Online Multiplayer with Photon PUN:

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Tuto: Setup the project to use Online Multiplayer	link
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Read First:

Online Multiplayer use Photon PUN 2 Free.
https://www.photonengine.com/en-US/PUN

Online multiplayer work the same on mobile and desktop.

Online optimization for mobile are the same as describe on:
-MCR Documentation.pdf section Export to mobile.

Where to start:

1-Read section: Tuto: Setup the project to use Online Multiplayer .

3-The others sections give you more details about Online Multiplayer

Setup the project to use Online Multiplayer:

-Open the scene: Menu
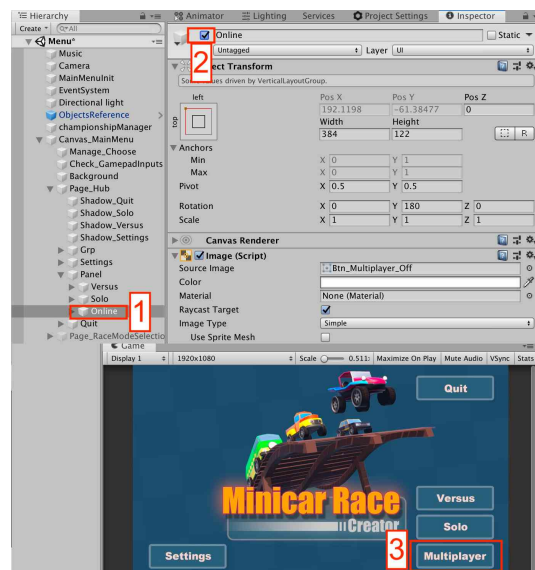*(Project Tab: MCR Creator → Assets → Scenes → Menu)*

-In the Hierarchy select the button Online (spot 1).
(Hierarchy: Canvas_MainMenu → Page Hub → Panel → Online)

-In the Inspector enable the button (spot 2).

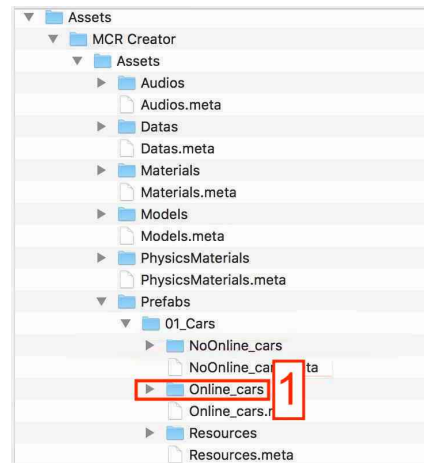*(Info: The button multiplayer is enable in the scene view (spot 3)).*

-Save the scene (Ctrl+S).

-Quit Unity (close the software)
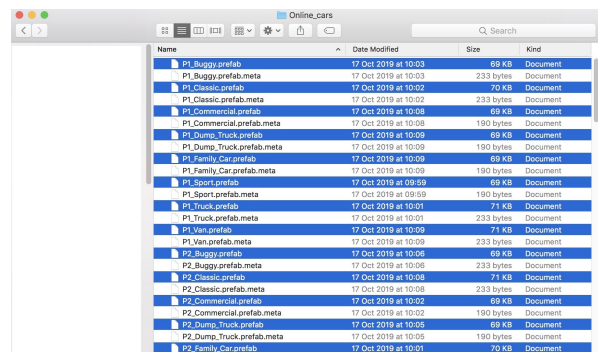
On your PC/Mac desktop:

-Open the folder: Online_cars (spot 1)
MCR Creator → Assets → Prefabs → 01_Cars →
Online_cars

-Select all Prefabs files.

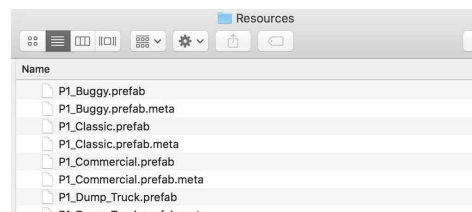IMPORTANT: Select only the prefabs files (blue
files on the right picture)

Do not select the meta data files (Not selected on
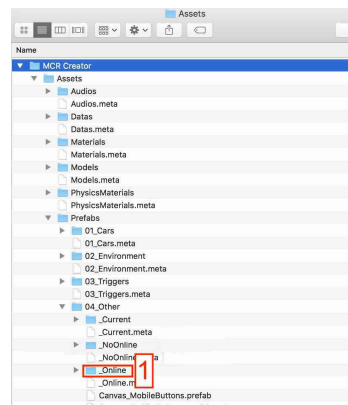the right picture)

-Copy (Ctrl+C).

-Open the folder: Resources
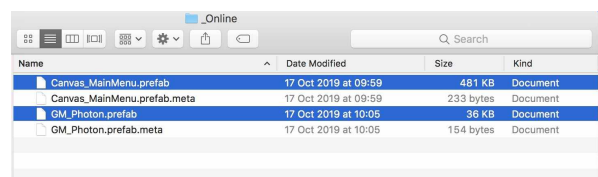MCR Creator → Assets → Prefabs → 01_Cars →
Resources

-Paste (Ctrl+V).

-Open the folder: _Online (spot 1)
MCR Creator → Assets → Prefabs → 04_Other →
_Online

-Select all Prefabs files.

