

Online Multiplayer with Photon PUN:

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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:

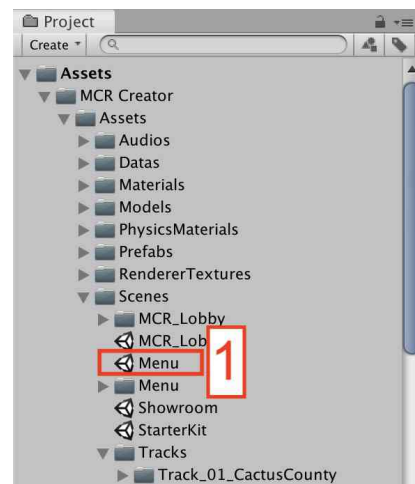
1-Read section: [Tuto: Setup the project to use Online Multiplayer](#) .

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)

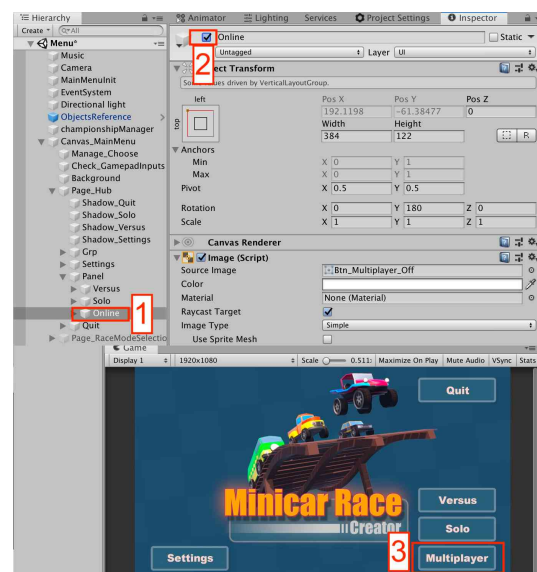


-In the Hierarchy select the button **Online** (spot 1).

(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)).



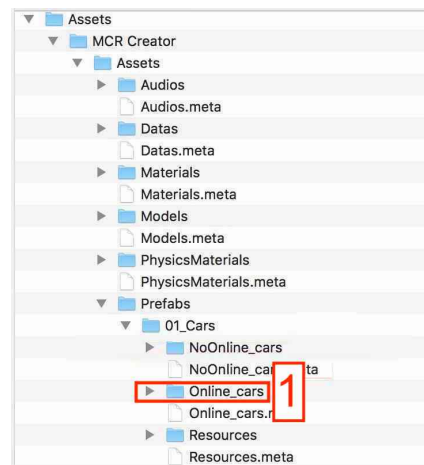
-Save the scene (Ctrl+S).

-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

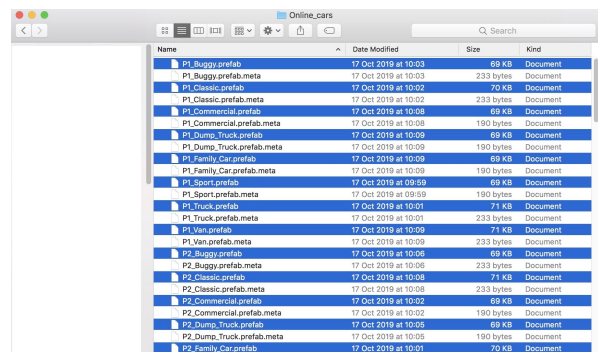


-Select all Prefabs files.

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

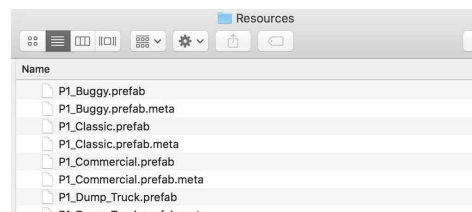
Do not select the meta data files (Not selected on the right picture)

-Copy (Ctrl+C).

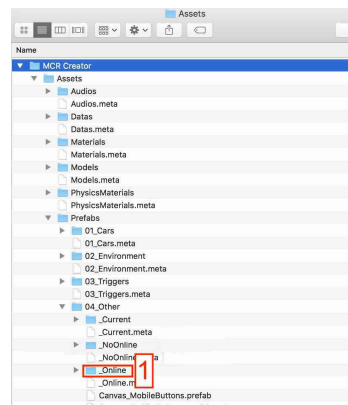


-Open the folder: **Resources**
MCR Creator → Assets → Prefabs → 01_Cars →
Resources

-Paste (Ctrl+V).



