PLAYSTATION AND KUBERNETES: HOW TO SOLVE A PROBLEM LIKE REAL-TIME

Joseph Irving

LEVEL SELECT:

TUTORIAL: REAL-TIME GAMSERVERS

LEVEL 1: RUNNING IN KUBERNETES

LEVEL 2: AUTOSCALING

LEVEL 3: MULTI-REGION

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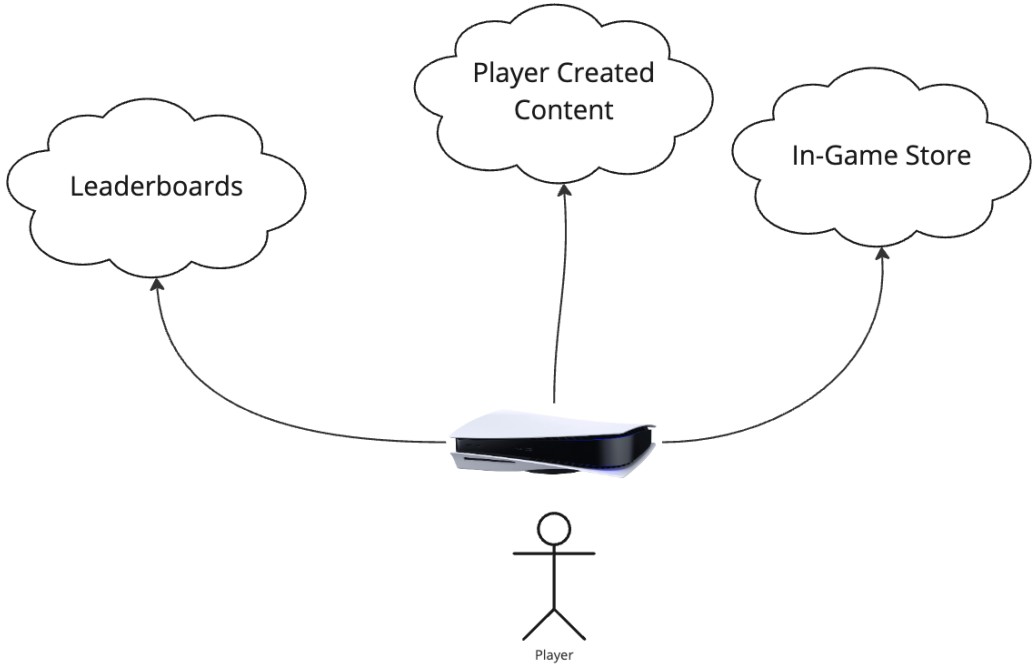
What isn’t Real-time?

Async

Request Based

HTTPS/GRPC

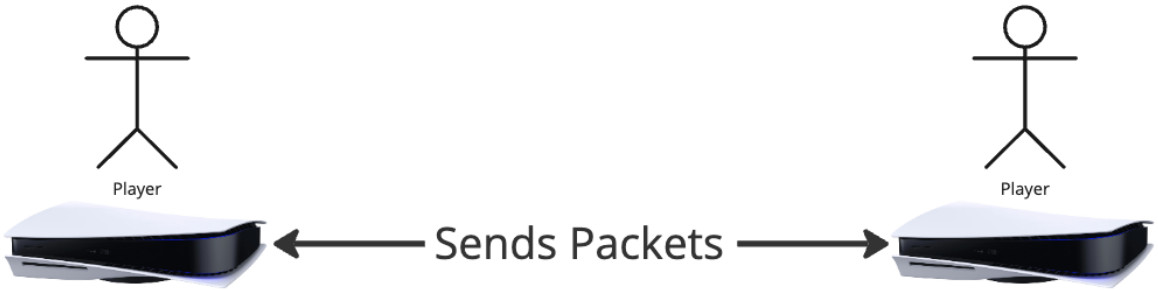
Not Latency Sensitive



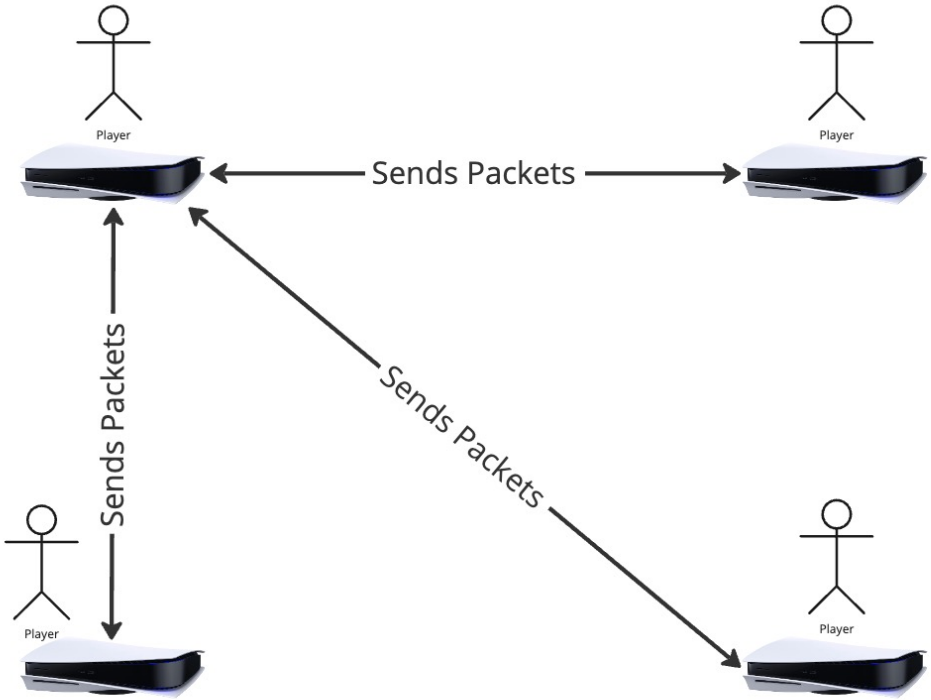
Real-time


Codelwave
<PALS FOR LIFE>
Madtoker
<PALS FOR LIFE>
Juron
<PALS FOR LIFE>
Forekin
<PALS FOR LIFE>
<AFK>Leeroy
<PALS FOR LIFE>

