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Master Audio Multiplayer: Introduction

Congratulations on your purchase of Dark Tonic’s Master Audio Multiplayer plugin for Unity. You now have extensive turnkey multiplayer features to go along with the massive power of Master Audio, whether you use Mirror or Photon! This includes the full latest version of the Master Audio plugin along with our exclusive multiplayer code. Your dynamic audio will be heard by all players without having to write any code or RPC’s, in most cases just by you clicking a checkbox! This gives you the tools to choose which audio is heard by all players in all cases, regardless of which other RPC's you may or may not have with your other non-audio code (more on this later).

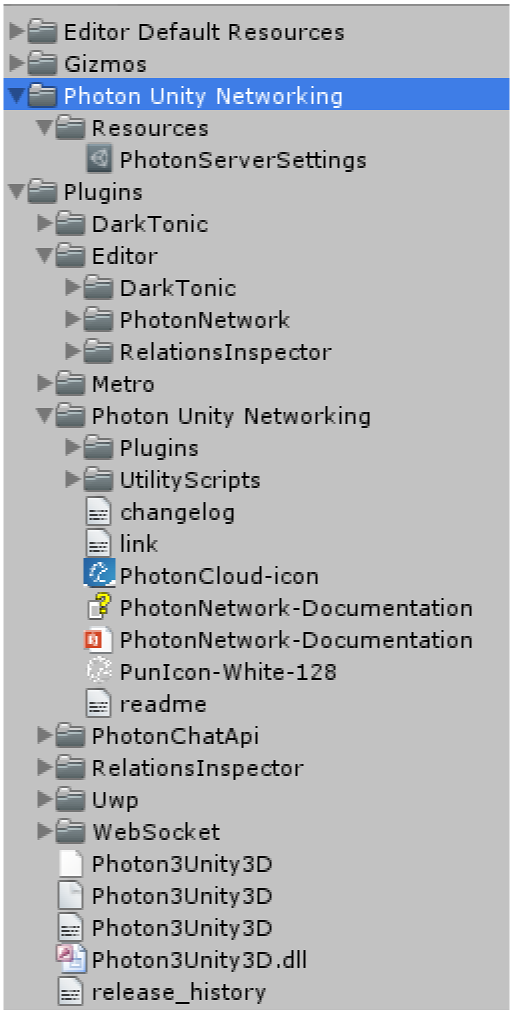
For the full list of important links for the base Master Audio, check here.

If Using Photon, Take These Steps First

1) In order to use Master Audio Multiplayer with Photon, you must have a copy of the following plugin installed in your project:
   a. Photon Unity Networking (any version will do, including the free version).
2) All DarkTonic plugins are installed in the **Assets/Plugins** folder (as is the recommended option for all Editor Extensions because it speeds up compile time), so you will need to move Photon into **Assets/Plugins** as well so things will compile after you install Master Audio Multiplayer. To do this, perform the following steps from within Unity:
   a. In the Project view, drag the entire **Photon** folder (in the top-level folder) into **Assets/Plugins**.
   b. If you have a **Photon Chat** folder in the top-level folder too, drag that into **Assets/Plugins** as well.
   c. In the **Assets/Plugins** folder, Editor files need to be in a precise location, so we need to make one more change. Locate the folder you just dragged, in the **Assets/Plugins/Photon Unity Networking** folder, and expand it. Also expand the Code folder located under that. Now drag the **Editor** folder there up into the **Assets/Plugins/Editor** folder instead of **Plugins/Photon Unity Networking/Editor**. Finally, rename your dragged folder to "PhotonUnityNetworking". That will be at **Assets/Plugins/Editor/PhotonUnityNetworking** when you are finished.
   d. **Note:** if you have other code referencing the Photon API, you will need to move those scripts into Plugins as well. However, this is great for compile time because only when code in Plugins is modified will the code in Plugins have to be recompiled.
3) Finally, install Master Audio Multiplayer plugin and then the optional Photon package it has. By default a non-functioning version is installed (since Unity deprecated UNET in Unity 2019). To install the Photon version, install the package in Plugins/DarkTonic/MasterAudioMultiplayer/Packages called "MAM_Photon" and you're ready to begin! It will overwrite a single code file with Photon specific code. If you need PUN 2, instead install “MAM_Photon_2”.

   Note: There's also a package "MAM_UNET" in the same folder if you want to use UNET, but know that it is deprecated start in Unity 2019 and may stop working at any moment.

