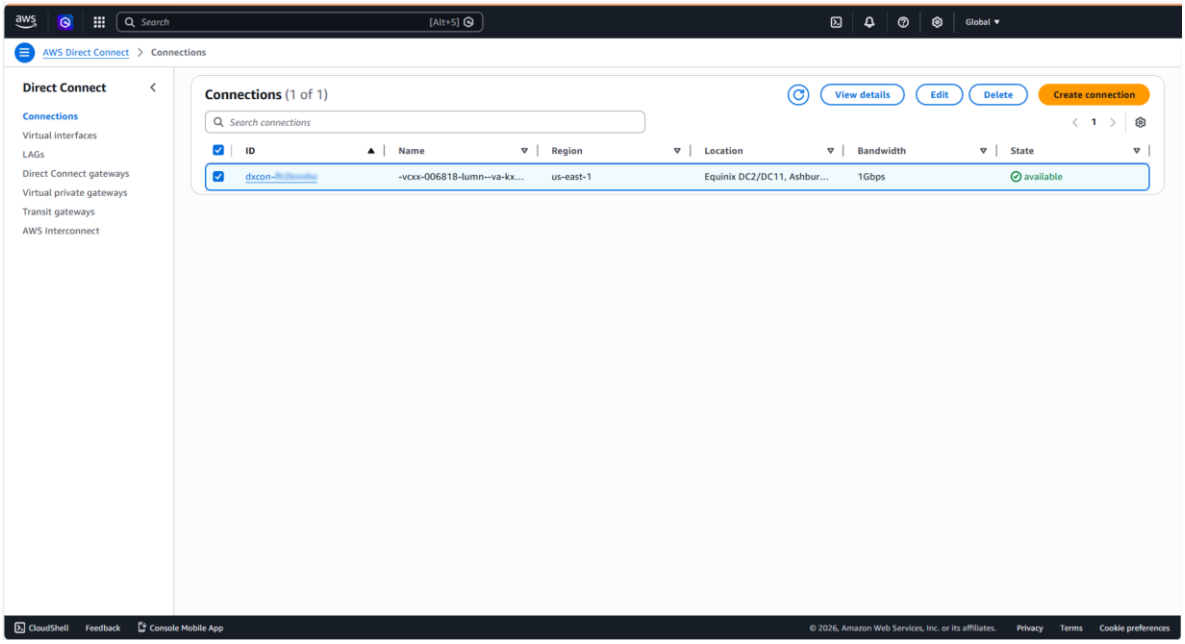
6. A new window will be shown, and a message will display **Virtual interface deleted successfully**. The connection **State** will show as **deleting**.



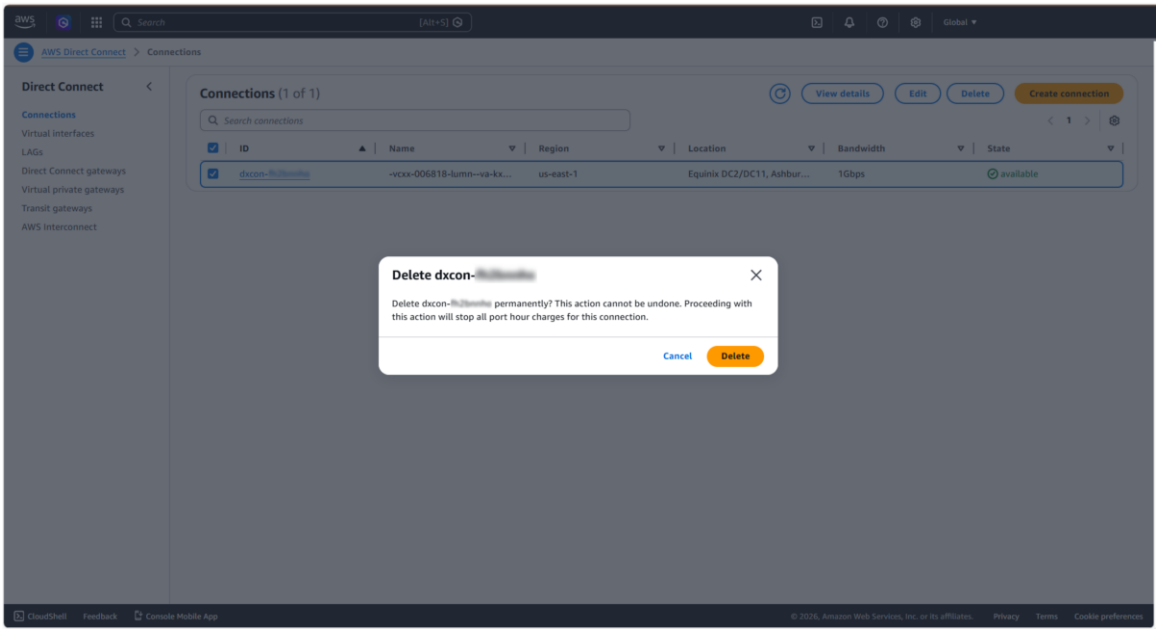
7. After a few minutes, the message will display **Virtual Interface deleted successfully** and the connection **State** will show as **deleted**.



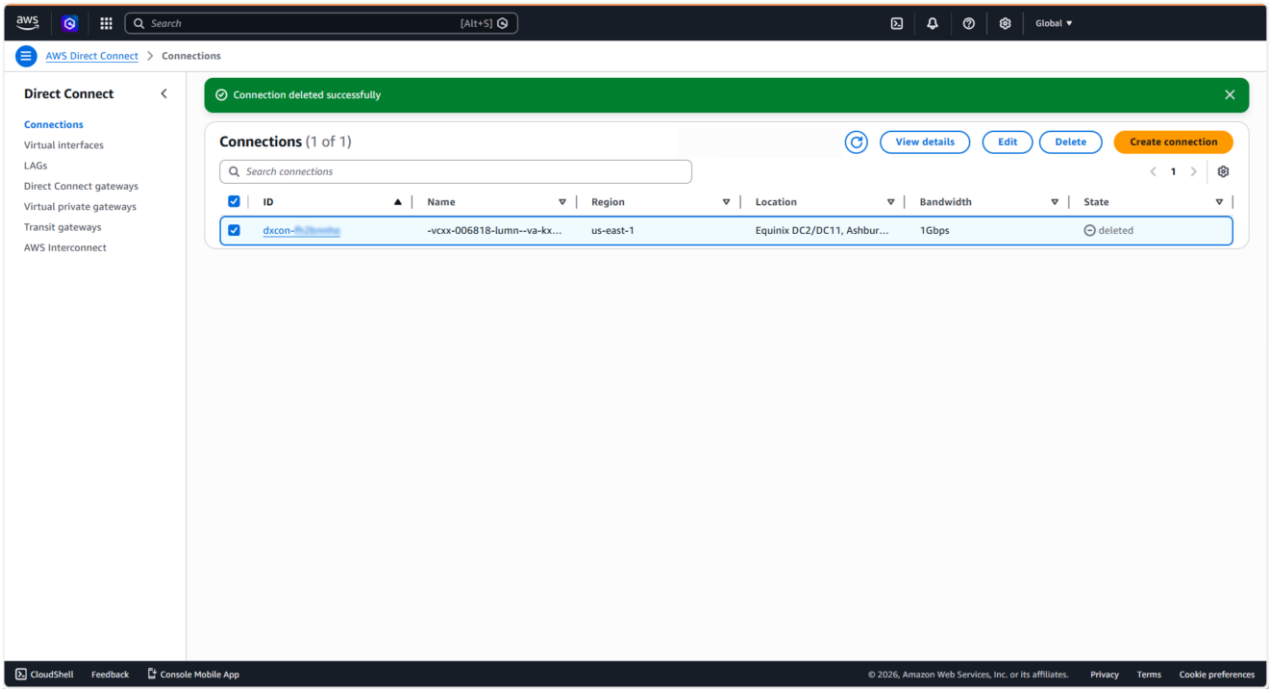
8. Navigate back to Direct Connect > Connections, select the box next to the Connection ID associated with the IP VPN On-Demand service that is being disconnected, and click Delete in the upper right-hand corner.



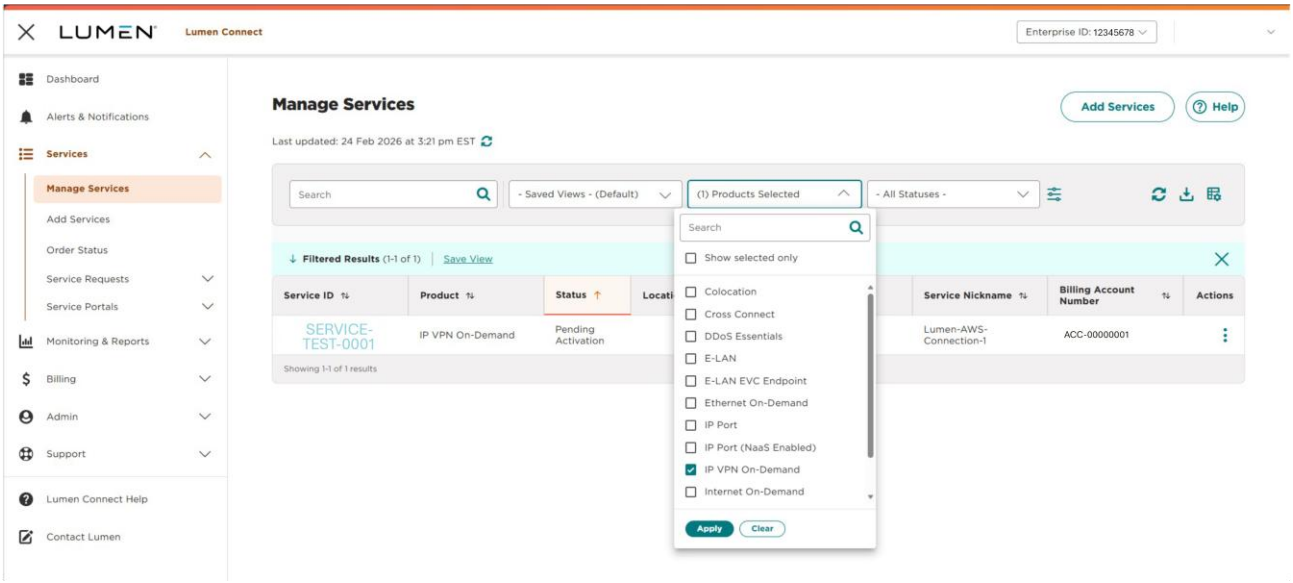
9. A pop-up will appear asking to confirm. Click **Delete** again.



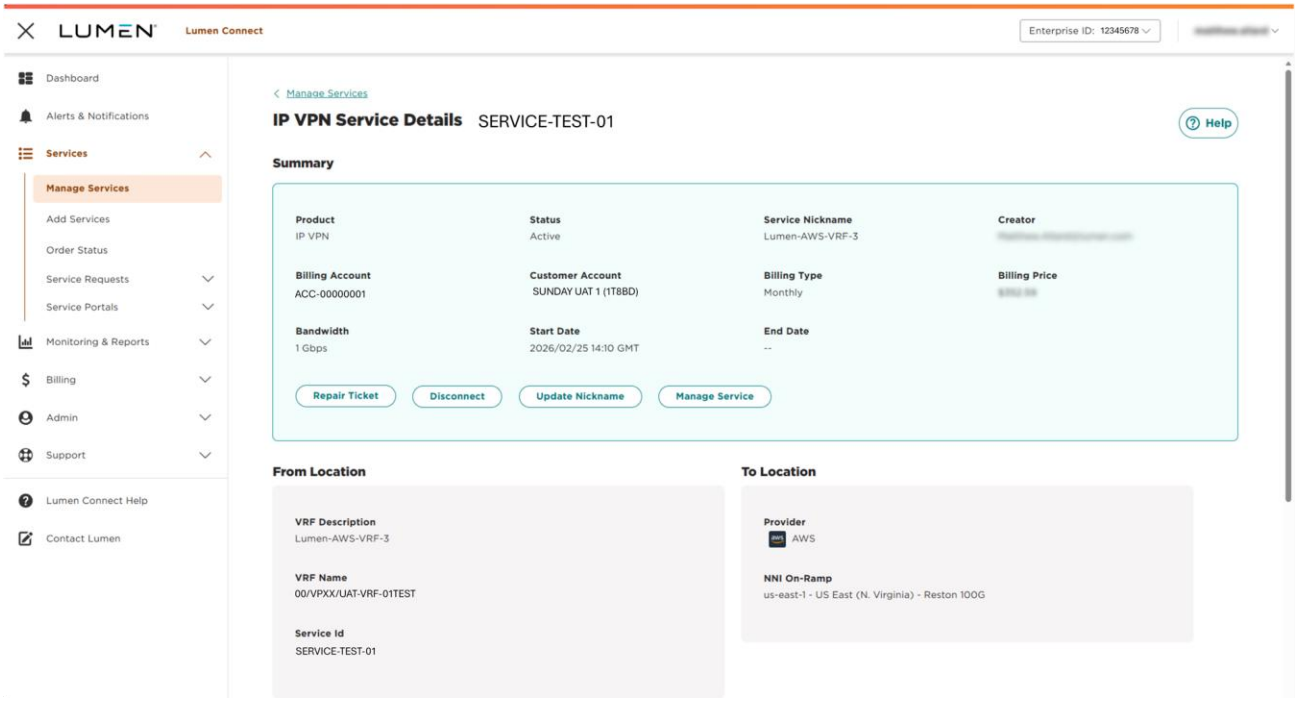
10. A message will show **Connection deleted successfully** and the connection **State** will show **deleted**.



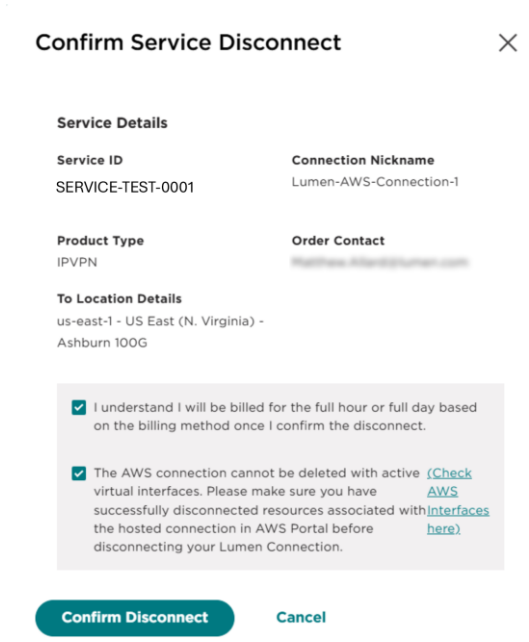
11. Within Lumen Connect[SM] you can now select the **Manage Services, filter by Product, select IP VPN on-Demand** to locate the Service ID of the connection you want to disconnect.



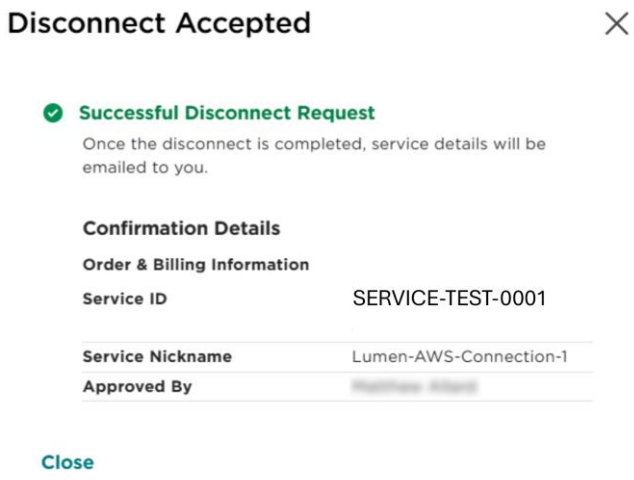
12. Select the Service ID of the connection you want to disconnect and click **Disconnect**



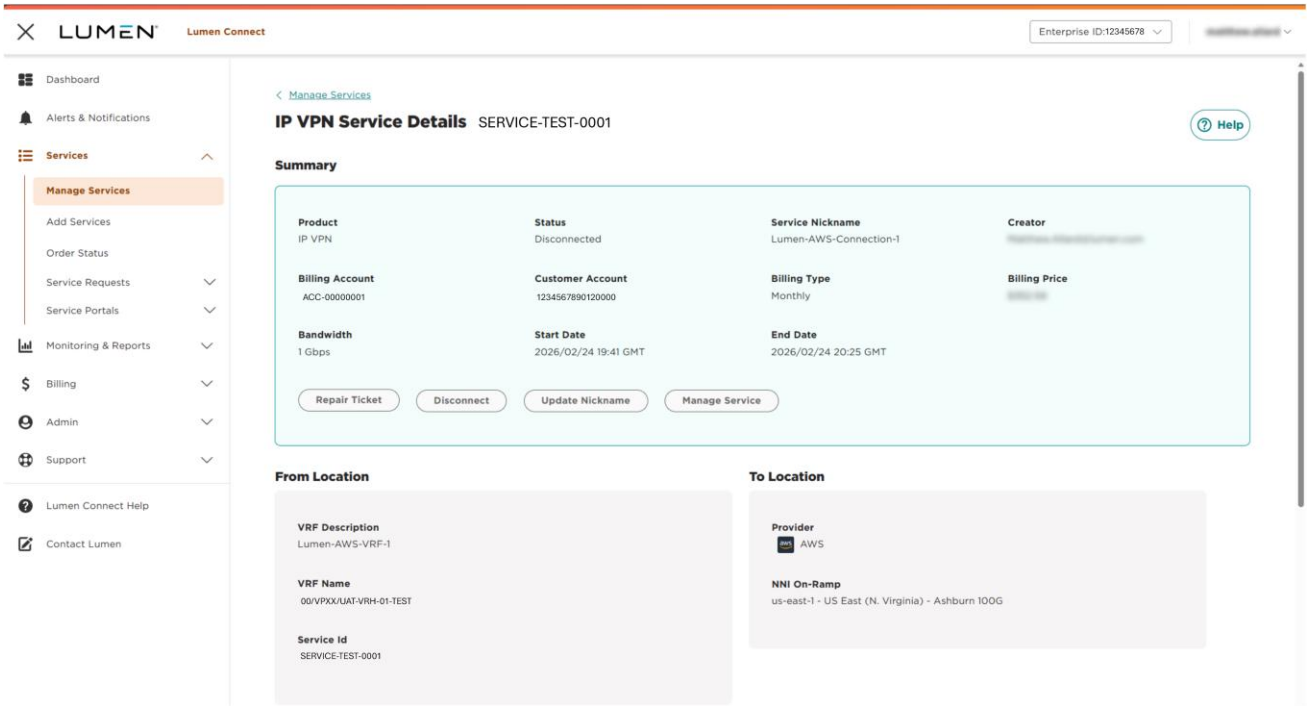
13. Check the box to confirm the change and click **Confirm Disconnect**



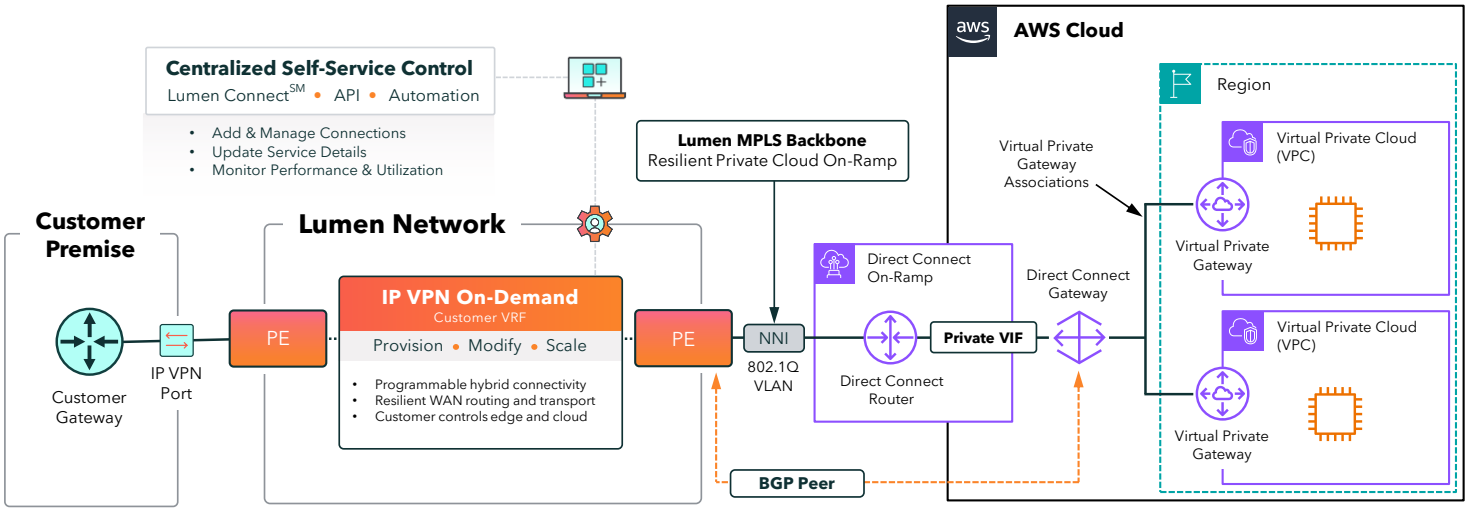
14. A pop-up will display **Disconnect Accepted – Successful Disconnect Request**. You may now click **CLOSE**.



15. Once complete, the **Summary** page will show the **Status** as **Disconnected**.



Deploying Lumen Network-as-a-Service IP VPN On-Demand to a Private VIF with Direct Connect Gateway



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Direct Connect Gateway peering with connectivity to multiple VPCs

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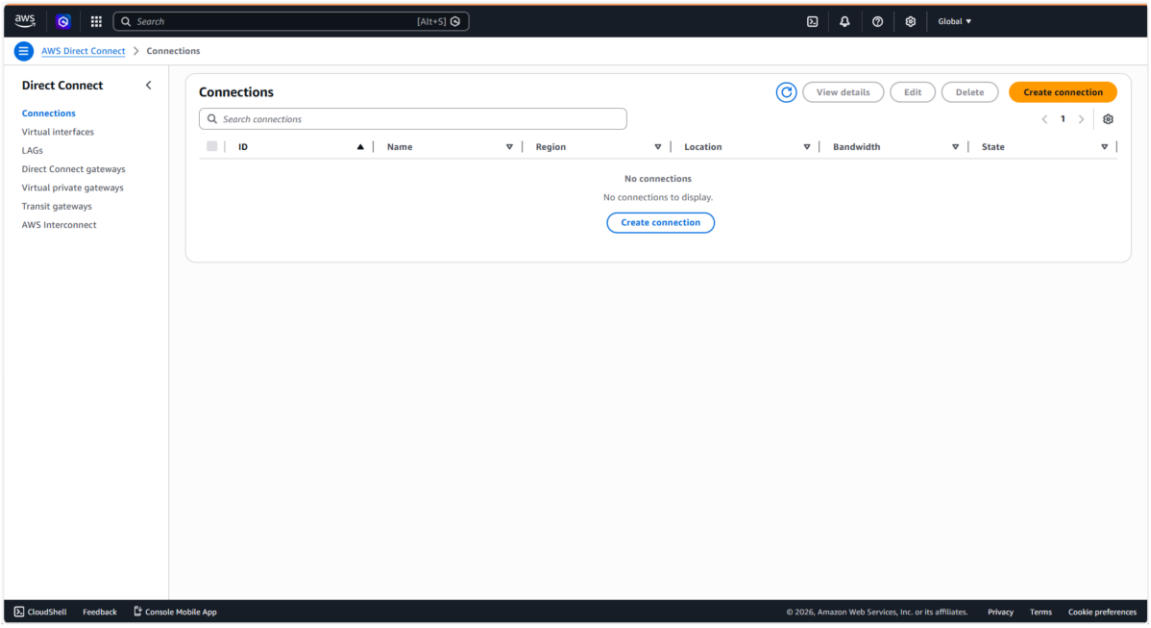
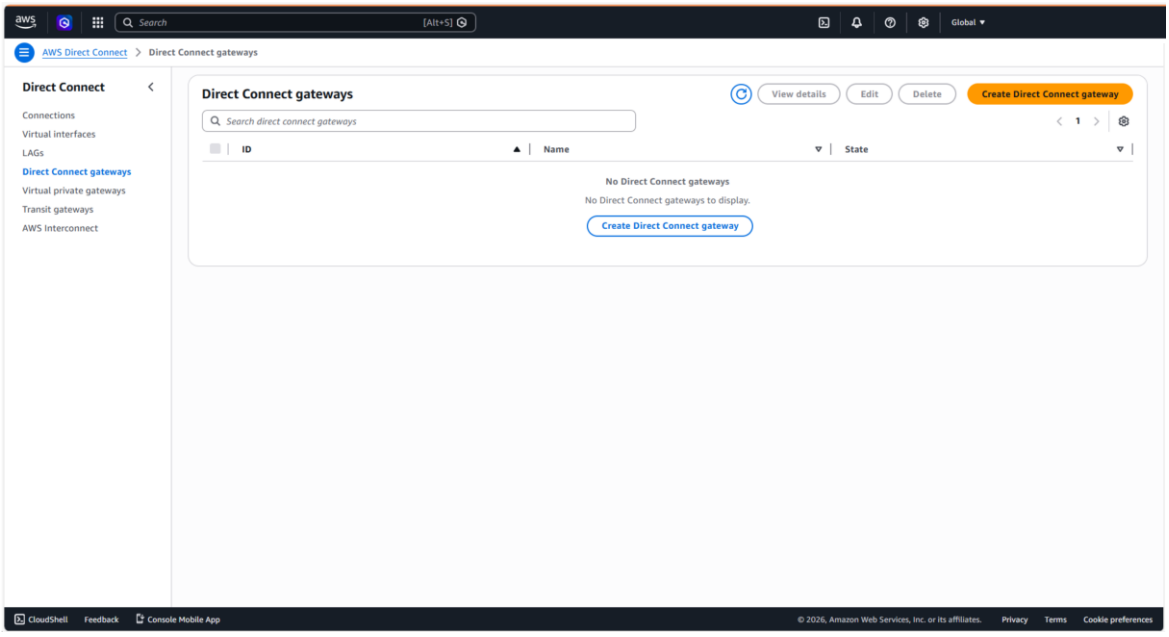
Step 1: Prepare the AWS connection

To prepare the connection in AWS:

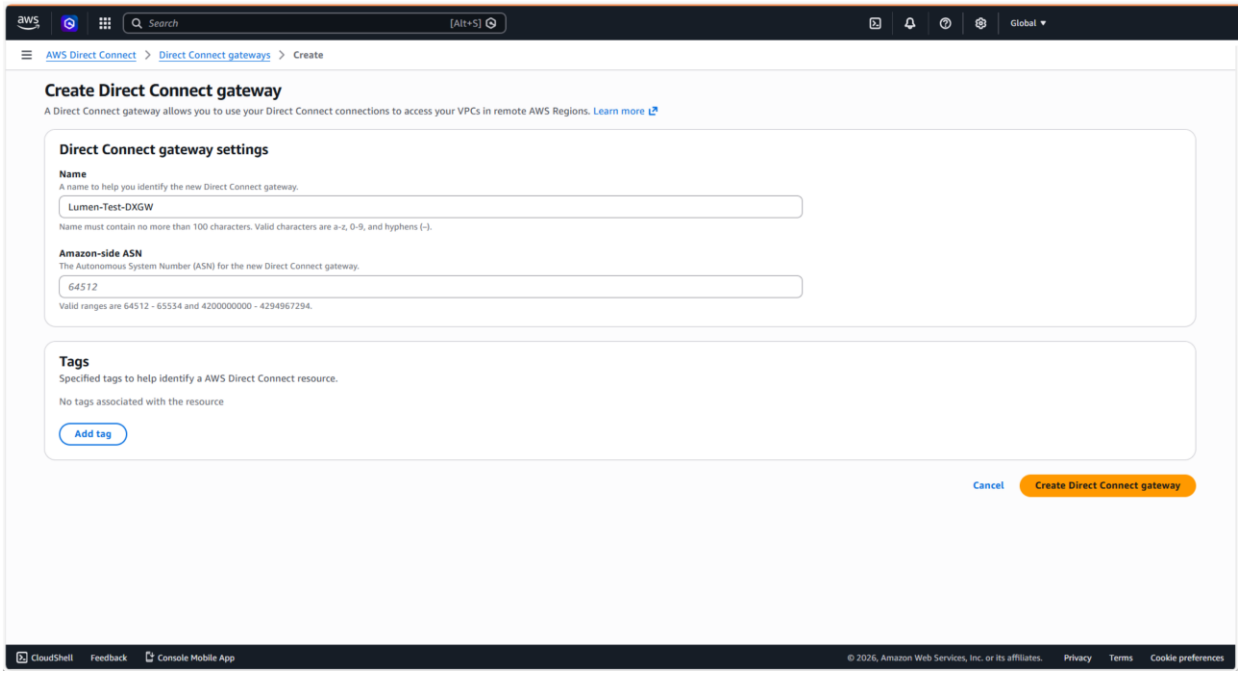
1. Sign in to the AWS Console.
2. If you do not already have a **Direct Connect Gateway** open the **Direct Connect Dashboard**
3. All Services > Networking & Content Delivery > Direct Connect
4. On the left-hand side select **Direct Connect gateways**



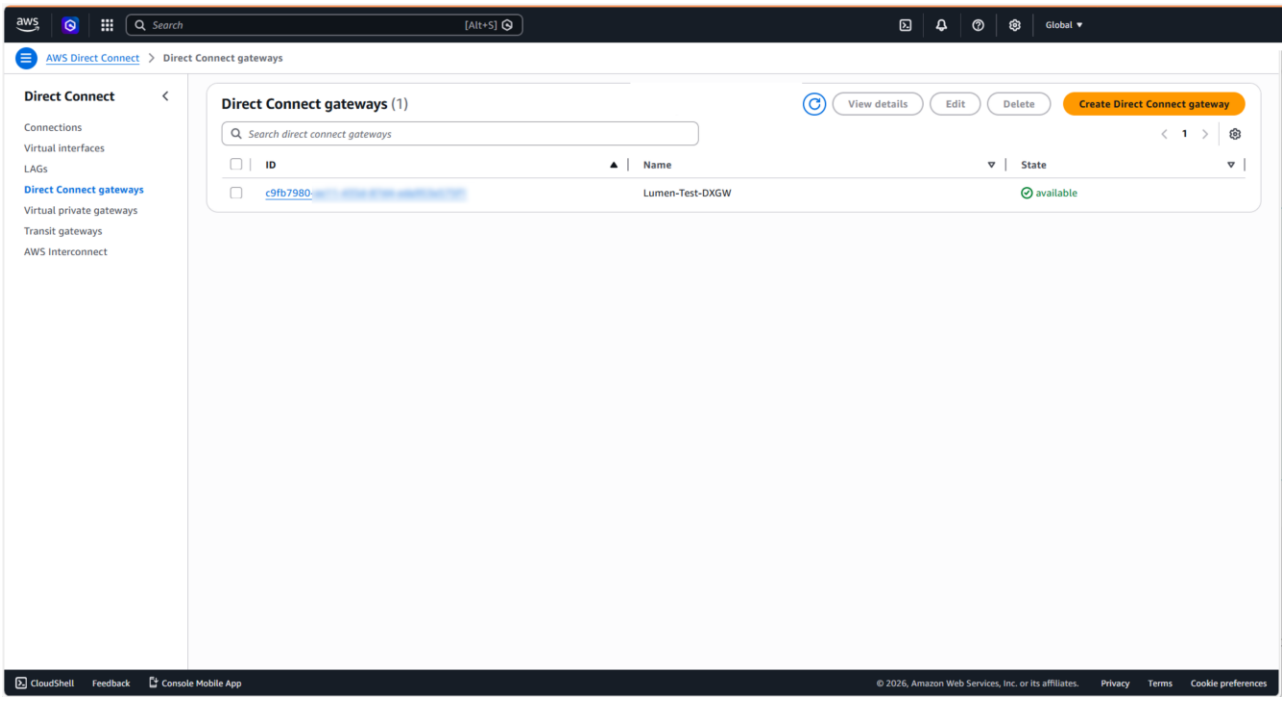
5. Click **Create Direct Connect gateway**



6. Complete the **Direct Connect gateway settings**
    - **Name**
    - **Amazon-side ASN**
        1. Custom ASN (if you modify the ASN, make note as you will need it when creating the IP VPN On-Demand Connection)



7. Click **Create Direct Connect gateway**
8. The **Direct Connect gateways** window will be shown, with the new Direct Connect gateway state as available.



9. Copy your AWS Account ID. You will paste this into Lumen Connect℠ when creating the On-Demand connection.

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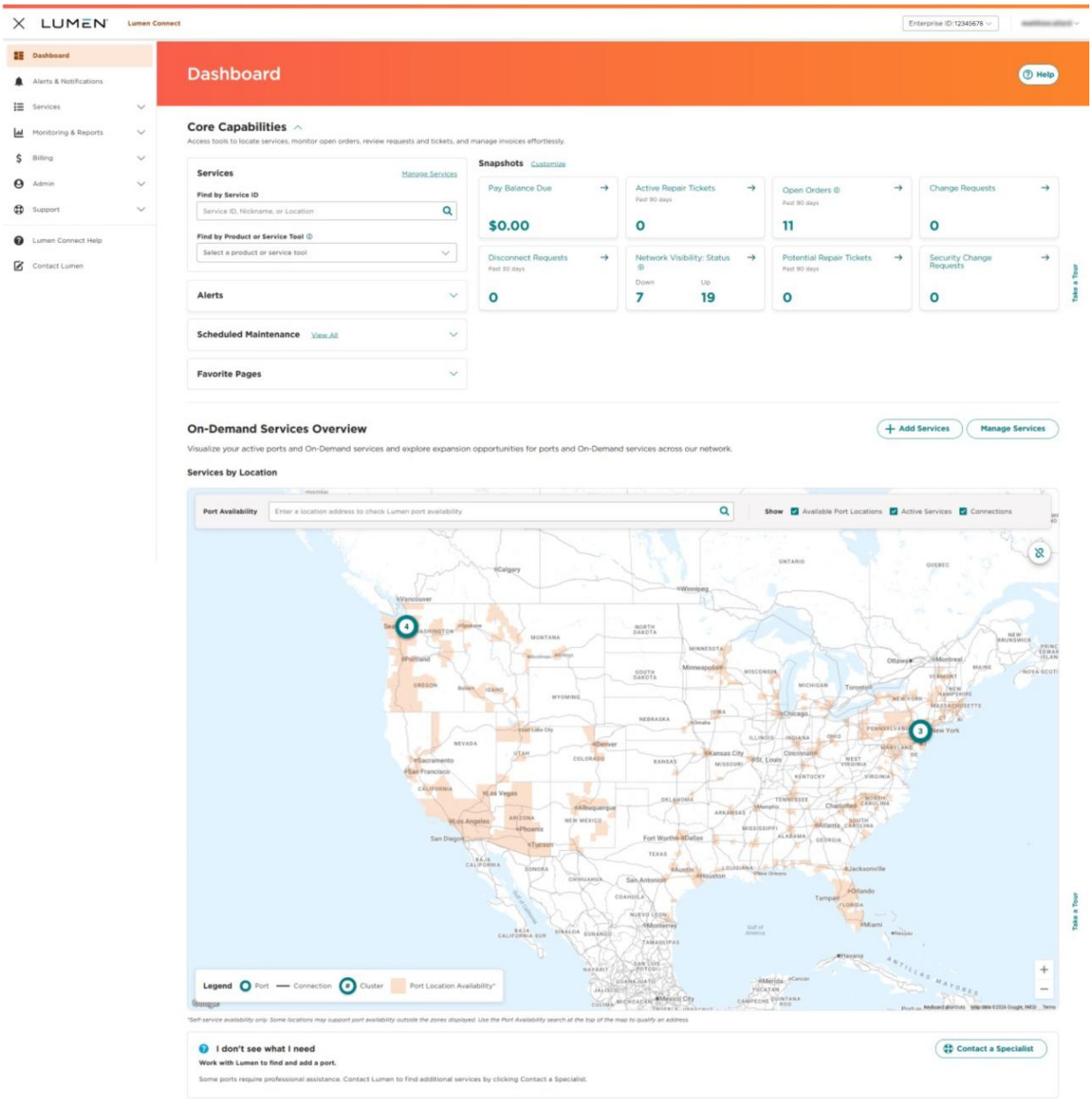
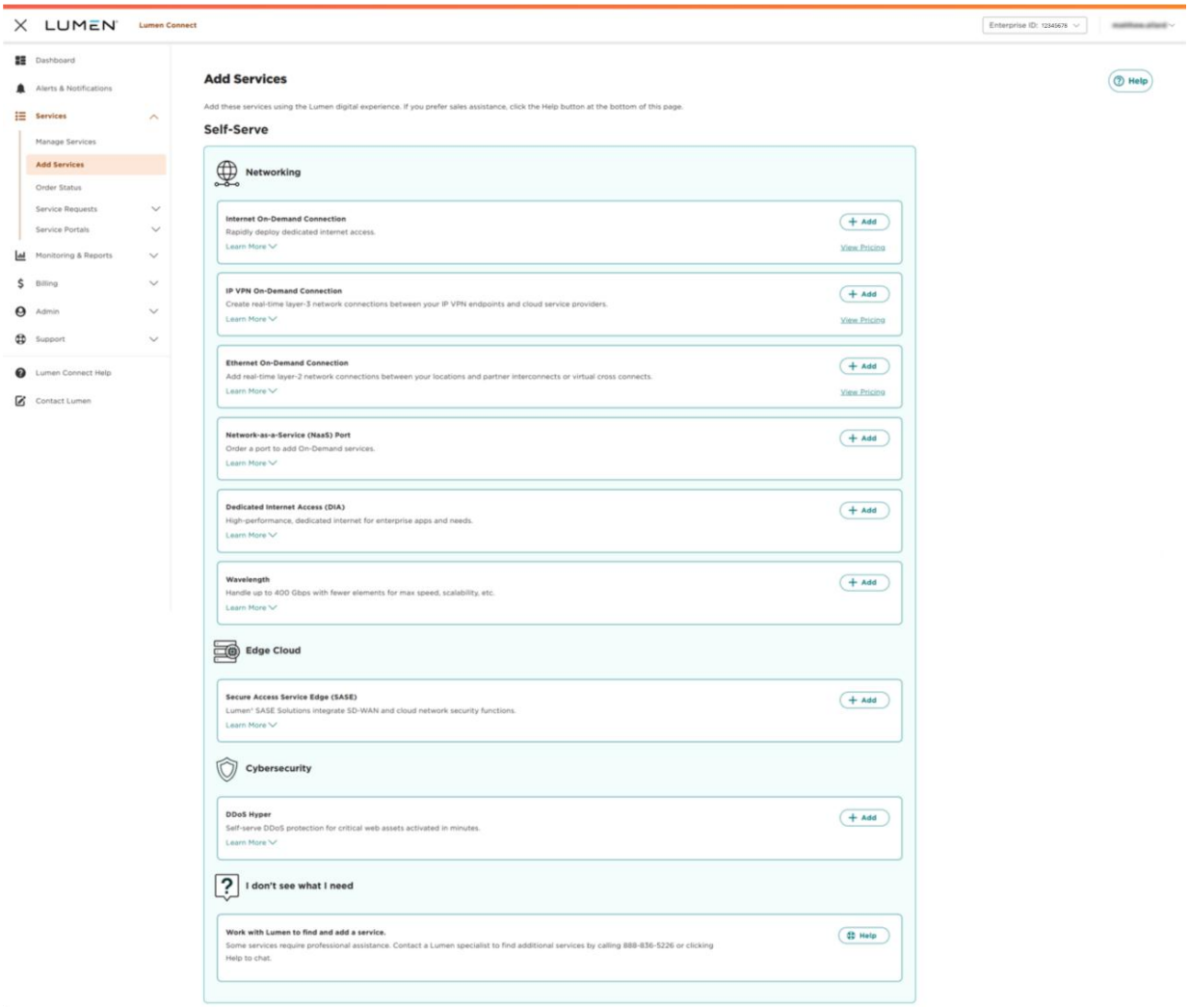


2. Using the left menu click **Services**, then click **Add Services**.



3. Click **+ Add** for IP VPN On-Demand.
4. From the **Customer ID** and **Billing Account Number** lists, select the customer number and billing account number you want to add IP VPN On-Demand to.

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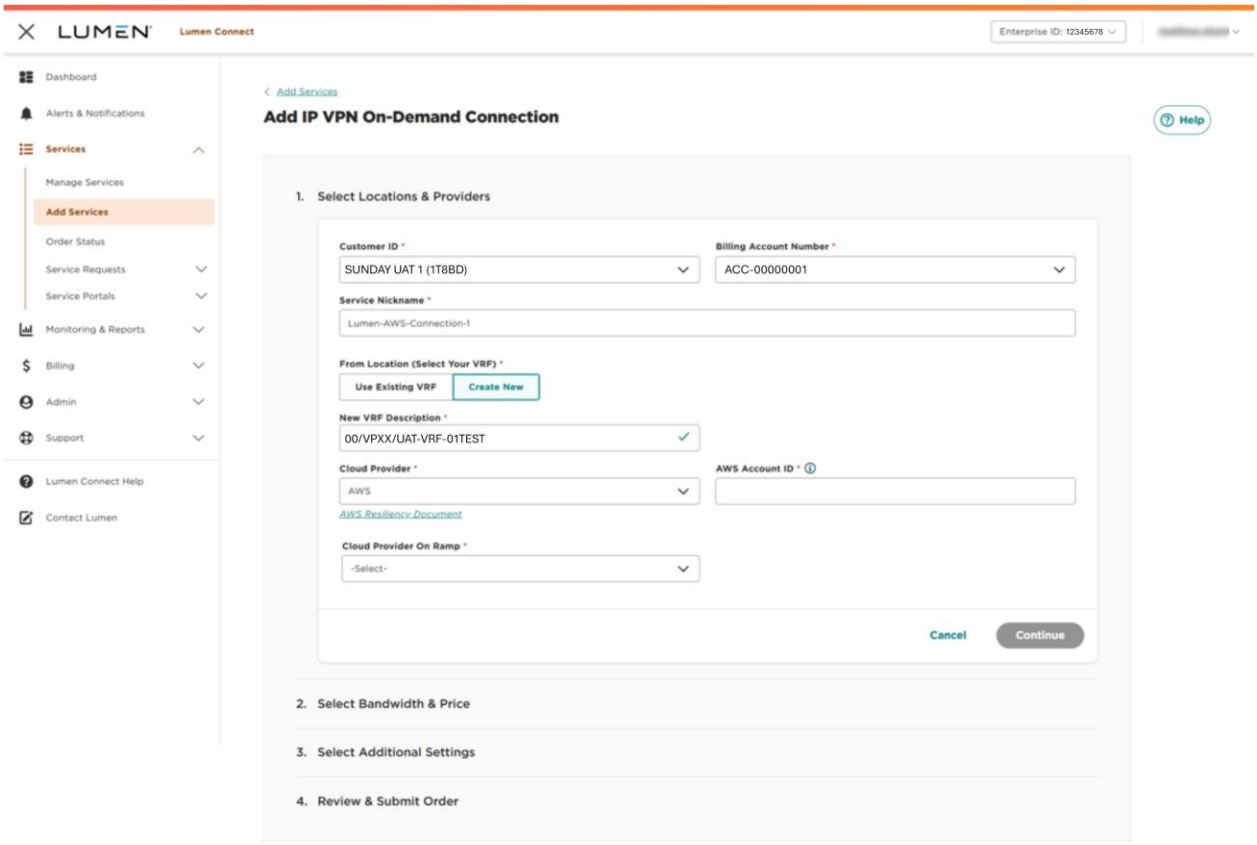
5. In the **Service Nickname** field, type a name for the connection you're creating. (Be sure to use something memorable. This name will appear on your invoice.)

6. In the **From Location (Select Your VRF)** section, select or create a VRF for the other end of your connection.

    - Select the VRF to use for the other end of your connection. Click **View Details** for a VRF to view the VRF's routes.
    - Click **Create New**, then type a description for the new VRF in the **New VRF Description** field. Lumen Connect℠ will create the VRF and activate your VPN service once you create your connection.

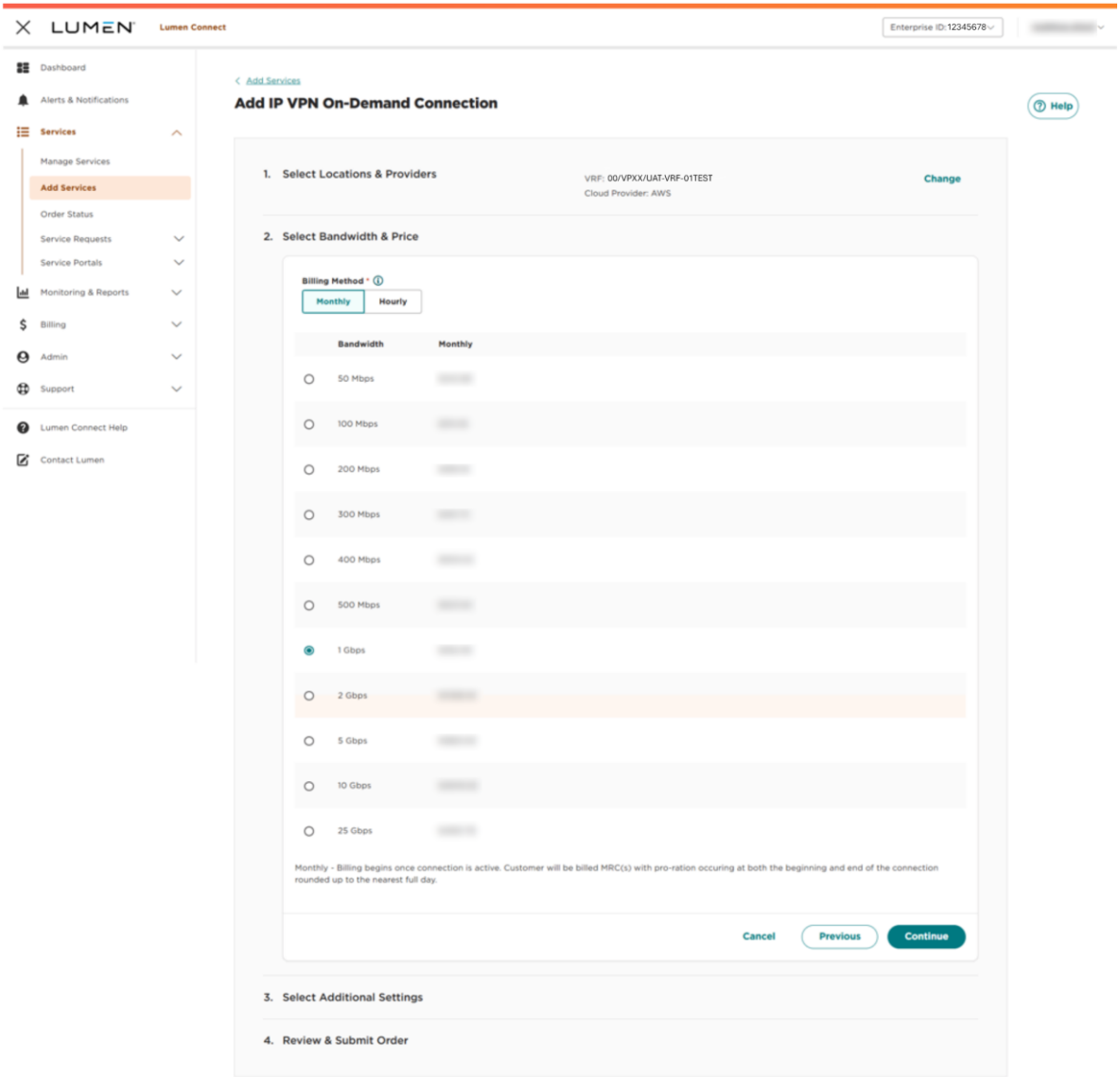


7. From the **Cloud Provider** list, select AWS.
8. Fill in the information for the AWS connection:

    1. In the **AWS Account ID** field, type your AWS account ID.
    2. From the **Cloud Provider On-Ramp** list, select an On-Ramp.

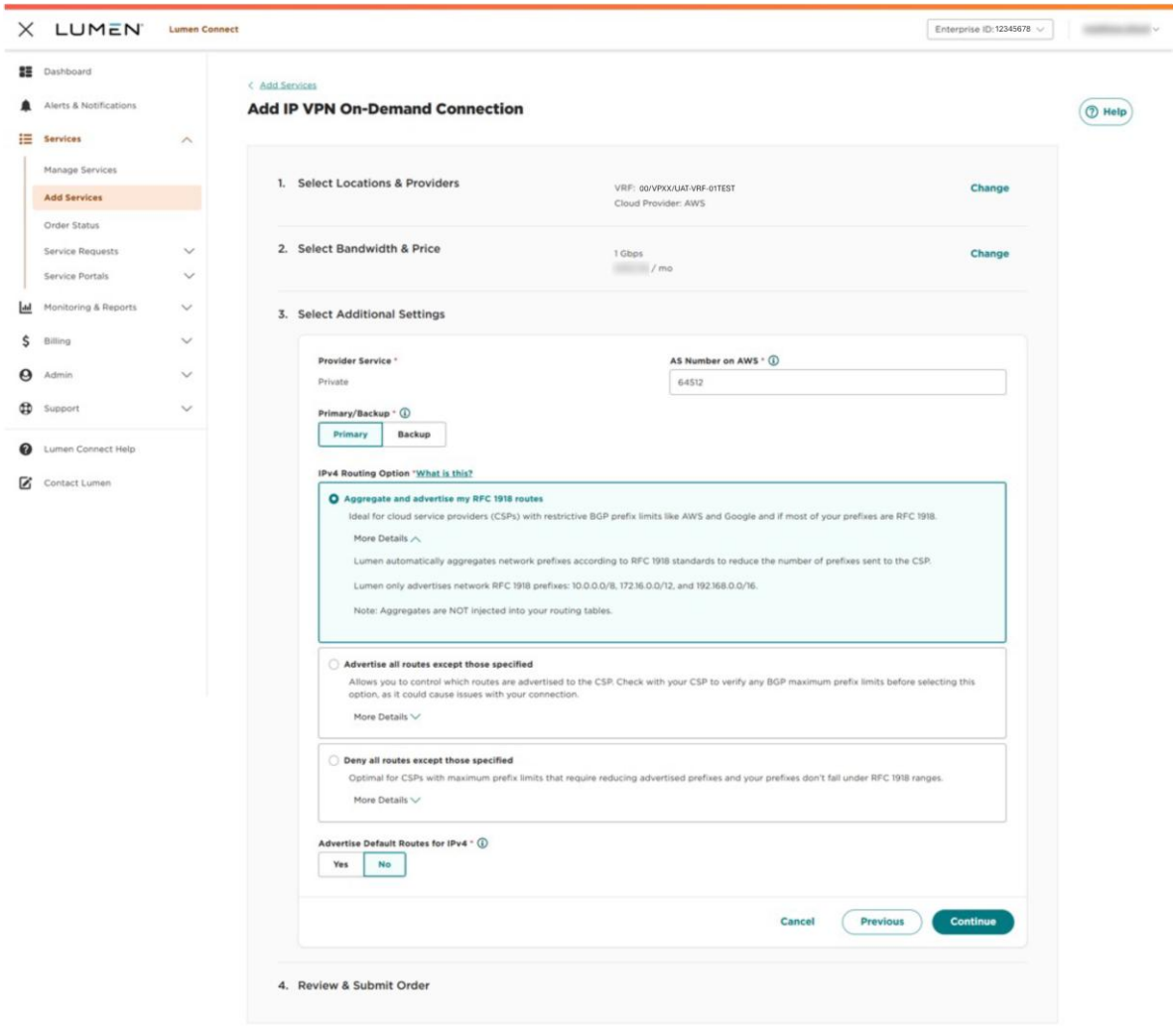
9. Click **CONTINUE**.

10. Use the **Billing Method** buttons to select whether you want monthly or hourly billing for the connection, then select the bandwidth for the connection. Bandwidth options are determined by the destination (to location). (You can't change the bandwidth once you create the connection. If you need to choose a different bandwidth after creating the connection, disconnect the connection and create a new one.)



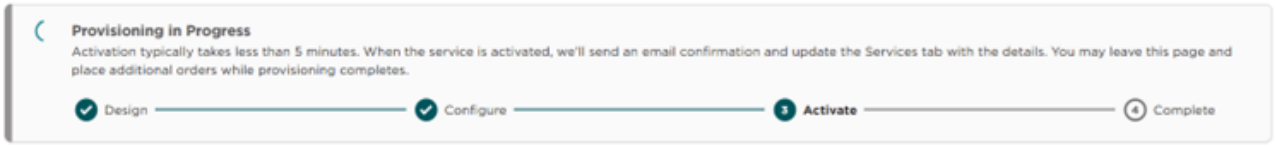
11. Click **CONTINUE**.
12. In the **Select Additional Settings** section, fill in the additional details for the connection:

- In the **AS Number on AWS** field, type the autonomous system number from Amazon (ranges from 64512 to 65534 or 4200000000 to 4294967294) used when creating the Direct Connect gateway.
- Select whether this is a primary or backup connection.
    - Primary will set the local-pref to 750
    - Backup will set the local-pref to 700
- In the **IPv4 Routing Option** field, select the radio button for the routing option you want to use for the connection. Learn more about routing options for an IP VPN connection
- Use the buttons to select whether you want to advertise default routes.



13. Click **CONTINUE**.
14. Review the order information and correct any missing or invalid selections, then click **SUBMIT ORDER**.

    Lumen Connect℠ creates the request for connection, places it in *Pending Activation* status, and routes you to the Services tab so you can monitor the status of the connection. To see status updates, click 🔄. Once Lumen assigns the permanent VRF (within five minutes), the connection changes to *Active* status.



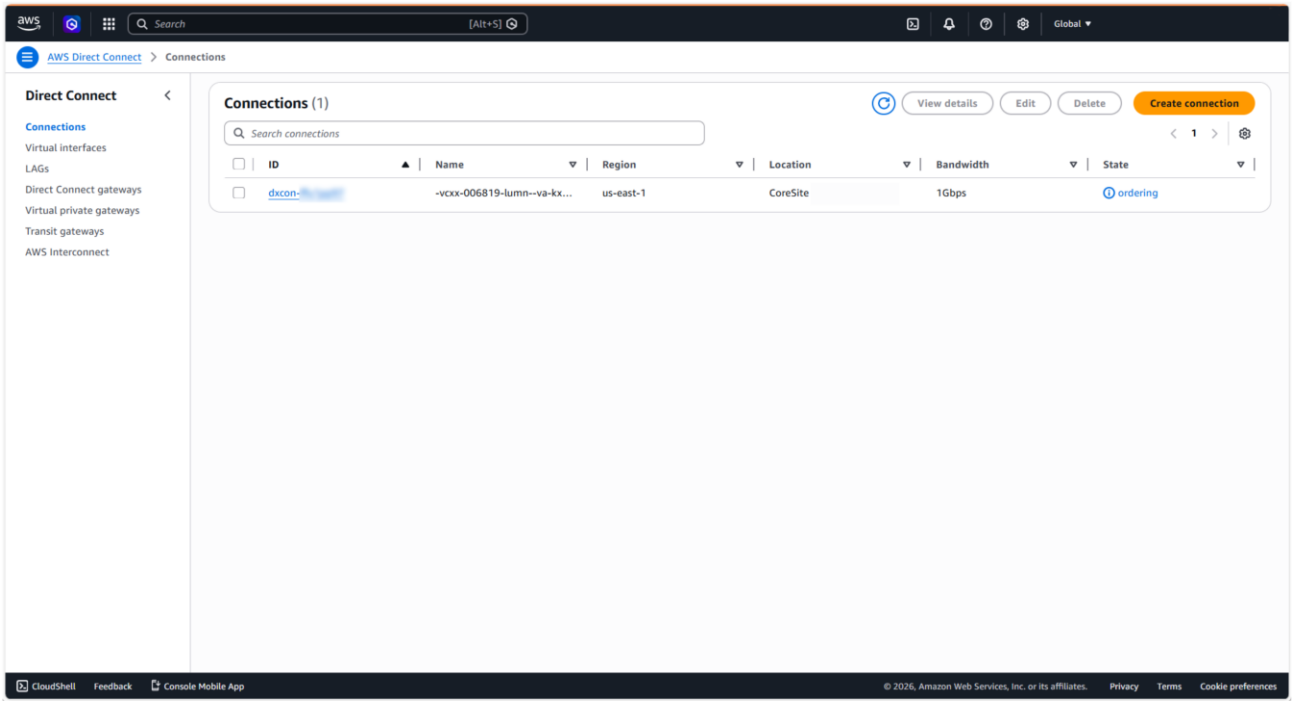
15. If you want to add High Resiliency for this connection, repeat steps 2-12 using the same VRF and a different AWS on-ramp location.