IMPORTANT: Select only the prefabs files (blue
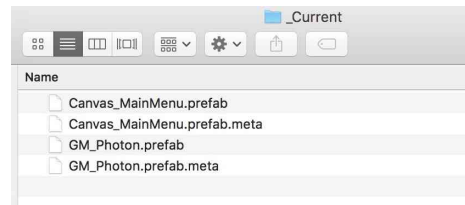files on the right picture)

Do not select the meta data files (Not selected on
the right picture)

-Copy (Ctrl+C).

-Open the folder: _Current
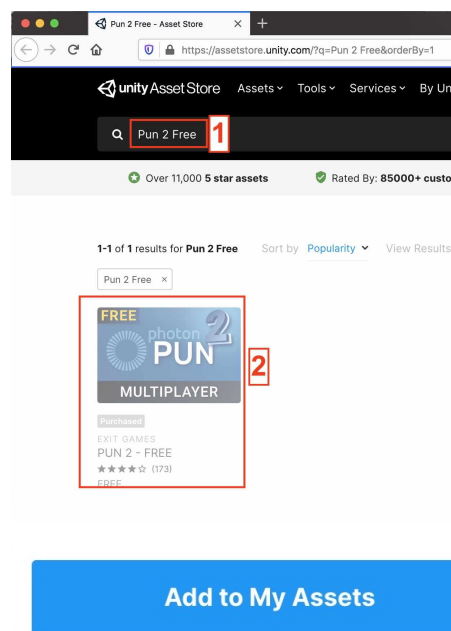MCR Creator → Assets → Prefabs → 04_Other →
_Current

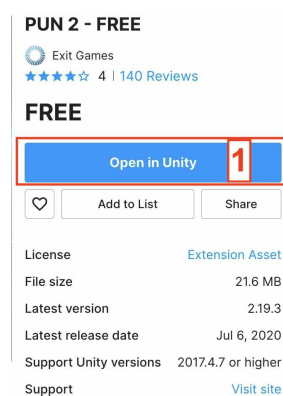-Paste (Ctrl+V).

-Restart Unity and open your project.

-Open your web browser.
-Go to the Unity asset store web page:
https://assetstore.unity.com/

-In the search bar write Pun 2 Free (spot 1).
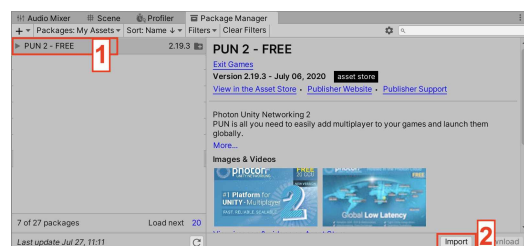-Press the Photon icon to open the page asset
(spot 2).

In the new window press button
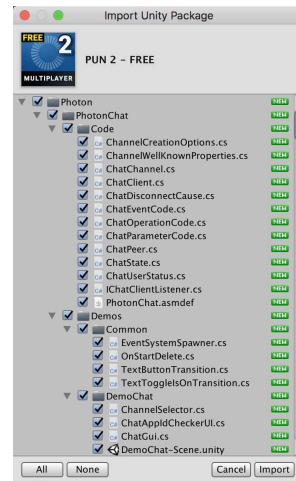Add to My Assets

Then press button
Open in Unity (spot 1)

-In Unity Select PUN 2 – Free in the
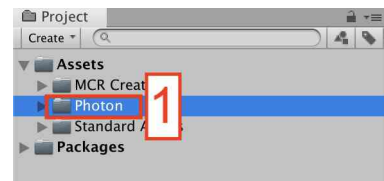Package Manager (spot 1)
(Window → Package Manager)

-Press Import (spot 2).

-Press Import.

(**Info**: In Project Tab: a new folder Photon is created (spot 1))

A new window appears to setup Photon.

If you already have an AppID enter this ID in the empty field (spot 1)

To register an account enter an email and follow the steps.

More info about setup Photon account here:
https://doc.photonengine.com/en-us/pun/v2/getting-started/initial-setup

Go to Edit → Project Settings.

(a new window appears)

-Select Player (spot 1)

-Press the button Desktop (spot 2).

-In field Scripting Define Symbols copy and paste:
CROSS_PLATFORM_INPUT;PHOTON_UNITY_NETWORKING;PUN_2_0_OR_NEWER;PUN_2_OR_NEWER
(spot 3)

If you use other platform (In this example Android platform is used):
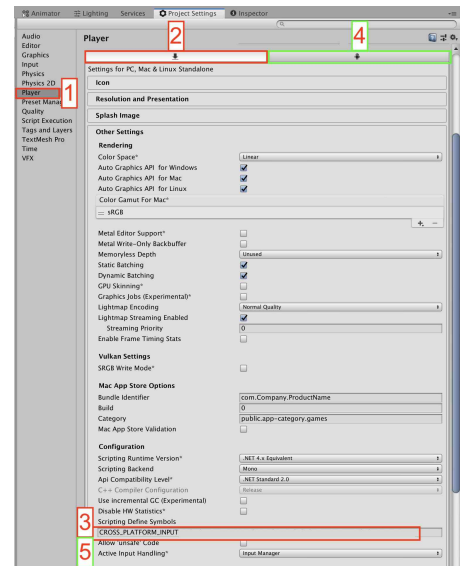-Press the button Android (spot 4).

