

AWS re:Invent

NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

NET202

Get hands-on with IPv6

Alan Halachmi

Director, Solutions Architecture, WWPS
AWS

Rohit Aswani

Senior Solutions Architect, Networking Specialist, WWPS
AWS



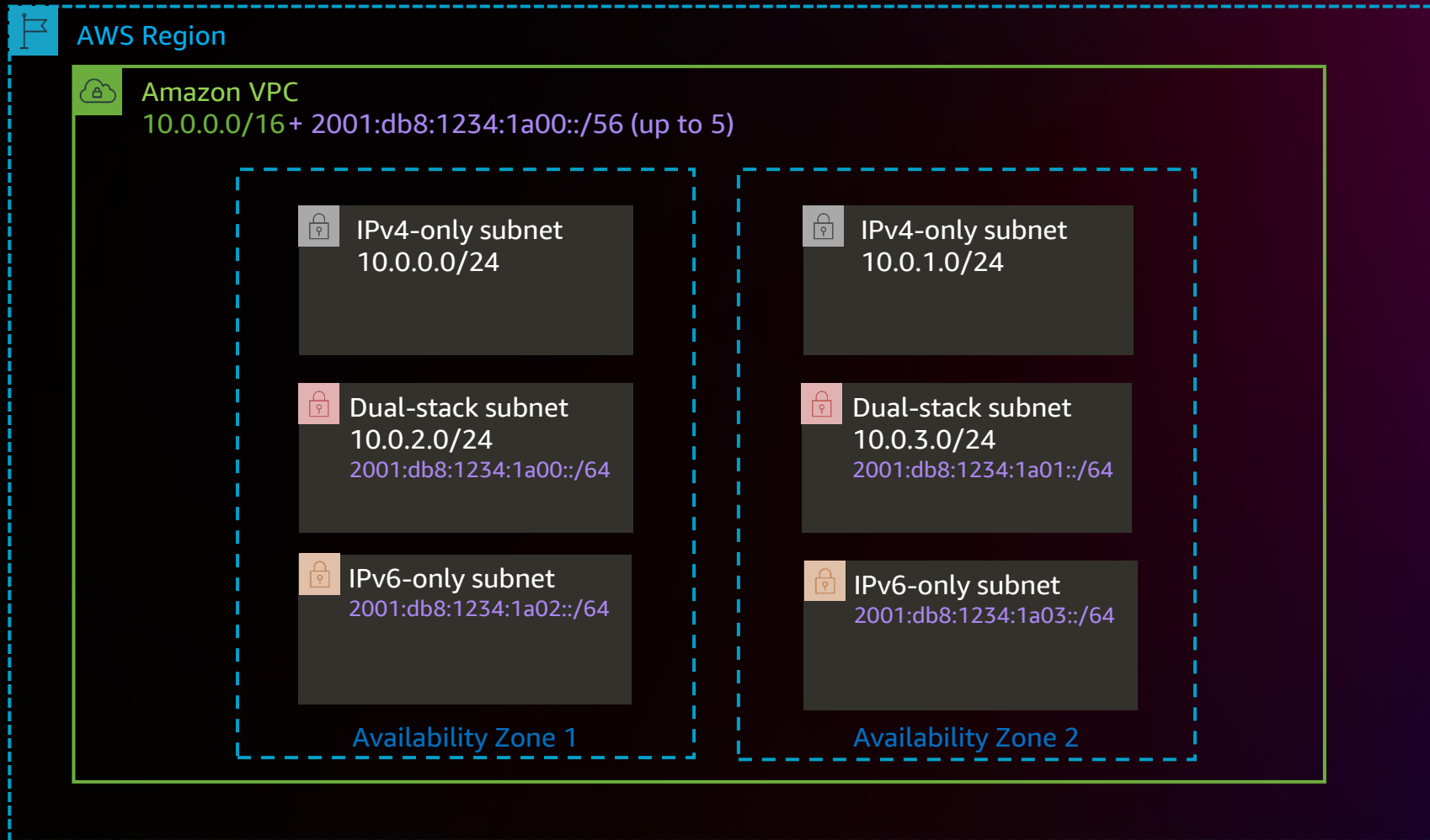
© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Agenda

- IPv6 for Amazon VPC
- Load balancing and traffic management
- Event logistics
- Workshop scenario