    Learn more about AWS resiliency options

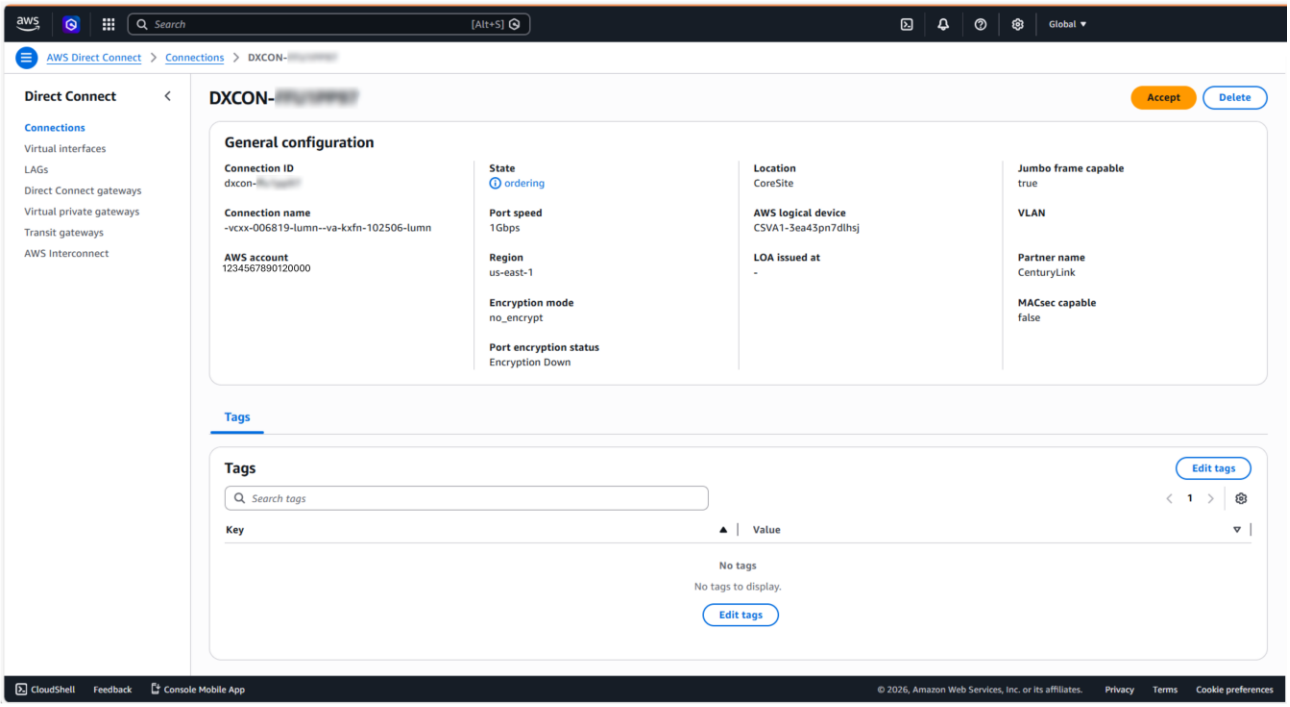
Step 3: Complete the AWS connection

To complete the connection in AWS:

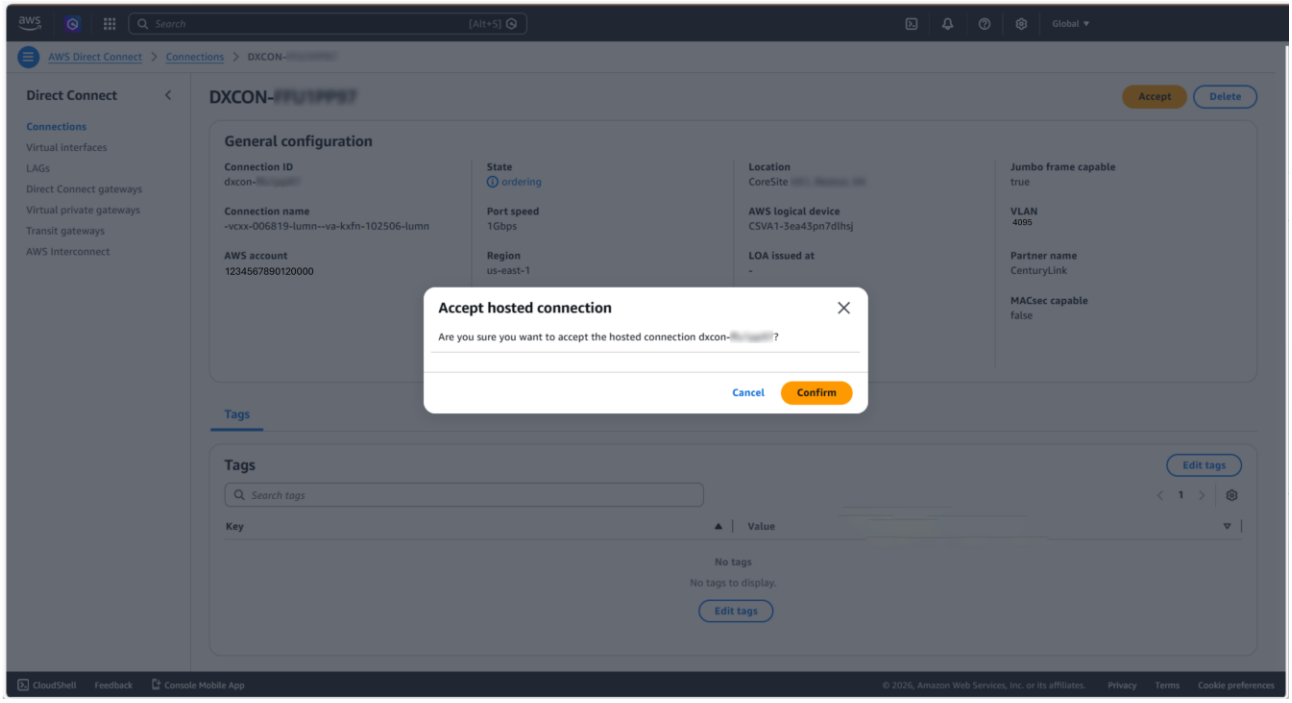
1. Go to the AWS Management Console and sign in.
2. Navigate to the Direct Connect Console
    - AWS Console > Services > Networking & Content Delivery > Direct Connect
3. Select the ID of the connection in the **State** showing **ordering**



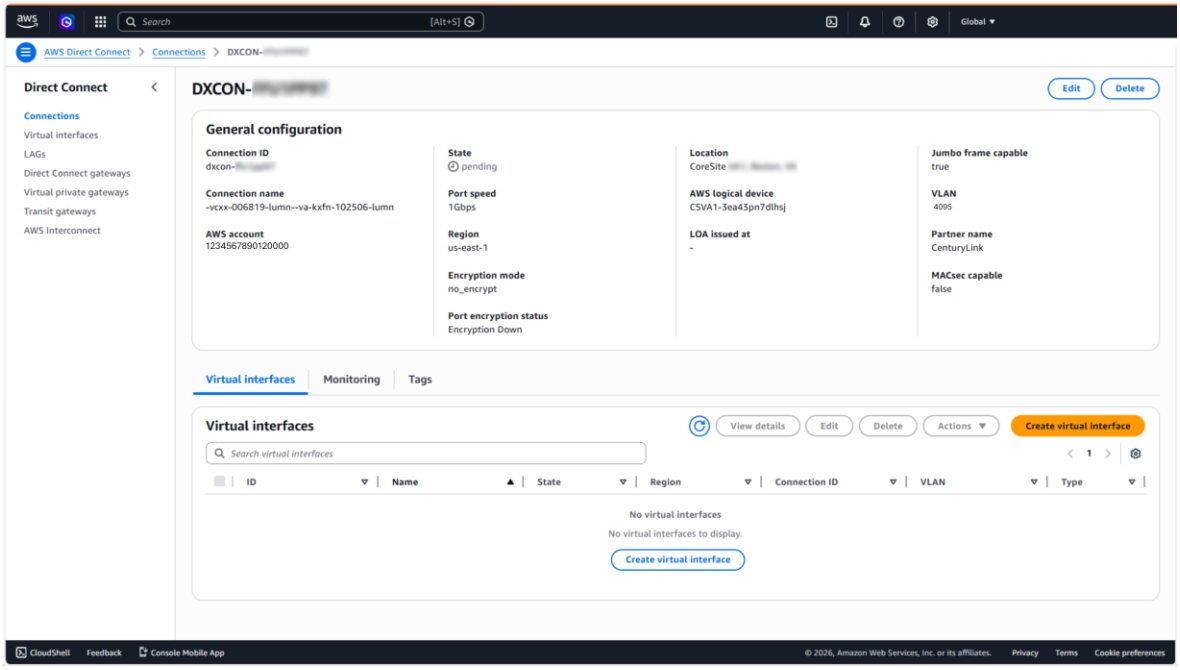
4. Click **Accept**



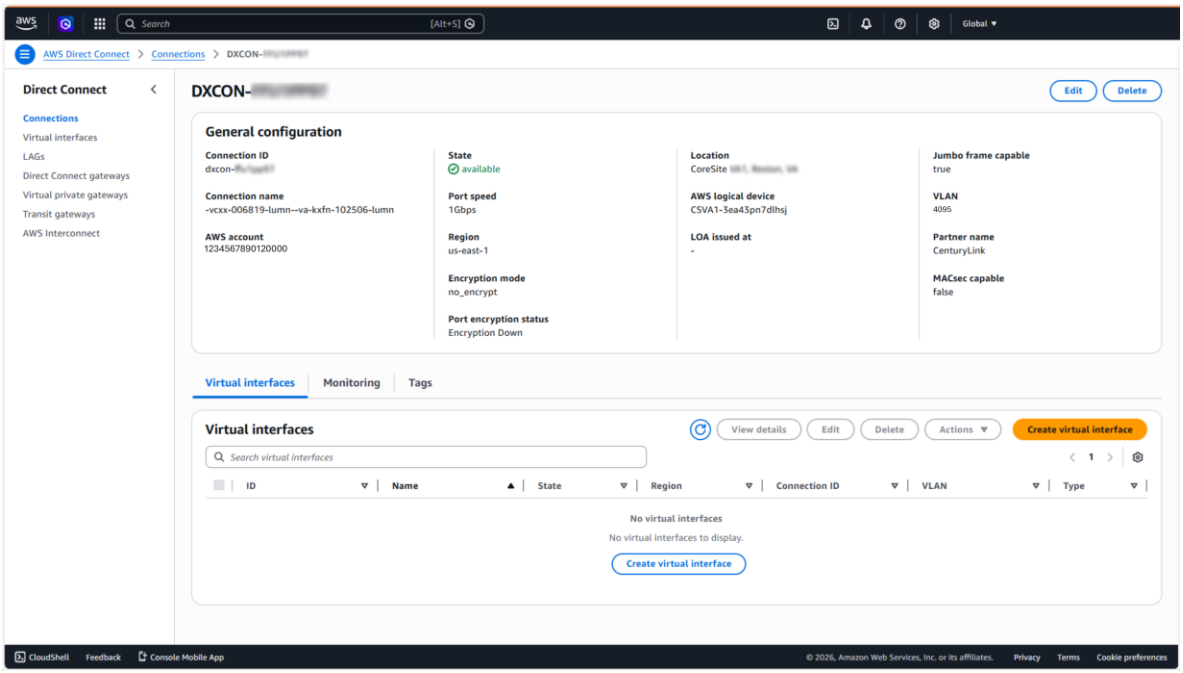
5. A pop-up will ask you to confirm a second time. Click **Confirm**



6. The connection **State** will show **pending**.

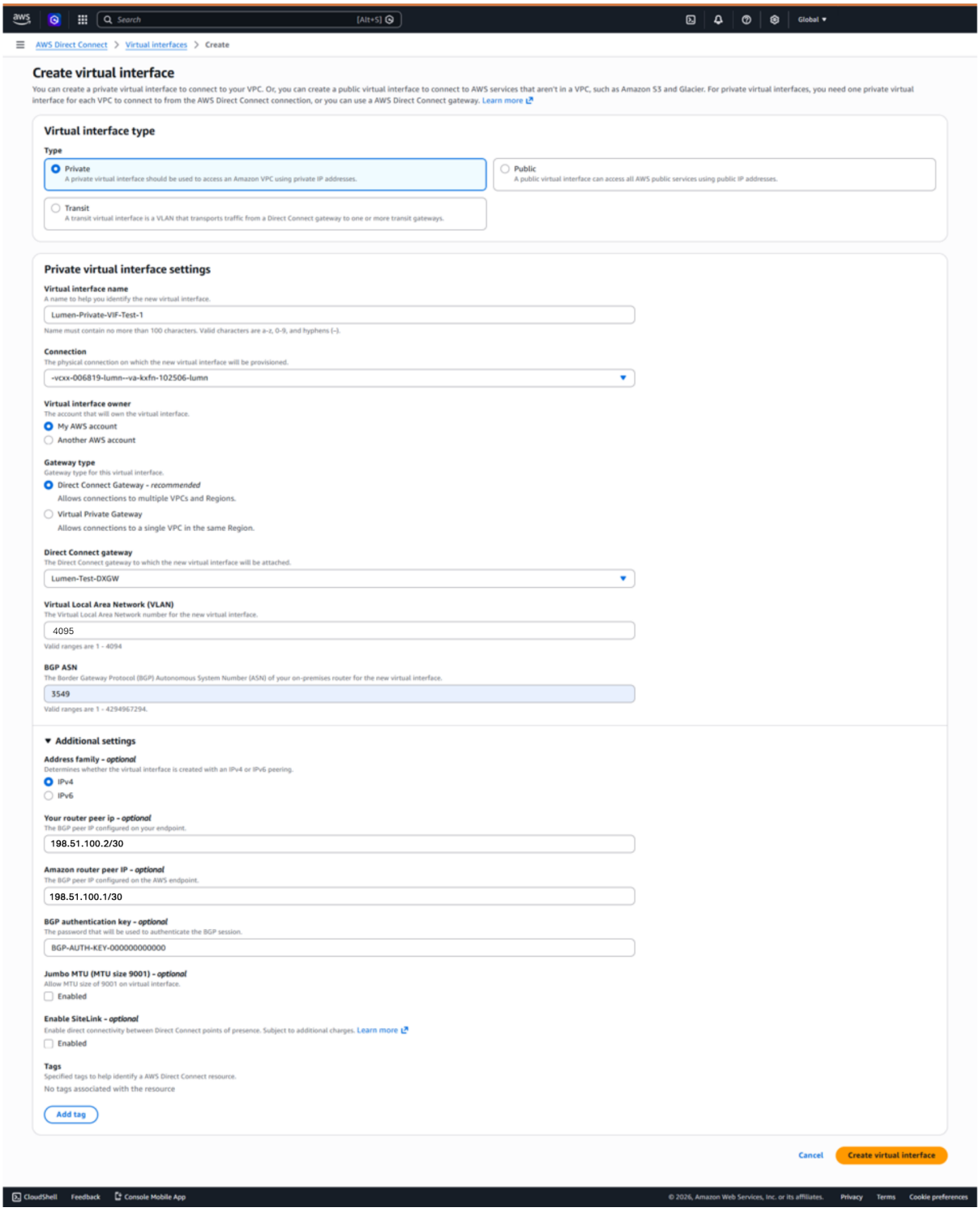


7. After a few minutes the connection state will show **available**. Click **Create virtual interface**

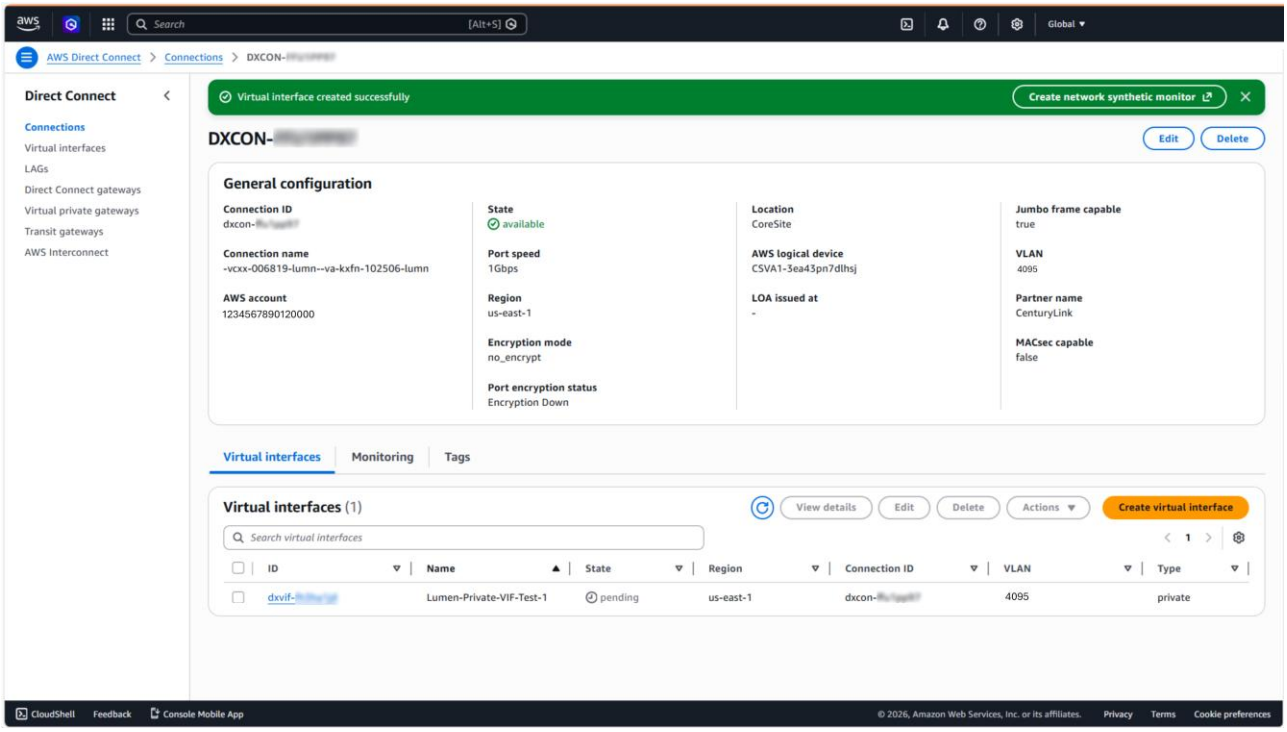


8. Complete the connection details (you will need to expand Additional settings)
    - Virtual interface type - select Private
    - Virtual interface name – name the interface
    - Connection – select the connection that was just accepted
    - Virtual interface owner
        - My AWS Account if connecting to your own VPC
        - Another AWS Account if sharing with a 3rd Party Partner/Vendor
    - Gateway Type – Direct Connect Gateway
    - Direct Connect gateway – the name of the Direct Connect Gateway being used with the connection
    - Virtual Local Area Network (VLAN) – do not change
    - BGP ASN – 3549
    - Your router peer IP – Lumen Router Peer IP from Lumen Connect℠
    - Amazon router peer IP – Cloud Provider Router Peer IP from Lumen Connect℠
    - BGP authentication key – BGP Auth Key from Lumen Connect℠

9. Click **Create virtual interface**

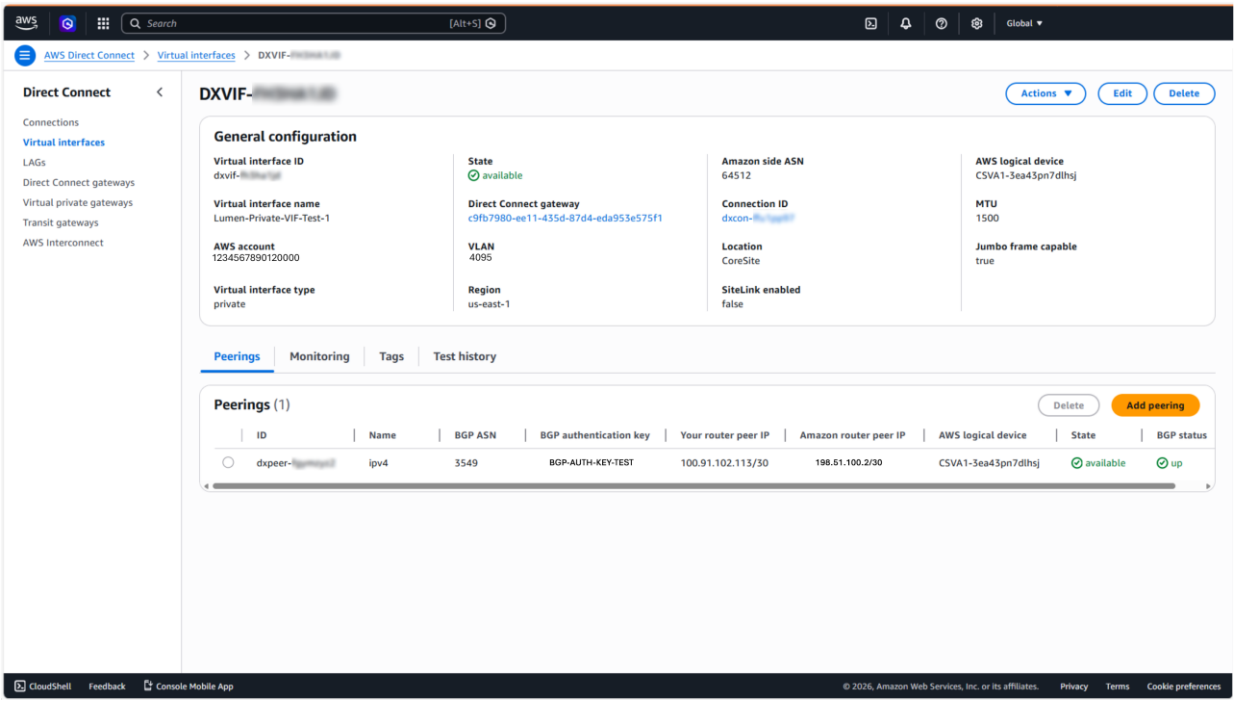


10. A new window will be shown and a message will display **Virtual interface created successfully**. The connection **State** of the VIF will show as **pending**.



11. After a few minutes, the connection **State** will show as **available** and the BGP status will show as up.

***Note**: This can take a few minutes and the BGP status may show down for some period of time.*

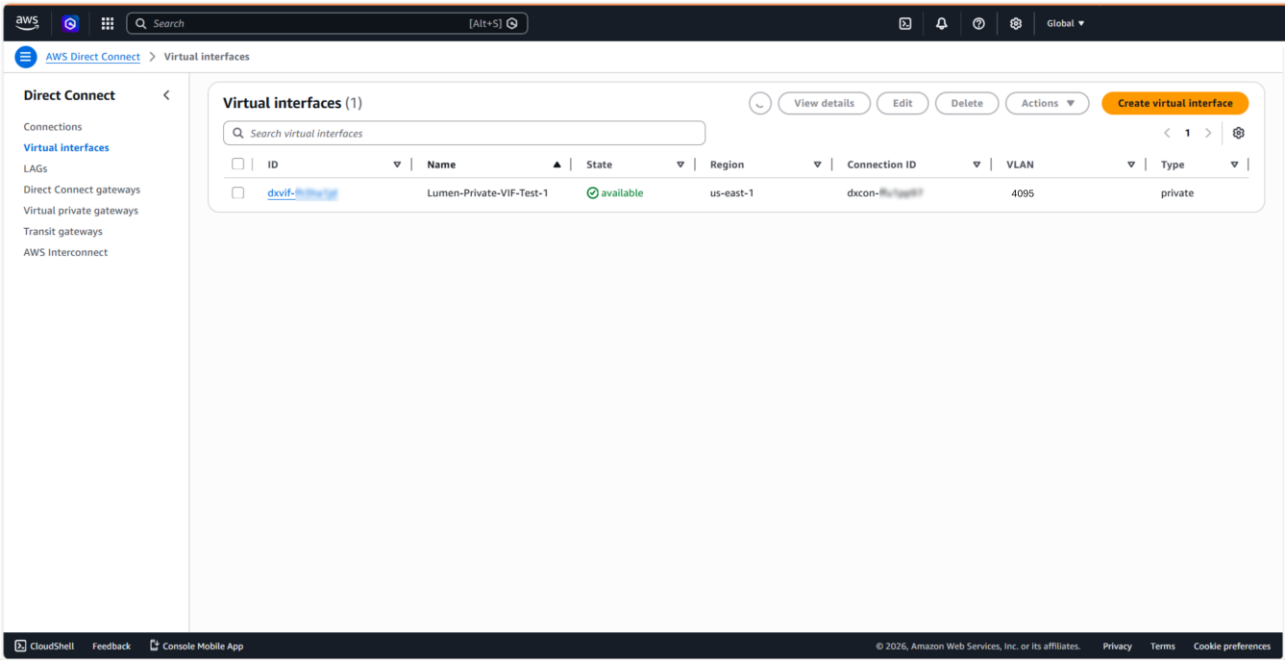


12. Continue AWS Network configuration.

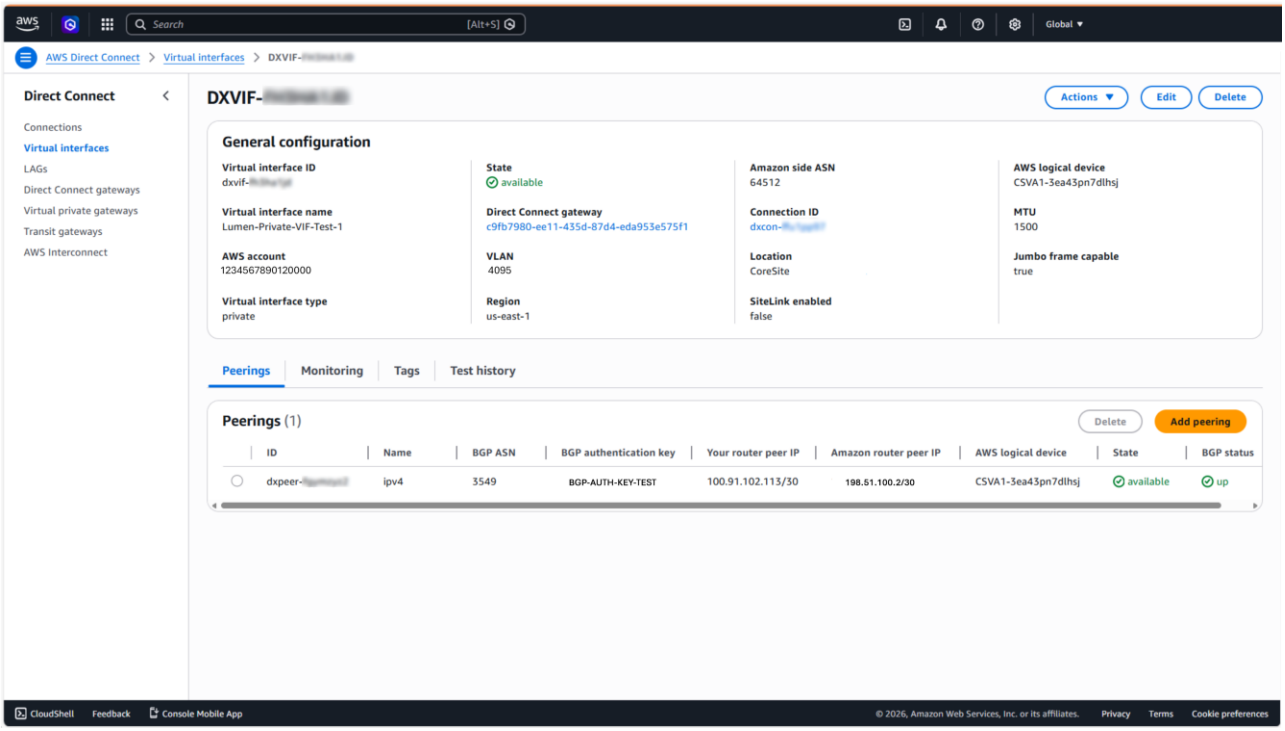
Note: For detailed guidance on configuring your AWS networking, refer to the AWS Direct Connect Documentation. If you'd like personalized support, please contact your Lumen Account Team to explore our professional services for AWS management.

Disconnect Lumen Network-as-a-Service IP VPN On-Demand to a Private VIF with Direct Connect Gateway

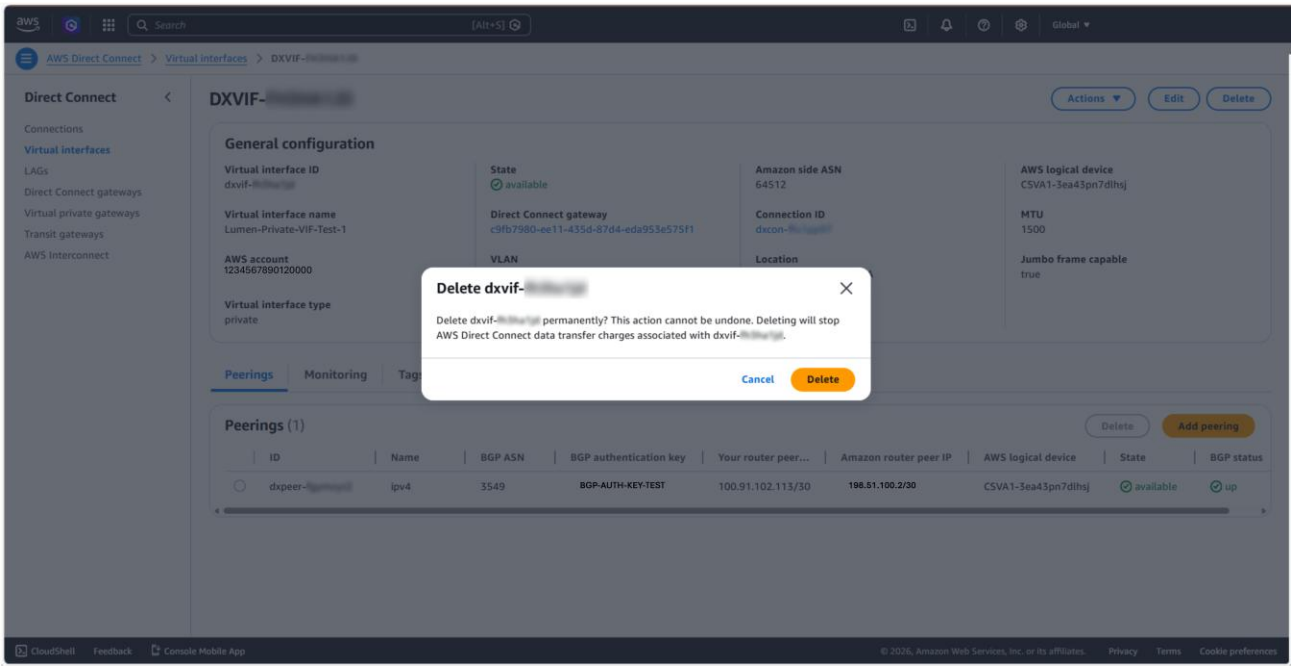
1. Sign in to the AWS Console.
2. Navigate to **AWS Direct Connect > Virtual Interfaces**
3. Select the Virtual Interface associated with the IP VPN On-Demand service that is being disconnected.



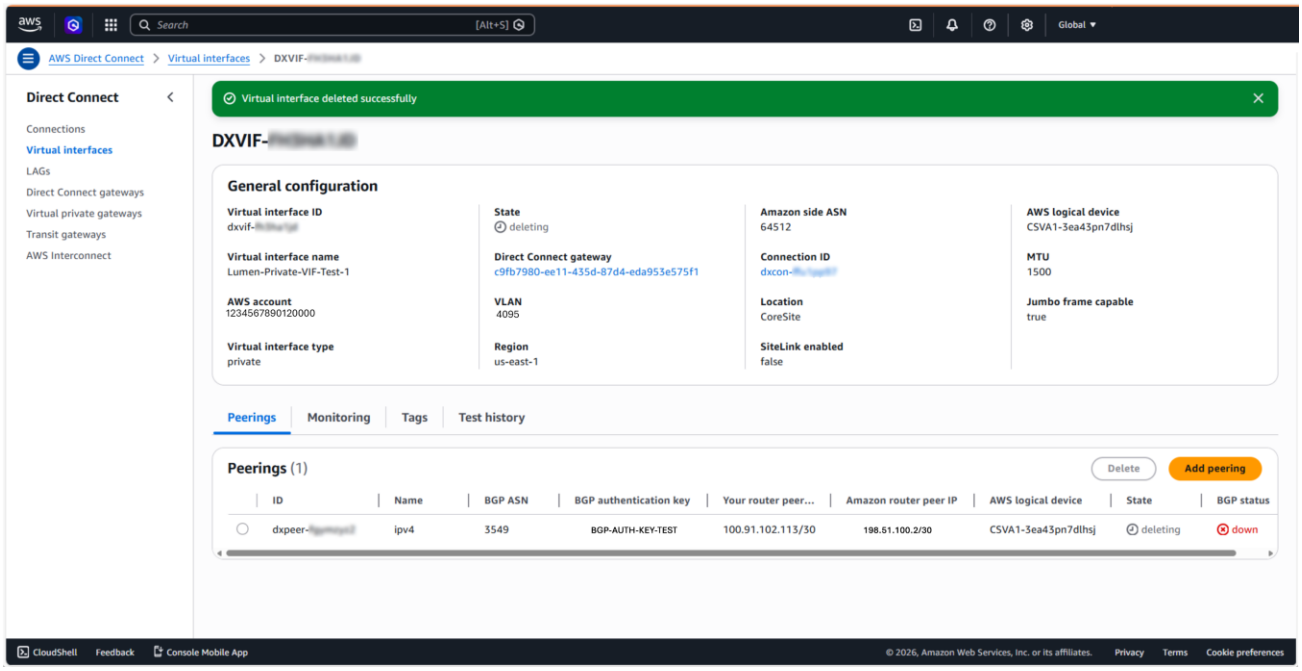
4. In the upper right-hand corner, click **Delete**



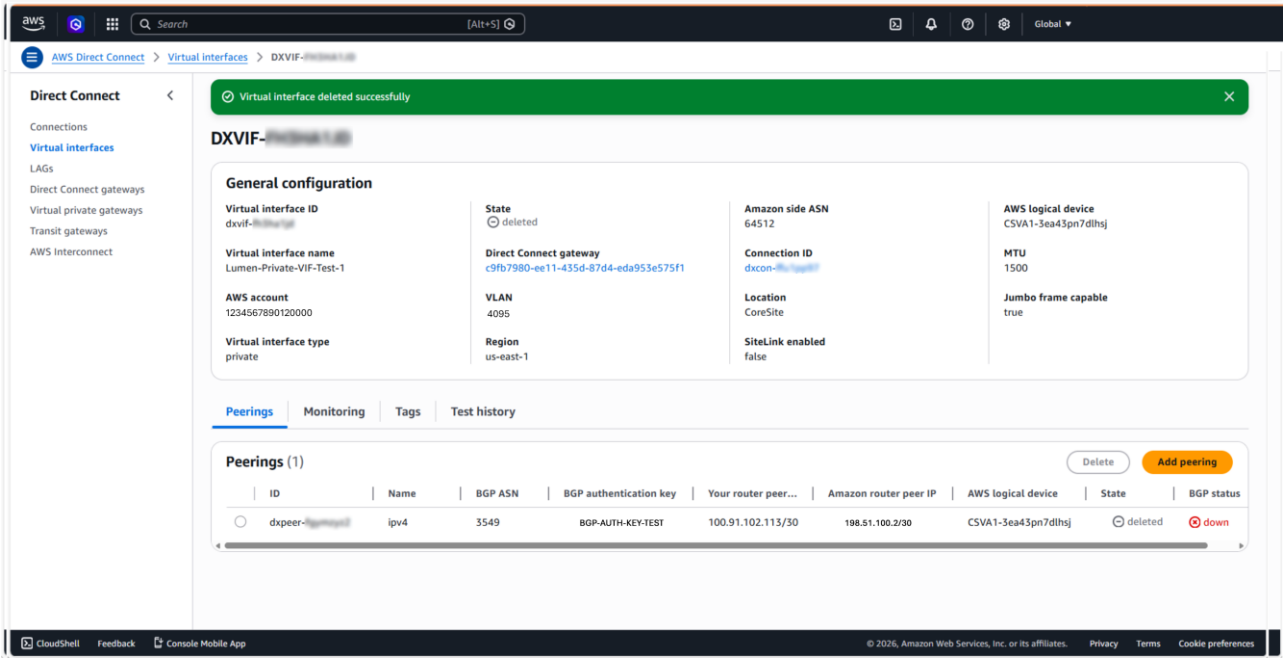
5. A pop-up will appear asking to confirm. Click **Delete** again.



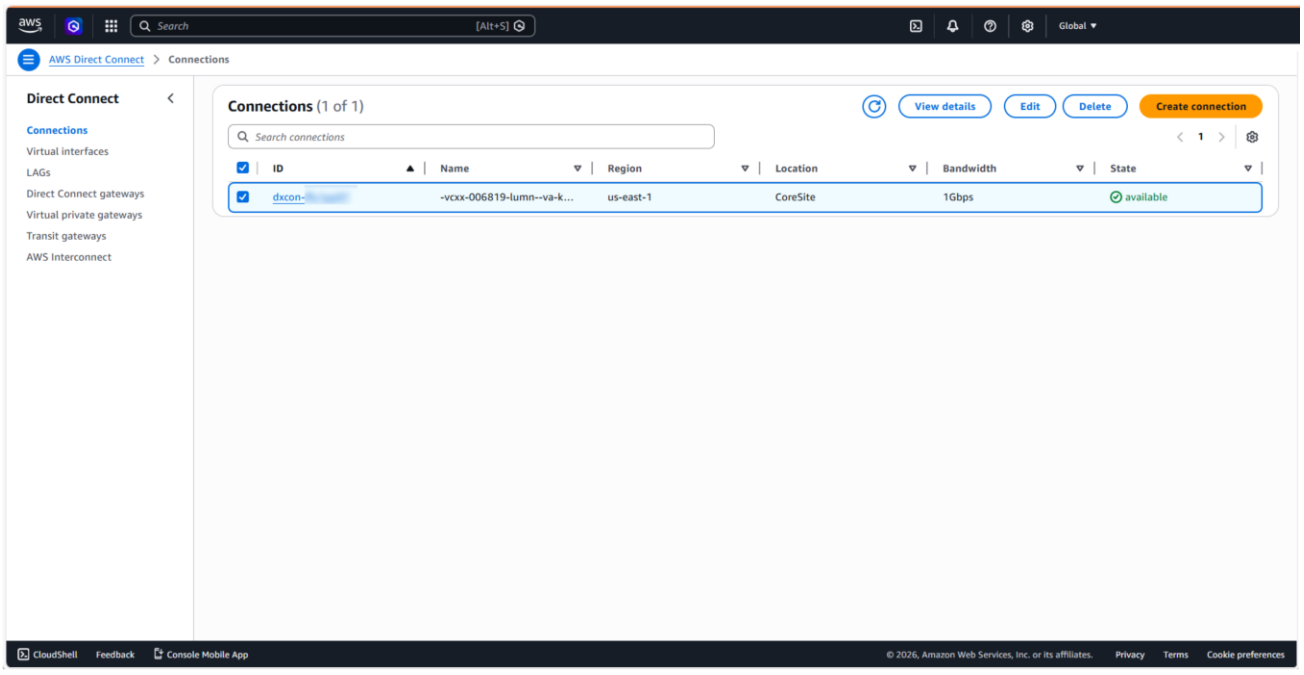
6. A new window will be shown, and a message will display **Virtual interface deleted successfully**. The connection **State** will show as **deleting**.



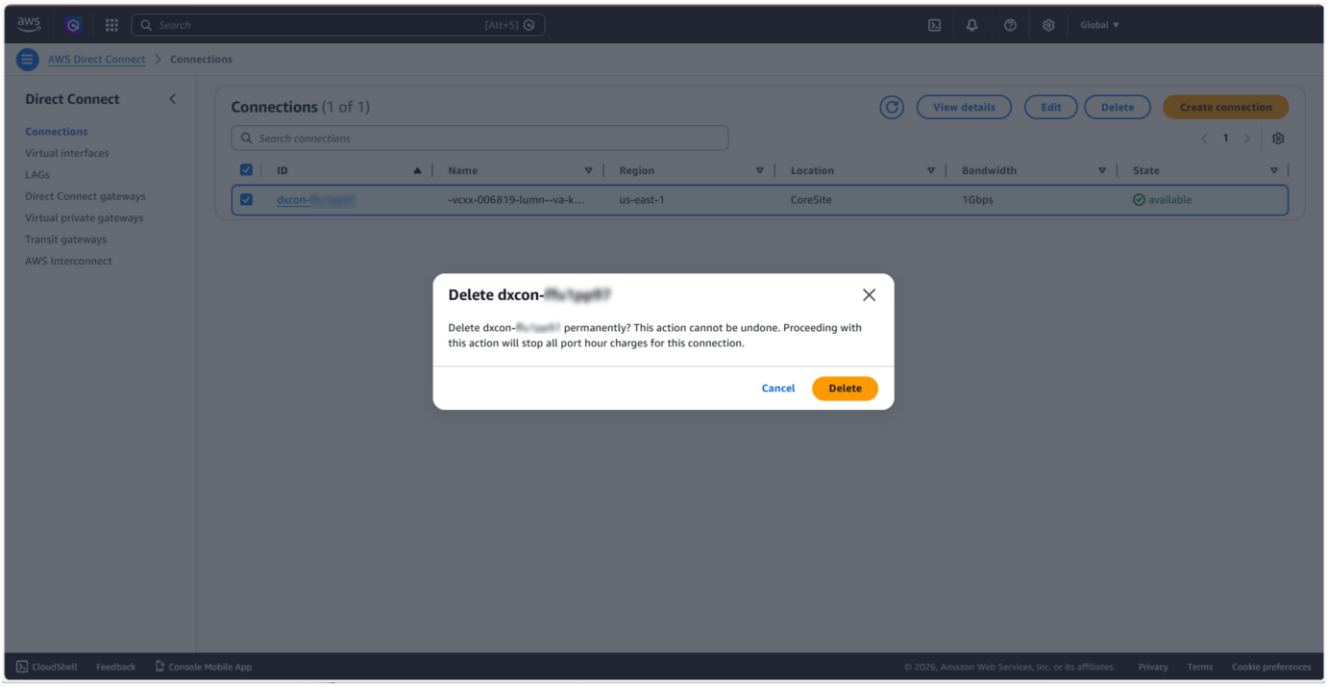
7. After a few minutes, the message will display **Virtual Interface deleted successfully** and the connection **State** will show as **deleted**.



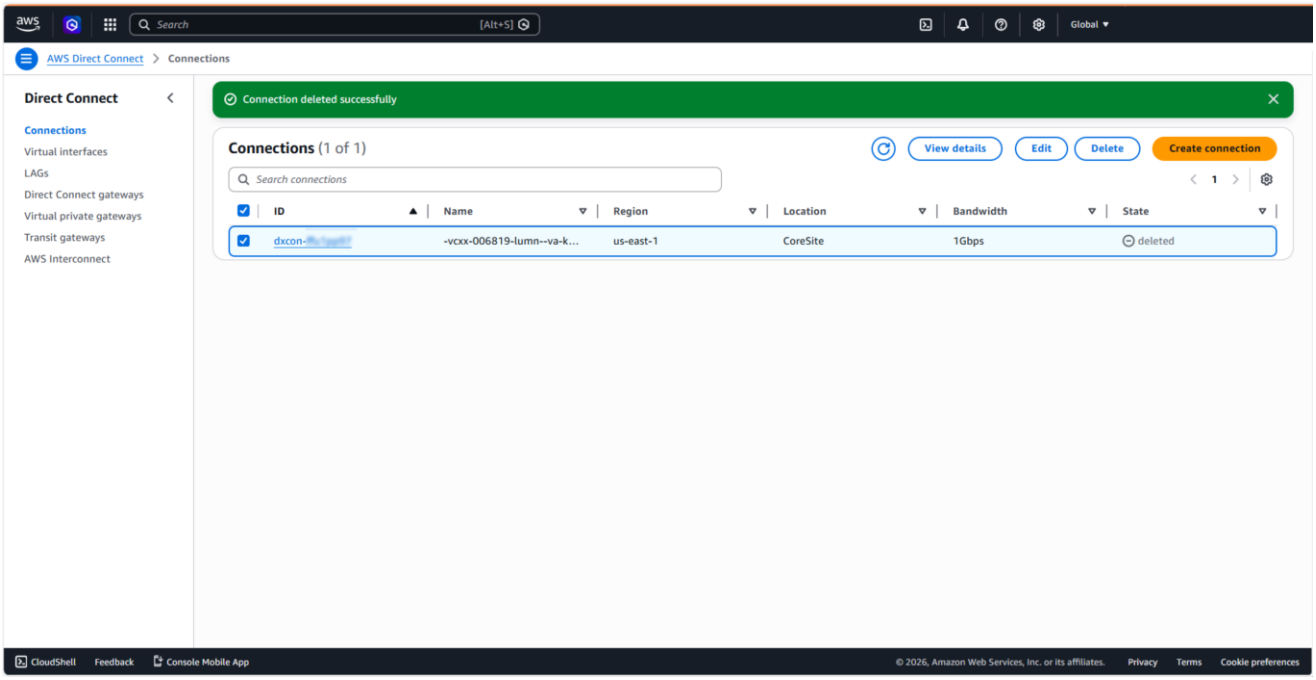
8. Navigate back to **Direct Connect > Connections**, select the box next to the Connection ID associated with the IP VPN On-Demand service that is being disconnected, and click **Delete** in the upper right-hand corner.



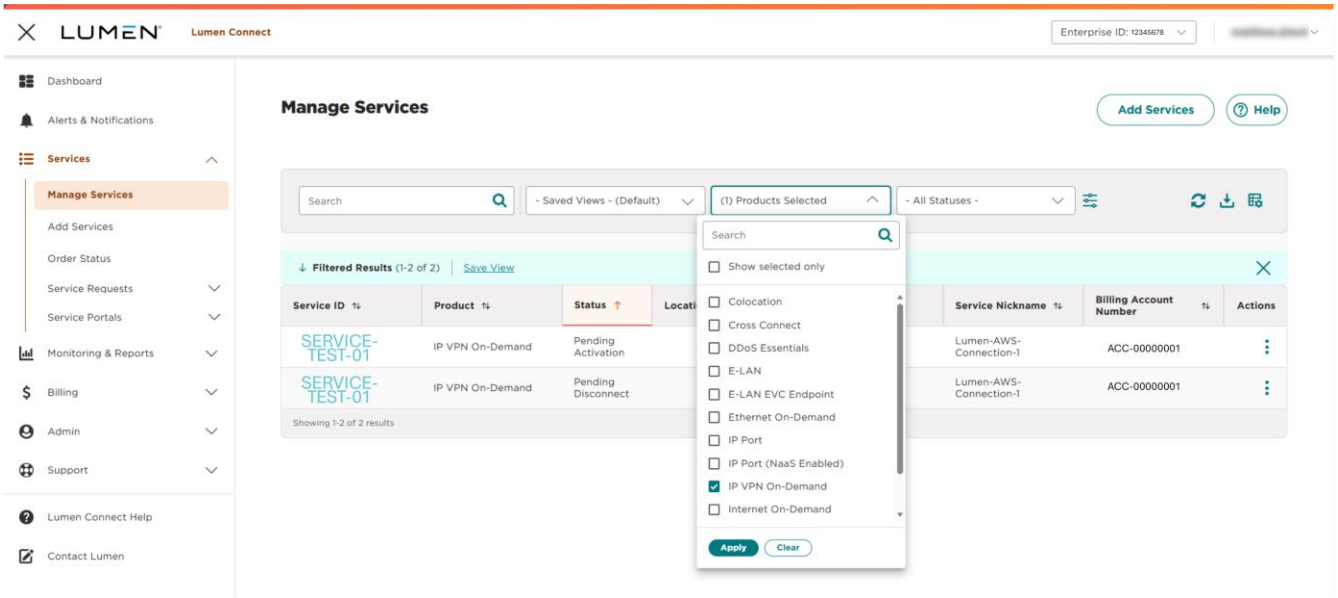
9. A pop-up will appear asking to confirm. Click **Delete** again.



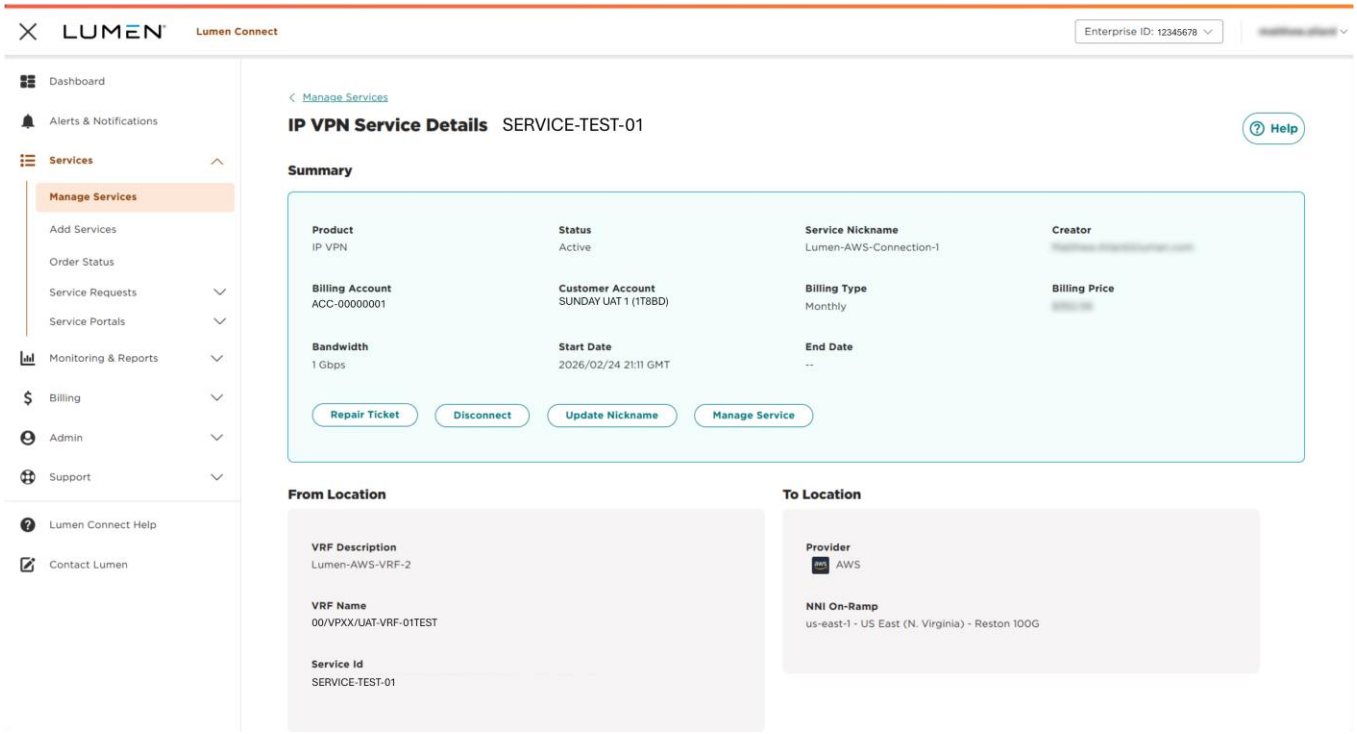
10. A message will show **Connection deleted successfully** and the connection **State** will show **deleted**.



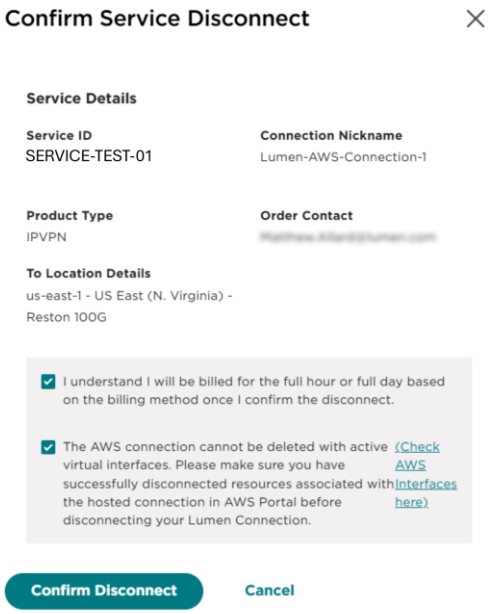
11. Within Lumen Connect[SM] you can now select the **Manage Services, filter by Product, select IP VPN on-Demand** to locate the Service ID of the connection you want to disconnect.



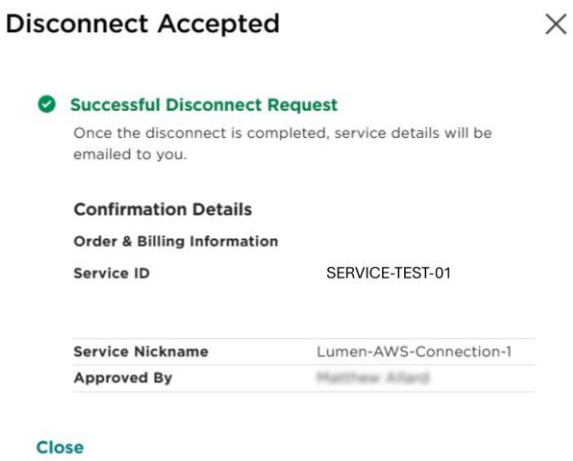
12. Select the Service ID of the connection you want to disconnect and click **Disconnect**.