-In field Scripting Define Symbols copy and paste:
CROSS_PLATFORM_INPUT;PHOTON_UNITY_NETWORKING;PUN_2_0_OR_NEWER;PUN_2_OR_NEWER
(spot 5)
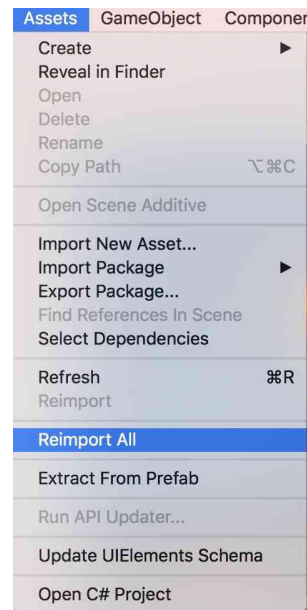
Repeat this process for each platform available in your project.

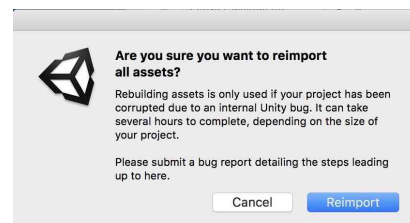-Quit Unity software.

-Restart Unity and open your project.

Go to: Assets → Reimport all.

Create
Reveal in Finder
Open
Delete
Rename
Copy Path   ⌥⌘C

Open Scene Additive

Import New Asset...
Import Package   ▶
Export Package...
Find References In Scene
Select Dependencies

Refresh   ⌘R
Reimport

Reimport All

Extract From Prefab

Run API Updater...

Update UIElements Schema

Open C# Project

A new window appears:
-Press Reimport

Are you sure you want to reimport all assets?

Rebuilding assets is only used if your project has been corrupted due to an internal Unity bug. It can take several hours to complete, depending on the size of your project.

Please submit a bug report detailing the steps leading up to here.

Cancel   Reimport

*(**Info**: If Unity Crash during the process.)*
-Quit unity Hub.
-Reopen Unity.
-Go to: Edit → Reimport all.

-Press Play to test the game

Minicar is now ready to use online Multiplayer.

Troubleshooting:

1-The track doesn't start and this error message appears in the console when a track is loaded.

InvalidCastException: Specified cast is not valid.
Photon.Pun.UtilityScripts.CountdownTimer.TryGetStartTime
(System.Int32& startTimestamp) (at
Assets/Photon/PhotonUnityNetworking/UtilityScripts/Room/Co
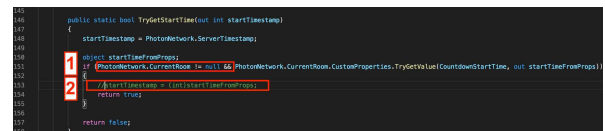untdownTimer.cs:153)
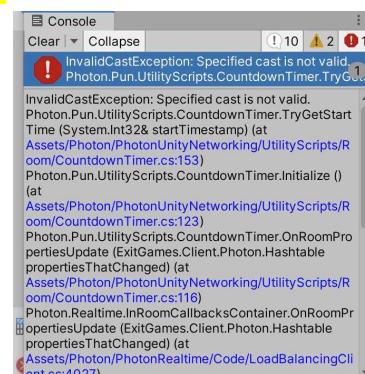
-Open the script CountdownTime.cs in your script editor (spot 1)

(Assets → Photon → PhotonUnityNetworking → UtilityScripts → Room → CountdownTimer.cs)
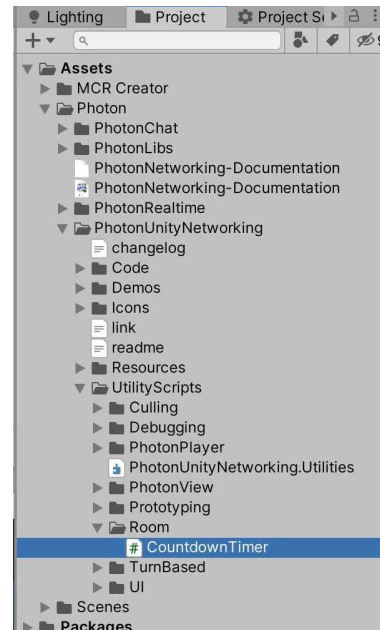
-Line 151 add `PhotonNetwork.CurrentRoom != null &&` (spot 1)

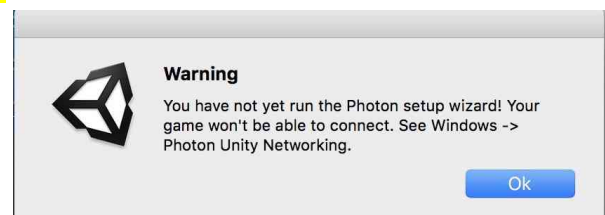-Remove the line 153 (spot 2)
-Save the script (Ctrl+S)