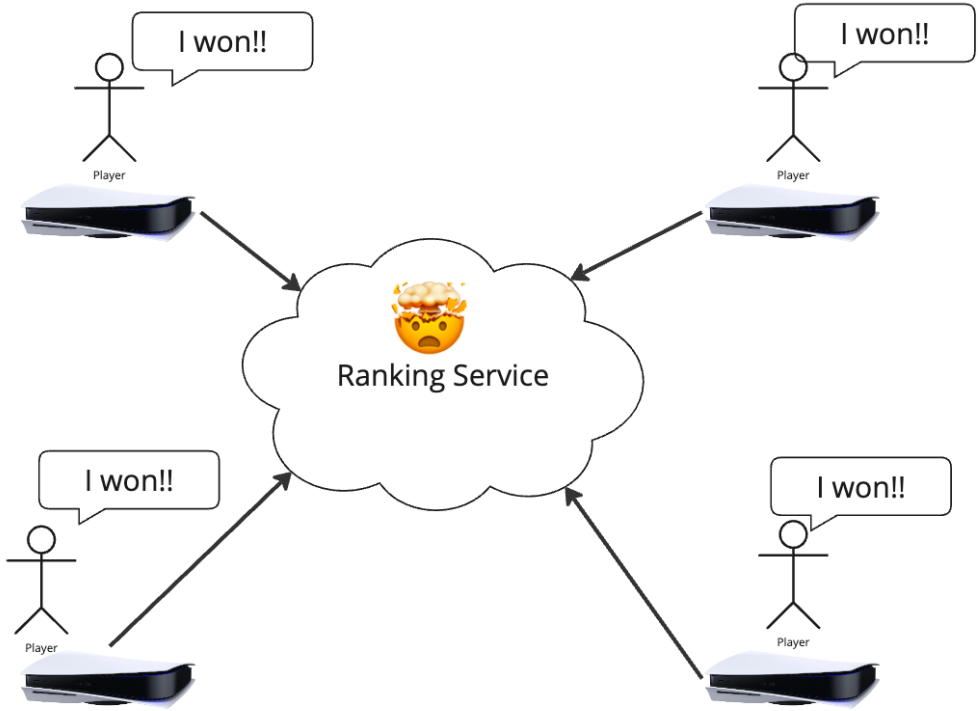
Peer to Peer



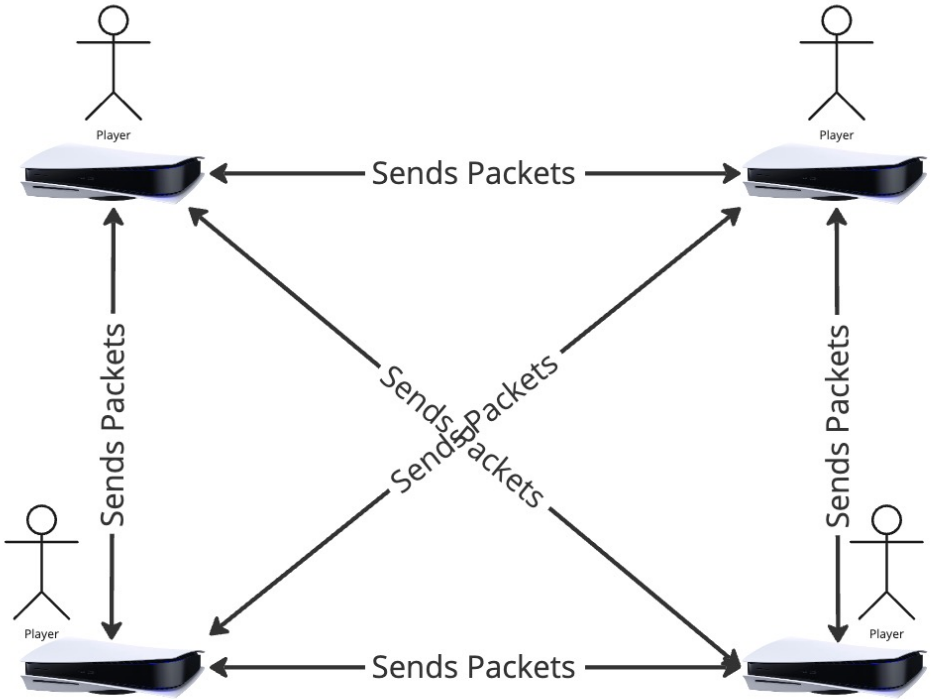
Peer to Peer


Player
Player
Sends Packets
Sends Packets
Sends Packets
Player
Player

Peer to Peer


I won!!
Player
I won!!
Player
Ranking Service
I won!!
Player
I won!!
Player

Peer to Peer


Player
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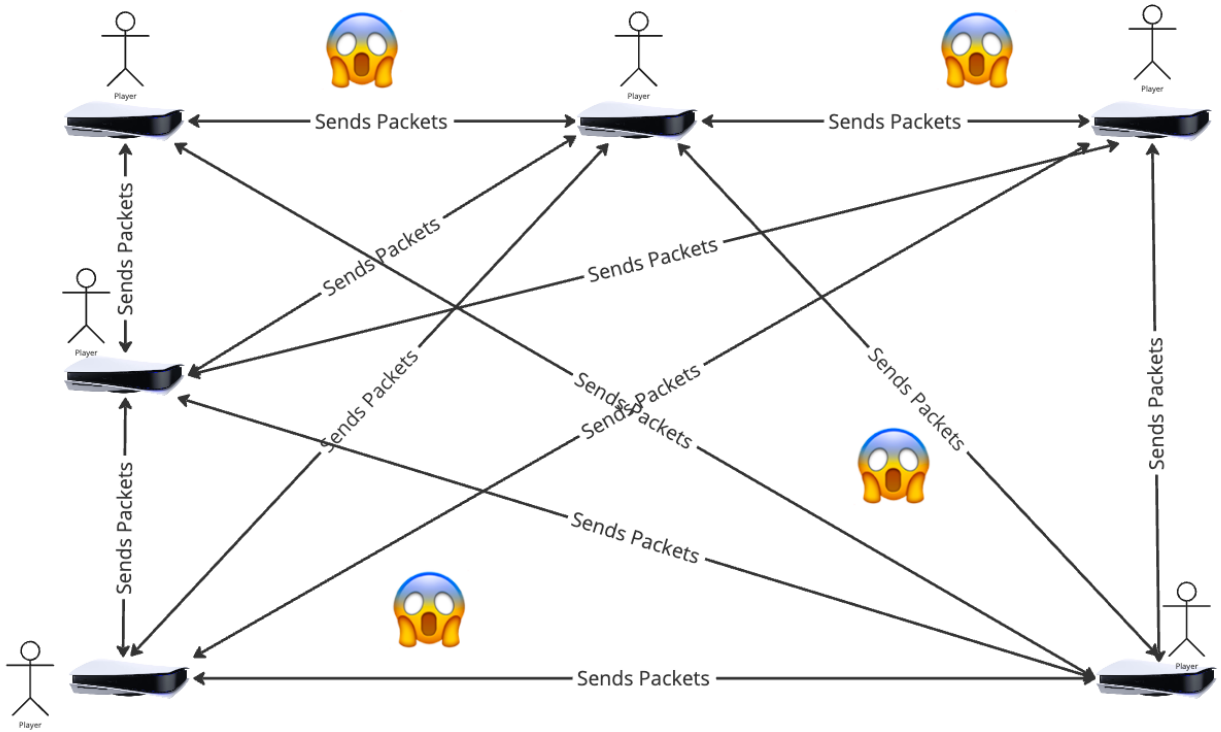
Peer to Peer