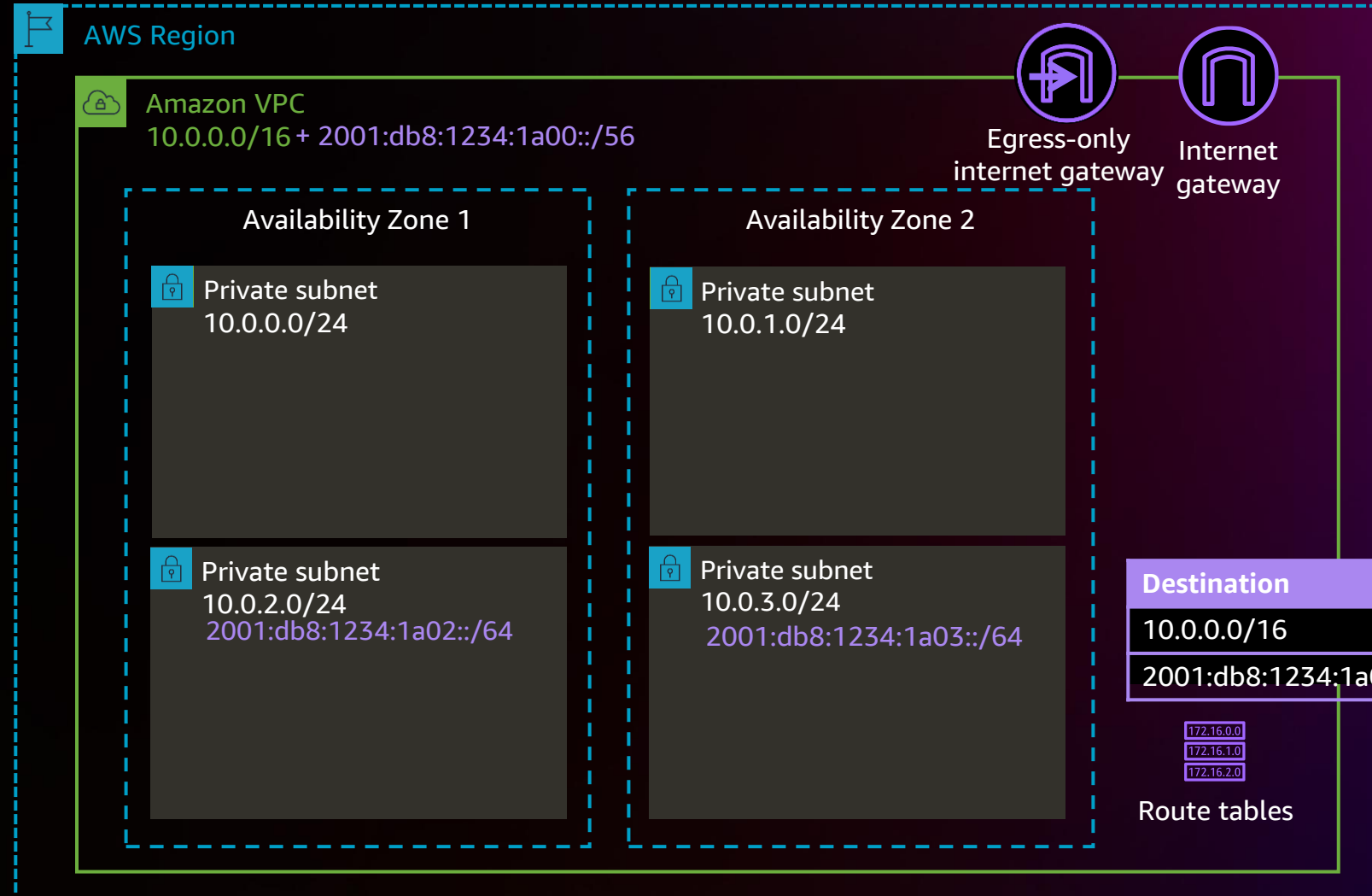
Amazon VPC: IP addressing

IPV4-ONLY, DUAL STACK, AND IPV6-ONLY SUBNETS



Amazon VPC: Routing

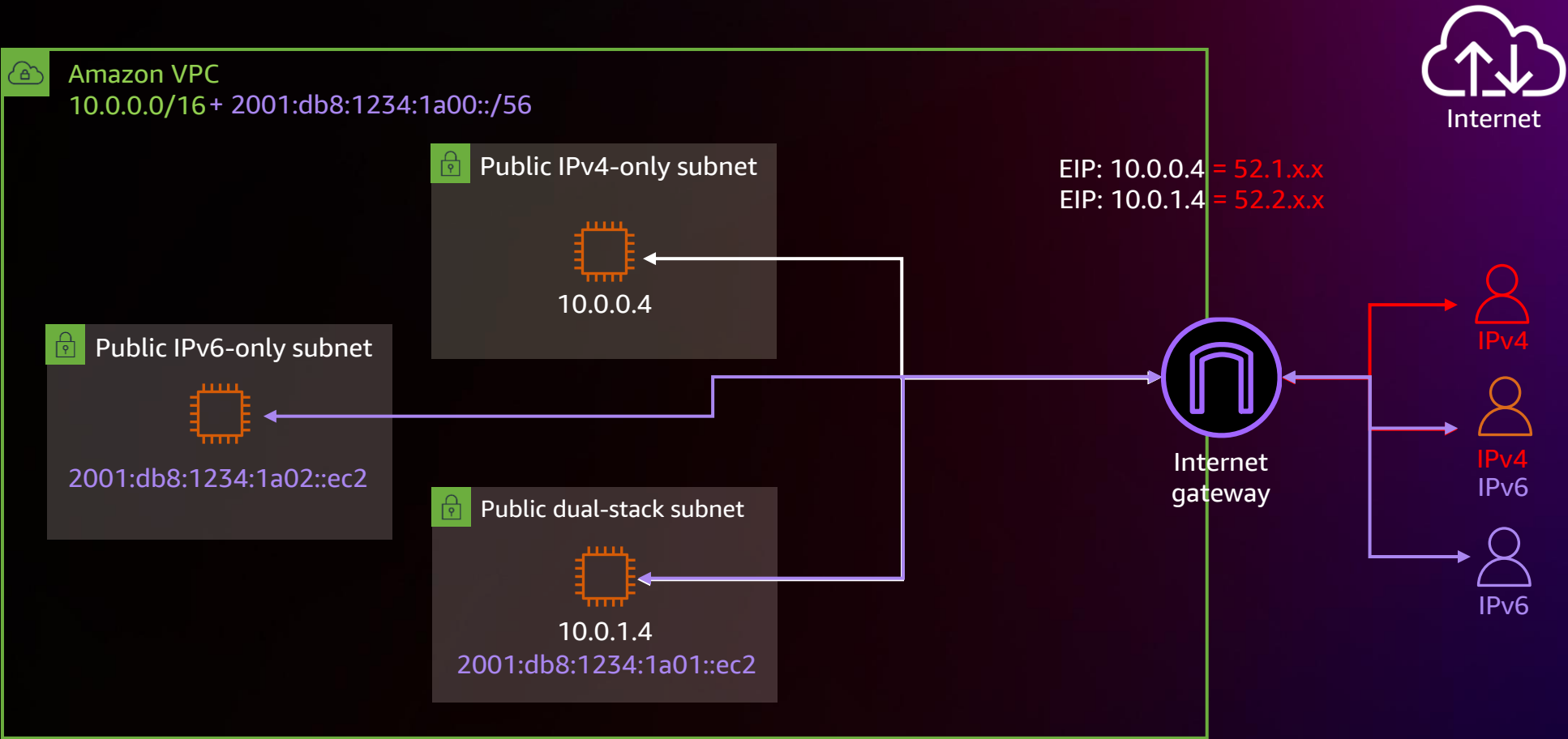
Destination	Target
10.0.0.0/16	Local
2001:db8:1234:1a00::/56	Local
0.0.0.0/0	IGW
::/0	EIGW



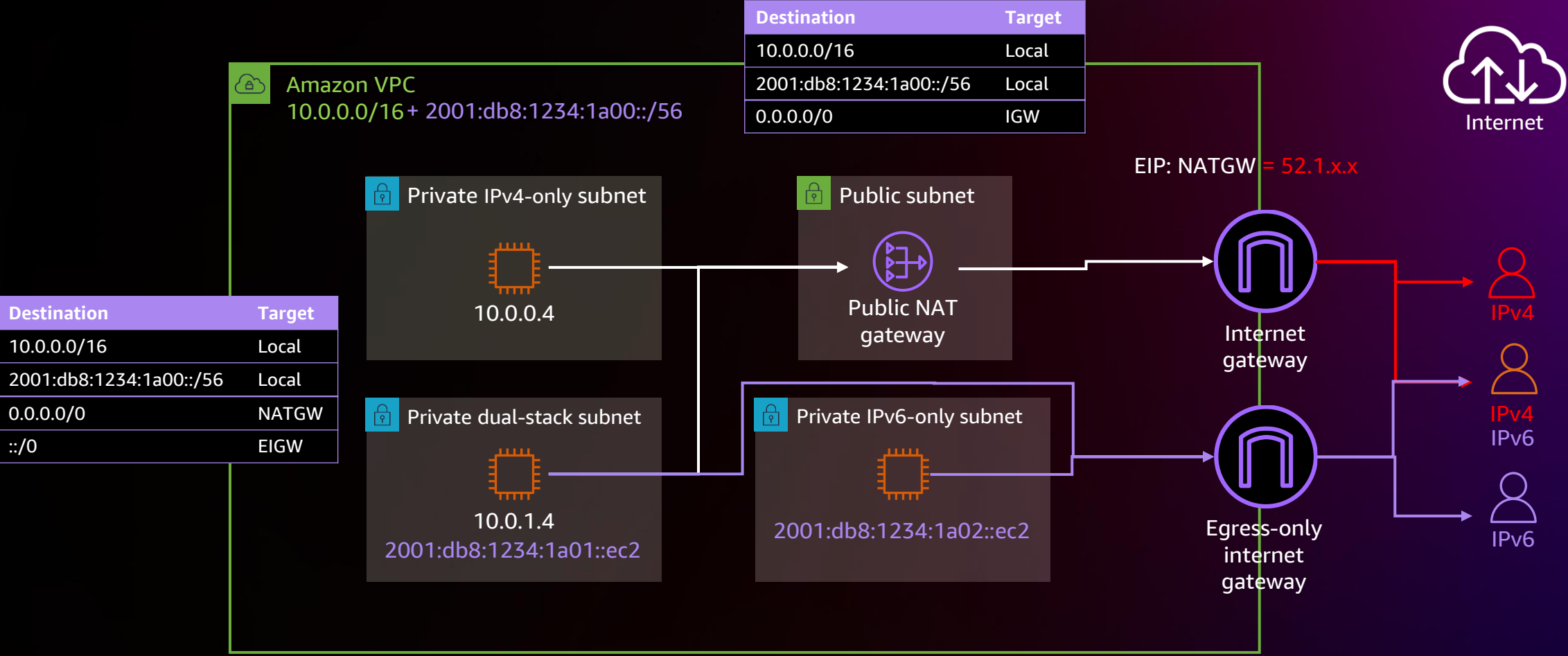
Destination	Target
10.0.0.0/16	Local
2001:db8:1234:1a00::/56	Local

Public subnets: Internet connectivity

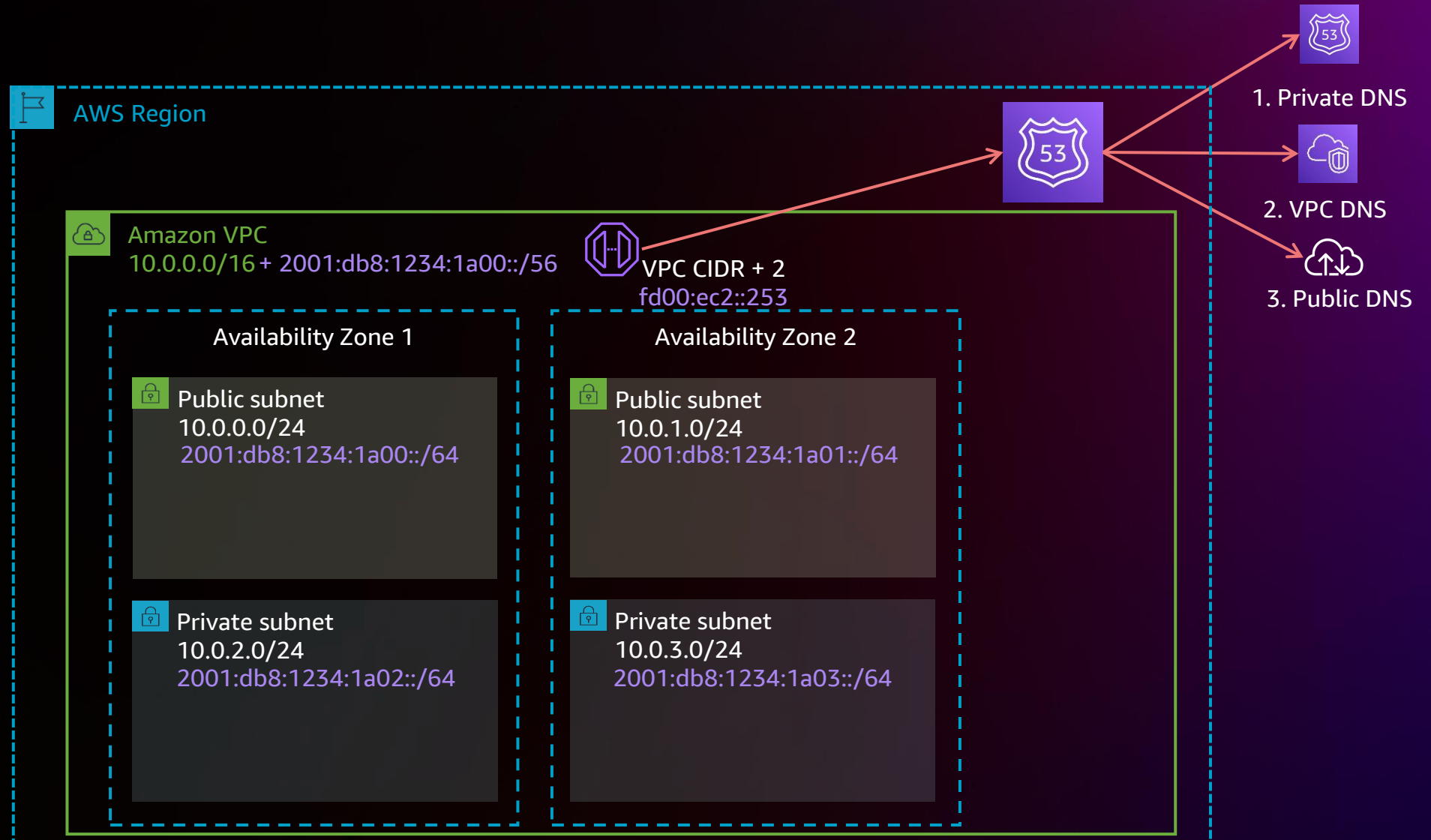
Destination	Target
10.0.0.0/16	Local
2001:db8:1234:1a00::/56	Local
0.0.0.0/0	IGW
::/0	IGW



