aws

AWS Local Zones

AWS Local Zones: User Guide

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What is AWS Local Zones?

AWS Local Zones places compute, storage, database, and other select AWS resources close to large population and industry centers. You can use Local Zones to provide your users with low-latency access to your applications.

Why use AWS Local Zones?

Here are some reasons to use AWS Local Zones.

- **Run low-latency applications at the edge** — Build and deploy applications close to end users to enable real-time gaming, live streaming, augmented and virtual reality (AR/VR), virtual workstations, and more.

- **Simplify hybrid cloud migrations** — Migrate your applications to a nearby AWS Local Zone, while still meeting the low-latency requirements of hybrid deployment.

- **Meet stringent data residency requirements** — Comply with state and local data residency requirements in sectors such as healthcare, financial services, iGaming, and government.

Deploying in Local Zones

You can manage your AWS resources in a Local Zone using the following options:

- **AWS Management Console** — Provides a web interface that you can use to manage your Local Zones and create resources in your Local Zones.

- **AWS Command Line Interface (AWS CLI)** — Provides commands for a broad set of AWS services, including Amazon VPC, and is supported on Windows, macOS, and Linux. The services that you use in Local Zones continue to use their own namespaces. For example, Amazon EC2 uses the "ec2" namespace, and Amazon EBS uses the "ebs" namespace. For more information, see AWS Command Line Interface.

- **AWS SDKs** — Provides language-specific APIs and takes care of many of the connection details, such as calculating signatures, handling request retries, and handling errors. For more information, see AWS SDKs.

Pricing for AWS Local Zones

There's no additional charge for enabling Local Zones. You pay only for the resources that you deploy in your Local Zones. AWS resources in Local Zones have different prices than they do in parent AWS Regions. For more information, see [AWS Local Zones pricing](#).

AWS Local Zones concepts

These are the essential concepts in AWS Local Zones:

- **Local Zone** — An extension of an AWS Region in geographic proximity to your users, where the Local Zone infrastructure is deployed.

- **VPC** — A virtual private cloud (VPC) is a virtual network that closely resembles a traditional network that you'd operate in your own data center. You create subnets in your VPCs and deploy AWS resources, such as Amazon EC2 instances, in your subnets. A VPC can span Availability Zones, Local Zones, and Wavelength Zones.

- **Local Zone subnet** — A subnet that you create in a Local Zone. You can deploy supported AWS resources in your Local Zone subnets.

- **Network Border Group** — A unique group from which AWS advertises public IP addresses. It consists of Availability Zones, Local Zones, or Wavelength Zones. A pool of public IP addresses can be explicitly allocated for use in a network border group. Once provisioned, IP addresses cannot move between network border groups. For example, the `us-west-2-lax-1` network border group consists of two Local Zones in Los Angeles, and the `us-east-1-bos-1` network border group consists of a single Local Zone in Boston. You can move an IP address between the two Los Angeles Local Zones, but you cannot move an IP address from a Los Angeles Local Zone to the Boston Local Zone.

  When creating a subnet, you will find the network border group for the Local Zones in the **Availability Zone** drop-down list.

- **Parent Region** — The Region that handles some of the Local Zone and Wavelength Zone control plane operations, such as API calls.

- **Parent Zone ID** — The ID of the zone that handles some of the Local Zone and Wavelength Zone control plane operations, such as API calls

For more information, see:

- [AWS Site-to-Site VPN concepts](#) in the *AWS Site-to-Site VPN User Guide*.
- [Route table concepts](#) in the *Amazon VPC User Guide*.

How AWS Local Zones work

A Local Zone is an extension of an AWS Region in geographic proximity to your users. Local Zones have their own connections to the internet and support Direct Connect, so that resources created in a Local Zone can serve applications that require low latency.

To use a Local Zone, you must first enable it. Next, you create a subnet in the Local Zone. Finally, you launch resources in the Local Zone subnet. For more detailed instructions, see *Getting started*.

The following diagram illustrates an account with a VPC in the AWS Region `us-west-2` that is extended to the Local Zone `us-west-2-lax-1`. Each zone in the VPC has one subnet, and each subnet has one EC2 instance.
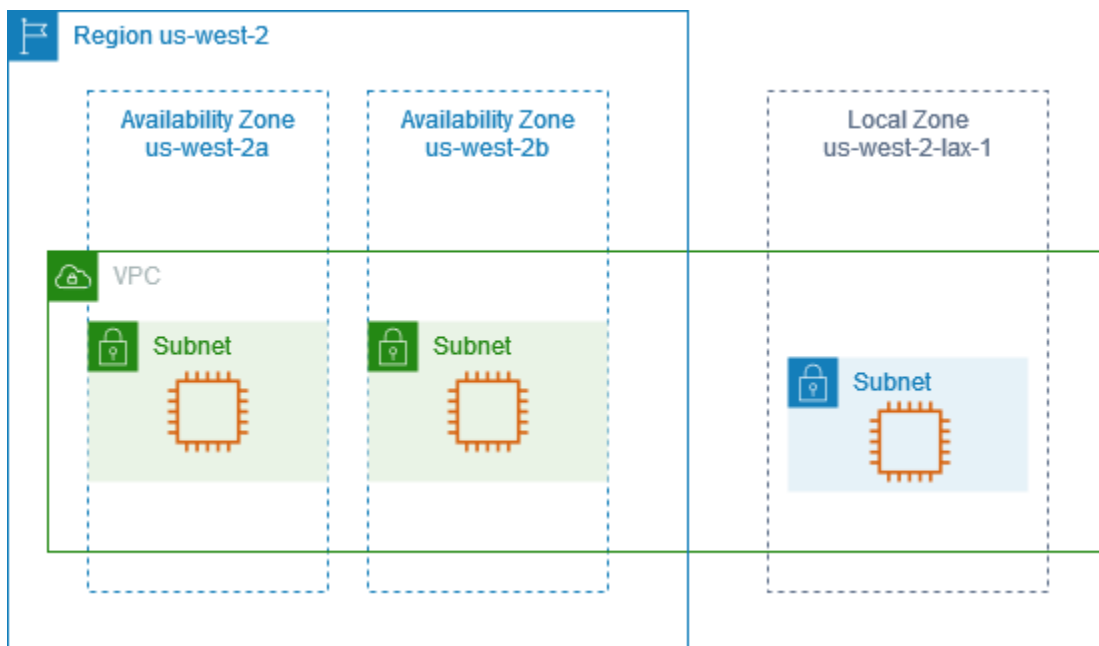
AWS resources supported in Local Zones

Creating a resource in a Local Zone subnet puts it close to your users. For a list of services with resources that are supported in Local Zones, see AWS Local Zones features.

