

Configure Amazon EC2

- Description : Name of Instance
- Choose a Region : Select Region of the Instance

Description

Choose a location type: [Info](#)

Choose a Region

Region

Location type

Certainly, I can explain the differences between AWS EC2 (Elastic Compute Cloud) Region, Local Zones, and Wavelength Zones in detail:

AWS EC2 Region:

An AWS Region is a geographic area where AWS resources and services are hosted. Each region consists of multiple Availability Zones (AZs), which are essentially isolated data centers. Regions are designed to provide fault tolerance and high availability. Services like EC2 instances, S3 storage, and databases can be deployed in a specific region. Each region is identified by a unique name (e.g., us-east-1, eu-west-2), and resources within a region can communicate with each other over the AWS network backbone.

Local Zones:

Local Zones are an extension of AWS Regions. They are designed to provide low-latency access to AWS services in locations that are closer to end-users, but may not have a full-fledged AWS Region. Local Zones are typically located in metropolitan areas and are connected to the parent AWS Region through a high-bandwidth connection. They can be thought of as a way to place compute and storage resources closer to end-users to reduce latency for applications that require very low latency. While Local Zones provide certain services like EC2 instances and storage, they may have limited service availability compared to full regions.

Wavelength Zones:

Wavelength Zones are similar in concept to Local Zones but have a specific focus on enabling ultra-low latency for mobile and 5G applications. Wavelength Zones are located at the edge of telecommunication carriers' 5G networks. They allow developers to deploy applications that require single-digit millisecond latencies to mobile and connected devices. These zones are optimized for use cases like gaming, augmented reality (AR), virtual reality (VR), and real-time communications.

In summary:

- EC2 Region is a geographical area with multiple Availability Zones for fault tolerance and high availability of AWS resources.
- Local Zones are located in metropolitan areas, providing low-latency access to AWS services for specific regions.
- Wavelength Zones are designed to provide ultra-low latency for mobile and 5G applications by being positioned at the edge of 5G networks.

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Each of these concepts is aimed at addressing different latency and availability requirements for various use cases, from general cloud applications to scenarios where ultra-low latency is critical, such as real-time communications and immersive experiences.

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- **Operating system:** Choose the operating system to run your Amazon EC2 instances on.
 - **Workloads:** Choose the graph that best represents your monthly workload
- 1) **Constant usage:** This workload is suitable for use cases that have a constant, predictable load. This includes use cases such as logging traffic to a website or running processes in the background.
 - 2) **Number of instances:** Please specify the total number of Instances that you need each month.
 - 3) **Daily spike traffic:** This workload is best for usage patterns that peak once a day. This is suitable for scenarios where, for example, you need to run several jobs at midnight or have a morning news spike.
 - 4) **Weekly spike traffic:** This workload is best for patterns that peak once a week. This is suitable for scenarios such as blogs that post once a week and weekly television shows.
 - 5) **Monthly spike traffic:** This workload is best for traffic that spikes once a month, such as monthly invoices, payroll, or other monthly reports.
 - **Baseline:** Enter the minimum number of instances for your workload.
 - **Peak:** Enter the maximum number of instances for your workload.
 - **Duration of peak (hours, minutes):** Enter the amount of days, hours, and minutes your instances are running at peak.
 - **Peak Duration (days, hours, and minutes):** Enter the amount of days, hours, and minutes your instances are running at peak.

The screenshot shows the 'EC2 specifications' configuration page in the AWS console. It includes sections for 'Tenancy' (set to 'Shared Instances'), 'Operating system' (set to 'Linux'), 'Workloads' (with radio buttons for 'Constant usage', 'Daily spike traffic', 'Weekly spike traffic', and 'Monthly spike traffic', where 'Constant usage' is selected), and 'Number of instances' (a text input field containing the number '1').

EC2 specifications

In AWS EC2 (Elastic Compute Cloud), the tenancy type determines how your virtual instances (EC2 instances) are physically located and isolated within the underlying hardware infrastructure. There are three main tenancy types: shared tenancy, dedicated instances, and dedicated hosts. Here's a breakdown of the differences:

Shared Instances:

- **Default Tenancy:** When you launch an EC2 instance, it's launched on shared tenancy by default.

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- **Characteristics:** Instances from multiple AWS accounts can run on the same physical hardware. This is achieved through virtualization, where instances are logically isolated but share the same underlying hardware with instances from other customers.
- **Advantages:** Shared tenancy is cost-effective and convenient for most use cases where strict isolation is not required.

Dedicated Instances:

- **Characteristics:** With dedicated instances, the EC2 instances are launched on physical hardware that is dedicated to your AWS account only. These instances are isolated from instances belonging to other accounts.
- **Advantages:** Dedicated instances can be preferred when you need to ensure regulatory compliance, meet strict security requirements, or have control over the physical placement of your instances. While they provide isolation, they still share the same physical host with other instances from your AWS account.