You must have this:

```
if (PhotonNetwork.CurrentRoom != null &&
PhotonNetwork.CurrentRoom.CustomProperties.TryGetVa
lue(CountdownStartTime, out startTimeFromProps))
{
//startTimestamp = (int)startTimeFromProps;
return true;
}
```
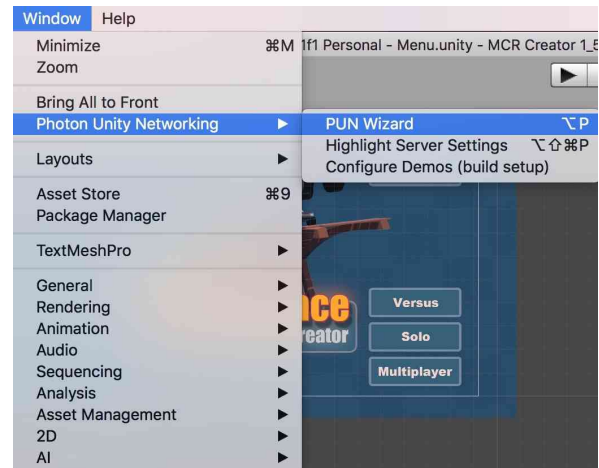
2- I have a warning pop up message

If this message appears.
-Press Ok.

-Go to Window → Photon Unity Networking →
PUN Wizard

(a new window appears)

-Press Setup Project (spot 1).

A new window appears to setup Photon.

If you already have an AppID enter this ID in the
empty field (spot 1)

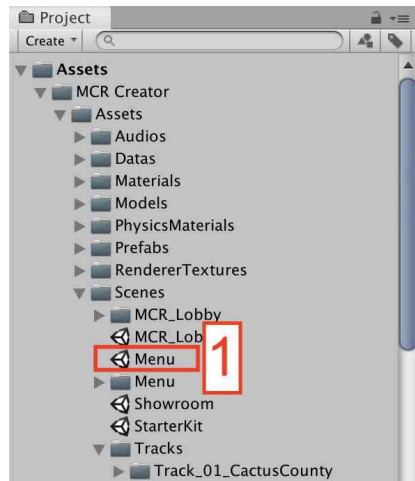To register an account enter an email and follow
the steps.

More info about setup Photon account here:
https://doc.photonengine.com/en-
us/pun/v2/getting-started/initial-setup

-Open the scene: Menu
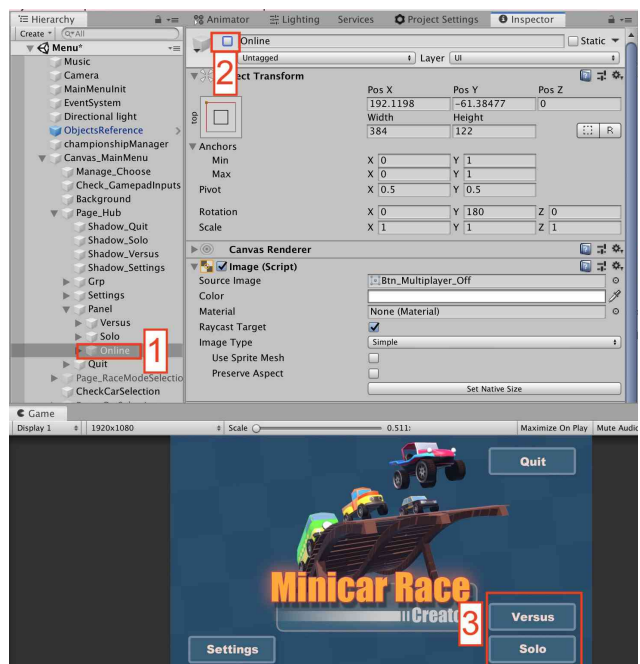*(Project Tab: MCR Creator → Assets → Scenes → Menu)*

-In the Hierarchy select the button Online
(spot 1).
*(Hierarchy: Canvas_MainMenu → Page Hub → Panel →
Online)*

-In the Inspector disabled the button (spot 2).

*(**Info**: The button multiplayer is disabled in the scene view
(spot 3)).*

-Save the scene (Ctrl+S).
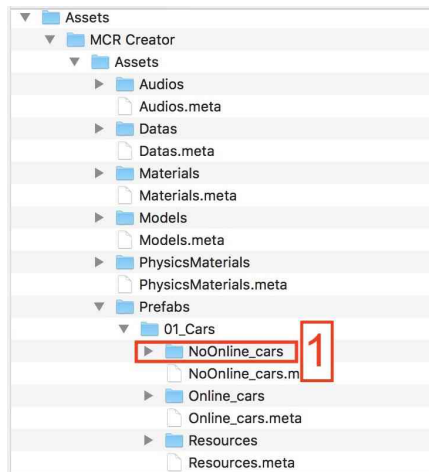
-Quit Unity (close the software)

On your PC/Mac desktop:

-Open the folder: NoOnline_cars (spot 1)
MCR Creator → Assets → Prefabs → 01_Cars
→ NoOnline_cars

-Select all the Prefab files into the folder.
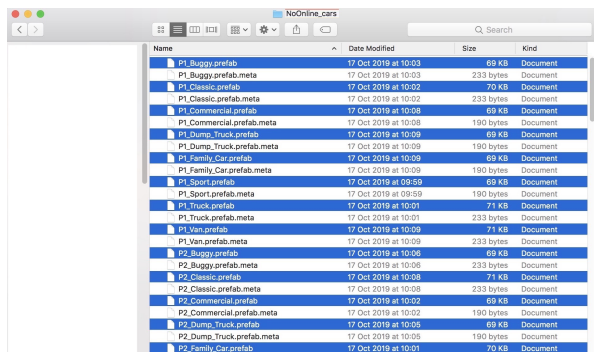

-Select all Prefabs files.