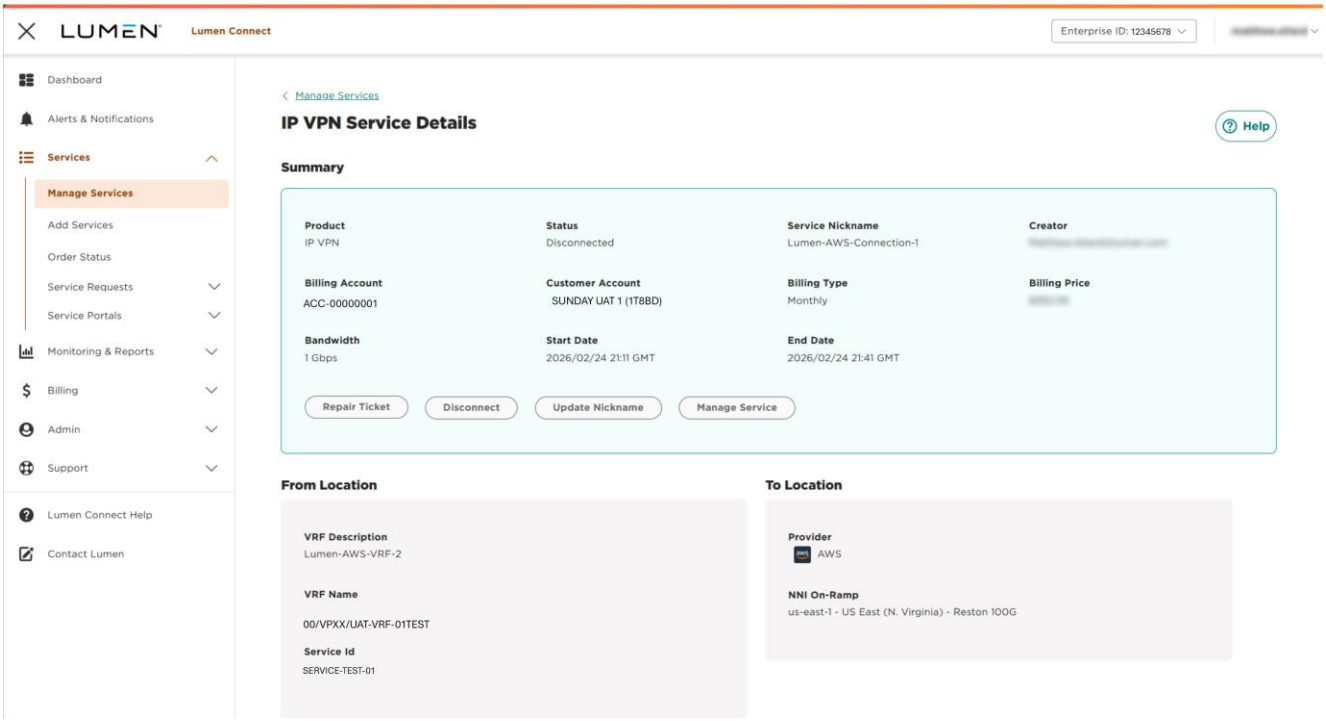
13. Check the box to confirm the change and click **Confirm Disconnect**



14. A pop-up will display **Disconnect Accepted – Successful Disconnect Request**. You may now click **CLOSE**.

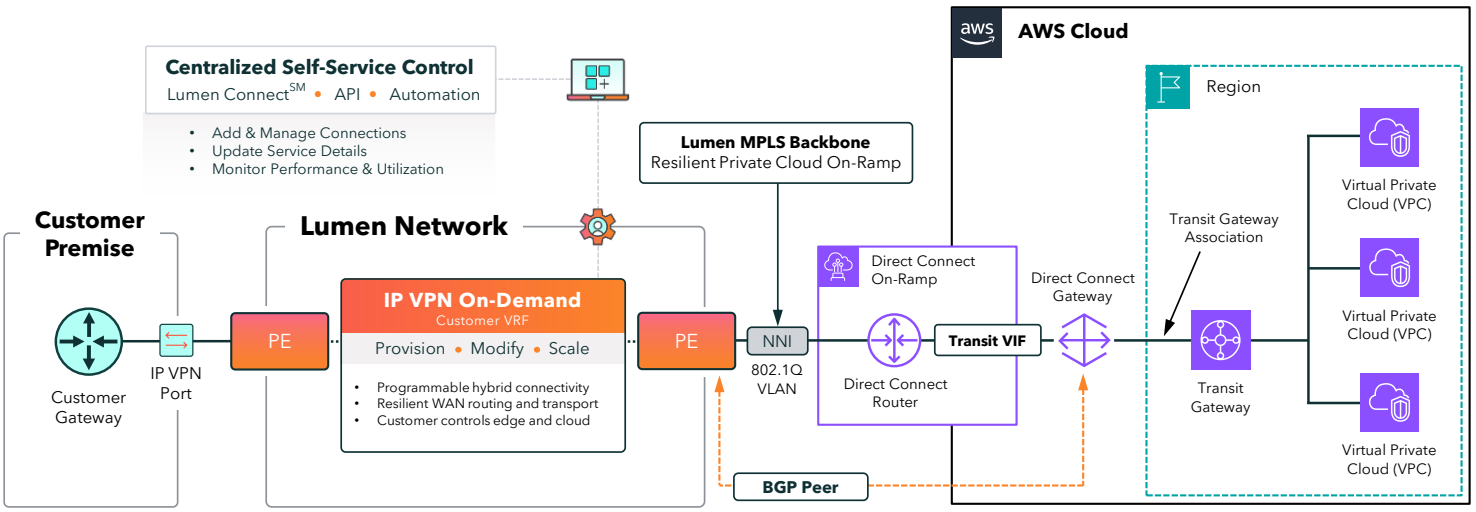


15. Once complete, the **Summary** page will show the **Status** as **Disconnected**.



Deploying Lumen Network-as-a-Service IP VPN On-Demand to a Transit VIF with Direct Connect Gateway

Direct Connect Gateway peering, transit gateway, and connectivity to multiple VPCs



Hybrid Connectivity Responsibility Model:

Customer Edge Configuration	Lumen IP VPN On-Demand Connectivity with Self-Service Control	Customer Configuration of BGP (Lumen ⇆ AWS)	Customer AWS Cloud Network Configuration

Getting Started Checklist

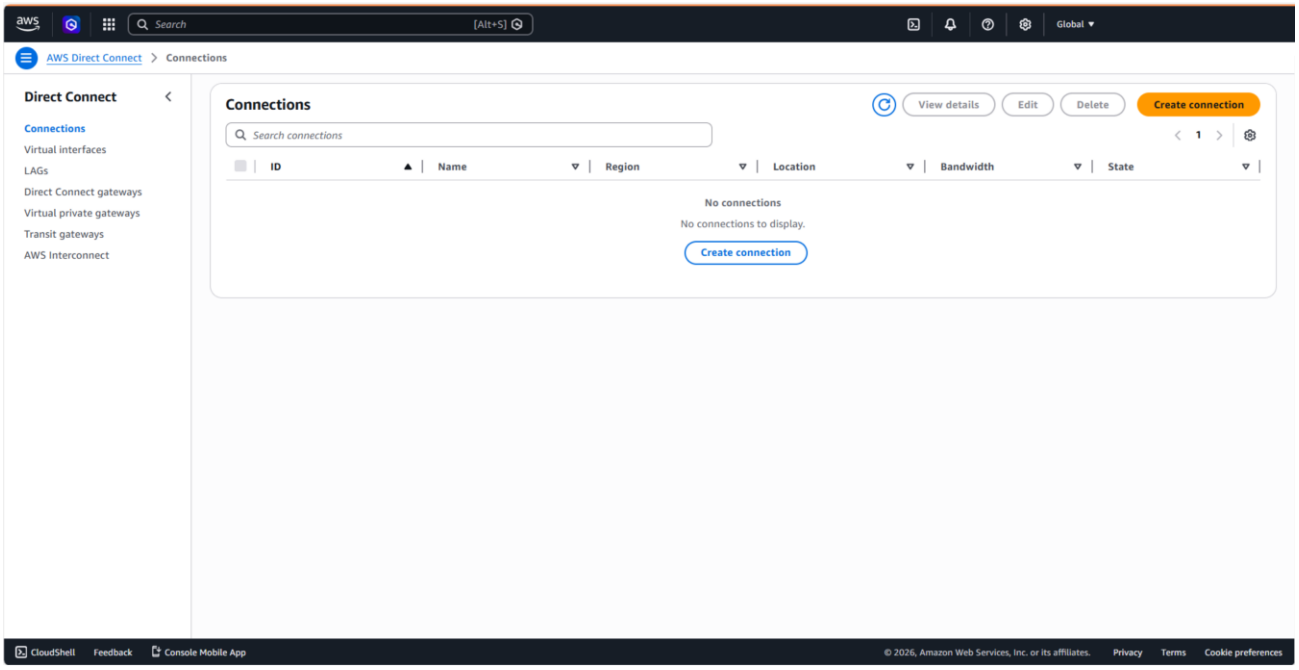
1. **Lumen Connect℠ Access -** Confirm you have access to Lumen Connect℠ and are entitled for the **Fabric & On-Demand Services** functionality.
2. **AWS Account Number** - Ensure you have the correct **12-digit AWS Account ID** that you intend to connect with.
3. **AWS Console Access -** Verify that you have the necessary **login credentials and permissions** to access the AWS Management Console for the target account.

Step 1: Prepare the AWS connection

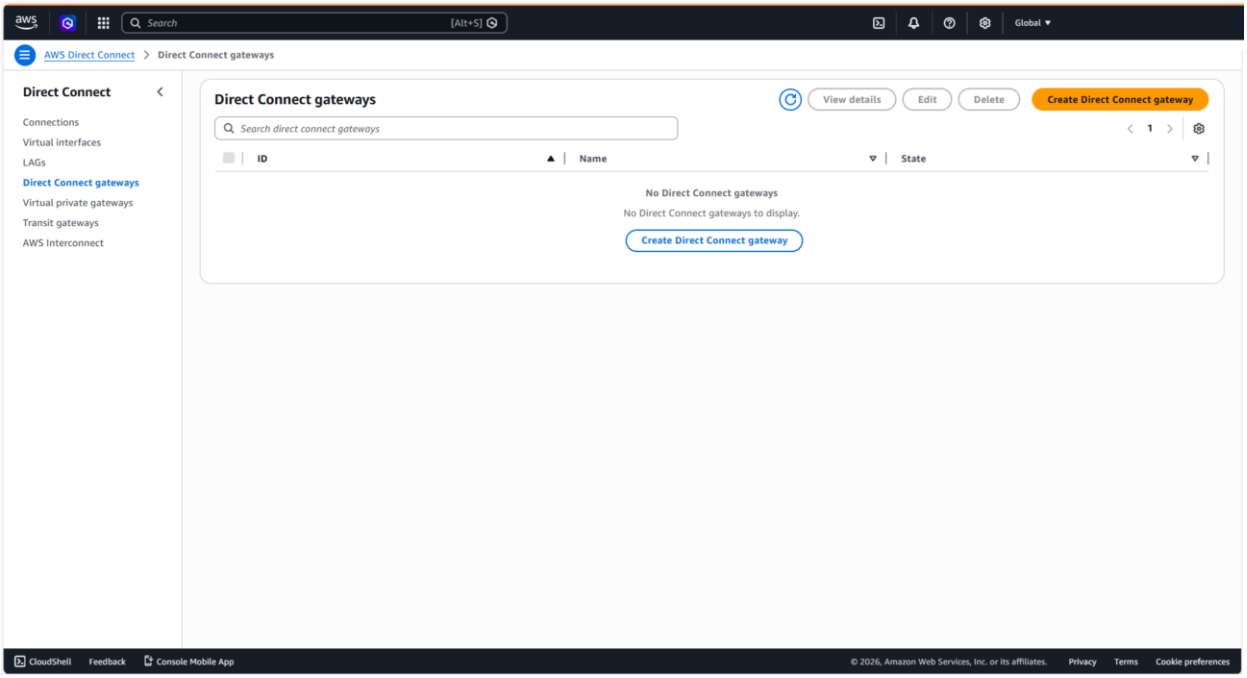
To prepare the connection in AWS:

1. Sign in to the AWS Console.

2. If you do not already have a **Direct Connect Gateway** open the **Direct Connect Dashboard**
3. All Services > Networking & Content Delivery > Direct Connect
4. On the left-hand side select **Direct Connect gateways**

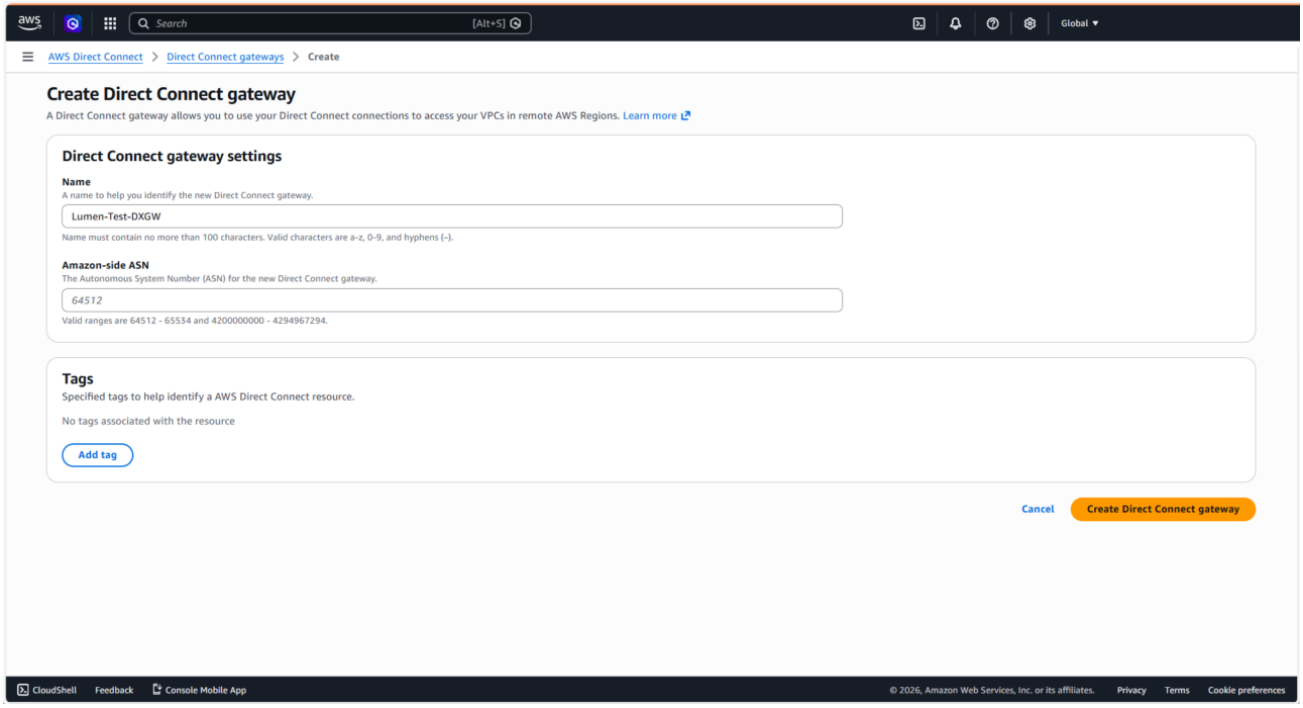


5. Click **Create Direct Connect gateway**



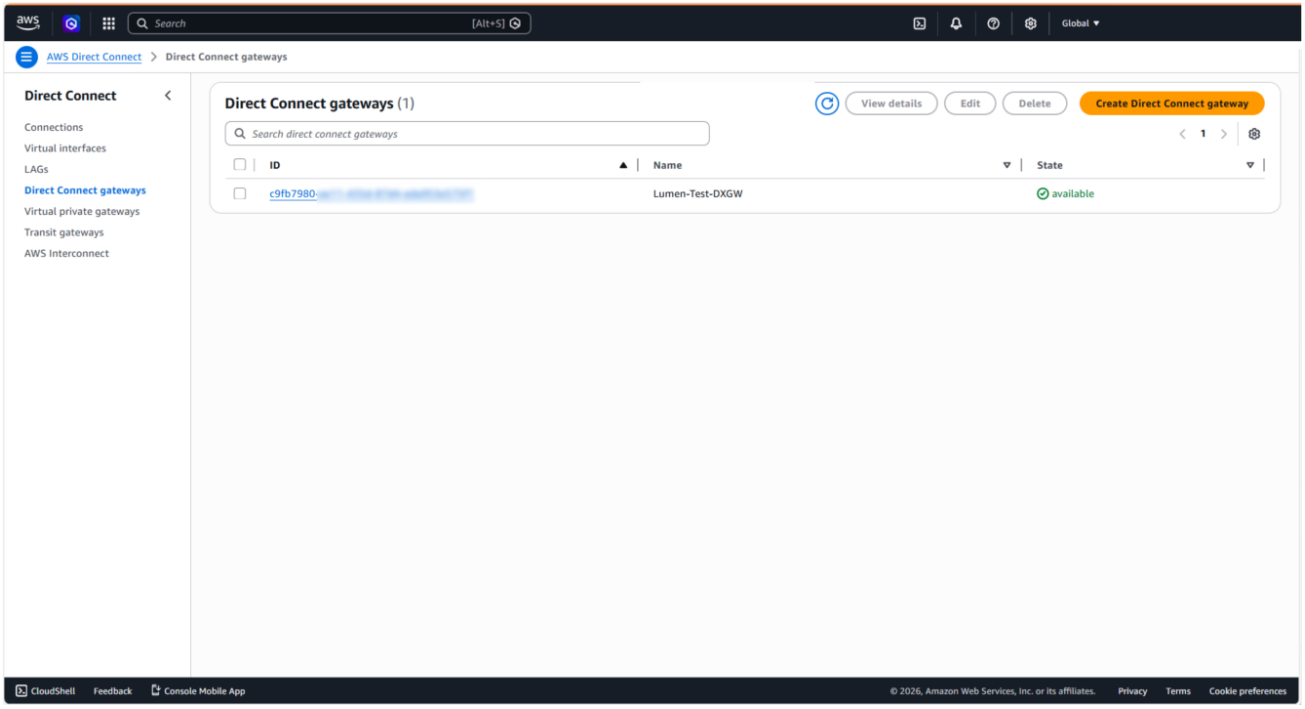
6. Complete the **Direct Connect gateway settings**

    - **Name**
    - **Amazon-side ASN**
        - Custom ASN (if you modify the ASN, make note as you will need it when creating the IP VPN On-Demand Connection)



7. Click **Create Direct Connect gateway**

8. A new window will be shown and a message will display **Direct Connect gateway created successfully**.

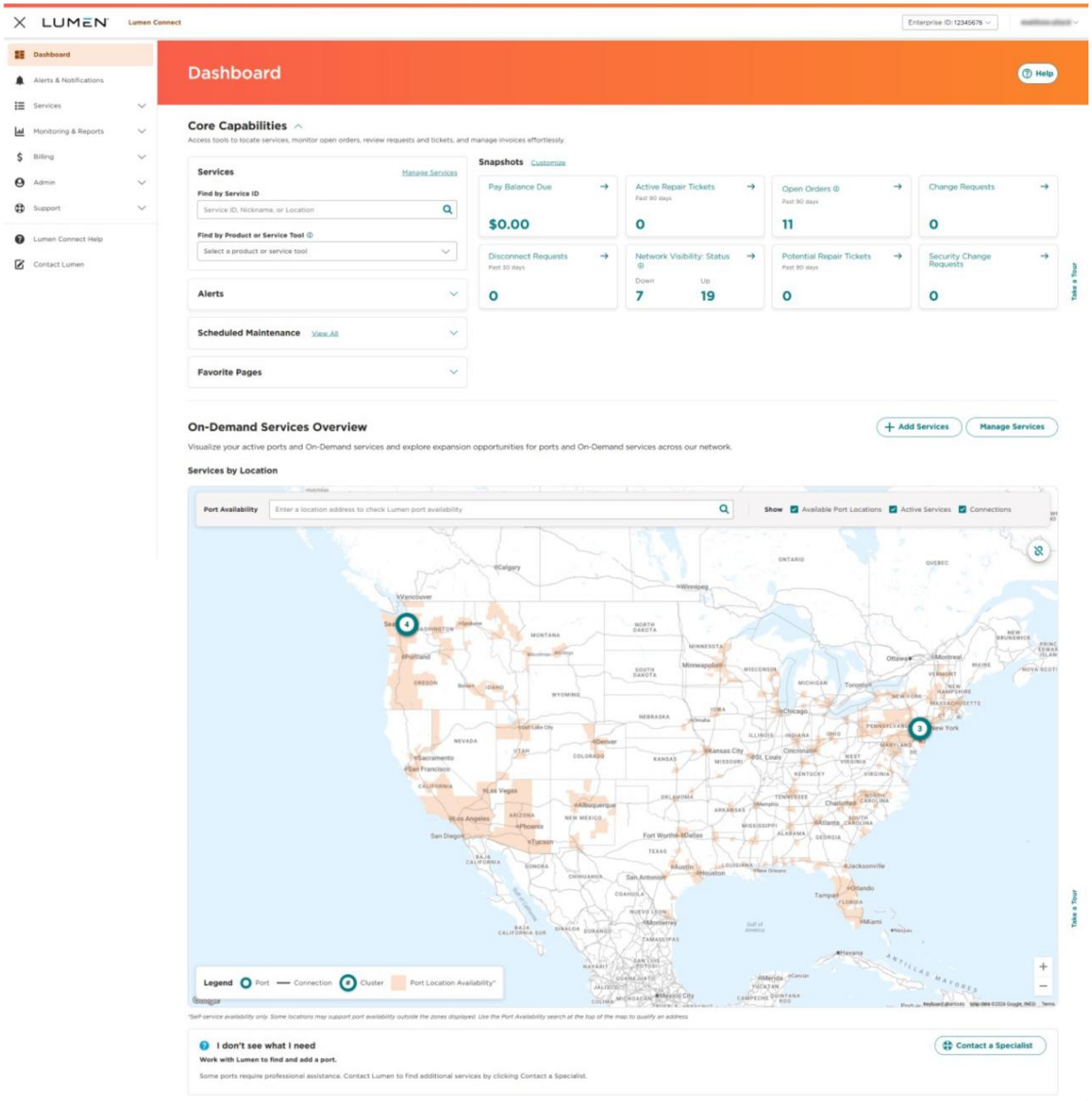


9. Copy your AWS Account ID. You will paste this into Lumen Connect℠ when creating the On-Demand connection.

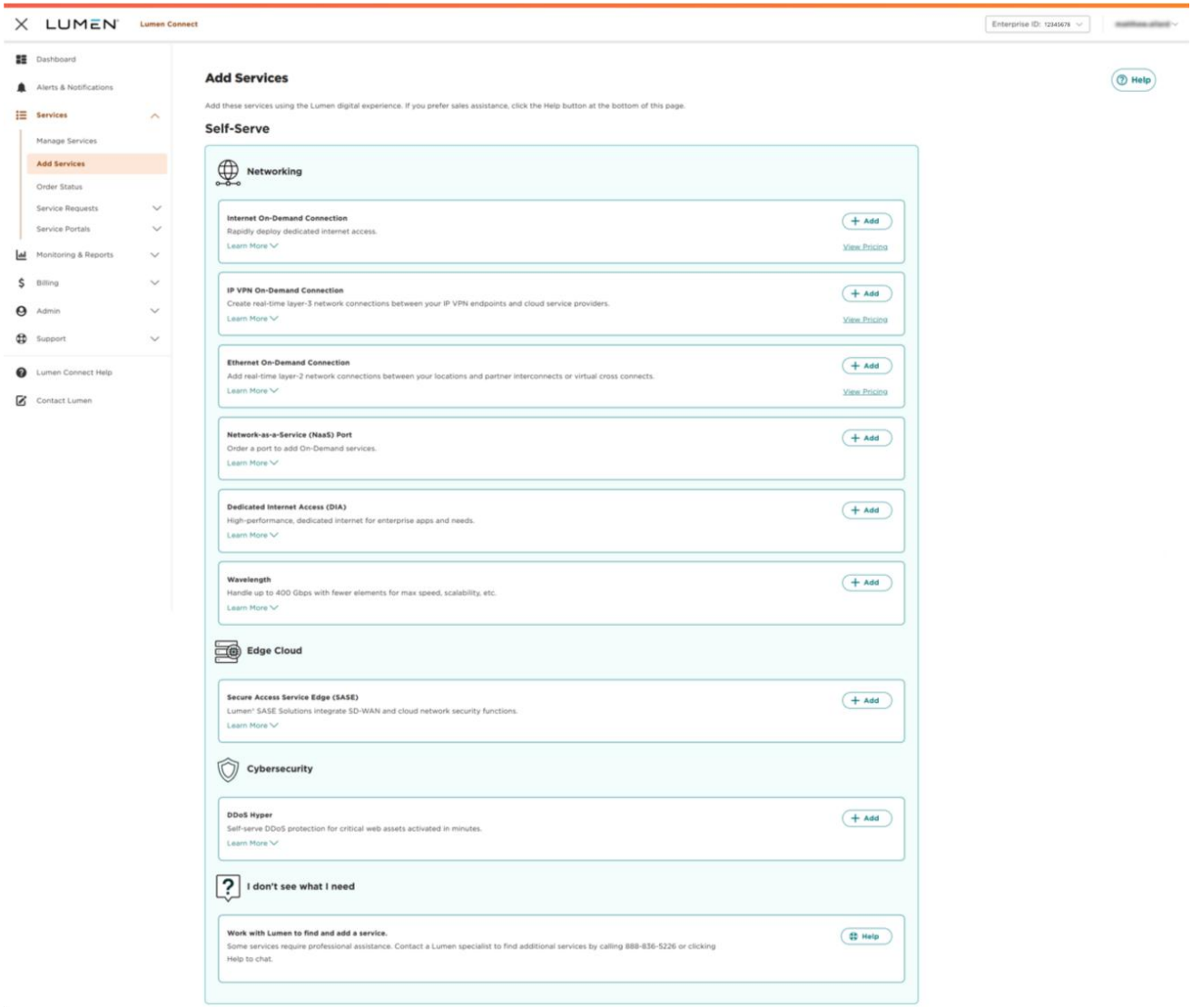
Step 2: Add the connection in Lumen Connect℠

To add the IP VPN On-Demand connection:

1. Sign in to Lumen Connect℠. (Get help retrieving your username/password.)



2. Using the left menu click **Services**, then click **Add Services**.



3. Click **+ Add** for IP VPN On-Demand.

4. From the **Customer ID** and **Billing Account Number** lists, select the customer number and billing account number you want to add IP VPN On-Demand to.

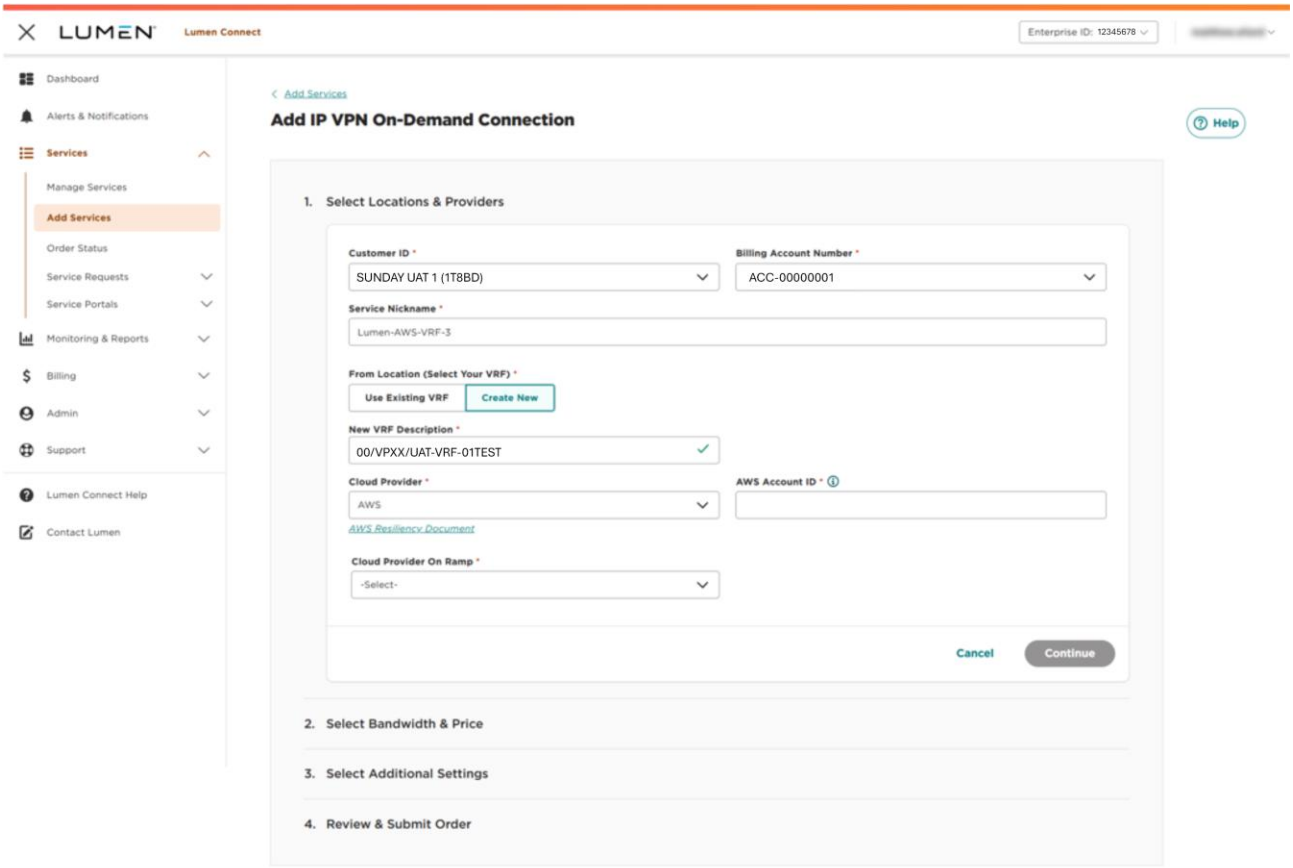
   Lumen Connect℠ fills in the VRF inventory based on the customer ID and billing account number you selected.

5. In the **Service Nickname** field, type a name for the connection you're creating. (Be sure to use something memorable. This name will appear on your invoice.)

6. In the **From Location (Select Your VRF)** section, select or create a VRF for the other end of your connection.

    - Select the VRF to use for the other end of your connection. Click **View Details** for a VRF to view the VRF's routes.

    - Click **Create New**, then type a description for the new VRF in the **New VRF Description** field. Lumen Connect℠ will create the VRF and activate your VPN service once you create your connection.



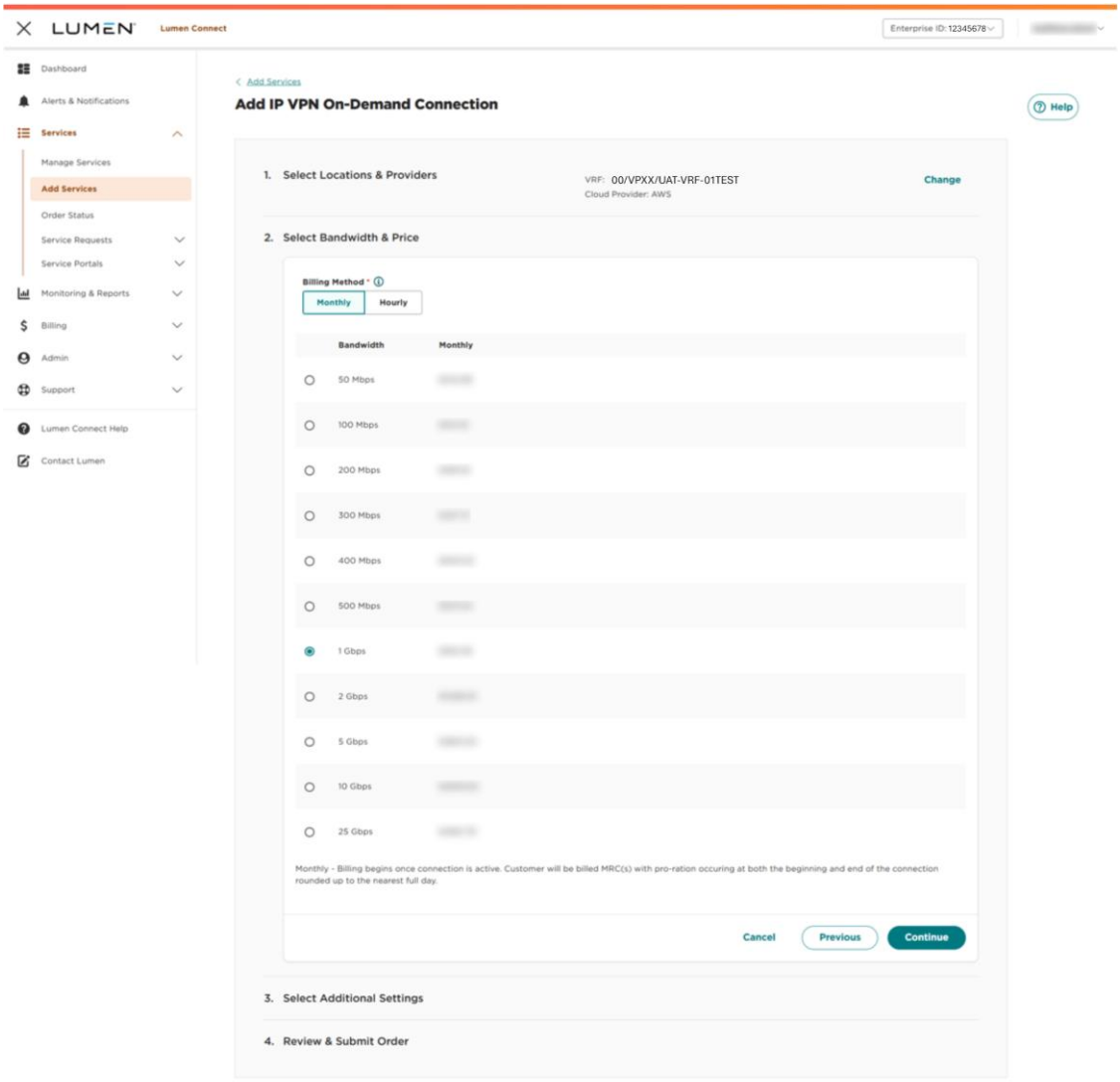
7. From the **Cloud Provider** list, select AWS.

8. Fill in the information for the AWS connection:

    - In the **AWS Account ID** field, type your AWS account ID.

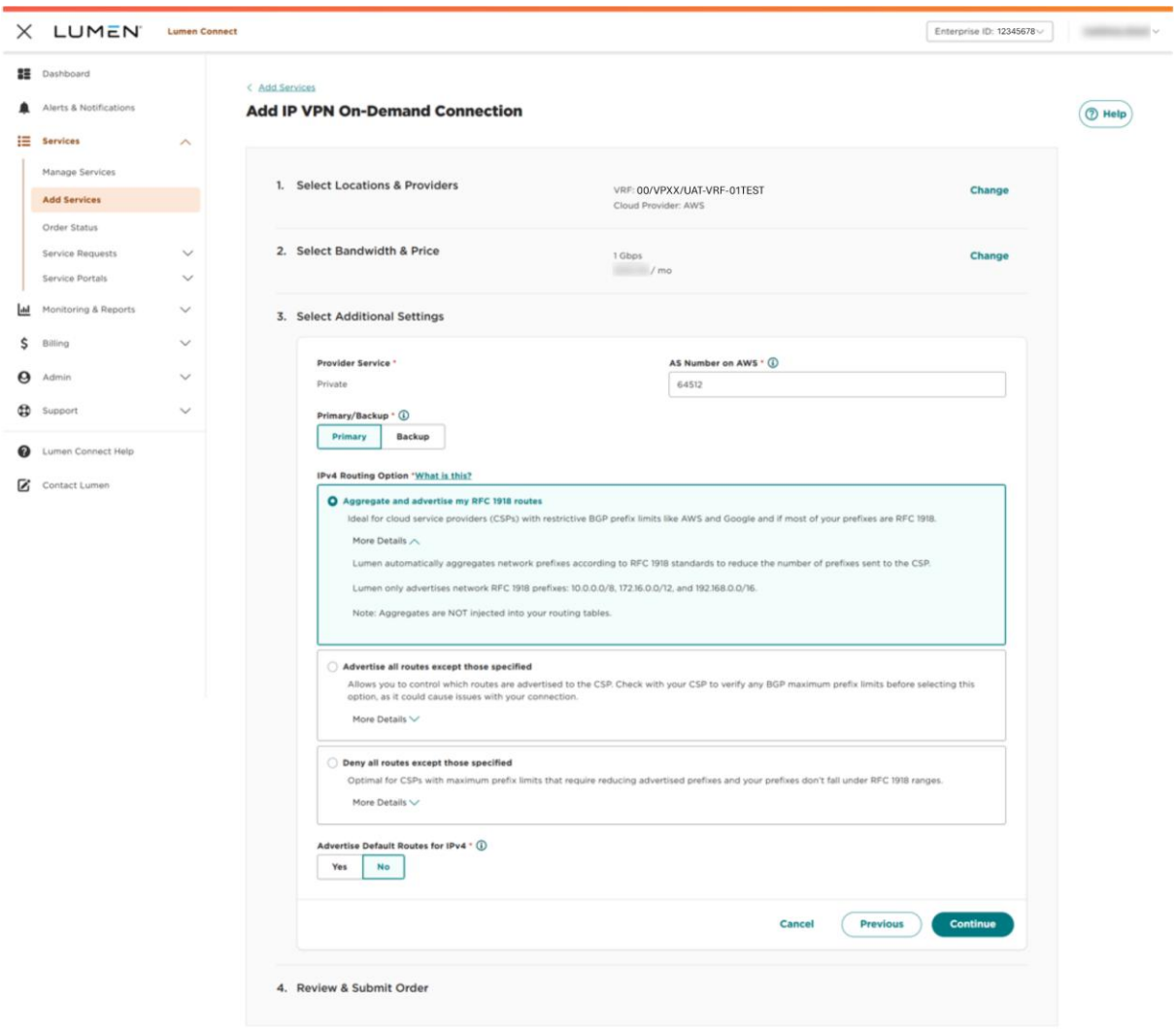
    - From the **Cloud Provider On-Ramp** list, select an On-Ramp.

9. Click **CONTINUE**.
10. Use the **Billing Method** buttons to select whether you want monthly or hourly billing for the connection, then select the bandwidth for the connection. Bandwidth options are determined by the destination (to location). (You can't change the bandwidth once you create the connection. If you need to choose a different bandwidth after creating the connection, disconnect the connection and create a new one.)



11. Click **CONTINUE**.
12. In the **Select Additional Settings** section, fill in the additional details for the connection:

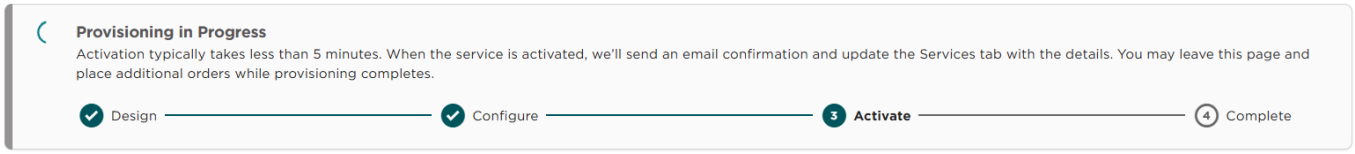
- In the **AS Number on AWS** field, type the autonomous system number from Amazon (ranges from 64512 to 65534 or 4200000000 to 4294967294) used when creating the Direct Connect gateway.
- Select whether this is a primary or backup connection.
    - Primary will set the local-pref to 750
    - Backup will set the local-pref to 700
- In the **IPv4 Routing Option** field, select the radio button for the routing option you want to use for the connection. [Learn more about routing options for an IP VPN connection]
- Use the buttons to select whether you want to advertise default routes.



13. Click **CONTINUE**.

14. Review the order information and correct any missing or invalid selections, then click **SUBMIT ORDER**.

Lumen Connect℠ creates the request for connection, places it in **Pending Activation** status, and routes you to the Services tab so you can monitor the status of the connection. To see status updates, click ↻. Once Lumen assigns the permanent VRF (within five minutes), the connection changes to **Active status**.



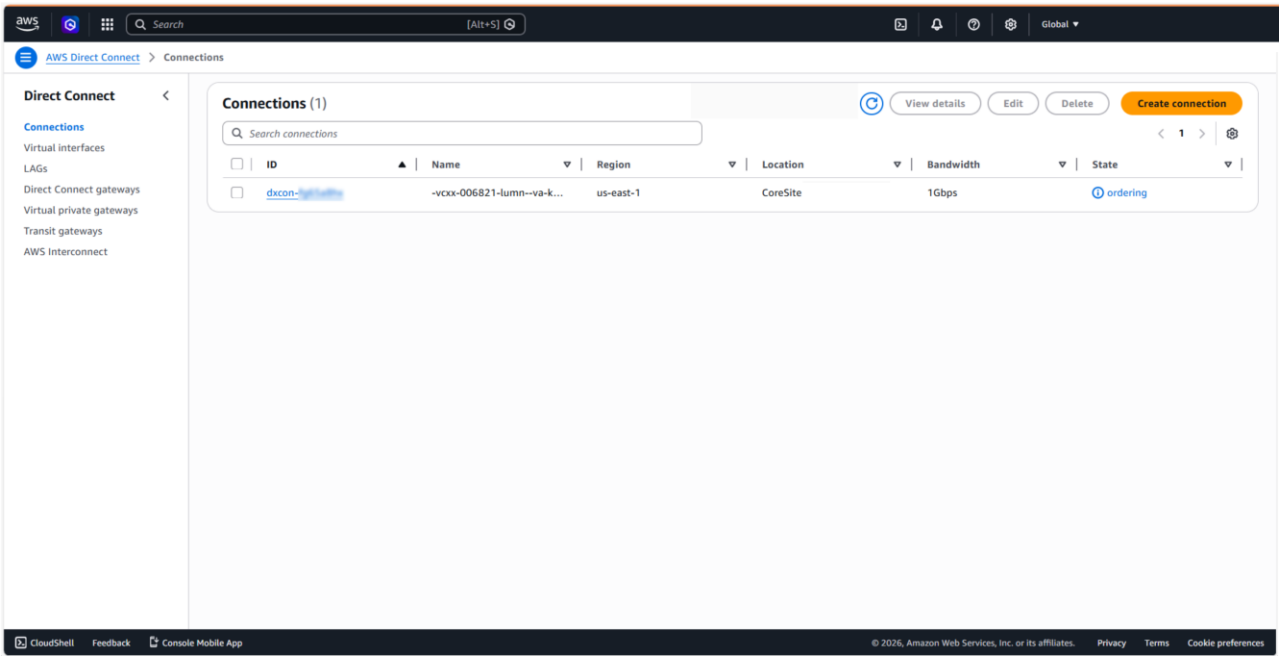
15. If you want to add High Resiliency for this connection, repeat steps 2-12 using the same VRF and a different AWS on-ramp location.

[Learn more about AWS resiliency options]

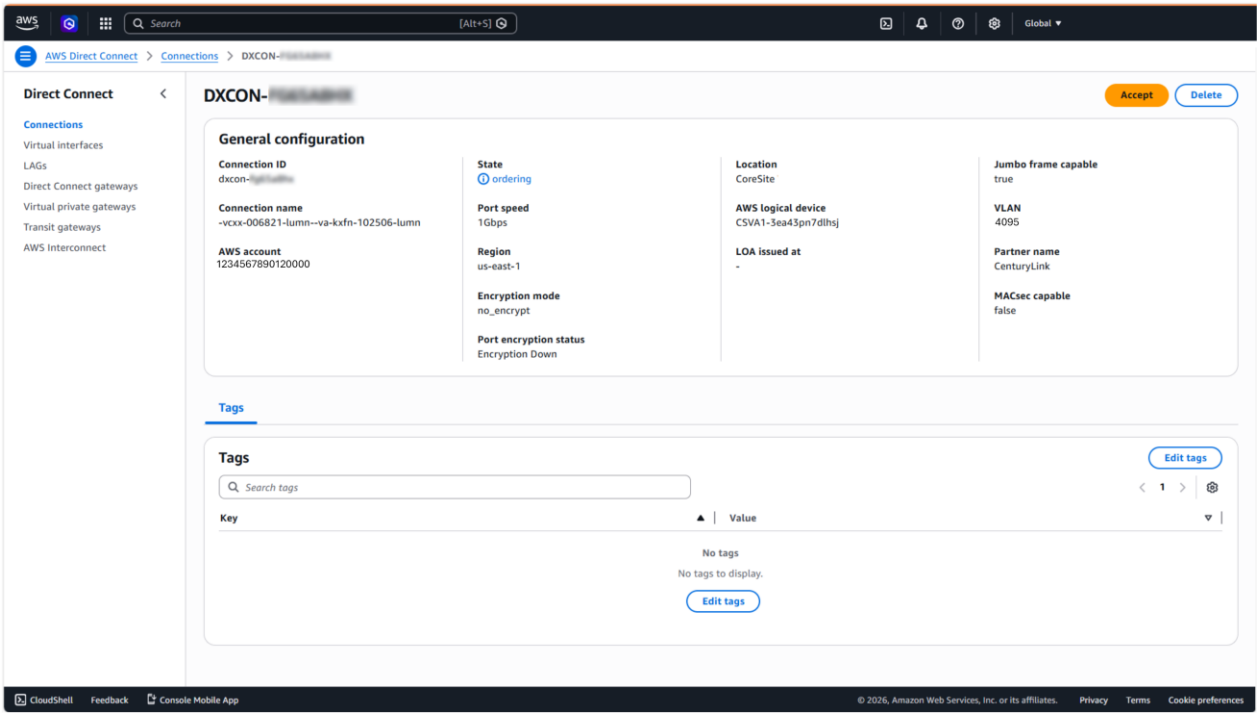
Step 3: Complete the AWS connection

To complete the connection in AWS:

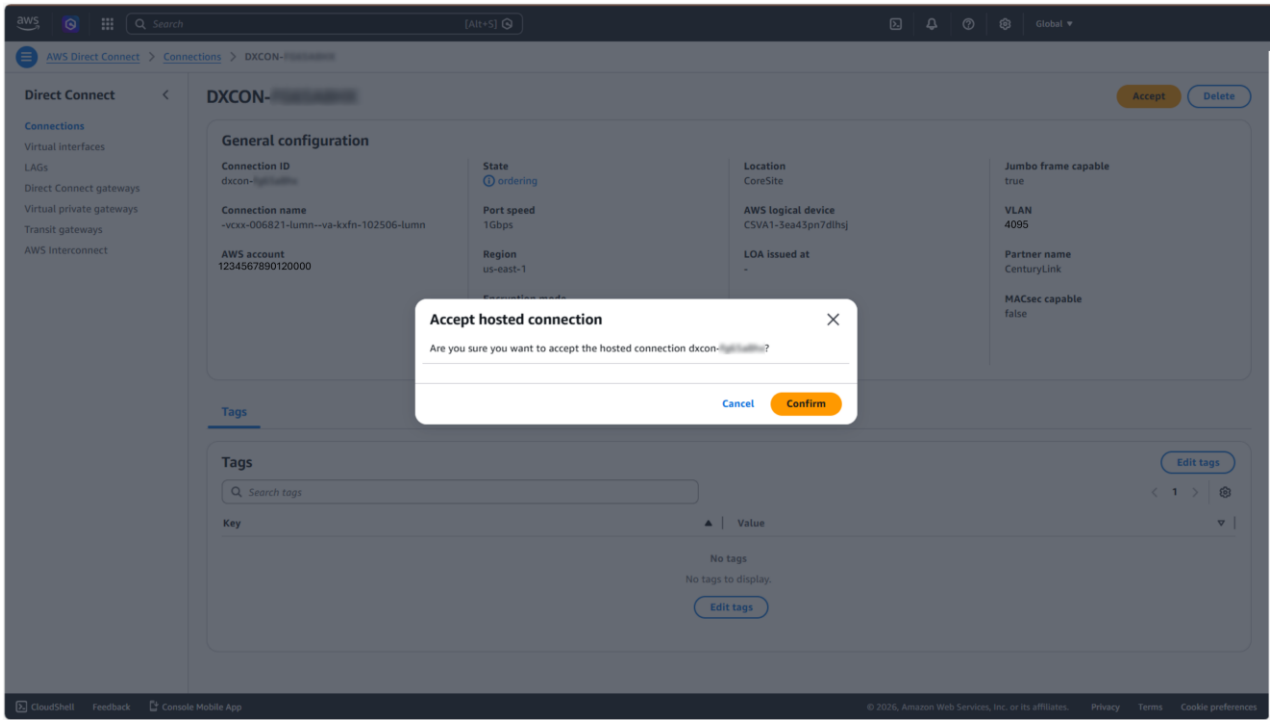
1. Go to the AWS Management Console and sign in.
2. Navigate to the Direct Connect Console
    - AWS Console > Services > Networking & Content Delivery > Direct Connect
3. Select the ID of the connection in the **State** showing **ordering**



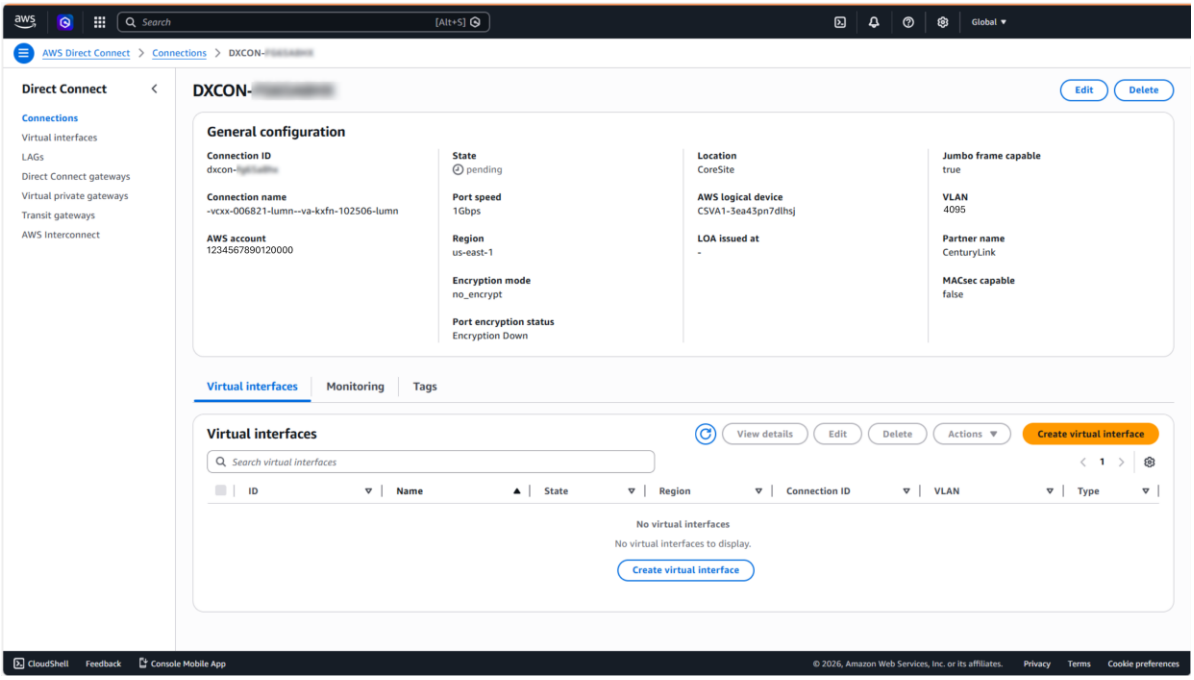
4. Click **Accept**



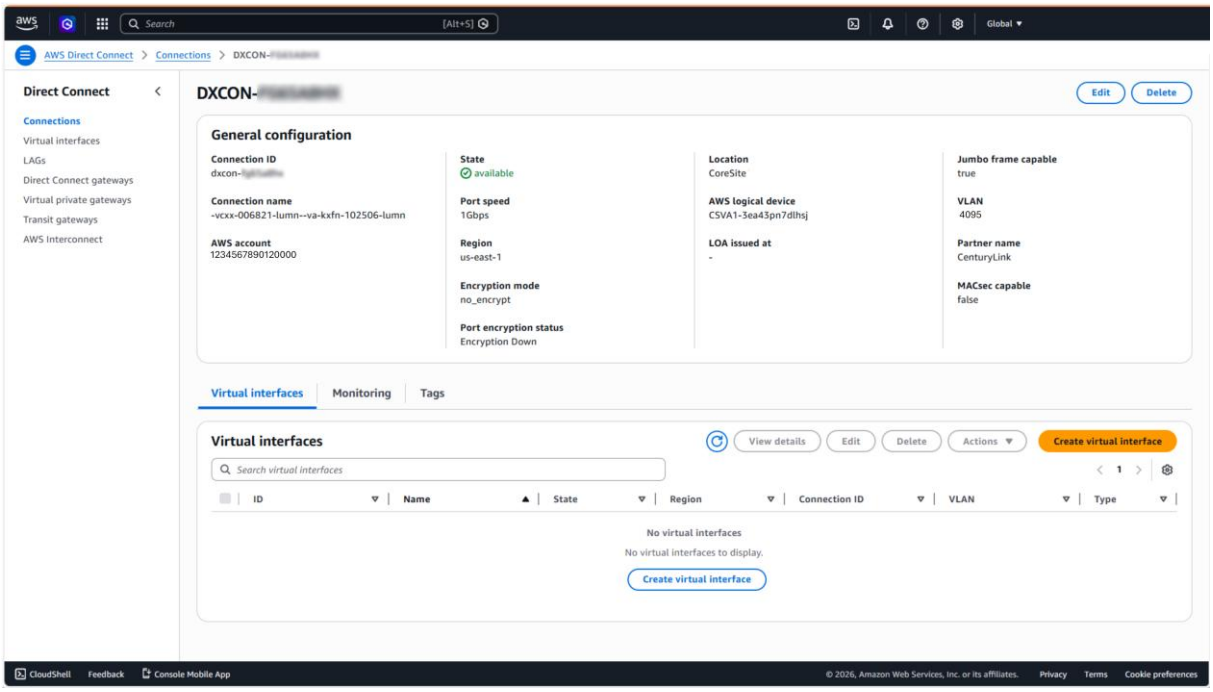
5. A pop-up will ask you to confirm a second time. Click **Confirm**



6. The connection **State** will show **pending**.



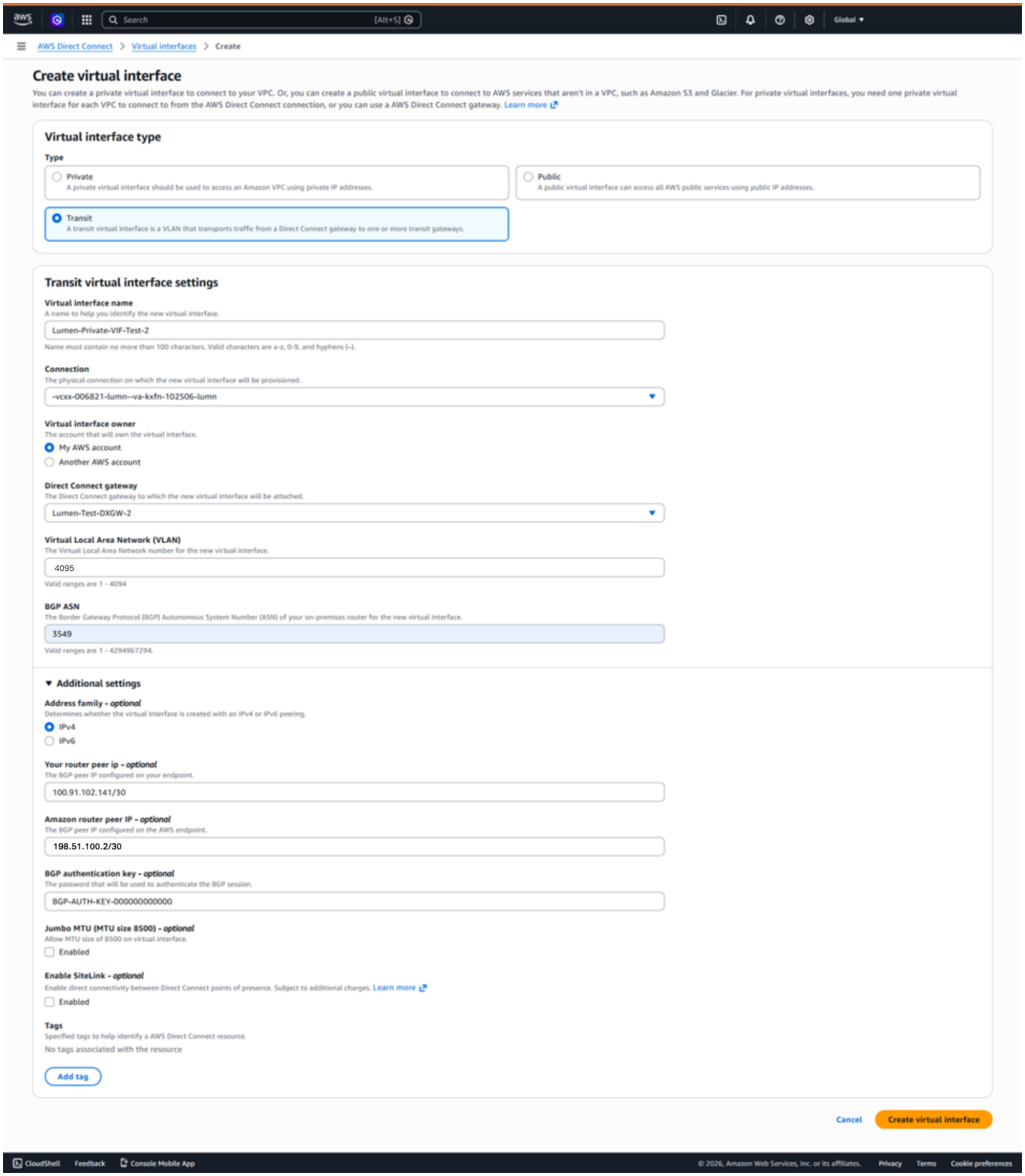
7. After a few minutes the connection state will show will show **available**. Click **Create virtual interface**



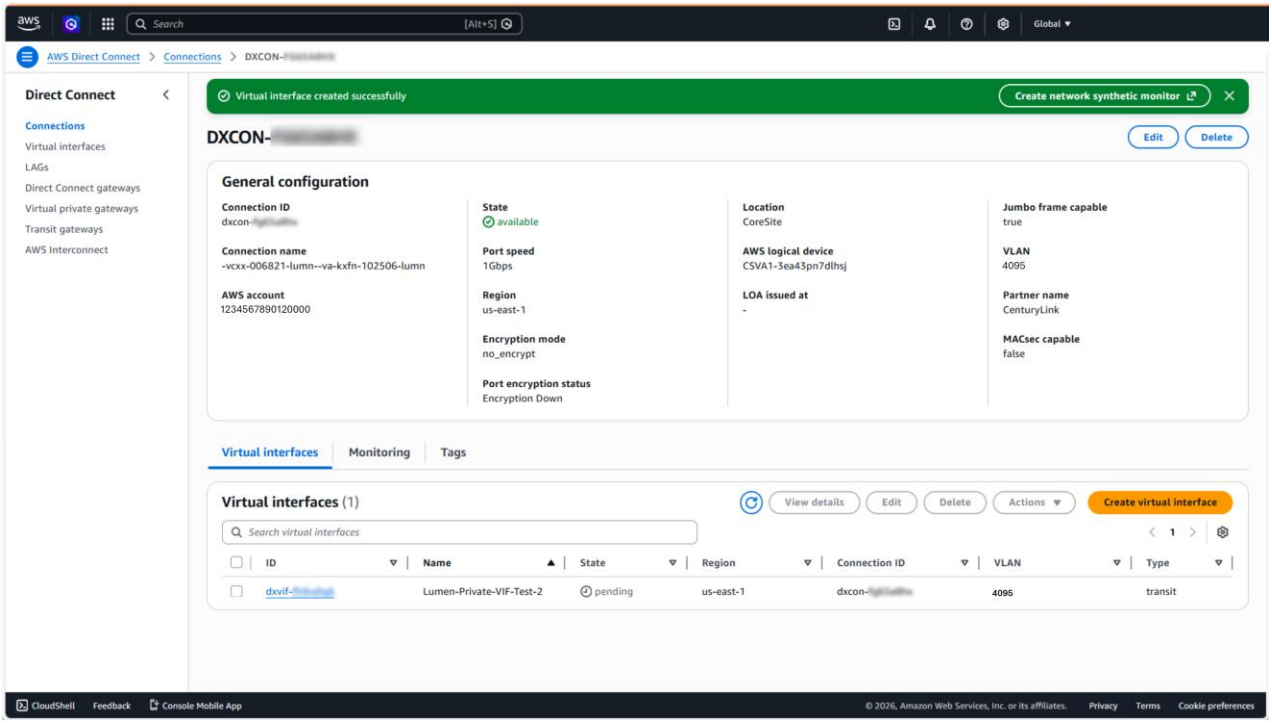
8. Complete the connection details (you will need to expand Additional settings)

    - Virtual interface type - select Transit
    - Virtual interface name – name the interface
    - Connection – select the connection that was just accepted
    - Virtual interface owner
        - My AWS Account if connecting to your own VPC
        - Another AWS Account if sharing with a 3rd Party Partner/Vendor
    - Gateway Type – Direct Connect Gateway
    - Direct Connect gateway – the name of the Direct Connect Gateway being used with the connection
    - Virtual Local Area Network (VLAN) – do not change (if blank, this is the VLAN ID of the connection in Lumen Connect℠)
    - BGP ASN – 3549
    - Your router peer IP – Lumen Router Peer IP from Lumen Connect℠
    - Amazon router peer IP – Cloud Provider Router Peer IP from Lumen Connect℠
    - BGP authentication key – BGP Auth Key from Lumen Connect℠

9. Click **Create virtual interface**

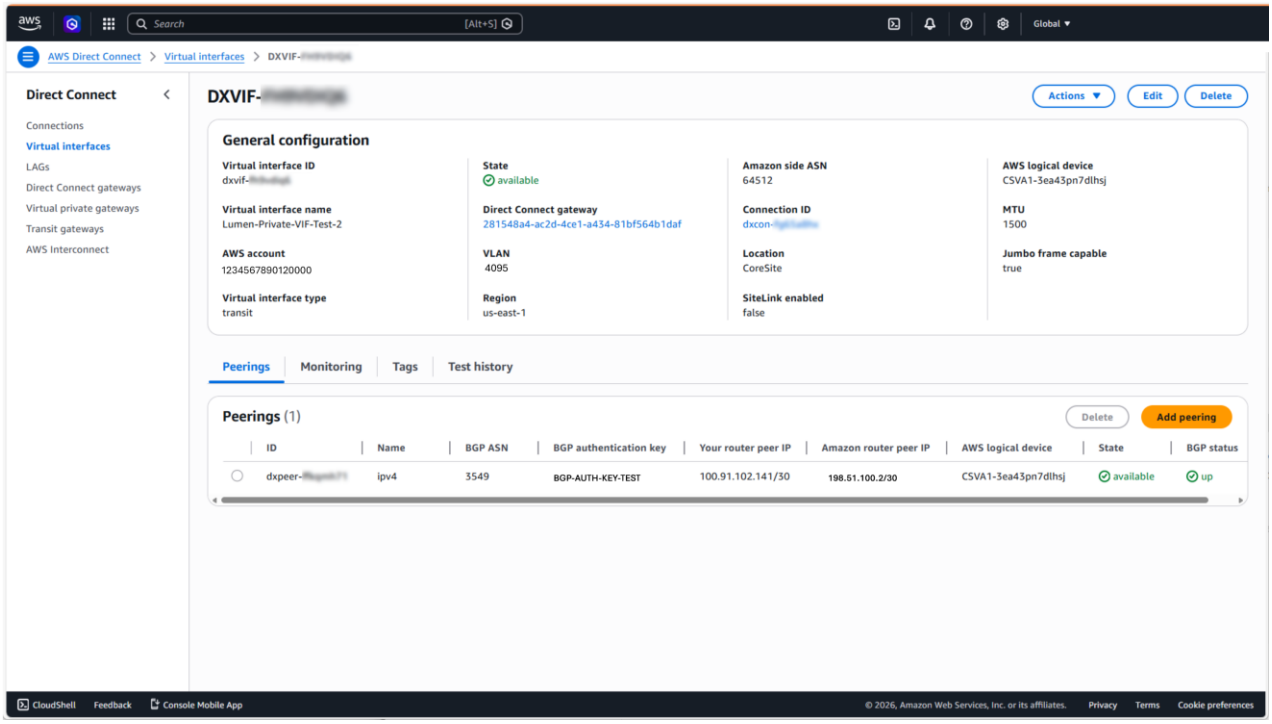


10. A new window will be shown and a message will display **Virtual interface created successfully**. The connection **State** of the VIF will show as **pending**.