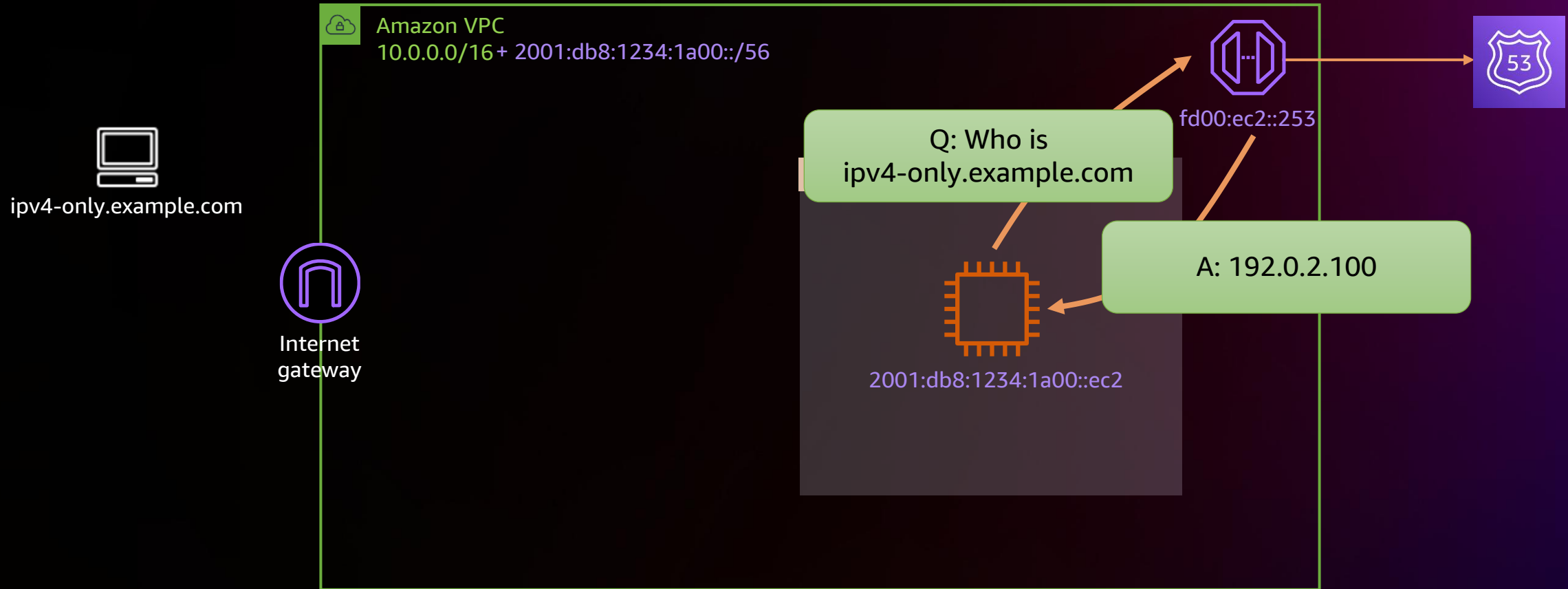
Private subnets: Internet connectivity



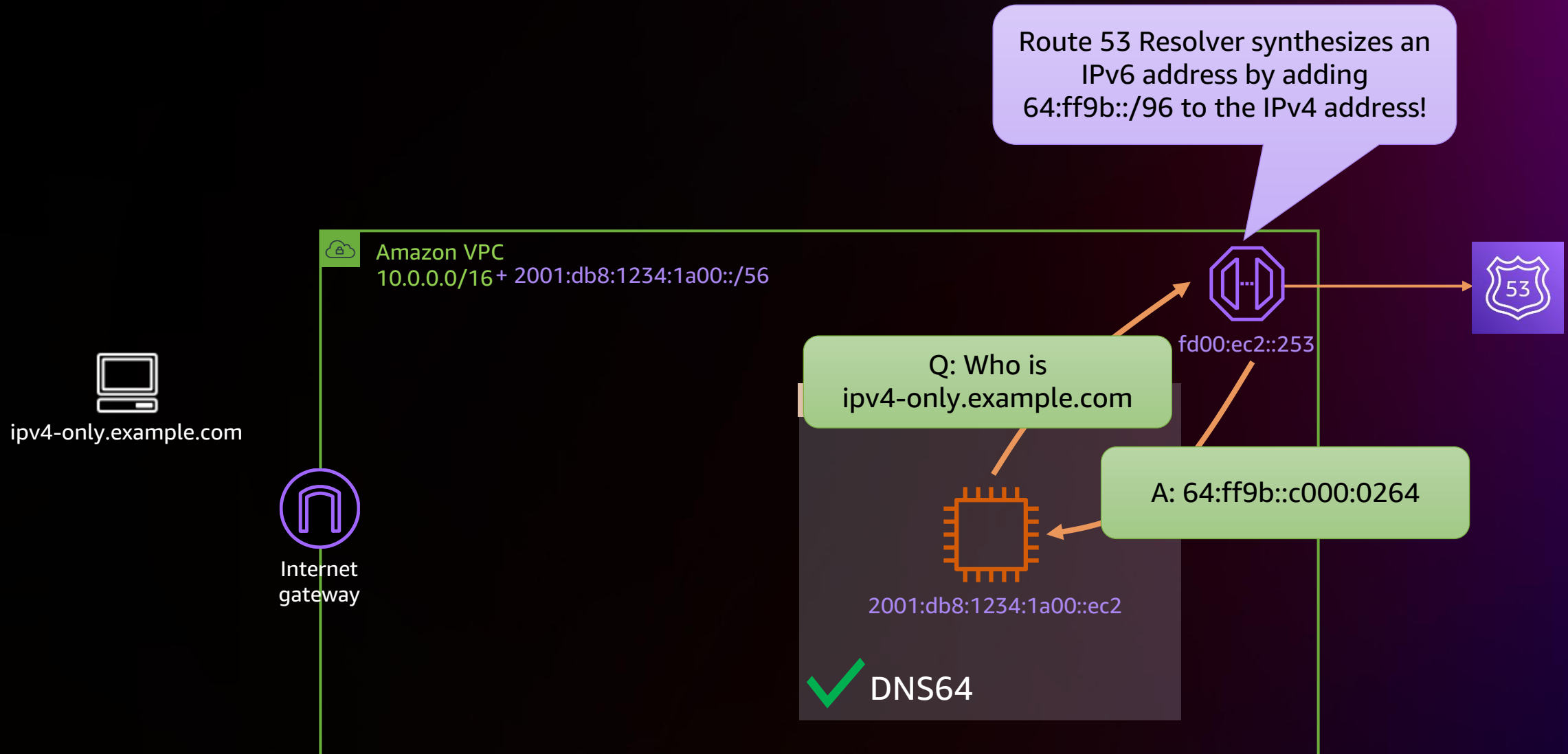
Amazon VPC: DNS



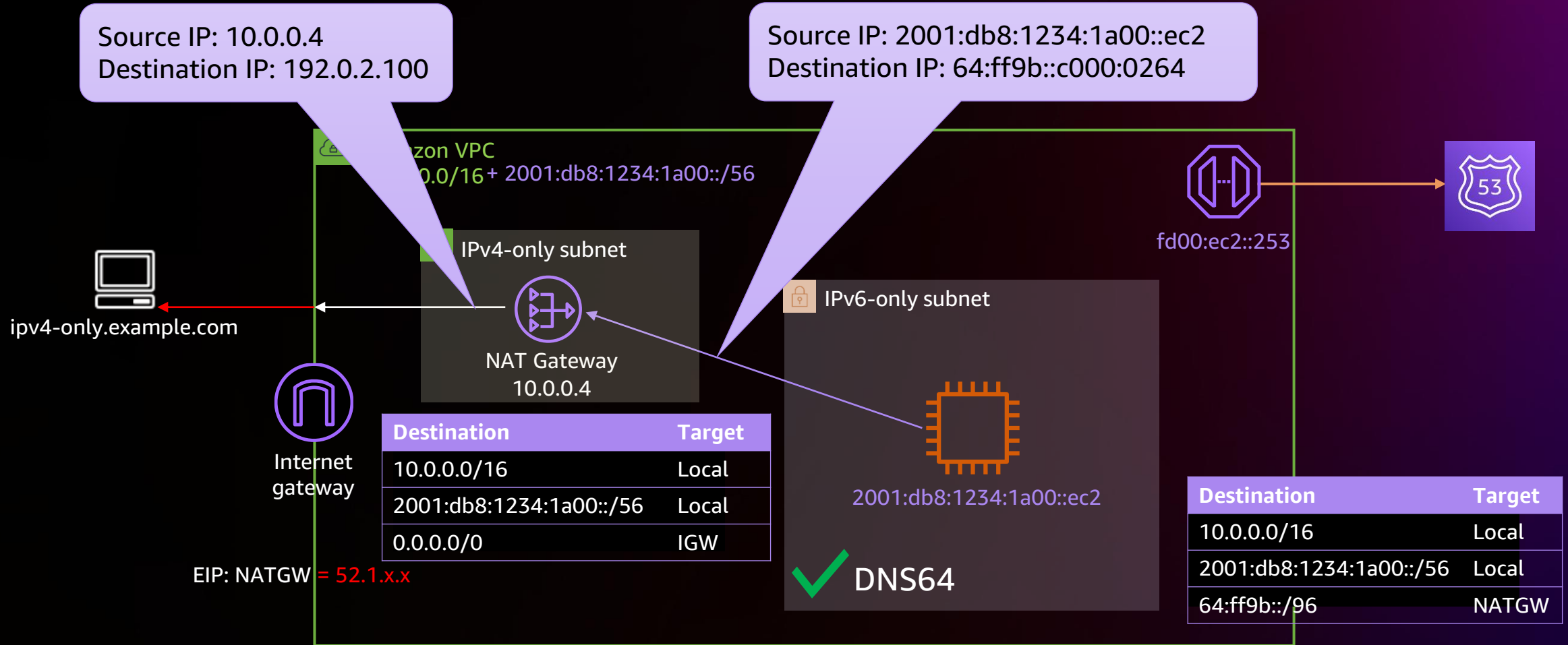
Address translation: 6-to-4



Address translation: DNS64

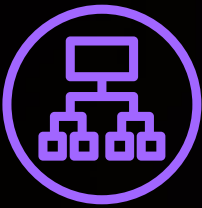


Address translation: NAT64

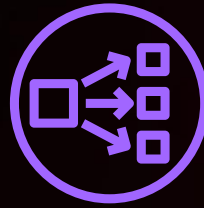


Load balancing and traffic management

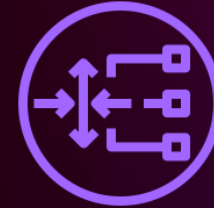
Elastic Load Balancing



Application Load
Balancer

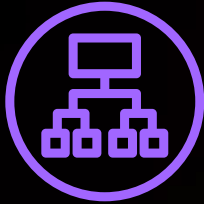


Network Load
Balancer



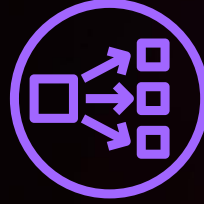
Gateway Load
Balancer