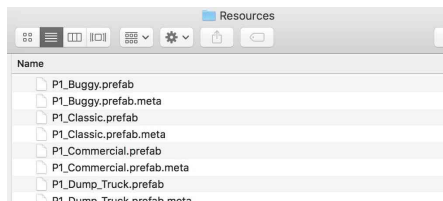<mark>IMPORTANT: Select only the prefabs files (blue files on the right picture)</mark>

<mark>Do not select the meta data files (Not selected on the right picture)</mark>
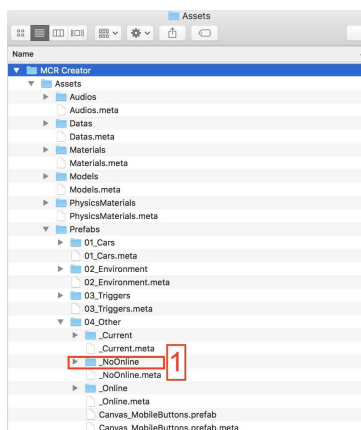
-Copy (Ctrl+C).

-Open the folder: Resources
MCR Creator → Assets → Prefabs → 01_Cars
→ Resources

-Paste (Ctrl+V).

-Open the folder: _NoOnline (spot 1)
MCR Creator → Assets → Prefabs → 04_Other
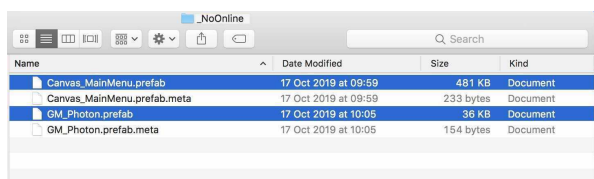→ _NoOnline

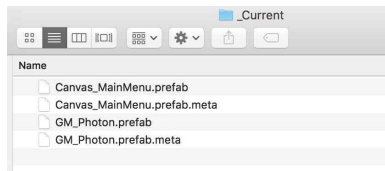-Select all Prefabs files.

<mark>IMPORTANT: Select only the prefabs files (blue files on the right picture)</mark>

<mark>Do not select the meta data files (Not selected on the right picture)</mark>
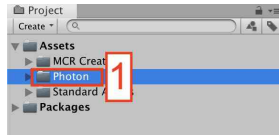
-Copy (Ctrl+C).

-Open the folder: _Current
MCR Creator → Assets → Prefabs → 04_Other
→ _Current

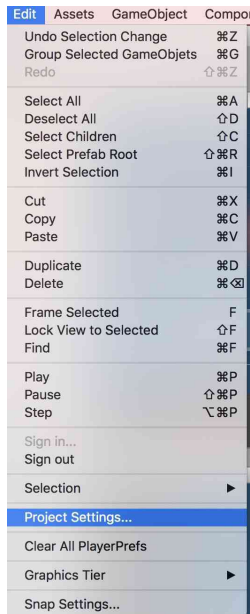-Paste (Ctrl+V).

-Restart Unity and open your project.

-In Project Tab:
Delete the folder Photon (spot 1)

Go to Edit → Project Settings.

(a new window appears)

-Select Player (spot 1)

-Press the button Desktop (spot 2).

-In field Scripting Define Symbols remove:
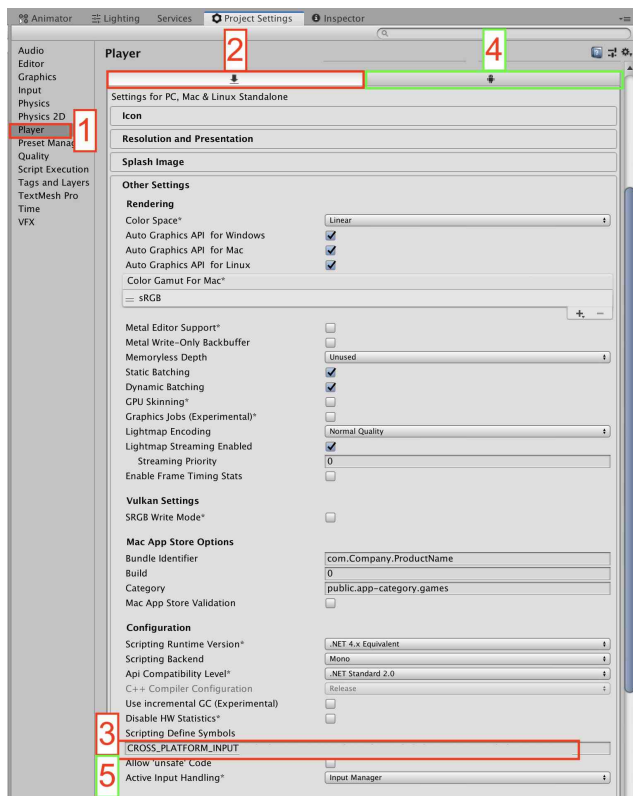;PHOTON_UNITY_NETWORKING;PUN_2_0_OR_NEWER;PUN_2_OR_NEWER