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

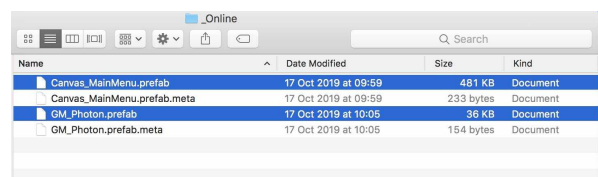


-Select all Prefabs files.

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

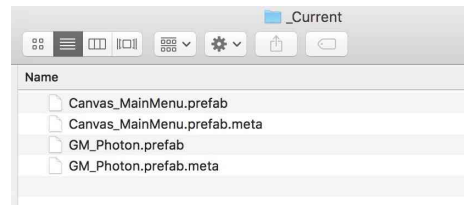
Do not select the meta data files (Not selected on the right picture)

-Copy (Ctrl+C).



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

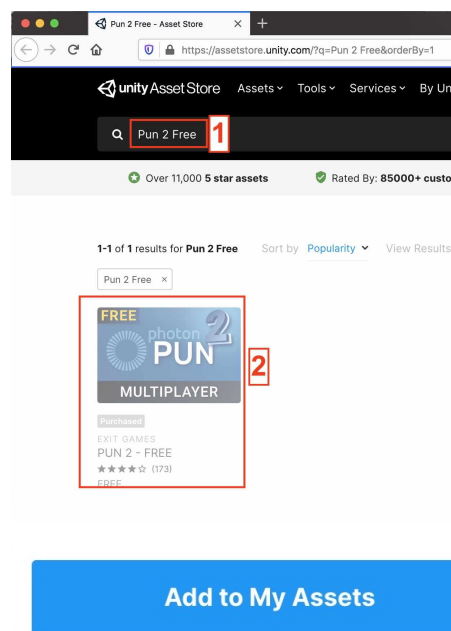
-Paste (Ctrl+V).



-Restart Unity and open your project.

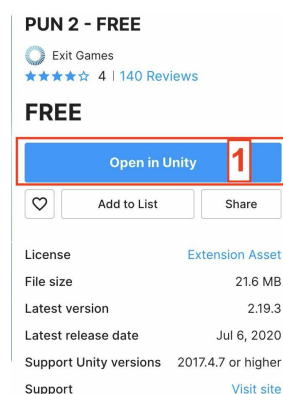
Since Unity 2020 you must download assets
outside Unity Editor.

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



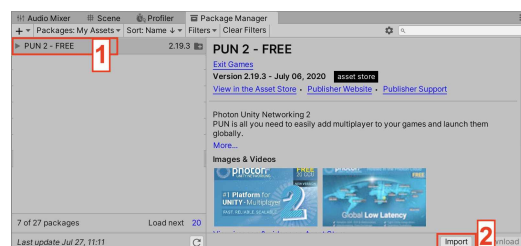
In the new window press button
Add to My Assets

Then press button
Open in Unity (spot 1)

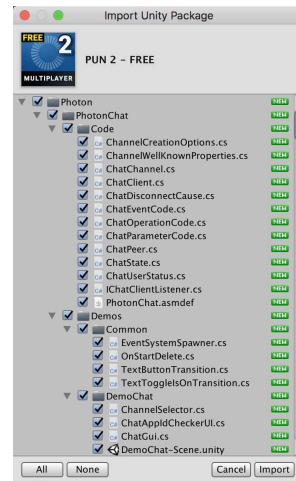


-In Unity Select **PUN 2 – Free** in the
Package Manager (spot 1)
(Window → Package Manager)

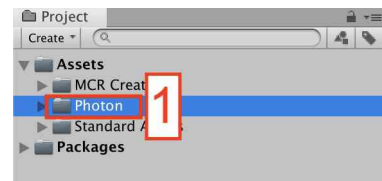
-Press **Import** (spot 2).



-Press **Import**.



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



A new window appears to setup Photon.

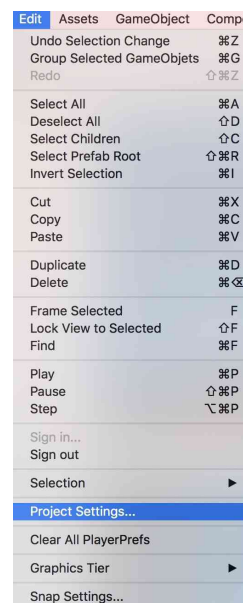
If you already have an AppID enter this ID in the empty field (spot 1)

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).