11. After a few minutes, the connection **State** will show as **available** and the **BGP status** will show as **up**.

***Note**: This can take a few minutes and the BGP status may show **down** for some period of time.*

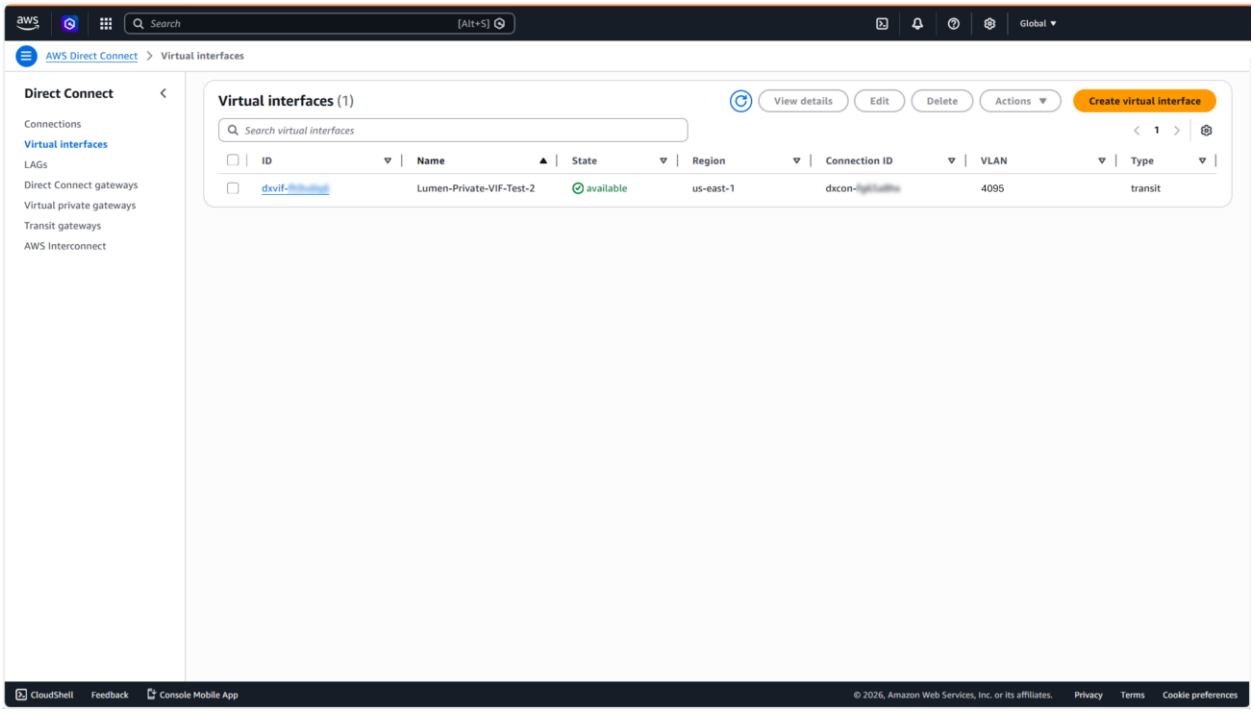


12. Continue AWS Network configuration.

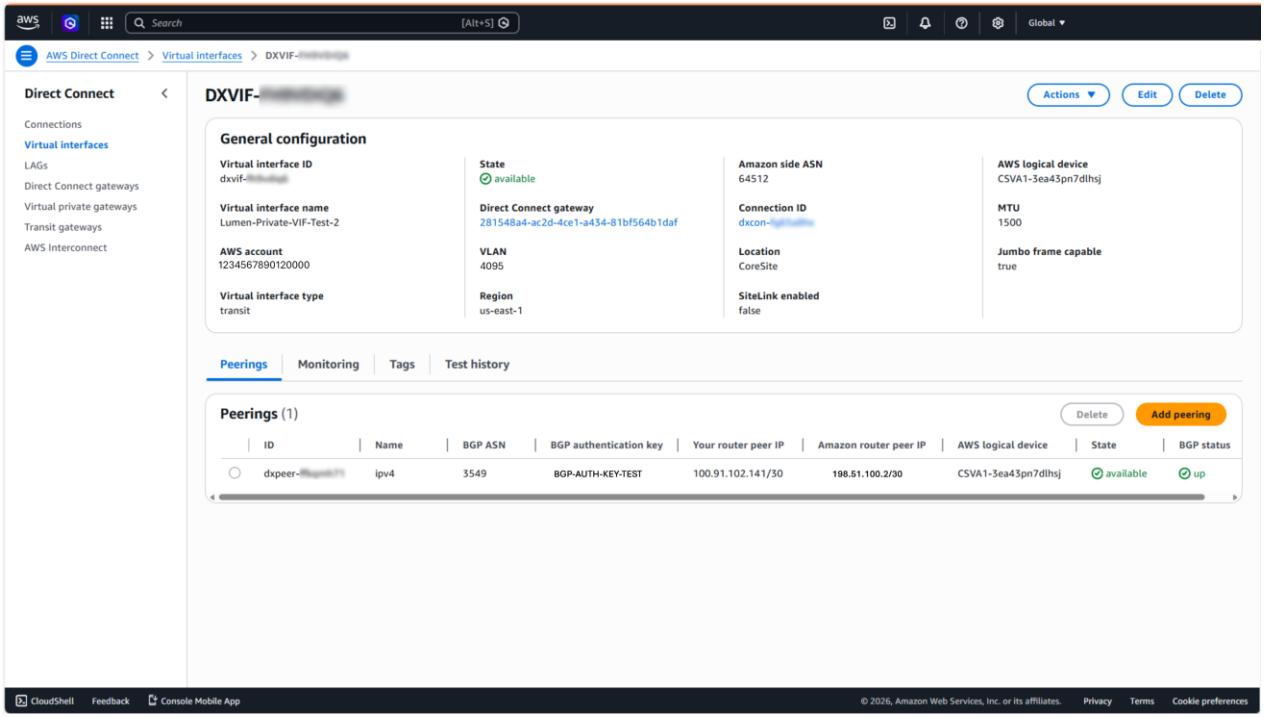
Note: For detailed guidance on configuring your AWS networking, refer to the AWS Direct Connect Documentation. If you'd like personalized support, please contact your Lumen Account Team to explore our professional services for AWS management.

Disconnect Lumen Network-as-a-Service IP VPN On-Demand to a Transit VIF with Direct Connect Gateway

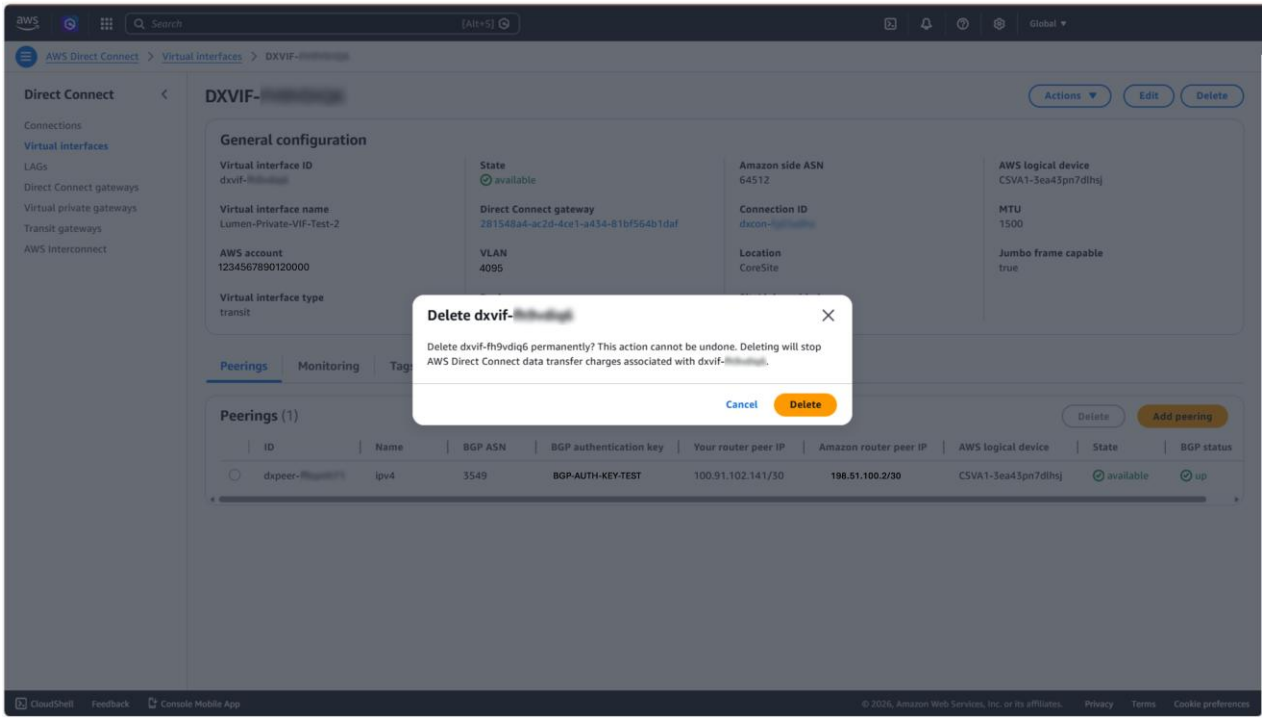
1. Sign in to the AWS Console.
2. Navigate to AWS Direct Connect > Virtual Interfaces
3. Select the Virtual Interface associated with the IP VPN On-Demand service that is being disconnected.



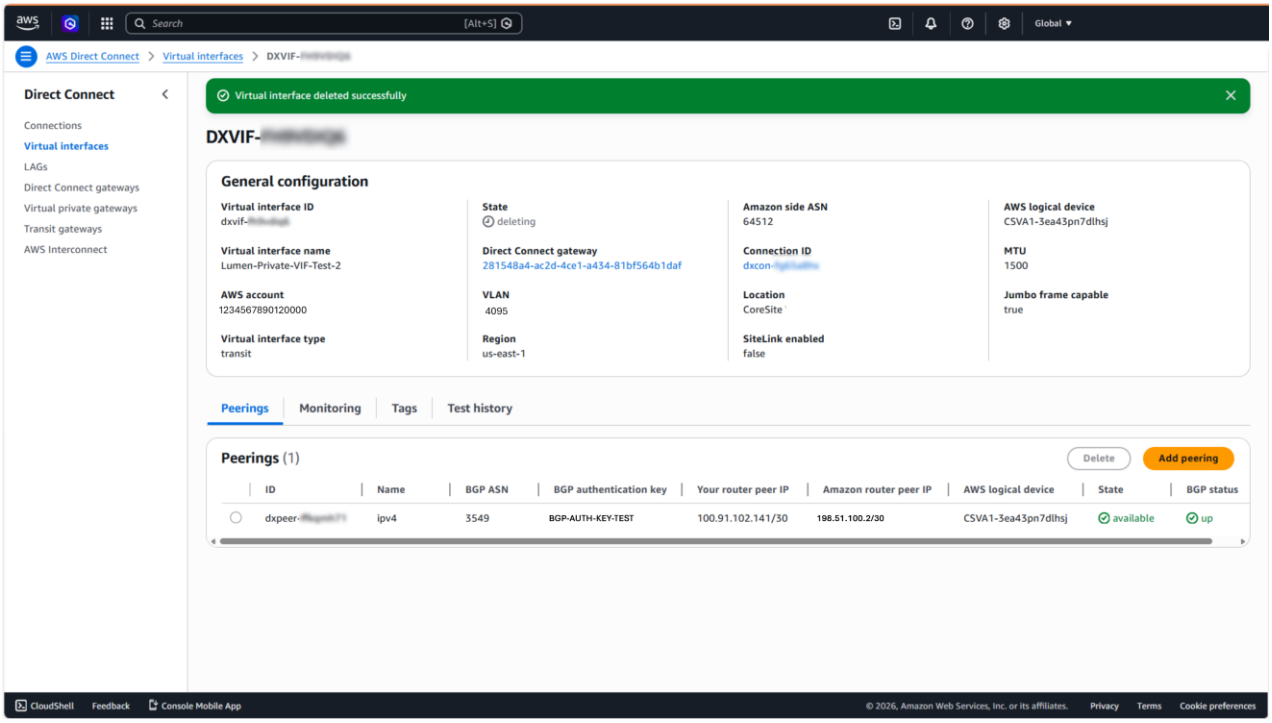
4. In the upper right-hand corner, click **Delete**



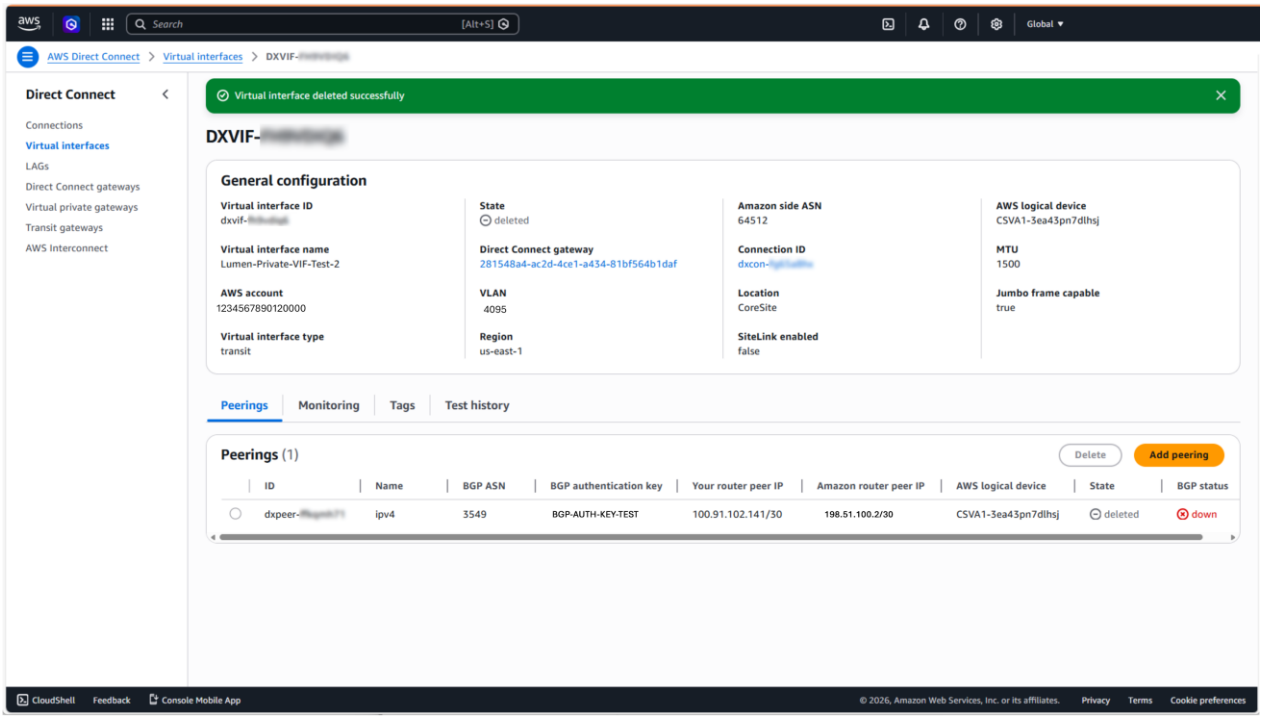
5. A pop-up will appear asking to confirm. Click **Delete** again.



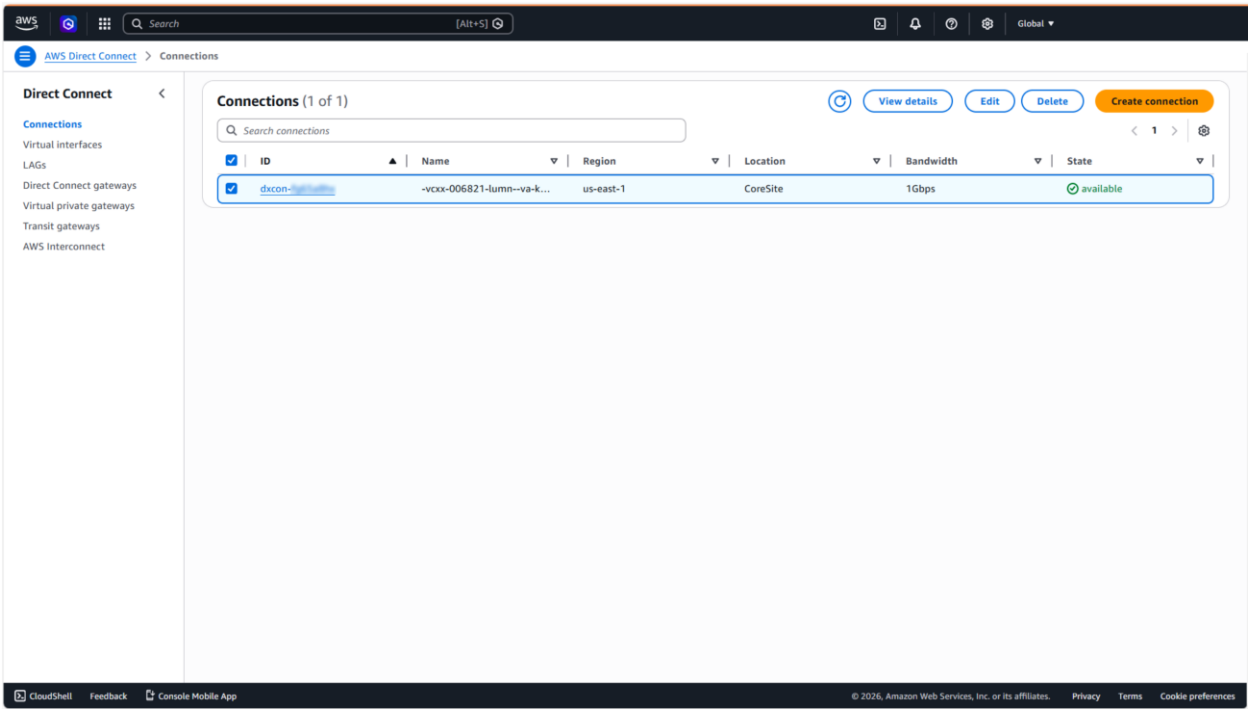
6. A new window will be shown, and a message will display **Virtual interface deleted successfully**. The connection **State** will show as **deleting**.



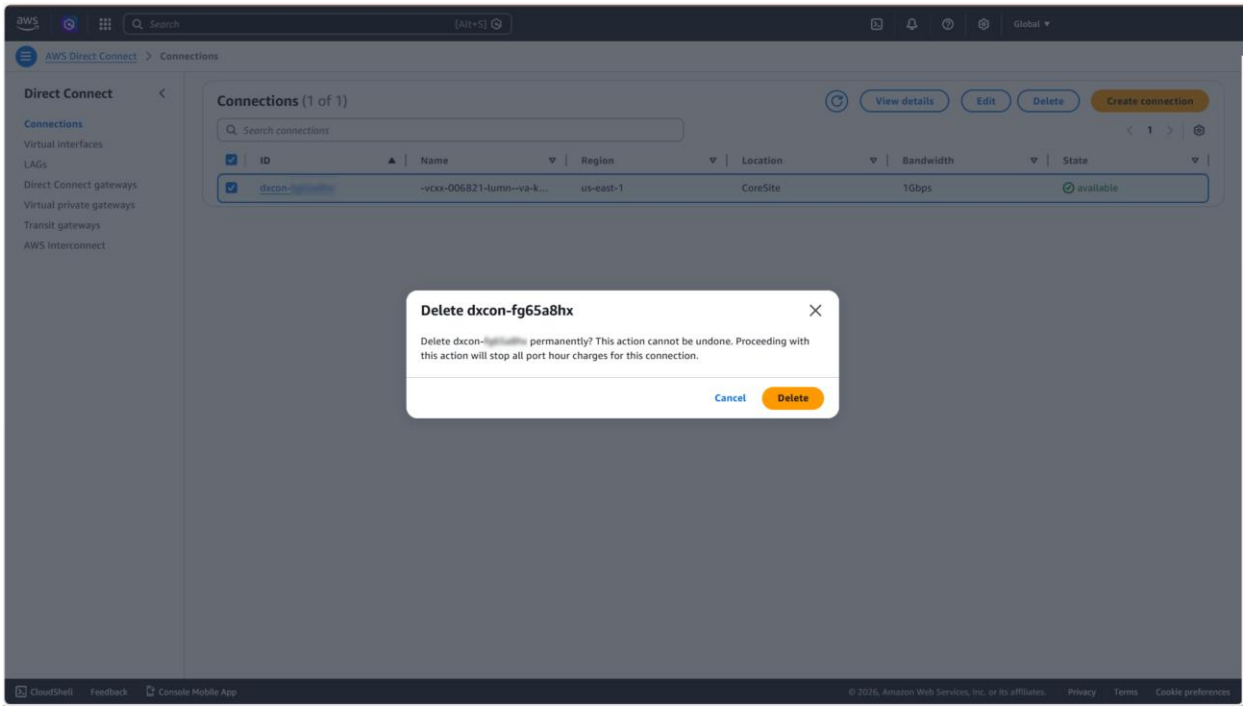
7. After a few minutes, the message will display **Virtual Interface deleted successfully** and the connection **State** will show as **deleted**.



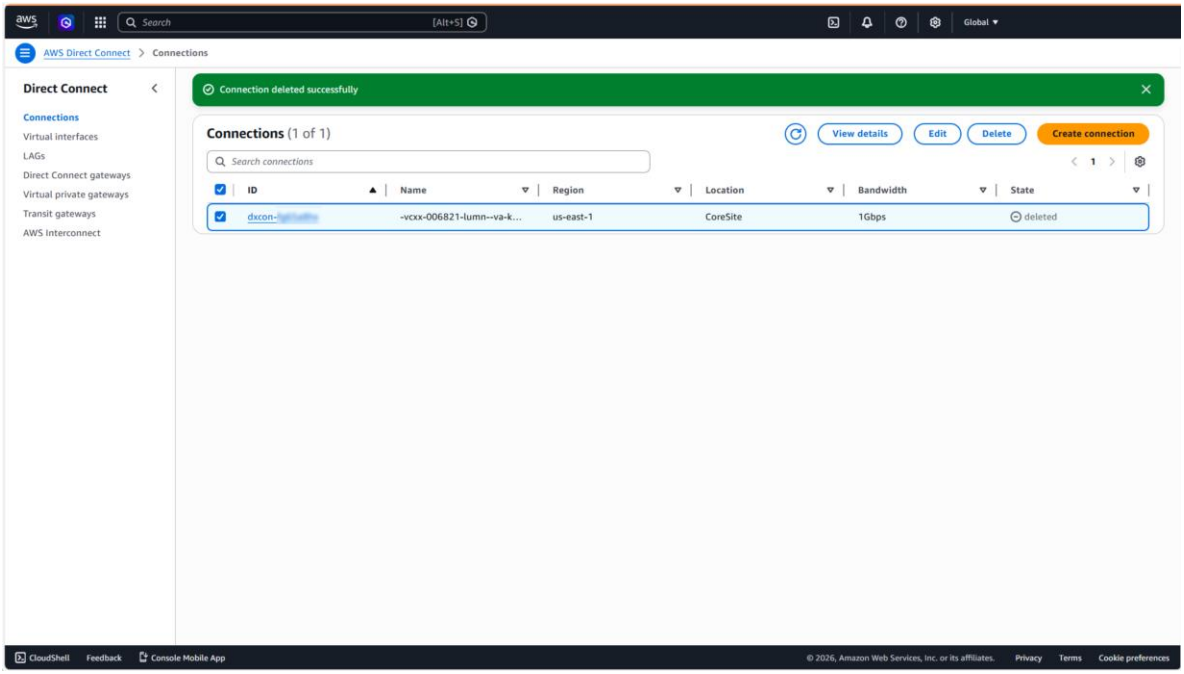
8. Navigate back to **Direct Connect > Connections**, select the box next to the Connection ID associated with the IP VPN On-Demand service that is being disconnected, and click **Delete** in the upper right-hand corner.



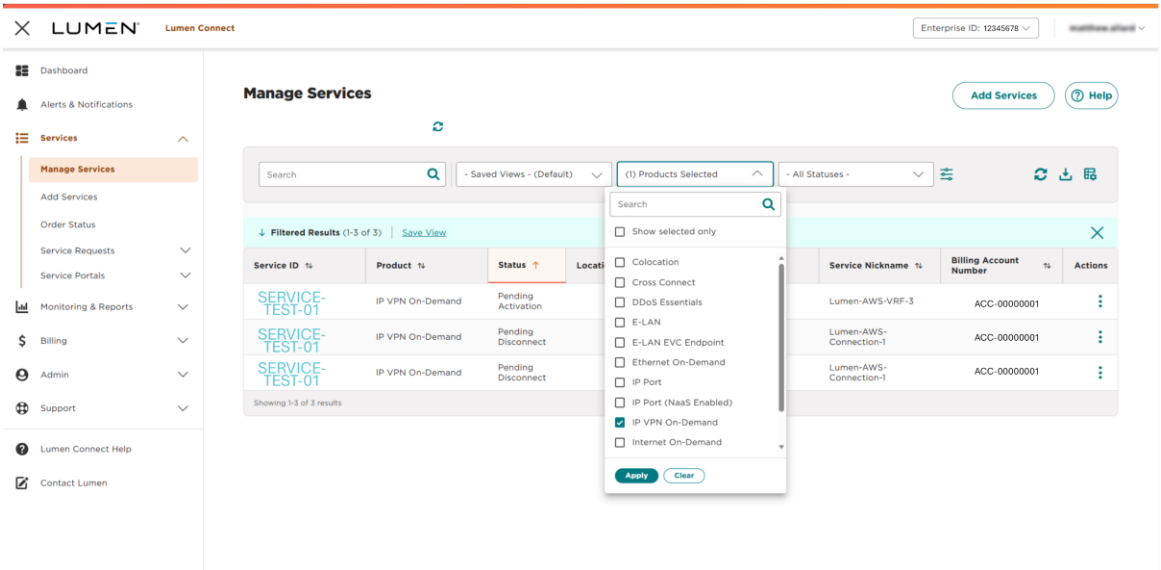
9. A pop-up will appear asking to confirm. Click **Delete** again.



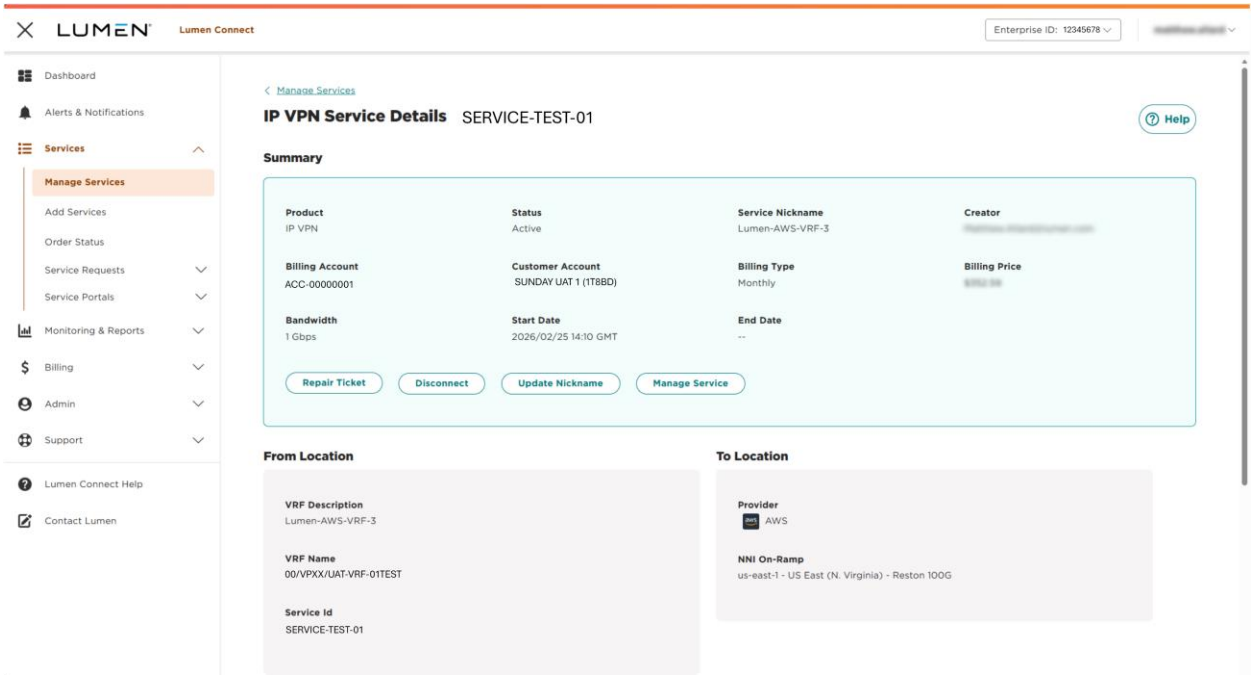
10. A message will show **Connection deleted successfully** and the connection **State** will show **deleted**.



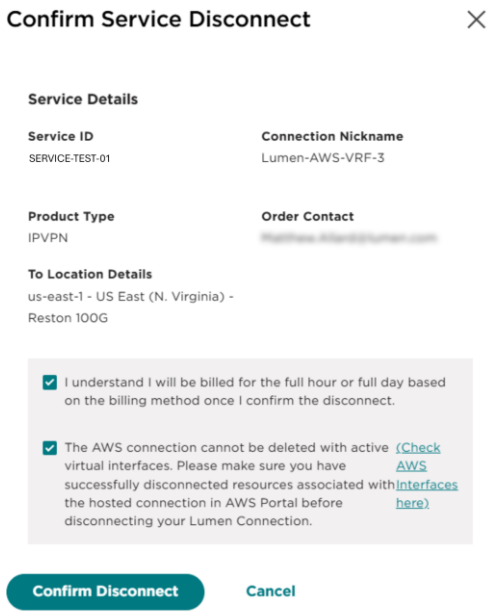
11. Within Lumen Connect℠ you can now select the **Manage Services, filter by Product, select IP VPN on-Demand** to locate the Service ID of the connection you want to disconnect.



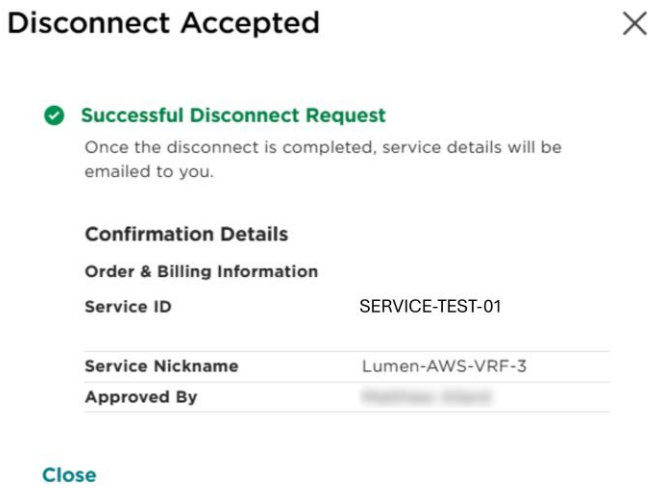
12. Select the Service ID of the connection you want to disconnect and click **Disconnect**



13. Check the box to confirm the change and click **Confirm Disconnect**



14. A pop-up will display **Disconnect Accepted – Successful Disconnect Request**. You may now click **CLOSE**.



Lumen Network-as-a-Service IP VPN On-Demand to Microsoft Azure

Creating a **Microsoft Azure ExpressRoute connection** involves coordination between Lumen, Microsoft Azure, and the end customer.

What is an ExpressRoute Connection?

An **ExpressRoute Connection** is a type of Microsoft Azure connection provisioned by a partner who owns the physical Network-to-Network (NNI) infrastructure (e.g., port) and allocates bandwidth to customers on demand. It is different than **ExpressRoute Direct**, where Lumen would provision a physical port and dedicated third-party cross-connect (3PXC) and a single customer would own the usage of the entire physical connection.

All Network-as-a-Service IP VPN On-Demand connections to Microsoft Azure are ExpressRoute Connections.

Customer Self-Assessment Questions

1. **About Your Use Case**
    - What will you use this connection for (e.g., cloud storage, data transfer, hybrid workloads)?
    - Do your applications require low latency or guaranteed uptime?
    - Will your connection needs change frequently?
2. **Bandwidth Planning**
    - What is the peak and average bandwidth you need?
3. **Redundancy & Resiliency**
    - Do you need a backup path in case of a failure?
    - Do you want to connect to multiple Azure regions or Availability Zones?
4. **Microsoft Azure Connectivity Setup**
    - Which Microsoft Azure region(s) and VNET(s) do you need to reach?

- Do you want to connect to multiple VNETs?

5. **ExpressRoute Type Selection**

   - Will you need Private Peering, Microsoft Peering, or both?

     Note: *Microsoft Peering is not currently supported with IP VPN On-Demand*

6. **IP Addressing & Routing**

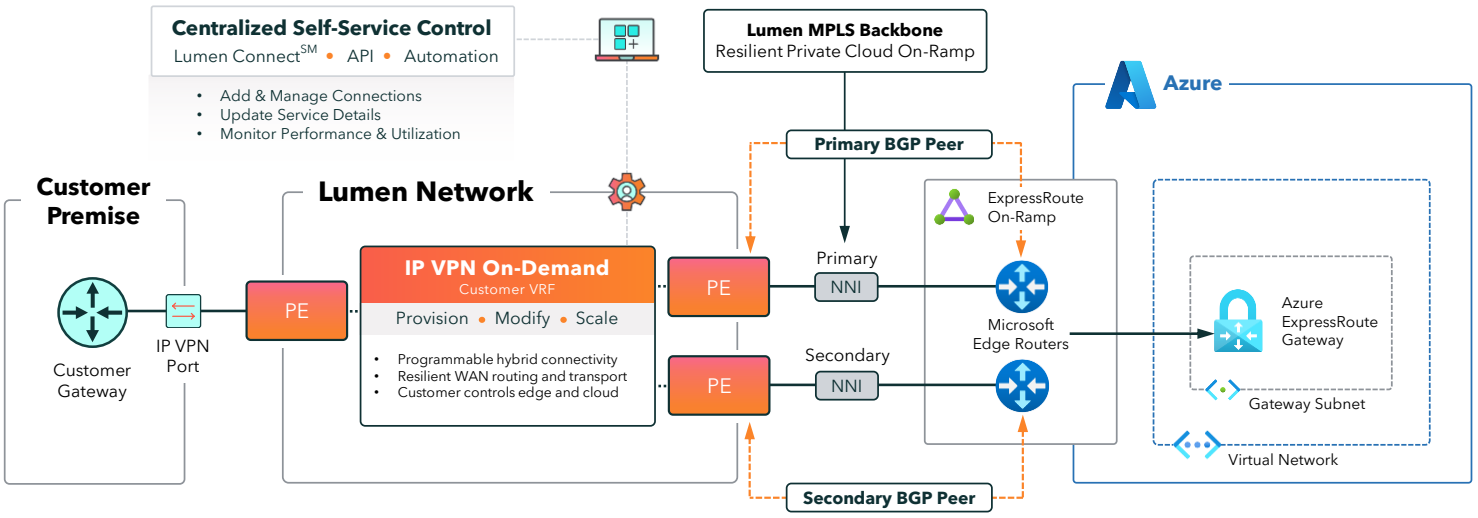
   - Do you have your IP address ranges ready?
   - Are your IP addresses overlapping with any Microsoft Azure environments?

Key Considerations

- ExpressRoute connections can be increased but not decreased; decreasing logical port size requires deleting and recreating to implement changes.
- Microsoft Azure ExpressRoute SLA applies only when redundant connections are used in separate locations.
  - Learn more about ExpressRoute
  - Learn more about Designing for high availability with Azure ExpressRoute
  - Learn More about ExpressRoute resiliency

Deploying Lumen Network-as-a-Service IP VPN On-Demand to Microsoft Azure ExpressRoute

Microsoft Edge Router peering with connectivity to ExpressRoute Gateway



Hybrid Connectivity Responsibility Model:

Customer Edge Configuration	Lumen IP VPN On-Demand Connectivity with Self-Service Control	Customer Azure Cloud Network Configuration

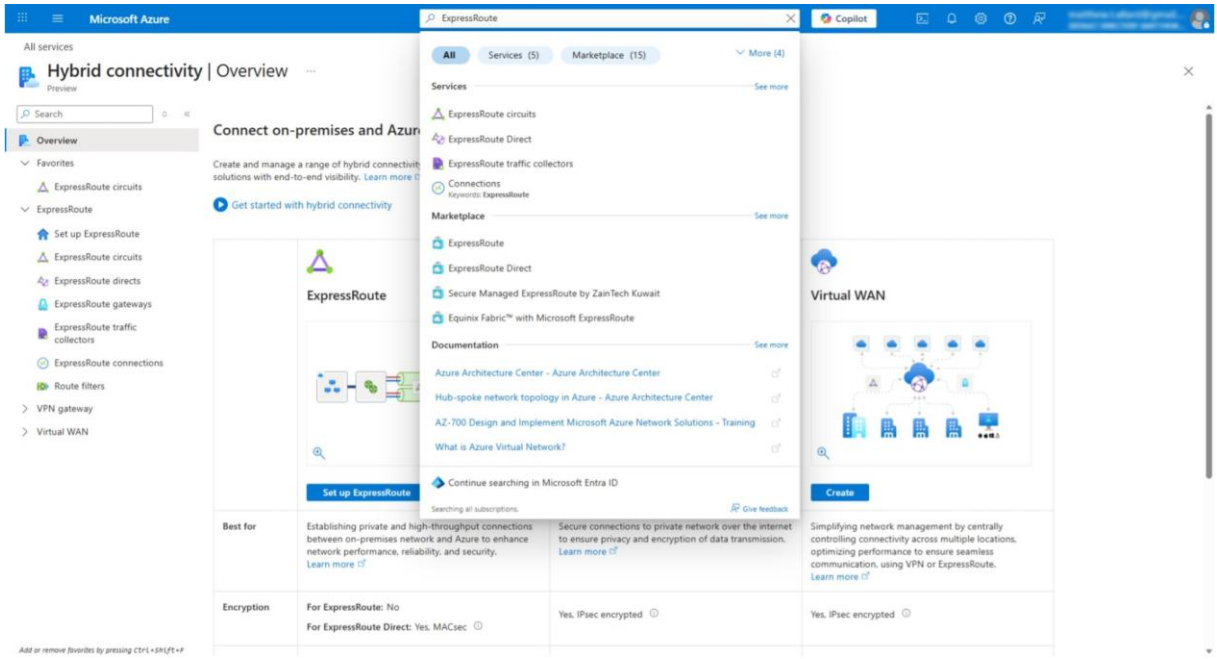
Getting Started Checklist

1. **Lumen Connect℠ Access -** Confirm you have access to Lumen Connect℠ and are entitled for the **Fabric & On-Demand Services** functionality.
2. **Microsoft Azure ExpressRoute Portal Access -** Verify that you have the necessary **login credentials and permissions** to access the Microsoft Azure environment for the target account.

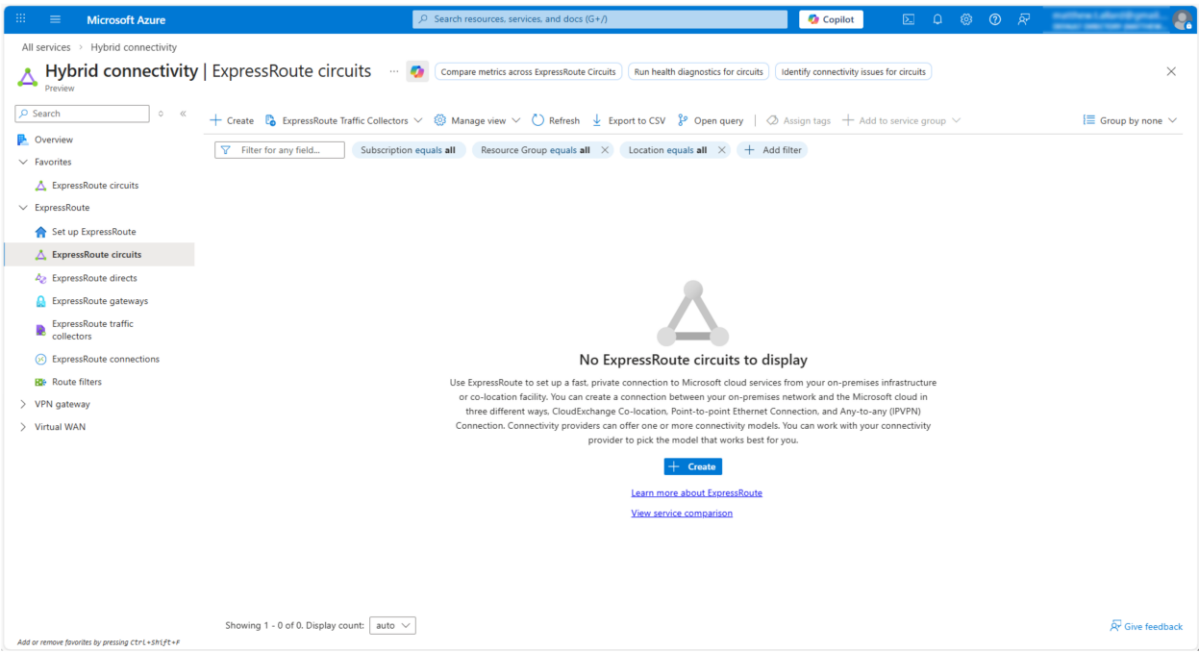
Step 1: Create the Microsoft Azure ExpressRoute Service Key

To create a Microsoft Azure ExpressRoute Service Key in the Azure portal:

1. Sign in to the Microsoft Azure portal and navigate to ExpressRoute circuits by searching for ExpressRoute.



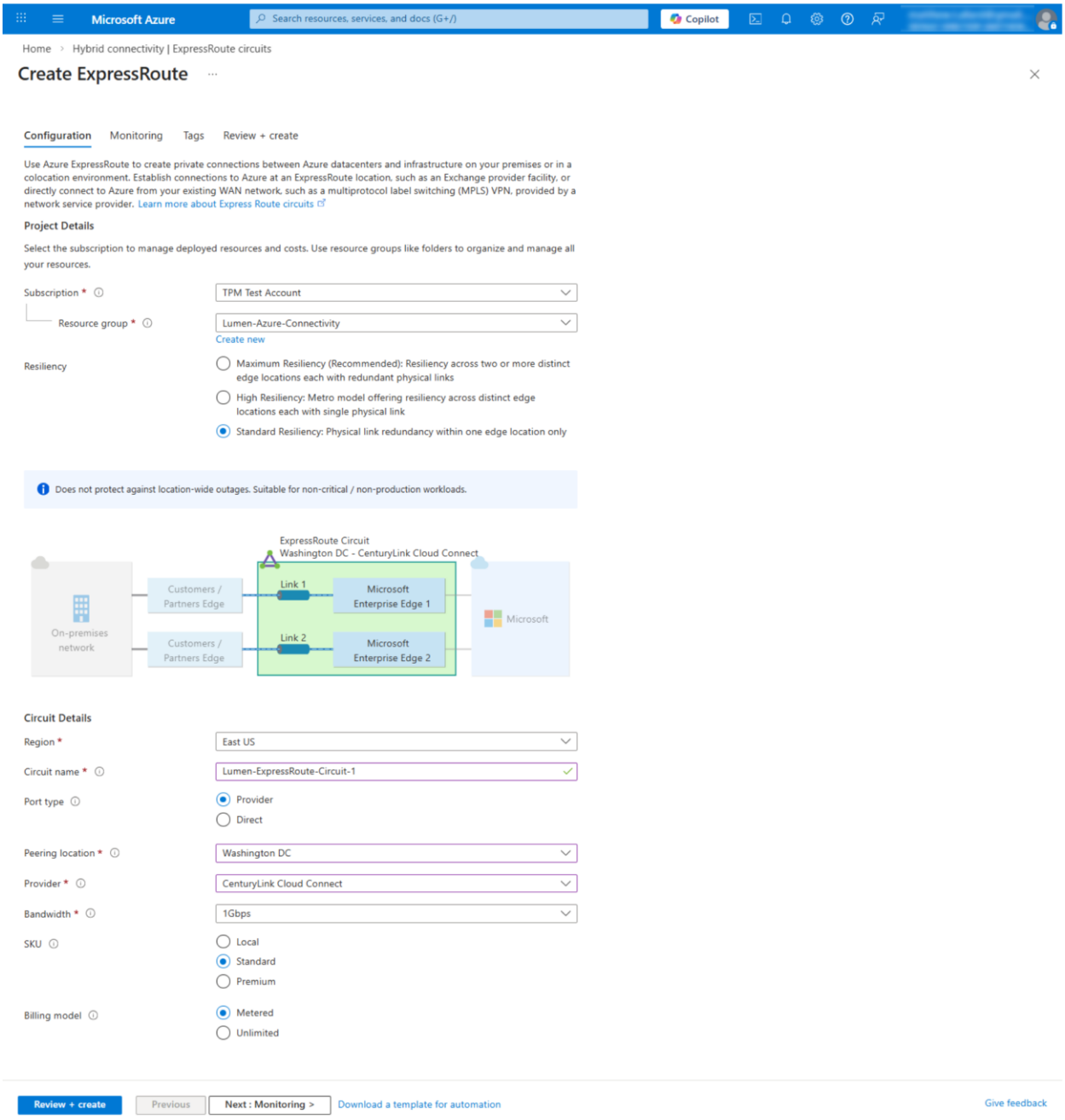
2. Click **Create** to create an ExpressRoute circuit



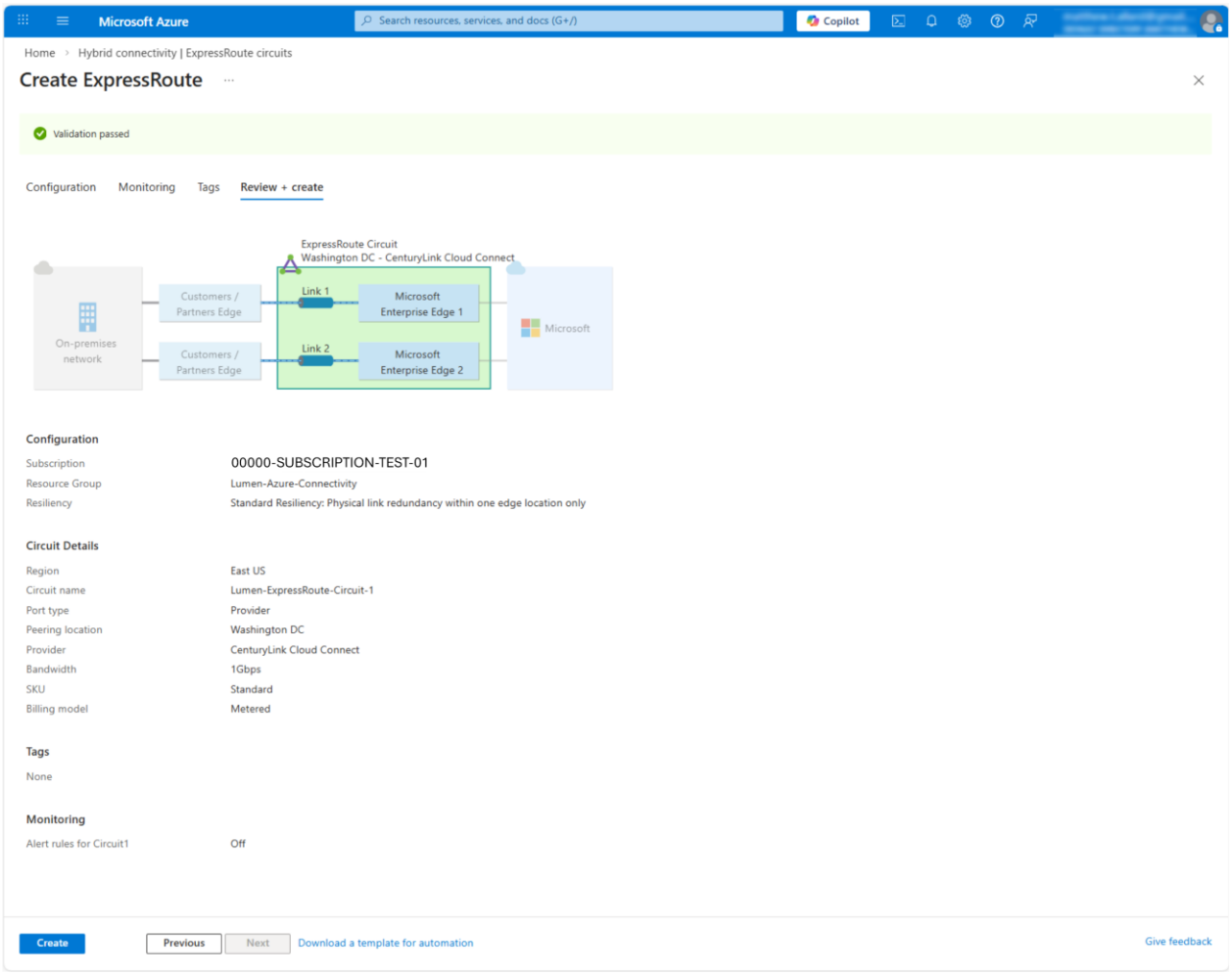
3. Complete the connection details

    - Subscription
    - Resource group
    - Resiliency (*This example utilizes Standard Resiliency*) Connection
        - Standard and Maximum are supported by NaaS
    - Region
    - Circuit Name
    - Port Type: Provider (Direct is ExpressRoute Direct and not utilized with NaaS)
    - Peering Location
    - Provider: CenturyLink Cloud Connect
    - Bandwidth
    - SKU
    - Billing Model