Player
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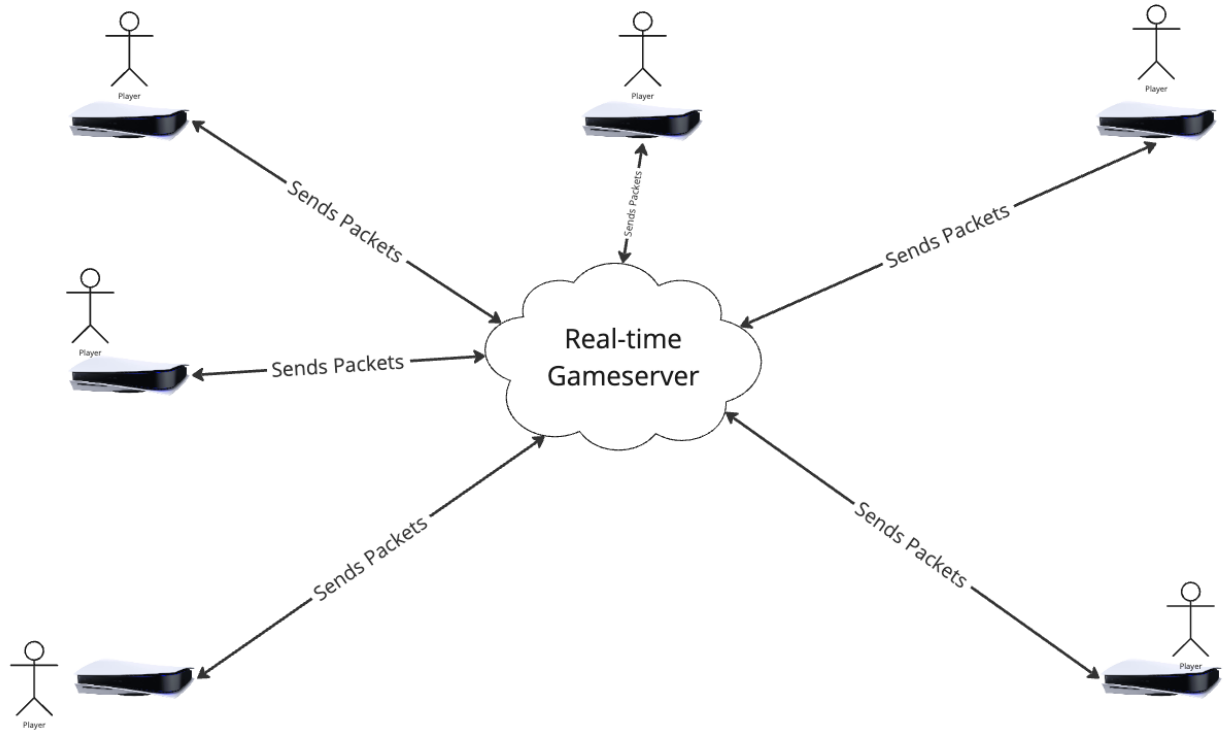
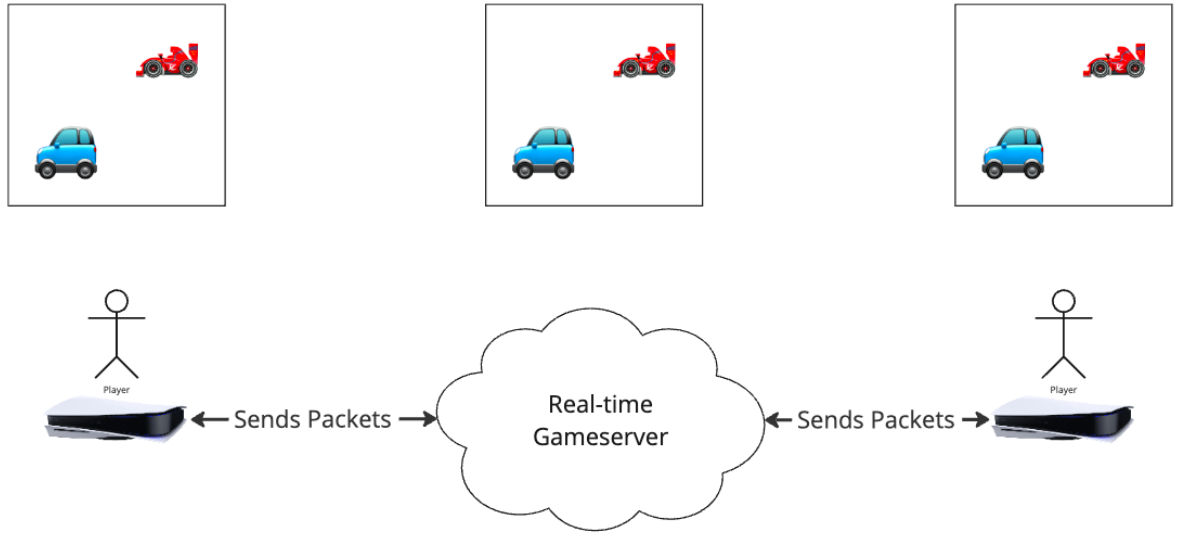
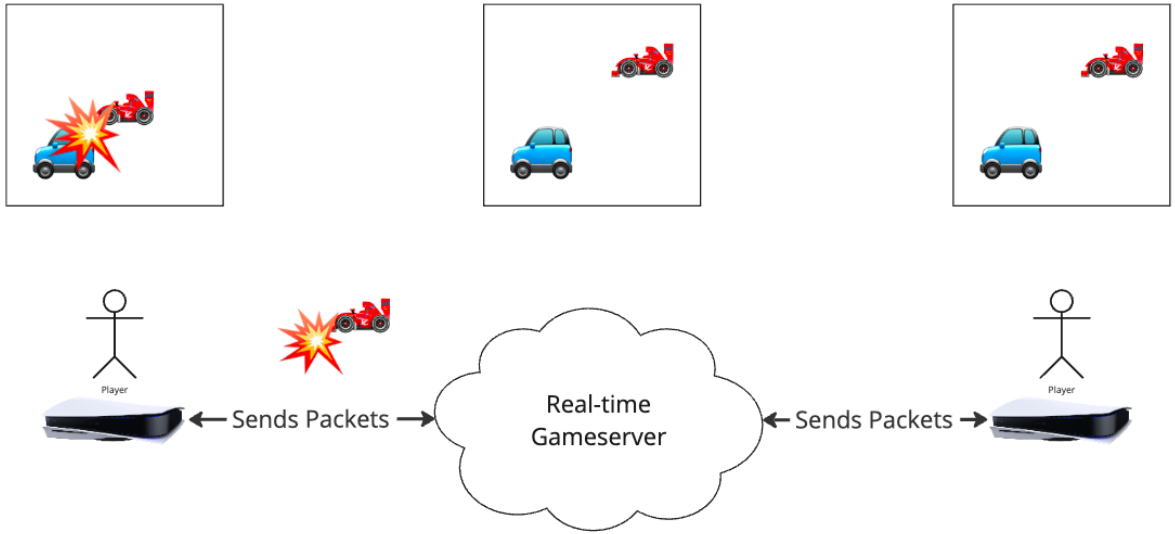
Dedicated Game Server



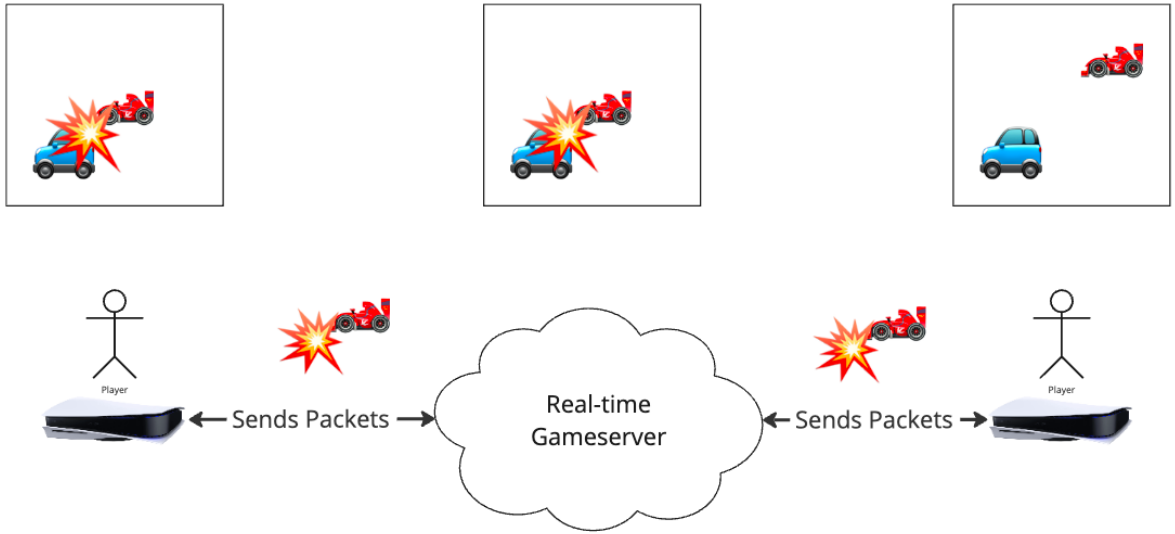
Dedicated Game Server



Dedicated Game Server



Dedicated Game Server



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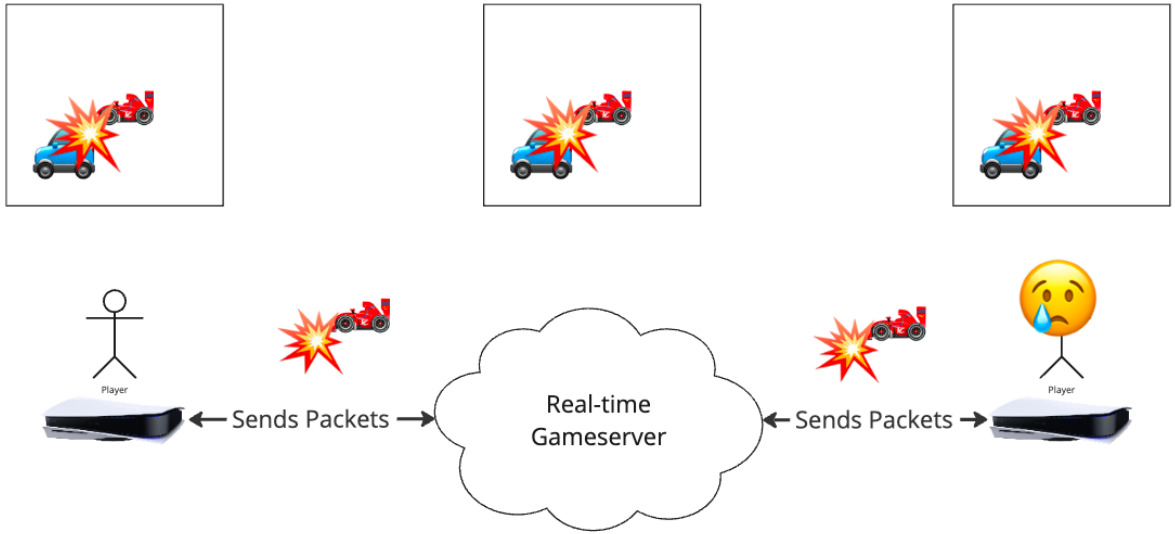