Dedicated Hosts:

- **Characteristics:** With dedicated hosts, you have full control over the underlying physical server. You launch instances onto specific physical servers, which are dedicated to your AWS account. No other instances from other AWS accounts run on the same host.
- **Advantages:** Dedicated hosts provide the highest level of isolation and control. This option is often used when you need to meet strict compliance and regulatory requirements, or when you have software licensing that requires specific host-level isolation.

In summary:

Shared Tenancy: Instances from different accounts share the same physical hardware through virtualization. This is the default option and is cost-effective for most use cases.

Dedicated Instances: Instances from your account run on dedicated physical hardware, providing isolation from instances of other accounts but still sharing the same host.

Dedicated Hosts: You have exclusive control over the physical host, allowing you to run instances from your account with maximum isolation and control.

The choice of tenancy type depends on your specific requirements, including security, compliance, and software licensing needs. It's important to choose the appropriate tenancy type that aligns with your application's characteristics and compliance considerations.

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EC2 Instances (74)
Based on your inputs, this is the lowest-cost EC2 instance: **a1**
Chosen instance: **a1** | **16vCPU** | **16 Physical cores**
Search instance types

Instance family [Info](#) vCPUs Physical Cores Instance Category

Any family Any vCPUs Any physical cores Any category

Search instance types

- **Instance families**

- 1) C – Compute optimized
- 2) D – Dense storage
- 3) F – FPGA
- 4) G – Graphics intensive
- 5) Hpc – High performance computing
- 6) I – Storage optimized
- 7) Inf – AWS Inferentia
- 8) M – General purpose
- 9) Mac – macOS
- 10) P – GPU accelerated
- 11) R – Memory optimized
- 12) T – Burstable performance
- 13) Trn – AWS Trainium
- 14) U – High memory
- 15) VT – Video transcoding
- 16) X – Memory intensive

- **Processor families**

- 1) a – AMD processors
- 2) g – AWS Graviton processors
- 3) i – Intel processors

- **Additional capabilities**

- 1) d – Instance store volumes
- 2) n – Network and EBS optimized
- 3) e – Extra storage or memory
- 4) z – High performance
- 5) flex – Flex instance

- **vCPUs:** 8 to 448

- **Physical Cores:** 0 to 224

- **Instance Category:** General Purpose, Compute optimized, memory optimize, Storage optimize, GPU instance, Machine learning ASIC instance

- 1) **General purpose:** M6a, M6g, M6gd, M6i, M6id, M6idn, M6in, M7a, M7g, M7gd, M7i, M7i-flex, T4g
- 2) **Compute optimized:** C6a, C6g, C6gd, C6gn, C6i, C6id, C6in, C7g, C7gd, C7gn, Hpc6a
- 3) **Memory optimized:** Hpc6id, R6a, R6g, R6gd, R6i, R6id, R6idn, R6in, R7g, R7gd, X2gd, X2idn, X2iedn
- 4) **Storage optimized:** I4g, I4i, Im4gn, Is4gen

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Payment options

As of my last knowledge update in September 2021, AWS offers various pricing options for EC2 instances to help customers optimize their costs based on their usage patterns and requirements. Keep in mind that AWS services and offerings might have evolved since then. Here's a breakdown of the different

Pricing options you mentioned:

- **Convertible Reserved Instances:**

Convertible Reserved Instances provide more flexibility than Standard Reserved Instances. You can change the instance family, OS, and tenancy as long as the instance value is equal to or greater than the original reservation. They are a good choice when your workload evolves or if you want to take advantage of newer instance types.

- **Compute Savings Plans:**

Compute Savings Plans are even more flexible than Instance Savings Plans. They offer discounts on EC2 instance usage, just like Instance Savings Plans, but they can also be applied to Fargate and Lambda usage. Compute Savings Plans provide more flexibility in how you allocate your committed spend across these different compute services.

- **On-Demand Instances:**

These are instances that you pay for by the hour or second, with no upfront commitment. They are suitable for workloads with unpredictable usage patterns or short-term requirements. On-Demand instances provide flexibility but are generally more expensive compared to other pricing models over a sustained period.

- **Spot Instances:**

Spot Instances allow you to bid on spare EC2 capacity, which can result in significantly lower costs compared to On-Demand instances. However, AWS can terminate your Spot Instances with very short notice (when the spot price goes above your bid or if capacity becomes constrained). Spot Instances are ideal for workloads that are fault-tolerant and can handle interruptions.

- **Standard Reserved Instances:**

Reserved Instances are a way to save costs by committing to use instances for a 1- or 3-year term. They offer substantial discounts compared to On-Demand instances. Standard Reserved Instances provide instance size flexibility but are tied to a specific instance family, OS, and region.

- **EC2 Instance Savings Plans:**

Instance Savings Plans offer more flexibility than Reserved Instances. They provide a discount on instance usage in exchange for committing to a specific amount of compute usage in dollars per hour over a 1- or 3-year term. Unlike Reserved Instances, Savings Plans are more flexible and can be applied to a broader range of instance sizes and families within a region.