Considerations

- Local Zone subnets follow the same routing rules as Availability Zone subnets, including the use of route tables, security groups, and network ACLs.

- Outbound internet traffic leaves a Local Zone from the Local Zone.

- Network traffic will hairpin to the AWS Region when connecting from an on-premises location into a Local Zone using a Transit Gateway.

- You cannot select a subnet from a Local Zone while creating a Cloud WAN or transit gateway VPC attachment. Doing so will result in an error.

- Traffic that is destined for a subnet in a Local Zone using Direct Connect does not travel through the parent Region of the Local Zone. Instead, traffic takes the shortest path to the Local Zone. This decreases latency and helps make your applications more responsive.

  If you require a more resilient connection, implement more than one Direct Connect between your on-premises locations and the Local Zone. For more information on building resilience with Direct Connect, see [Direct Connect Resiliency Recommendations](#).

- The following Local Zones support IPv6: `us-east-1-atl-2a`, `us-east-1-chi-2a`, `us-east-1-dfw-2a`, `us-east-1-iah-2a`, `us-east-1-mia-2a`, `us-east-1-nyc-2a`, `us-west-2-lax-1a`, `us-west-2-lax-1b`, and `us-west-2-phx-2a`.

- The following Local Zones support edge association with virtual private gateway (VGW): `us-east-1-atl-2a`, `us-east-1-chi-2a`, `us-east-1-dfw-2a`, `us-east-1-iah-2a`, `us-east-1-mia-2a`, `us-east-1-nyc-2a`, `us-west-2-lax-1a`, `us-west-2-lax-1b`, and `us-west-2-phx-2a`.

  To understand edge association and other route-table concepts, see [Route table concepts](#) in the *Amazon VPC User Guide*.

  To understand virtual private gateway and other AWS Site-to-Site VPN concepts, see [Concepts](#) in the *AWS Site-to-Site VPN User Guide*.

- You cannot create VPC endpoints inside Local Zone subnets.

- The AWS Site-to-Site VPN is not available in Local Zones. Use a software-based VPN to establish a site-to-site VPN connection into a Local Zone.

- Generally, the Maximum Transmission Unit (MTU) is as follows:

  - 9001 bytes between Amazon EC2 instances in the same Local Zone.

  - 1500 bytes between an internet gateway and a Local Zone.

  - 1468 bytes between Direct Connect and a Local Zone.

  - 1300 bytes between an Amazon EC2 instance in a Local Zone and an Amazon EC2 instance in the Region for most Local Zones except:

    - 9001 bytes for `us-west-2-lax-1a` and `us-west-2-lax-1b`

- 8801 bytes for `us-east-1-atl-2a`, `us-east-1-chi-2a`, `us-east-1-dfw-2a`, `us-east-1-iah-2a`, `us-east-1-mia-2a`, `us-east-1-nyc-2a`, and `us-west-2-phx-2a`

Resources

Learn how to get started with AWS Local Zones with the following resources:

- [Getting started](#)
- [Get Started Deploying Low Latency Applications with AWS Local Zones](#)

Available Local Zones

The code for a Local Zone is the code of its parent region followed by an identifier for its location. For example, `us-west-2-lax-1a` is in Los Angeles where `us-west-2` is the parent region code and `lax-1a` is the location identifier.

For more information on Local Zone terms, see [Concepts](#)

The following Local Zones are available:

Local Zone Name	Local Zone Code	Local Zone ID	Network Border Group	Parent Region Code	Parent Zone ID
Argentina (Buenos Aires)	`us-east-1-bue-1a`	`use1-bue1-az1`	`us-east-1-bue-1`	`us-east-1`	`use1-az2`
Australia (Perth)	`ap-southeast-2-per-1a`	`apse2-per1-az1`	`ap-southeast-2-per-1`	`ap-southeast-2`	`apse2-az1`
Chile (Santiago)	`us-east-1-scl-1a`	`use1-scl1-az1`	`us-east-1-scl-1`	`us-east-1`	`use1-az1`
Denmark (Copenhagen)	`eu-north-1-cph-1a`	`eun1-cph1-az1`	`eu-north-1-cph-1`	`eu-north-1`	`eun1-az2`
Finland (Helsinki)	`eu-north-1-hel-1a`	`eun1-hel1-az1`	`eu-north-1-hel-1`	`eu-north-1`	`eun1-az1`
Germany (Hamburg)	`eu-central-1-ham-1a`	`euc1-ham1-az1`	`eu-central-1-ham-1`	`eu-central-1`	`euc1-az3`

Local Zone Name	Local Zone Code	Local Zone ID	Network Border Group	Parent Region Code	Parent Zone ID
India (Delhi)	ap-south-1-del-1a	aps1-del1-az1	ap-south-1-del-1	ap-south-1	aps1-az3
India (Kolkata)	ap-south-1-ccu-1a	aps1-ccu1-az1	ap-south-1-ccu-1	ap-south-1	aps1-az1
México (Querétaro)	us-east-1-qro-1a	use1-qro1-az1	us-east-1-qro-1	us-east-1	use1-az1
New Zealand (Auckland)	ap-southeast-2-akl-1a	apse2-akl1-az1	ap-southeast-2-akl-1	ap-southeast-2	apse2-az2
Nigeria (Lagos)	af-south-1-los-1a	afs1-los1-az1	af-south-1-los-1	af-south-1	afs1-az1
Oman (Muscat)	me-south-1-mct-1a	mes1-mct1-az1	me-south-1-mct-1	me-south-1	mes1-az1
Peru (Lima)	us-east-1-lim-1a	use1-lim1-az1	us-east-1-lim-1	us-east-1	use1-az2
Philippines (Manila)	ap-southeast-1-mnl-1a	apse1-mnl1-az1	ap-southeast-1-mnl-1	ap-southeast-1	apse1-az1