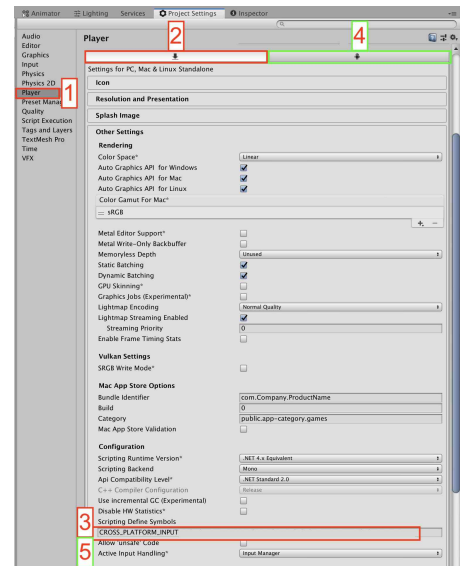
-In field **Scripting Define Symbols** copy and paste:

`CROSS_PLATFORM_INPUT;PHOTON_UNITY_NETWORKING;PUN_2_0_OR_NEWER;PUN_2_OR_NEWER`
(spot 5)

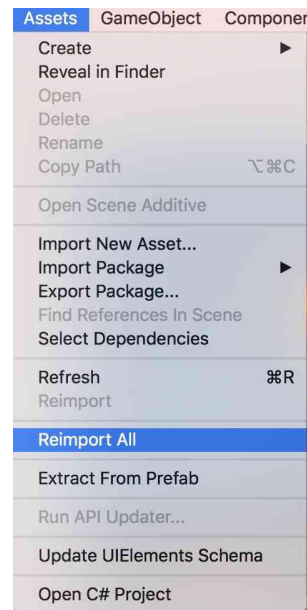
Repeat this process for each platform available in your project.

-Quit Unity software.

-Restart Unity and open your project.

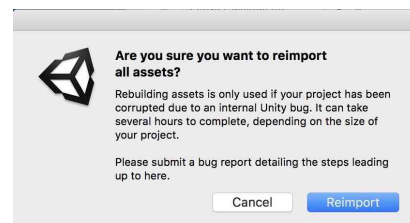


Go to: **Assets** → **Reimport all**.



A new window appears:

-Press **Reimport**



(Info: If Unity Crash during the process.)

-Quit unity Hub.

-Reopen Unity.

-Go to: **Edit** → **Reimport all**.

-Press **Play** to test the game

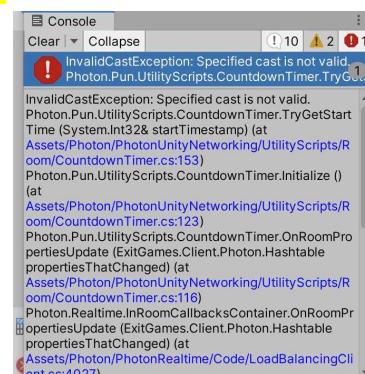


Minicar is now ready to use online Multiplayer.

Troubleshooting:

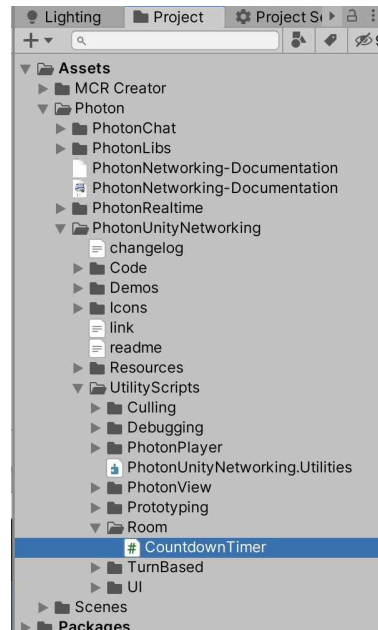
1-The track doesn't start and this error message appears in the console when a track is loaded.

InvalidCastException: Specified cast is not valid.
Photon.Pun.UtilityScripts.CountdownTimer.TryGetStartTime
(System.Int32& startTimestamp) (at
Assets/Photon/PhotonUnityNetworking/UtilityScripts/Room/Co
untdownTimer.cs:153)



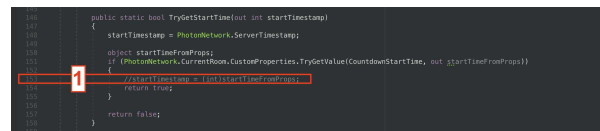
-Open the script **CountdownTime.cs** in your script editor (spot 1)

(Assets → Photon → PhotonUnityNetworking → UtilityScripts → Room → CountdownTimer.cs)



-Remove the **line 153** (spot 1)

