Unite 2016
TOKYO

unity

Unity Multiplayer

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Unity Multiplayer

This is a network that is made of:

- 1 server
- Multiple clients (local client, remote client)

The server can be:

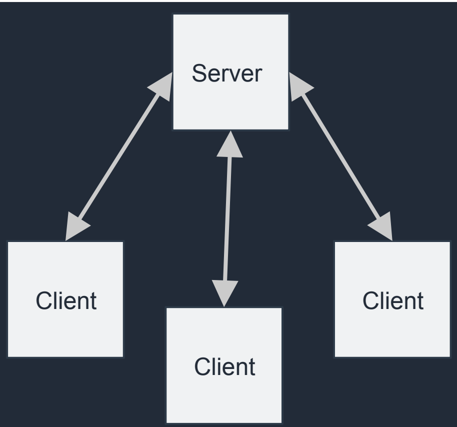
- Host - This is a server and a client in a single process
- A dedicated server with no active player(s). (Soon)

iOS
PS4
XBOX ONE

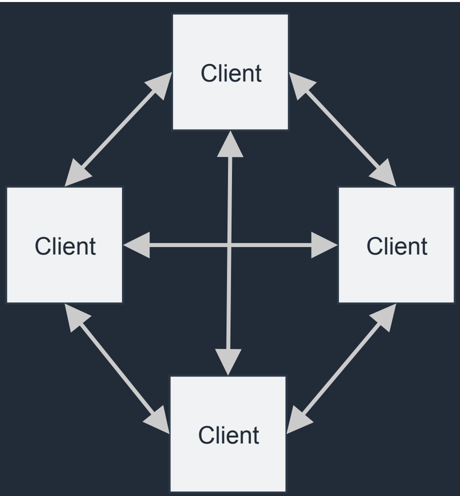
http://docs.unity3d.com/Manual/UNetConcepts.html