You must write this in the field:
CROSS_PLATFORM_INPUT (spot 3)

If you use other platform (In this example
Android platform is used):
-Press the button Android (spot 4).
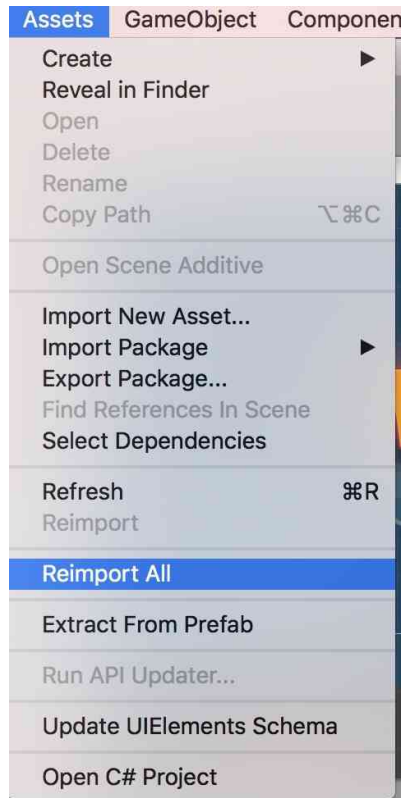
-In field Scripting Define Symbols remove:
;PHOTON_UNITY_NETWORKING;PUN_2_0_OR_NEWER;PUN_2_OR_NEWER

You must write this in the field:
CROSS_PLATFORM_INPUT (spot 5)

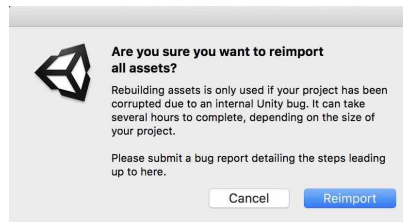Repeat this process for each platform
availablein your project.

Go to: Assets → Reimport all.

Assets | GameObject | Componen

Create ►
Reveal in Finder
Open
Delete
Rename
Copy Path ⌥⌘C

Open Scene Additive

Import New Asset...
Import Package ►
Export Package...
Find References In Scene
Select Dependencies

Refresh ⌘R
Reimport

Reimport All

Extract From Prefab

Run API Updater...

Update UIElements Schema

Open C# Project

A new window appears:
-Press Reimport

Are you sure you want to reimport all assets?

Rebuilding assets is only used if your project has been corrupted due to an internal Unity bug. It can take several hours to complete, depending on the size of your project.

Please submit a bug report detailing the steps leading up to here.

Cancel   Reimport

(Info: If Unity Crash during the process.)
-Reopen Unity.
-Go to: Edit → Reimport all.

Minicar is now ready to use without online Multiplayer.

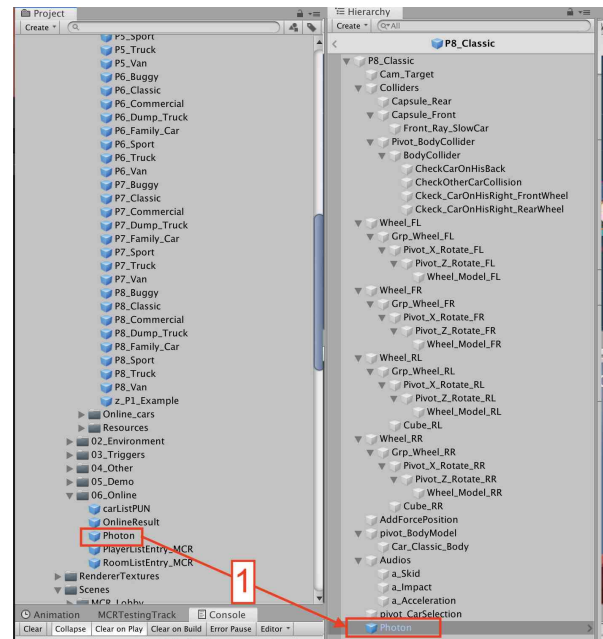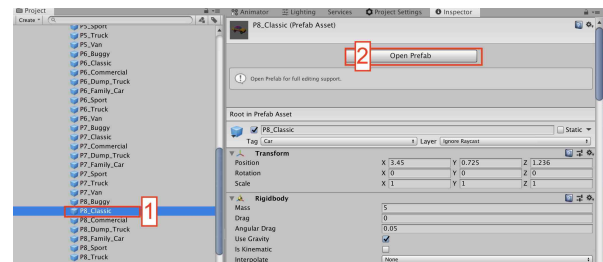-In the Project tab:
Select a car (spot 1).

-In the Inspector press Open Prefab button
(spot 2).