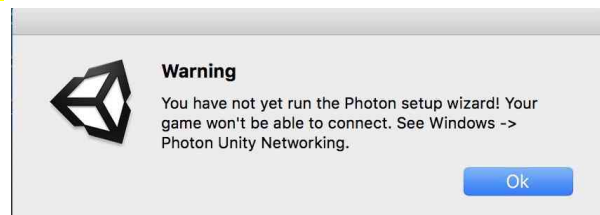
-Save the script (Ctrl+S)



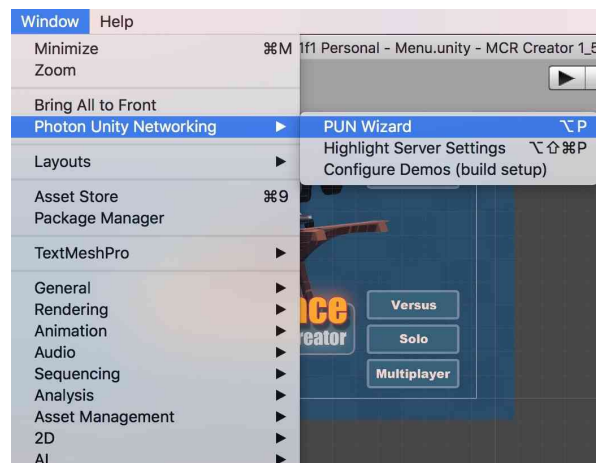
2- I have a warning pop up message

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:

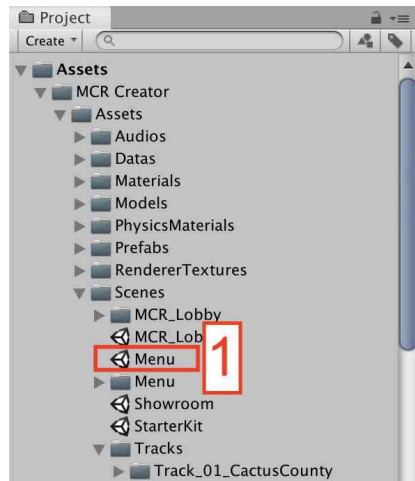
<https://doc.photonengine.com/en-us/pun/v2/getting-started/initial-setup>



Remove Online Multiplayer:

-Open the scene: **Menu**

(Project Tab: MCR Creator → Assets → Scenes → Menu)

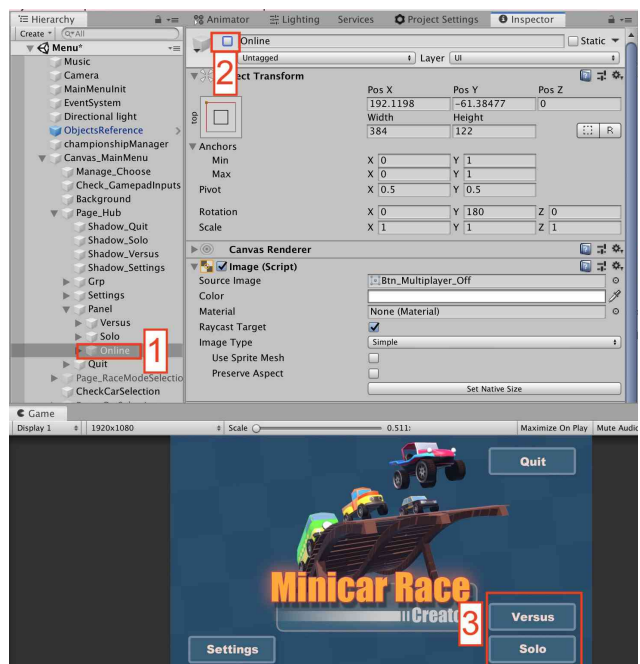


-In the Hierarchy select the button **Online** (spot 1).

(Hierarchy: Canvas_MainMenu → Page Hub → Panel → Online)

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

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



-Save the scene (Ctrl+S).

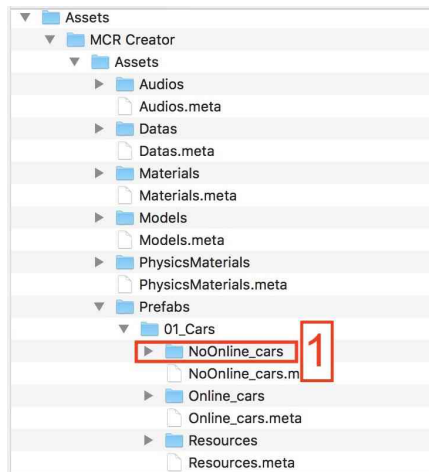
-Quit Unity (close the software)



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.

