

Photon Unity Networking 2

v2.7

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Chapter 1

Main Page

Introduction

Photon is a real-time multiplayer game development framework that is fast, lean and flexible. **Photon** consists of a server and multiple client SDKs for major platforms.

Photon Unity Network (PUN) is our is our take on a Unity specific, high-level solution: Matchmaking, easy to use callbacks, components to synchronize GameObjects, Remote Procedure Calls (RPCs) and similar features provide a great start. Beyond that is a solid, extensive API for more advanced control.

Full source code is available, so you can scale this package to support any type of multiplayer game you come up with.

This package is compatible with the managed **Photon Cloud** service, which runs Photon Servers for you. A setup window registers you (for free) in less than a minute.

Most notable features:

- Dead-easy API
- Lots of demos and an extensive **PUN Basics Tutorial**
- Server available as hosted service (free for development) or as "On Premise"
- Load-balanced! Scales across servers (with no extra effort)
- Outstanding performance of the Photon Server
- Dedicated servers. No NAT punch-through needed
- Offline mode: re-use your multiplayer code in singleplayer game modes

Documentation And Learning

There is an **Online Documentation**, which is considered a manual for PUN. This might become your primary source for information.

This is the Reference Documentation for PUN. It summarizes the most important classes in the **Public API module** and explains each class, method and field individually. This is generated from the source of PUN and should be used to look up details on usage and parameters.

Aside from that, there are also Demos in the PUN package itself and a **PUN Basics Tutorial** online, which you should check out.

First Steps

Import PUN into a new, empty project. Register via the pop up "wizard" (ALT+P) to get you a free [Photon](#) Cloud subscription (saving an initial AppId for you). Now you're ready to run and dissect the Demos.

Make sure to open and code the [PUN Basics Tutorial](#).

Chapter 2

General Documentation

Brief overview of Photon, subscriptions, hosting options and how to start.

Photon Unity Networking - First steps

When you import PUN, the "Wizard" window will pop up. If not, find it in the Window menu as "Photon Unity Networking". In the Wizard, either enter your email address to register for the [Photon](#) Cloud, enter the AppId of an existing account or skip this step for the time being.

The Wizard creates a configuration in the project, named: PhotonServerSettings.

PUN consists of quite a few files, however most functionality is concentrated into: [Photon.Pun.PhotonNetwork](#). This class contains all functions and variables typically needed. If you ever have custom requirements, you can always modify the source files - this plugin is just an implementation of [Photon](#) after all.

To learn how this API works, visit the [online documentation for PUN](#)

2.1 Photon

[Photon](#) Unity Networking (PUN) always connects to a dedicated [Photon](#) server, which provides matchmaking, load balancing and in-room communication for players.

Behind the scenes PUN uses more than one server: A "Name Server" acts as point of entry and provides a list of regional "Master Servers". A Master Server keeps track of rooms and provides the Matchmaking, while several "Game Servers" run the actual rooms (matches).

Exit Games Cloud

The Exit Games Cloud provides hosted and load balanced [Photon](#) servers for you, fully managed by Exit Games. Free trials are available and [subscription costs for commercial use](#) are competitively low.

The Public Cloud service runs a fixed logic, so the clients need to be authoritative.

Clients are separated by "application id" (identifies your game title) and a "game version". Changing the game version helps separate players with new and old client builds.

Subscriptions bought in Asset Store

If you bought a package with [Photon](#) Cloud Subscription in the Asset Store:

- Register a Photon Cloud Account [at this link](#)

- Create an App and get your AppID from the [Dashboard](#)
- Send a Mail to: developer@photonengine.com
- With:
 - Your Name and Company (if applicable)
 - Invoice/Purchase ID from the Asset Store
 - Photon Cloud AppID

Photon Server SDK

As alternative to the [Photon](#) Cloud service, you can run your own server and develop server side logic on top of our "Load Balancing" C# solution. This gives you full control of the server logic.

The Photon Server SDK can be downloaded [at this link](#)

Read about how to start the server [here](#).

Chapter 3

Network Simulation GUI

Simple GUI element to control the built-in network condition simulation.

The Photon client library can simulate network conditions for lag (message delay) and loss, which can be a good tool for developer when testing with a local server or on near perfect network conditions.

To use it, add the component [Photon.Pun.UtilityScripts.PhotonLagSimulationGui](#) to an enabled GameObject in your scene. At runtime, the top left of the screen shows the current roundtrip time (RTT) and the controls for network simulation:

- RTT: The roundtrip time is the average of milliseconds until a message was acknowledged by the server. The variance value (behind the +/-) shows how stable the rtt is (a lower value being better).
- "Sim" toggle: Enables and disables the simulation. A sudden, big change of network conditions might result in disconnects.
- "Lag" slider: Adds a fixed delay to all outgoing and incoming messages. In milliseconds.
- "Jit" slider: Adds a random delay of "up to X milliseconds" per message.
- "Loss" slider: Drops the set percentage of messages. You can expect less than 2% drop in the internet today.

Chapter 4

Network Statistics GUI

The PhotonStatsGui is a simple GUI component to track and show network-metrics at runtime.

Usage

Just add the [Photon.Pun.UtilityScripts.PhotonStatsGui](#) component to any active GameObject in the hierarchy. A window appears (at runtime) and shows the message count.

A few toggles let you configure the window:

- buttons: Show buttons for "stats on", "reset stats" and "to log"
- traffic: Show lower level network traffic (bytes per direction)
- health: Show timing of sending, dispatches and their longest gaps

Message Statistics

The top most values showns are counter for "messages". Any operation, response and event are counted. Shown are the total count of outgoing, incoming and the sum of those messages as total and as average for the timespan that is tracked.

Traffic Statistics

These are the byte and packet counters. Anything that leaves or arrives via network is counted here. Even if there are few messages, they could be huge by accident and still cause less powerful clients to drop connection. You also see that there are packages sent when you don't send messages. They keeps the connection alive.

Health Statistics

The block beginning with "longest delta between" is about the performance of your client. We measure how much time passed between consecutive calls of send and dispatch. Usually they should be called ten times per second. If these values go beyond one second, you should check why Update() calls are delayed.

Button "Reset"

This resets the stats but keeps tracking them. This is useful to track message counts for different situations.

Button "To Log"

Pressing this simply logs the current stat values. This can be useful to have a overview how things evolved or just as reference.

Button "Stats On" (Enabling Traffic Stats)

The Photon library can track various network statistics but usually this feature is turned off. The PhotonStatsGui will enable the tracking and show those values.

The "stats on" toggle in the Gui controls if traffic stats are collected at all. The "Traffic Stats On" checkbox in the Inspector is the same value.

Chapter 5

Public API Module

The Public API module rounds up the most commonly used classes of PUN.

The classes which are most commonly used, are grouped into a Public API module, which is only a documentation structure. Classes like [Photon.Pun.PhotonNetwork](#) and [Photon.Pun.MonoBehaviourPunCallbacks](#) are good entry points to learn how to code with PUN.

Typically, classes for internal use are not public but there are a few exceptions to this where access may be of use, if you know what you're doing.

[Open the Public API module](#)

Chapter 6

Module Documentation

6.1 Public API

Groups the most important classes that you need to understand early on.

Classes

- class [PhotonNetwork](#)
The main class to use the [PhotonNetwork](#) plugin. This class is static.
- class [PhotonView](#)
A [PhotonView](#) identifies an object across the network (viewID) and configures how the controlling client updates remote instances.
- struct [PhotonMessageInfo](#)
Container class for info about a particular message, RPC or update.
- class [PhotonStream](#)
This container is used in `OnPhotonSerializeView()` to either provide incoming data of a [PhotonView](#) or for you to provide it.