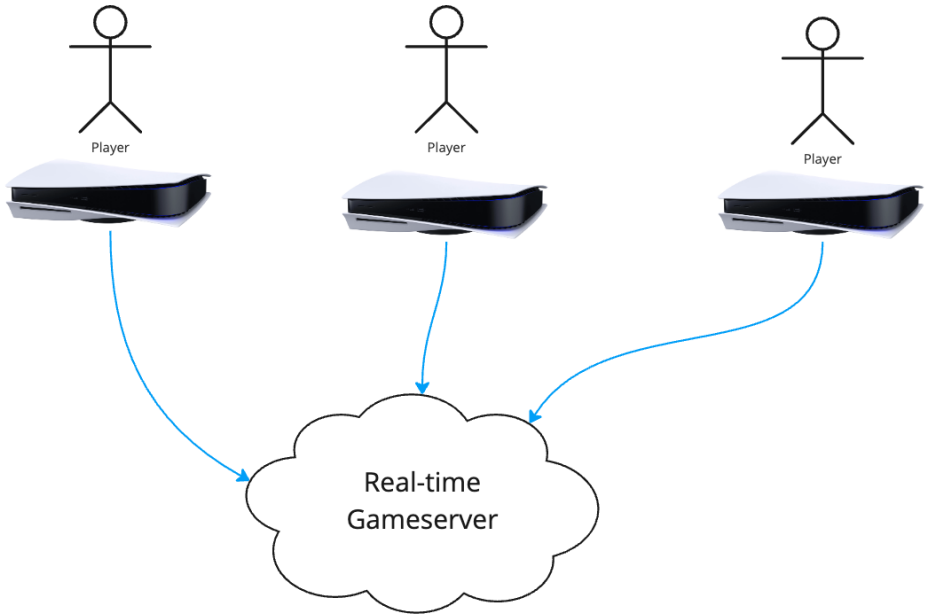
Real-time

Moment to moment

UDP

Persistent Connection

Latency Sensitive



LEVEL SELECT:

TUTORIAL: REAL-TIME GAMSERVERS

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Agones

Open Source Project for running game servers in Kubernetes

Made by Google

googleforgames/agones

Pod Termination

Cluster Autoscaler

Deployment Rollouts

GameServers

```yaml
apiVersion: agones.dev/v1
kind: GameServer
metadata:
  name: us-west-2-game-servers-p2qvj-6tj9k
  namespace: dev-game-server
spec:
  container: simple-game-server
  ports:
  - container: simple-game-server
    containerPort: 7654
    hostPort: 7025
    portPolicy: Dynamic
    protocol: UDP
  scheduling: Packed
  template:
    spec:
      containers:
      - image: gcr.io/agones-images/simple-game-server:0.13
        name: simple-game-server
```

```
kubectl get gameserver
NAME                                  STATE   ADDRESS                                          PORT   NODE                                          AGE
us-west-2-game-servers-p2qvj-669m8    Ready   ec2-35-89-190-116.us-west-2.compute.amazonaws.com   7140   ip-10-0-6-88.us-west-2.compute.internal   3d18h
us-west-2-game-servers-p2qvj-6tj9k    Ready   ec2-35-89-190-116.us-west-2.compute.amazonaws.com   7025   ip-10-0-6-88.us-west-2.compute.internal   3d18h
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us-west-2-game-servers-p2qvj-6tj9k    Ready   ec2-35-89-190-116.us-west-2.compute.amazonaws.com   7025   ip-10-0-6-88.us-west-2.compute.internal   3d18h
```
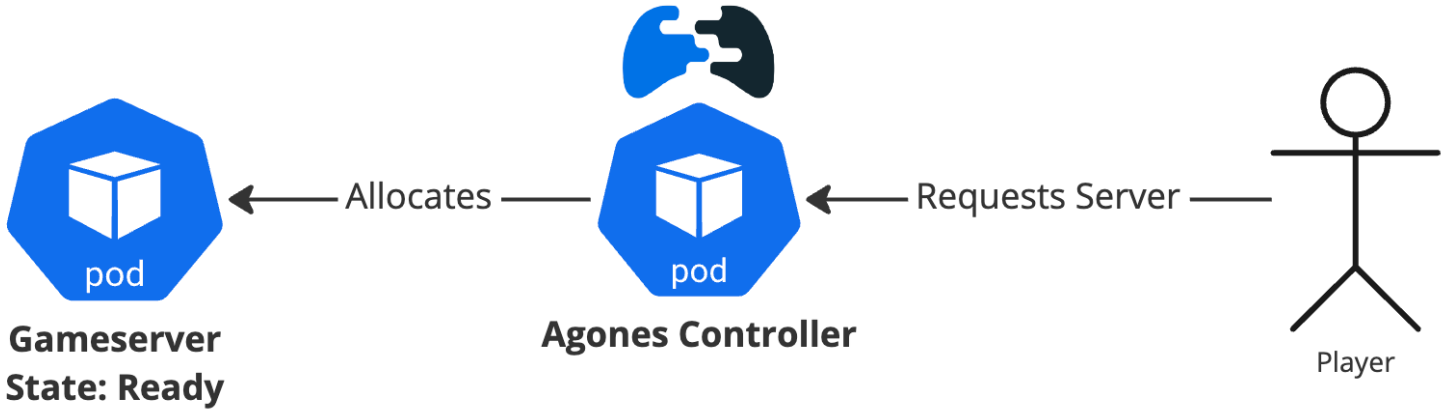
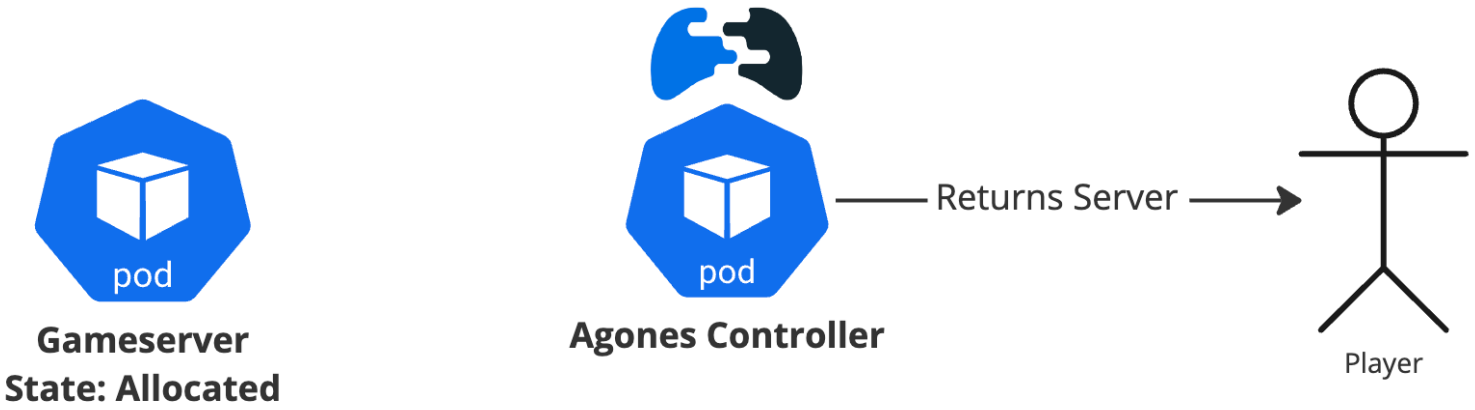

GameServers



GameServers



GameServer Allocation

```yaml
apiVersion: "allocation.agones.dev/v1"
kind: GameServerAllocation
spec:
  selectors:
    - matchLabels:
        agones.dev/fleet: my-fleet
      players:
        minAvailable: 10
        maxAvailable: 20
```

GameServer Allocation

```yaml
apiVersion: "allocation.agones.dev/v1"
kind: GameServerAllocation
spec:
  selectors:
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        agones.dev/fleet: my-fleet
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GameServer Allocation

```yaml
apiVersion: "allocation.agones.dev/v1"
kind: GameServerAllocation
metadata:
  name: my-allocation
spec:
  selectors:
    - matchLabels:
        agones.dev/fleet: my-fleet
      players:
        minAvailable: 10
        maxAvailable: 20
status:
  address: ec2-54-214-163-180.us-west-2.compute.amazonaws.com
  gameServerName: simple-game-server-ngtq6-ctgjc
  nodeName: ip-10-0-1-113.us-west-2.compute.internal
  ports:
  - name: default
    port: 7044
  state: Allocated
```

GameServer Allocation