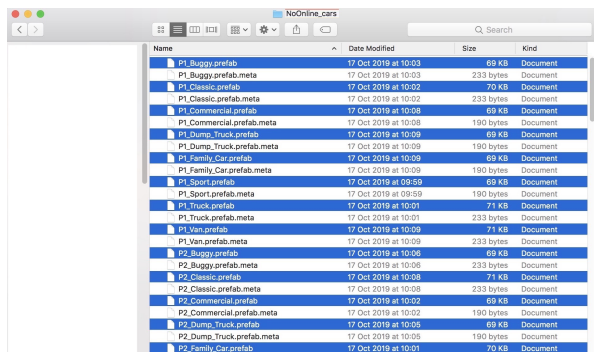


-Select all Prefabs files.

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

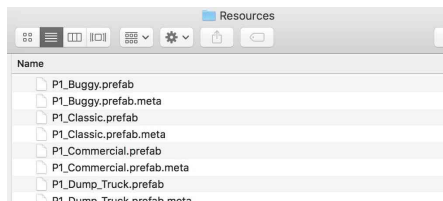
Do not select the meta data files (Not selected on the right picture)

-Copy (Ctrl+C).



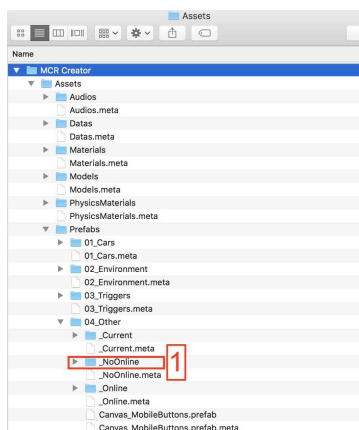
-Open the folder: **Resources**
MCR Creator → Assets → Prefabs → 01_Cars
→ Resources

-Paste (Ctrl+V).



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

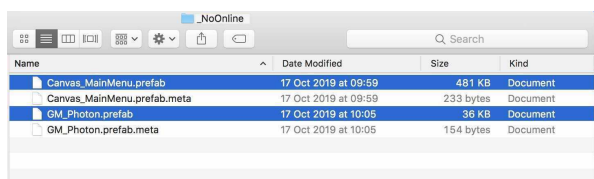
-Select all Prefabs files.



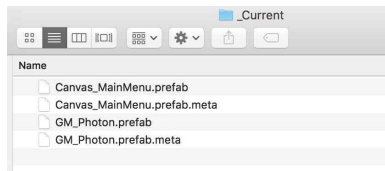
IMPORTANT: Select only the prefabs files (blue files on the right picture)

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

-Copy (Ctrl+C).



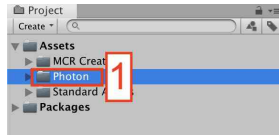
-Open the folder: **_Current**
MCR Creator → **Assets** → **Prefabs** → **04_Other**
 → **_Current**



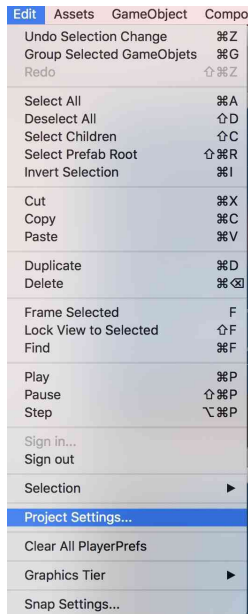
-Paste (Ctrl+V).

-Restart Unity and open your project.

-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

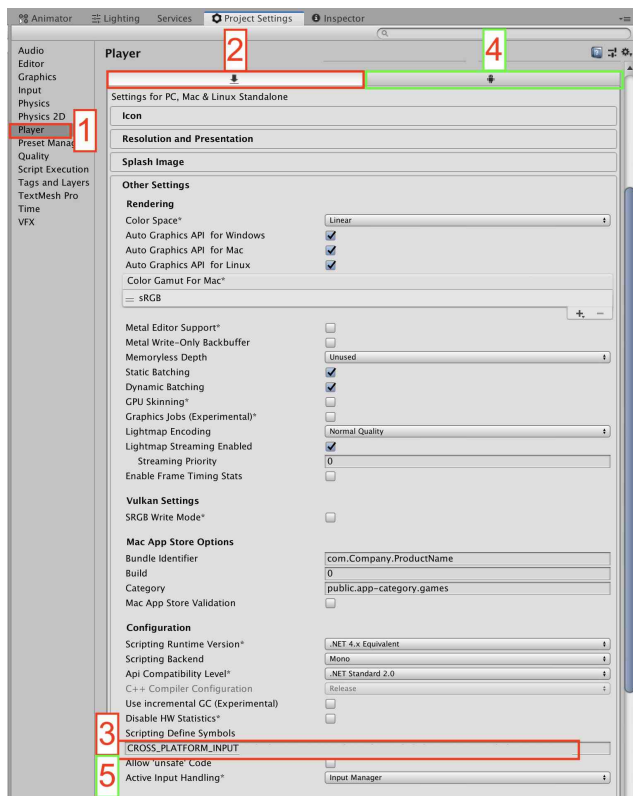
You must write this in the field:
CROSS_PLATFORM_INPUT (spot 3)