Enumerations

- enum [ClientState](#)
State values for a client, which handles switching [Photon](#) server types, some operations, etc.
- enum [PunLogLevel](#)
Used to define the level of logging output created by the PUN classes. Either log errors, info (some more) or full.
- enum [RpcTarget](#)
Enum of "target" options for RPCs. These define which remote clients get your RPC call.

Functions

- void [OnPhotonSerializeView](#) (PhotonStream stream, PhotonMessageInfo info)
Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

6.1.1 Detailed Description

Groups the most important classes that you need to understand early on.

6.1.2 Enumeration Type Documentation

6.1.2.1 enum ClientState [strong]

State values for a client, which handles switching [Photon](#) server types, some operations, etc.

Enumerator

PeerCreated Peer is created but not used yet.

Authenticating Transition state while connecting to a server. On the [Photon](#) Cloud this sends the AppId and [AuthenticationValues](#) (UserID).

Authenticated Transition state while connecting to a server. Leads to state ConnectedToMasterServer or JoinedLobby.

JoiningLobby The client sent an OpJoinLobby and if this was done on the Master Server, it will result in. Depending on the lobby, it gets room listings.

JoinedLobby The client is in a lobby, connected to the MasterServer. Depending on the lobby, it gets room listings.

DisconnectingFromMasterServer Transition from MasterServer to GameServer.

ConnectingToGameServer Transition to GameServer (client authenticates and joins/creates a room).

ConnectedToGameServer Connected to GameServer (going to auth and join game).

Joining Transition state while joining or creating a room on GameServer.

Joined The client entered a room. The CurrentRoom and Players are known and you can now raise events.

Leaving Transition state when leaving a room.

DisconnectingFromGameServer Transition from GameServer to MasterServer (after leaving a room/game).

ConnectingToMasterServer Connecting to MasterServer (includes sending authentication values).

Disconnecting The client disconnects (from any server). This leads to state Disconnected.

Disconnected The client is no longer connected (to any server). Connect to MasterServer to go on.

ConnectedToMasterServer Connected to MasterServer. You might use matchmaking or join a lobby now.

ConnectedToMaster Connected to MasterServer. You might use matchmaking or join a lobby now.

ConnectingToNameServer Client connects to the NameServer. This process includes low level connecting and setting up encryption. When done, state becomes ConnectedToNameServer.

ConnectedToNameServer Client is connected to the NameServer and established encryption already. You should call OpGetRegions or ConnectToRegionMaster.

DisconnectingFromNameServer Clients disconnects (specifically) from the NameServer (usually to connect to the MasterServer).

6.1.2.2 enum PunLogLevel [strong]

Used to define the level of logging output created by the PUN classes. Either log errors, info (some more) or full.

Enumerator

ErrorsOnly Show only errors. Minimal output. Note: Some might be "runtime errors" which you have to expect.

Informational Logs some of the workflow, calls and results.

Full Every available log call gets into the console/log. Only use for debugging.

6.1.2.3 enum RpcTarget [strong]

Enum of "target" options for RPCs. These define which remote clients get your RPC call.

Enumerator

- All** Sends the RPC to everyone else and executes it immediately on this client. Player who join later will not execute this RPC.
- Others** Sends the RPC to everyone else. This client does not execute the RPC. Player who join later will not execute this RPC.
- MasterClient** Sends the RPC to MasterClient only. Careful: The MasterClient might disconnect before it executes the RPC and that might cause dropped RPCs.
- AllBuffered** Sends the RPC to everyone else and executes it immediately on this client. New players get the RPC when they join as it's buffered (until this client leaves).
- OthersBuffered** Sends the RPC to everyone. This client does not execute the RPC. New players get the RPC when they join as it's buffered (until this client leaves).
- AllViaServer** Sends the RPC to everyone (including this client) through the server. This client executes the RPC like any other when it received it from the server. Benefit: The server's order of sending the RPCs is the same on all clients.
- AllBufferedViaServer** Sends the RPC to everyone (including this client) through the server and buffers it for players joining later. This client executes the RPC like any other when it received it from the server. Benefit: The server's order of sending the RPCs is the same on all clients.

6.1.3 Function Documentation

6.1.3.1 void OnPhotonSerializeView (PhotonStream stream, PhotonMessageInfo info)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

This method will be called in scripts that are assigned as Observed component of a [PhotonView](#).

[PhotonNetwork.SerializationRate](#) affects how often this method is called.

[PhotonNetwork.SendRate](#) affects how often packages are sent by this client.

Implementing this method, you can customize which data a [PhotonView](#) regularly synchronizes. Your code defines what is being sent (content) and how your data is used by receiving clients.

Unlike other callbacks, *OnPhotonSerializeView only gets called when it is assigned to a [PhotonView](#) as PhotonView.observed script.*

To make use of this method, the [PhotonStream](#) is essential. It will be in "writing" mode" on the client that controls a PhotonView (PhotonStream.IsWriting == true) and in "reading mode" on the remote clients that just receive that the controlling client sends.

If you skip writing any value into the stream, PUN will skip the update. Used carefully, this can conserve bandwidth and messages (which have a limit per room/second).

Note that OnPhotonSerializeView is not called on remote clients when the sender does not send any update. This can't be used as "x-times per second Update()".

Implemented in [PhotonAnimatorView](#), [CullingHandler](#), [PhotonTransformViewClassic](#), [PhotonRigidbodyView](#), [PhotonRigidbody2DView](#), [PhotonTransformView](#), and [SmoothSyncMovement](#).

6.2 Optional Gui Elements

Useful GUI elements for PUN.

Classes

- class [PhotonLagSimulationGui](#)

This MonoBehaviour is a basic GUI for the [Photon](#) client's network-simulation feature. It can modify lag (fixed delay), jitter (random lag) and packet loss.

- class [PhotonStatsGui](#)

Basic GUI to show traffic and health statistics of the connection to [Photon](#), toggled by shift+tab.

6.2.1 Detailed Description

Useful GUI elements for PUN.

6.3 Callbacks

Callback Interfaces.

Classes

- interface [IConnectionCallbacks](#)
Collection of "organizational" callbacks for the [Realtime](#) Api to cover: Connection and Regions.
- interface [ILobbyCallbacks](#)
Collection of "organizational" callbacks for the [Realtime](#) Api to cover the Lobby.
- interface [IMatchmakingCallbacks](#)
Collection of "organizational" callbacks for the [Realtime](#) Api to cover Matchmaking.
- interface [IInRoomCallbacks](#)
Collection of "in room" callbacks for the [Realtime](#) Api to cover: Players entering or leaving, property updates and Master Client switching.
- interface [IOnEventCallback](#)
Event callback for the [Realtime](#) Api. Covers events from the server and those sent by clients via [OpRaiseEvent](#).
- interface [IWebRpcCallback](#)
Interface for "WebRpc" callbacks for the [Realtime](#) Api. Currently includes only responses for Web RPCs.
- interface [IPunObservable](#)
Defines the [OnPhotonSerializeView](#) method to make it easy to implement correctly for observable scripts.
- interface [IPunOwnershipCallbacks](#)
This interface is used as definition of all callback methods of PUN, except [OnPhotonSerializeView](#). Preferably, implement them individually.
- interface [IPunInstantiateMagicCallback](#)
- class [MonoBehaviourPunCallbacks](#)
This class provides a [.photonView](#) and all callbacks/events that PUN can call. Override the events/methods you want to use.

6.3.1 Detailed Description

Callback Interfaces.