You will now have a Project View with the following and everything should be compiling fine:



```
▶ Editor Default Resources
▶ Gizmos
▼ Photon Unity Networking
  ▼ Resources
      PhotonServerSettings
▼ Plugins
  ▶ DarkTonic
  ▼ Editor
    ▶ DarkTonic
    ▶ PhotonNetwork
    ▶ RelationsInspector
  ▶ Metro
  ▼ Photon Unity Networking
    ▶ Plugins
    ▶ UtilityScripts
      changelog
      link
      PhotonCloud-icon
      PhotonNetwork-Documentation
      PhotonNetwork-Documentation
      PunIcon-White-128
      readme
  ▶ PhotonChatApi
  ▶ RelationsInspector
  ▶ Uwp
  ▶ WebSocket
    Photon3Unity3D
    Photon3Unity3D
    Photon3Unity3D
    Photon3Unity3D.dll
    release_history
```

If Using Mirror, Take These Steps First

1) In order to use Master Audio Multiplayer with Mirror, you must have a copy of the following plugin installed in your project:
   a. Mirror (I prefer to install it from the Unity Asset Store).
2) Install Master Audio Multiplayer plugin and then the optional Mirror package it has. By default a non-functioning version is installed (since Unity deprecated UNET in Unity 2019). To install the Mirror version, install the package in Plugins/DarkTonic/MasterAudioMultiplayer/Packages called "MAM_Mirror" and you’re ready to begin! It will overwrite a few files of Master Audio and add some multiplayer related ones.

   Note: There's also a package "MAM_UNET" in the same folder if you want to use UNET, but know that it is deprecated start in Unity 2019 and may stop working at any moment.

You will now have everything compiling fine.

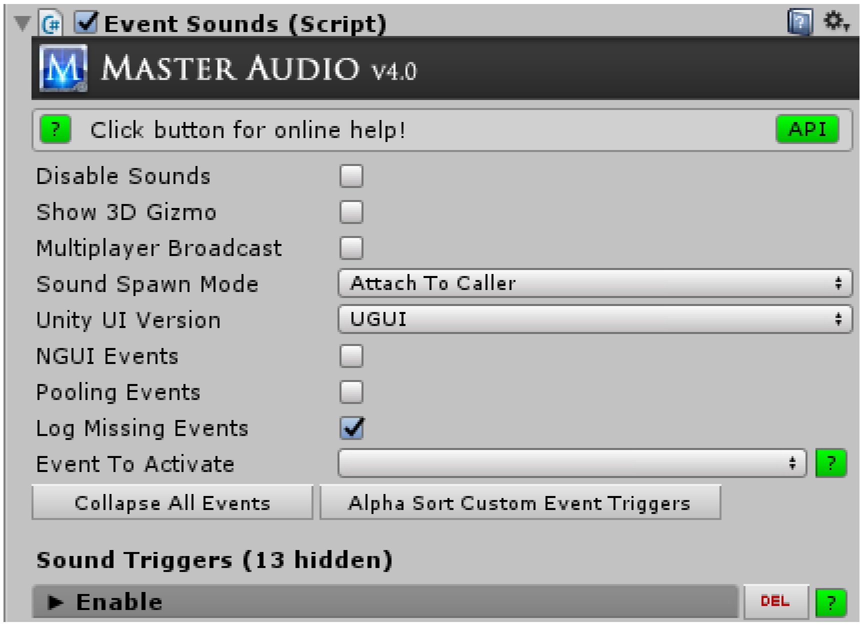
Scene Setup & Requirements To Use

In order to get this plugin to work properly for multiplayer audio, regardless of whether you're writing code or using the supplied scripts, you will need to make sure of 2 things.

1. First, go to your Master Audio Game Object (all of them if you have them in different Scenes) and add the MasterAudioMultiplayerAdapter script to it. It will also automatically add a Photon View (or NetworkIdentity for Mirror / UNET) component, which it needs to perform the RPC's.
2. In order for a GameObject to be able to use the Multiplayer Broadcast checkbox in its scripts when checked (or to call MasterAudioMultiplayerAdapter via your scripts), the only requirement is that the same game object, or ANY of its parent Game Objects must have a Photon View (or NetworkIdentity) component on it. The closest Photon View (or NetworkIdentity) will be used (as previously mentioned) to see if you are the owner, before executing any code. If you are not the owner of the Photon View (or NetworkIdentity), nothing will happen. You don't really need to worry about this part. This code is there because all clients may try and execute the same audio code at the same time, and this ensures that only one of them actually does.

How to Use the Multiplayer Features, Without Coding

If you are using the built in Master Audio scripts of Event Sounds, Mechanim State Sounds or Mechanim State Custom Events, there will be a new checkbox in the Inspector labeled "Multiplayer Broadcast", shown below.



☑ Event Sounds (Script)

MASTER AUDIO v4.0

? Click button for online help! API

Disable Sounds □

Show 3D Gizmo □

Multiplayer Broadcast □

Sound Spawn Mode: Attach To Caller

Unity UI Version: UGUI

NGUI Events □

Pooling Events □

Log Missing Events ☑

Event To Activate ?