Elastic Load Balancing



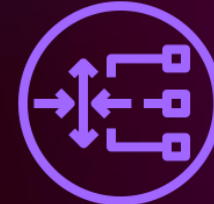
Application Load Balancer

- Layer 7
- Targets: IP, instance, AWS Lambda
- Terminates flows
- Listener: HTTP, HTTPS, gRPC
- Front end: virtual IP



Network Load Balancer

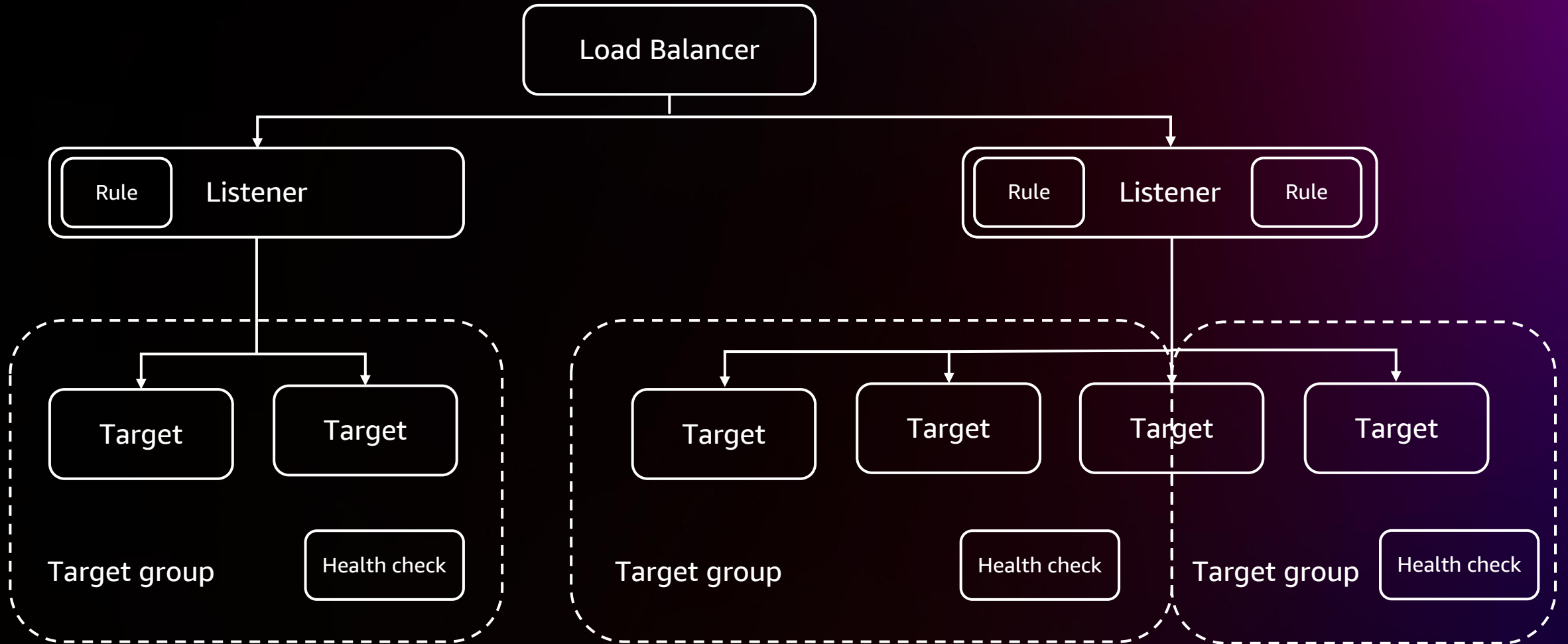
- Layer 4
- Targets: IP, instance, Application Load Balancer
- Terminates flows
- Listener: TCP, UDP, TLS
- Front end: virtual IP



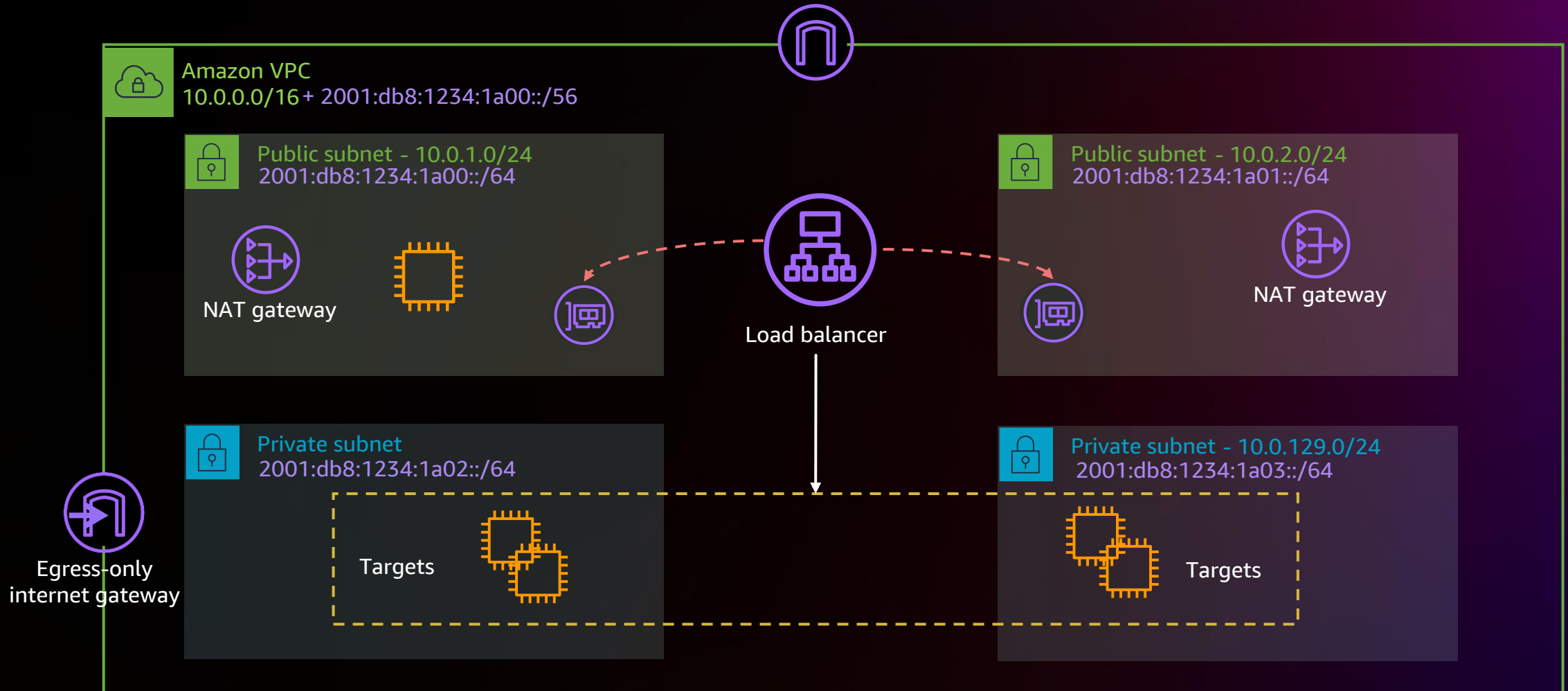
Gateway Load Balancer

- Layer 3 gateway and Layer 4 load balancing
- Targets: IP, instance
- Transparent pass through of flows
- Listener: IP
- Route table entry