-Drag and drop the prefab Photon in the Hierarchy
(spot 1)
(Project Tab: MCR Creator→ Assets → Prefabs → 06_Online)

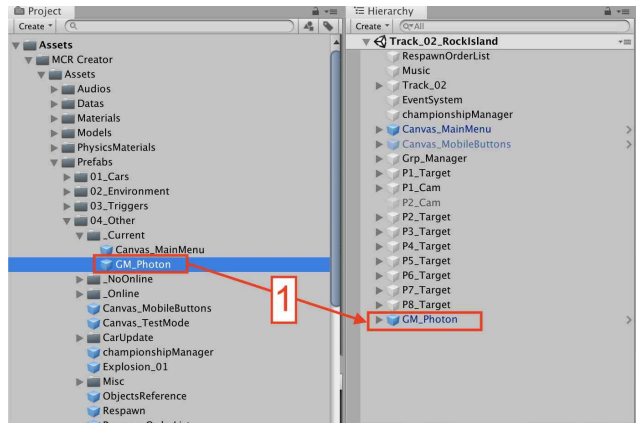*Info: Repeat the process for each car you need to update.*

Update a scene for Online Multiplayer:

-In your track scene, drag and drop the prefab GM_Photon (spot 1).
(Project Tab: MCR Creator→ Assets → Prefabs → 04_Other → _Current)

Info: Repeat the process for each track you need to update.

Disable object like Cone Signaling:

In each track scene you will find the Object
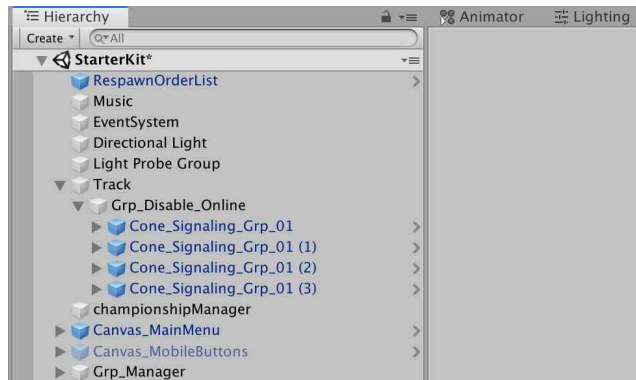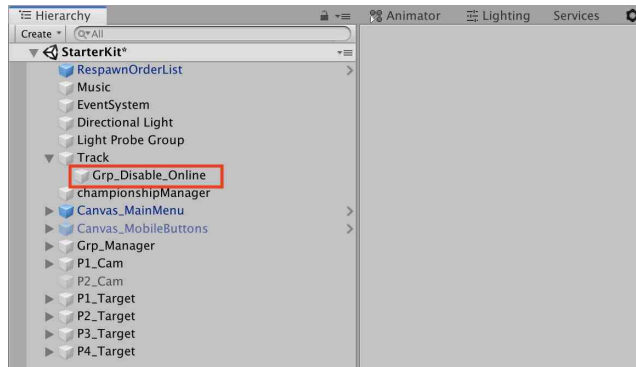Grp_Disable_Online (spot 1).
(Hierarchy: Track → Grp_Disable_Online)

If Grp_Disable_Online doesn't exist in the
hierarchy:
-Create an empty object
-Rename it Grp_Disable_Online

Put your Cone Signaling or other object you
don't want to use in multiplayer mode (spot 1).
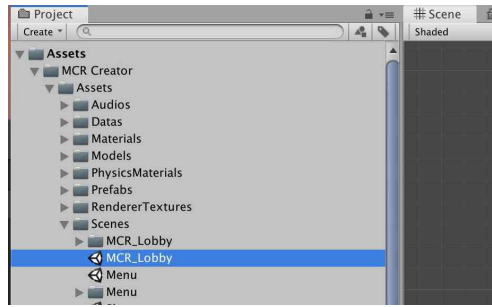
When the scene starts in Online multiplayer
mode:
The object inside Grp_Disable_Online will be
disabled.

Choose the number of player by race:

-Open scene MCR_Lobby
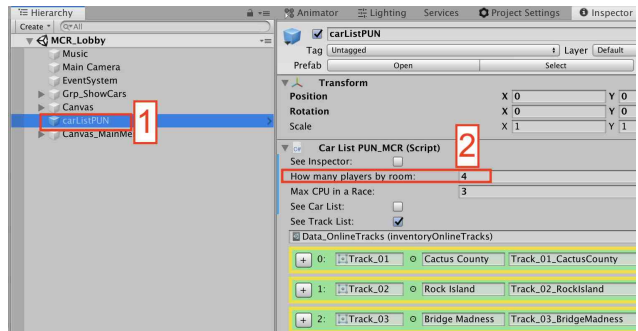*(Project tab: MCR Creator → Assets → Scenes → MCR_Lobby)*

In the Hierarchy:
-Select carListPUN (spot 1)

In the Inspector:
-Choose the number of player by room (spot 2).

Important: Remember that adding players increases the amount of data sent and received by the server.
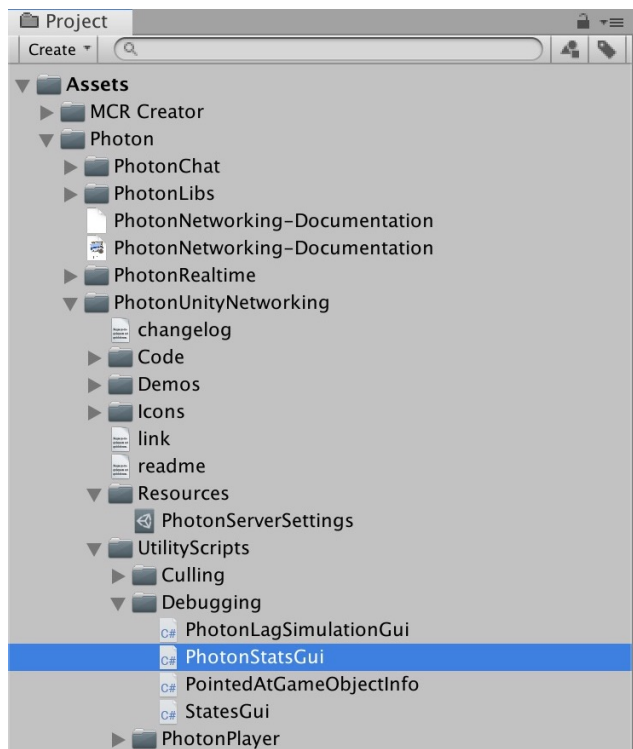