Chapter 7

Namespace Documentation

7.1 Photon Namespace Reference

Namespaces

- namespace [Chat](#)
- namespace [Pun](#)
- namespace [Realtime](#)

7.2 Photon.Chat Namespace Reference

Classes

- class [AuthenticationValues](#)
Container for user authentication in [Photon](#). Set AuthValues before you connect - all else is handled.
- class [ChannelCreationOptions](#)
- class [ChannelWellKnownProperties](#)
- class [ChatChannel](#)
A channel of communication in [Photon Chat](#), updated by [ChatClient](#) and provided as READ ONLY.
- class [ChatClient](#)
Central class of the [Photon Chat](#) API to connect, handle channels and messages.
- class [ChatEventCode](#)
Wraps up internally used constants in [Photon Chat](#) events. You don't have to use them directly usually.
- class [ChatOperationCode](#)
Wraps up codes for operations used internally in [Photon Chat](#). You don't have to use them directly usually.
- class [ChatParameterCode](#)
Wraps up codes for parameters (in operations and events) used internally in [Photon Chat](#). You don't have to use them directly usually.
- class [ChatPeer](#)
Provides basic operations of the [Photon Chat](#) server. This internal class is used by public [ChatClient](#).
- class [ChatUserStatus](#)
Contains commonly used status values for SetOnlineStatus. You can define your own.
- class [ErrorCode](#)
[ErrorCode](#) defines the default codes associated with [Photon](#) client/server communication.
- interface [IChatClientListener](#)
Callback interface for [Chat](#) client side. Contains callback methods to notify your app about updates. Must be provided to new [ChatClient](#) in constructor
- class [ParameterCode](#)
Class for constants. Codes for parameters of Operations and Events.

Enumerations

- enum [ChatDisconnectCause](#)
Enumeration of causes for Disconnects (used in [ChatClient.DisconnectedCause](#)).
- enum [CustomAuthenticationType](#) : byte
Options for optional "Custom Authentication" services used with [Photon](#). Used by [OpAuthenticate](#) after connecting to [Photon](#).
- enum [ChatState](#)
Possible states for a Chat Client.

7.2.1 Enumeration Type Documentation

7.2.1.1 enum [ChatDisconnectCause](#) [strong]

Enumeration of causes for Disconnects (used in [ChatClient.DisconnectedCause](#)).

Read the individual descriptions to find out what to do about this type of disconnect.

Enumerator

None No error was tracked.

DisconnectByServerUserLimit OnStatusChanged: The CCUs count of your [Photon](#) Server License is exhausted (temporarily).

ExceptionOnConnect OnStatusChanged: The server is not available or the address is wrong. Make sure the port is provided and the server is up.

DisconnectByServer OnStatusChanged: The server disconnected this client. Most likely the server's send buffer is full (receiving too much from other clients).

TimeoutDisconnect OnStatusChanged: This client detected that the server's responses are not received in due time. Maybe you send / receive too much?

Exception OnStatusChanged: Some internal exception caused the socket code to fail. Contact Exit Games.

InvalidAuthentication OnOperationResponse: Authenticate in the [Photon](#) Cloud with invalid Appld. Update your subscription or contact Exit Games.

MaxCcuReached OnOperationResponse: Authenticate (temporarily) failed when using a [Photon](#) Cloud subscription without CCU Burst. Update your subscription.

InvalidRegion OnOperationResponse: Authenticate when the app's [Photon](#) Cloud subscription is locked to some (other) region(s). Update your subscription or change region.

OperationNotAllowedInCurrentState OnOperationResponse: Operation that's (currently) not available for this client (not authorized usually). Only tracked for op Authenticate.

CustomAuthenticationFailed OnOperationResponse: Authenticate in the [Photon](#) Cloud with invalid client values or custom authentication setup in Cloud Dashboard.

7.2.1.2 enum [ChatState](#) [strong]

Possible states for a [Chat](#) Client.

Enumerator

Uninitialized Peer is created but not used yet.

ConnectingToNameServer Connecting to name server.

ConnectedToNameServer Connected to name server.

Authenticating Authenticating on current server.

Authenticated Finished authentication on current server.

DisconnectingFromNameServer Disconnecting from name server. This is usually a transition from name server to frontend server.

ConnectingToFrontEnd Connecting to frontend server.

ConnectedToFrontEnd Connected to frontend server.

DisconnectingFromFrontEnd Disconnecting from frontend server.

QueuedComingFromFrontEnd Currently not used.

Disconnecting The client disconnects (from any server).

Disconnected The client is no longer connected (to any server).

7.2.1.3 enum CustomAuthenticationType : byte [strong]

Options for optional "Custom Authentication" services used with [Photon](#). Used by OpAuthenticate after connecting to [Photon](#).

Enumerator

Custom Use a custom authentication service. Currently the only implemented option.

Steam Authenticates users by their Steam Account. Set auth values accordingly!

Facebook Authenticates users by their Facebook Account. Set auth values accordingly!

Oculus Authenticates users by their Oculus Account and token.

PlayStation Authenticates users by their PSN Account and token.

Xbox Authenticates users by their Xbox Account and XSTS token.

None Disables custom authentication. Same as not providing any [AuthenticationValues](#) for connect (more precisely for: OpAuthenticate).

7.3 Photon.Pun Namespace Reference

Namespaces

- namespace [UtilityScripts](#)

Classes

- class **CustomTypes**

Internally used class, containing de/serialization methods for various Unity-specific classes. Adding those to the [Photon](#) serialization protocol allows you to send them in events, etc.

- class [DefaultPool](#)

The default implementation of a PrefabPool for PUN, which actually Instantiates and Destroys GameObjects but pools a resource.

- struct [InstantiateParameters](#)

- interface [IPunInstantiateMagicCallback](#)

- interface [IPunObservable](#)

Defines the OnPhotonSerializeView method to make it easy to implement correctly for observable scripts.

- interface [IPunOwnershipCallbacks](#)

This interface is used as definition of all callback methods of PUN, except OnPhotonSerializeView. Preferably, implement them individually.

- interface [IPunPrefabPool](#)

Defines an interface for object pooling, used in PhotonNetwork.Instantiate and [PhotonNetwork.Destroy](#).

- class [MonoBehaviourPun](#)

- This class adds the property `photonView`, while logging a warning when your game still uses the `networkView`.*
- class [MonoBehaviourPunCallbacks](#)
This class provides a `.photonView` and all callbacks/events that PUN can call. Override the events/methods you want to use.
 - class [PhotonAnimatorView](#)
This class helps you to synchronize Mecanim animations. Simply add the component to your `GameObject` and make sure that the [PhotonAnimatorView](#) is added to the list of observed components.
 - class **PhotonHandler**
Internal `MonoBehaviour` that allows [Photon](#) to run an Update loop.
 - struct [PhotonMessageInfo](#)
Container class for info about a particular message, RPC or update.
 - class [PhotonNetwork](#)
The main class to use the [PhotonNetwork](#) plugin. This class is static.
 - class [PhotonRigidbody2DView](#)
 - class [PhotonRigidbodyView](#)
 - class [PhotonStream](#)
This container is used in `OnPhotonSerializeView()` to either provide incoming data of a [PhotonView](#) or for you to provide it.
 - class [PhotonStreamQueue](#)
The [PhotonStreamQueue](#) helps you poll object states at higher frequencies than what [PhotonNetwork.SendRate](#) dictates and then sends all those states at once when `Serialize()` is called. On the receiving end you can call `Deserialize()` and then the stream will roll out the received object states in the same order and timeStep they were recorded in.
 - class [PhotonTransformView](#)
 - class [PhotonTransformViewClassic](#)
This class helps you to synchronize position, rotation and scale of a `GameObject`. It also gives you many different options to make the synchronized values appear smooth, even when the data is only sent a couple of times per second. Simply add the component to your `GameObject` and make sure that the [PhotonTransformViewClassic](#) is added to the list of observed components.
 - class [PhotonTransformViewPositionControl](#)
 - class [PhotonTransformViewPositionModel](#)
 - class [PhotonTransformViewRotationControl](#)
 - class [PhotonTransformViewRotationModel](#)
 - class [PhotonTransformViewScaleControl](#)
 - class [PhotonTransformViewScaleModel](#)
 - class [PhotonView](#)
A [PhotonView](#) identifies an object across the network (viewID) and configures how the controlling client updates remote instances.
 - class **PunEvent**
Defines [Photon](#) event-codes as used by PUN.
 - class [PunExtensions](#)
Small number of extension methods that make it easier for PUN to work cross-Unity-versions.
 - class [PunRPC](#)
Replacement for `RPC` attribute with different name. Used to flag methods as remote-callable.
 - class [SceneManagerHelper](#)
 - class [ServerSettings](#)
Collection of connection-relevant settings, used internally by [PhotonNetwork.ConnectUsingSettings](#).