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

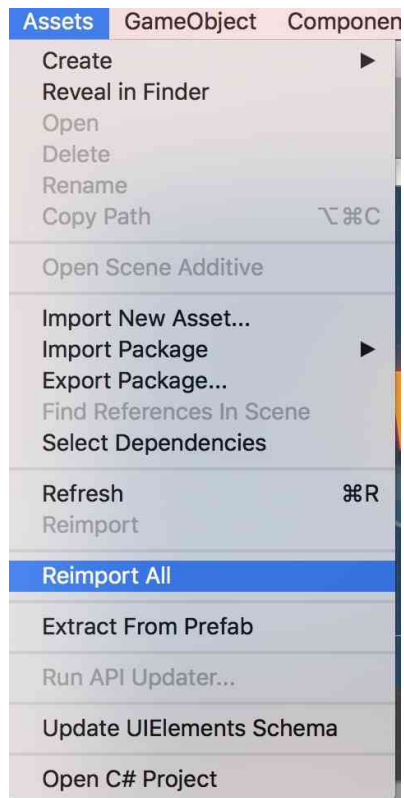
-In field **Scripting Define Symbols** remove:
 ;PHOTON_UNITY_NETWORKING;PUN_2_0_OR_NEWER;PUN_2_OR_NEWER

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

Repeat this process for each platform
 available in your project.

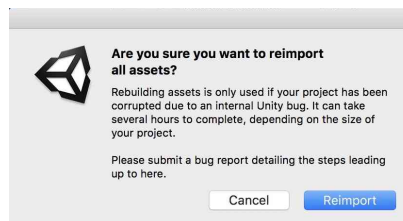


Go to: **Assets** → **Reimport all**.



A new window appears:

-Press **Reimport**



(Info: If Unity Crash during the process.)

-Reopen Unity.

-Go to: **Edit** → **Reimport all**.

Minicar is now ready to use without online Multiplayer.

Update cars for Online:

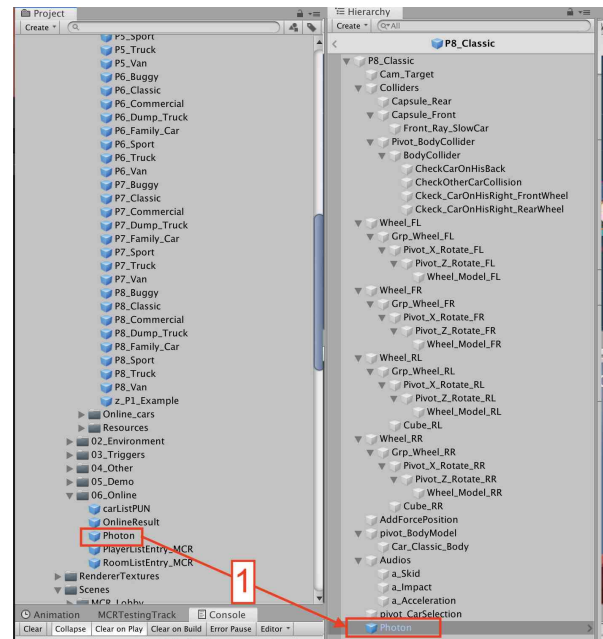
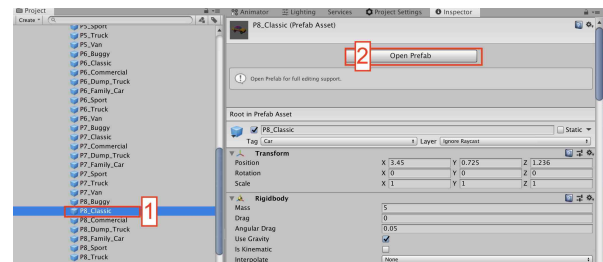
-In the Project tab:
Select a car (spot 1).

-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.