Local Zone Name	Local Zone Code	Local Zone ID	Network Border Group	Parent Region Code	Parent Zone ID
Poland (Warsaw)	`eu-central-1-waw-1a`	`euc1-waw1-az1`	`eu-central-1-waw-1`	`eu-central-1`	`euc1-az3`
Taiwan (Taipei)	`ap-northeast-1-tpe-1a`	`apne1-tpe1-az1`	`ap-northeast-1-tpe-1`	`ap-northeast-1`	`apne1-az2`
Thailand (Bangkok)	`ap-southeast-1-bkk-1a`	`apse1-bkk1-az1`	`ap-southeast-1-bkk-1`	`ap-southeast-1`	`apse1-az1`
US East (Atlanta) 2	`us-east-1-atl-2a`	`use1-atl2-az1`	`us-east-1-atl-2`	`us-east-1`	`use1-az5`
US East (Atlanta)*	`us-east-1-atl-1a`	`use1-atl1-az1`	`us-east-1-atl-1`	`us-east-1`	`use1-az4`
US East (Boston)	`us-east-1-bos-1a`	`use1-bos1-az1`	`us-east-1-bos-1`	`us-east-1`	`use1-az4`
US East (Chicago) 2	`us-east-1-chi-2a`	`use1-chi2-az1`	`us-east-1-chi-2`	`us-east-1`	`use1-az6`
US East (Chicago)*	`us-east-1-chi-1a`	`use1-chi1-az1`	`us-east-1-chi-1`	`us-east-1`	`use1-az5`

Local Zone Name	Local Zone Code	Local Zone ID	Network Border Group	Parent Region Code	Parent Zone ID
US East (Dallas) 2	us-east-1-dfw-2a	use1-dfw2-az1	us-east-1-dfw-2	us-east-1	use1-az4
US East (Dallas)*	us-east-1-dfw-1a	use1-dfw1-az1	us-east-1-dfw-1	us-east-1	use1-az1
US East (Houston) 2	us-east-1-iah-2a	use1-iah2-az1	us-east-1-iah-2	us-east-1	use1-az2
US East (Houston) *	us-east-1-iah-1a	use1-iah1-az1	us-east-1-iah-1	us-east-1	use1-az6
US East (Kansas City 2)	us-east-1-mci-1a	use1-mci2-az1	us-east-1-mci-1	us-east-1	use1-az2
US East (Miami) 2	us-east-1-mia-2a	use1-mia2-az1	us-east-1-mia-2	us-east-1	use1-az6
US East (Miami)*	us-east-1-mia-1a	use1-mia1-az1	us-east-1-mia-1	us-east-1	use1-az2
US East (Minneapolis)	us-east-1-msp-1a	use1-msp1-az1	us-east-1-msp-1	us-east-1	use1-az5

Local Zone Name	Local Zone Code	Local Zone ID	Network Border Group	Parent Region Code	Parent Zone ID
US East (New York City) 2	us-east-1-nyc-2a	use1-nyc2-az1	us-east-1-nyc-2	us-east-1	use1-az5
US East (New York City)*	us-east-1-nyc-1a	use1-nyc1-az1	us-east-1-nyc-1	us-east-1	use1-az5
US East (Philadelphia)	us-east-1-phl-1a	use1-phl1-az1	us-east-1-phl-1	us-east-1	use1-az1
US West (Denver)	us-west-2-den-1a	usw2-den1-az1	us-west-2-den-1	us-west-2	usw2-az4
US West (Honolulu)	us-west-2-hnl-1a	usw2-hnl1-az1	us-west-2-hnl-1	us-west-2	usw2-az3
US West (Las Vegas)	us-west-2-las-1a	usw2-las1-az1	us-west-2-las-1	us-west-2	usw2-az3
US West (Los Angeles)	us-west-2-lax-1a	usw2-lax1-az1	us-west-2-lax-1	us-west-2	usw2-az2
US West (Los Angeles)	us-west-2-lax-1b	usw2-lax1-az1	us-west-2-lax-1	us-west-2	usw2-az4

Local Zone Name	Local Zone Code	Local Zone ID	Network Border Group	Parent Region Code	Parent Zone ID
US West (Phoenix) 2	`us-west-2-phx-2a`	`usw2-phx2-az1`	`us-west-2-phx-2`	`us-west-2`	`usw2-az2`
US West (Phoenix) *	`us-west-2-phx-1a`	`usw2-phx1-az1`	`us-west-2-phx-1`	`us-west-2`	`usw2-az2`
US West (Portland)	`us-west-2-pdx-1a`	`usw2-pdx1-az1`	`us-west-2-pdx-1`	`us-west-2`	`usw2-az3`
US West (Seattle)	`us-west-2-sea-1a`	`usw2-sea1-az1`	`us-west-2-sea-1`	`us-west-2`	`usw2-az1`

> ⓘ **Note**
>
>   * Contact Support to request access.

For the complete list of supported and announced Local Zones, see [AWS Local Zones Locations](#).

Find your Local Zones using the AWS CLI

Use the [describe-availability-zones](#) command to get a details of the Local Zones available in a specific Region, for your account.

The following example shows how to run the `describe-availability-zones` command:

```
aws ec2 describe-availability-zones \
  --region us-west-2 \
  --filters Name=zone-type,Values=local-zone \
  --all-availability-zones
```

The following example shows an output of the `describe-availability-zones` command:

```
{
            "State": "available",
            "OptInStatus": "opted-in",
            "Messages": [],
            "RegionName": "us-west-2",
            "ZoneName": "us-west-2-lax-1a",
            "ZoneId": "usw2-lax1-az1",
            "GroupName": "us-west-2-lax-1",
            "NetworkBorderGroup": "us-west-2-lax-1",
            "ZoneType": "local-zone",
            "ParentZoneName": "us-west-2a",
            "ParentZoneId": "usw2-az2"
        },
        {
            "State": "available",
            "OptInStatus": "opted-in",
            "Messages": [],
            "RegionName": "us-west-2",
            "ZoneName": "us-west-2-lax-1b",
            "ZoneId": "usw2-lax1-az2",
            "GroupName": "us-west-2-lax-1",
            "NetworkBorderGroup": "us-west-2-lax-1",
            "ZoneType": "local-zone",
            "ParentZoneName": "us-west-2d",
            "ParentZoneId": "usw2-az4"
        }
```

Getting started with AWS Local Zones

To get started with AWS Local Zones, you must first enable a Local Zone through the Amazon EC2 console or the AWS CLI. Next, create a subnet in a VPC in the parent Region, specifying the Local Zone when you create it. Finally, create AWS resources in the Local Zone subnet.