```yaml
apiVersion: "allocation.agones.dev/v1"
kind: GameServerAllocation
metadata:
  name: my-allocation
spec:
  selectors:
    - matchLabels:
        agones.dev/fleet: my-fleet
      players:
        minAvailable: 10
        maxAvailable: 20
status:
  address: ec2-54-214-163-180.us-west-2.compute.amazonaws.com
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  nodeName: ip-10-0-1-113.us-west-2.compute.internal
  ports:
  - name: default
    port: 7044
  state: Allocated
```
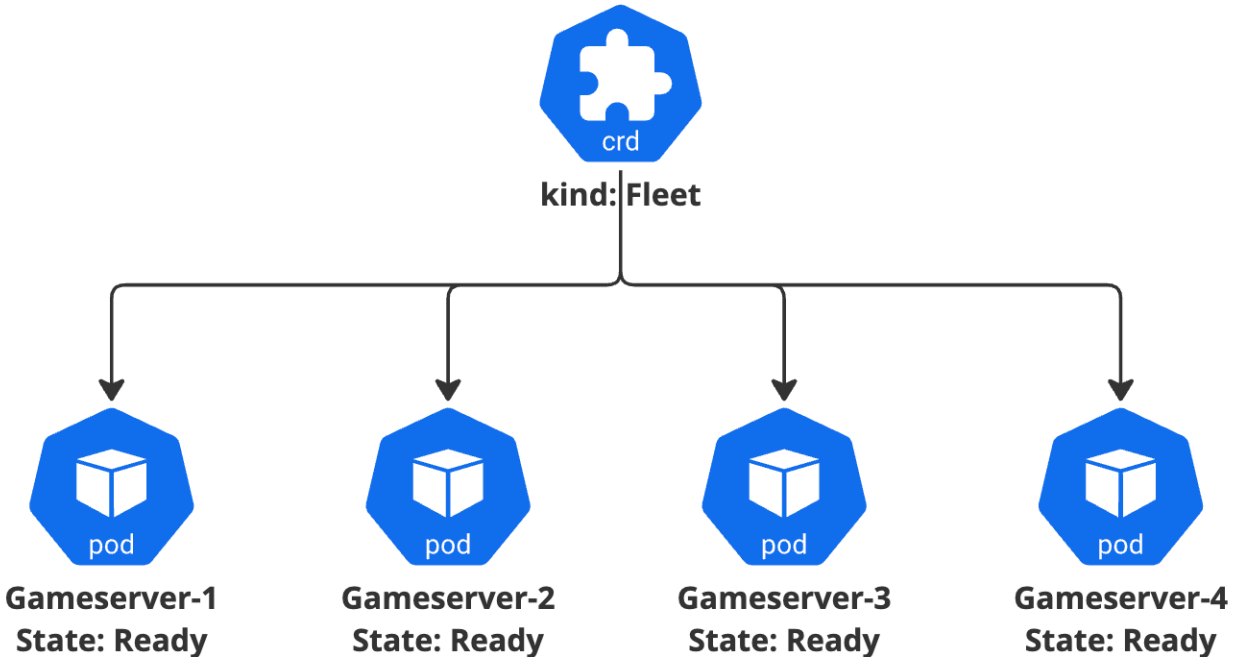

Fleets

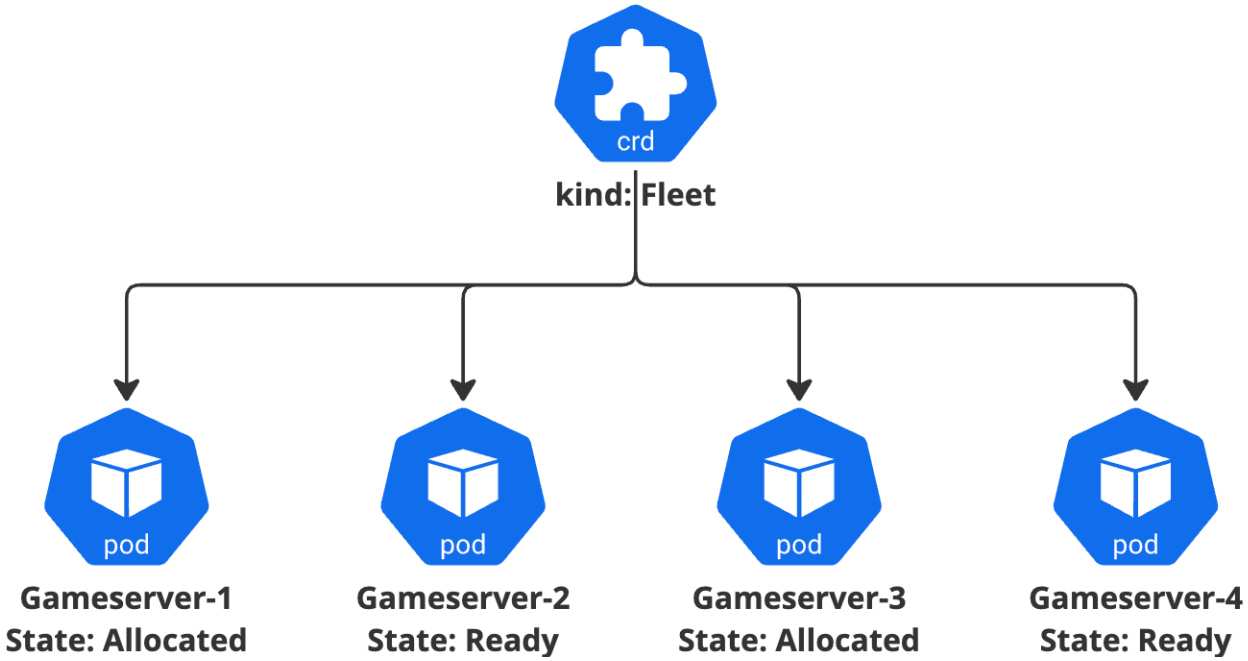
```yaml
apiVersion: agones.dev/v1
kind: Fleet
  name: us-west-2-game-servers
  namespace: dev-game-server
spec:
  replicas: 2
  scheduling: Packed
  template:
    spec:
      ports:
      - containerPort: 7654
        name: default
      template:
        spec:
          containers:
          - image: gcr.io/agones-images/simple-game-server:0.13
            name: simple-game-server
```

```
kubectl get fleets
NAME                   SCHEDULING   DESIRED   CURRENT   ALLOCATED   READY   AGE
us-west-2-game-servers   Packed       2         2         0           2       3d22h
```

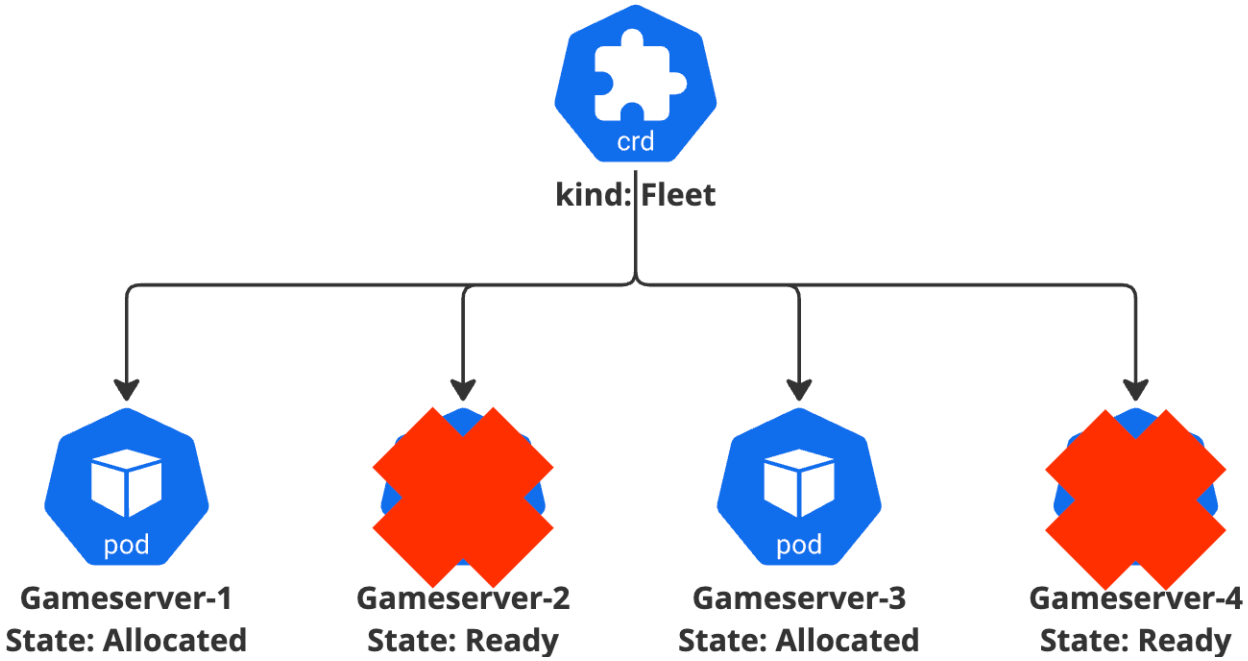
Fleets


crd
kind: Fleet
pod
pod
pod
pod
Gameserver-1
State: Ready
Gameserver-2
State: Ready
Gameserver-3
State: Ready
Gameserver-4
State: Ready

Kubectl scale fleet –replicas=1



Kubectl scale fleet –replicas=1



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Autoscaling

HPA based on CPU/Memory doesn’t make sense with gameservers

Autoscaling needs to consider the state of the gameservers

Fleet Autoscaler