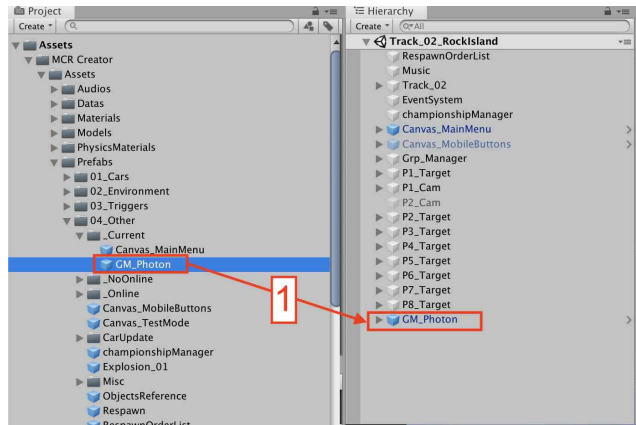


Update a scene for Online Multiplayer:

-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)

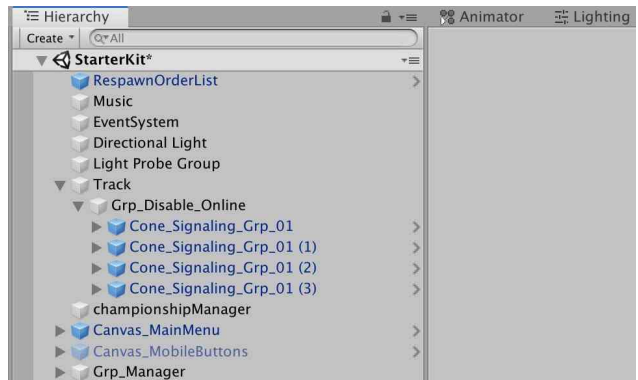
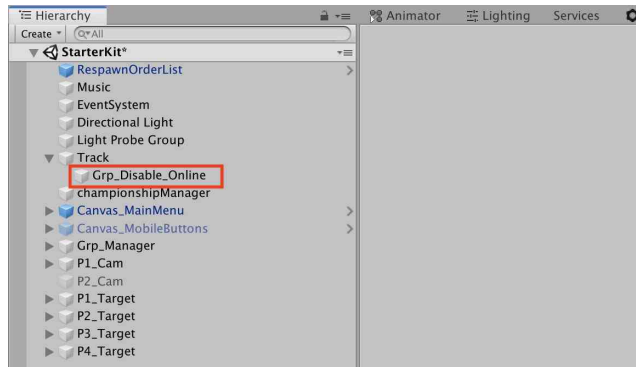
If **Grp_Disable_Online** doesn't exist in the hierarchy:

- 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:

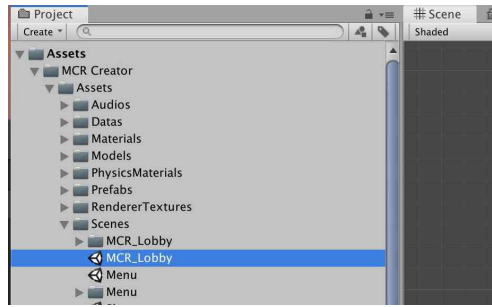
The object inside **Grp_Disable_Online** will be disabled.



Choose the number of player by race:

-Open scene **MCR_Lobby**

(Project tab: MCR Creator → Assets → Scenes → MCR_Lobby)

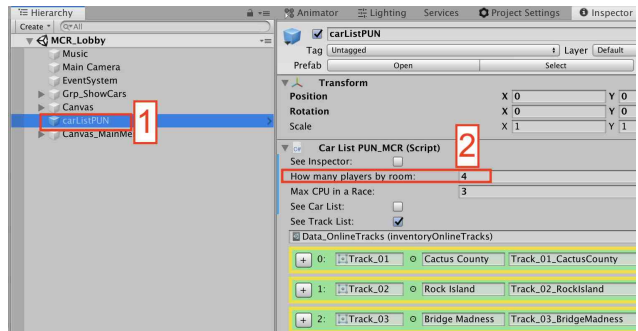


In the Hierarchy:

-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:

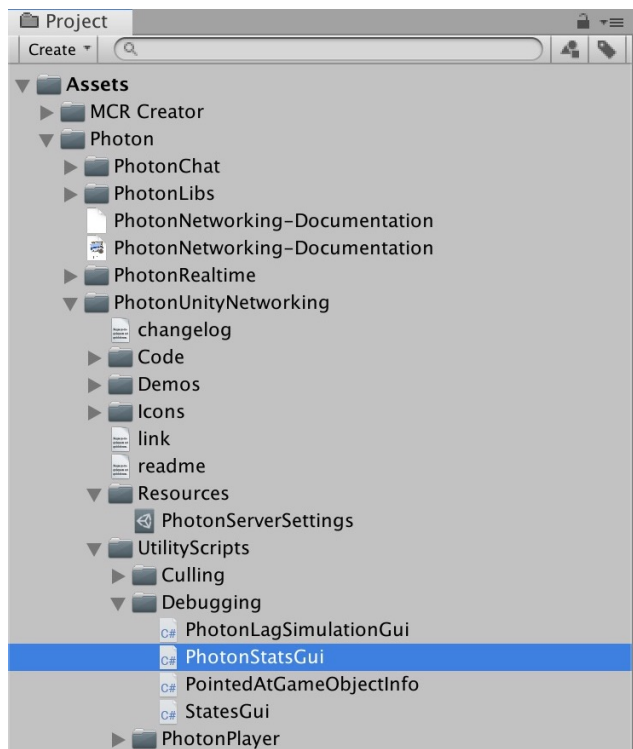
-Create an empty object in your scene.