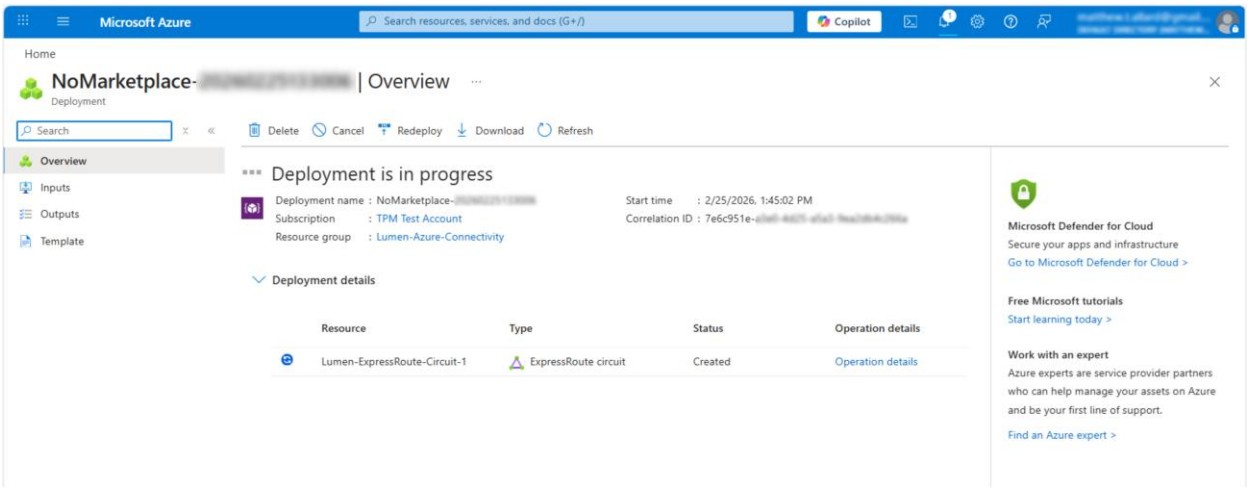
4. Click **Review + create**



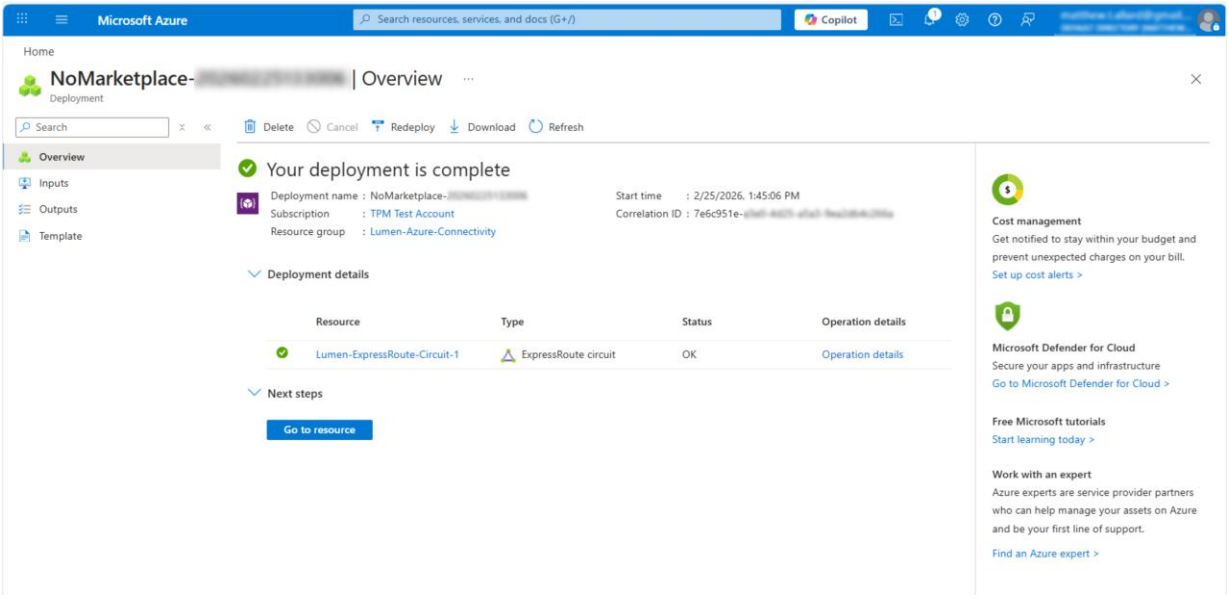
5. Click **Create**



6. A new window will be shown and a message will display **Deployment is in progress**



7. Once complete, a message will display **Your deployment is complete.** Expand Deployment details and click the resource name

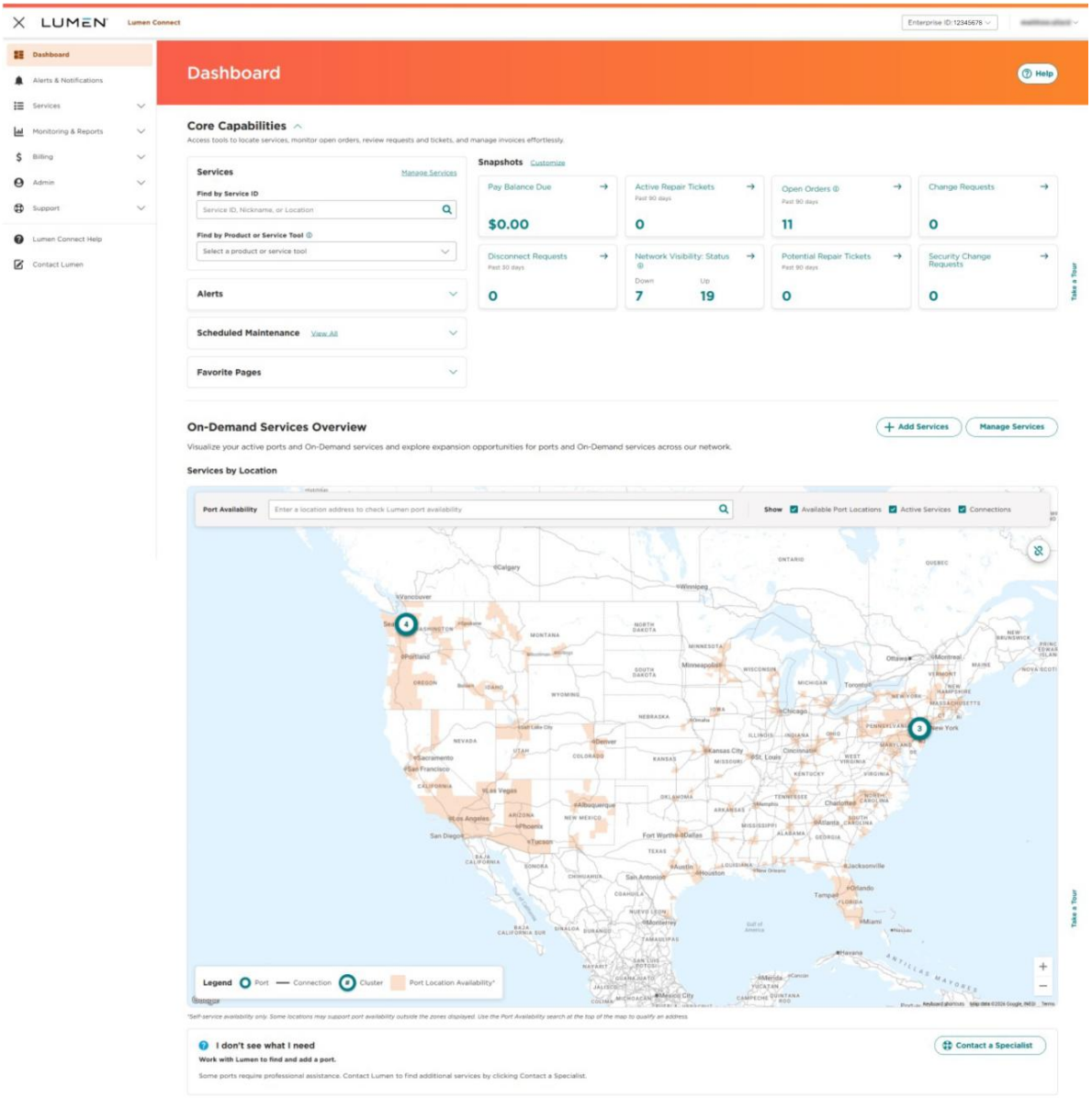


8. Copy the Service Key to be utilized in Lumen Connect℠

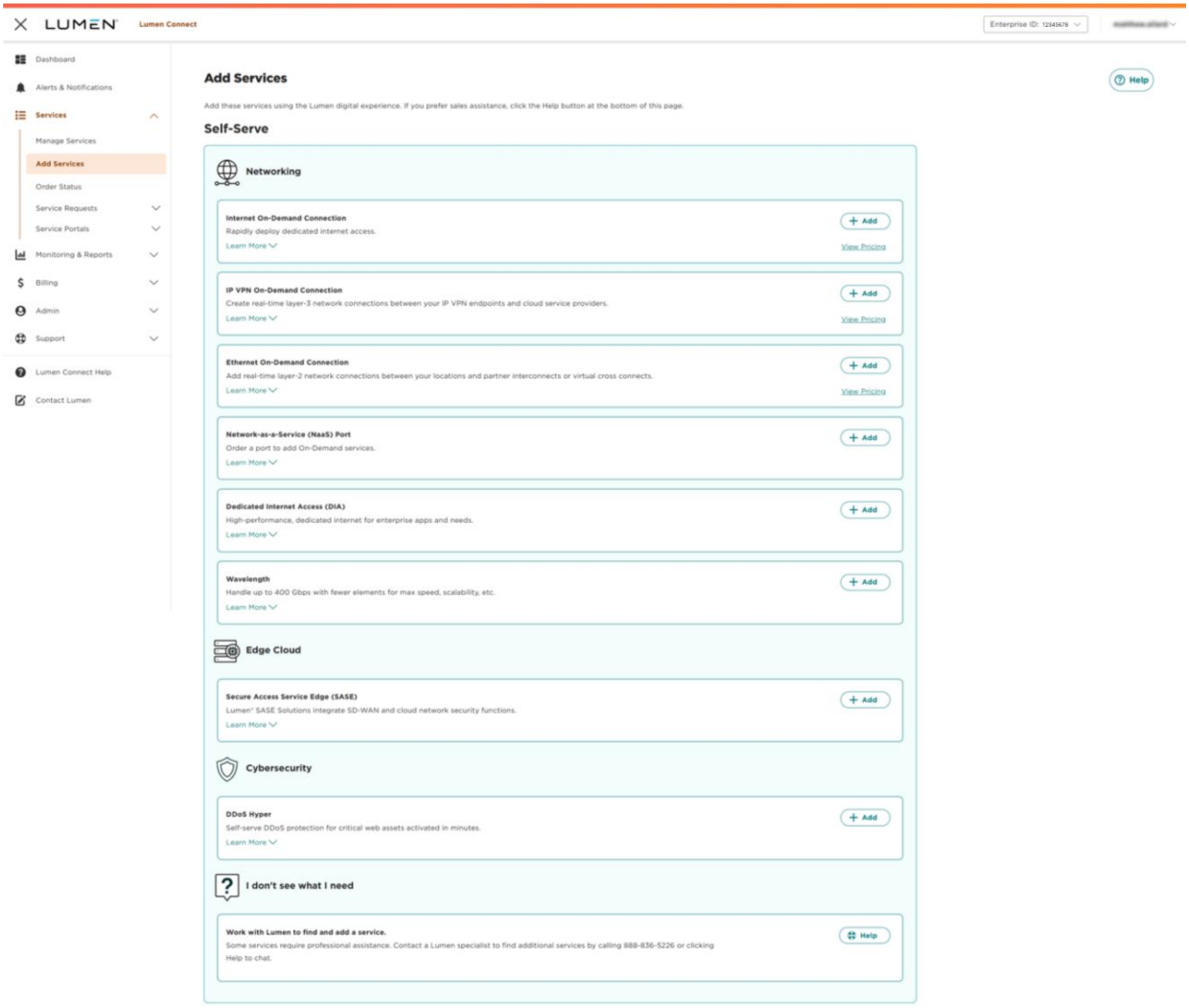
Step 2: Add the connection in Lumen Connect℠

To add the IP VPN On-Demand connection:

1. Sign in to Lumen Connect℠. (Get help retrieving your username/password.)



2. Using the left menu click **Services**, then click **Add Services**.



3. Click **+ Add** for IP VPN On-Demand.
4. From the **Customer ID** and **Billing Account Number** lists, select the customer number and billing account number you want to add IP VPN On-Demand to.

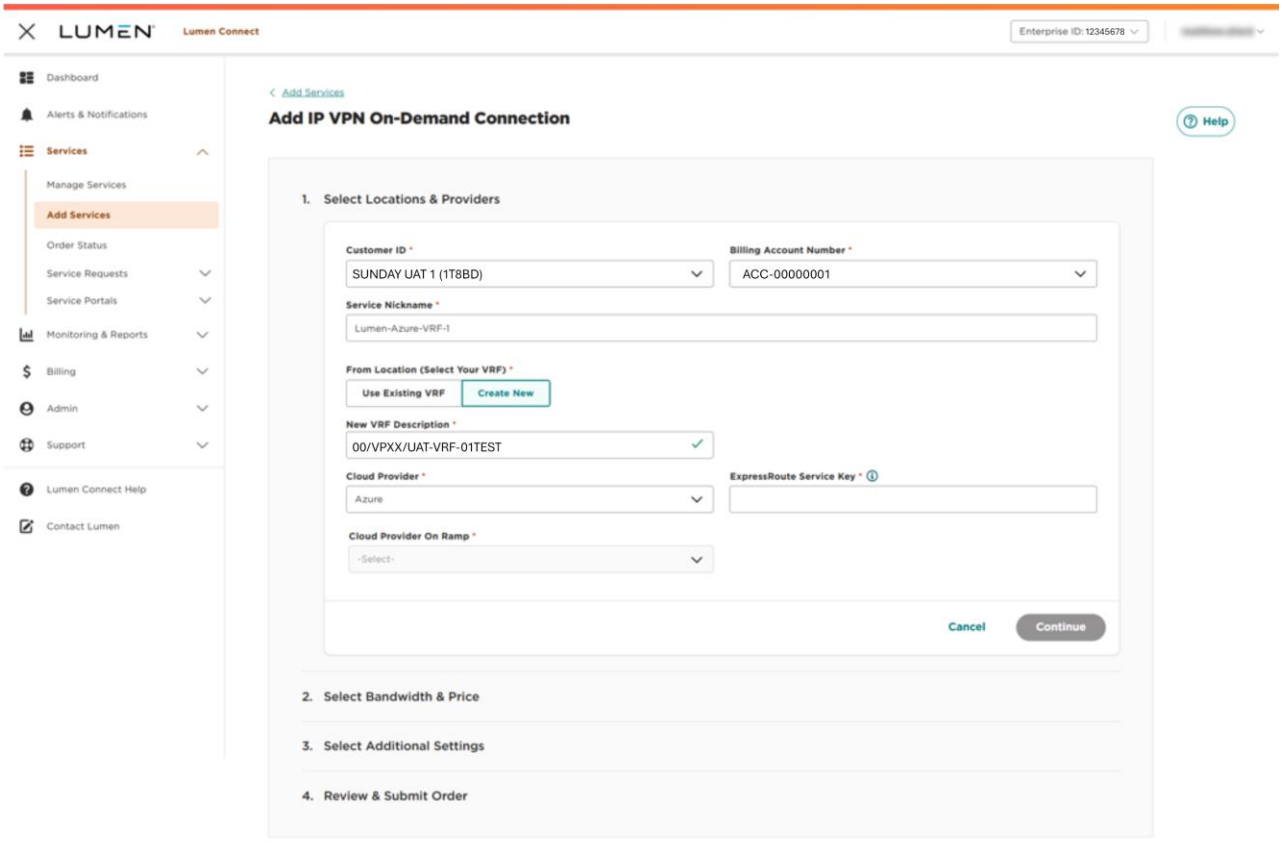
   Lumen Connect℠ fills in the VRF inventory based on the customer ID and billing account number you selected.

5. In the **Service Nickname** field, type a name for the connection you're creating. (Be sure to use something memorable. This name will appear on your invoice.)

6. In the **From Location (Select Your VRF)** section, select or create a VRF for the other end of your connection.

    - Select the VRF to use for the other end of your connection. Click **View Details** for a VRF to view the VRF's routes.

    - Click **Create New**, then type a description for the new VRF in the **New VRF Description** field. Lumen Connect℠ will create the VRF and activate your VPN service once you create your connection.

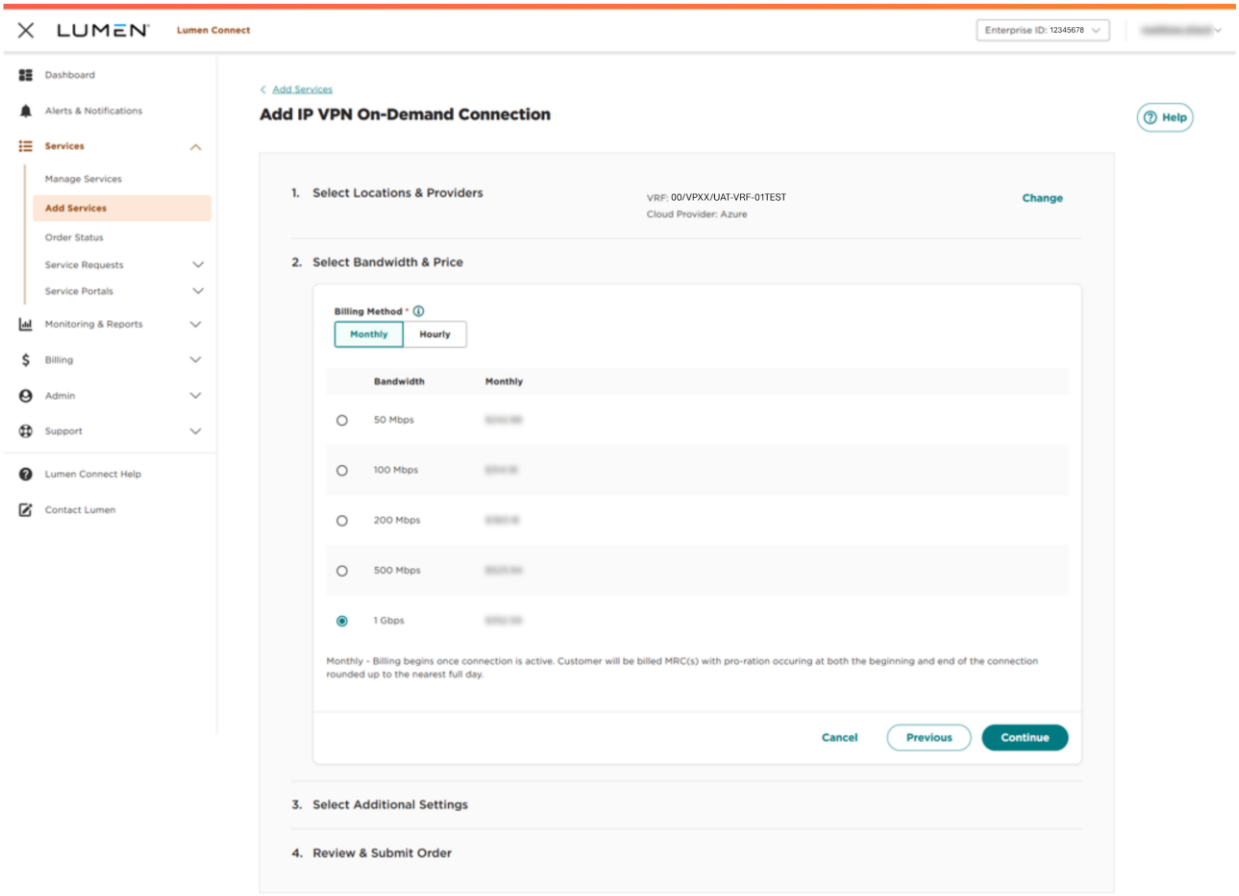


7. From the **Cloud Provider** list, select **Azure**.
8. In the **ExpressRoute Service Key** field, type or copy and paste your ExpressRoute service key provided by Microsoft. (**Note:** You can only use a service key that isn't provisioned and has no peerings.)

Once you fill in the ExpressRoute service key, Lumen Connect℠ retrieves connection information from Microsoft and fills in the on ramp information.

9. Click **CONTINUE**.

10. Use the **Billing Method** buttons to select whether you want monthly or hourly billing for the connection, then select the bandwidth for the connection. Bandwidth options are determined by the destination (to location). (You can't change the bandwidth once you create the connection. If you need to choose a different bandwidth after creating the connection, disconnect the connection and create a new one.)



11. Click **CONTINUE**.

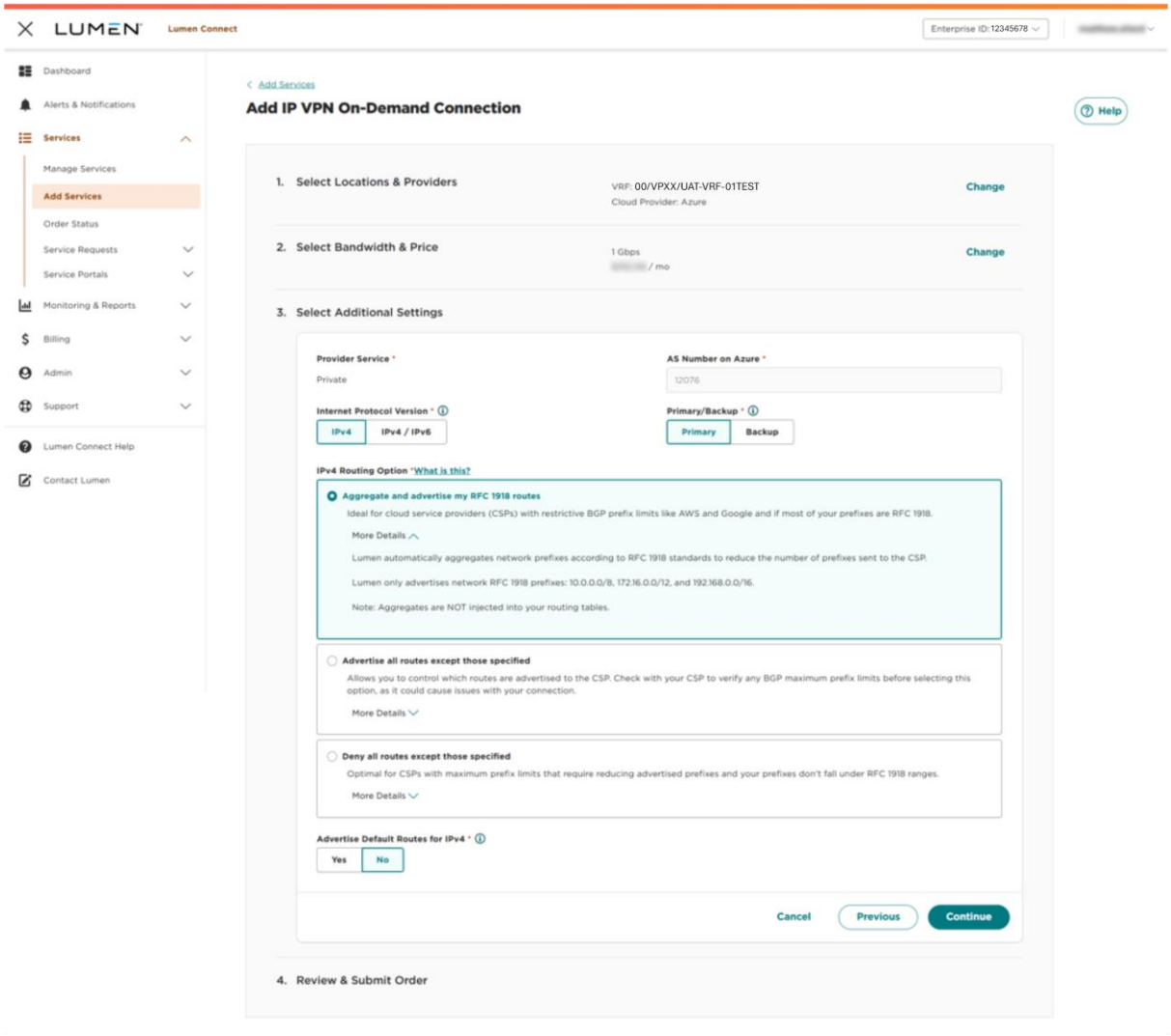
12. In the **Select Additional Settings** section, fill in the additional details for the connection. (Lumen Connect[SM] automatically makes the connection private and sets 12076 as the AS number for Azure.)

    a. Select whether this is a primary or backup connection.

        - Primary will set the local-pref to 750
        - Backup will set the local-pref to 700

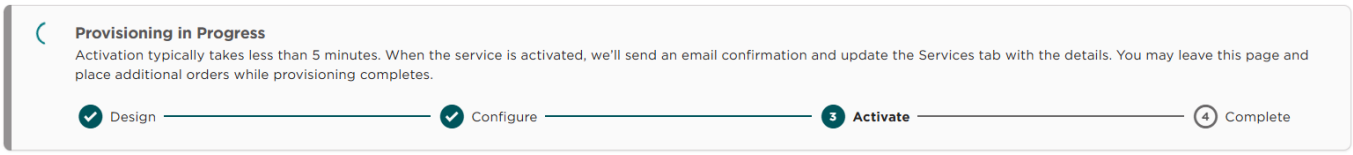
    b. In the **IPv4 Routing Option** field, select the radio button for the routing option you want to use for the connection. Learn more about routing options for an IP VPN connection

    c. Use the buttons to select whether you want to advertise default routes (for both IPv4 and IPv6 if you selected both Internet Protocol versions).



13. Click **CONTINUE**.

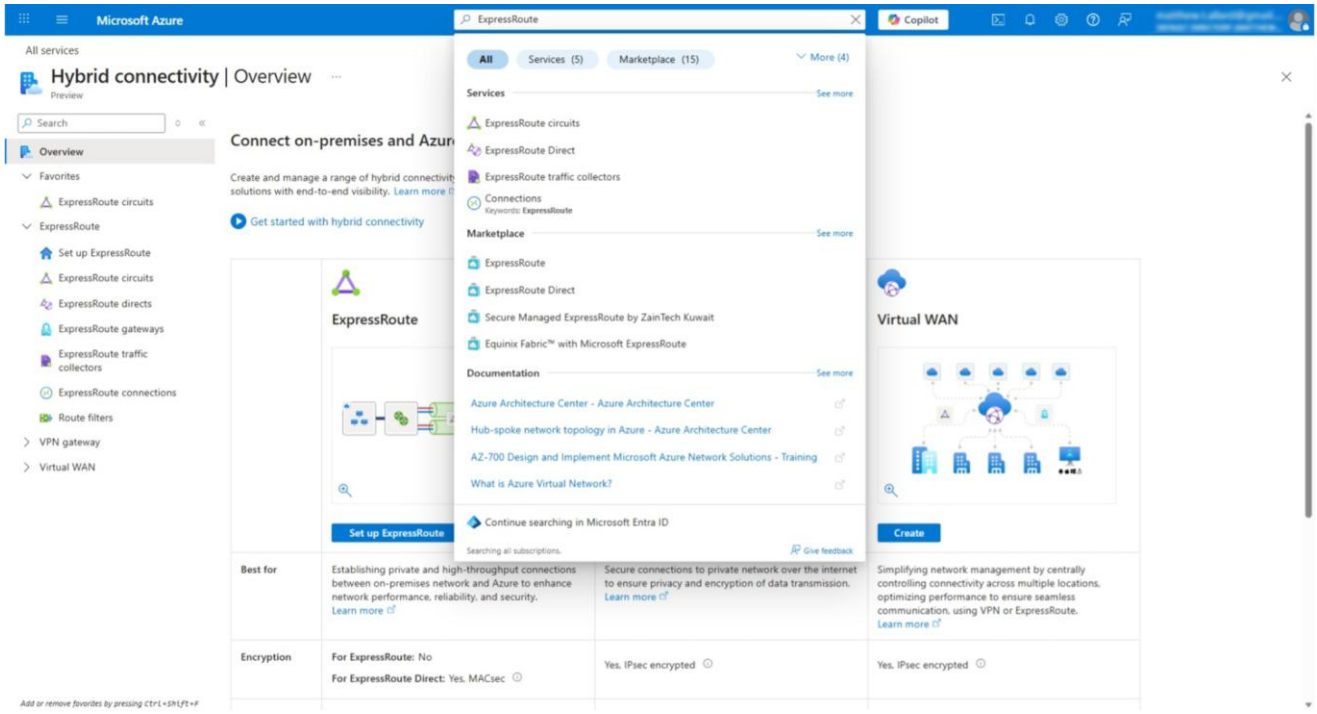
14. Review the order information and correct any missing or invalid selections, then click **SUBMIT ORDER**.



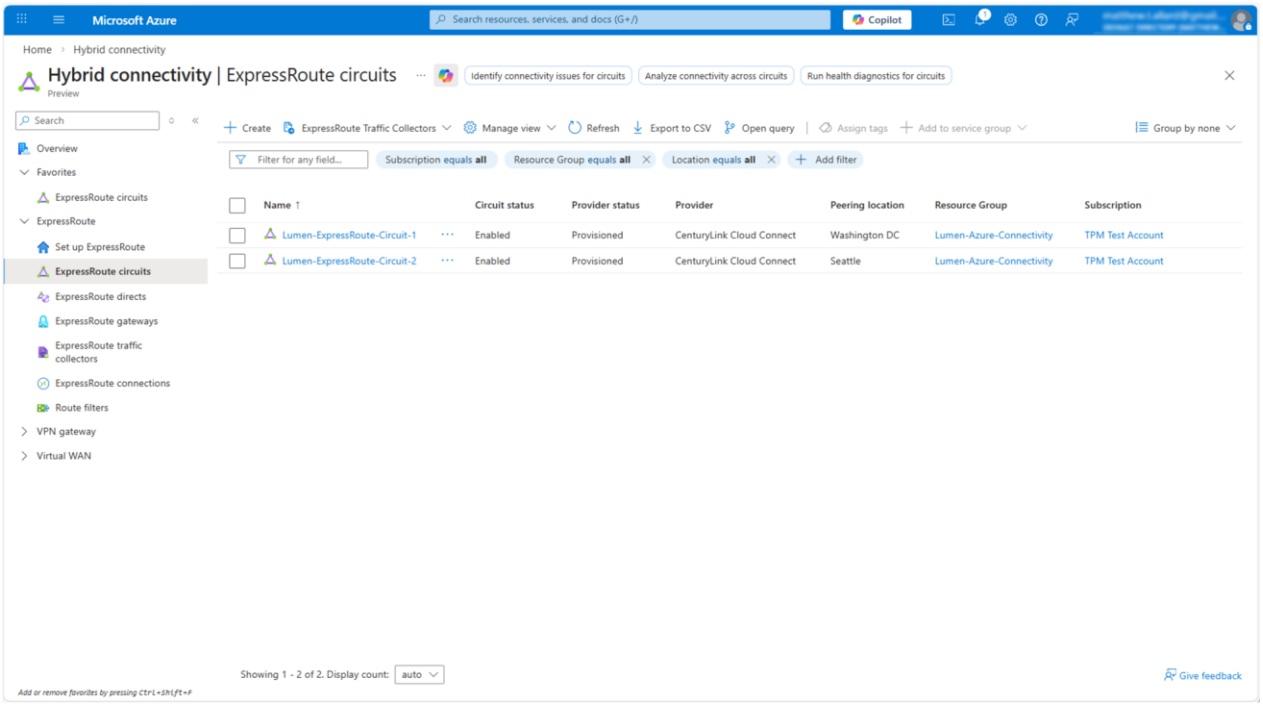
Lumen Connect℠ creates the request for connection, places it in *Pending Activation* status, and routes you to the Services tab so you can monitor the status of the connection. To see status updates, click 🔄. Once Lumen assigns the permanent VRF (within five minutes), the connection changes to *Active* status.

Step 3: Finish provisioning the ExpressRoute circuit with Azure

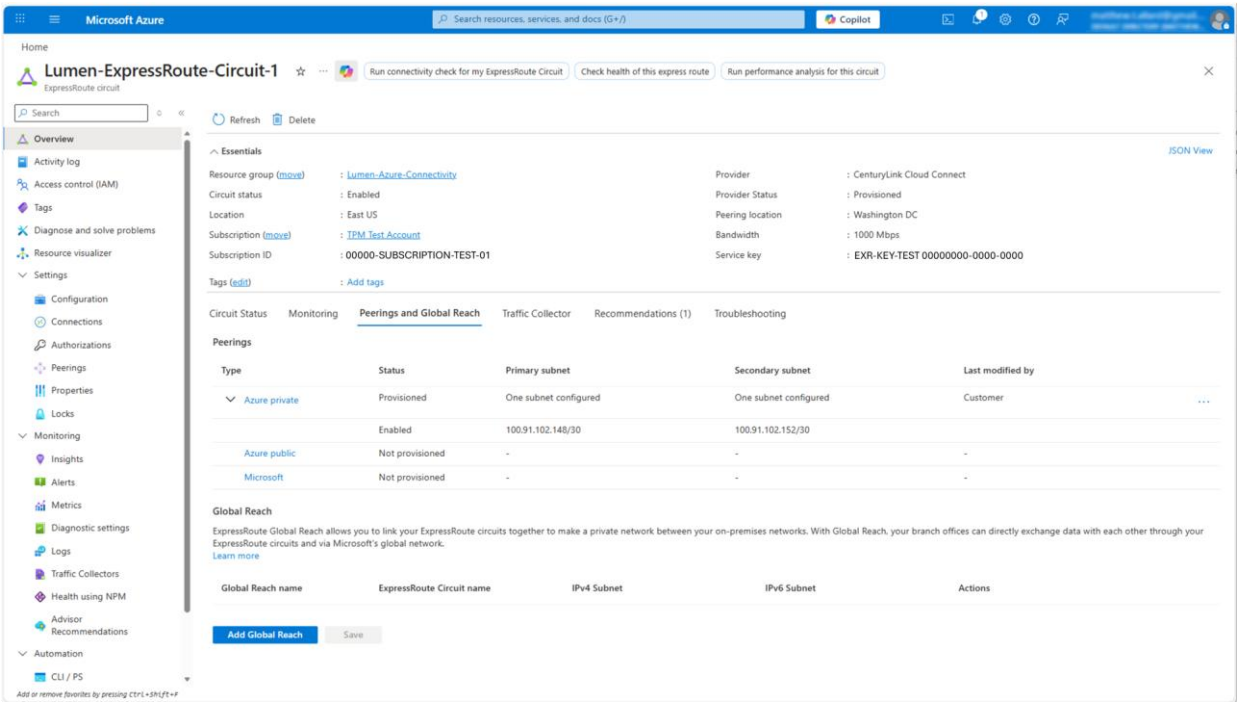
1. Sign in to the Microsoft Azure portal and navigate to ExpressRoute circuits by searching for ExpressRoute.

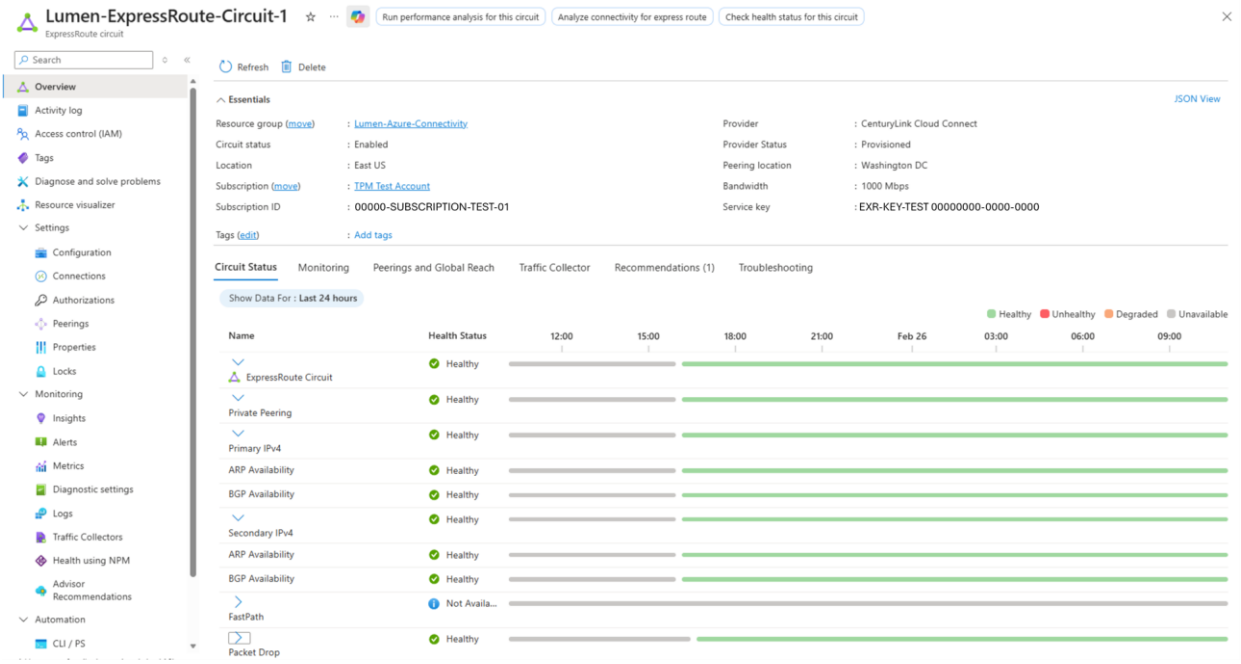


2. Expand the ExpressRoute resource group



3. You will see the following values
    1. Circuit status: **Enabled**
    2. Settings / Peerings:
        - Azure Private: **Provisioned**
        - **Primary Subnet**
        - **Secondary Subnet**



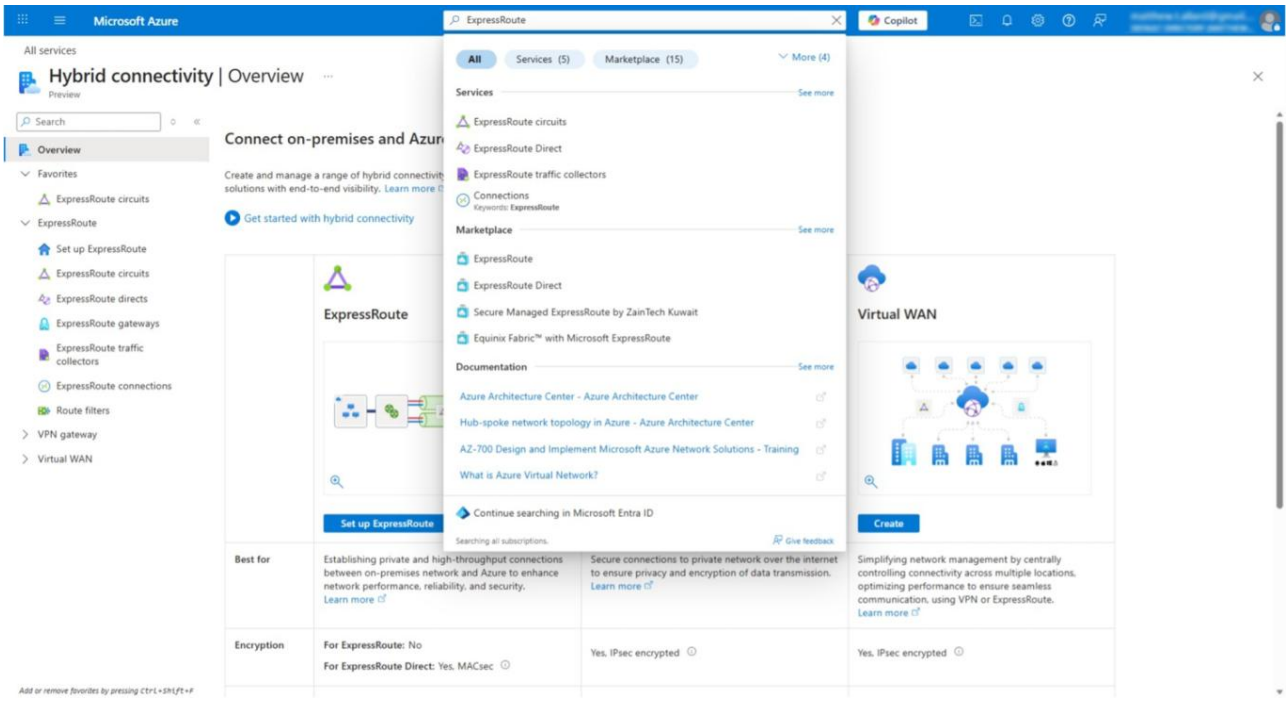


1. Your BGP Peer is established and you may now continue your Microsoft Azure Network configuration

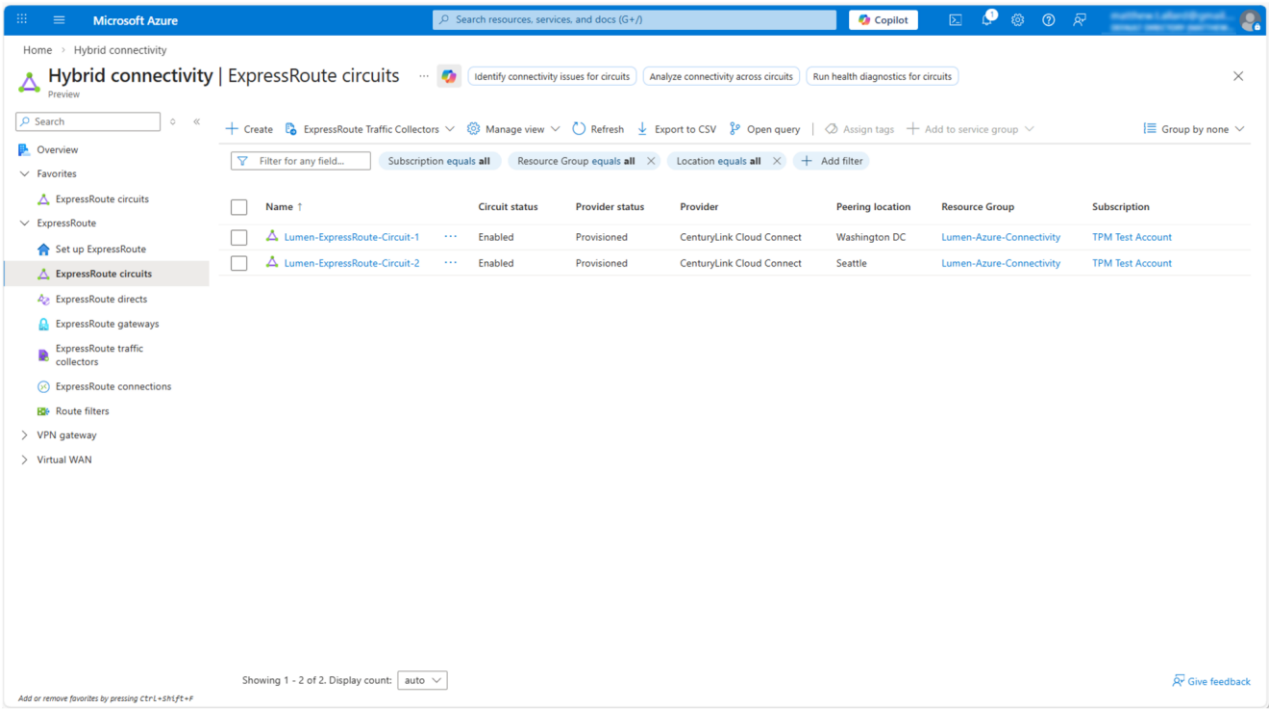
Note: For detailed guidance on configuring your Microsoft Azure networking, refer to the Microsoft Azure ExpressRoute documentation. If you'd like personalized support, please contact your Lumen Account Team to explore our professional services for Microsoft Azure management.

Disconnect Lumen Network-as-a-Service IP VPN On-Demand to Microsoft Azure ExpressRoute

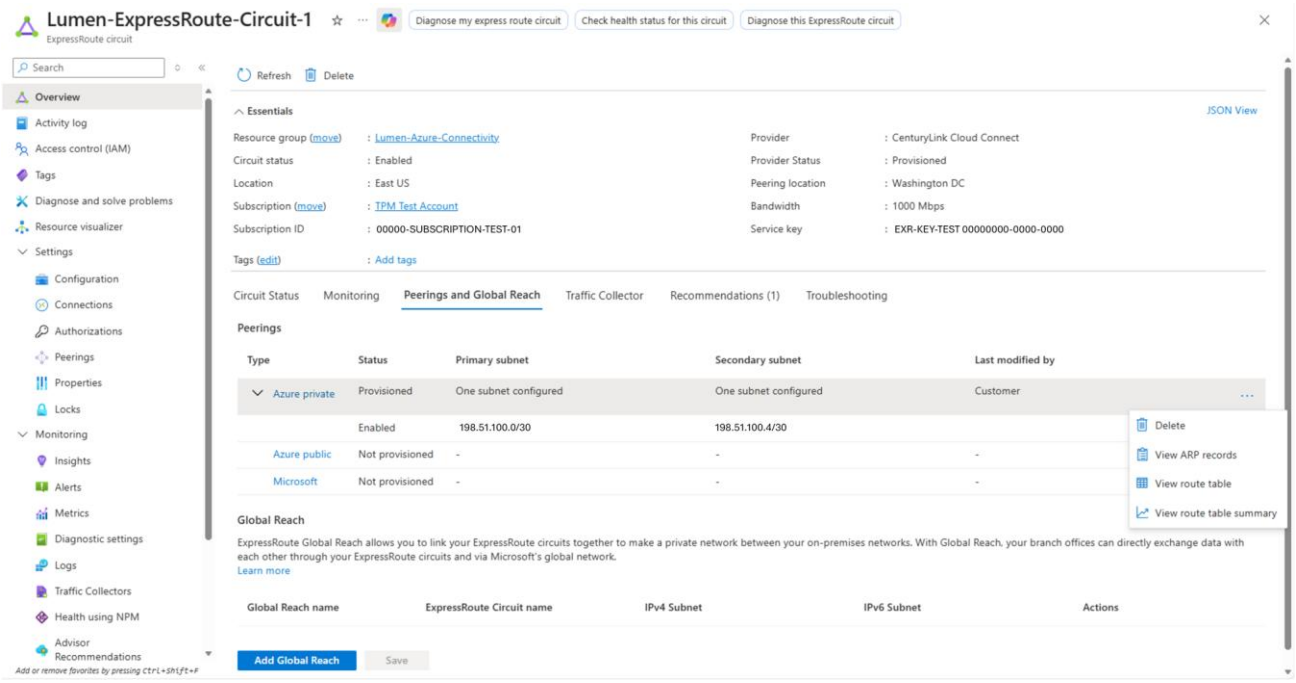
1. Sign in to the Microsoft Azure portal and navigate to ExpressRoute circuits by searching for ExpressRoute.



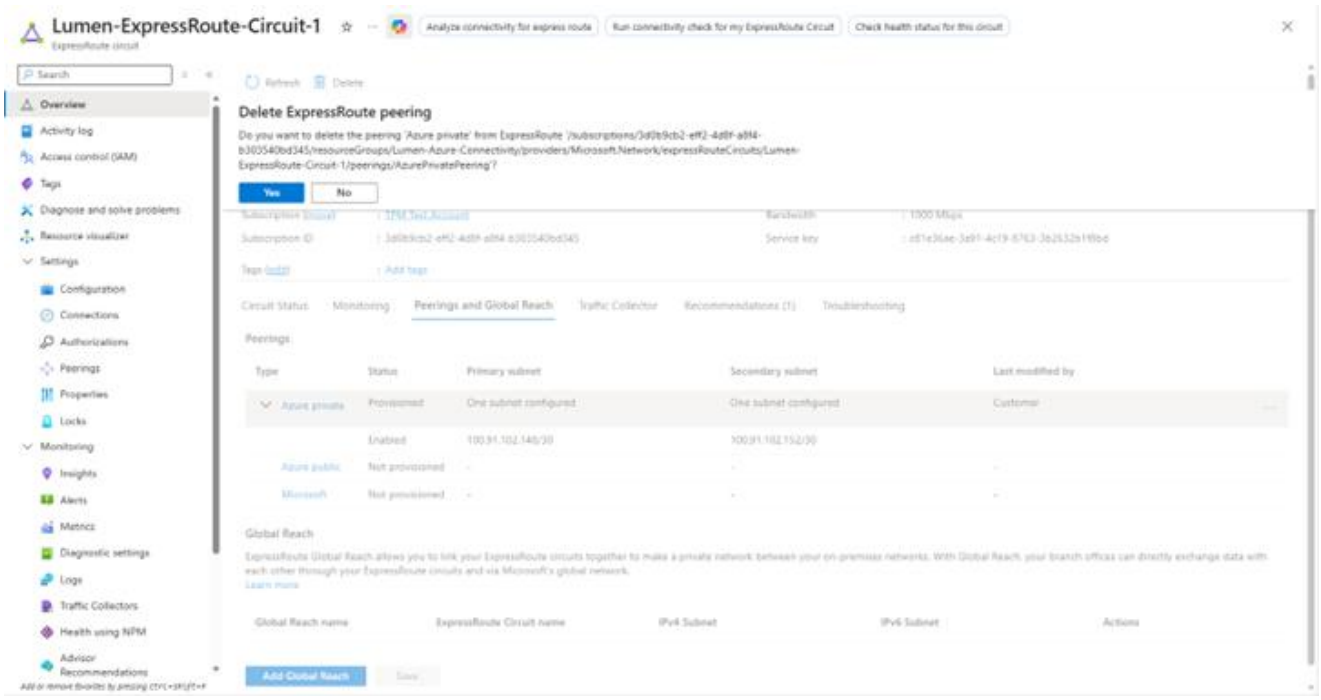
2. Expand the ExpressRoute resource group



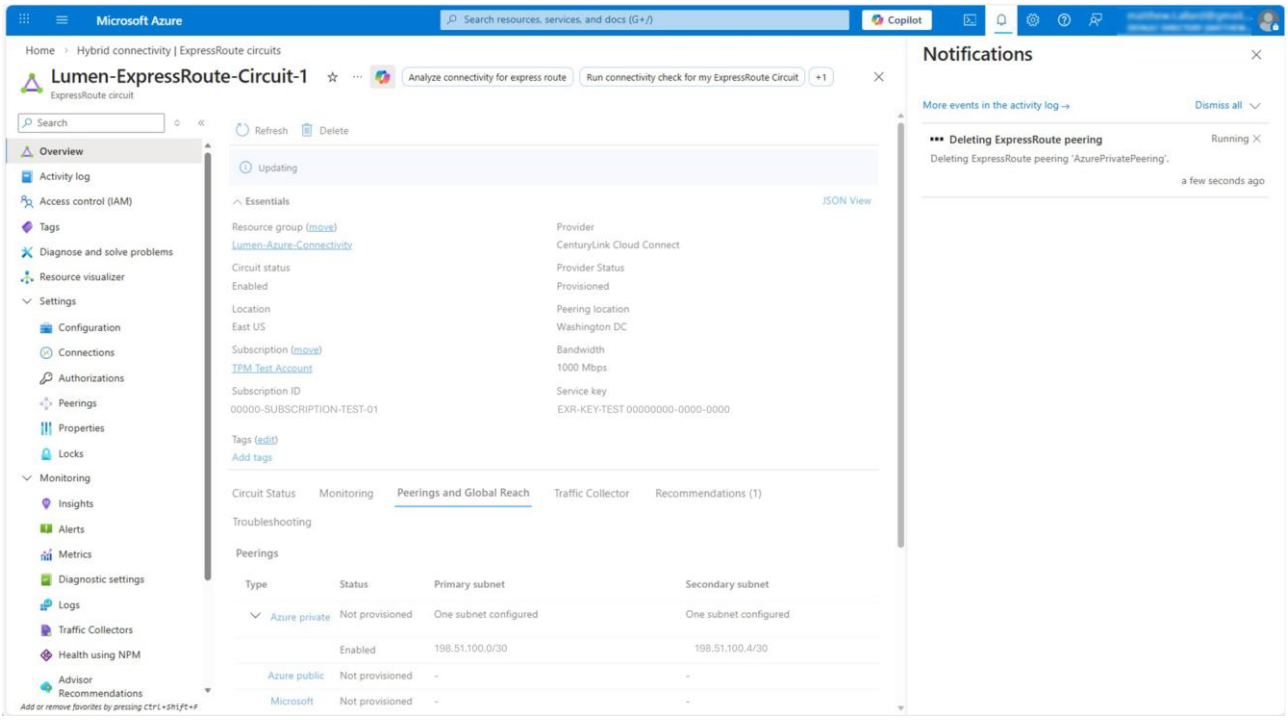
3. Expand the ellipsis "**...**" at the end of the **Azure private** peering row and select **Delete**



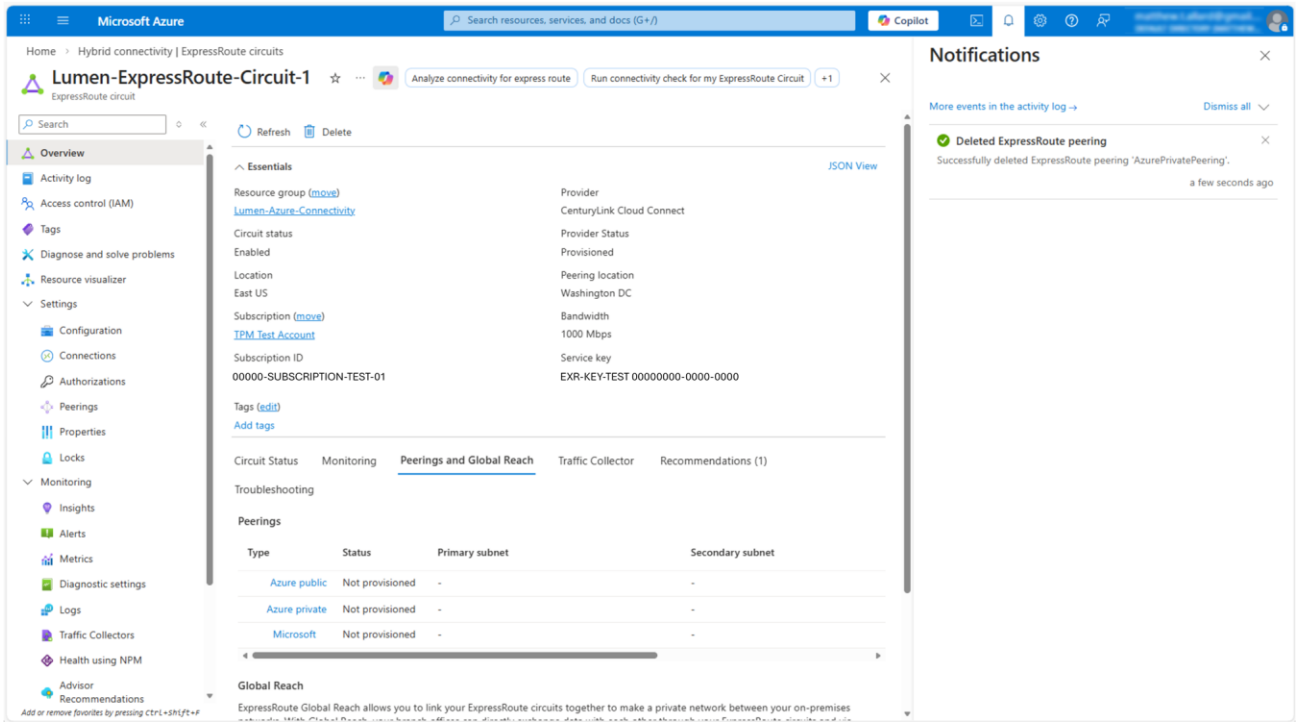
4. A pop-up will ask for confirmation. Click **Yes**.



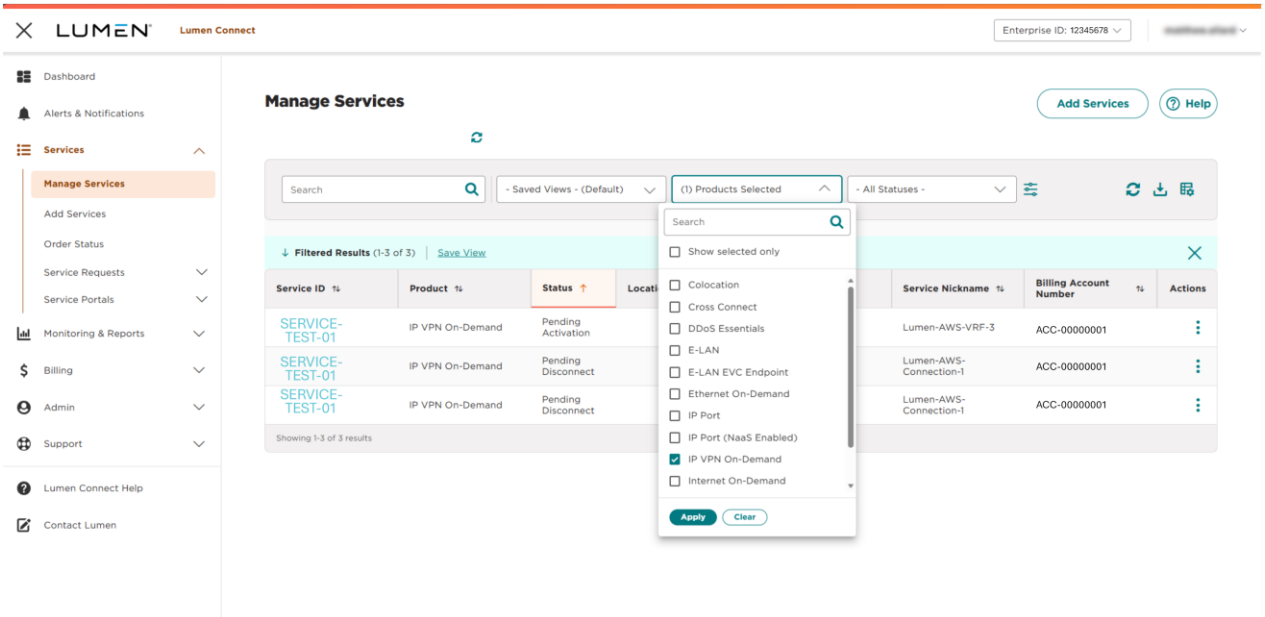
5. The ExpressRoute circuit will show Updating for a few minutes while it removes the BGP Peering.