Typedefs

- using **Debug** = `UnityEngine.Debug`
- using **Hashtable** = `ExitGames.Client.Photon.Hashtable`
- using **SupportClassPun** = `ExitGames.Client.Photon.SupportClass`

Enumerations

- enum [ConnectMethod](#)
Which PhotonNetwork method was called to connect (which influences the regions we want pinged).
- enum [PunLogLevel](#)
Used to define the level of logging output created by the PUN classes. Either log errors, info (some more) or full.
- enum [RpcTarget](#)
Enum of "target" options for RPCs. These define which remote clients get your RPC call.
- enum **ViewSynchronization**
- enum [OwnershipOption](#)
Options to define how Ownership Transfer is handled per PhotonView.

7.3.1 Enumeration Type Documentation

7.3.1.1 enum [ConnectMethod](#) [strong]

Which [PhotonNetwork](#) method was called to connect (which influences the regions we want pinged).

[PhotonNetwork.ConnectUsingSettings](#) will call either [ConnectToMaster](#), [ConnectToRegion](#) or [ConnectToBest](#), depending on the settings.

7.3.1.2 enum [OwnershipOption](#) [strong]

Options to define how Ownership Transfer is handled per [PhotonView](#).

This setting affects how [RequestOwnership](#) and [TransferOwnership](#) work at runtime.

Enumerator

Fixed Ownership is fixed. Instantiated objects stick with their creator, scene objects always belong to the Master Client.

Takeover Ownership can be taken away from the current owner who can't object.

Request Ownership can be requested with [PhotonView.RequestOwnership](#) but the current owner has to agree to give up ownership. The current owner has to implement [IPunCallbacks.OnOwnershipRequest](#) to react to the ownership request.

7.4 Photon.Pun.UtilityScripts Namespace Reference

Classes

- class [ButtonInsideScrollList](#)
Button inside scroll list will stop scrolling ability of scrollRect container, so that when pressing down on a button and draggin up and down will not affect scrolling. this doesn't do anything if no scrollRect component found in Parent Hierarchy.
- class [CellTree](#)
Represents the tree accessible from its root node.
- class [CellTreeNode](#)
Represents a single node of the tree.
- class [ConnectAndJoinRandom](#)
Simple component to call ConnectUsingSettings and to get into a PUN room easily.
- class [CountdownTimer](#)

This is a basic [CountdownTimer](#). In order to start the timer, the MasterClient can add a certain entry to the Custom Room Properties, which contains the property's name 'StartTime' and the actual start time describing the moment, the timer has been started. To have a synchronized timer, the best practice is to use [PhotonNetwork.Time](#). In order to subscribe to the CountdownTimerHasExpired event you can call [CountdownTimer.OnCountdownTimerHasExpired](#) += OnCountdownTimerIsExpired; from Unity's OnEnable function for example. For unsubscribing simply call [CountdownTimer.OnCountdownTimerHasExpired](#) -= OnCountdownTimerIsExpired;. You can do this from Unity's OnDisable function for example.

- class [CullArea](#)
Represents the cull area used for network culling.
- class [CullingHandler](#)
Handles the network culling.
- class [EventSystemSpawner](#)
Event system spawner. Will add an EventSystem GameObject with an EventSystem component and a StandaloneInputModule component Use this in additive scene loading context where you would otherwise get a "Multiple eventsystem in scene... this is not supported" error from Unity
- class [GraphicTogglesOnTransition](#)
Use this on toggles texts to have some color transition on the text depending on the isOn State.
- interface [IPunTurnManagerCallbacks](#)
- class [MoveByKey](#)
Very basic component to move a GameObject by WASD and Space.
- class [OnClickDestroy](#)
Destroys the networked GameObject either by [PhotonNetwork.Destroy](#) or by sending an RPC which calls Object.Destroy().
- class [OnClickInstantiate](#)
Instantiates a networked GameObject on click.
- class [OnClickRpc](#)
This component will instantiate a network GameObject when in a room and the user click on that component's GameObject. Uses PhysicsRaycaster for positioning.
- class [OnEscapeQuit](#)
This component will quit the application when escape key is pressed
- class [OnJoinedInstantiate](#)
This component will instantiate a network GameObject when a room is joined
- class [OnPointerOverTooltip](#)
Set focus to a given photonView when pointed is over
- class [OnStartDelete](#)
This component will destroy the GameObject it is attached to (in Start()).
- class [PhotonLagSimulationGui](#)
This MonoBehaviour is a basic GUI for the [Photon](#) client's network-simulation feature. It can modify lag (fixed delay), jitter (random lag) and packet loss.
- class [PhotonStatsGui](#)
Basic GUI to show traffic and health statistics of the connection to [Photon](#), toggled by shift+tab.
- class [PlayerNumbering](#)
Implements consistent numbering in a room/game with help of room properties. Access them by Player.GetPlayerNumber() extension.
- class [PlayerNumberingExtensions](#)
Extension used for PlayerRoomIndexing and Player class.
- class [PointedAtGameObjectInfo](#)
Display ViewId, OwnerActorNr, IsCeneView and IsMine when clicked.
- class [PunPlayerScores](#)
Scoring system for PhotonPlayer
- class [PunTeams](#)
Implements teams in a room/game with help of player properties. Access them by Player.GetTeam extension.
- class [PunTurnManager](#)

Pun turnBased Game manager. Provides an Interface ([IPunTurnManagerCallbacks](#)) for the typical turn flow and logic, between players Provides Extensions for Player, Room and RoomInfo to feature dedicated api for TurnBased Needs

- class [ScoreExtensions](#)
- class [SmoothSyncMovement](#)
Smoothed out movement for network gameobjects
- class [StatesGui](#)
Output detailed information about [Pun](#) Current states, using the old Unity UI framework.
- class [TabViewManager](#)
[Tab](#) view manager. Handles [Tab](#) views activation and deactivation, and provides a Unity Event Callback when a tab was selected.
- class [TeamExtensions](#)
Extension used for [PunTeams](#) and Player class. Wraps access to the player's custom property.
- class [TextButtonTransition](#)
Use this on Button texts to have some color transition on the text as well without corrupting button's behaviour.
- class [TextTogglesOnTransition](#)
Use this on toggles texts to have some color transition on the text depending on the isOn State.
- class [TurnExtensions](#)