Tasks

- Step 1: Enable a Local Zone
- Step 2: Create a Local Zone subnet
- Step 3: Create a resource in your Local Zone subnet
- Step 4: Clean up

Step 1: Enable a Local Zone

You can use the Amazon EC2 console or a command line interface to determine which Local Zones are available for your account, and then enable the Local Zone that you want to use.

To enable a Local Zone using the console

1. Open the Amazon EC2 console at https://console.aws.amazon.com/ec2/.
2. From the navigation bar, choose the **Regions** selector and then choose the parent Region.
3. From the Amazon EC2 console dashboard, in the **Account attributes** box, choose **Zones**.
4. (Optional) To filter the list of zones, choose the **All Zones** filter and then **Local Zones**.
5. Select the row of the Local Zone that you want to use.
6. Choose **Actions**, **Manage Zone group**.
7. On the **Manage zone group** pop-up, select **Enable**.
8. Choose **Update**.
9. To confirm that you want to enable the Local Zone, enter **Enable**.
10. Choose **Enable zone group**.

To enable a Local Zone using the AWS CLI

Use the describe-availability-zones command as follows to describe all Local Zones in the specified Region.

```
aws ec2 describe-availability-zones \
  --region us-west-2 \
  --filters Name=zone-type,Values=local-zone \
  --all-availability-zones
```

Use the [modify-availability-zone-group](#) command as follows to enable a specific Local Zone.

```
aws ec2 modify-availability-zone-group \
  --region us-west-2 \
  --group-name us-west-2-lax-1 \
  --opt-in-status opted-in
```

Step 2: Create a Local Zone subnet

When you add a subnet, you must specify an IPv4 CIDR block for the subnet from the range of your VPC. You can optionally specify an IPv6 CIDR block for a subnet if there is an IPv6 CIDR block associated with the VPC. You can specify the Local Zone where the subnet resides. You can have multiple subnets in the same Local Zone.

To add a Local Zone subnet to a VPC using the console

1. Open the Amazon VPC console at https://console.aws.amazon.com/vpc/.

2. From the navigation bar, choose the **Regions** selector and then choose the parent Region.

3. In the navigation pane, choose **Subnets**.

4. Choose **Create subnet**.

5. For **VPC ID**, select the VPC.

6. For **Subnet name**, enter a name for your subnet. Doing so creates a tag with a key of Name and the value that you specify.

7. For **Availability Zone**, choose the Local Zone that you enabled.

8. Specify the IPv4 CIDR block for the subnet.

9. (Optional) Specify an IPv6 CIDR block for the subnet. This option is available only if an IPv6 CIDR block is associated with the VPC.

10. (Optional) To add a tag, enter the tag key and tag value. Choose **Add new tag** to add another tag.

11. Choose **Create subnet**.

To add a Local Zone subnet to a VPC using the AWS CLI

Use the [create-subnet](#) command as follows to create a subnet for the specified VPC in the specified Local Zone.

```
aws ec2 create-subnet \
   --region us-west-2 \
   --availability-zone us-west-2-lax-1a \
   --vpc-id vpc-081ec835f303f720e
```

Step 3: Create a resource in your Local Zone subnet

After you create a subnet in a Local Zone, you can deploy AWS resources in the Local Zone. For example, the following procedure shows how to launch an Amazon EC2 instance in a Local Zone.

To launch an Amazon EC2 instance in a Local Zone subnet using the console

1. Open the Amazon EC2 console at https://console.aws.amazon.com/ec2/.

2. From the Amazon EC2 console dashboard, in the **Launch instance** box, choose **Launch instance**.

3. Under **Name and tags**, enter a descriptive name for the instance (for example, *my-lz-instance*). Doing so creates a tag with a key of Name and the value that you specify.

4. Under **Application and OS Images (Amazon Machine Image)**, do the following:

    a. Select an operating system for your instance.

    b. Select the **Amazon Machine Image (AMI)**. An *Amazon Machine Image (AMI)* is a basic configuration that serves as a template for your instance.

    c. Select the **Architecture**.

5. Under **Instance type**, from the **Instance type** list, select the hardware configuration for your instance that's supported in a Local Zone. For example, the t3.micro instance type.

6. Under **Key pair (login)**, choose an existing key pair or create a new one.

    > ⚠️ **Warning**
    >
    > Do not choose **Proceed without a key pair (Not recommended)**. If you launch your instance without a key pair, then you can't connect to it.

7. Next to **Network settings**, choose **Edit**, and then:

    a. Select your VPC.

    b. Select your Local Zone subnet.

    c. Enable or disable **Auto-assign public IP**.

    d. Create a security group or select an existing one.

8. You can keep the default selections for the other configuration settings for your instance. To determine the storage types that are supported, see the *Compute and storage* section in AWS Local Zones features.

9. Review a summary of your instance configuration in the **Summary** panel, and when you're ready, choose **Launch instance**.

10. A confirmation page lets you know that your instance is launching. Choose **View all instances** to close the confirmation page and return to the console.

11. On the **Instances** screen, you can view the status of the launch. It takes a short time for an instance to launch. When you launch an instance, its initial state is `pending`. After the instance starts, its state changes to `running` and it receives a public DNS name. If the **Public IPv4 DNS** column is hidden, choose the settings icon (

    ⚙

) in the top-right corner, turn on **Public IPv4 DNS**, and choose **Confirm**.

12. It can take a few minutes for the instance to be ready for you to connect to it. Check that your instance has passed its status checks; you can view this information in the **Status check** column.

To launch an EC2 instance in a Local Zone subnet using the AWS CLI

Use the run-instances command as follows to launch an instance in the specified Local Zone subnet.

```
aws ec2 run-instances \
  --region us-west-2 \
  --subnet-id subnet-08fc749671b2d077c \
  --instance-type t3.micro \
  --image-id ami-0abcdef1234567890 \
  --security-group-ids sg-0b0384b66d7d692f9 \
  --key-name my-key-pair
```

Step 4: Clean up

When you are finished with a Local Zone, delete the resources in the Local Zone. Then contact AWS Support to disable it.

Connectivity options for Local Zones

There are many ways to connect users and applications to resources running in a Local Zone.

You build Local Zones into your network architecture in the same way you choose an Availability Zone. Your workloads use the same application programming interfaces (APIs), security models, and toolsets. You can extend any VPC from a parent Region into a Local Zone by creating a new subnet and assigning it to the Local Zone. When you create a subnet in AWS Local Zones, we extend your VPC to that Local Zone and your VPC treats the subnet the same as any subnet in any other Availability Zone and automatically adjusts any relevant gateways and route tables.