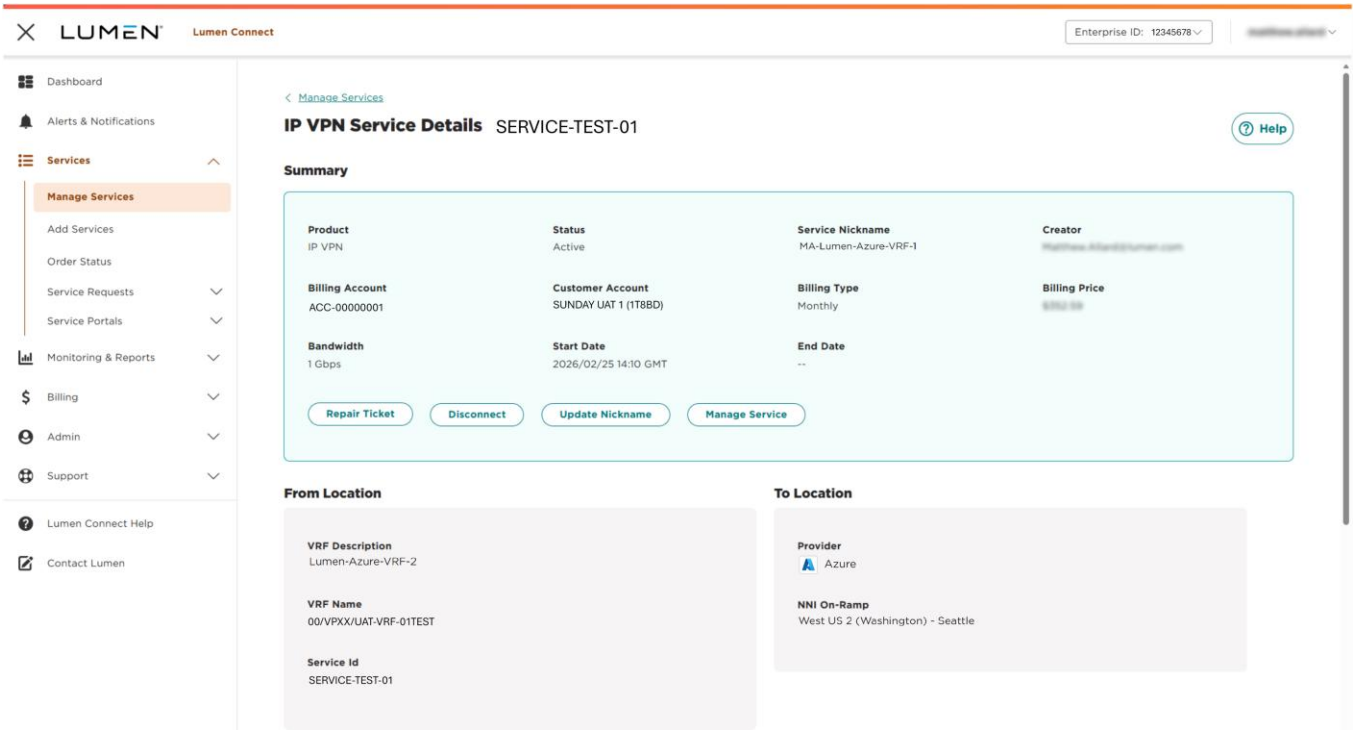
6. Once complete the **Azure private** peering will show **Not provisioned**



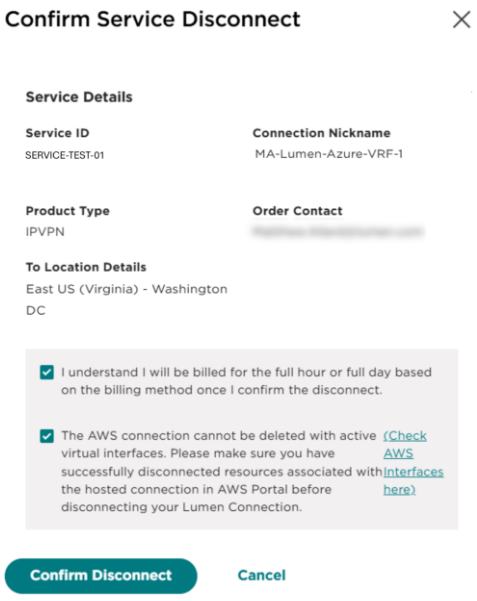
7. Within Lumen Connect℠ you can now select the **Manage Services, filter by Product, select IP VPN on-Demand** to locate the Service ID of the connection you want to disconnect.



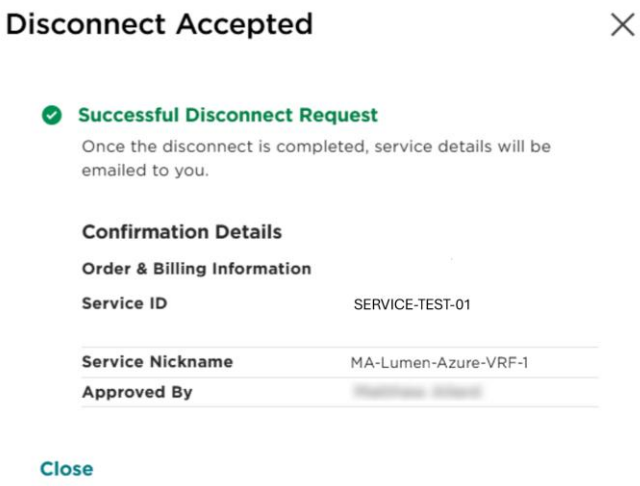
8. Select the Service ID of the connection you want to disconnect and click **Disconnect**



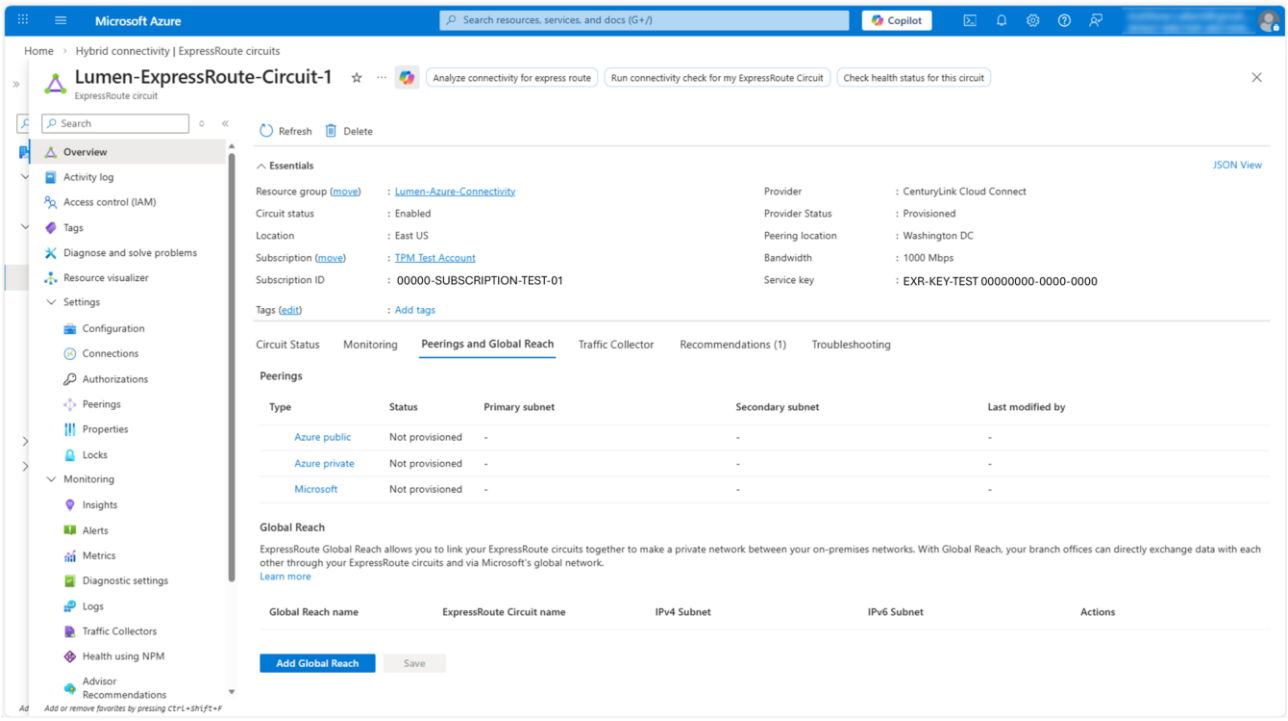
9. Check the box to confirm the change and click **Confirm Disconnect**



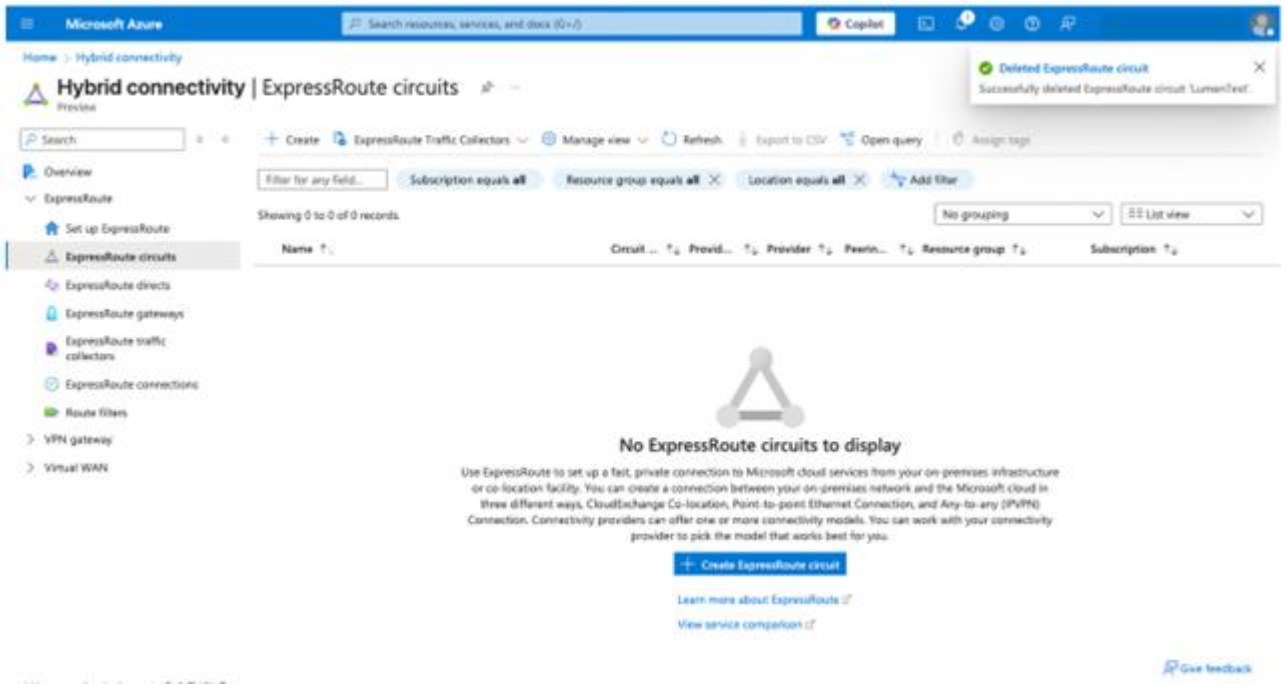
10. A pop-up will display **Disconnect Accepted – Successful Disconnect Request**. You may now click **CLOSE**.



11. Returning to the ExpressRoute circuit information in Microsoft Azure, in the middle of the screen, click **Delete**



12. Once completed a pop-up will display **Deleted ExpressRoute circuit**



Lumen Network-as-a-Service IP VPN On-Demand to Google Cloud

Creating a **Google Cloud Partner Interconnect** involves coordination between Lumen, Google Cloud, and the end customer.

What is a Google Cloud Partner Interconnect?

A **Partner Interconnect** is a type of Google Cloud connection provisioned by a partner who owns the physical Network-to-Network (NNI) infrastructure (e.g., port) and allocates bandwidth to customers on demand. It is different than **Dedicated Interconnects** where Lumen would provision a physical port and dedicated third-party cross-connect (3PXC) and a single customer would own the usage of the entire physical connection.

All Network-as-a-Service IP VPN On-Demand connections to Google Cloud are Partner Interconnects.

Customer **Self-Assessment Questions**

1. About Your Use Case

- What will you use this connection for (e.g., cloud storage, data transfer, hybrid workloads)?
- Do your applications require low latency or guaranteed uptime?
- Will your connection needs change frequently?

2. Bandwidth Planning

- What is the peak and average bandwidth you need?

3. Redundancy & Resiliency

- Do you need a backup path in case of a failure?
- Do you want to connect to multiple Google Cloud regions or Availability Zones?

4. Google Cloud Connectivity Setup

- Which Google Cloud region(s) and VPC(s) do you need to reach?

- Do you want to connect to multiple VPCs?

7. **IP Addressing & Routing**

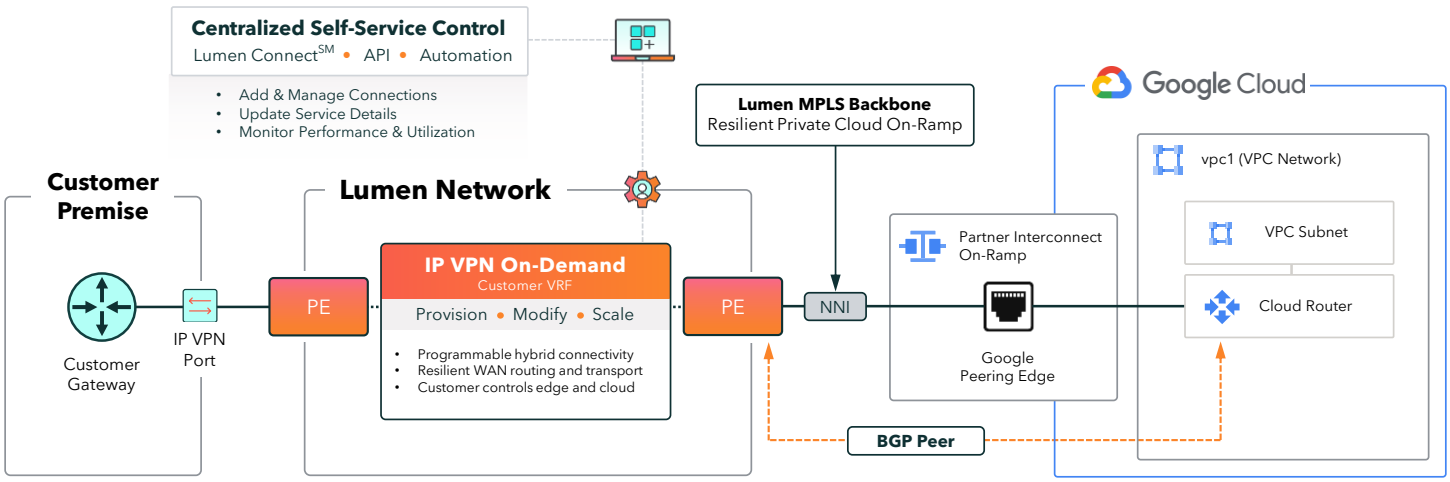
   - Do you have your IP address ranges ready?
   - Are your IP addresses overlapping with any Google Cloud environments?

Key Considerations

- Google Cloud Partner Interconnect SLAs apply only when redundant connections are provisioned in in a single or diverse region.
  - Learn more about Partner Interconnects
  - Learn more about Partner Interconnect SLAs

Deploying Lumen Network-as-a-Service IP VPN On-Demand to Google Cloud Partner Interconnect

Google Cloud Router peering with connectivity to a VPC Network



Hybrid Connectivity Responsibility Model:

Customer Edge Configuration	Lumen IP VPN On-Demand Connectivity with Self-Service Control	Customer Activation of VLAN Attachment (In Google Cloud)	Customer Google Cloud Network Configuration

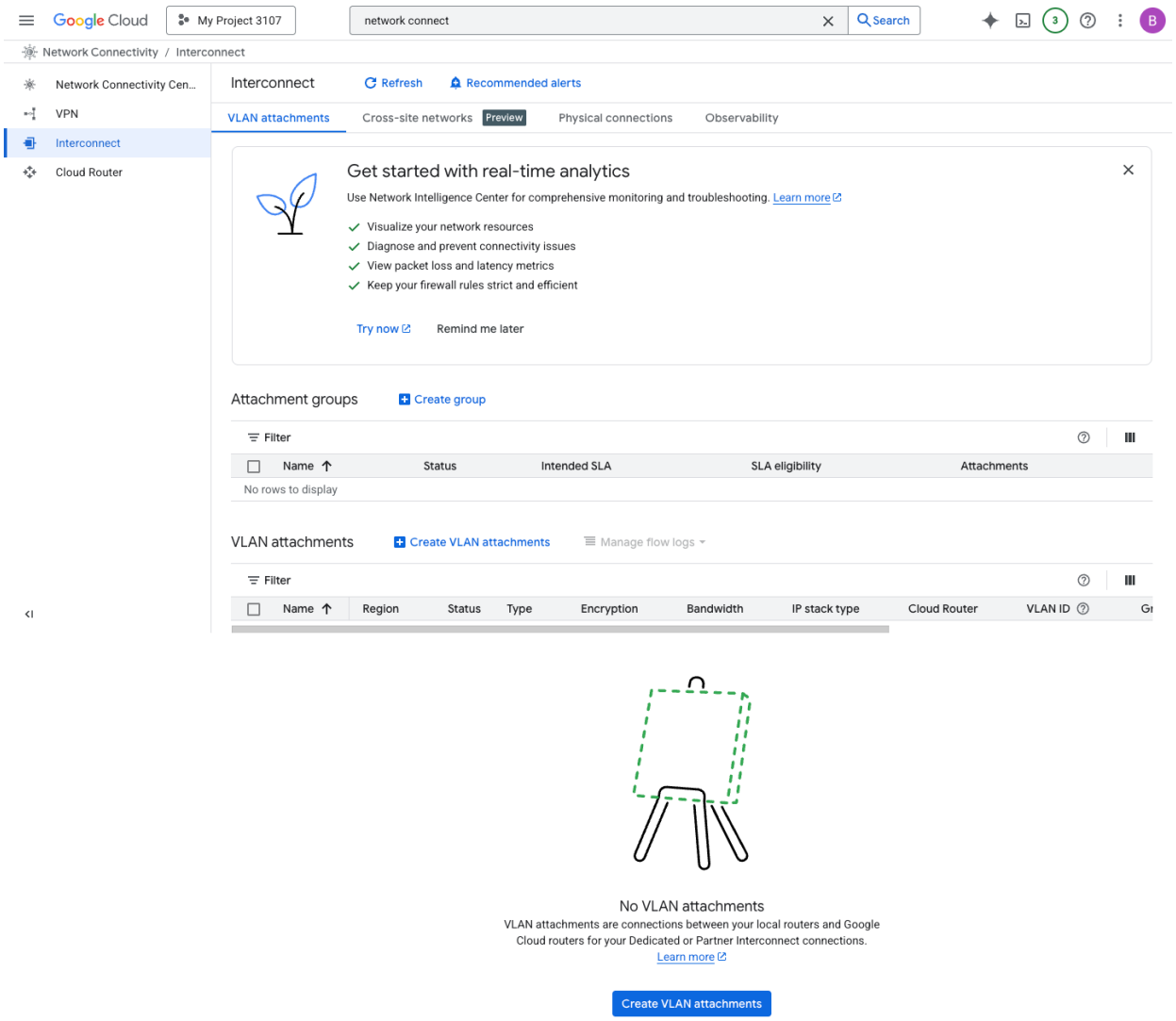
Getting Started Checklist

1. **Lumen Connect℠ Access -** Confirm you have access to **Lumen Connect℠** and are entitled for the **Fabric & On-Demand Services** functionality.
2. **Google Cloud Console Access -** Verify that you have the necessary **login credentials and permissions** to access the Google Cloud environment for the target account.
3. In your Google Cloud project, you need:
    1. A **VPC network** with subnets in the region(s) you'll connect to.
    2. A **Cloud Router** in each region, with BGP ASN **16550** (or another private ASN you choose). You will need the ASN when configuring the IP VPN On-Demand Connection

Step 1: Create the Partner Interconnect Pairing Key

To create a Partner Interconnect Pairing Key in the Google Cloud console:

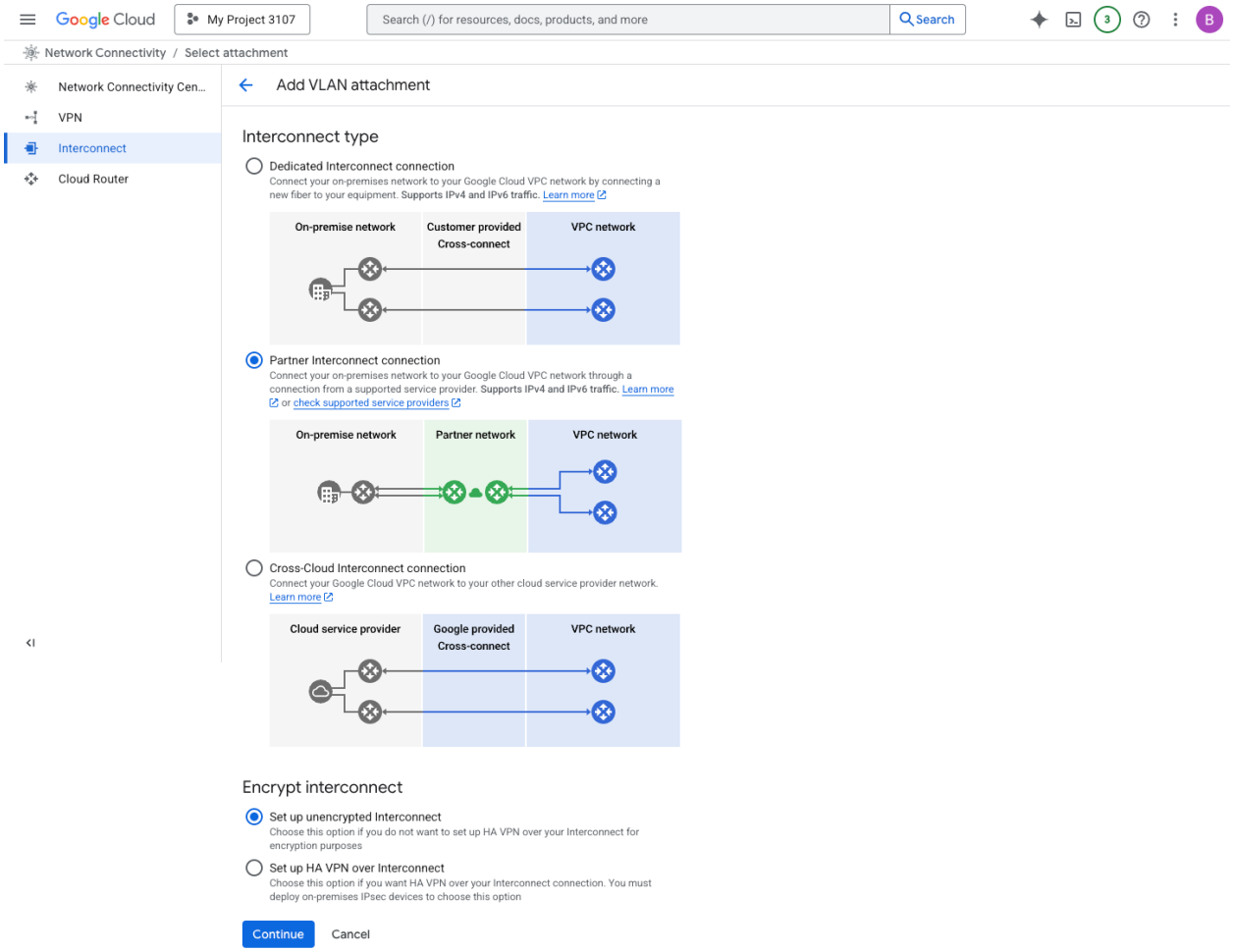
1. Sign into the Google Cloud console and navigate to **Network Connectivity > Interconnect**



2. Click **Create VLAN attachments**
3. Select **Partner Interconnect**

4. Choose **Unencrypted** (or **Encrypted** if you're doing HA VPN over Interconnect), then **Continue**.

5. Click **Continue**



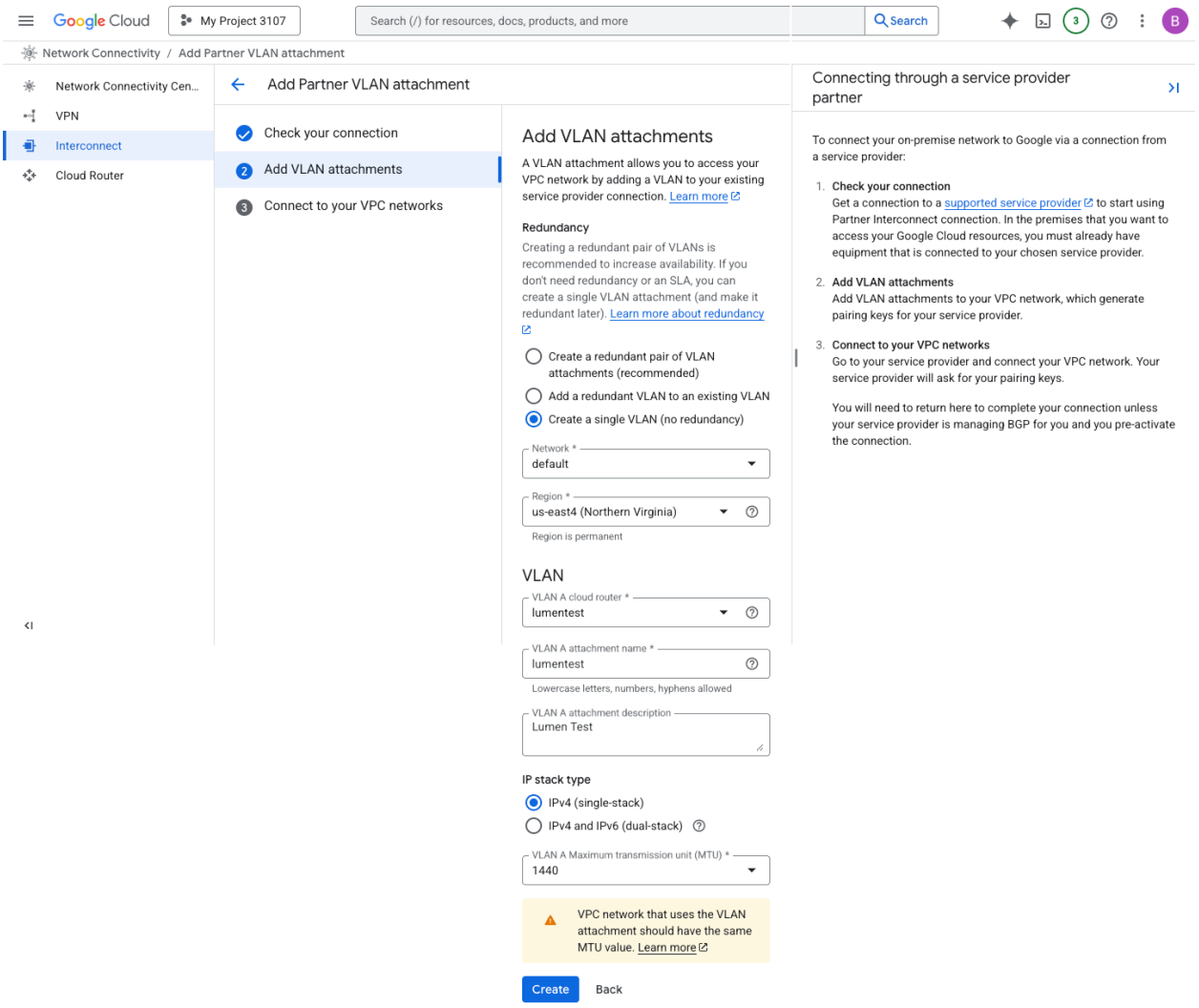
6. Click **I already have a service provider**.

7. Under Add VLAN attachments configure the following values and click Create

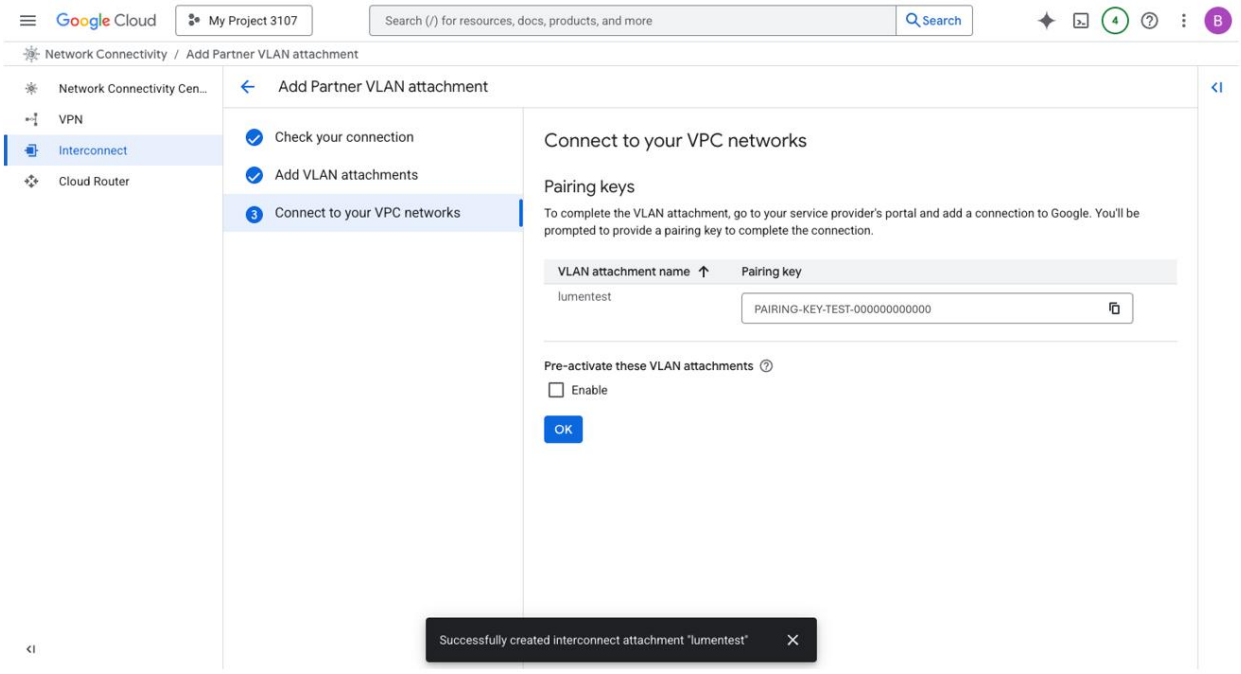
- Redundancy option

  Note: For the purposes of this demo we will create a single VLAN by selecting **Create a single VLAN (no redundancy)**

- Network
- Region
- VLAN A Cloud Router
- VLAN A attachment name
- VLAN A attachment description
- IP stack type (IPV4 or IPV4 and IPv6)
- Maximum MTU



  - When ready, copy the generated **pairing key**—you'll need this for the next step.

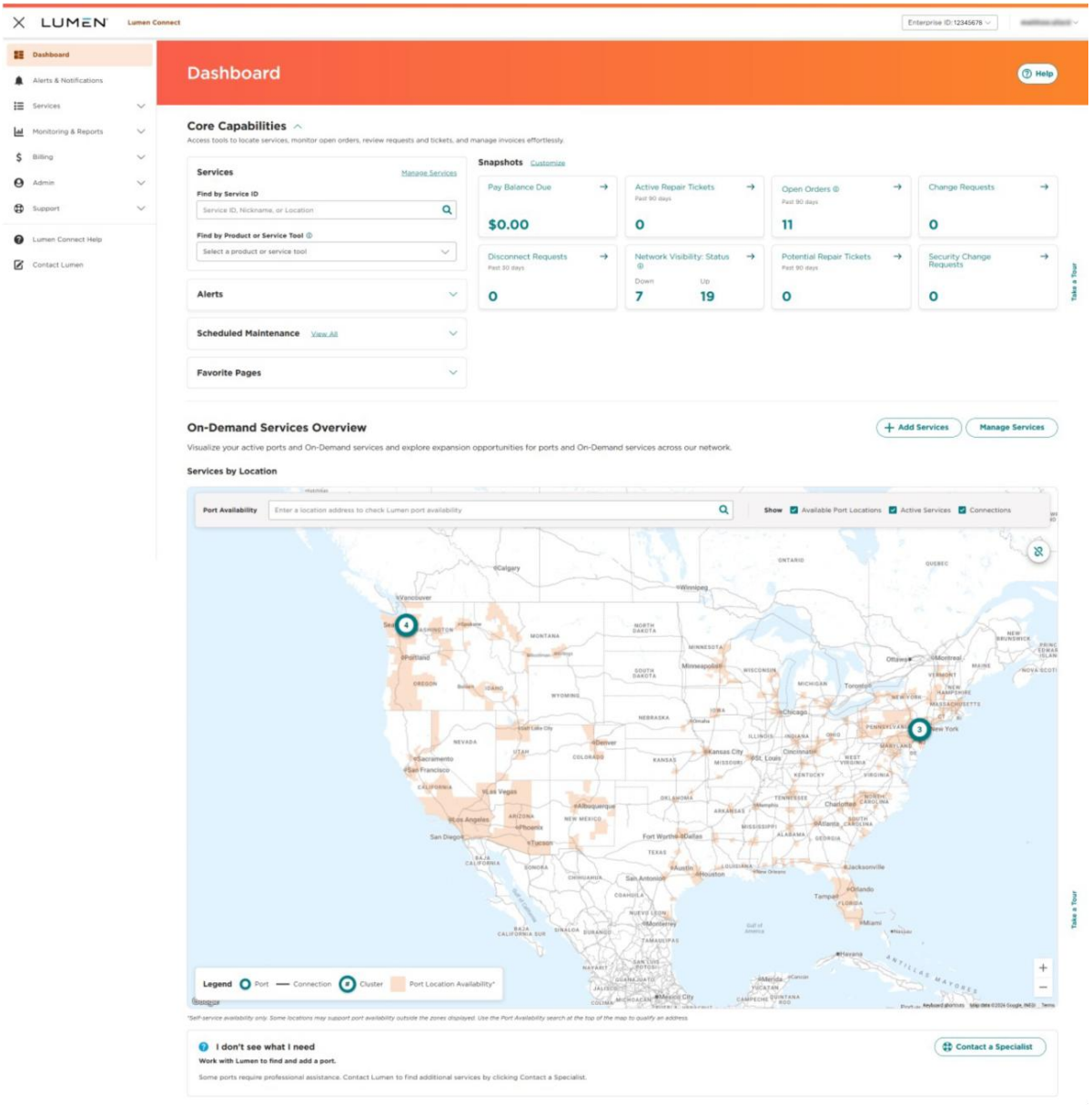


9. Copy the Pairing Key to be utilized in Lumen Connect℠

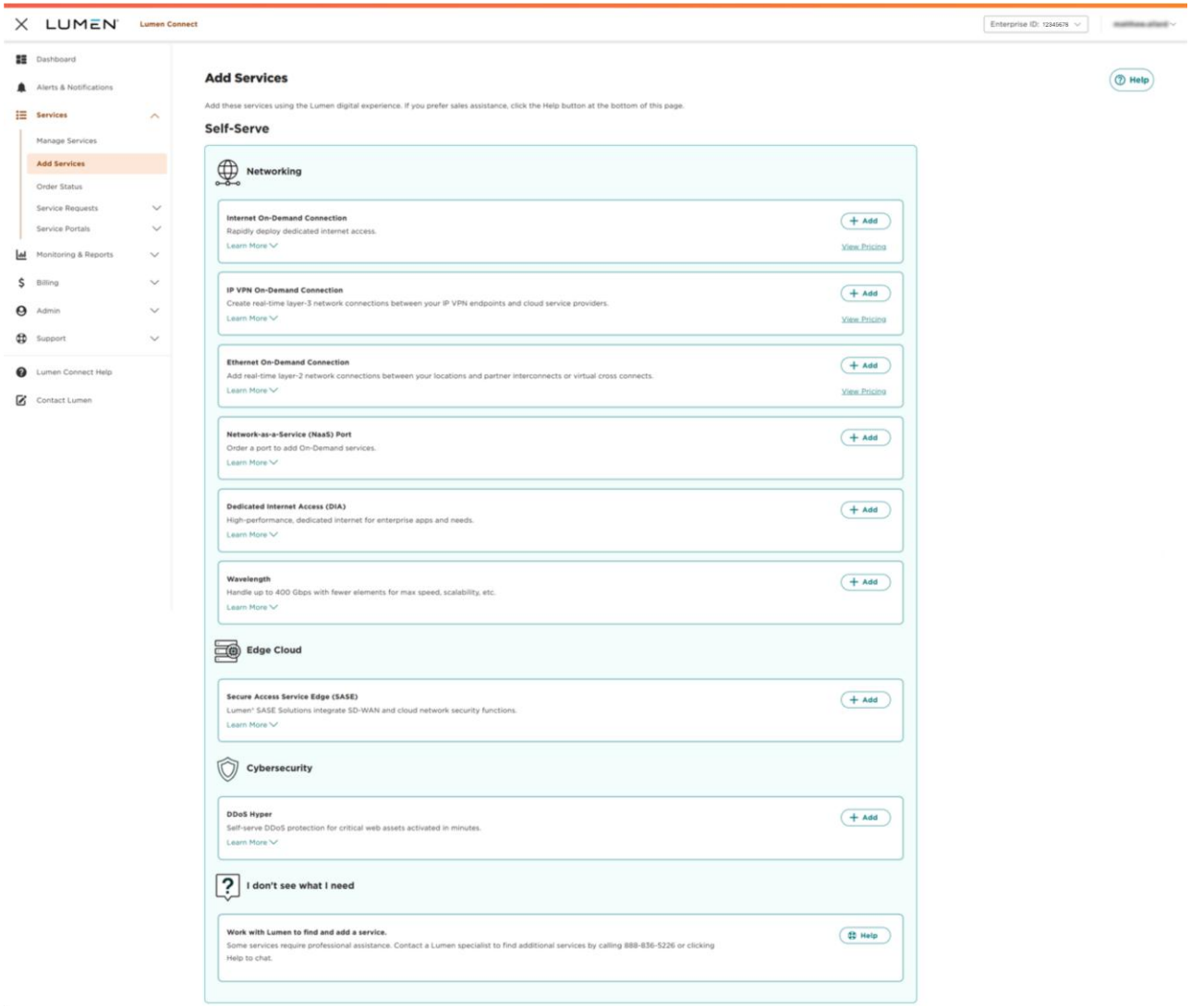
Step 2: Add the connection in Lumen Connect℠

To add the IP VPN On-Demand connection:

1. Sign in to Lumen Connect℠. (Get help retrieving your username/password.)



2. Using the left menu click **Services**, then click **Add Services**.



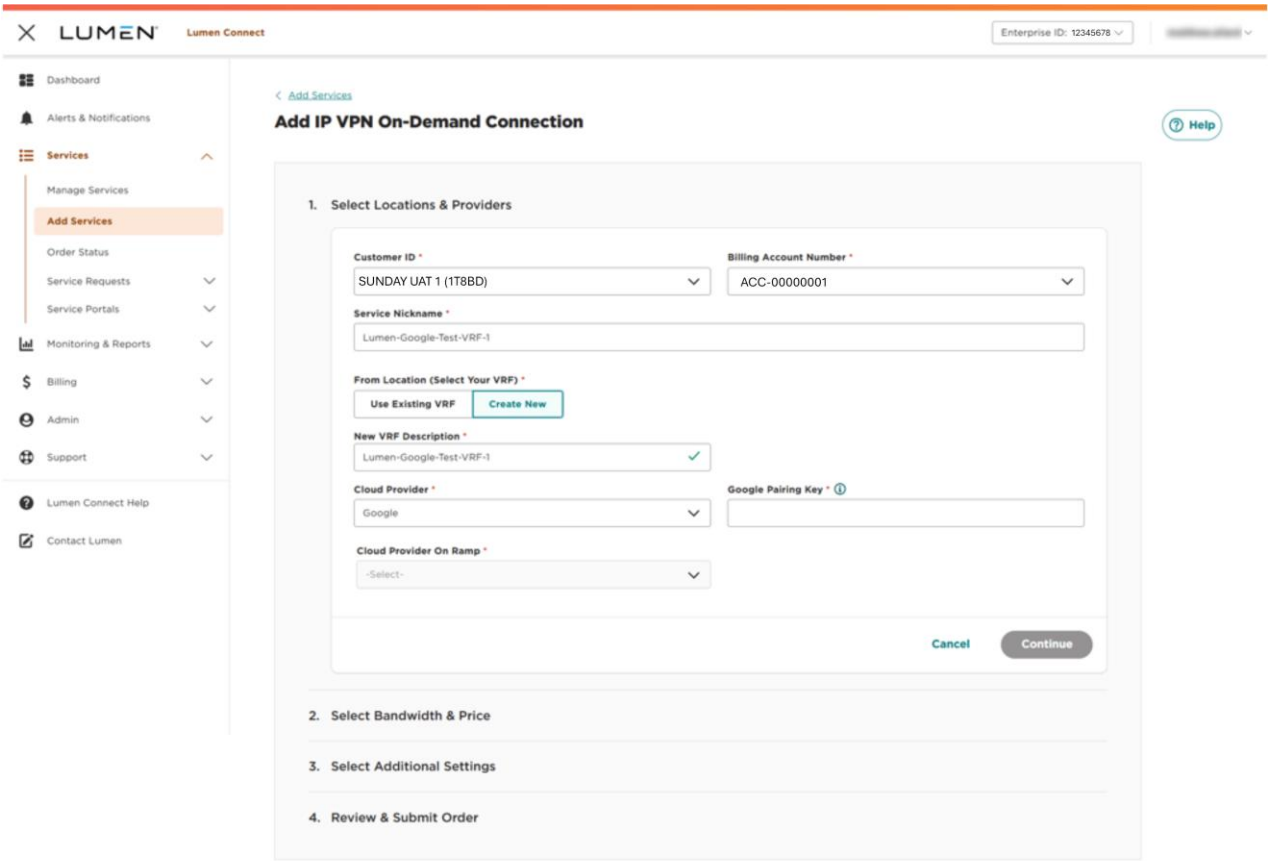
3. Click **+ Add** for IP VPN On-Demand.
4. From the **Customer ID** and **Billing Account Number** lists, select the customer number and billing account number you want to add IP VPN On-Demand to.

   Lumen Connect℠ fills in the VRF inventory based on the customer ID and billing account number you selected.

5. In the **Service Nickname** field, type a name for the connection you're creating. (Be sure to use something memorable. This name will appear on your invoice.)
6. In the **From Location (Select Your VRF)** section, select or create a VRF for the other end of your connection.

    - Select the VRF to use for the other end of your connection. Click **View Details** for a VRF to view the VRF's routes.

    - Click **Create New**, then type a description for the new VRF in the **New VRF Description** field. Lumen Connect℠ will create the VRF and activate your VPN service once you create your connection.



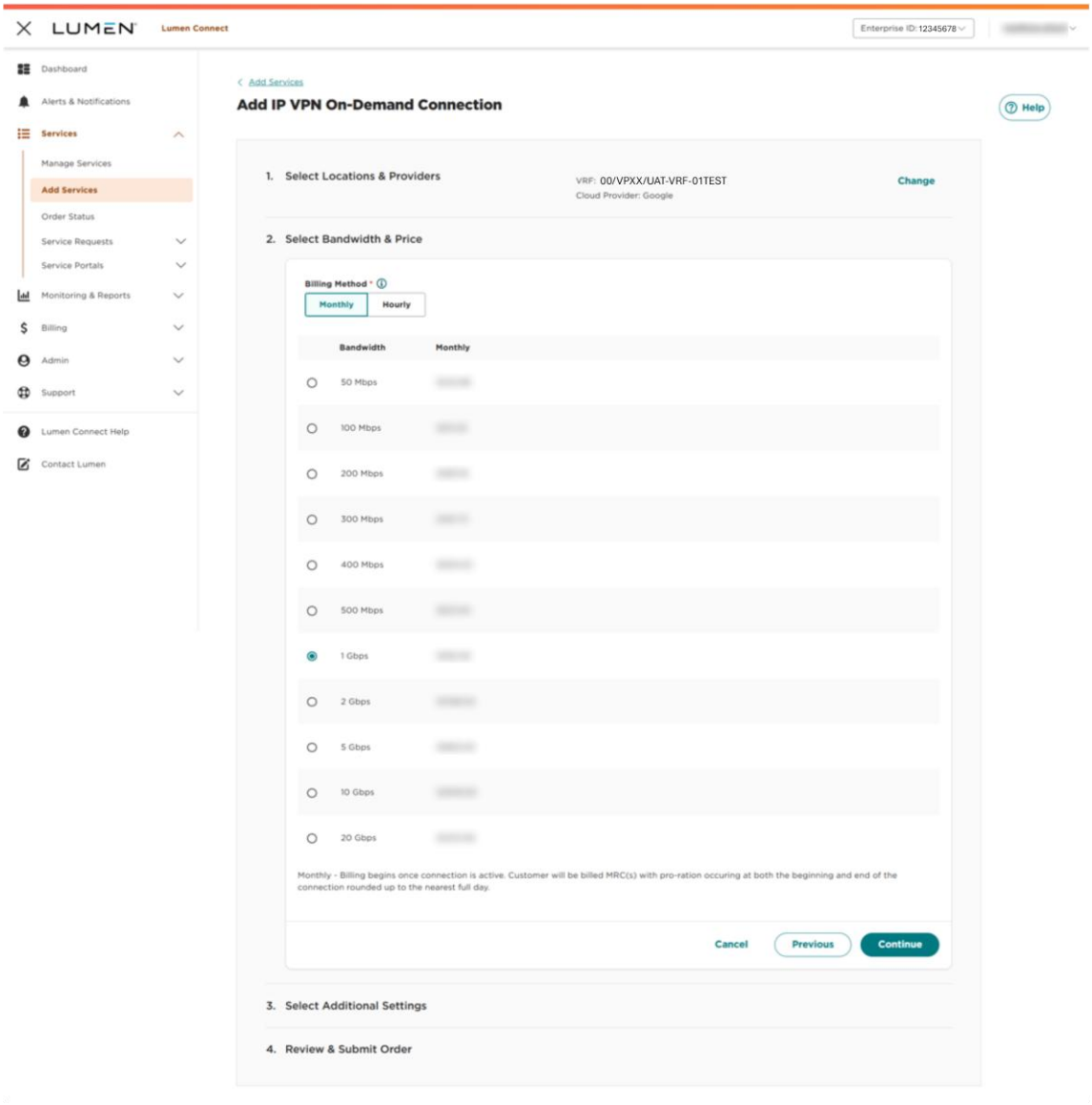
7. From the **Cloud Provider** list, select **Google**.

8. Fill in the information for the Google connection:

    - In the **Google Pairing key** field, type your pairing key from Google. Lumen Connect℠ validates the pairing key.
    - From the **Cloud Provider On Ramp** list, select an on ramp.

9. Click **CONTINUE**.

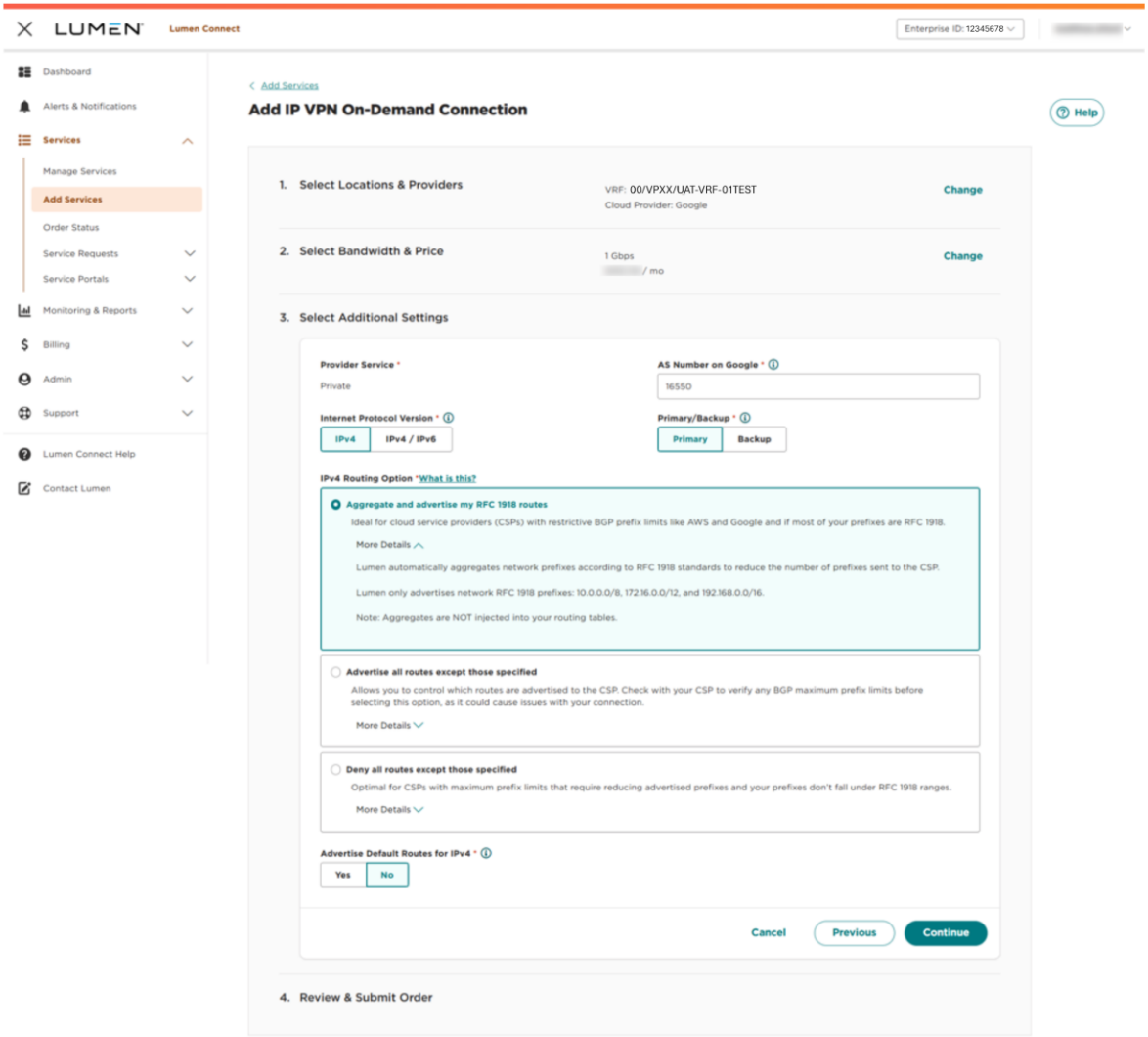
10. Use the **Billing Method** buttons to select whether you want monthly or hourly billing for the connection, then select the bandwidth for the connection. Bandwidth options are determined by the destination (to location). (You can't change the bandwidth once you create the connection. If you need to choose a different bandwidth after creating the connection, disconnect the connection and create a new one.)



11. Click **CONTINUE**.
12. In the **Select Additional Settings** section, fill in the additional details for the connection:

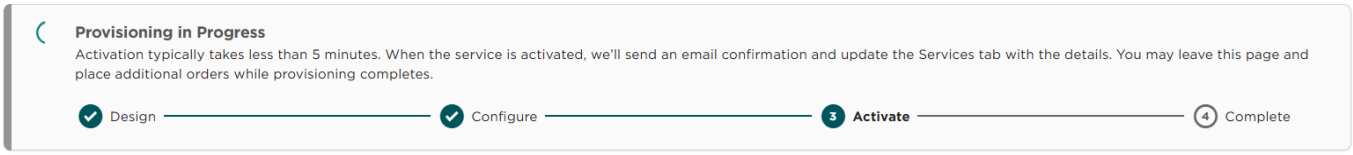
    - Input the ASN of your Cloud Router in the **AS Number on Google** field. (in this example 16550)
    - Select the **Internet Protocol Version** you want to use.

- Select whether this is a primary or backup connection.
    - Primary will set the local-pref to 750
    - Backup will set the local-pref to 700
- In the **IPv4 Routing Option** field, select the radio button for the routing option you want to use for the connection. Learn more about routing options for an IP VPN connection
- Use the buttons to select whether you want to advertise default routes (for both IPv4 and IPv6 if you selected both Internet Protocol versions).



13. Click **CONTINUE**.

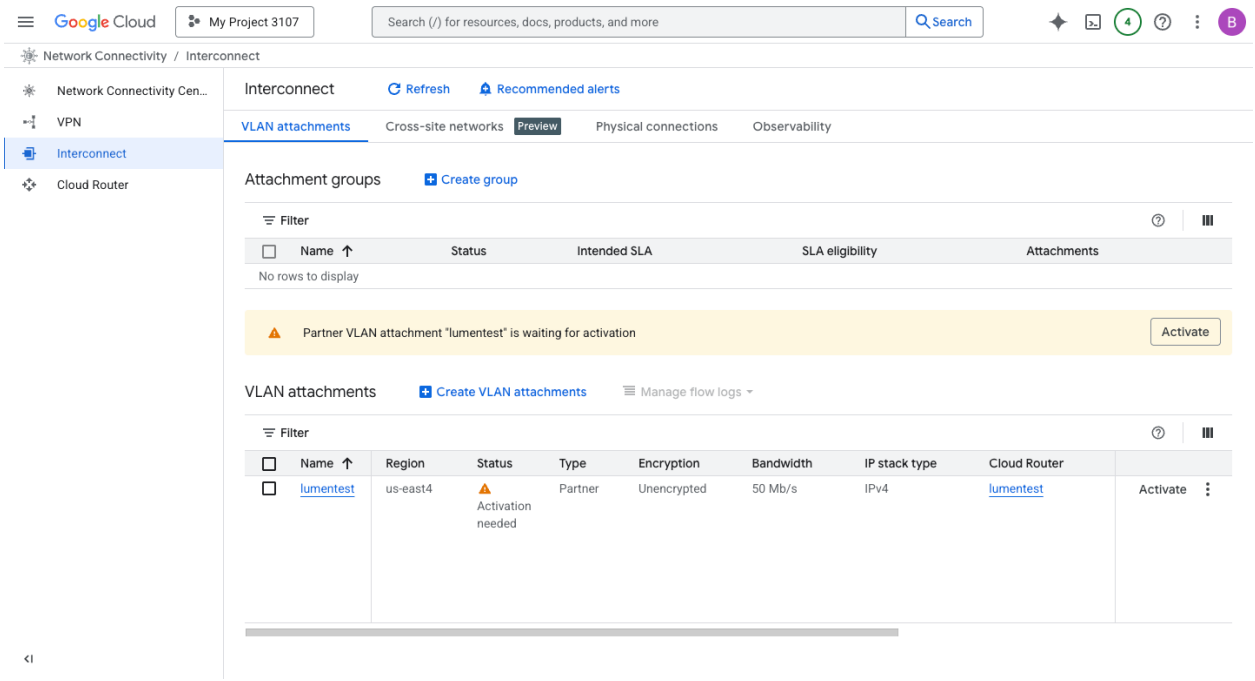
14. Review the order information and correct any missing or invalid selections, then click **SUBMIT ORDER**.