7.5 Photon.Realtime Namespace Reference

Classes

- class [ActorProperties](#)
Class for constants. These (byte) values define "well known" properties for an Actor / [Player](#).
- class [AppSettings](#)
Settings for [Photon](#) application(s) and the server to connect to.
- class [AuthenticationValues](#)
Container for user authentication in [Photon](#). Set AuthValues before you connect - all else is handled.
- class [ConnectionCallbacksContainer](#)
Container type for callbacks defined by [IConnectionCallbacks](#). See [LoadBalancingCallbackTargets](#).
- class [ConnectionHandler](#)
- class [EncryptionDataParameters](#)
- class [EnterRoomParams](#)
- class [ErrorCode](#)
[ErrorCode](#) defines the default codes associated with [Photon](#) client/server communication.
- class [EventCode](#)
Class for constants. These values are for events defined by [Photon](#) Loadbalancing.
- class [Extensions](#)
This static class defines some useful extension methods for several existing classes (e.g. Vector3, float and others).
- class [FriendInfo](#)
Used to store info about a friend's online state and in which room he/she is.
- class [GamePropertyKey](#)
Class for constants. These (byte) values are for "well known" room/game properties used in [Photon](#) Loadbalancing.
- interface [IConnectionCallbacks](#)
Collection of "organizational" callbacks for the [Realtime](#) Api to cover: Connection and Regions.
- interface [IInRoomCallbacks](#)
Collection of "in room" callbacks for the [Realtime](#) Api to cover: Players entering or leaving, property updates and Master Client switching.
- interface [ILobbyCallbacks](#)
Collection of "organizational" callbacks for the [Realtime](#) Api to cover the Lobby.
- interface [IMatchmakingCallbacks](#)

- Collection of "organizational" callbacks for the [Realtime](#) Api to cover Matchmaking.
- class **InRoomCallbacksContainer**
Container type for callbacks defined by [IInRoomCallbacks](#). See [InRoomCallbackTargets](#).
 - interface [IOnEventCallback](#)
Event callback for the [Realtime](#) Api. Covers events from the server and those sent by clients via [OpRaiseEvent](#).
 - interface [IWebRpcCallback](#)
Interface for "WebRpc" callbacks for the [Realtime](#) Api. Currently includes only responses for Web RPCs.
 - class [LoadBalancingClient](#)
This class implements the [Photon](#) LoadBalancing workflow by using a [LoadBalancingPeer](#). It keeps a state and will automatically execute transitions between the Master and Game Servers.
 - class [LoadBalancingPeer](#)
A LoadbalancingPeer provides the operations and enum definitions needed to use the loadbalancing server application which is also used in [Photon](#) Cloud.
 - class **LobbyCallbacksContainer**
Container type for callbacks defined by [ILobbyCallbacks](#). See [LobbyCallbackTargets](#).
 - class [MatchMakingCallbacksContainer](#)
Container type for callbacks defined by [IMatchmakingCallbacks](#). See [MatchMakingCallbackTargets](#).
 - class [OperationCode](#)
Class for constants. Contains operation codes. [Pun](#) uses these constants internally.
 - class [OpJoinRandomRoomParams](#)
 - class [ParameterCode](#)
Class for constants. Codes for parameters of Operations and Events.
 - class [PhotonPing](#)
 - class [PingMono](#)
Uses C# Socket class from System.Net.Sockets (as Unity usually does).
 - class [Player](#)
Summarizes a "player" within a room, identified (in that room) by ID (or "actorNumber").
 - class [RaiseEventOptions](#)
Aggregates several less-often used options for operation [RaiseEvent](#). See field descriptions for usage details.
 - class [Region](#)
 - class [RegionHandler](#)
Provides methods to work with [Photon](#)'s regions ([Photon](#) Cloud) and can be use to find the one with best ping.
 - class [RegionPinger](#)
 - class [Room](#)
This class represents a room a client joins/joined.
 - class [RoomInfo](#)
A simplified room with just the info required to list and join, used for the room listing in the lobby. The properties are not settable ([IsOpen](#), [MaxPlayers](#), etc).
 - class [RoomOptions](#)
Wraps up common room properties needed when you create rooms. Read the individual entries for more details.
 - class [SupportLogger](#)
Helper class to debug log basic information about [Photon](#) client and vital traffic statistics.
 - class [TypedLobby](#)
Refers to a specific lobby (and type) on the server.
 - class [TypedLobbyInfo](#)
 - class [WebFlags](#)
Optional flags to be used in [Photon](#) client SDKs with [Op RaiseEvent](#) and [Op SetProperties](#). Introduced mainly for webhooks 1.2 to control behavior of forwarded HTTP requests.
 - class **WebRpcCallbacksContainer**
Container type for callbacks defined by [IWebRpcCallback](#). See [WebRpcCallbackTargets](#).
 - class [WebRpcResponse](#)
Reads an operation response of a WebRpc and provides convenient access to most common values.

Typedefs

- using **SupportClass** = ExitGames.Client.Photon.SupportClass
- using **Stopwatch** = System.Diagnostics.Stopwatch

Enumerations

- enum [ClientState](#)
State values for a client, which handles switching [Photon](#) server types, some operations, etc.
- enum [DisconnectCause](#)
Enumeration of causes for Disconnects (used in LoadBalancingClient.DisconnectedCause).
- enum [ServerConnection](#)
Available server (types) for internally used field: server.
- enum [EncryptionMode](#)
Defines how the communication gets encrypted.
- enum [JoinMode](#) : byte
Defines possible values for OpJoinRoom and OpJoinOrCreate. It tells the server if the room can be only be joined normally, created implicitly or found on a web-service for Turnbased games.
- enum [MatchmakingMode](#) : byte
Options for matchmaking rules for OpJoinRandom.
- enum [ReceiverGroup](#) : byte
Lite - OpRaiseEvent lets you chose which actors in the room should receive events. By default, events are sent to "Others" but you can overrule this.
- enum [EventCaching](#) : byte
Lite - OpRaiseEvent allows you to cache events and automatically send them to joining players in a room. Events are cached per event code and player: Event 100 (example!) can be stored once per player. Cached events can be modified, replaced and removed.
- enum [PropertyTypeFlag](#) : byte
Flags for "types of properties", being used as filter in OpGetProperties.
- enum [LobbyType](#) : byte
Options of lobby types available. Lobby types might be implemented in certain [Photon](#) versions and won't be available on older servers.
- enum [AuthModeOption](#)
Options for authentication modes. From "classic" auth on each server to AuthOnce (on NameServer).
- enum [CustomAuthenticationType](#) : byte
Options for optional "Custom Authentication" services used with [Photon](#). Used by OpAuthenticate after connecting to [Photon](#).

7.5.1 Enumeration Type Documentation

7.5.1.1 enum AuthModeOption [strong]

Options for authentication modes. From "classic" auth on each server to AuthOnce (on NameServer).

7.5.1.2 enum CustomAuthenticationType : byte [strong]

Options for optional "Custom Authentication" services used with [Photon](#). Used by OpAuthenticate after connecting to [Photon](#).

Enumerator

- Custom** Use a custom authentication service. Currently the only implemented option.
- Steam** Authenticates users by their Steam Account. Set auth values accordingly!

Facebook Authenticates users by their Facebook Account. Set auth values accordingly!

Oculus Authenticates users by their Oculus Account and token.

PlayStation Authenticates users by their PSN Account and token.

Xbox Authenticates users by their Xbox Account and XSTS token.

None Disables custom authentication. Same as not providing any [AuthenticationValues](#) for connect (more precisely for: `OpAuthenticate`).

7.5.1.3 enum `DisconnectCause` [`strong`]

Enumeration of causes for Disconnects (used in [LoadBalancingClient.DisconnectedCause](#)).

Read the individual descriptions to find out what to do about this type of disconnect.

Enumerator

None No error was tracked.

ExceptionOnConnect `OnStatusChanged`: The server is not available or the address is wrong. Make sure the port is provided and the server is up.

Exception `OnStatusChanged`: Some internal exception caused the socket code to fail. This may happen if you attempt to connect locally but the server is not available. In doubt: Contact Exit Games.

ServerTimeout `OnStatusChanged`: The server disconnected this client due to timing out (missing acknowledgements from the client).

DisconnectByServer `OnStatusChanged`: The server disconnected this client. Most likely the server's send buffer is full (receiving too much from other clients).

ClientTimeout `OnStatusChanged`: This client detected that the server's responses are not received in due time.