The following diagram shows a network with resources running in two Availability Zones and in a Local Zone within an AWS Region. The Local Zone network can have public or private subnets, internet gateways, and Direct Connect gateways (DXGW). Workloads running in the Local Zone can directly access workloads or AWS services that live in any AWS Region.
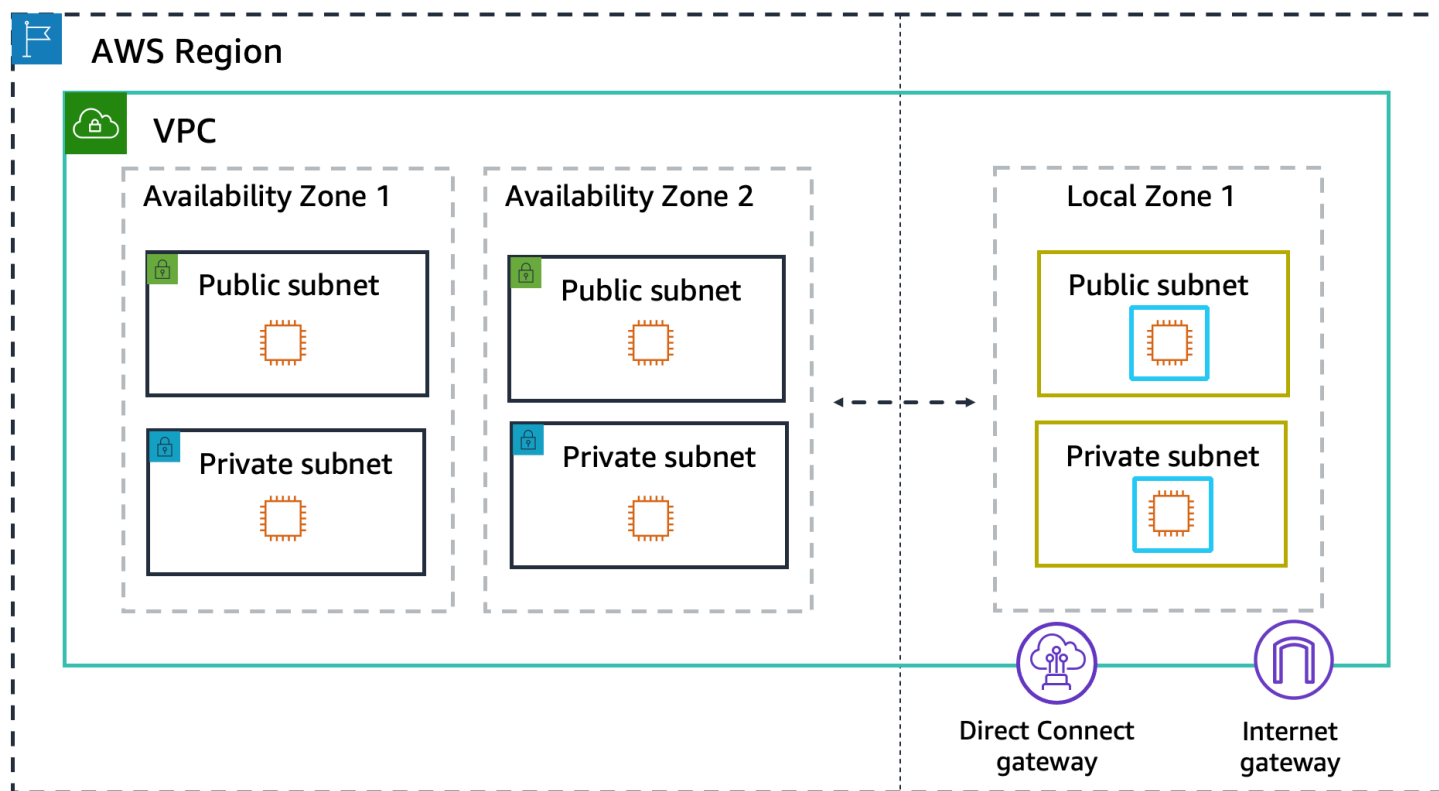
The following sections explain the different ways to connect to resources in a Local Zone.
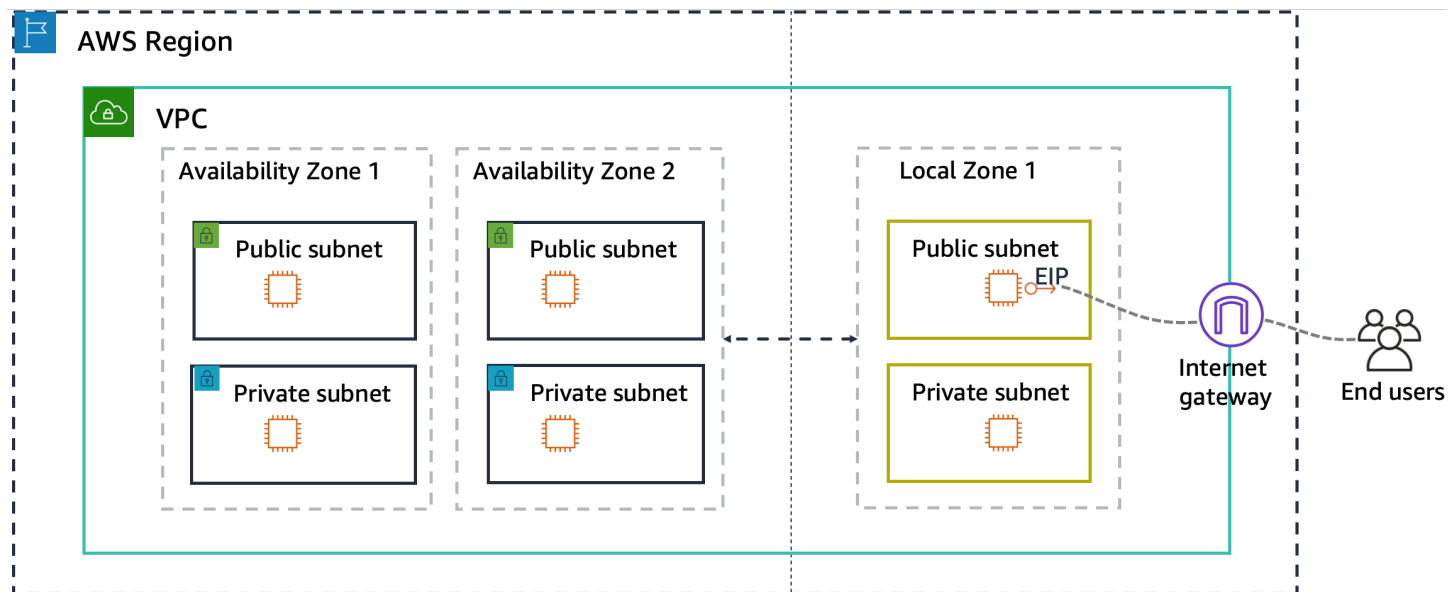
Connection options