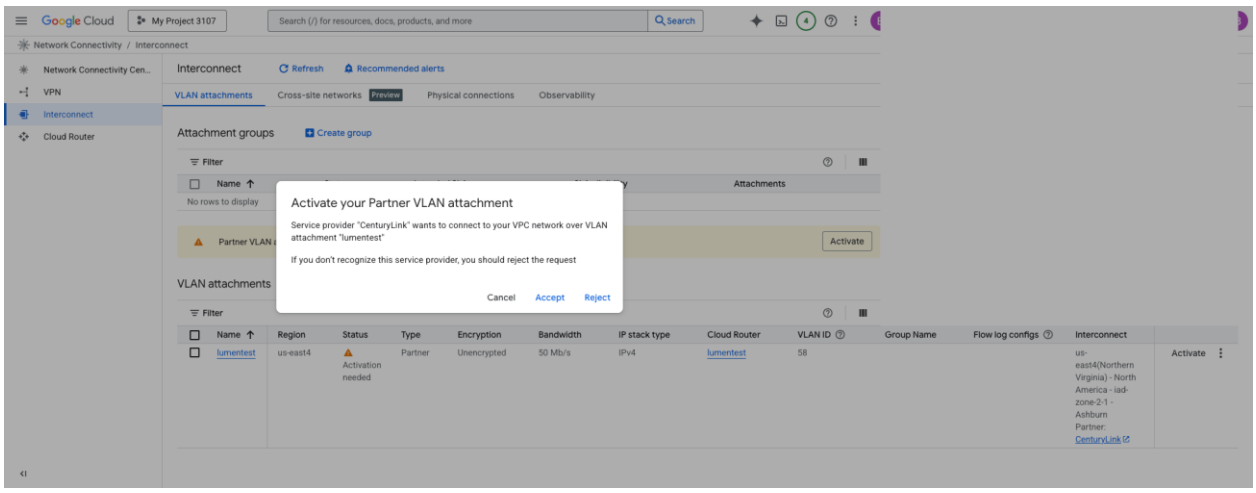
Lumen Connect℠ creates the request for connection, places it in *Pending Activation* status, and routes you to the Services tab so you can monitor the status of the connection. To see status updates, click . Once Lumen assigns the permanent VRF (within five minutes), the connection changes to *Active* status.

Step 3: Finish provisioning the Partner Interconnect with Google Cloud

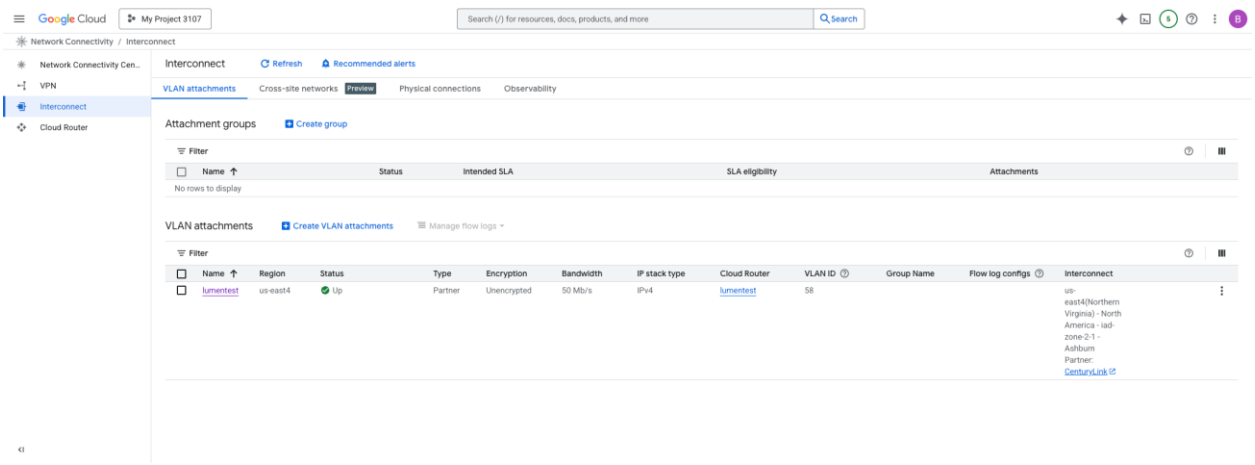
1. Sign into the Google Cloud console and navigate to **Network Connectivity > Interconnect**
2. The VLAN attachment previously created will have a Status of **Activation needed.**
3. Click **Activate**



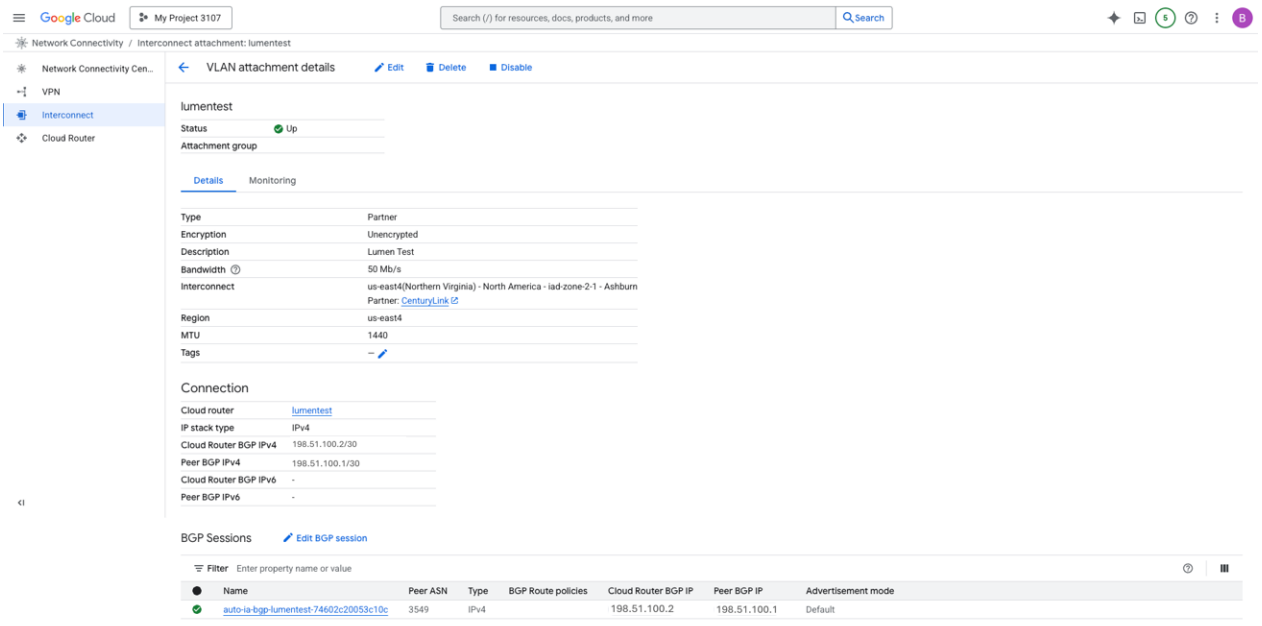
4. A pop-up to Activate your Partner VLAN attachment will appear. Click Accept



5. After a few minutes the VLAN attachment will have a **Status** of **Up**



6. Expanding the VLAN Attachment will show the BGP Peering Subnets and other connectivity details

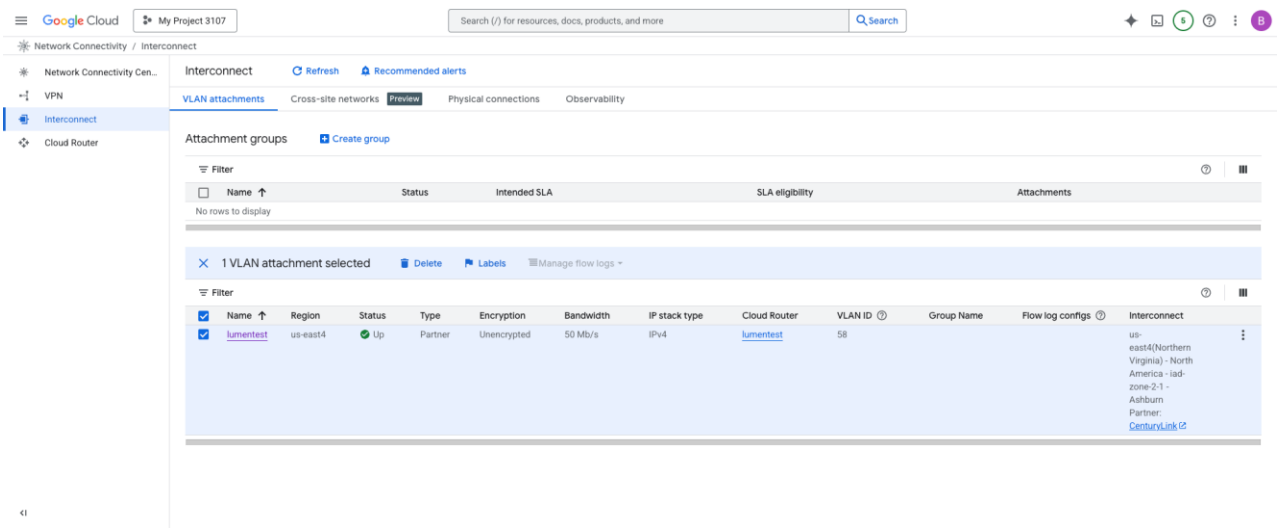


7. Your BGP Peer is established, and you may now continue your Google Cloud network configuration

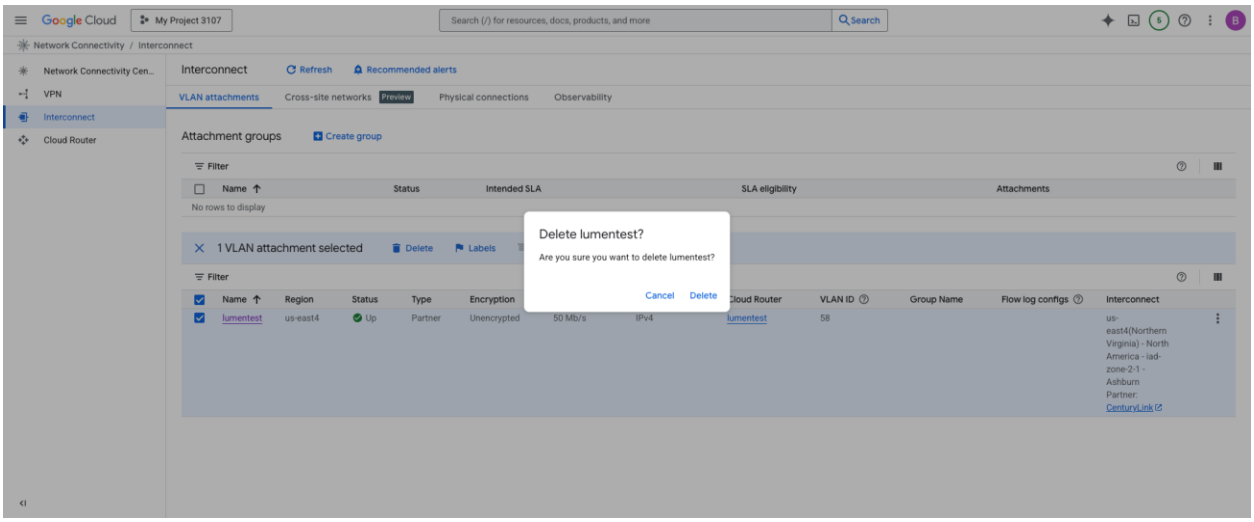
8. **Note:** For detailed guidance on configuring your Google Cloud networking, refer to the Partner Interconnect Documentation. If you'd like personalized support, please contact your Lumen Account Team to explore our professional services for Google Cloud management.

Disconnect Lumen Network-as-a-Service IP VPN On-Demand to Google Cloud Partner Interconnect

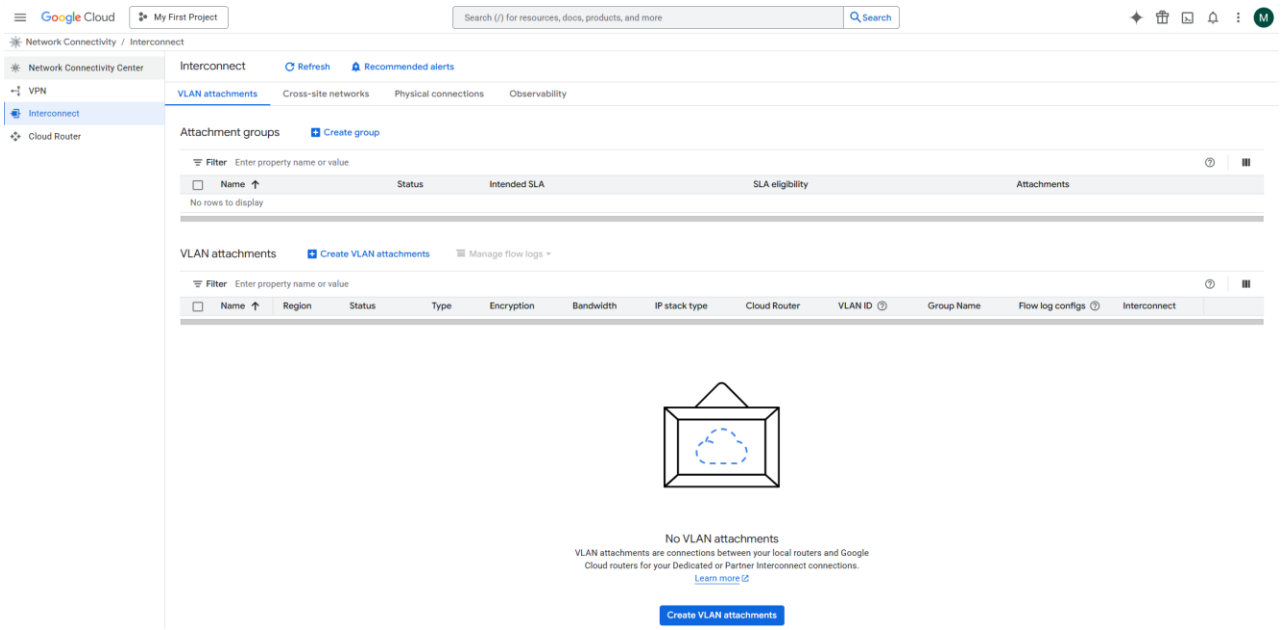
1. Sign into the Google Cloud console and navigate to **Network Connectivity > Interconnect**
2. Locate VLAN attachment associated with the IP VPN On-Demand Connection you would like to remove, select the box, and click Delete



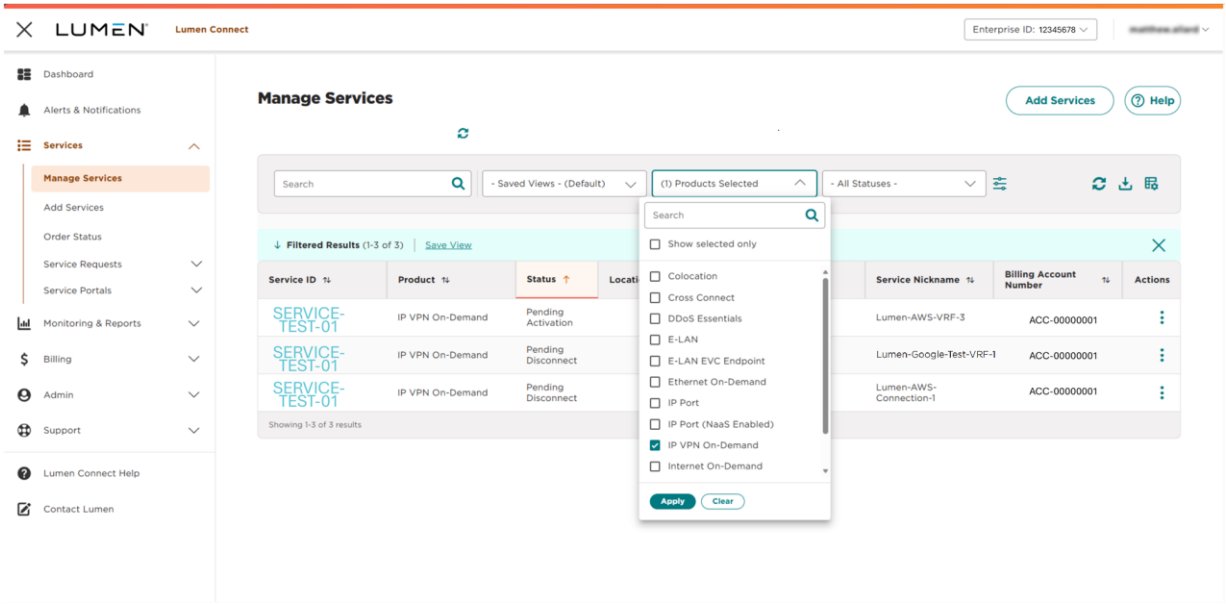
3. A pop-up will ask for confirmation. Click **Delete**



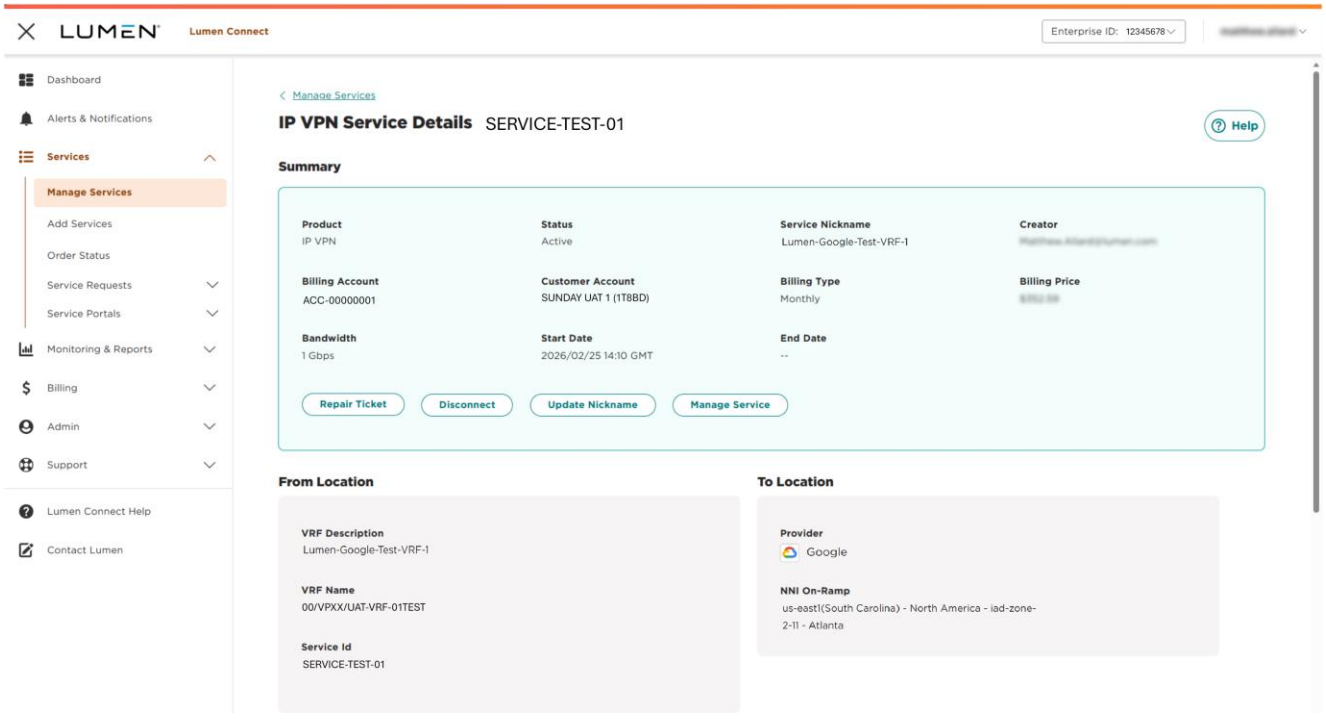
4. After a few minutes the VLAN attachment will be removed



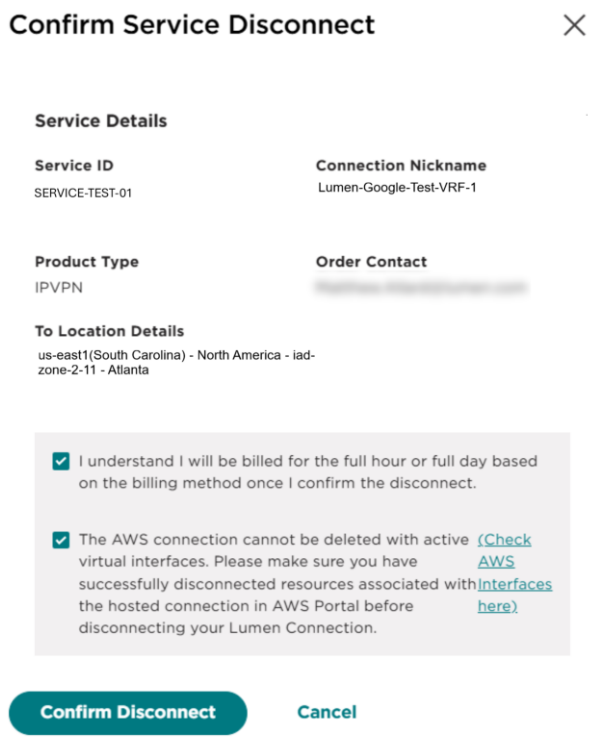
5. Within Lumen Connect[SM] you can now select the **Manage Services, filter by Product, select IP VPN on-Demand** to locate the Service ID of the connection you want to disconnect.



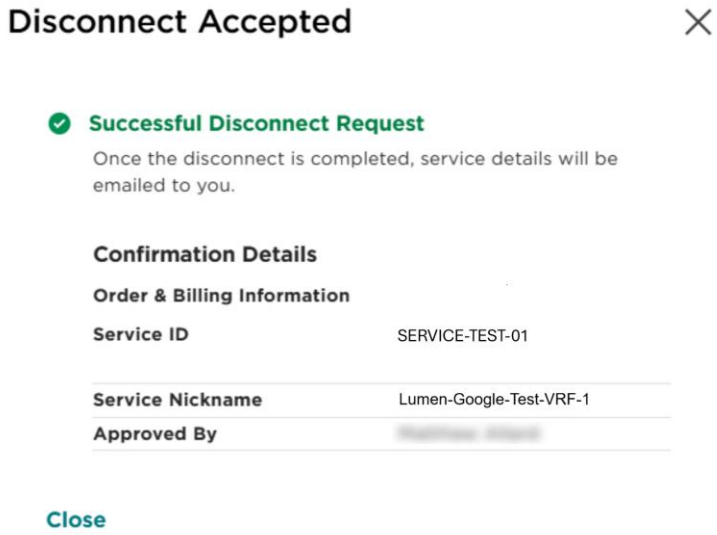
6. Select the Service ID of the connection you want to disconnect and click **Disconnect**



7. Check the box to confirm the change and click **Confirm Disconnect**



1. A pop-up will display **Disconnect Accepted – Successful Disconnect Request**. You may now click **CLOSE**.



Lumen Network-as-a-Service IP VPN On-Demand to Oracle Cloud Infrastructure

Creating an **Oracle Cloud Infrastructure Partner FastConnect** involves coordination between Lumen, Oracle Cloud Infrastructure, and the end customer.

What is a Oracle Cloud Infrastructure Partner FastConnect?

A **Partner FastConnect** is a type of Oracle Cloud Infrastructure connection provisioned by a partner who owns the physical Network-to-Network (NNI) infrastructure (e.g., port) and allocates bandwidth to customers on demand. It is different than **Dedicated FastConnect** where Lumen would provision a physical port and dedicated third-party cross-connect (3PXC) and a single customer would own the usage of the entire physical connection.

All Network-as-a-Service IP VPN On-Demand connections to Oracle Cloud Infrastructure are Partner FastConnects.

Customer Self-Assessment Questions

1. **About Your Use Case**
   - What will you use this connection for (e.g., cloud storage, data transfer, hybrid workloads)?
   - Do your applications require low latency or guaranteed uptime?
   - Will your connection needs change frequently?
2. **Bandwidth Planning**
   - What is the peak and average bandwidth you need?
3. **Redundancy & Resiliency**
   - Do you need a backup path in case of a failure?
   - Do you want to connect to multiple Oracle Cloud Infrastructure regions or Availability Zones?
4. **Oracle Cloud Infrastructure Connectivity Setup**
   - Which Oracle Cloud Infrastructure region(s) and VCN(s) do you need to reach?
   - Do you want to connect to multiple VCNs?

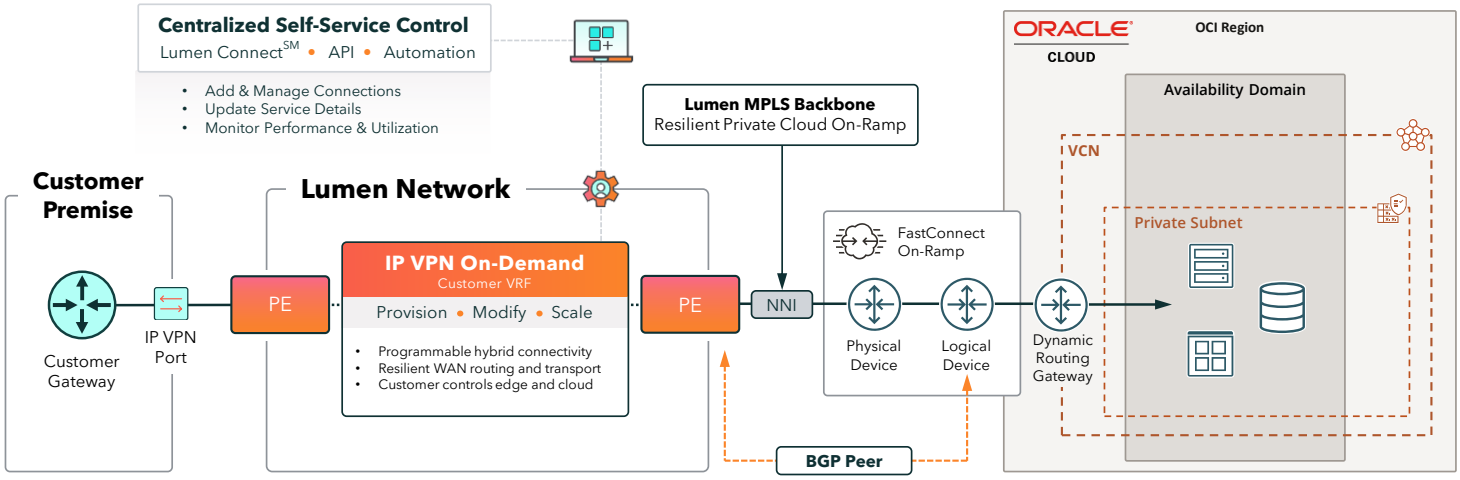
6. **IP Addressing & Routing**
    - Do you have your IP address ranges ready?
    - Are your IP addresses overlapping with any Oracle Cloud Infrastructure environments?

Key Considerations

- Oracle Cloud Infrastructure Partner FastConnect SLAs apply only when redundant connections are provisioned in in a single or diverse region.
    - Learn more about FastConnect
    - FastConnect FAQ

Deploying Lumen Network-as-a-Service IP VPN On-Demand to Oracle Cloud Infrastructure FastConnect

FastConnect logical device peering with connectivity to a VCN



Hybrid Connectivity Responsibility Model:

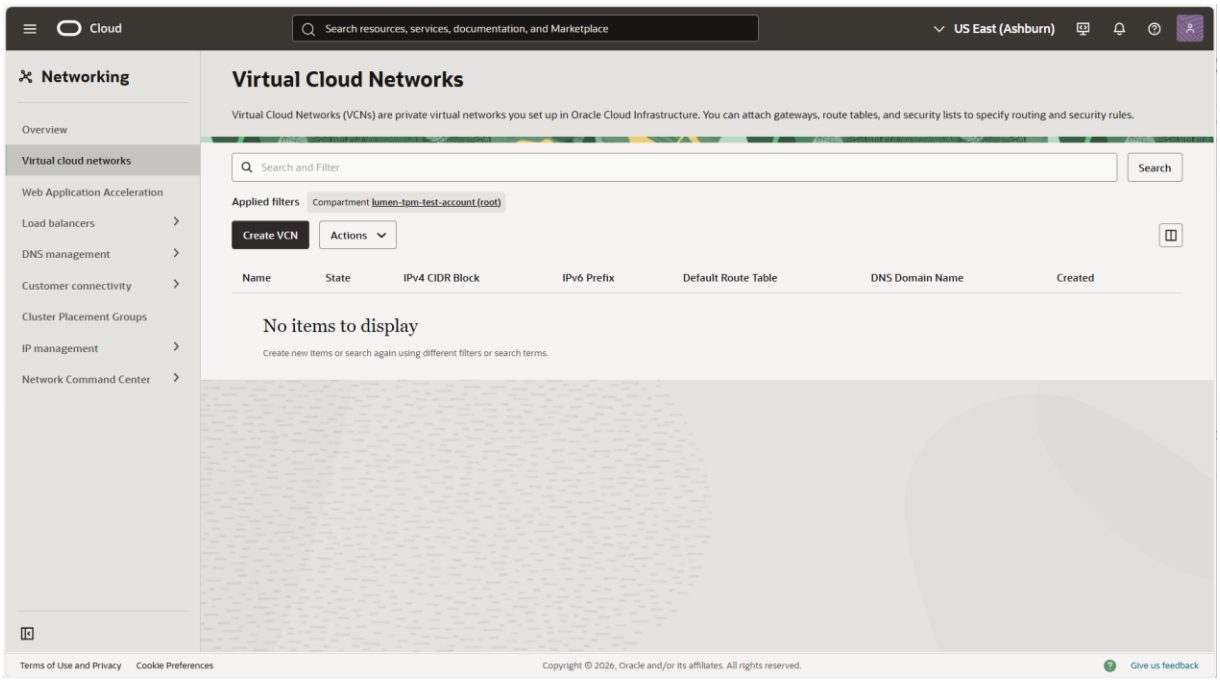
Customer Edge Configuration	Lumen IP VPN On-Demand Connectivity with Self-Service Control	Customer FastConnect Configuration	Customer Oracle Cloud Network Configuration

Getting Started Checklist

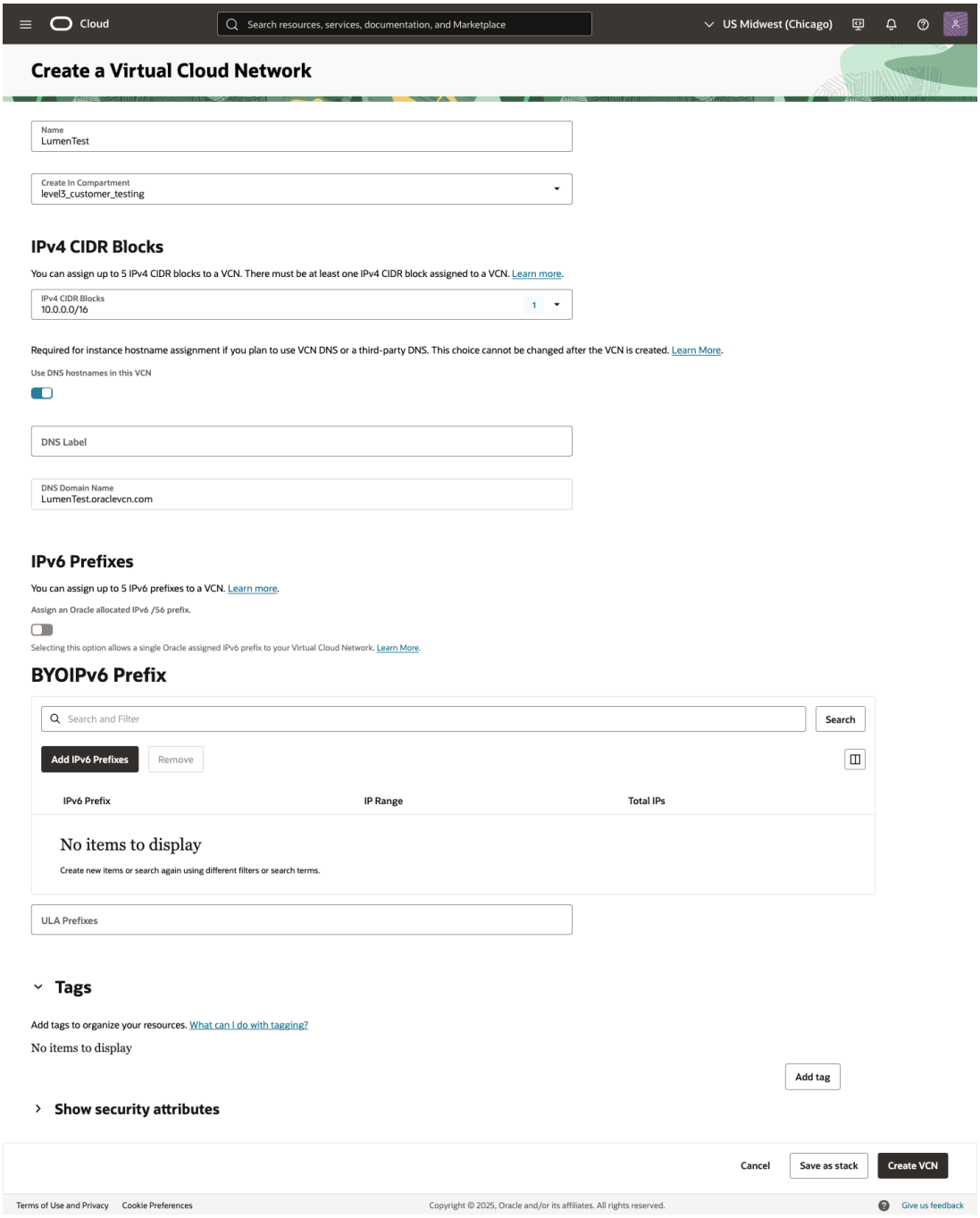
1. **Lumen Connect℠ Access -** Confirm you have access to Lumen Connect℠ and are entitled for the **Fabric & On-Demand Services** functionality.
2. **Oracle Cloud Infrastructure Console Access -** Verify that you have the necessary **login credentials and permissions** to access the Oracle Cloud Infrastructure for the target account.
3. In your Oracle Cloud Infrastructure account, you need:
    1. A **Virtual Cloud Network (VCN)** pre-created in OCI
    2. A **Dynamic Routing Gateway (DRG)**

Step 1: Create the Virtual Cloud Network (VCN)

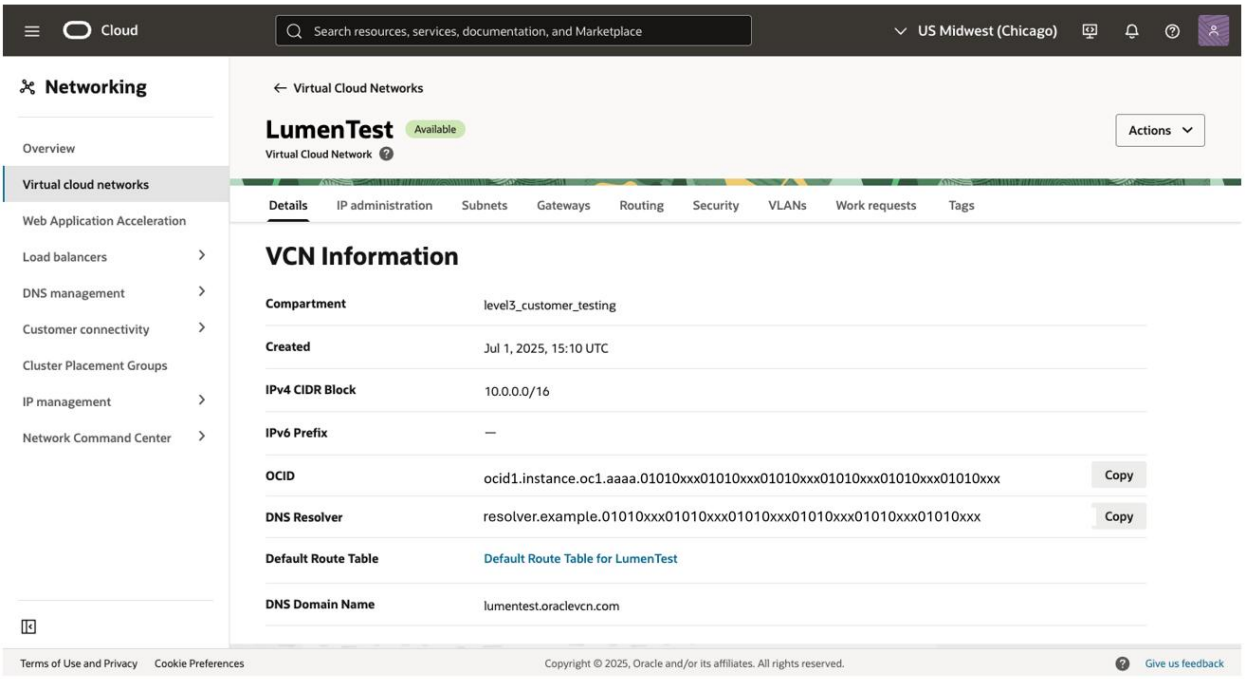
1. Login to the **OCI Console**: https://cloud.oracle.com and navigate to **Networking > Virtual Cloud Networks**



2. Click **Create VCN**
3. Fill in:
    - **Name**
    - **Create In Compartment** (select compartment)
    - **CIDR Block**
    - **DNS Label**: Optional, for internal DNS resolution
4. Click **Create VCN**



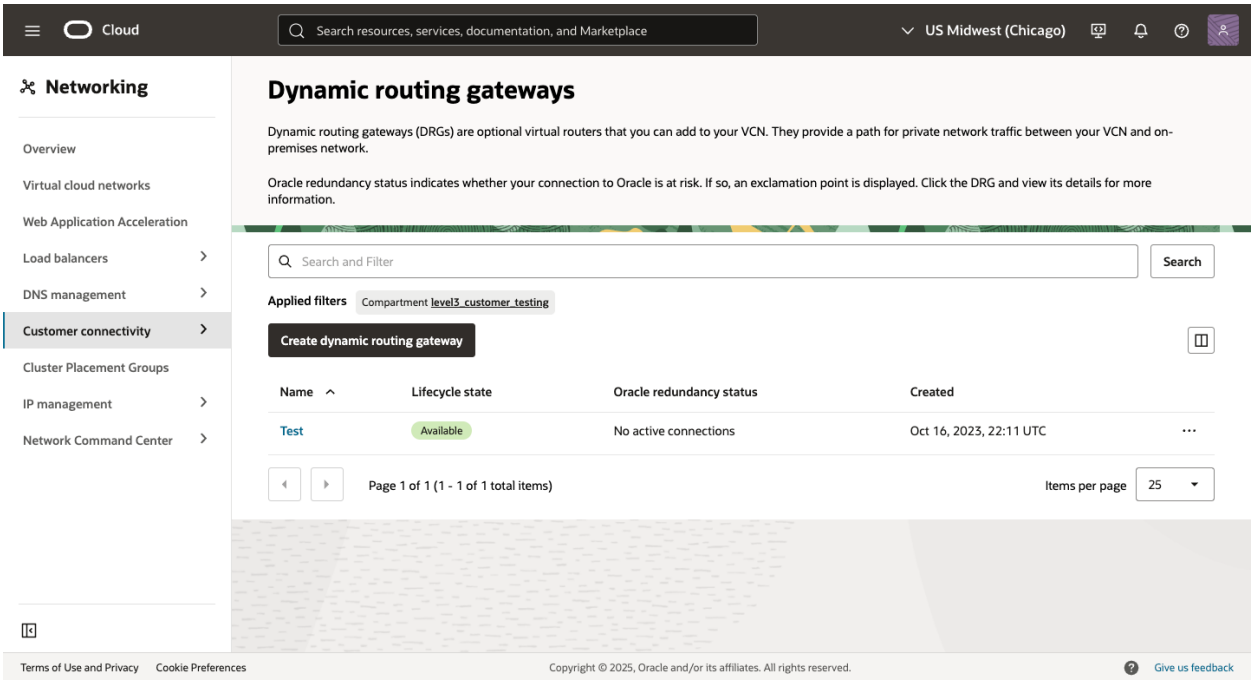
5. A new window will show the completed VCN details



Step 2: Create the Dynamic Routing Gateway (DRG)

1. Login to the **OCI Console**: https://cloud.oracle.com and navigate to **Networking > Customer Connectivity > Dynamic routing gateway**

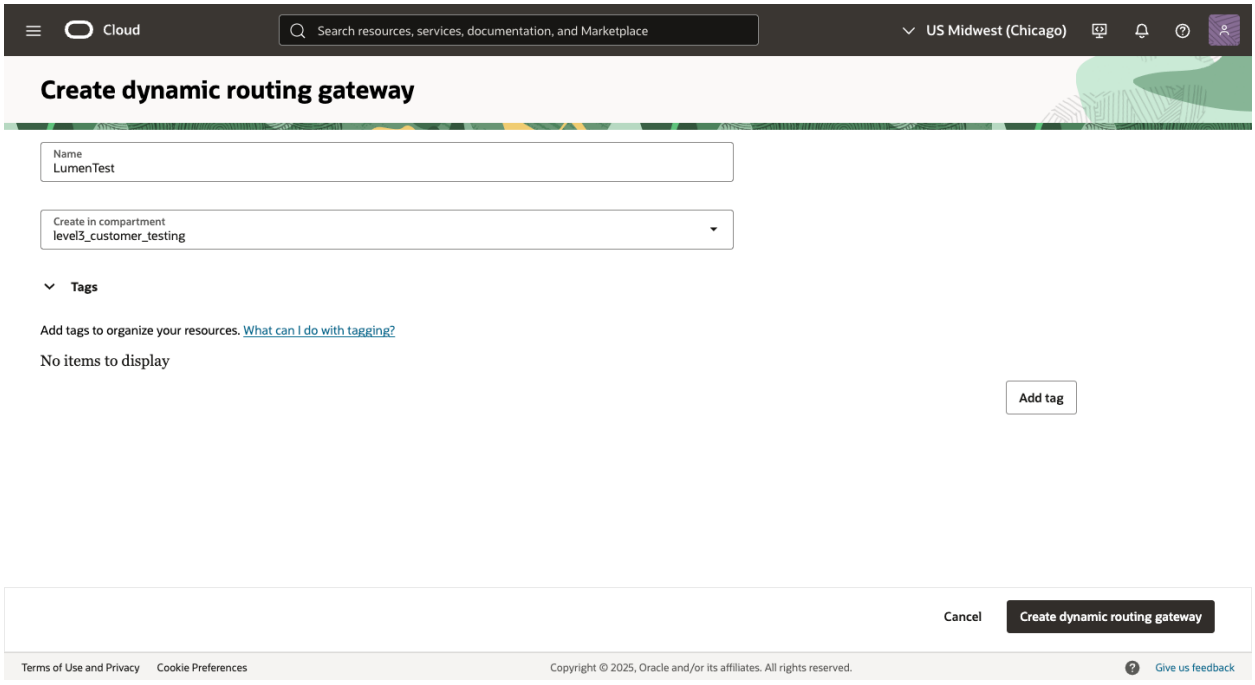
2. Click **Create dynamic routing gateway**



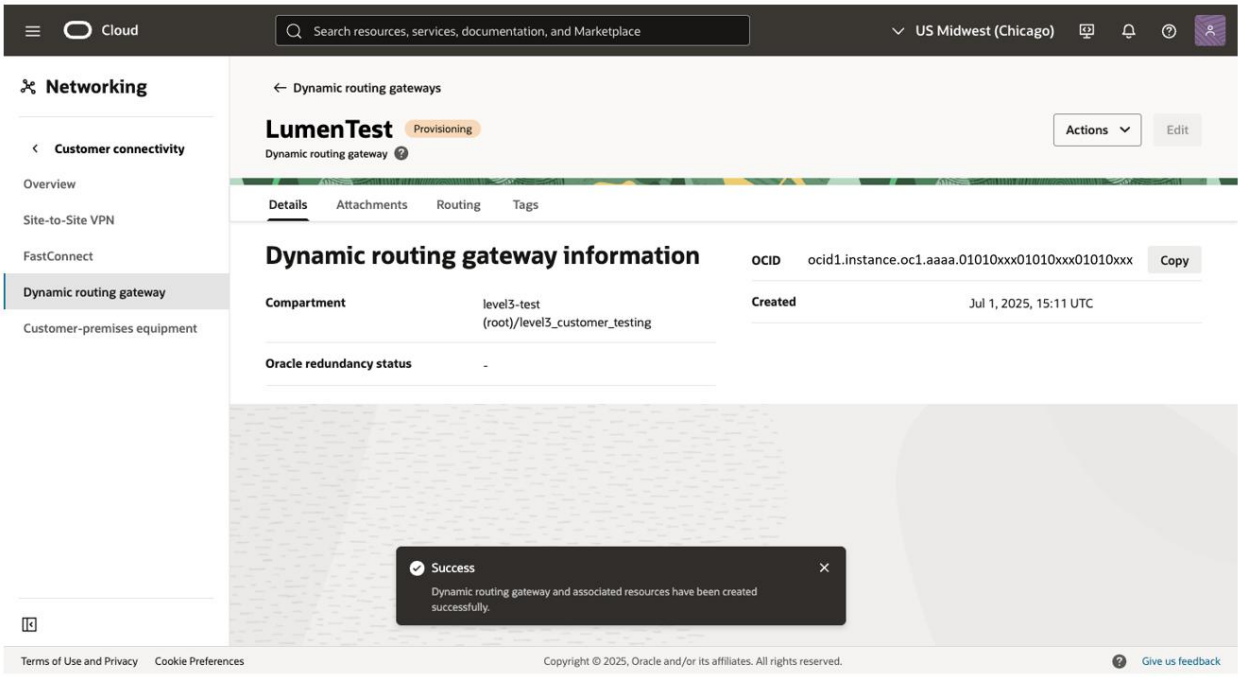
3. Fill in:

    - **Name**
    - **Create In Compartment** (select compartment)

4. **Click Create dynamic routing gateway**



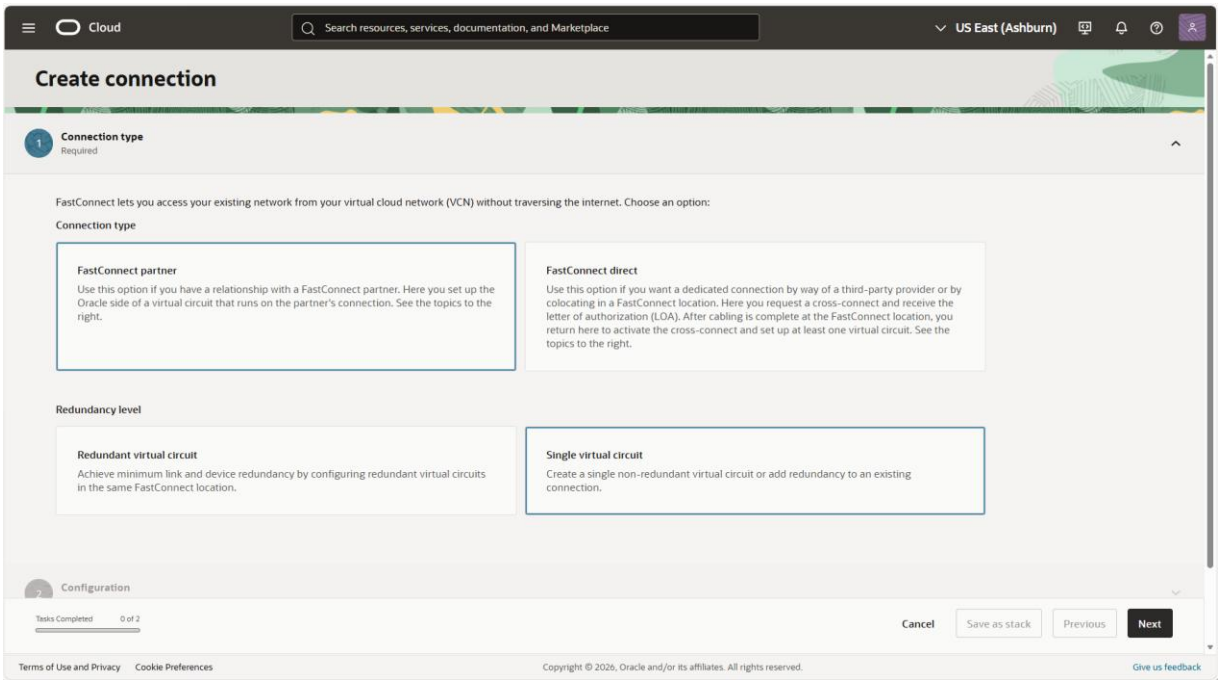
5. A new window will display the of the newly created Dynamic routing gateway



Step 3: Create the FastConnect OCID

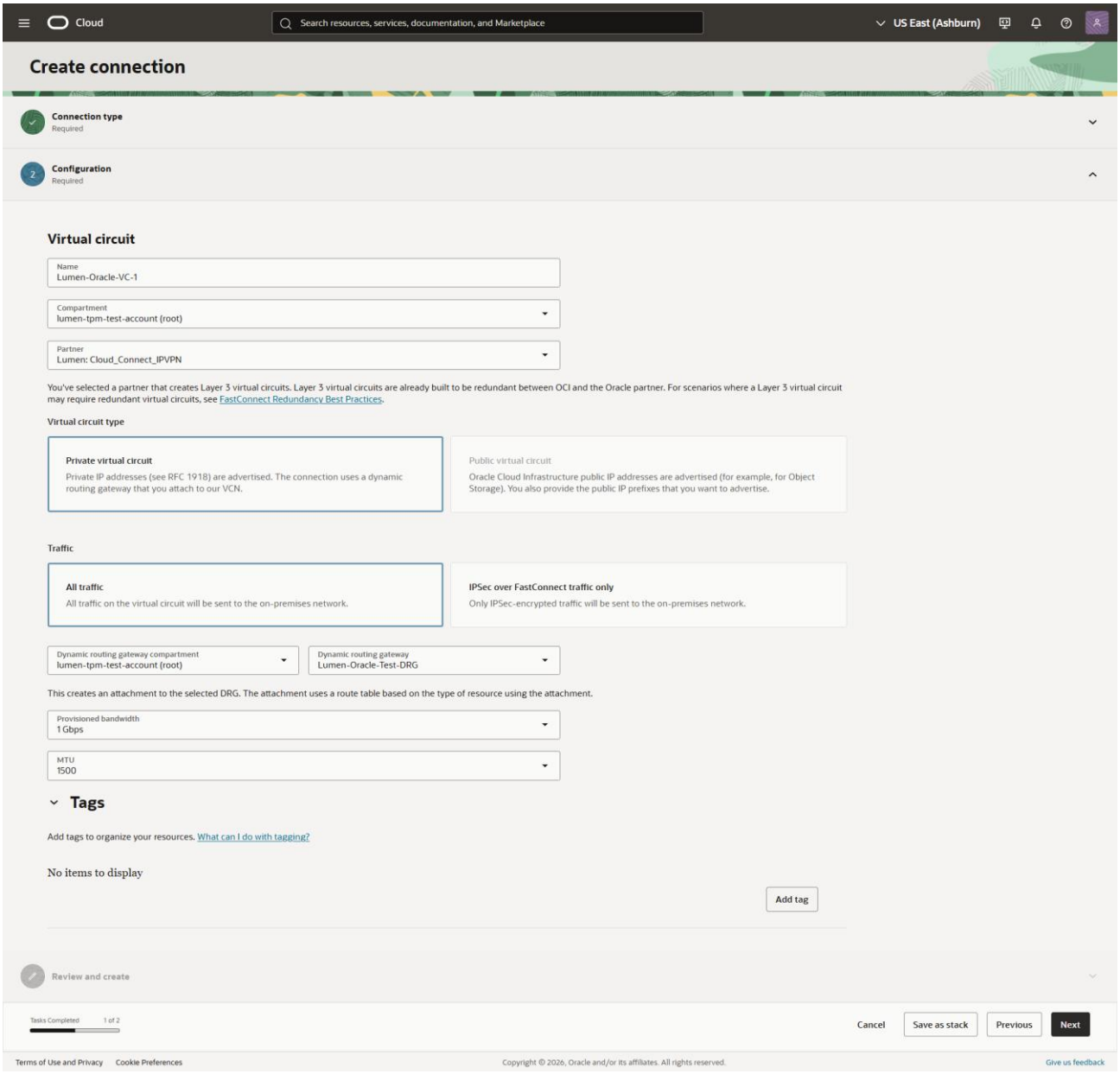
1. Login to the **OCI Console**: https://cloud.oracle.com and navigate to **Networking > Customer Connectivity > FastConnect**

2. **Click Create FastConnect**



3. Select **FastConnect partner** and choose a **Redundancy level** (for the purposes of this demo we will build a Single virtual circuit)

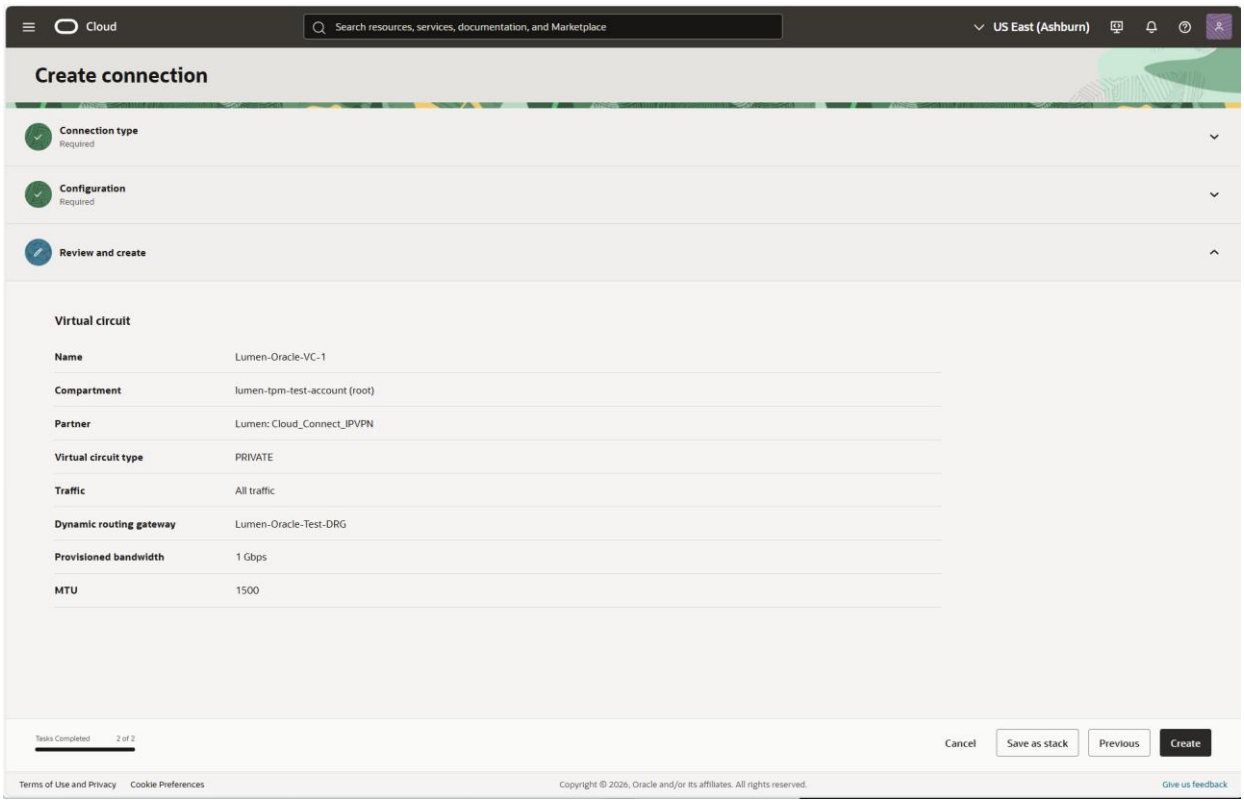
4. **Click Next**



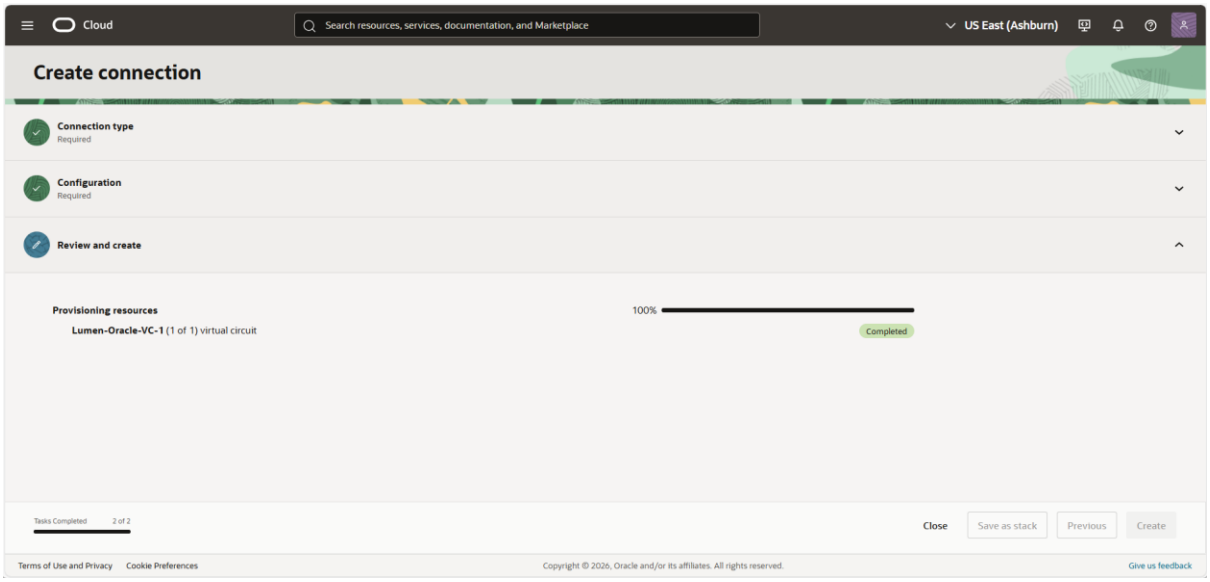
5. Complete the **Virtual circuit 1** section by filling in the additional details for the connection:
    1. Name
    2. Compartment
    3. Partner: **Lumen: Cloud_Connect_IPVPN**
    4. Private virtual circuit (Public virtual circuits are not currently supported)