```yaml
apiVersion: "autoscaling.agones.dev/v1"
kind: FleetAutoscaler
metadata:
  name: fleet-autoscaler-example
spec:
  fleetName: fleet-example
  policy:
    type: Buffer
    buffer:
      bufferSize: 5
      minReplicas: 10
      maxReplicas: 20
```

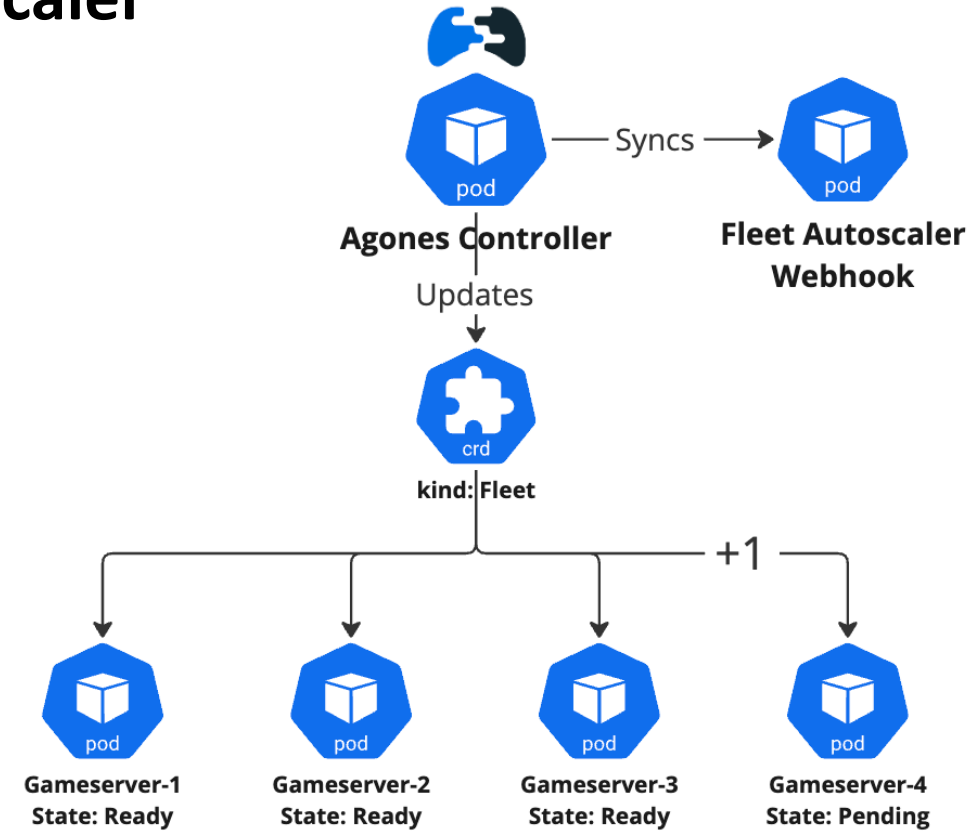
Fleet Autoscaler

```yaml
apiVersion: "autoscaling.agones.dev/v1"
kind: FleetAutoscaler
metadata:
  name: fleet-autoscaler-example
spec:
  fleetName: fleet-example
  policy:
    type: Buffer
    buffer:
      bufferSize: 5
      minReplicas: 10
      maxReplicas: 20
```

Fleet Autoscaler