- [Internet gateway connection in Local Zones](#)

- [NAT gateway connection in Local Zones](#)

- [VPN connection in Local Zones](#)

- [Direct Connect in Local Zones](#)

- [Transit gateway connection between Local Zones](#)

- [Transit gateway connection in Local Zones](#)

Internet gateway connection in Local Zones

Internet gateways provide two-way public connectivity to applications running in AWS Regions and/or in Local Zones. For more information, see [Internet gateways](#) in the *Amazon VPC User Guide*.

In the following diagram, end users access a public-facing application in Local Zone 1. Traffic goes directly to the internet gateway in Local Zone 1 without going through the parent AWS Region. Use this type of connectivity for low-latency use-cases where you want your public-facing applications to be closer to end users than an AWS Region can provide.

For your private applications that require outbound-only connectivity to the internet, use a NAT gateway.

NAT gateway connection in Local Zones

A NAT gateway is a Network Address Translation (NAT) service. It allows your Amazon VPC resources in your private subnets to securely access services outside the subnet, including the

internet, while keeping those private resources inaccessible to any unsolicited traffic. For a list of Local Zones that support NAT gateways, see AWS Local Zones features.

To use NAT gateway to access the internet from your private resources, instantiate your NAT gateway in the public subnet and then route your internet traffic (`0.0.0.0/0` or `::/0`) from the private subnet to the NAT gateway. The NAT gateway translates the private IP address of the traffic coming from your private subnet to the EIP associated with it so that your private resources can access the internet securely.

The NAT gateway only accepts the response traffic from the destinations that are accessed and drops any unsolicited inbound connections. This keeps your private resources inaccessible from the internet.

For more information, see NAT gateways in the *Amazon VPC User Guide*.

The following image shows the traffic flow from a private subnet in a Local Zone to a NAT gateway in a public subnet in the same Local Zone, then to an internet gateway, and to the internet.
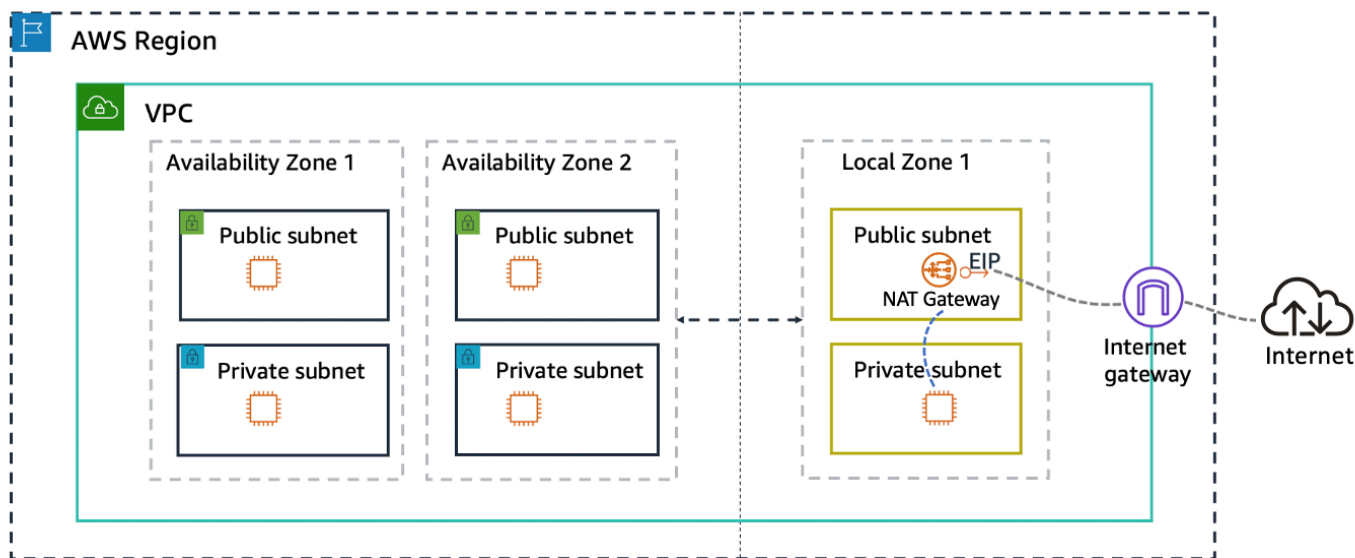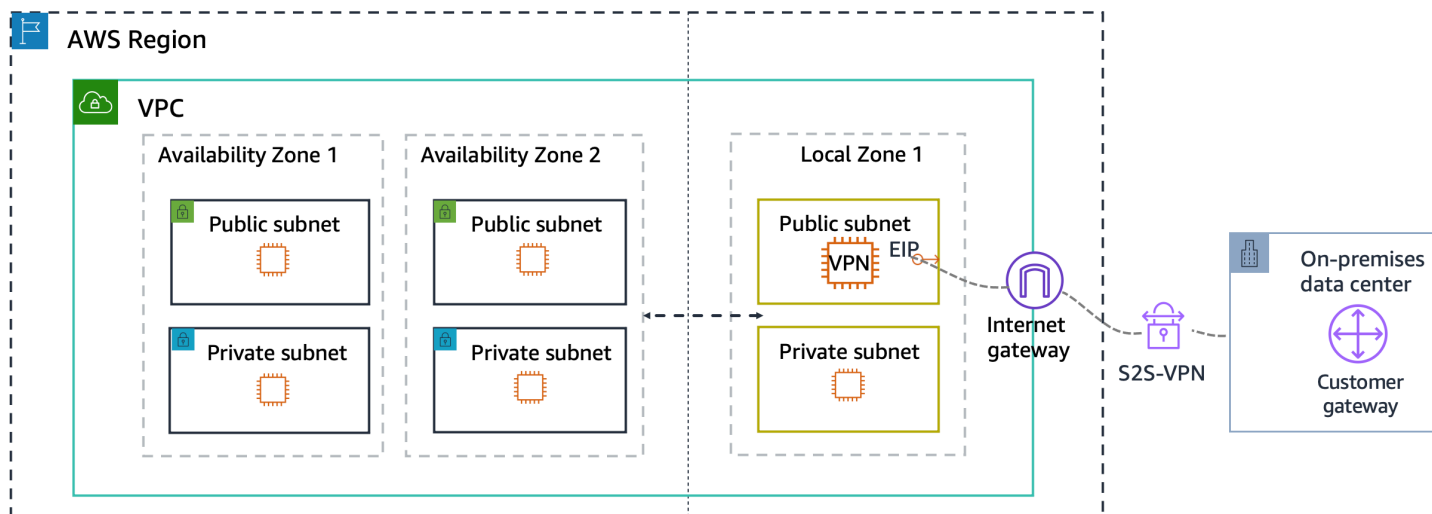