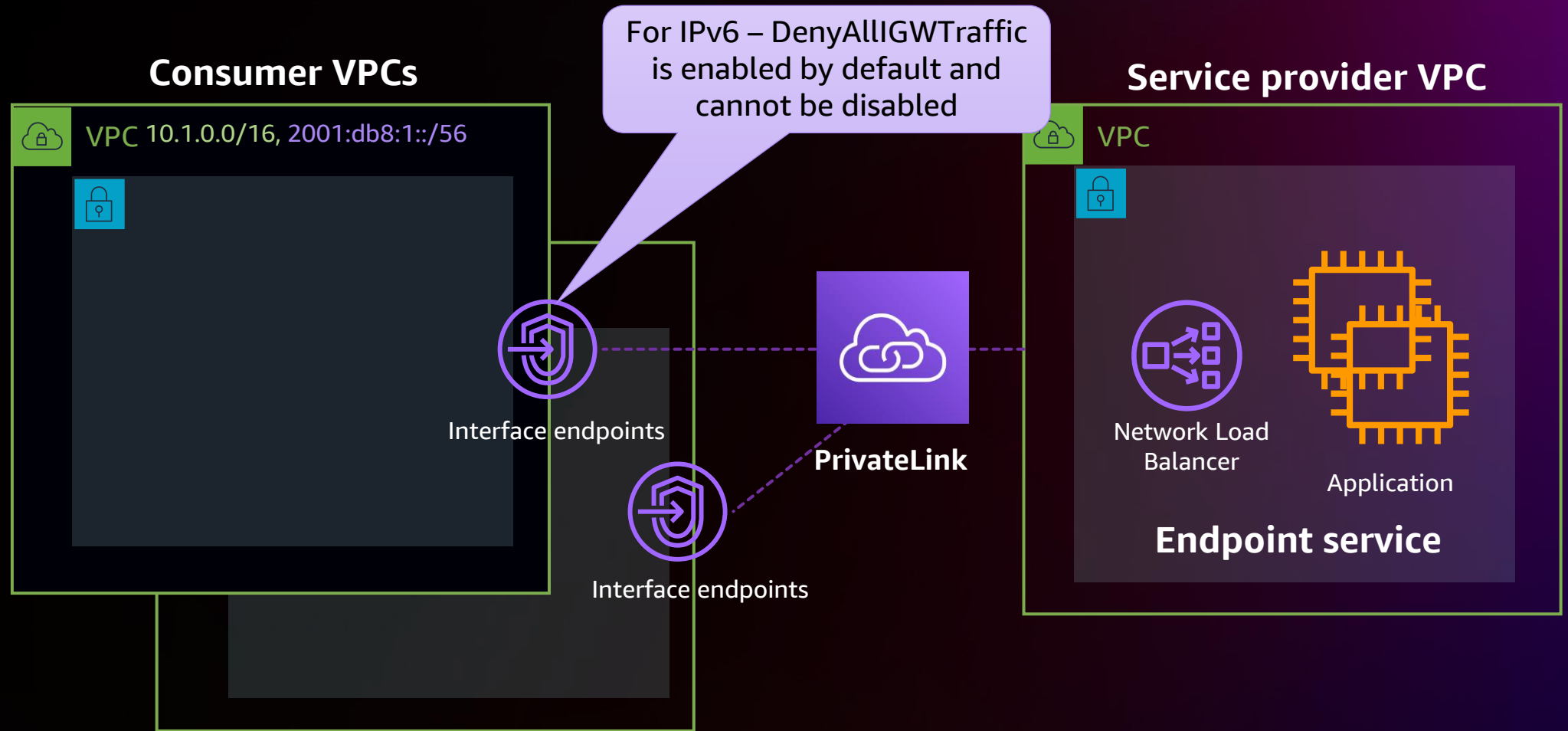
Elastic Load Balancing



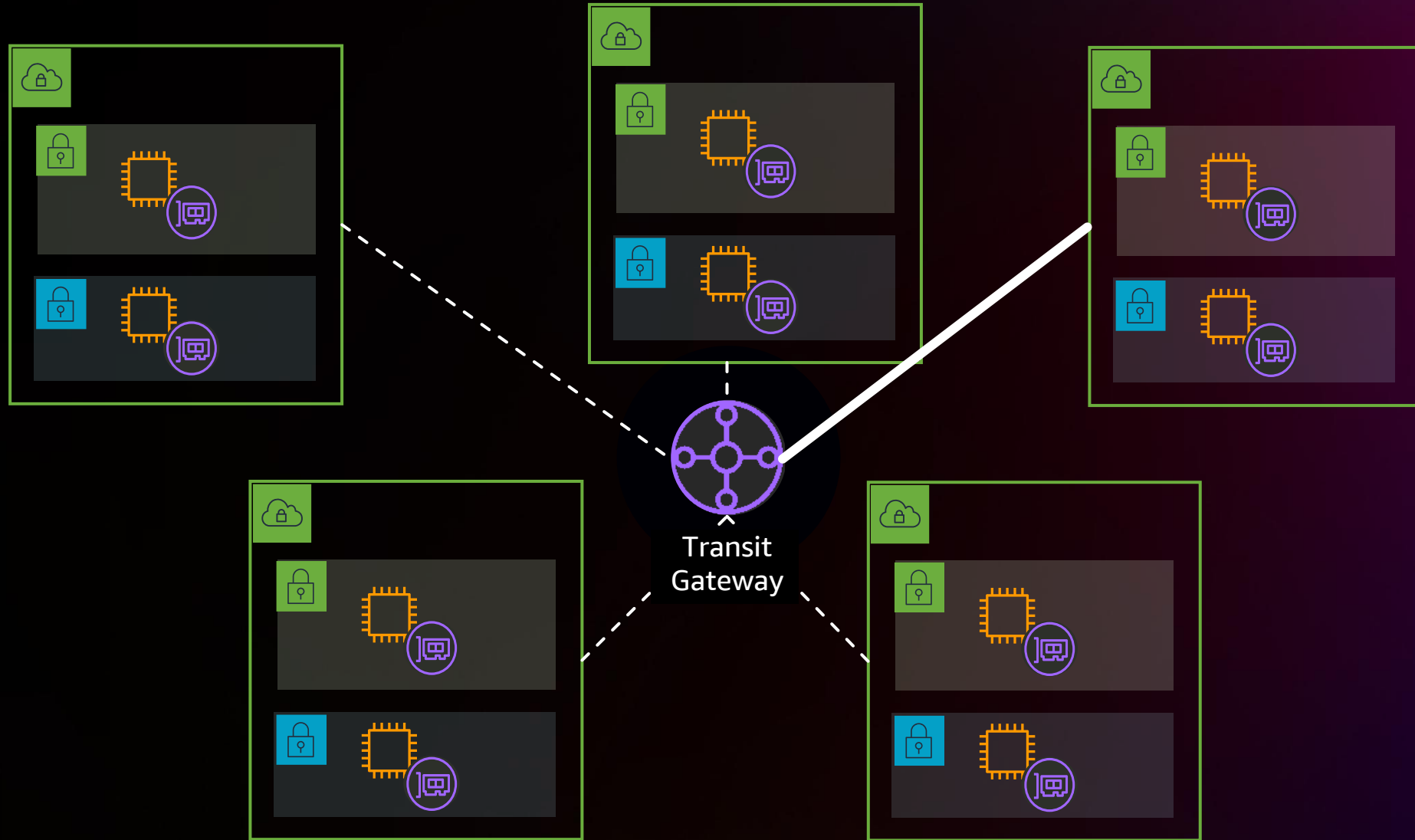
Elastic Load Balancing



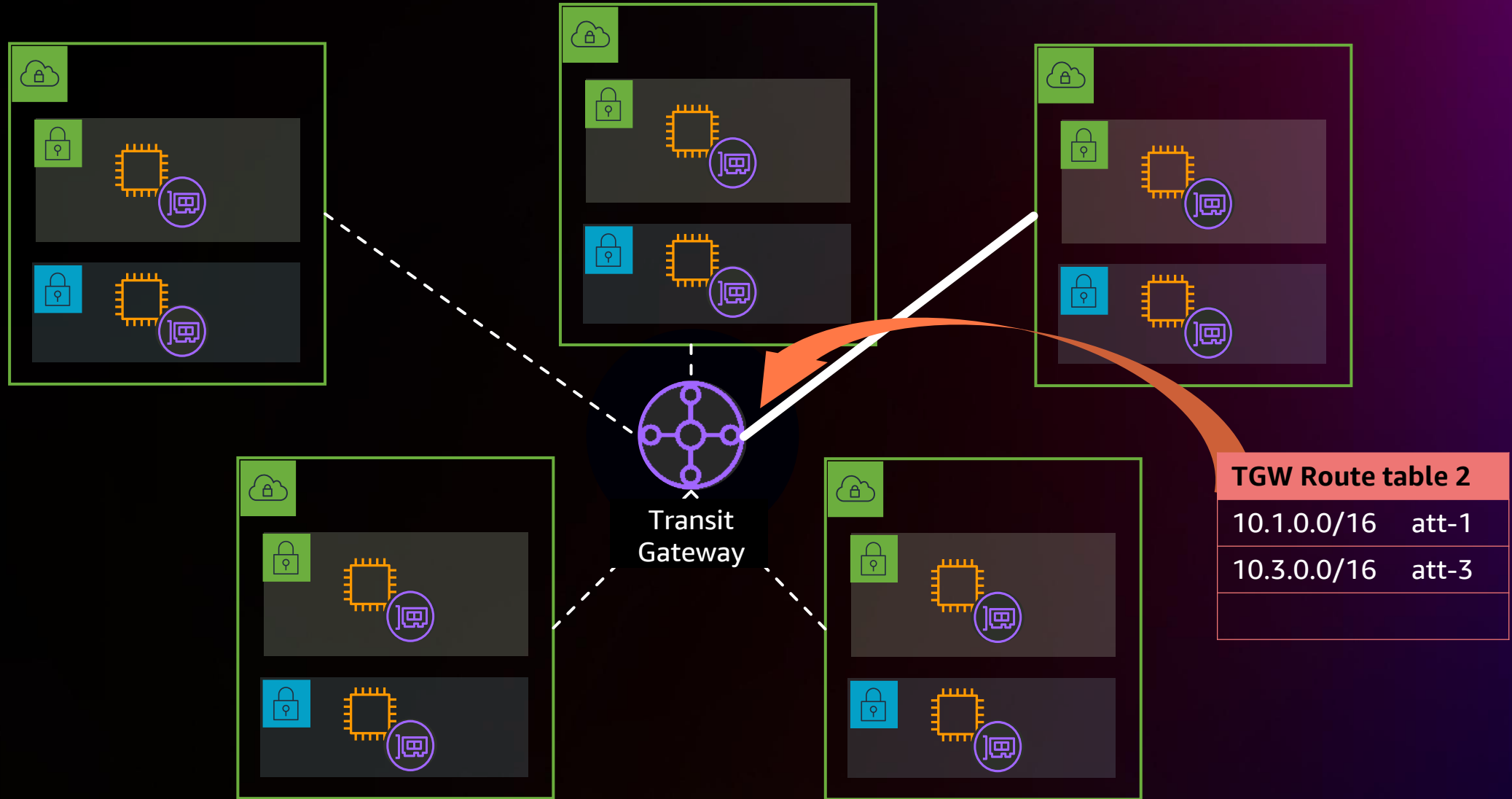
AWS PrivateLink



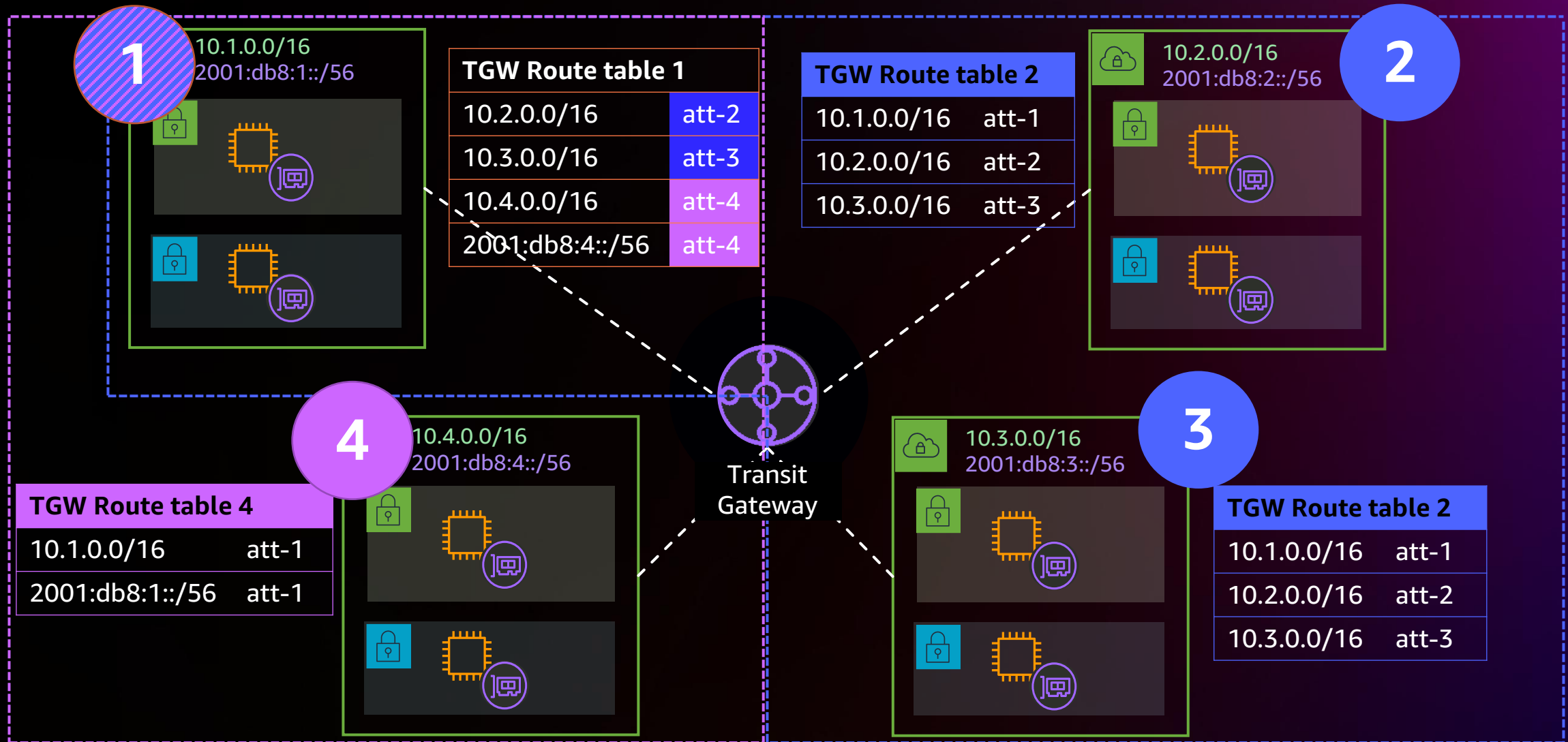
Transit Gateway



Transit Gateway



Transit Gateway route tables and domains



Event logistics



Getting started with this workshop

- As a participant, you will have access to an AWS account with any optional preprovisioned infrastructure and IAM policies needed to complete this workshop
- The AWS account will only be available for the duration of this workshop; you will lose access to the account thereafter