Network Topologies

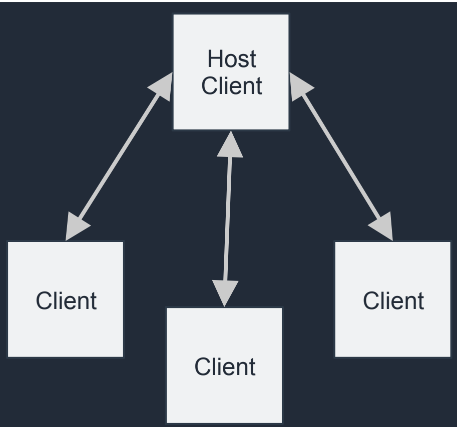
Dedicated Server



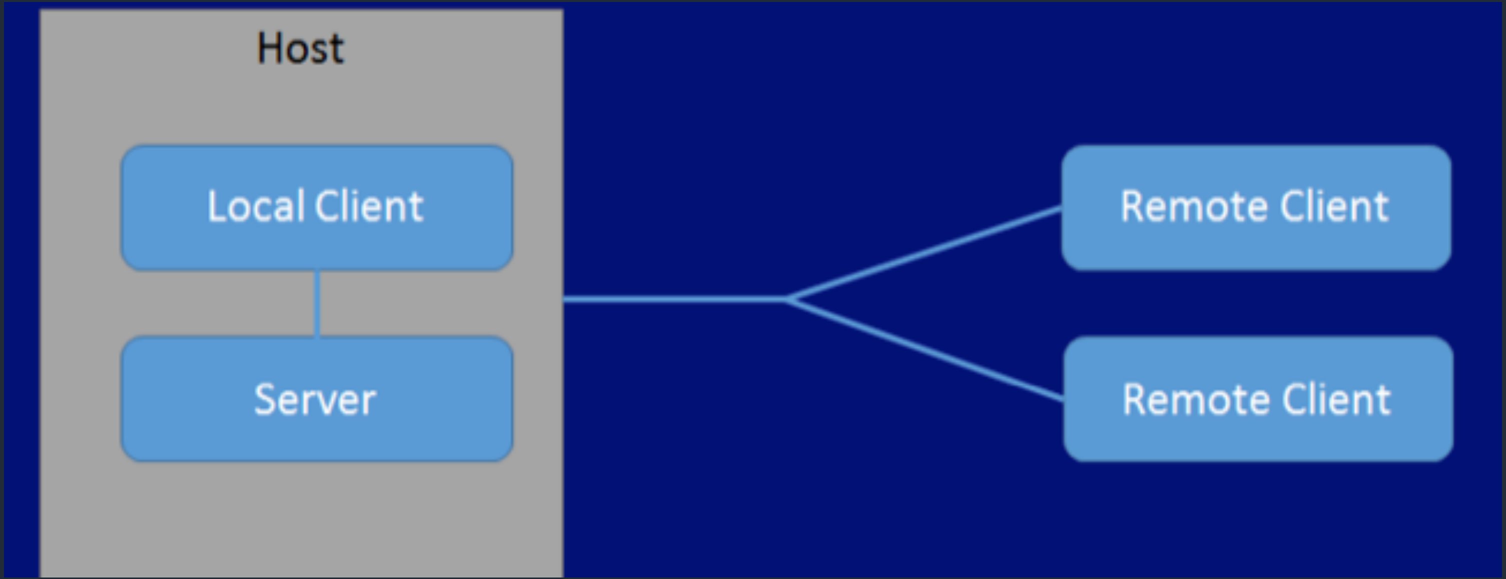
Peer to Peer (Mesh)



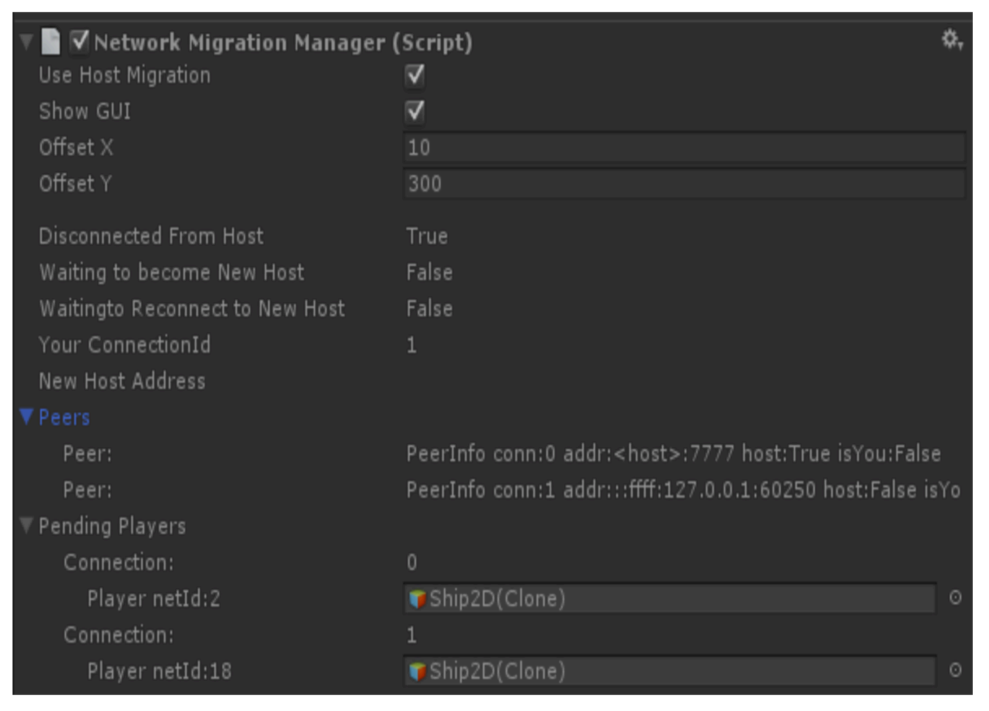
Hybrid – Host Based



Server, Client, and Host



Host Migration



☑ Network Migration Manager (Script)