VPN connection in Local Zones

A VPN connection can provide secure, two-way communication between workloads running in an on-premises data center and a Local Zone. For Local Zones, you must deploy a software-based VPN solution on an Amazon EC2 instance. Visit the AWS Marketplace and find VPN solutions that are

ready to run on an Amazon EC2 instance. You'll also need to deploy an internet gateway so that you can establish your VPN connection.

The following diagram shows a data center connected to Local Zone 1 by a software-based VPN solution running on an Amazon EC2 instance in Local Zone 1. This allows for encrypted connectivity from the data center directly into the Local Zone without traffic going through the parent Region.
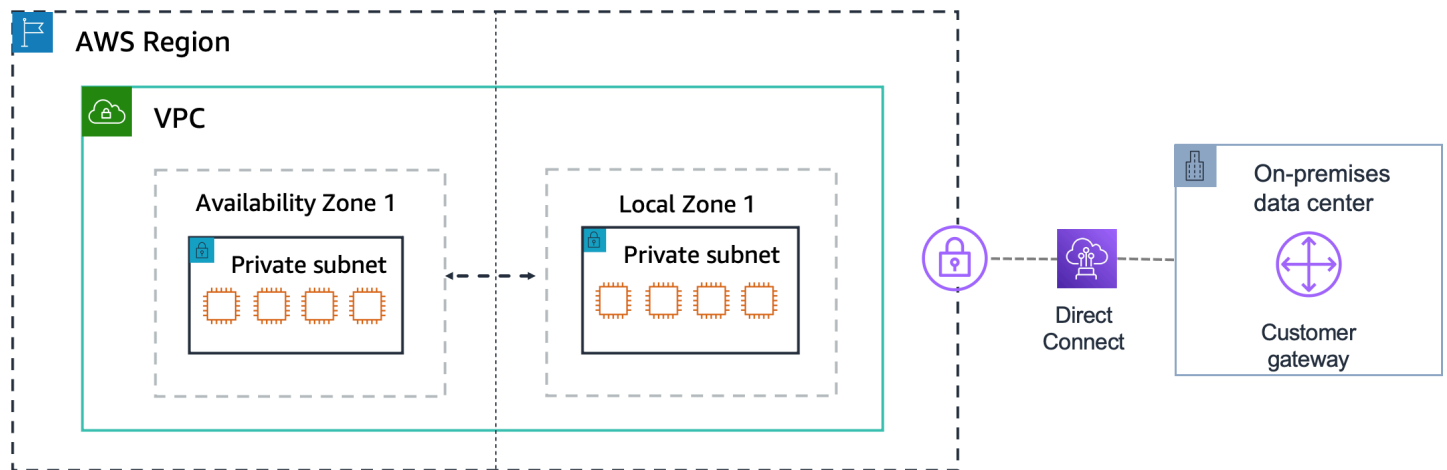

Direct Connect in Local Zones

With Direct Connect, you transfer data privately and directly from your data center into and out of Local Zones using a Public Virtual Interface (VIF) or Private VIF. Direct Connect provides similar benefits to using a software-based VPN on Amazon EC2, but bypasses the public internet and reduces the overheard required to manage the connection to Local Zones.

For more information, see the Direct Connect User Guide.

The following diagram shows a Direct Connect connection between a Local Zones and data center.

During a hybrid cloud migration, you can migrate your applications to Local Zones while using Direct Connect to communicate back to other parts of your applications in the data center. An example is migrating the front end of an application to Amazon EC2, Amazon ECS, or Amazon EKS in a Local Zone and having the back-end database remain in the data center. Eventually, you can migrate the database to the Local Zone and the entire application to an AWS Region.

Transit gateway connection between Local Zones

A transit gateway can be used to connect one Local Zone to another within the same parent Region. For more information about transit gateways, see Connect your VPC to other VPCs and networks using a transit gateway in the *Amazon VPC User Guide*.