TimeoutDisconnect `OnStatusChanged`: This client detected that the server's responses are not received in due time.

DisconnectByServerLogic `OnStatusChanged`: The server disconnected this client from within the room's logic (the C# code).

DisconnectByServerReasonUnknown `OnStatusChanged`: The server disconnected this client for unknown reasons.

InvalidAuthentication `OnOperationResponse`: Authenticate in the [Photon](#) Cloud with invalid `AppId`. Update your subscription or contact Exit Games.

CustomAuthenticationFailed `OnOperationResponse`: Authenticate in the [Photon](#) Cloud with invalid client values or custom authentication setup in Cloud Dashboard.

AuthenticationTicketExpired The authentication ticket should provide access to any [Photon](#) Cloud server without doing another authentication-service call. However, the ticket expired.

MaxCcuReached `OnOperationResponse`: Authenticate (temporarily) failed when using a [Photon](#) Cloud subscription without CCU Burst. Update your subscription.

DisconnectByServerUserLimit `OnStatusChanged`: The current CCUs exceed the CCUs of your subscription (or license). Get a suitable subscription (some include overage).

InvalidRegion `OnOperationResponse`: Authenticate when the app's [Photon](#) Cloud subscription is locked to some (other) region(s). Update your subscription or master server address.

OperationNotAllowedInCurrentState `OnOperationResponse`: Operation that's (currently) not available for this client (not authorized usually). Only tracked for `op Authenticate`.

DisconnectByClientLogic `OnStatusChanged`: The client disconnected from within the logic (the C# code).

7.5.1.4 enum EncryptionMode [strong]

Defines how the communication gets encrypted.

Enumerator

PayloadEncryption This is the default encryption mode: Messages get encrypted only on demand (when you send operations with the "encrypt" parameter set to true).

DatagramEncryption With this encryption mode for UDP, the connection gets setup and all further datagrams get encrypted almost entirely. On-demand message encryption (like in PayloadEncryption) is unavailable.

DatagramEncryptionRandomSequence With this encryption mode for UDP, the connection gets setup with random sequence numbers and all further datagrams get encrypted almost entirely. On-demand message encryption (like in PayloadEncryption) is unavailable.

7.5.1.5 enum EventCaching : byte [strong]

Lite - OpRaiseEvent allows you to cache events and automatically send them to joining players in a room. Events are cached per event code and player: Event 100 (example!) can be stored once per player. Cached events can be modified, replaced and removed.

Caching works only combination with ReceiverGroup options Others and All.

Enumerator

DoNotCache Default value (not sent).

MergeCache Will merge this event's keys with those already cached.

ReplaceCache Replaces the event cache for this eventCode with this event's content.

RemoveCache Removes this event (by eventCode) from the cache.

AddToRoomCache Adds an event to the room's cache

AddToRoomCacheGlobal Adds this event to the cache for actor 0 (becoming a "globally owned" event in the cache).

RemoveFromRoomCache Remove fitting event from the room's cache.

RemoveFromRoomCacheForActorsLeft Removes events of players who already left the room (cleaning up).

SliceIncreaseIndex Increase the index of the sliced cache.

SliceSetIndex Set the index of the sliced cache. You must set RaiseEventOptions.CacheSliceIndex for this.

SlicePurgeIndex Purge cache slice with index. Exactly one slice is removed from cache. You must set RaiseEventOptions.CacheSliceIndex for this.

SlicePurgeUpToIndex Purge cache slices with specified index and anything lower than that. You must set RaiseEventOptions.CacheSliceIndex for this.

7.5.1.6 enum JoinMode : byte [strong]

Defines possible values for OpJoinRoom and OpJoinOrCreate. It tells the server if the room can be only be joined normally, created implicitly or found on a web-service for Turnbased games.

These values are not directly used by a game but implicitly set.

Enumerator

Default Regular join. The room must exist.

CreateIfNotExists Join or create the room if it's not existing. Used for OpJoinOrCreate for example.

JoinOrRejoin The room might be out of memory and should be loaded (if possible) from a Turnbased web-service.

RejoinOnly Only re-join will be allowed. If the user is not yet in the room, this will fail.

7.5.1.7 enum LobbyType : byte [strong]

Options of lobby types available. Lobby types might be implemented in certain Photon versions and won't be available on older servers.

Enumerator

Default This lobby is used unless another is defined by game or JoinRandom. Room-lists will be sent and JoinRandomRoom can filter by matching properties.

SqlLobby This lobby type lists rooms like Default but JoinRandom has a parameter for SQL-like "where" clauses for filtering. This allows bigger, less, or and and combinations.

AsyncRandomLobby This lobby does not send lists of games. It is only used for OpJoinRandomRoom. It keeps rooms available for a while when there are only inactive users left.

7.5.1.8 enum MatchmakingMode : byte [strong]

Options for matchmaking rules for OpJoinRandom.

Enumerator

FillRoom Fills up rooms (oldest first) to get players together as fast as possible. Default. Makes most sense with MaxPlayers > 0 and games that can only start with more players.

SerialMatching Distributes players across available rooms sequentially but takes filter into account. Without filter, rooms get players evenly distributed.

RandomMatching Joins a (fully) random room. Expected properties must match but aside from this, any available room might be selected.

7.5.1.9 enum PropertyTypeFlag : byte [strong]

Flags for "types of properties", being used as filter in OpGetProperties.

Enumerator

None (0x00) Flag type for no property type.

Game (0x01) Flag type for game-attached properties.

Actor (0x02) Flag type for actor related properties.

GameAndActor (0x01) Flag type for game AND actor properties. Equal to 'Game'

7.5.1.10 enum ReceiverGroup : byte [strong]

Lite - OpRaiseEvent lets you choose which actors in the room should receive events. By default, events are sent to "Others" but you can overrule this.

Enumerator

Others Default value (not sent). Anyone else gets my event.

All Everyone in the current room (including this peer) will get this event.

MasterClient The server sends this event only to the actor with the lowest actorNumber. The "master client" does not have special rights but is the one who is in this room the longest time.

7.5.1.11 enum **ServerConnection** [strong]

Available server (types) for internally used field: server.

[Photon](#) uses 3 different roles of servers: Name Server, Master Server and Game Server.

Enumerator

MasterServer This server is where matchmaking gets done and where clients can get lists of rooms in lobbies.

GameServer This server handles a number of rooms to execute and relay the messages between players (in a room).

NameServer This server is used initially to get the address (IP) of a Master Server for a specific region. Not used for [Photon](#) OnPremise (self hosted).

7.6 ReplaceStringInTextFile Namespace Reference

Classes

- class [Program](#)

Chapter 8

Class Documentation

8.1 ActorProperties Class Reference

Class for constants. These (byte) values define "well known" properties for an Actor / [Player](#).

Public Attributes

- const byte [PlayerName](#) = 255
(255) Name of a player/actor.
- const byte [IsInactive](#) = 254
(254) Tells you if the player is currently in this game (getting events live).
- const byte [UserId](#) = 253
(253) UserId of the player. Sent when room gets created with [RoomOptions.PublishUserId](#) = true.

8.1.1 Detailed Description

Class for constants. These (byte) values define "well known" properties for an Actor / [Player](#).

[Pun](#) uses these constants internally. "Custom properties" have to use a string-type as key. They can be assigned at will.

8.1.2 Member Data Documentation

8.1.2.1 const byte IsInactive = 254

(254) Tells you if the player is currently in this game (getting events live).

A server-set value for async games, where players can leave the game and return later.

8.1.2.2 const byte PlayerName = 255

(255) Name of a player/actor.

8.1.2.3 const byte UserId = 253

(253) UserId of the player. Sent when room gets created with [RoomOptions.PublishUserId](#) = true.

8.2 AppSettings Class Reference

Settings for [Photon](#) application(s) and the server to connect to.