```yaml
apiVersion: "autoscaling.agones.dev/v1"
kind: FleetAutoscaler
metadata:
  name: fleet-autoscaler-example
spec:
  fleetName: fleet-example
  policy:
    type: Webhook
    webhook:
      service:
        name: autoscaler-webhook-service
        namespace: default
        path: scale
```

Fleet Autoscaler



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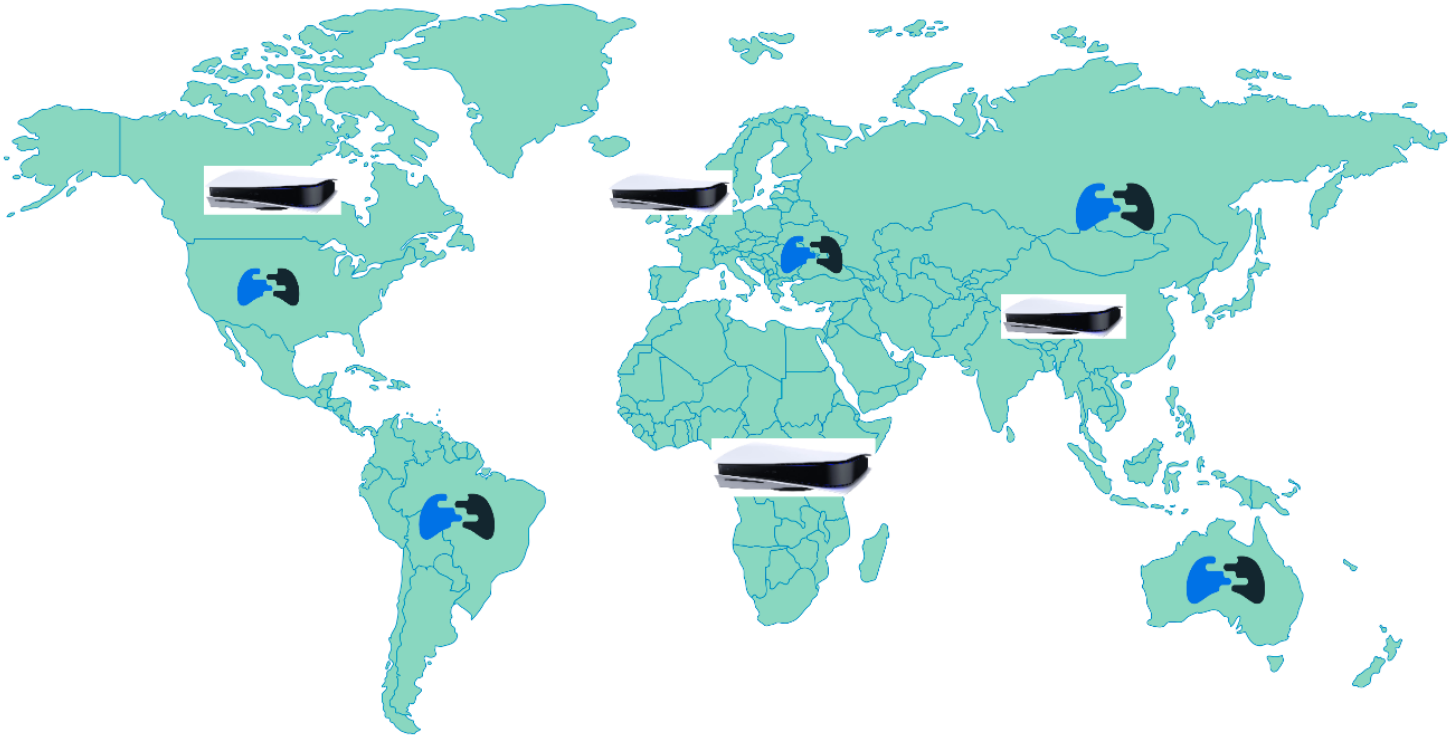
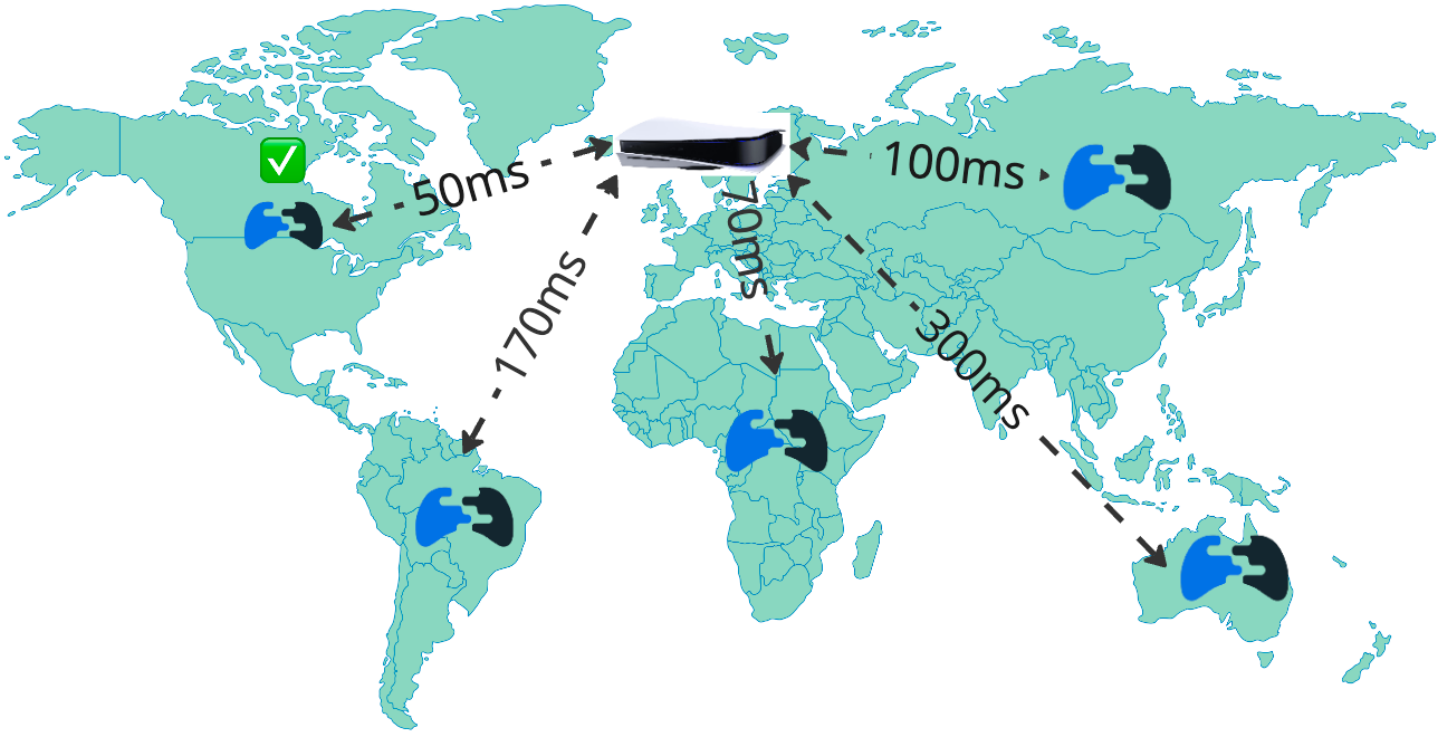
Multi-Region Agones



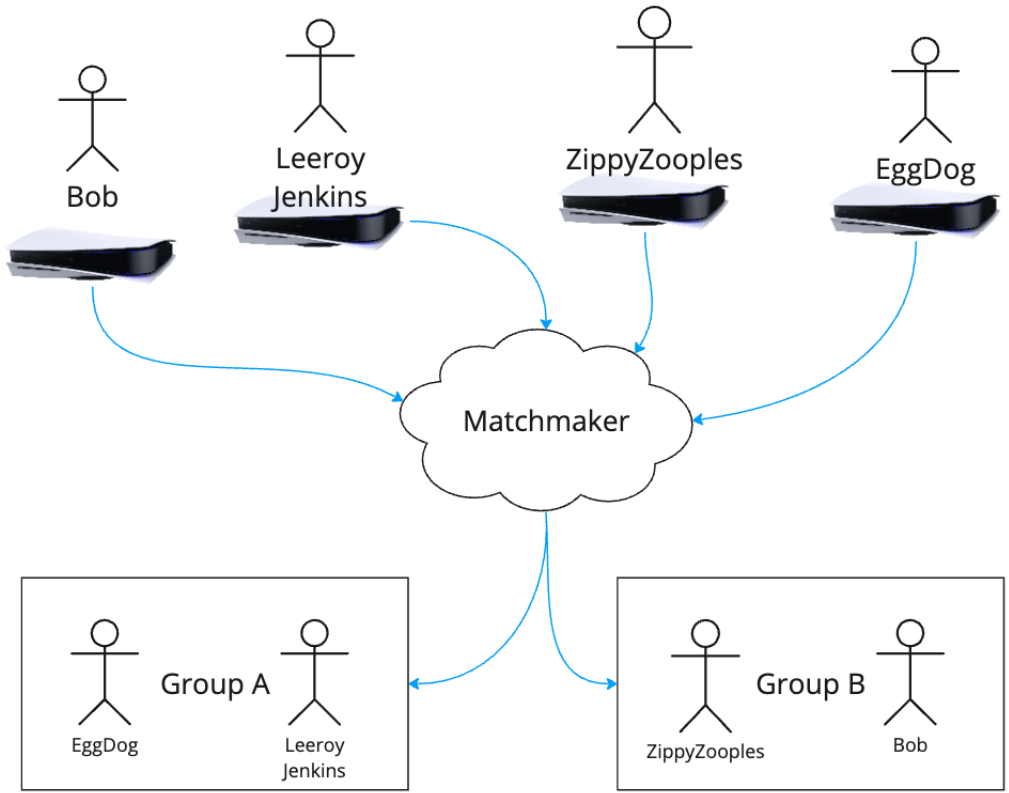
Multi-Region Agones



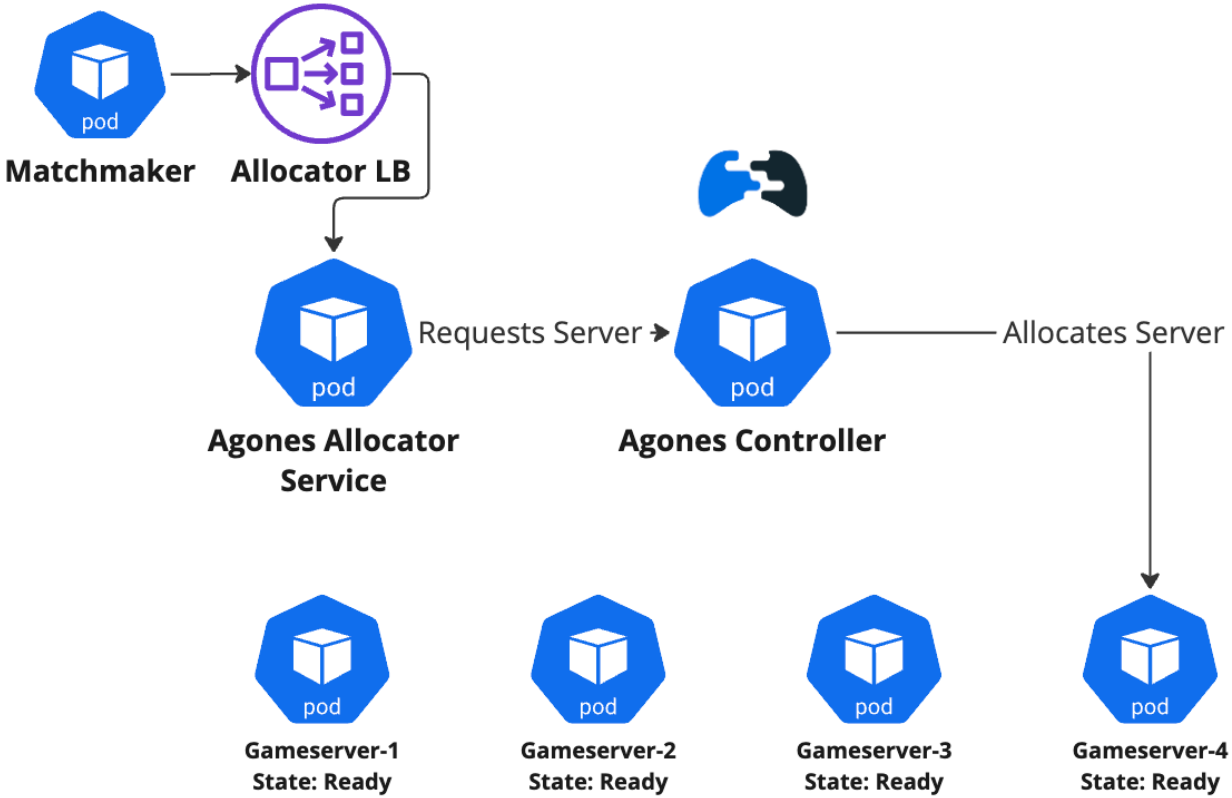