The following diagram shows the transit gateway connection between two Local Zones in the same Region.
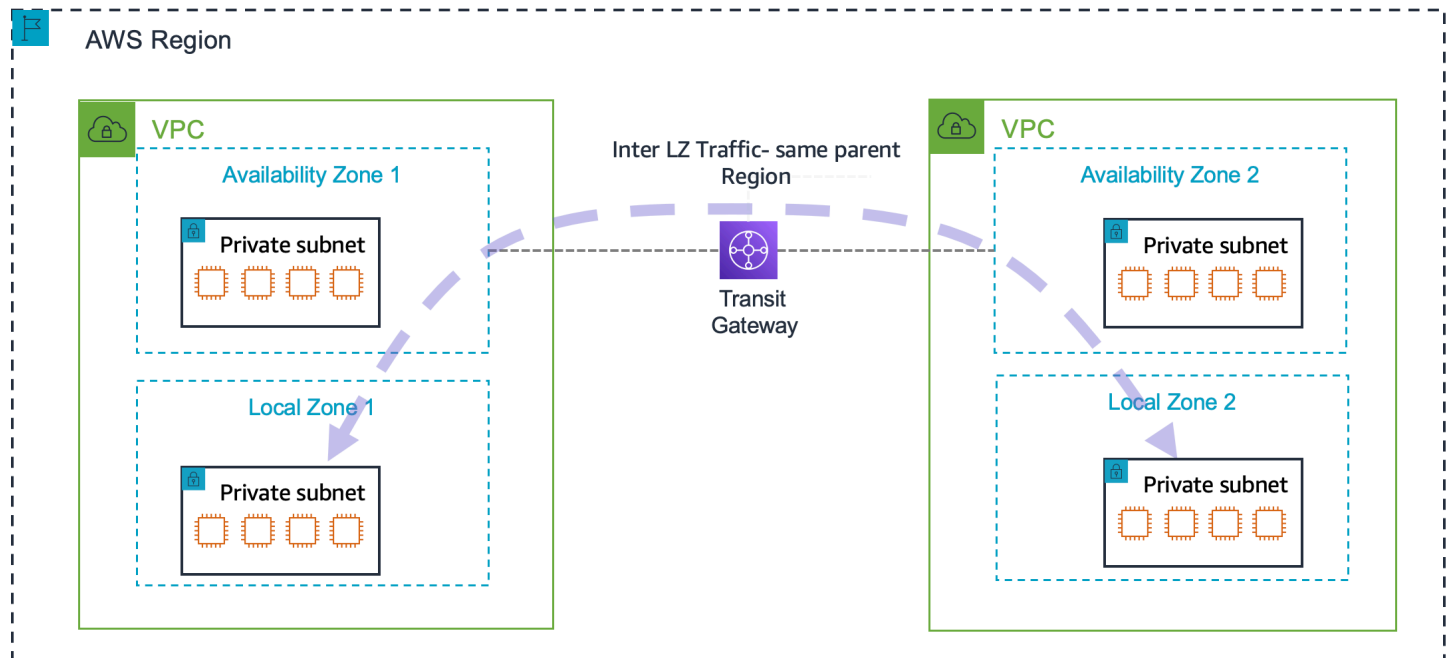
A transit gateway connection between Local Zones is useful when you have workloads in different Local Zones and also require network connectivity between them.

> **ⓘ Note**
>
> You cannot connect a Local Zone to another Local Zone or Outpost that is within the same VPC.

Transit gateway connection in Local Zones

A transit gateway connects your Amazon Virtual Private Cloud and on-premises networks through a central hub. Transit gateways live in AWS Regions. While you can use a transit gateway to connect data centers to a Local Zone, this is not a direct connection.

For more information about transit gateways, see Connect your VPC to other VPCs and networks using a transit gateway in the *Amazon VPC User Guide*.

The following diagram shows the connection from the customer gateway over the Direct Connect into the transit gateway in the AWS Region using a Transit VIF. From there, it connects to the VPC to enable traffic to the Local Zone.
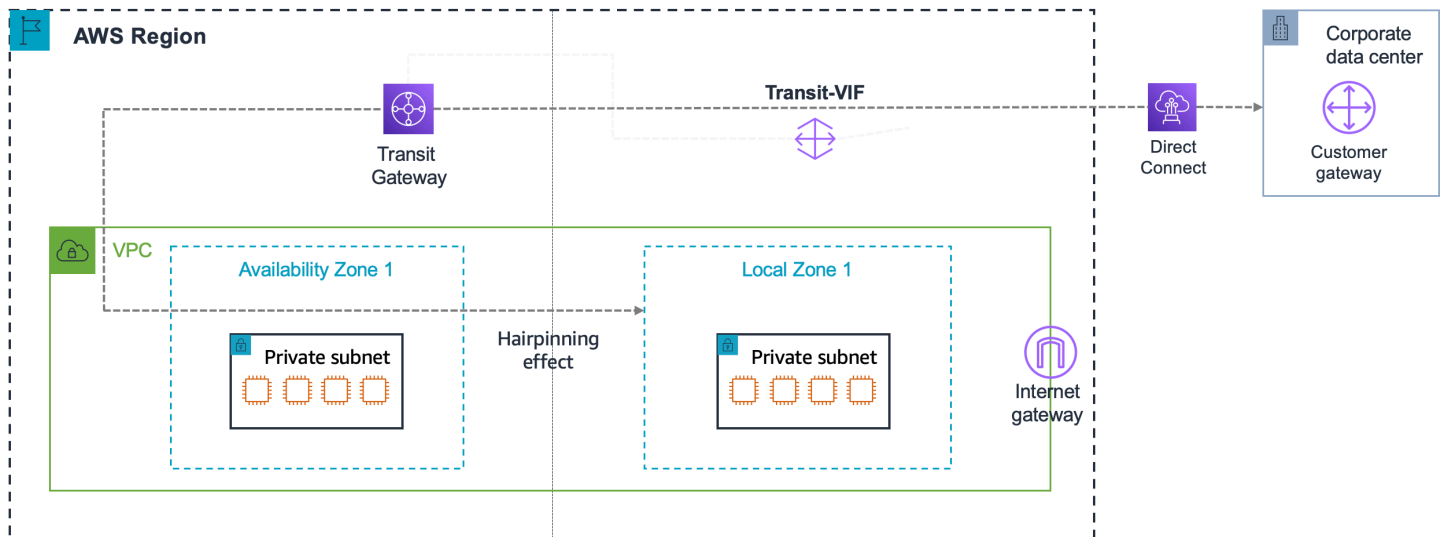
When you use this connectivity option for Local Zones, all traffic from the data center to the Local Zone will first go to the parent Region (also known as "hairpinning") of the destination Local Zone and then to the Local Zone. Using a transit gateway to connect to a Local Zone from your premises is not an ideal path since your data must travel to the Region first, increasing latency.

Document history for the AWS Local Zones user guide

The following table describes the documentation releases for AWS Local Zones.

Change	Description	Date
New Local Zone launch	A new Local Zone is now available in US East (New York City).	January 8, 2025
New Local Zone launch	A new Local Zone is now available in US West (Honolulu).	April 29, 2024
New Local Zone launch	A new Local Zone is now available in US East (Miami) 2.	March 28, 2024
New Local Zone launch	A new Local Zone is now available in US East (Atlanta) 2.	February 26, 2024
New Local Zone launch	A new Local Zone is now available in US East (Houston) 2.	February 5, 2024
New Local Zone launch	A new Local Zone is now available in US East (Chicago) 2.	January 30, 2024
New Local Zone launch	A new Local Zone is now available in US East (Dallas) 2.	November 13, 2023
NAT gateways	NAT gateways are now available in select Local Zones.	August 17, 2023

| New Local Zone launch | A new Local Zone is now available in US West (Phoenix) 2. | July 27, 2023 |
| Initial release | Initial release of the AWS Local Zones User Guide | November 17, 2022 |