-Add the script **PhotonStatsGui** to that empty object.

(Project tab: Photon → UtilityScripts → Debugging)

More info:

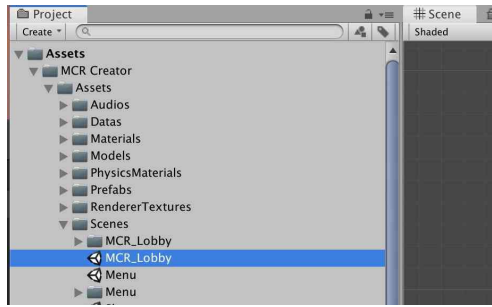
<https://doc.photonengine.com/en-us/pun/current/troubleshooting/photon-stats-gui>



Choose the max number of CPU by race

-Open scene **MCR_Lobby**

(Project tab: MCR Creator → Assets → Scenes → MCR_Lobby)

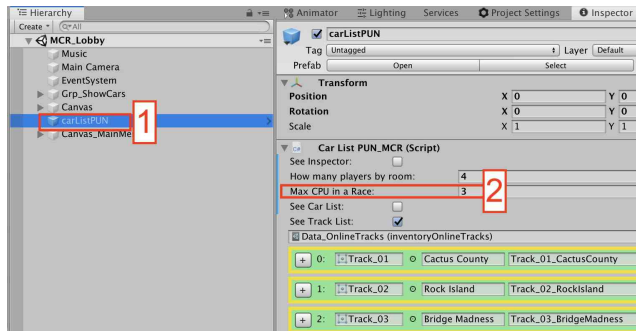


In the Hierarchy:

-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:

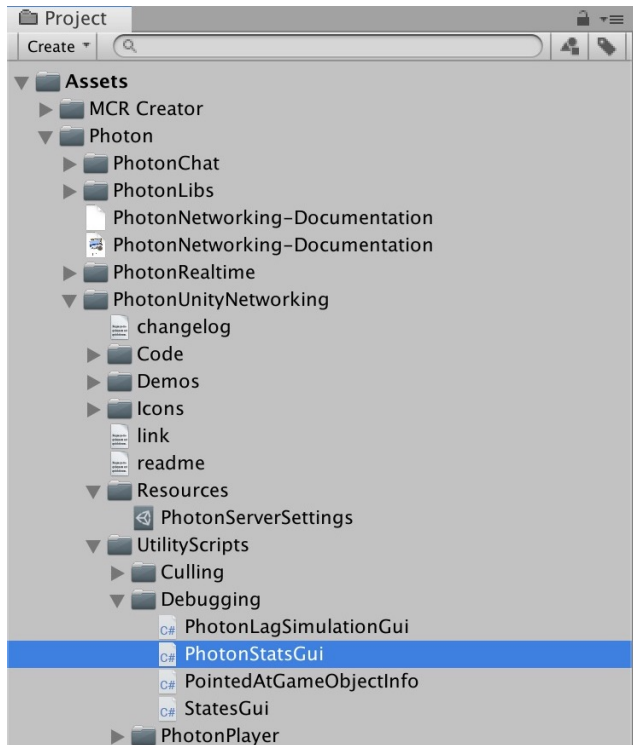
-Create an empty object in your scene.

-Add the script **PhotonStatsGui** to that empty object.

(Project tab: Photon → UtilityScripts → Debugging)

More info:

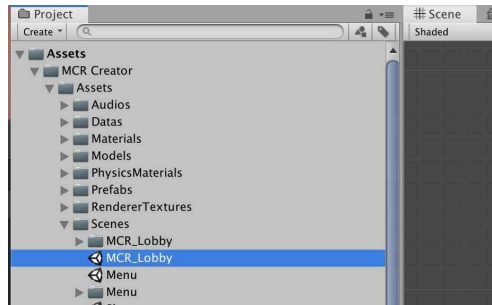
<https://doc.photonengine.com/en-us/pun/current/troubleshooting/photon-stats-gui>



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).