- The optional preprovisioned infrastructure will be deployed to a specific region; check your workshop content to determine whether other regions will be used
- Be sure to review the terms and conditions of the event; do not upload any personal or confidential information in the account

Step 1: Sign in via your preferred method

<https://catalog.workshops.aws/join>



aws workshop studio

Workshop Studio > Sign in

Sign in

Choose a preferred sign-in method

Email one-time password (OTP)

Enter your personal or corporate email to receive a one-time password

Login with Amazon

Login with your Amazon.com retail account

Amazon employee

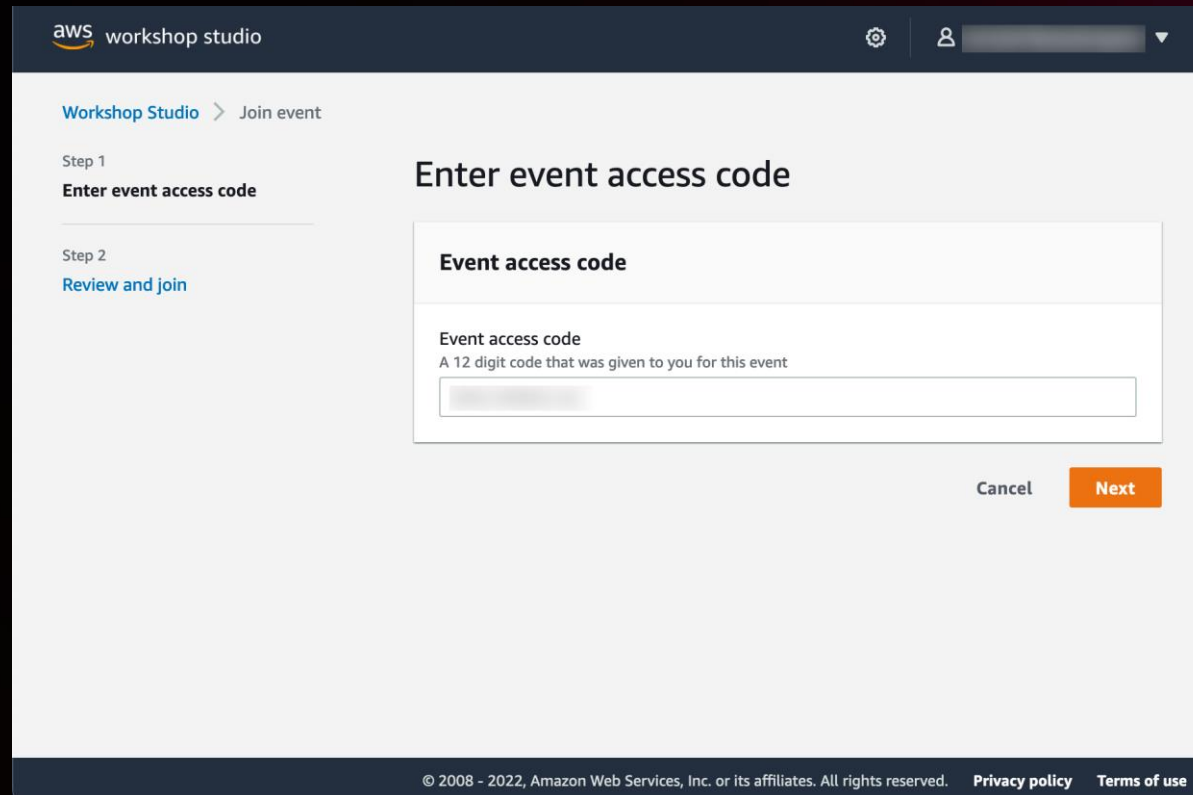
Login with your Amazon Corporate account. Only for Amazon Employees.

© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy policy](#) [Terms of use](#)

Step 2: Enter event access code

Enter 12-digit event access code

If you were given a 1-click join link, you can skip this step



The screenshot shows the AWS Workshop Studio interface for joining an event. The top navigation bar includes the AWS logo, 'workshop studio', a settings gear icon, and a user profile icon. The breadcrumb trail is 'Workshop Studio > Join event'. On the left, a progress indicator shows 'Step 1 Enter event access code' as the current step and 'Step 2 Review and join' as the next step. The main content area is titled 'Enter event access code'. It contains a section labeled 'Event access code' with a description: 'Event access code' and 'A 12 digit code that was given to you for this event'. Below this is a text input field. At the bottom right of the form are 'Cancel' and 'Next' buttons. The footer contains the copyright notice '© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.' and links to 'Privacy policy' and 'Terms of use'.

Step 3: Review terms and join event

aws workshop studio

Workshop Studio > Join event

Step 1
[Enter event access code](#)

Step 2
Review and join

Review and join

Event details

Name	Start time	Duration	Level
AWS General Immersion Day	9/23/2022 01:13 AM	12 hours	-

Description
AWS General Immersion Day

Terms and Conditions

Read and accept before joining the event

1. By using AWS Workshop Studio for the relevant event, you agree to the AWS Event Terms and Conditions and the AWS Acceptable Use Policy. You acknowledge and agree that are using an AWS-owned account that you can only access for the duration of the relevant event. If you find residual resources or materials in the AWS-owned account, you will make us aware and cease use of the account. AWS reserves the right to terminate the account and delete the contents at any time.
2. You will not: (a) process or run any operation on any data other than test data sets or lab-approved materials by AWS, and (b) copy, import, export or otherwise create derivate works of materials provided by AWS, including but not limited to, data sets.
3. AWS is under no obligation to enable the transmission of your materials through Event Engine and may, in its discretion, edit, block, refuse to post, or remove your materials at any time.
4. Your use of AWS Workshop Studio will comply with these terms and all applicable laws, and your access to AWS Workshop Studio will immediately and automatically terminate if you do not comply with any of these terms or conditions.

☒ I agree with the Terms and Conditions

Cancel

Previous

Join event

© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

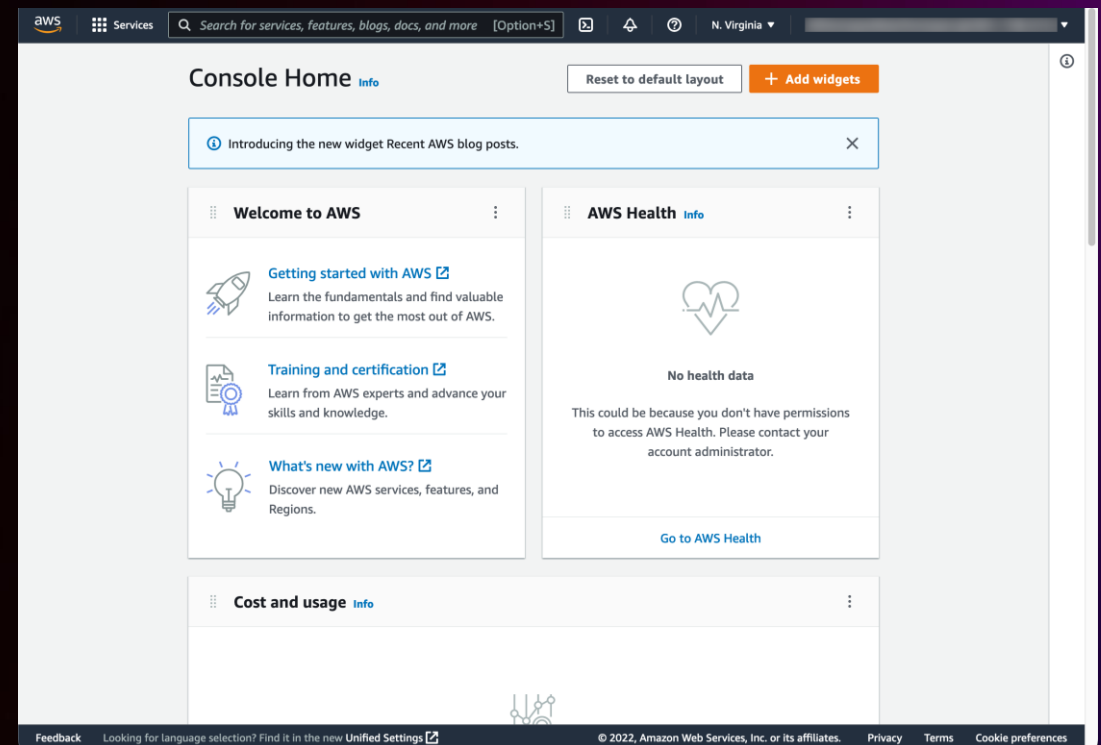
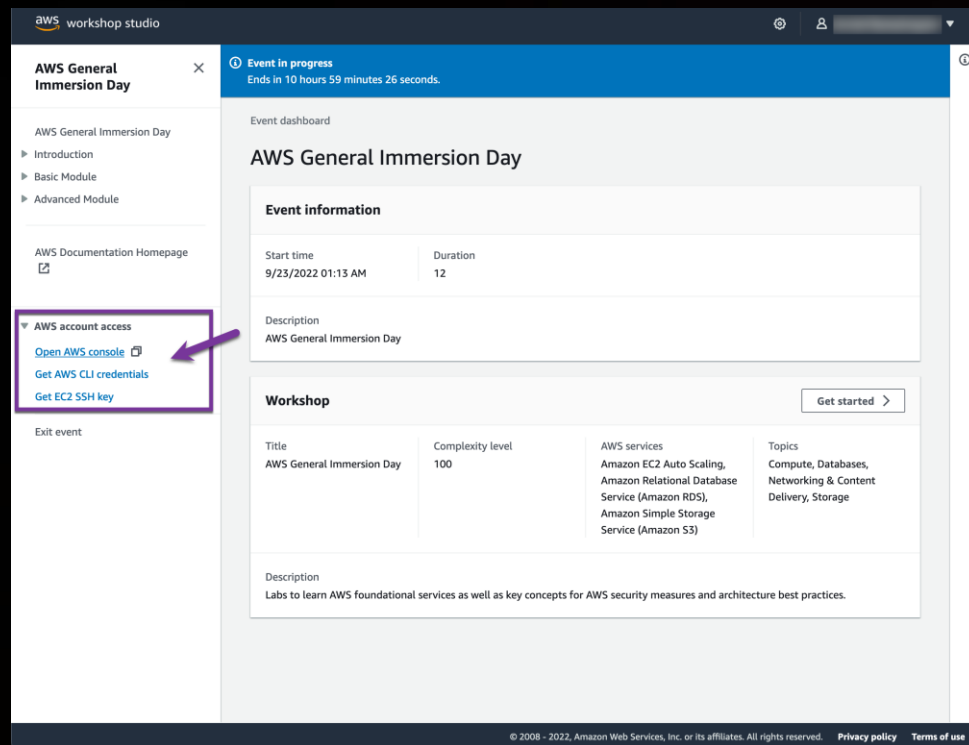
[Privacy policy](#)

[Terms of use](#)