Use Host Migration	☑
Show GUI	☑
Offset X	10
Offset Y	300
Disconnected From Host	True
Waiting to become New Host	False
Waitingto Reconnect to New Host	False
Your ConnectionId	1
New Host Address	
Peers	
Peer:	PeerInfo conn:0 addr:<host>:7777 host:True isYou:False
Peer:	PeerInfo conn:1 addr:::ffff:127.0.0.1:60250 host:False isYo
Pending Players	
Connection:	0
Player netId:2	Ship2D(Clone)
Connection:	1
Player netId:18	Ship2D(Clone)

Instantiate vs Spawn

Single-instance games:

- GameObjects are Instantiated to create an instance of them in the game.

Networked games:

- Objects must also be “spawned” on the network

Instantiate vs Spawn

Spawning:

- Makes GameObjects active on the network
- Can only be done on the server
- Causes the objects to be created on connected clients.

The Spawning System supports:

- Distributed object life-cycle management
- State synchronization.

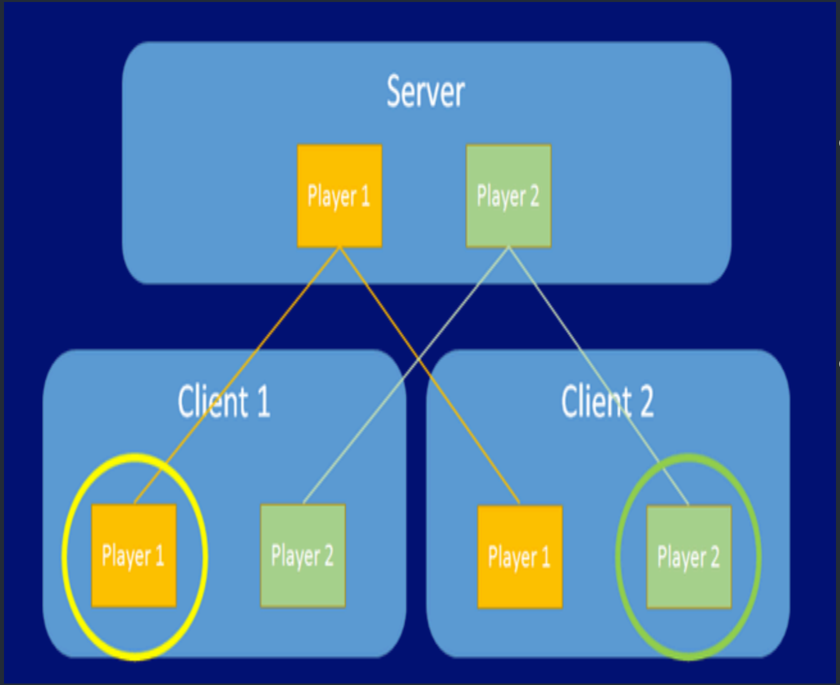
Player Objects

- Player objects are special.
- There is a player object associated with each person playing the game.
- Commands are routed to that object. (client-to-server remote procedure calls)
- Each player object is associated with a connection.
- Switching Players for connection

Local Players

- A person cannot invoke a command on another person’s player object - only their own.
- This is the concept of “my” player object.
- This player object becomes a “local player” object on the client of that player.

Local Players



- Only the player object that is “yours” will have the isLocalPlayer flag set.
- isLocalPlayer that is set to true, and a callback OnStartLocalPlayer() that is invoked on the object on the client

