**Reserved Instances in Amazon EC2**

Amazon EC2 Reserved Instances (RIs) provide up to 72% savings compared to On-Demand pricing and optional capacity reservations in specific Availability Zones. RIs automatically apply discounted hourly rates when instance attributes match an active RI.

Types of RIs:

Standard RIs: Up to 72% savings, ideal for steady-state usage.

Convertible RIs: Up to 54% savings, with flexibility to change families, OS types, and tenancies if the changes result in equal or higher value RIs.

Key Benefits:

Significant cost savings for predictable workloads.

Capacity reservation in specific Availability Zones.

Flexibility with Convertible RIs to adjust to changing requirements.

**Amazon EC2 Instance Savings Plans**

Amazon EC2 Instance Savings Plans offer up to 72% savings on EC2 usage compared to On-Demand pricing. These plans provide flexibility and cost savings in exchange for a commitment to a consistent amount of usage (measured in $/hour) over a 1- or 3-year term.

Key Features

Flexibility: Change instance type in same families, sizes, operating systems, and tenancies while maintaining discounts.

Cost Efficiency: Significant savings for predictable or steady-state workloads.

Easy Commitment: Commit to a specific usage level, not tied to a specific instance type or region.

**key differences between Reserved Instances (RIs) and EC2 Instance Savings Plans in Amazon EC2**

1. Commitment and Flexibility

Reserved Instances (RIs):

Require a commitment to specific instance attributes such as instance type, region, tenancy, and operating system.

Standard RIs offer up to 72% savings but are less flexible (attributes cannot change).

Convertible RIs provide flexibility to change instance attributes (e.g., instance family or OS) as long as the new configuration equals or exceeds the original commitment value.

EC2 Instance Savings Plans:

Commit to a consistent usage level (measured in $/hour) over 1 or 3 years.

No restrictions on instance type, region, size, OS, or tenancy, offering greater flexibility compared to RIs.

Save up to 72%, similar to RIs.

2. Usage Scope

Reserved Instances (RIs):

Specific to the instance type and configuration you select.

Capacity reservation is available when an RI is tied to a specific Availability Zone.

Best for steady-state workloads with known, fixed requirements.

EC2 Instance Savings Plans:

Discounts apply broadly across EC2, including different instance types, families, regions, and sizes, as long as the total usage is within the committed $/hour.

Best for environments needing flexibility in scaling or migrating workloads.

3. Payment Options

Both options offer All Upfront, Partial Upfront, and No Upfront payment plans, providing flexibility in budget allocation.

4. Capacity Reservation

Reserved Instances (RIs):

Provide a capacity reservation when assigned to a specific Availability Zone.

Ensures availability for critical workloads, especially in high-demand situations.

EC2 Instance Savings Plans:

Do not include capacity reservations.

Primarily focus on cost savings without guaranteeing resource availability.

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| **Aspect** | **Reserved Instances (RIs)** | **EC2 Instance Savings Plans** |
| Commitment and Flexibility | - Commitment to specific instance attributes (type, region, tenancy, OS). | - Commitment to consistent usage ($/hour) over 1 or 3 years. |
| - Standard RIs: Up to 72% savings but no flexibility to change attributes. | - Highly flexible: No restrictions on instance type, region, size, OS, or tenancy. |
| - Convertible RIs: Can change instance attributes if new configuration equals/exceeds value. | - Similar savings (up to 72%) with greater flexibility. |
| Usage Scope | - Specific to the instance type and configuration selected. | - Discounts apply across instance types, families, regions, and sizes within committed usage. |
| - Capacity reservation available in specific Availability Zones. | - No capacity reservation; best for scaling or migrating workloads. |
| Payment Options | - Offers All Upfront, Partial Upfront, and No Upfront options. | - Offers the same payment options as RIs. |
| Capacity Reservation | - Provides capacity reservation in specific Availability Zones. | - Does not include capacity reservations. |
| Best Use Cases | - Ideal for steady-state workloads with known, fixed requirements. | - Ideal for dynamic environments needing flexibility and scaling. |

**Example: 8-Core Machine for 3 Years**

Let's assume you need an m5.2xlarge (8 vCPUs, 32 GB RAM) instance.

*Option 1: Reserved Instances (RIs)*

If you know you’ll always need the same instance type (m5.2xlarge) in the same region:

Standard RI (3 years, All Upfront): Up to 72% savings.

Convertible RI: Can modify instance type, but must maintain equivalent or higher value.

Capacity reservation available if needed.

*Option 2: EC2 Instance Savings Plan*

If you need flexibility across instance types, regions, and workloads, and it will minimum ~40% & maximum 72% savings.

Commit to a $/hour spending rate instead of a specific instance.

If workload changes (e.g., moving from m5.2xlarge → c6i.2xlarge or different region), discounts still apply.

No capacity reservation, but great for dynamic scaling.

**How Reserved Instances (RIs) Affect Other Servers in our AWS Account**

Discount Applies Only to Matching Instances

The RI discount only applies to instances that match the exact configuration (e.g., m5.2xlarge, specific region, OS, and tenancy).

Other instances in your account will be charged at the standard On-Demand rates unless you buy additional RIs for them.

***Other Instances Are Not Affected***

If you have other EC2 instances of different types (e.g., c6i.2xlarge, t3.medium), they will not receive RI discounts.

They will continue running as On-Demand or with their own pricing model (e.g., Spot, Savings Plans, or other RIs).

**How EC2 Instance Savings Plan Affects Other Servers in our AWS Account**

Applies Discounts Across Multiple Instances and Regions

The savings plan is not tied to a specific instance type like RIs.

The discount applies to any EC2 instance type, family, region, size, OS, or tenancy within your committed $/hour spend.

This means multiple instances across your account can benefit from the same plan.