EC2 Placement Group

- It's a logical grouping (clustering) of EC2 instance in the same AZ or in different AZs.
- A placement group determines how instances are placed on underlying hardware.

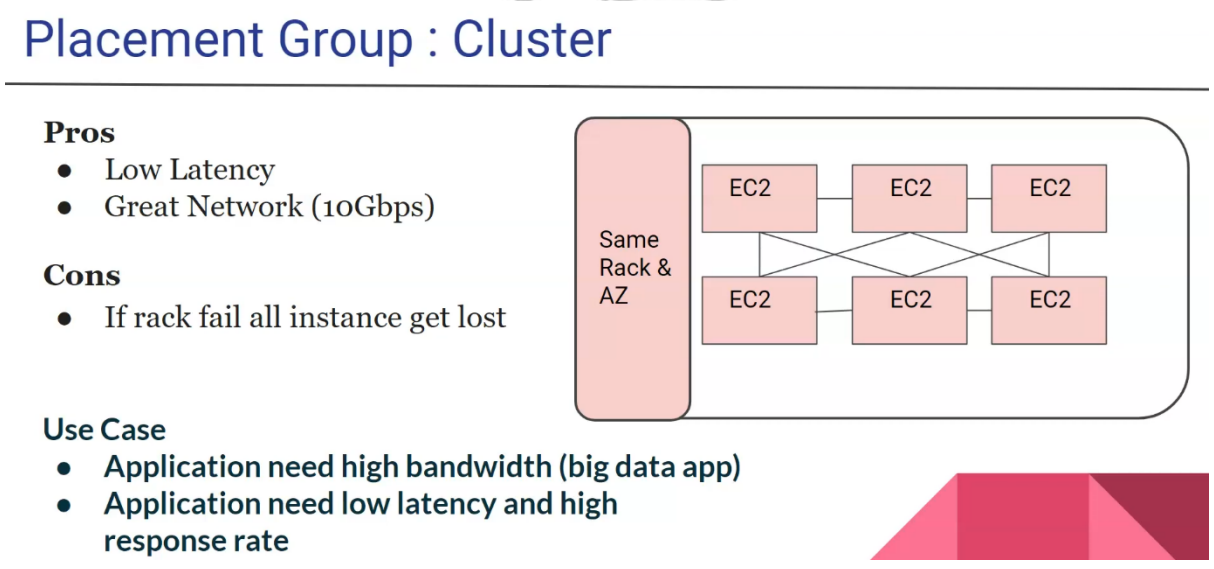
• Types of Placement Groups:

1. **Cluster PG:** cluster instance into a low -latency group in single AZ.
2. **Spread PG:** across underlaying hardware in multiple AZs (possible across peered VPC)
3. **Partition PG:** Spread your instances across logical partition in multiple AZs

- There is no charge for creating a PG (EC2 charge apply)

• EC2 – CLUSTER PLACEMENT GROUP

- A cluster PG is within a single AZ.
- It is recommended when your application majority of network traffic is between the instances in the group.
- Recommended to launch this PG instances at the same time and same type.
- If you try to add instances to the PG and you can't due to availability reasons, try to stop and start all instances.
- This may result in migration to other hosts that have availability of the specific instance types requested for the group.



• EC2 -SPREAD PLACEMENET GROUP

- A spread PG is group of instances that are each placed in distinct underlying Hardware (so can mix instances type).
- Spread PG are recommended for application that have a small number (max 7 in one AZ) of critical instances that should be kept separate from each other.

- If you start or launch an instance in a spread PG and there is insufficient unique hardware to fulfil the request then request fails.
- You can retry later, no need to stop all restart like cluster PG.

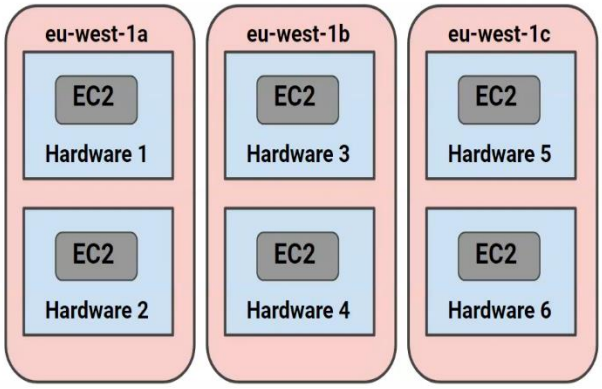
Placement Group : Spread

Pros

- Can span across AZs
- Low Risk in case of failure

Cons

- Limited to 7 instance per AZ per placement group



Use Case

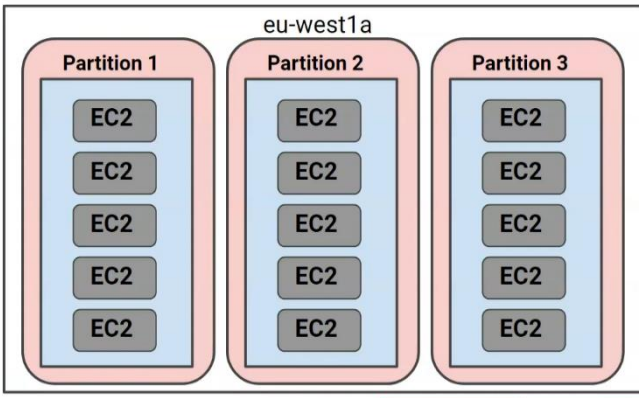
- Application need high availability
- Critical Application where each instance must be isolated from failure from each other

• EC2 – PARTITION PLACEMENT GROUP

- AWS tried to launch your group instances in to different logical entities called partitions.
- Partition is launched in a separate rack to minimize the impact of a failure.
- Partition placement groups can be in a single or multiple AZs in the same region.
- Maximum of 7 partition per AZ.
- A PG name must be unique within an AWS account for region.
- You cannot merge two PGs.
- An instance cannot be launched in multiple PG.

Placement Group : Partition

- 7 Partition per AZ
- Up to 100 EC2
- The instance in partition do not share rack with the underlying hardware with group of instance in different partitions.



Use Case

- Application HDFS, HBase, and Cassandra

Cluster

- EC2 instances placed on same hardware
- Grouping of instances in same Availability zone.
- Super low latency
- 10gbps bandwidth
- High Risk
- Max Failure Risk
- For Fast processing and faster communication among instances.

Spread

- EC2 instances placed on seperate hardware.
- Instances span over multiple Availabilty zones
- Reduces Risk of Failure
- Limitation of 7 instances per AZ per placement group.
- For critical applications & High Availabilty.

Partition

- Instances are grouped together in logical partitions.
- Each Partition has its own set of racks.
- No two partitions within a placement group share the same racks thus isolating the impact of hardware failure
- Multiple instances can share same partition
- Maximum of 7 partitions in one AZ.
- Upto 100 EC2 instances can be placed on single AZ
- Good for distributed and replicated workloads, such as HDFS, HBase, and Cassandra