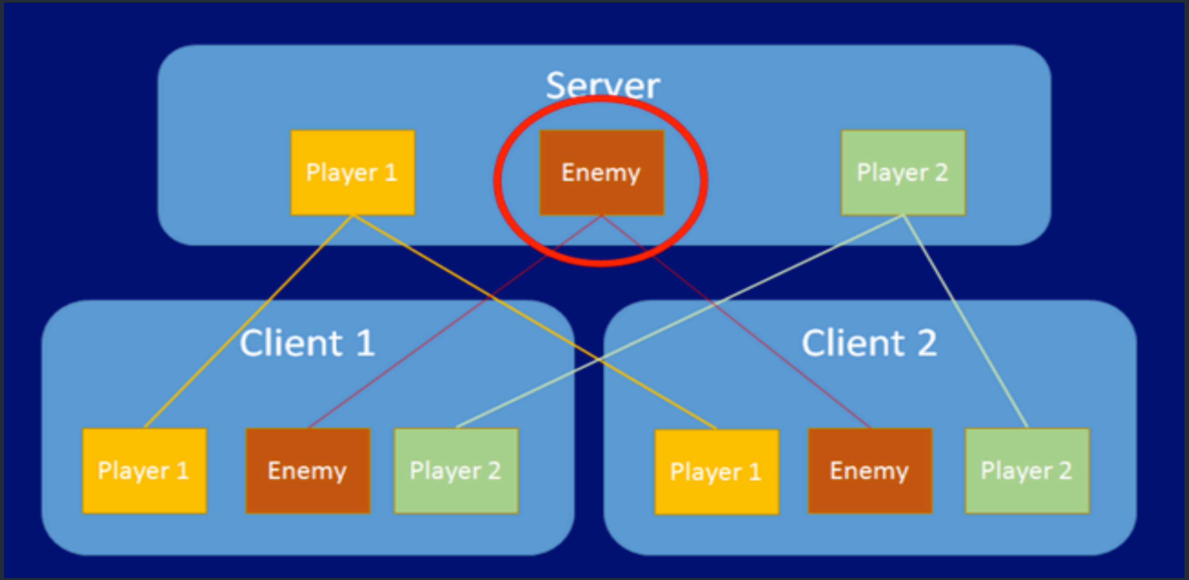
Authority

- GameObjects can have “local authority”.
- This means that the object on its owner’s client is responsible for the object.
- This is used most commonly for controlling movement.

Example:

- The NetworkTransform component will send movement from the client if it has authority.

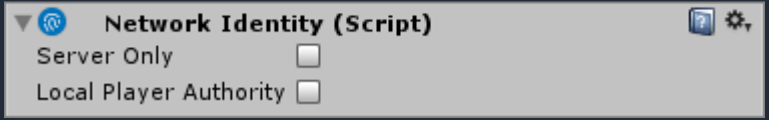
Authority



- Authority can reside on the server if the GameObject is not spawned with client authority

Authority

Network Identity

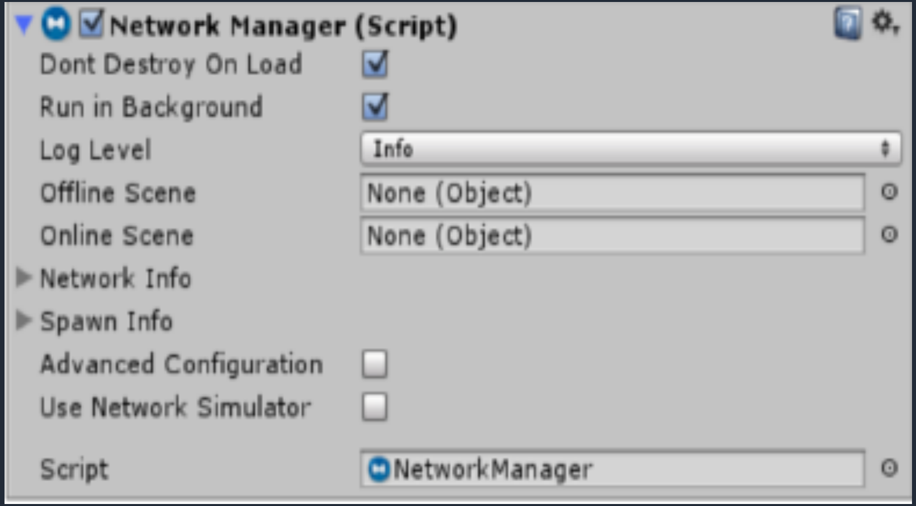


Network Identity (Script)