Public Member Functions

- string [ToStringFull](#) ()
ToString but with more details.

Public Attributes

- string [AppIdRealtime](#)
AppId for [Realtime](#) or PUN.
- string [AppIdChat](#)
AppId for the [Chat](#) Api.
- string [AppIdVoice](#)
AppId for use in the Voice Api.
- string [AppVersion](#)
The AppVersion can be used to identify builds and will split the AppId distinct "Virtual AppIds" (important for match-making).
- bool [UseNameServer](#) = true
If false, the app will attempt to connect to a Master Server (which is obsolete but sometimes still necessary).
- string [FixedRegion](#)
Can be set to any of the [Photon](#) Cloud's region names to directly connect to that region.
- string [Server](#)
The address (hostname or IP) of the server to connect to.
- int [Port](#)
If not null, this sets the port of the first [Photon](#) server to connect to (that will "forward" the client as needed).
- ConnectionProtocol [Protocol](#) = ConnectionProtocol.Udp
The network level protocol to use.
- bool [EnableLobbyStatistics](#)
If true, the client will request the list of currently available lobbies.
- DebugLevel [NetworkLogging](#) = DebugLevel.ERROR
Log level for the network lib.

Properties

- bool [IsMasterServerAddress](#) [get]
If true, the [Server](#) field contains a Master Server address (if any address at all).
- bool [IsBestRegion](#) [get]
If true, the client should fetch the region list from the Name Server and find the one with best ping.
- bool [IsDefaultNameServer](#) [get]
If true, the default nameserver address for the [Photon](#) Cloud should be used.
- bool [IsDefaultPort](#) [get]
If true, the default ports for a protocol will be used.

8.2.1 Detailed Description

Settings for [Photon](#) application(s) and the server to connect to.

This is Serializable for Unity, so it can be included in ScriptableObject instances.

8.2.2 Member Function Documentation

8.2.2.1 string ToStringFull ()

ToString but with more details.

8.2.3 Member Data Documentation

8.2.3.1 string AppIdChat

AppId for the [Chat](#) Api.

8.2.3.2 string AppIdRealtime

AppId for [Realtime](#) or PUN.

8.2.3.3 string AppIdVoice

AppId for use in the Voice Api.

8.2.3.4 string AppVersion

The AppVersion can be used to identify builds and will split the AppId distinct "Virtual AppIds" (important for match-making).

8.2.3.5 bool EnableLobbyStatistics

If true, the client will request the list of currently available lobbies.

8.2.3.6 string FixedRegion

Can be set to any of the [Photon](#) Cloud's region names to directly connect to that region.

if this IsNullOrEmpty() AND UseNameServer == true, use BestRegion. else, use a server

8.2.3.7 DebugLevel NetworkLogging = DebugLevel.ERROR

Log level for the network lib.

8.2.3.8 int Port

If not null, this sets the port of the first [Photon](#) server to connect to (that will "forward" the client as needed).

8.2.3.9 ConnectionProtocol Protocol = ConnectionProtocol.Udp

The network level protocol to use.

8.2.3.10 string Server

The address (hostname or IP) of the server to connect to.

8.2.3.11 bool UseNameServer = true

If false, the app will attempt to connect to a Master Server (which is obsolete but sometimes still necessary).
if true, Server points to a NameServer (or is null, using the default), else it points to a MasterServer.

8.2.4 Property Documentation

8.2.4.1 bool IsBestRegion [get]

If true, the client should fetch the region list from the Name Server and find the one with best ping.
See "Best Region" in the online docs.

8.2.4.2 bool IsDefaultNameServer [get]

If true, the default nameserver address for the [Photon](#) Cloud should be used.

8.2.4.3 bool IsDefaultPort [get]

If true, the default ports for a protocol will be used.

8.2.4.4 bool IsMasterServerAddress [get]

If true, the Server field contains a Master Server address (if any address at all).

8.3 AuthenticationValues Class Reference

Container for user authentication in [Photon](#). Set AuthValues before you connect - all else is handled.

Public Member Functions

- [AuthenticationValues](#) ()
Creates empty auth values without any info.
- [AuthenticationValues](#) (string userId)
Creates minimal info about the user. If this is authenticated or not, depends on the set AuthType.
- virtual void [SetAuthPostData](#) (string stringData)
Sets the data to be passed-on to the auth service via POST.
- virtual void [SetAuthPostData](#) (byte[] byteData)
Sets the data to be passed-on to the auth service via POST.
- virtual void [SetAuthPostData](#) (Dictionary< string, object > dictData)
Sets data to be passed-on to the auth service as Json (Content-Type: "application/json") via Post.
- virtual void [AddAuthParameter](#) (string key, string value)
Adds a key-value pair to the get-parameters used for Custom Auth.
- override string [ToString](#) ()

Properties

- [CustomAuthenticationType AuthType](#) [get, set]
The type of custom authentication provider that should be used. Currently only "Custom" or "None" (turns this off).
- string [AuthGetParameters](#) [get, set]
This string must contain any (http get) parameters expected by the used authentication service. By default, username and token.
- object [AuthPostData](#) [get]
Data to be passed-on to the auth service via POST. Default: null (not sent). Either string or byte[] (see setters).
- string [Token](#) [get, set]
After initial authentication, [Photon](#) provides a token for this client / user, which is subsequently used as (cached) validation.
- string [UserId](#) [get, set]
The UserId should be a unique identifier per user. This is for finding friends, etc..

8.3.1 Detailed Description

Container for user authentication in [Photon](#). Set AuthValues before you connect - all else is handled.

On [Photon](#), user authentication is optional but can be useful in many cases. If you want to FindFriends, a unique ID per user is very practical.

There are basically three options for user authentication: None at all, the client sets some UserId or you can use some account web-service to authenticate a user (and set the UserId server-side).

Custom Authentication lets you verify end-users by some kind of login or token. It sends those values to [Photon](#) which will verify them before granting access or disconnecting the client.

The AuthValues are sent in OpAuthenticate when you connect, so they must be set before you connect. Should you not set any AuthValues, PUN will create them and set the playerName as userId in them. If the AuthValues.userId is null or empty when it's sent to the server, then the [Photon](#) Server assigns a userId!

The [Photon](#) Cloud Dashboard will let you enable this feature and set important server values for it. <https://dashboard.photonengine.com>

8.3.2 Constructor & Destructor Documentation

8.3.2.1 AuthenticationValues ()

Creates empty auth values without any info.

8.3.2.2 AuthenticationValues (string userId)

Creates minimal info about the user. If this is authenticated or not, depends on the set AuthType.

Parameters

<i>userId</i>	Some UserId to set in Photon .
---------------	--

8.3.3 Member Function Documentation

8.3.3.1 virtual void AddAuthParameter (string key, string value) [virtual]

Adds a key-value pair to the get-parameters used for Custom Auth.

This method does uri-encoding for you.

Parameters

<i>key</i>	Key for the value to set.
<i>value</i>	Some value relevant for Custom Authentication.

8.3.3.2 `virtual void SetAuthPostData (string stringData) [virtual]`

Sets the data to be passed-on to the auth service via POST.

AuthPostData is just one value. Each SetAuthPostData replaces any previous value. It can be either a string, a byte[] or a dictionary. Each SetAuthPostData replaces any previous value.

Parameters

<i>stringData</i>	String data to be used in the body of the POST request. Null or empty string will set AuthPostData to null.
-------------------	---

8.3.3.3 `virtual void SetAuthPostData (byte[] byteData) [virtual]`

Sets the data to be passed-on to the auth service via POST.

AuthPostData is just one value. Each SetAuthPostData replaces any previous value. It can be either a string, a byte[] or a dictionary. Each SetAuthPostData replaces any previous value.