Matchmaker


Madtoker
<PALS FOR LIFE>
Juron
<PALS FOR LIFE>
Forekin
<PALS FOR LIFE>
<AFK>Leeroy
<PALS FOR LIFE>

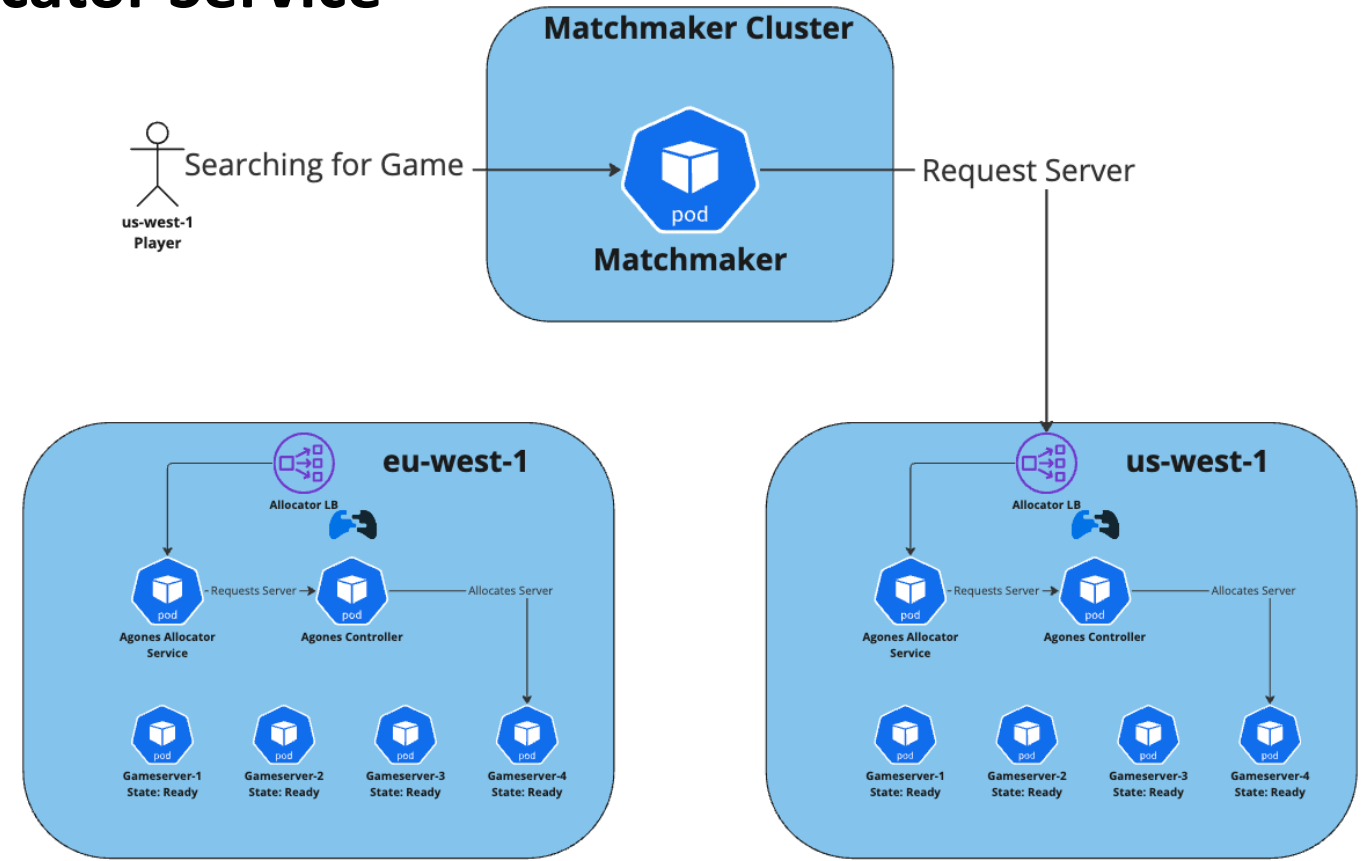
Matchmaker


Bob
Leeroy Jenkins
ZippyZooples
EggDog
Matchmaker
Group A
EggDog
Leeroy Jenkins
Group B
ZippyZooples
Bob

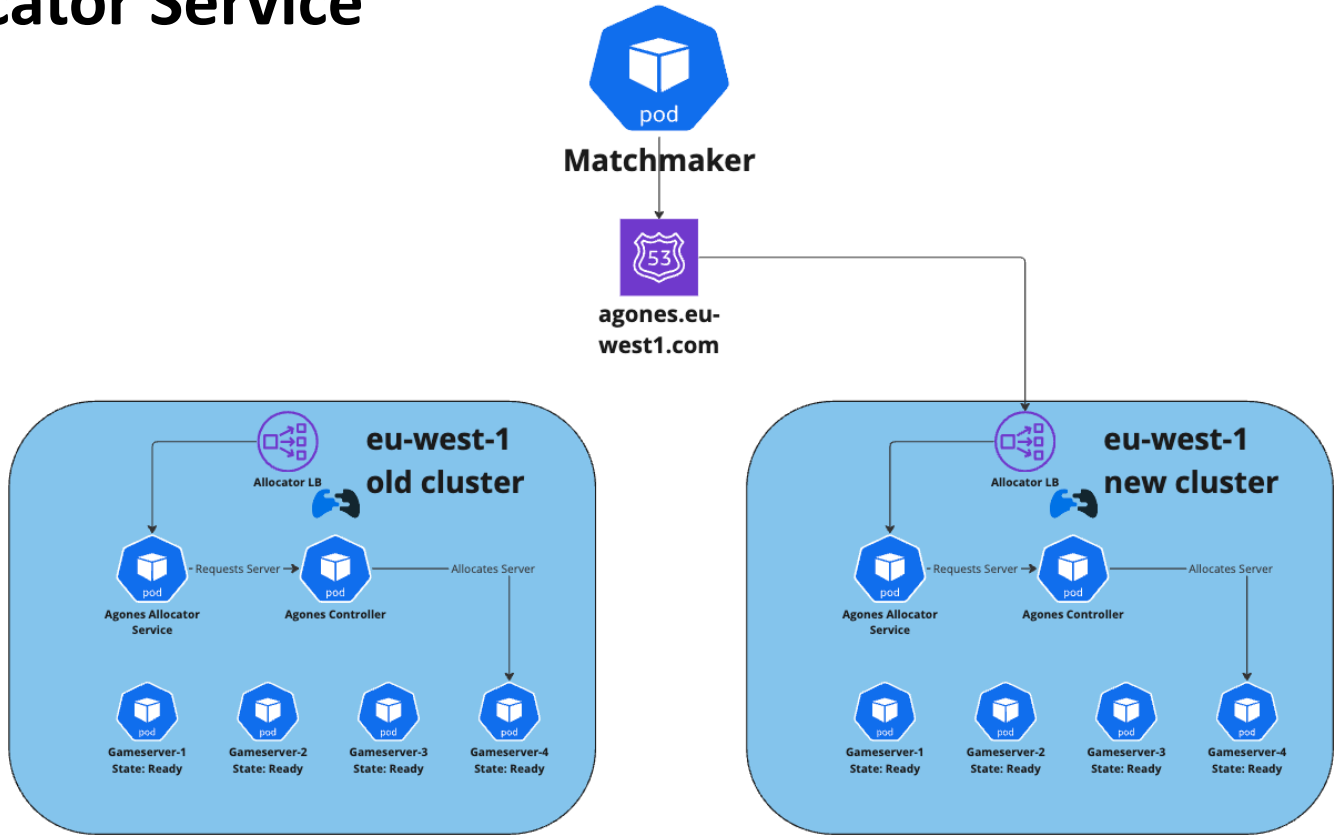
Allocator Service



Allocator Service



Allocator Service



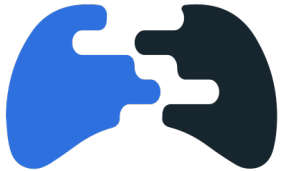
To Conclude…

Fleets and Gameservers

Fleet Autoscalers

Allocator Service

Multi-Region



agones

Scan the QR Code to leave feedback and see slides!