Tips:
To test the amount of data:

-Create an empty object in your scene.
-Add the script PhotonStatsGui to that empty object.
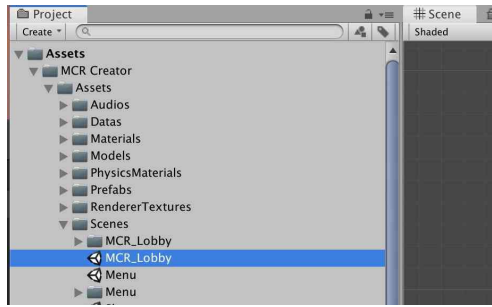*(Project tab: Photon → UtilityScripts → Debugging)*

More info:
https://doc.photonengine.com/en-us/pun/current/troubleshooting/photon-stats-gui

Choose the max number of CPU by race

-Open scene MCR_Lobby
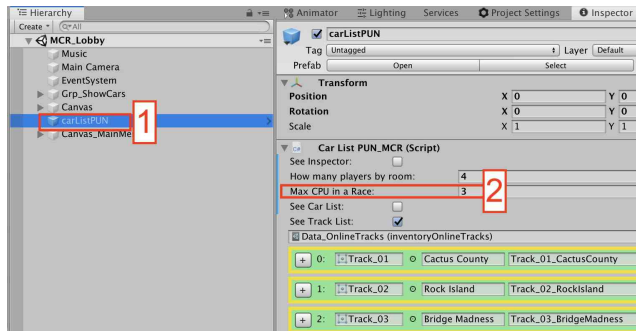*(Project tab: MCR Creator → Assets → Scenes → MCR_Lobby)*

In the Hierarchy:
-Select carListPUN (spot 1)

In the Inspector:
-Choose the maximum number of CPUs in the race. (spot 2).

Important: Remember that adding CPU increases the amount of data sent and received by the server.
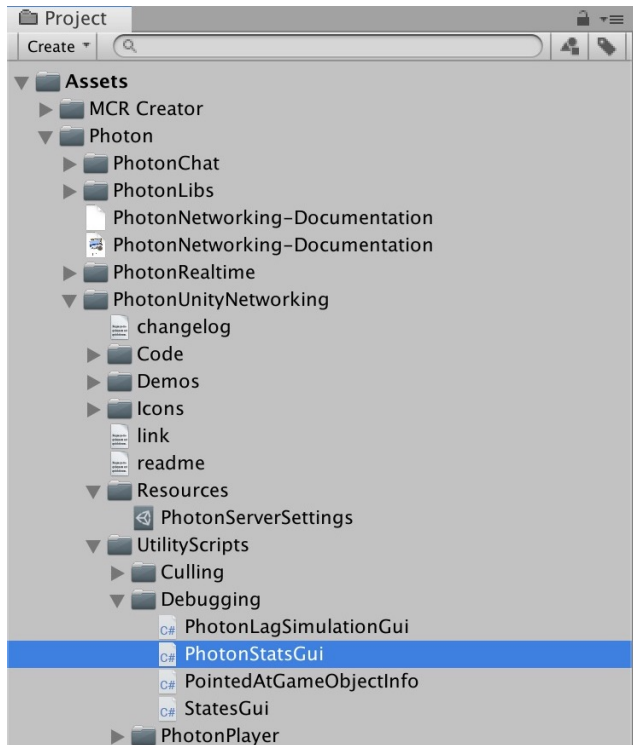

Tips:
To test the amount of data:

-Create an empty object in your scene.
-Add the script PhotonStatsGui to that empty object.
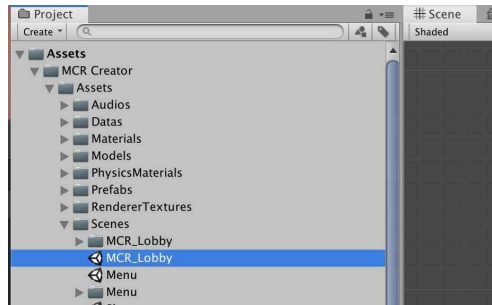*(Project tab: Photon → UtilityScripts → Debugging)*

More info:
https://doc.photonengine.com/en-us/pun/current/troubleshooting/photon-stats-gui

Add tracks to Online Multiplayer Mode

-Open scene MCR_Lobby
(Project tab: MCR Creator → Assets → Scenes → MCR_Lobby)

In the Hierarchy:
-Select carListPUN (spot 1)

In the Inspector:
-Press + button to add a new track to Online Mode (spot 2).

-Drag and drop a sprite that represent your track
(spot 3)

-Write the name of the track displayed in-game (spot 4)

-Write the name of the track scene (spot 5).