Each pricing model has its own use case and benefits. Choosing the right pricing option depends on your workload's characteristics, usage patterns, budget constraints, and willingness to commit to longer-term contracts. It's essential to analyze your workload and cost requirements to determine which option will provide the best balance between cost savings and flexibility for your specific use case. Always check the latest AWS documentation or contact AWS support for the most up-to-date information on pricing and offerings.

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When you're using Amazon Web Services (AWS) Elastic Compute Cloud (EC2) instances, you have the flexibility to choose between different payment options based on your budget, financial planning, and usage patterns. The payment options include No Upfront, Partial Upfront, and Full Upfront. Let's delve into the differences between these payment options:

No Upfront:

In the "No Upfront" payment option, you don't need to pay any upfront costs when you start using the EC2 instances.

You pay a lower hourly rate for the instances compared to On-Demand pricing, but your overall costs will be higher over the course of the instance's lifetime.

This option is suitable when you want to minimize upfront expenses and are willing to pay a slightly higher price over time.

Partial Upfront:

With the "Partial Upfront" payment option, you make a partial payment upfront, which covers a portion of the instance's total cost.

The remaining cost is then spread out over the instance's usage in the form of a lower hourly rate compared to On-Demand pricing.

This option is a compromise between upfront costs and ongoing costs. It can be beneficial if you have some upfront capital available and want to reduce your ongoing expenses.

Full Upfront:

In the "Full Upfront" payment option, you make a full upfront payment for the entire cost of the instance's usage.

As a result, you benefit from the lowest hourly rates available, significantly reducing the overall cost of the instance's usage.

This option is most cost-effective over the long term if you have the financial capacity to pay the full upfront cost.

- **To help you better understand the differences, here are some key takeaways:**

Upfront Payment: Both the Partial Upfront and Full Upfront options involve an upfront payment, which can help you save on the overall cost of using EC2 instances.

Hourly Rate: In all three options, you pay an hourly rate for using the instances. The rate is generally lower than the On-Demand pricing, regardless of the payment option you choose.

Total Cost: The total cost of using EC2 instances will vary based on the payment option you select. No Upfront has the lowest upfront costs but higher overall costs. Partial Upfront strikes a balance between upfront costs and ongoing costs. Full Upfront offers the lowest total cost over the instance's lifetime.

When deciding on a payment option, consider your budget, cash flow, usage projections, and your organization's financial strategy. Each payment option has its own advantages and trade-offs, so choose the one that aligns best with your needs and preferences.

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▼ Show calculations

Breakeven analysis

A cost-optimized strategy for your utilization is found by calculating the breakeven point when Compute Savings Plans instances are more cost effective to use than On-Demand Instances.

Compute Savings Plans rate for t2.micro in the US East (Ohio) for 1 Year term and No Upfront is 0.0083 USD

Hours in the commitment: 365 days * 24 hours * 1 year = 8760.0000 hours

Total Commitment: 0.0083 USD * 8760 hours = 72.7080 USD

Upfront: No Upfront (0% of 72.708) = 0.0000 USD

Hourly cost for Compute Savings Plans = (Total Commitment - Upfront cost)/Hours in the term: (72.708 - 0.00)/8760 = 0.0083 USD

Normalized Compute Savings Plans monthly price: (0.000000 USD / 12 months) + (0.008300 USD x 730 hours in a month) = 6.059000 USD

On-Demand hourly price: 0.011600 USD

Normalized On-Demand monthly price: 0.011600 USD x 730 hours in a month = 8.468000 USD

Breakeven percentage: 6.059000 USD / 8.468000 USD = 0.71551724137931034482

Breakeven point: 0.71551724137931034482 x 730 hours in month = 522.327586 hours

Utilization summary

For instance utilization over the breakeven point, 522.327586 hours, it is more cost effective to choose Compute Savings Plans instances than On-Demand Instances.

1 Compute Savings Plans instances x 0.000000 upfront cost = 0.000000 USD

Compute Savings Plans instances (upfront): 0.000000 USD

1 instances x 730 hours in a month = 730 Compute Savings Plans instance hours per month

730 Compute Savings Plans instance hours per month x 0.008300 USD = 6.059000 USD

Normalized Compute Savings Plans instances (monthly): 6.059000 USD

0 On-Demand instance hours per month x 0.011600 USD = 0.000000 USD

On-Demand (monthly): 0.000000 USD

0.000000 USD On-Demand (monthly) + 6.059000 USD Normalized Compute Savings Plans instances (monthly) = 6.059000 USD

Total cost (monthly): 6.059000 USD

**Please note that you will pay an hourly commitment for Savings Plans and your usage will be accrued at a discounted rate against this commitment.*

Optional Services:

- Amazon Elastic Block Store (EBS)
- Detailed monitoring
- Data transfer
- Elastic IPs
- Additional costs