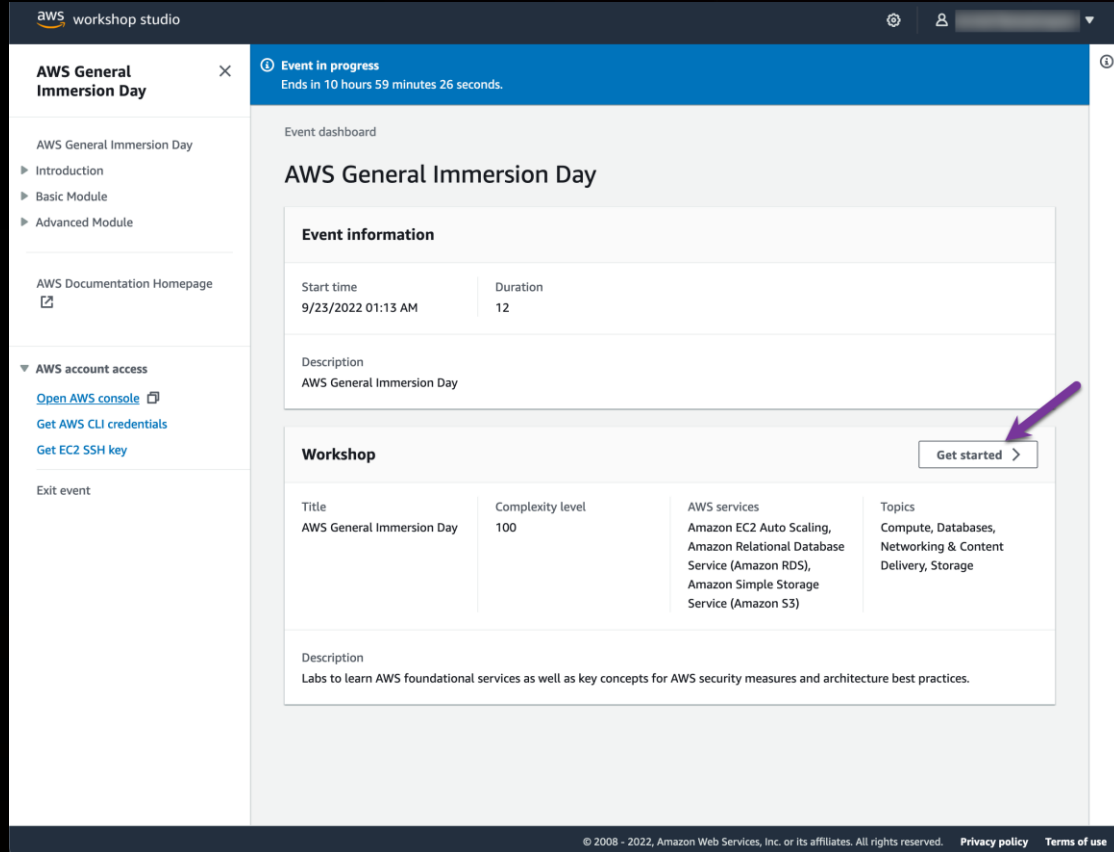


Step 4: Access AWS account

Access the AWS Console or generate AWS CLI credentials as needed



Step 5: Get started with the workshop



aws workshop studio

Event in progress
Ends in 10 hours 59 minutes 26 seconds.

Event dashboard

AWS General Immersion Day

Event information

Start time	Duration
9/23/2022 01:13 AM	12

Description
AWS General Immersion Day

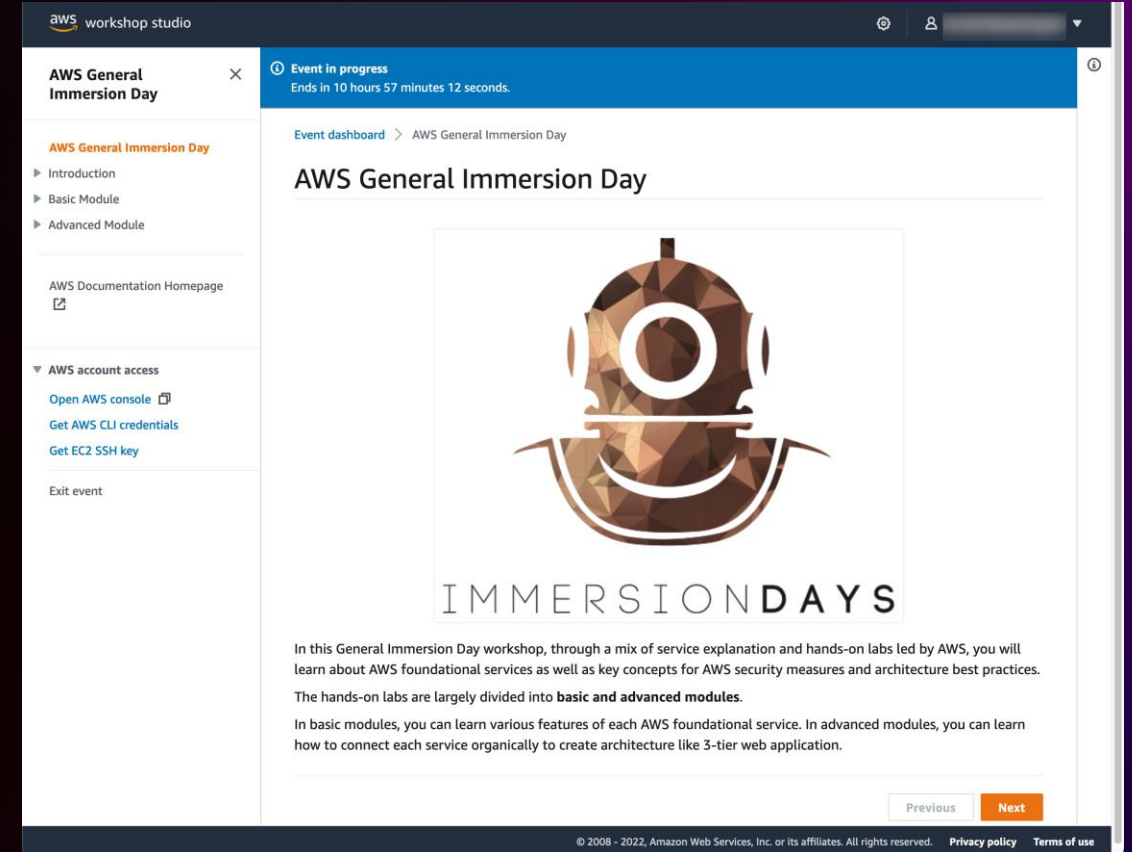
Workshop

Title	Complexity level	AWS services	Topics
AWS General Immersion Day	100	Amazon EC2 Auto Scaling, Amazon Relational Database Service (Amazon RDS), Amazon Simple Storage Service (Amazon S3)	Compute, Databases, Networking & Content Delivery, Storage

Description
Labs to learn AWS foundational services as well as key concepts for AWS security measures and architecture best practices.

Get started >

© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy policy Terms of use




aws workshop studio

Event in progress
Ends in 10 hours 57 minutes 12 seconds.

Event dashboard > AWS General Immersion Day

AWS General Immersion Day



IMMERSION DAYS

In this General Immersion Day workshop, through a mix of service explanation and hands-on labs led by AWS, you will learn about AWS foundational services as well as key concepts for AWS security measures and architecture best practices.

The hands-on labs are largely divided into **basic and advanced modules**.

In basic modules, you can learn various features of each AWS foundational service. In advanced modules, you can learn how to connect each service organically to create architecture like 3-tier web application.

Previous Next

© 2008 - 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy policy Terms of use

Workshop scenario

The story

AnyCompany offers a successful API service on AWS used by thousands of businesses; its customers are asking for IPv6 support, and AnyCompany has committed to delivering it

Customers will transition to IPv6 at different times, so AnyCompany must provide dual-stack (IPv4 & IPv6) compatibility for the foreseeable future

Example Corp uses the AnyCompany API service as part of its own corporate applications; Example Corp is exhausting its private IPv4 address space, and there is a corporate initiative to migrate to IPv6-only services across the enterprise

Example Corp deploys their corporate applications in AWS. Each corporate application has its own VPC. Example Corp connects to the AnyCompany API service from their shared services VPC using AWS PrivateLink. Example Corp VPCs connect internally using AWS Transit Gateway.

The job: AnyCompany

As AnyCompany, you will

- Convert an existing IPv4-only VPC to dual-stack and launch IPv6-only instances (Module 1)
- Make your API service dual-stack using a load balancer listening on TCP port 80 for users on the Internet (Module 2)
- Make your dual-stack API service available over AWS PrivateLink endpoint (Module 3)

The job: Example Corp

As Example Corp, you will

- Consume the AnyCompany API service in your shared services VPC privately over IPv4 and IPv6 (Module 3)
- Establish private IPv6 connectivity between the application VPC and the shared services VPC (Module 4)
- Deploy an internal-facing application via load balancer in your application VPC; the application must be accessible on HTTP port 80 (Module 5)
- Consume the AnyCompany API service over IPv6 from your application using existing connectivity (Module 5)

Workshop overview

Participant Account



Instance Profile for
SSM

Security
Group for
EC2
HTTP

Application VPC

10.3.0.0/16 + 2001:db8:1234:3c00::/56

AZ-A

Private IPv6 subnet
2001:db8:1234:3c06::/64



IPv6 EC2

Dualstack TGW subnet
10.3.0.0/24 +
2001:db8:1234:3c00::/64

AZ-B

Private IPv6 subnet
2001:db8:1234:3c07::/64



IPv6 EC2

Dualstack TGW subnet
10.3.1.0/24 +
2001:db8:1234:3c01::/64

AZ-A

Dualstack TGW subnet
10.2.4.0/24 +
2001:db8:1234:2b04::/64

Dualstack Private subnet
10.2.2.0/24 +
2001:db8:1234:2b02::/64

AZ-B

Dualstack TGW subnet
10.2.5.0/24 +
2001:db8:1234:2b05::/64

Dualstack Private subnet
10.2.3.0/24 +
2001:db8:1234:2b03::/64

Service Provider VPC

10.1.0.0/16

AZ-A

Public subnet
10.1.0.0/24



NGW

Private IPv4 subnet
10.1.2.0/24



IPv4 EC2

AZ-B

Public subnet
10.1.1.0/24



NGW

Private IPv4 subnet
10.1.3.0/24



IPv4 EC2



© 2022, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Getting started

- Option 1: Event URL: <https://catalog.workshops.aws/join>
 - Event Access Code: **9426-04d0d9-0b**
- Option 2: Shortened URL: <https://s12d.com/net202>
- Workshop URL: <https://catalog.workshops.aws/ipv6-on-aws/>
- Use your laptop or share with a partner



Resources

IPv6 Landing page



List of AWS services that support IPv6



IPv6 on AWS whitepaper



Thank you!

Alan Halachmi

[linkedin.com/in/alanhalachmi/](https://www.linkedin.com/in/alanhalachmi/)

Rohit Aswani

[linkedin.com/in/aswanirohit/](https://www.linkedin.com/in/aswanirohit/)



Please complete the session survey in the **mobile app**