Collapse All Events | Alpha Sort Custom Event Triggers

Sound Triggers (13 hidden)

▶ Enable DEL ?

In the most simple usage, if you simply check that box, everything will "just work" and be heard on all clients (all players playing in the same "room"). For the Event Sounds script, you can either check that checkbox in the top section, which means it will apply to all events you have configured in Event Sounds for that Game Object. If that's not what you want, the same Multiplayer Broadcast checkbox will appear on each event if you haven't checked it above.

It's worth mentioning that in some cases, it will not be necessary to check the Multiplayer Broadcast checkbox because things will already be heard on all clients without it. But that depends entirely on your setup.

Some examples for Event Sounds script:

1. If you are using the **Start** event to play some audio, that should normally occur naturally on all clients since they have to Instantiate the game objects as well for network propagation to work (unless you are using a Pooling plugin such as PoolBoss in which case using the OnSpawned event would also work properly). Note that using the Start event on Game Objects that are already in the Scene when it starts (for things such as ambient sounds) would not require "Multiplayer Broadcast" either since all clients will run that code automatically.
2. If you are using the **OnCollision** or **OnTrigger** events, that may or may not happen on all clients due to a lag in frame rate and completely passing over the collider during a move. So I'd recommend ticking the Multiplayer Broadcast box in that case.
3. If you are using the **OnBecameVisible** (or **OnBecameInvisible**) events - yes they will happen on all clients, but at probably different times because that player's camera may be in different locations. So if you want that to happen when for each player's camera judges it as having become visible or invisible, don't use the Multiplayer Broadcast checkbox. If you want it to be heard by everyone as soon as the owner's camera judges it as having become visible or invisible, then tick the Multiplayer Broadcast checkbox.

For Mechanim State Sounds Script:

1. Depending on how your Mechanim State Replication works, you may or may not need to check the Multiplayer Broadcast checkbox to get the sounds to reliably be heard by all players. It's there if you need it.

In most other cases, you **will** want to tick the Multiplayer Broadcast checkbox, but you can always test it without and add it later if needed.

Note: When sending a Custom Event, it saves bandwidth to send the Custom Event itself with Multiplayer Broadcast. That way, you only send the single event (Custom Event RPC) across the wire, and each audio event that a Game Object executes when listening to that Custom Event won't need to be sent across the wire at all since they will execute on all clients. **i.e.** if your Custom Event Listener performs 3 audio events and you ticked Multiplayer Broadcast on the Custom Event Listener event instead of the Custom Event sending event, you'd be sending 3 RPC's instead of 1 doing it the other way.

How to Use the Multiplayer Features, With Coding

Basically you will be using the static methods in the MasterAudioMultiplayerAdapter class instead of the ones in the MasterAudio class. The methods in both are mostly named identically but all require a Transform parameter to be passed in telling it the Game Object that is making the sound (named "Actor"). This is so that Multiplayer Master Audio can determine if the call is coming from the owner of a network object or not. If it is not, an RPC will not be sent across the wire and the call will be ignored. This is necessary to have everything working "auto-magically" and not have anything superfluous sent across the wire.

For example, instead of calling **MasterAudio.StopAllOfSound**, you would instead call **MasterAudioMultiplayerAdapter.StopAllOfSound**, and it will magically be done on all clients. If you want to examine some code, Event Sounds script conditionally calls either one depending on whether you have checked "Multiplayer Broadcast" or not.

Please consult the API website here if you can't find what you're looking for.

Single Player Fallback

In the following cases, MasterAudioMultiplayerAdapter will execute all audio events on the caller client only, so you can still test in single player mode without changing any code:

For Photon:

1. Photon is in offline mode.
2. No other players are connected.
3. Photon is in online mode but not yet connected.

For Mirror / UNET:

1. No other players are connected.
2. Server has not been started.
3. If local client is not active on the server.

Errors and Troubleshooting

There are a couple checkboxes on the MasterAudioMultiplayerAdapter for troubleshooting. You may wish to turn them on if something is failing and it will log clues to the Console window that may help to let you know why.

1. Log Diagnostics - turning this on will log messages on both the originating client and the receiving clients (if it's indeed sent across the network, passing the "owner check").
2. Check Target Client Name - turning this on is for troubleshooting the exact target Game Object on each client (that should match the originating client's Game Object).

When sending any bug reports to DarkTonic, make sure and include what is in the Console window for originating client and target client if applicable.

Conclusion

There are no multiplayer example Scenes provided, because network projects tend to modify every aspect of your setup. However, this is extremely simple setup and "just works" in all our tests so far.

You can email support at support@darktonic.com or use our forums here:
http://darktonic.freeforums.net/board/5/master-audio-multiplayer