Server Only □

Local Player Authority □

How the code works



☑ Network Manager (Script)

Dont Destroy On Load ☑

Run in Background ☑

Log Level: Info

Offline Scene: None (Object)

Online Scene: None (Object)

▶ Network Info

▶ Spawn Info

Advanced Configuration ☐

Use Network Simulator ☐

Script: NetworkManager

Game State Management

Spawning Management

Scene Management

Debugging Information

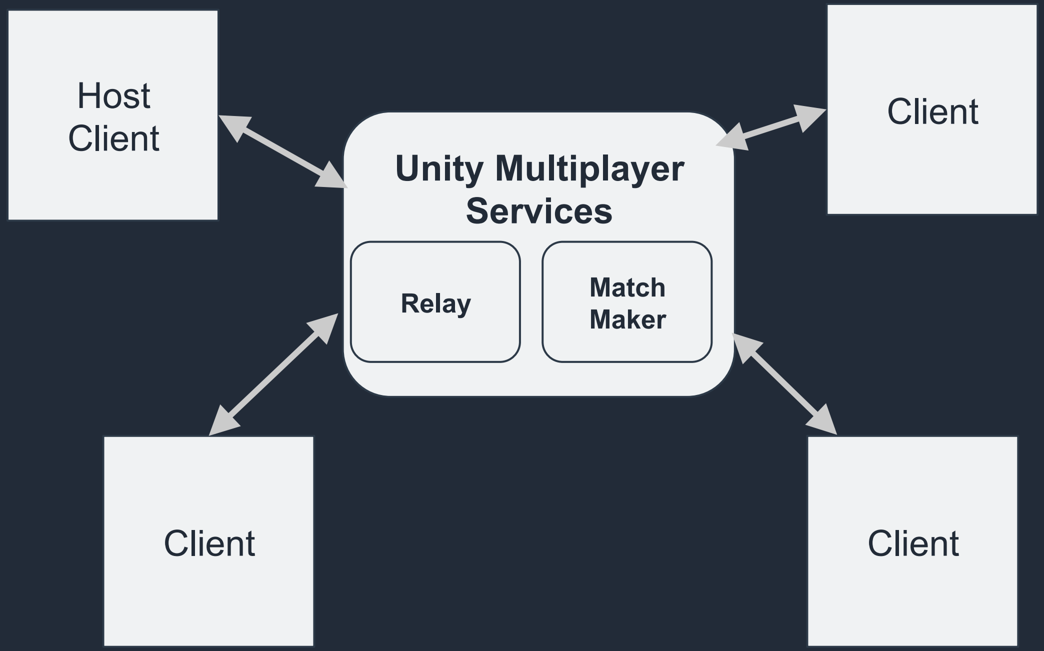
Matchmaking

Customization

How the code works

- High level APIs. Integrated into the Unity component based workflow; implement and iterate multiplayer features today.
- Low Level APIs. Full access to Multiplayer network code; completely optimize your game.

How the code works



Match Maker lets players advertise their game for others to join.

Relay Server ensures network traffic reaches all players in a game

Host is a client that is also the server for a particular game session (yes, we do host migration)

Infrastructure is load balanced, globally balanced, for quality of service

Multiplayer Demo

Multiplayer is for

1. **Real Time, Session Based Games** e.g. Action RPG, Racing.
2. **Rapid Prototyping**. Integrated in Unity so it’s fast and easy implement networked features.
3. **Global Audiences**. Infrastructure is distributed across continents for consistent quality.
4. **Flexibility**. Reutilize UMP subcomponents with ANY network solution.

Multiplayer is not (yet) for

1. **Asynchronous Games** that require a dedicated database, socket server.
2. **Platform-Specific Features** like Steamworks. No native support today.
3. **Cheat-Sensitive Games** that require a controlled dedicated server
4. **High Bandwidth Games** that require > 4500 bps e.g. multiplayer physics. (only through Relay Server)

Thank you!

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