5. Traffic: All traffic
6. Dynamic routing gateway
7. Provisioned Bandwidth
8. MTU

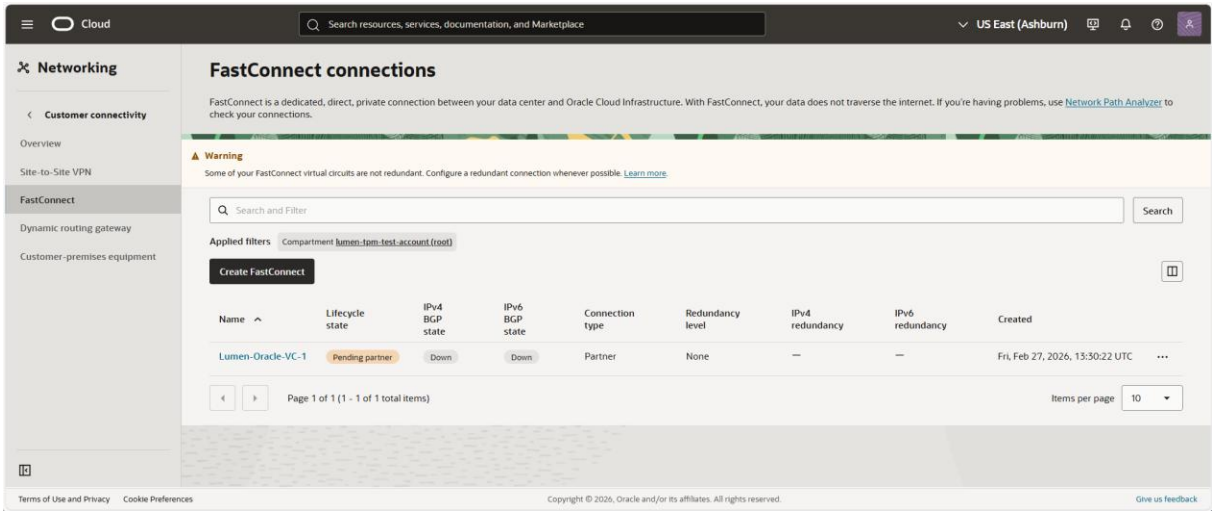
6. Click **Next**

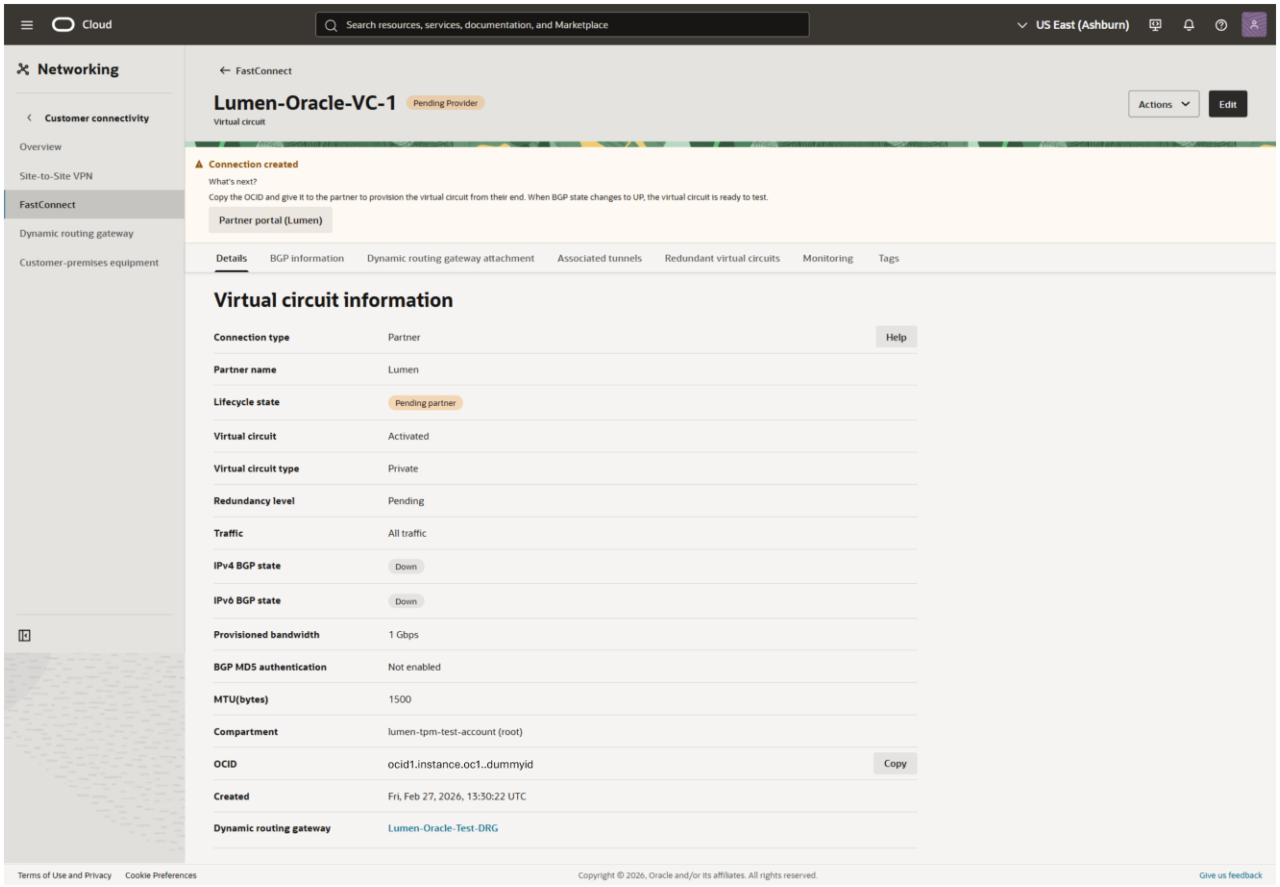


7. Review the connection details and click **Create**
8. A new window will show **Provisioning resources** completed when finished.
9. Click Close



10. Locate the new FastConnect and select it to see details of the connection.



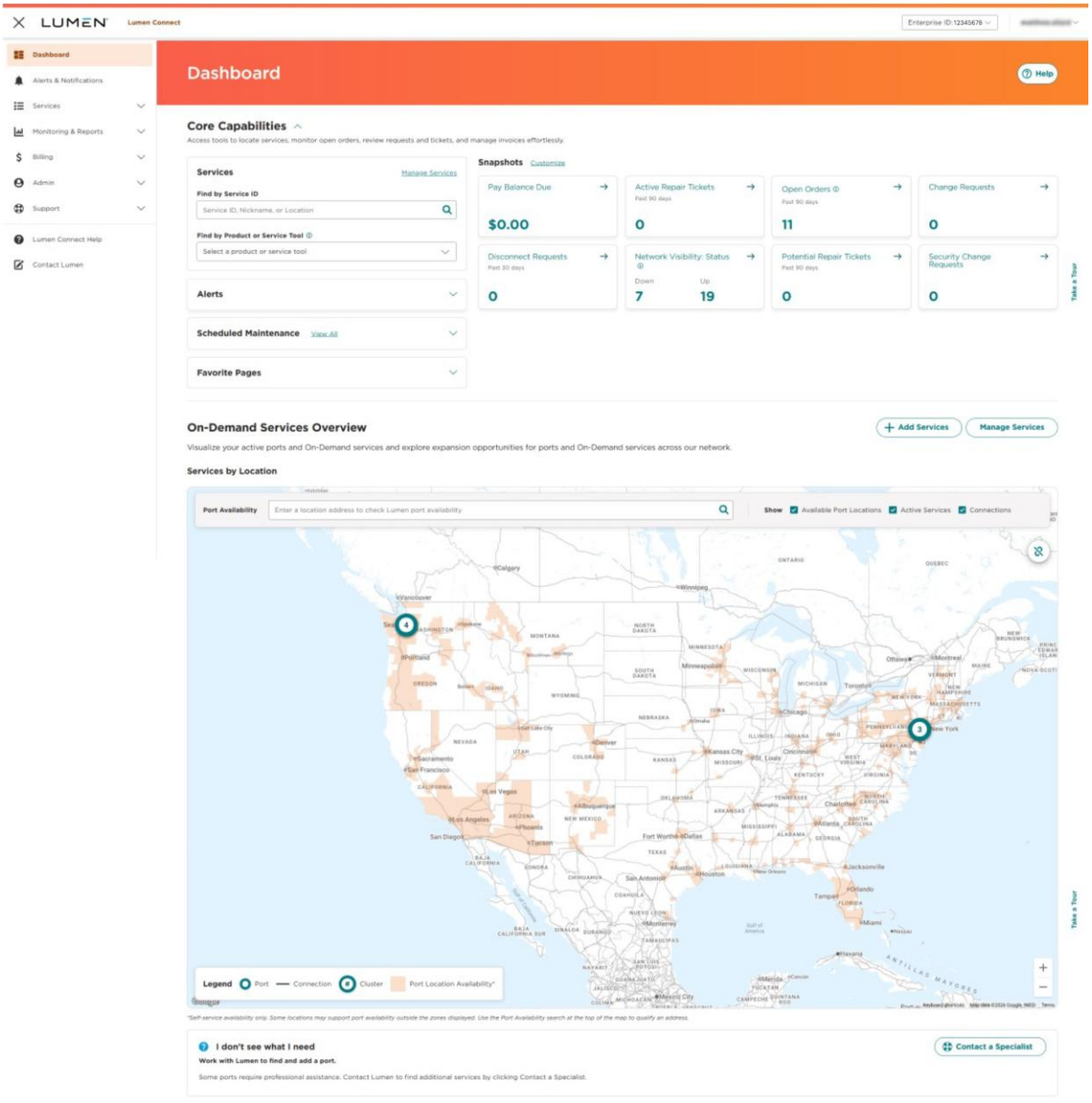


11. Copy the OCID for use in Lumen Connect℠

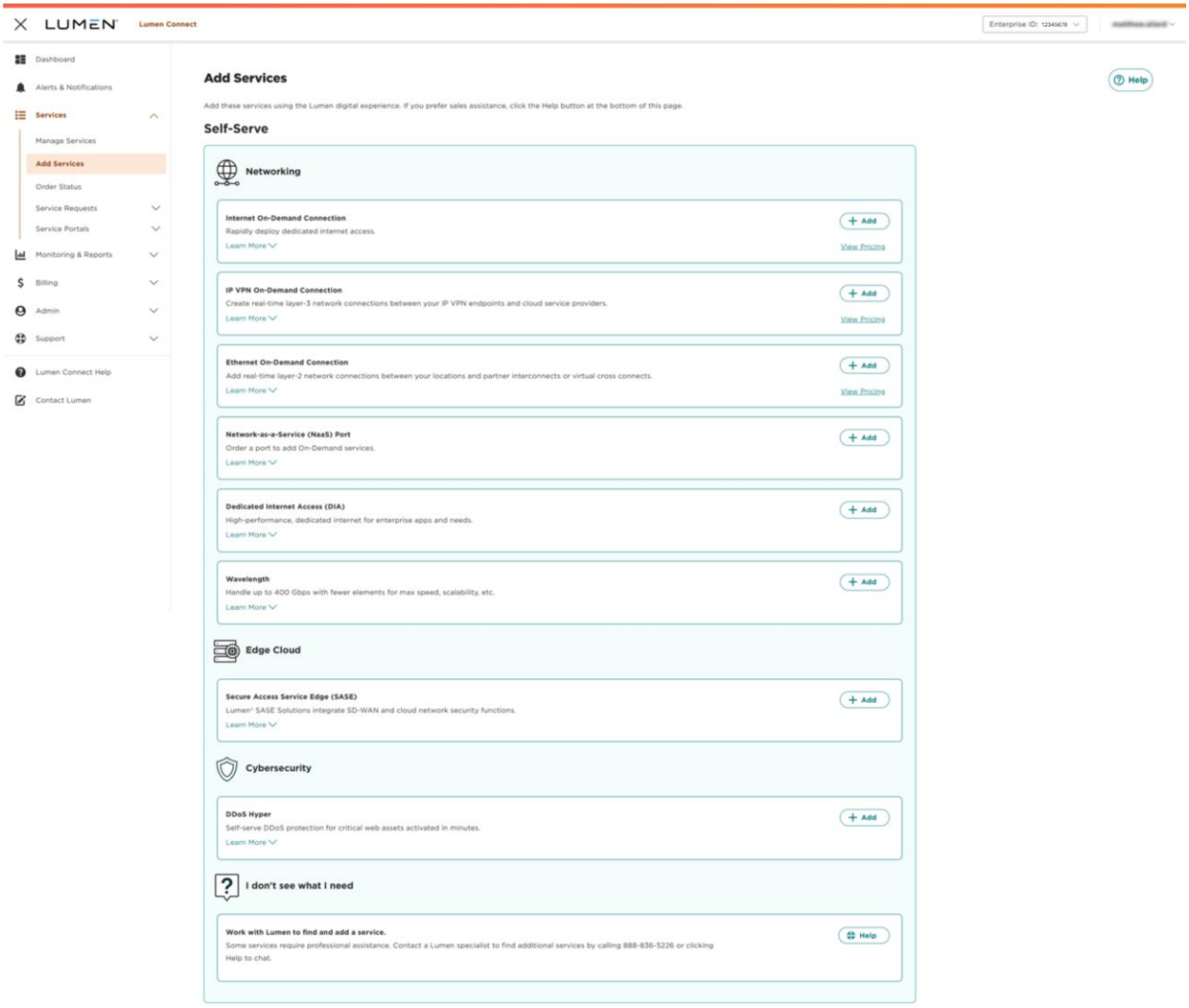
Step 4: Add the connection in Lumen Connect℠

To add the IP VPN On-Demand connection:

1. Sign in to Lumen Connect℠. (Get help retrieving your username/password.)



2. Using the left menu click **Services**, then click **Add Services**.



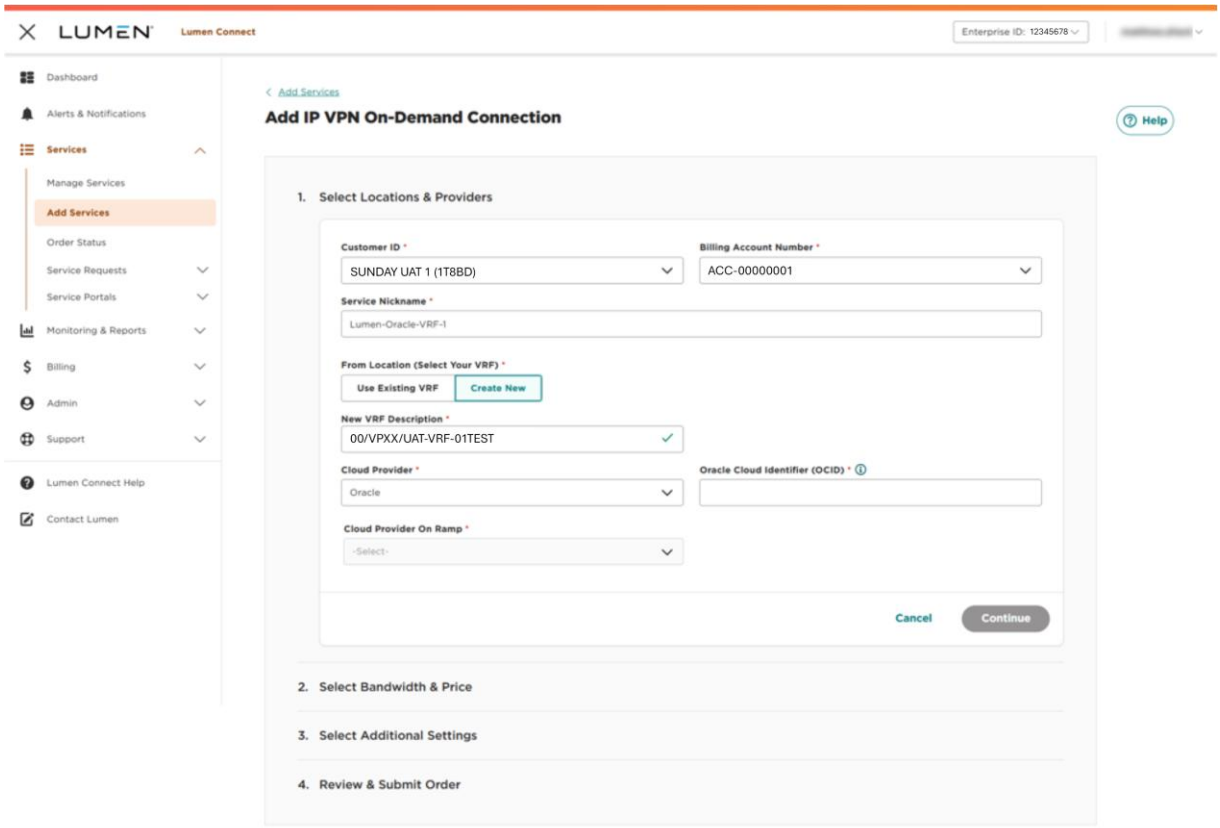
3. Click **+ Add** for IP VPN On-Demand.
4. From the **Customer ID** and **Billing Account Number** lists, select the customer number and billing account number you want to add IP VPN On-Demand to.

   Lumen Connect℠ fills in the VRF inventory based on the customer ID and billing account number you selected.
5. In the **Service Nickname** field, type a name for the connection you're creating. (Be sure to use something memorable. This name will appear on your invoice.)

6. In the **From Location (Select Your VRF)** section, select or create a VRF for the other end of your connection.

    - Select the VRF to use for the other end of your connection. Click **View Details** for a VRF to view the VRF's routes.

    - Click **Create New**, then type a description for the new VRF in the **New VRF Description** field. Lumen Connect℠ will create the VRF and activate your VPN service once you create your connection.



7. From the **Cloud Provider** list, select **Oracle**.

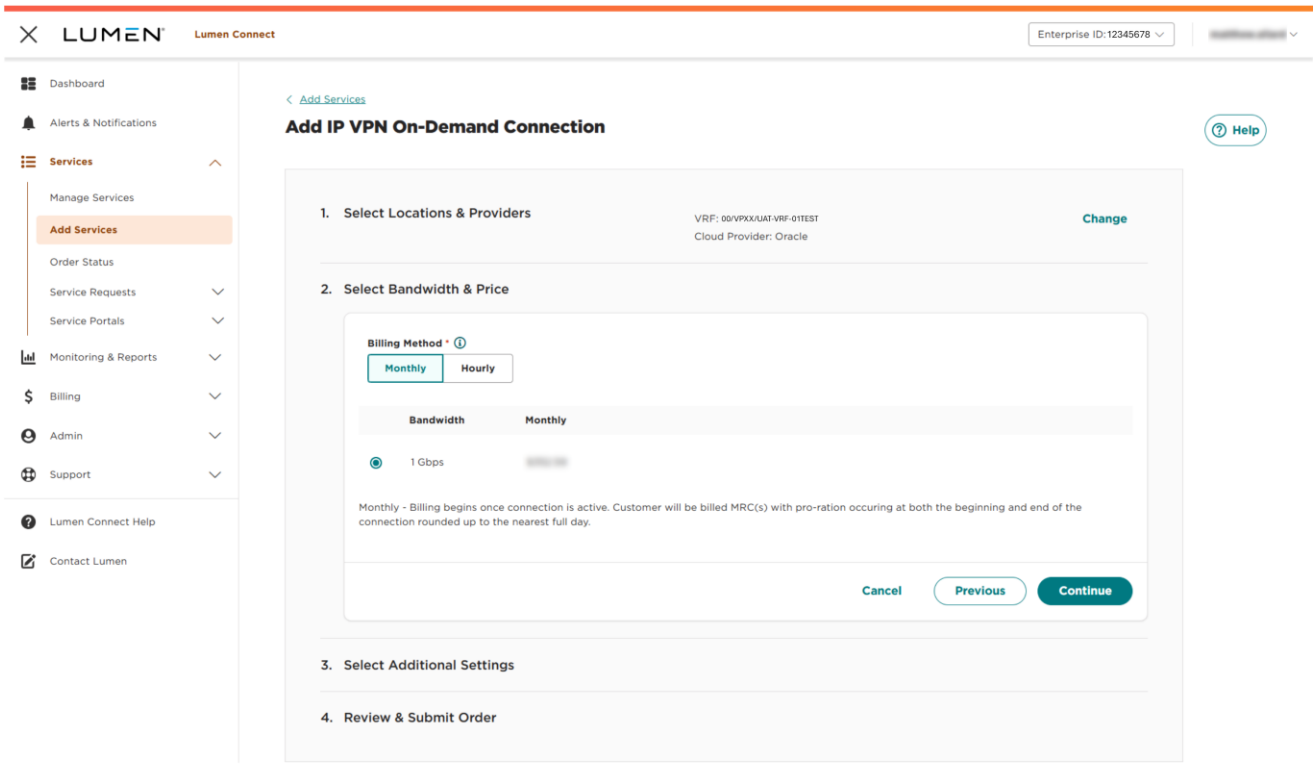
In the **Oracle Cloud Identifier (OCID)** field, type your inactive Oracle OCID. (You can obtain this from the Oracle FastConnect portal. You can only use an OCID on a single, active connection.

To reuse an OCID, you must first disconnect the active connection and then create a new connection using the OCID. Use the FastConnect portal to view the status of your OCIDs.)

Lumen Connect℠ uses the OCID information to select the correct on ramp for you based on the work load region you selected when you created the OCID in the FastConnect portal.

8. Click **CONTINUE**.

9. Use the **Billing Method** buttons to select whether you want monthly or hourly billing for the connection, then select the bandwidth for the connection. Bandwidth options are determined by the destination (to location). (You can't change the bandwidth once you create the connection. If you need to choose a different bandwidth after creating the connection, disconnect the connection and create a new one.)



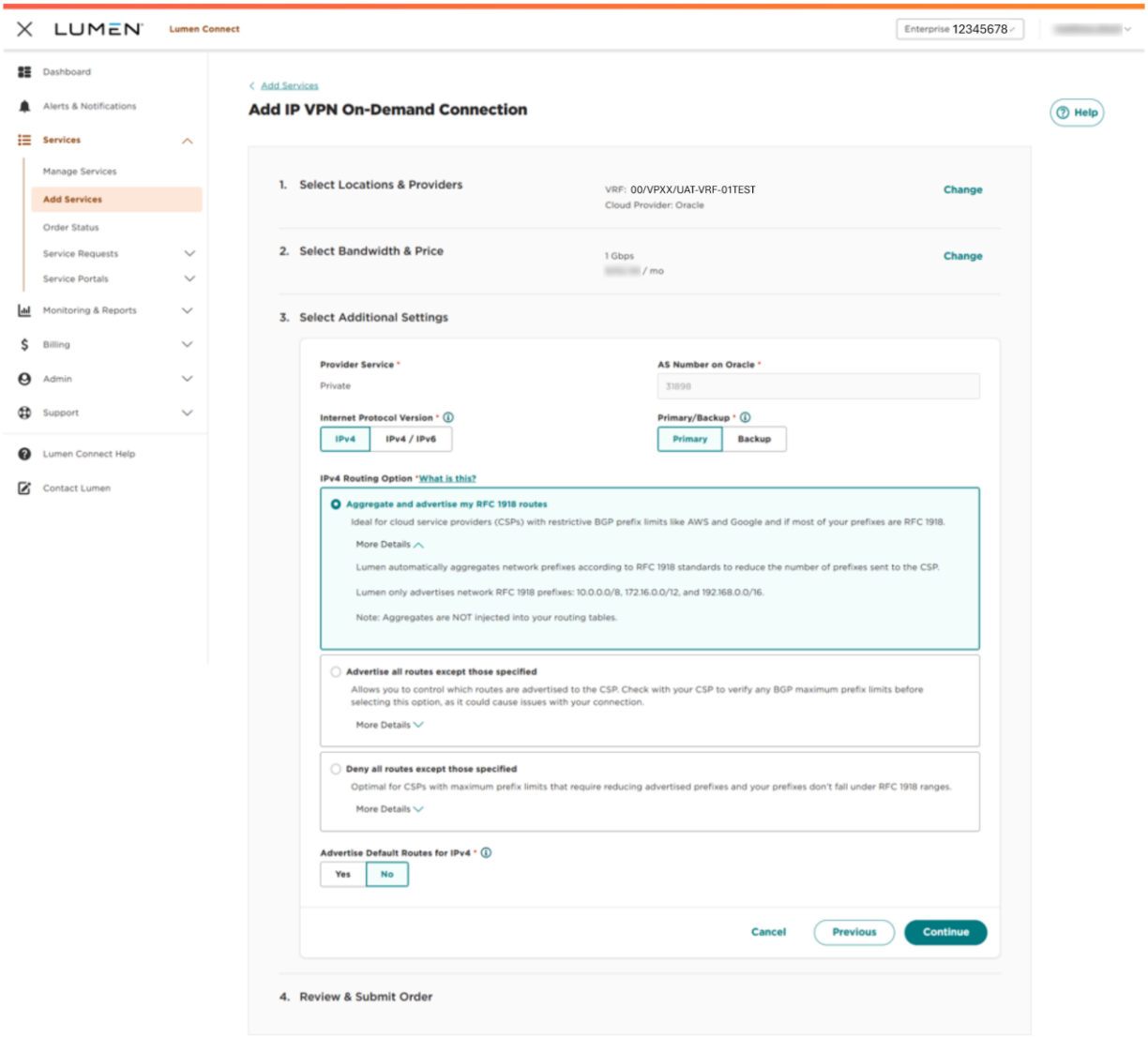
10. Click **CONTINUE**.

11. In the **Select Additional Settings** section, fill in the additional details for the connection. (Lumen Connect[SM] automatically makes the connection private and sets 31898 as the AS number for Oracle.)

    a. Select the **Internet Protocol Version** you want to use.
    b. Select whether this is a primary or backup connection.

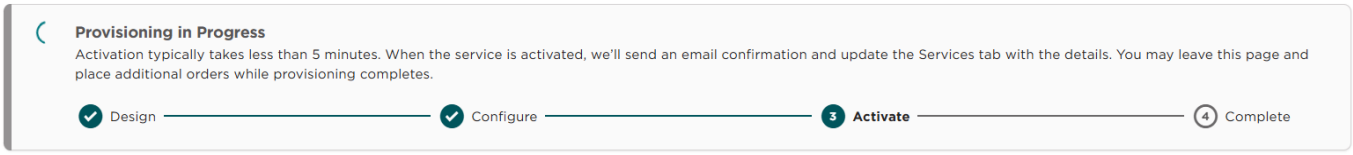
        - Primary will set the local-pref to 750
        - Backup will set the local-pref to 700

    c. In the **IPv4 Routing Option** field, select the radio button for the routing option you want to use for the connection. Learn more about routing options for an IP VPN connection
    d. Use the buttons to select whether you want to advertise default routes (for both IPv4 and IPv6 if you selected both Internet Protocol versions).



12. Click **CONTINUE**.

13. Review the order information and correct any missing or invalid selections, then click **SUBMIT ORDER**.

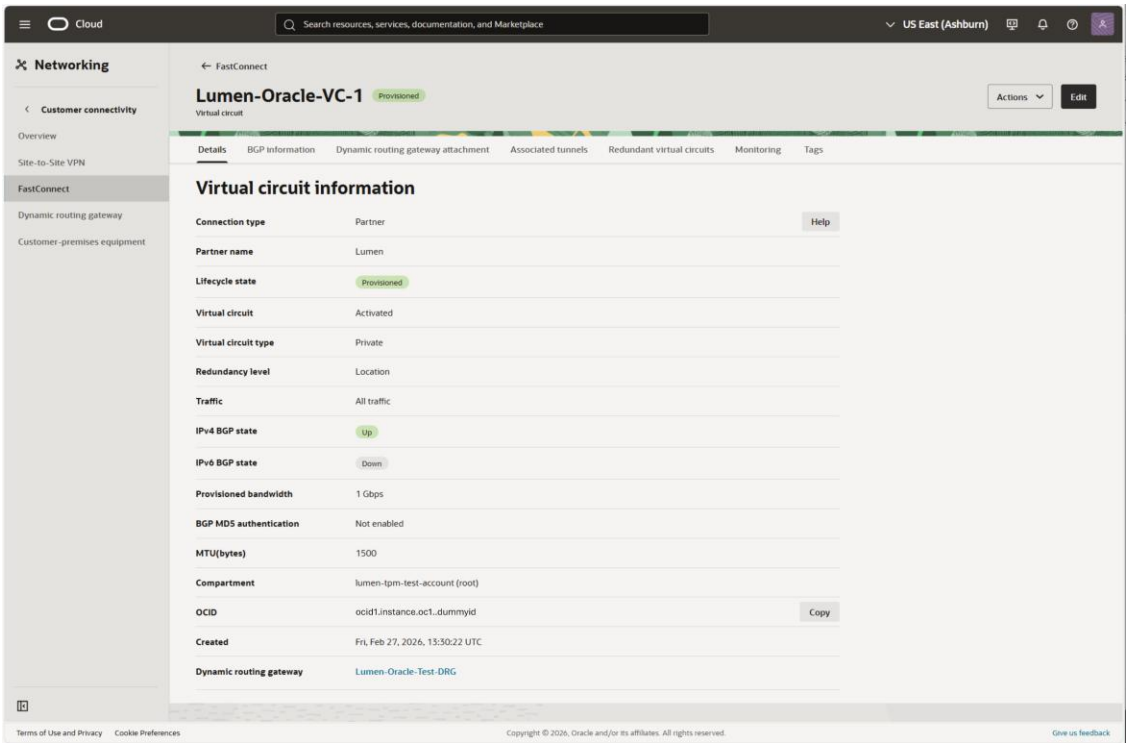


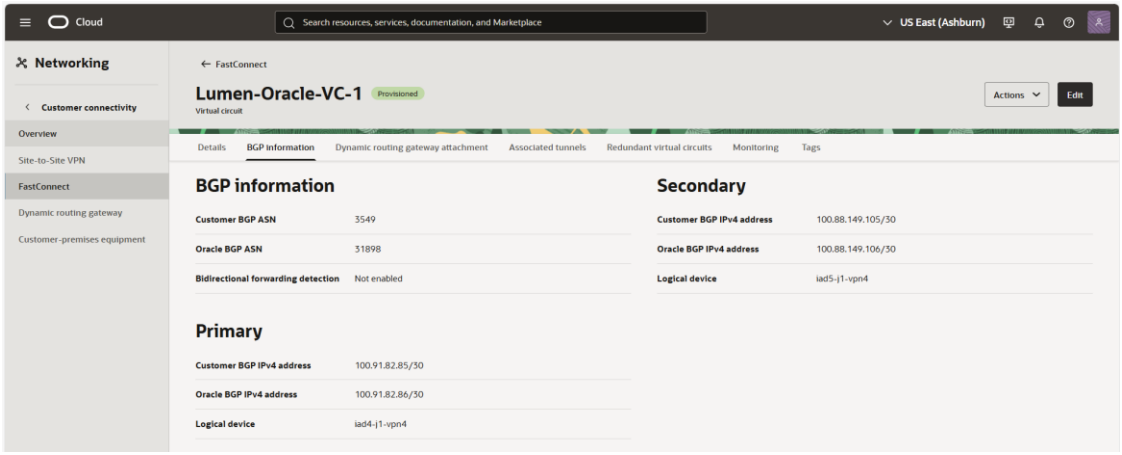
Lumen Connect℠ creates the request for connection, places it in *Pending Activation* status, and routes you to the Services tab so you can monitor the status of the connection. To see status updates, click . Once Lumen assigns the permanent VRF (within five minutes), the connection changes to *Active* status.

Step 5: Verify the Oracle connection

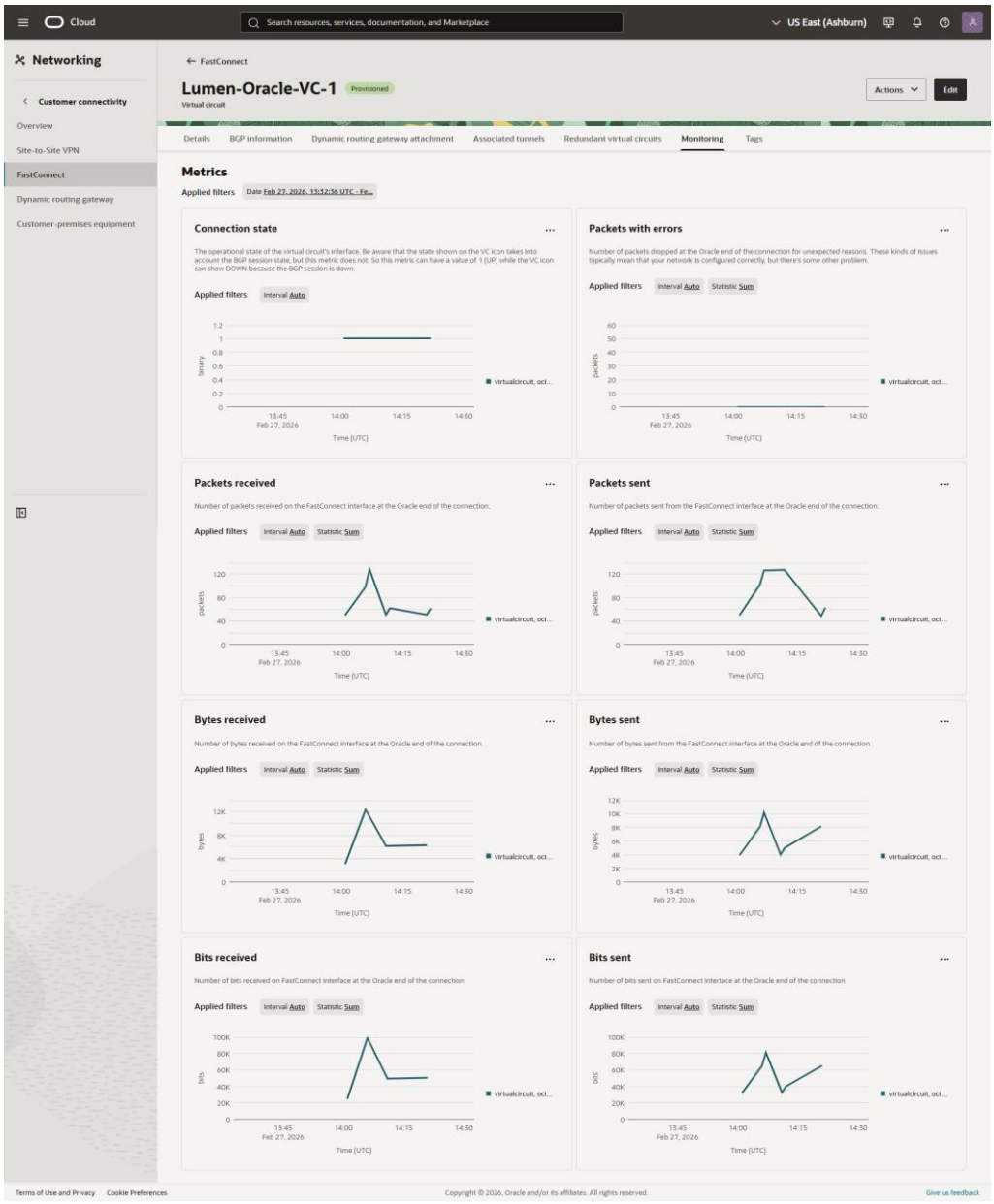
To verify the connection in Oracle:

1. Login to the **OCI Console**: https://cloud.oracle.com and navigate to **Networking > FastConnect**
2. Locate the new FastConnect and select it to see details of the connection.
3. You will see the **BGP state** as **Up**





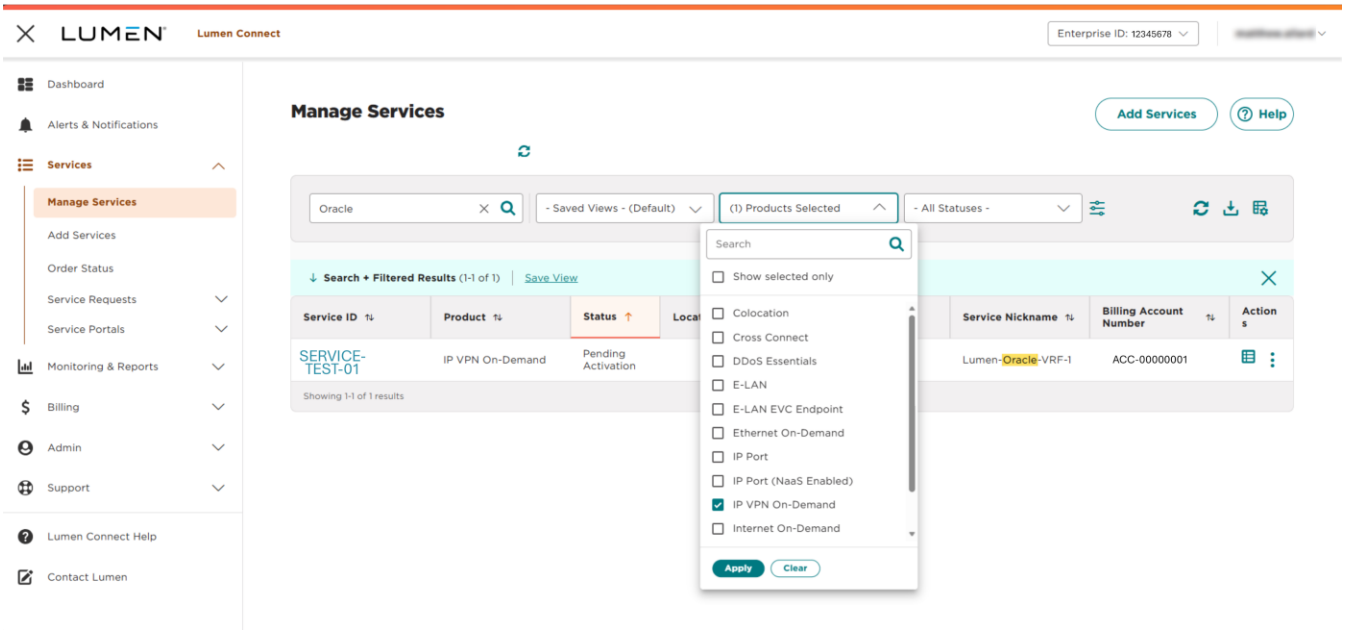
4. Your BGP Peer is established, and you may now continue any additional Oracle Cloud Infrastructure Network configuration



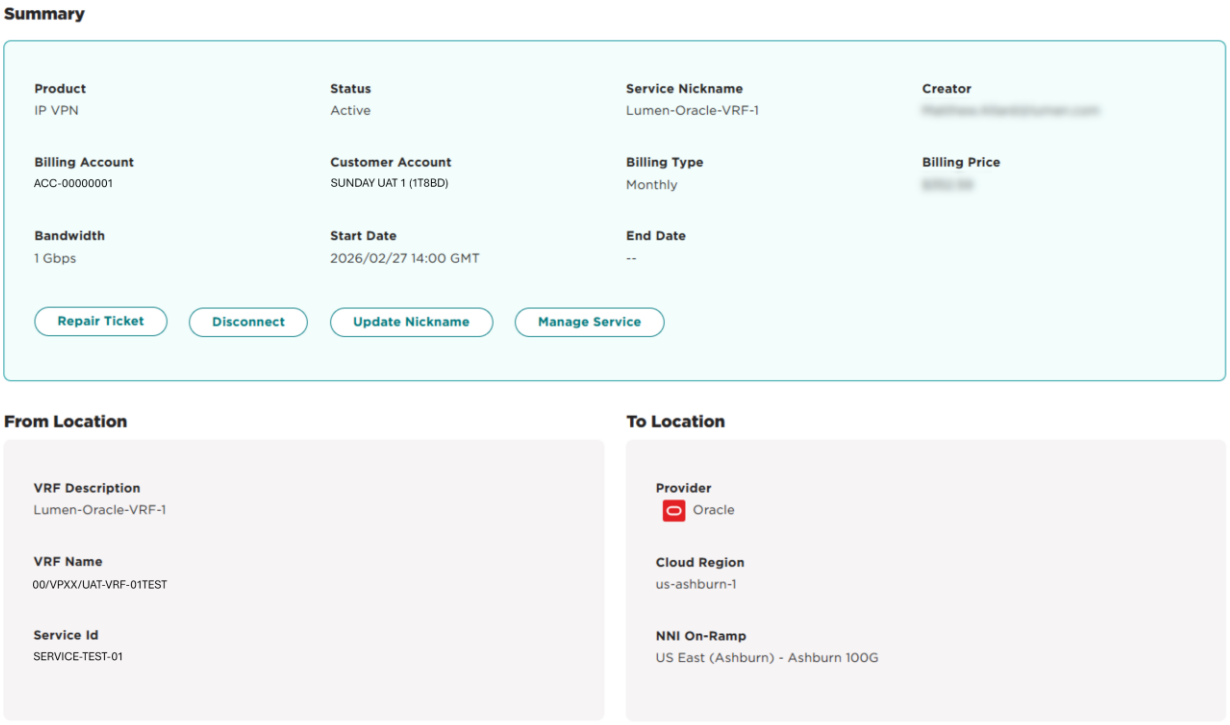
Note: For detailed guidance on configuring your Oracle Cloud Infrastructure networking, refer to the Oracle's FastConnect: With an Oracle Partner Documentation. If you'd like personalized support, please contact your Lumen Account Team to explore our professional services for Oracle Cloud Infrastructure management.

Disconnect Lumen Network-as-a-Service IP VPN On-Demand to Oracle Cloud Infrastructure FastConnect

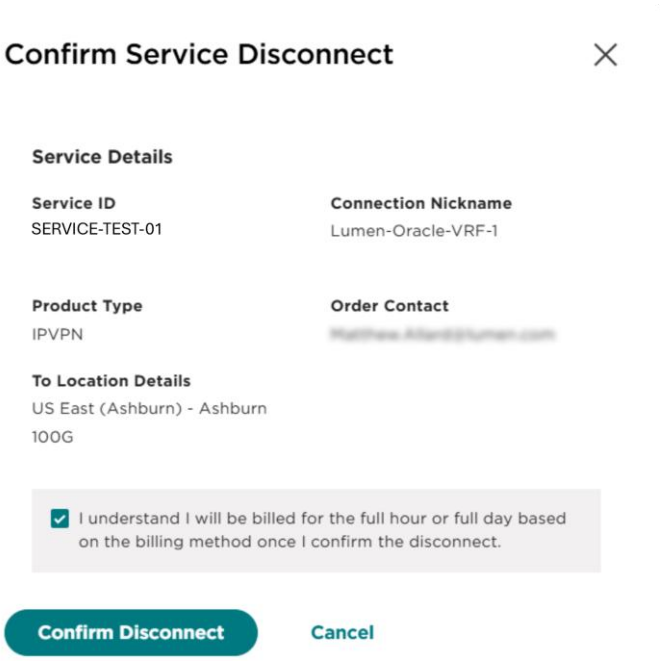
1. Within Lumen Connect℠ you can now select the **Manage Services, filter by Product, select IP VPN on-Demand** to locate the Service ID of the connection you want to disconnect.



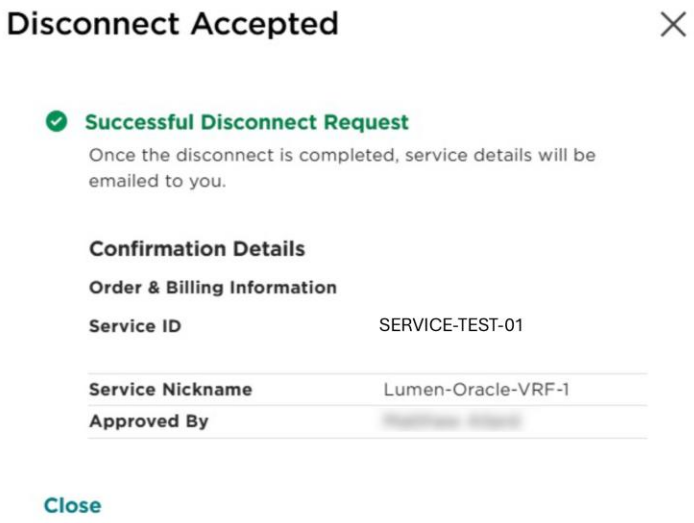
2. Select the Service ID of the connection you want to disconnect and click **Disconnect**



3. Check the box to confirm the change and click **Confirm Disconnect**

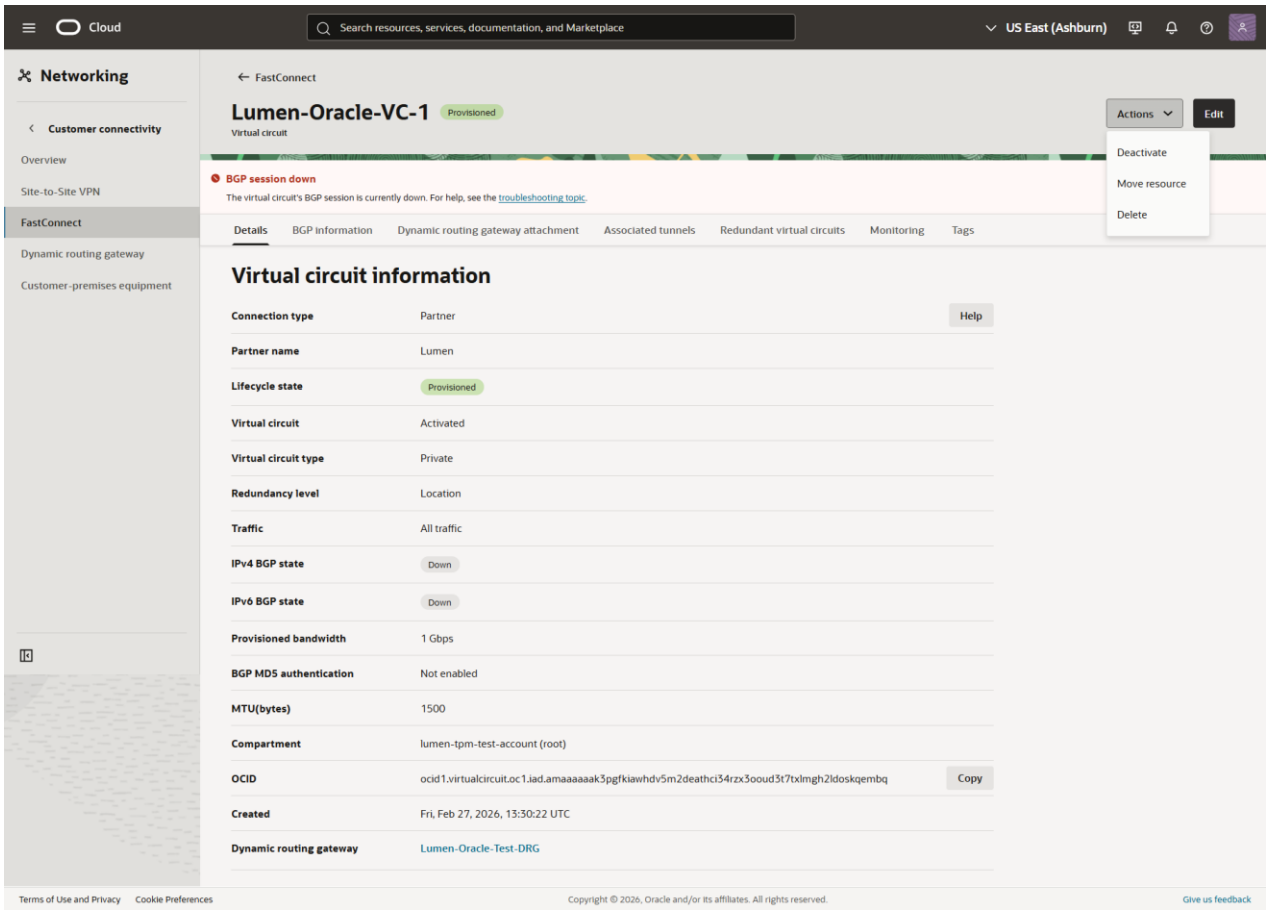


4. A pop-up will display **Disconnect Accepted – Successful Disconnect Request**. You may now click **CLOSE**.

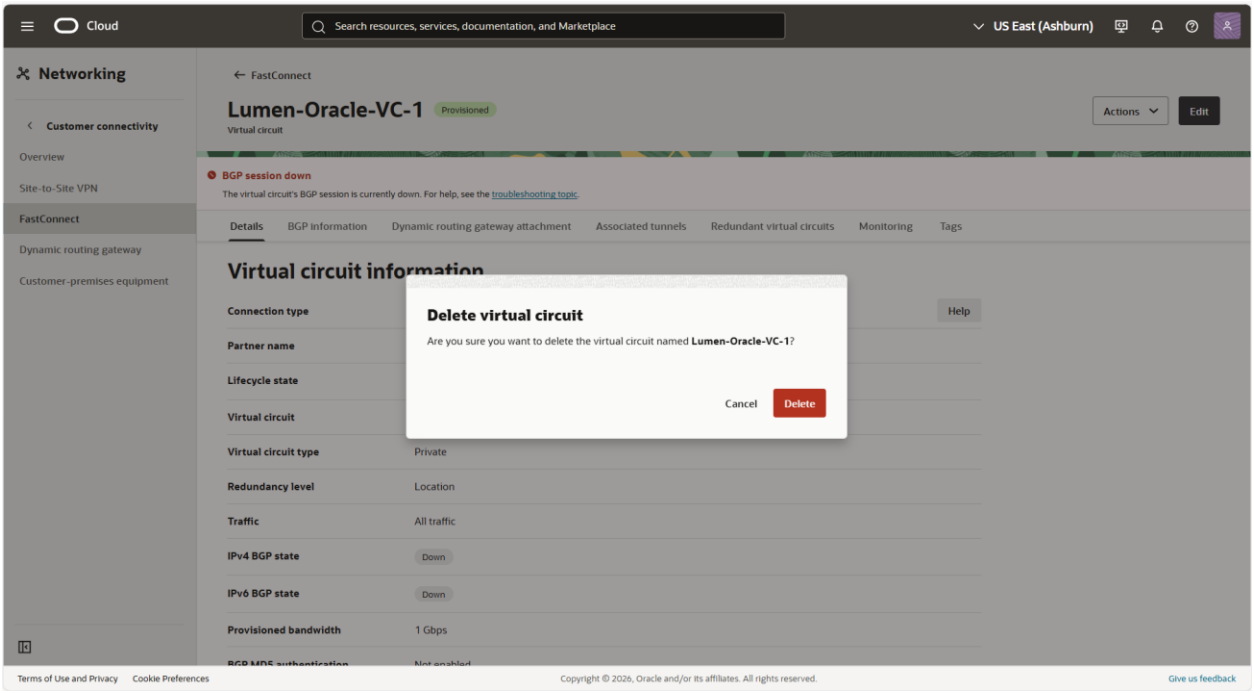


5. Login to the **OCI Console**: https://cloud.oracle.com and navigate to **Networking > Customer Connectivity > FastConnect**

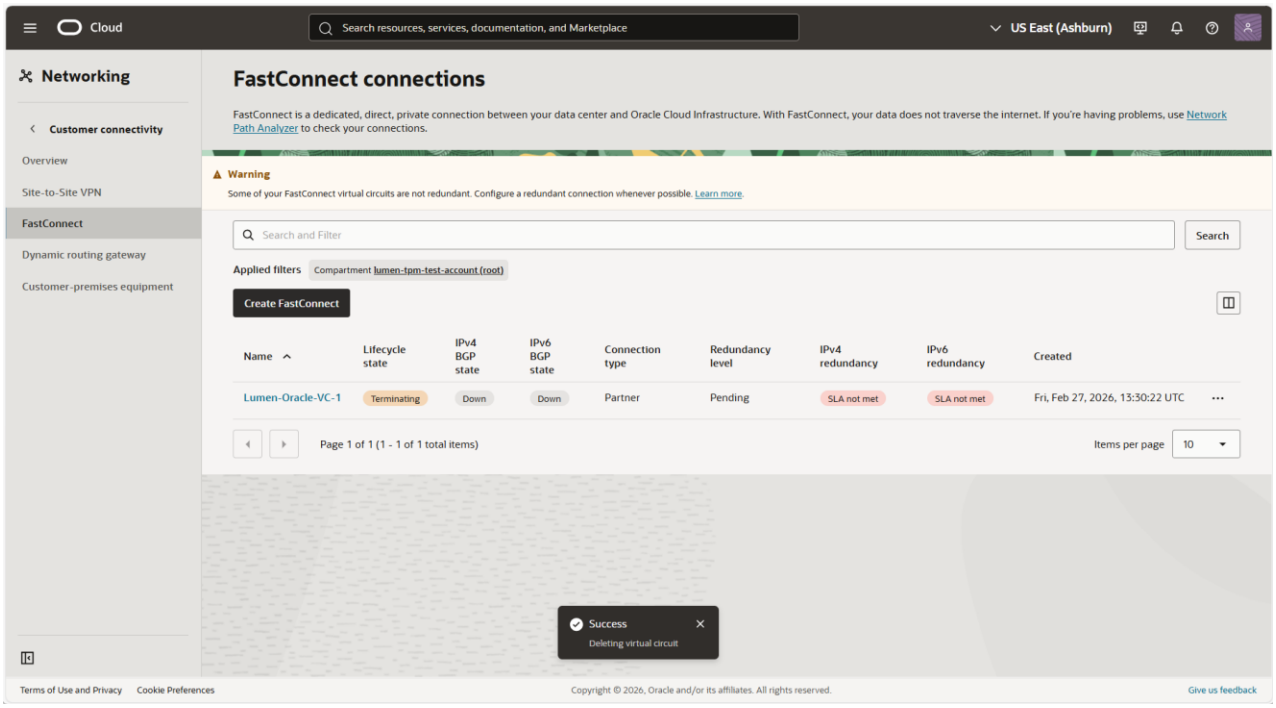
6. Locate the FastConnect associated with the IP VPN On-Demand Connection you would like to remove, select it, and click **Actions > Delete**



7. A pop-up will ask for confirmation. Click **Delete**



8. The selected FastConnect will show **Terminating**



9. After a few minutes it will no longer show within the Oracle Console

10. If required, continue deleting your Dynamic Routing Gateway and Virtual Cloud Network.

For More Information

- Lumen IPVPN On-Demand: https://www.lumen.com/en-us/services/ip-vpn-on-demand.html
- Lumen IPVPN On-Demand Documentation: https://docs.lumen.com/ip-vpn-on-demand/
- Sign in to Lumen Connect℠: https://connect.lumen.com/
- Learn more about Lumen: https://www.lumen.com/