Parameters

<i>byteData</i>	Binary token / auth-data to pass on.
-----------------	--------------------------------------

8.3.3.4 `virtual void SetAuthPostData (Dictionary< string, object > dictData) [virtual]`

Sets data to be passed-on to the auth service as Json (Content-Type: "application/json") via Post.

AuthPostData is just one value. Each SetAuthPostData replaces any previous value. It can be either a string, a byte[] or a dictionary. Each SetAuthPostData replaces any previous value.

Parameters

<i>dictData</i>	A authentication-data dictionary will be converted to Json and passed to the Auth webservice via HTTP Post.
-----------------	---

8.3.4 Property Documentation**8.3.4.1** `string AuthGetParameters [get], [set]`

This string must contain any (http get) parameters expected by the used authentication service. By default, username and token.

Standard http get parameters are used here and passed on to the service that's defined in the server ([Photon Cloud Dashboard](#)).

8.3.4.2 `object AuthPostData [get]`

Data to be passed-on to the auth service via POST. Default: null (not sent). Either string or byte[] (see setters).

8.3.4.3 `CustomAuthenticationType AuthType [get], [set]`

The type of custom authentication provider that should be used. Currently only "Custom" or "None" (turns this off).

8.3.4.4 string Token [get], [set]

After initial authentication, [Photon](#) provides a token for this client / user, which is subsequently used as (cached) validation.

8.3.4.5 string UserId [get], [set]

The UserId should be a unique identifier per user. This is for finding friends, etc..

See remarks of AuthValues for info about how this is set and used.

8.4 AuthenticationValues Class Reference

Container for user authentication in [Photon](#). Set AuthValues before you connect - all else is handled.

Public Member Functions

- [AuthenticationValues](#) ()
Creates empty auth values without any info.
- [AuthenticationValues](#) (string userId)
Creates minimal info about the user. If this is authenticated or not, depends on the set AuthType.
- virtual void [SetAuthPostData](#) (string stringData)
Sets the data to be passed-on to the auth service via POST.
- virtual void [SetAuthPostData](#) (byte[] byteData)
Sets the data to be passed-on to the auth service via POST.
- virtual void [AddAuthParameter](#) (string key, string value)
Adds a key-value pair to the get-parameters used for Custom Auth.
- override string [ToString](#) ()
Transform this object into string.

Properties

- [CustomAuthenticationType](#) AuthType [get, set]
The type of custom authentication provider that should be used. Currently only "Custom" or "None" (turns this off).
- string [AuthGetParameters](#) [get, set]
This string must contain any (http get) parameters expected by the used authentication service. By default, username and token.
- object [AuthPostData](#) [get]
Data to be passed-on to the auth service via POST. Default: null (not sent). Either string or byte[] (see setters).
- string [Token](#) [get, set]
After initial authentication, [Photon](#) provides a token for this client / user, which is subsequently used as (cached) validation.
- string [UserId](#) [get, set]
The UserId should be a unique identifier per user. This is for finding friends, etc..

8.4.1 Detailed Description

Container for user authentication in [Photon](#). Set AuthValues before you connect - all else is handled.

On [Photon](#), user authentication is optional but can be useful in many cases. If you want to FindFriends, a unique ID per user is very practical.

There are basically three options for user authentication: None at all, the client sets some UserId or you can use some account web-service to authenticate a user (and set the UserId server-side).

Custom Authentication lets you verify end-users by some kind of login or token. It sends those values to [Photon](#) which will verify them before granting access or disconnecting the client.

The [Photon](#) Cloud Dashboard will let you enable this feature and set important server values for it. <https://dashboard.photonengine.com>

8.4.2 Constructor & Destructor Documentation

8.4.2.1 AuthenticationValues ()

Creates empty auth values without any info.

8.4.2.2 AuthenticationValues (string *userId*)

Creates minimal info about the user. If this is authenticated or not, depends on the set AuthType.

Parameters

<i>userId</i>	Some UserId to set in Photon .
---------------	--

8.4.3 Member Function Documentation

8.4.3.1 virtual void AddAuthParameter (string *key*, string *value*) [virtual]

Adds a key-value pair to the get-parameters used for Custom Auth.

This method does uri-encoding for you.

Parameters

<i>key</i>	Key for the value to set.
<i>value</i>	Some value relevant for Custom Authentication.

8.4.3.2 virtual void SetAuthPostData (string *stringData*) [virtual]

Sets the data to be passed-on to the auth service via POST.

Parameters

<i>stringData</i>	String data to be used in the body of the POST request. Null or empty string will set AuthPostData to null.
-------------------	---

8.4.3.3 virtual void SetAuthPostData (byte[] *byteData*) [virtual]

Sets the data to be passed-on to the auth service via POST.

Parameters

<i>byteData</i>	Binary token / auth-data to pass on.
-----------------	--------------------------------------

8.4.3.4 override string ToString ()

Transform this object into string.

Returns

string representation of this object.

8.4.4 Property Documentation

8.4.4.1 string AuthGetParameters [get], [set]

This string must contain any (http get) parameters expected by the used authentication service. By default, user-name and token.

Standard http get parameters are used here and passed on to the service that's defined in the server ([Photon](#) Cloud Dashboard).

8.4.4.2 object AuthPostData [get]

Data to be passed-on to the auth service via POST. Default: null (not sent). Either string or byte[] (see setters).

8.4.4.3 CustomAuthenticationType AuthType [get], [set]

The type of custom authentication provider that should be used. Currently only "Custom" or "None" (turns this off).

8.4.4.4 string Token [get], [set]

After initial authentication, [Photon](#) provides a token for this client / user, which is subsequently used as (cached) validation.

8.4.4.5 string UserId [get], [set]

The UserId should be a unique identifier per user. This is for finding friends, etc..

8.5 ButtonInsideScrollList Class Reference

Button inside scroll list will stop scrolling ability of scrollRect container, so that when pressing down on a button and draggin up and down will not affect scrolling. this doesn't do anything if no scrollRect component found in Parent Hierarchy.

Inherits MonoBehaviour, IPointerDownHandler, and IPointerUpHandler.

8.5.1 Detailed Description

Button inside scroll list will stop scrolling ability of scrollRect container, so that when pressing down on a button and draggin up and down will not affect scrolling. this doesn't do anything if no scrollRect component found in Parent Hierarchy.

8.6 CellTree Class Reference

Represents the tree accessible from its root node.

Public Member Functions

- [CellTree](#) ()
Default constructor.
- [CellTree](#) ([CellTreeNode](#) root)
Constructor to define the root node.

Properties

- [CellTreeNode](#) [RootNode](#) [get]
Represents the root node of the cell tree.

8.6.1 Detailed Description

Represents the tree accessible from its root node.

8.6.2 Constructor & Destructor Documentation

8.6.2.1 [CellTree](#) ()

Default constructor.

8.6.2.2 [CellTree](#) ([CellTreeNode](#) root)

Constructor to define the root node.

Parameters

<i>root</i>	The root node of the tree.
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8.6.3 Property Documentation

8.6.3.1 [CellTreeNode](#) [RootNode](#) [get]

Represents the root node of the cell tree.

8.7 CellTreeNode Class Reference

Represents a single node of the tree.

Public Types

- enum **ENodeType**

Public Member Functions

- [CellTreeNode](#) ()
Default constructor.
- [CellTreeNode](#) (byte id, ENodeType nodeType, [CellTreeNode](#) parent)
Constructor to define the ID and the node type as well as setting a parent node.
- void [AddChild](#) ([CellTreeNode](#) child)
Adds the given child to the node.
- void [Draw](#) ()
Draws the cell in the editor.
- void [GetActiveCells](#) (List< byte > activeCells, bool yIsUpAxis, Vector3 position)
Gathers all cell IDs the player is currently inside or nearby.
- bool [IsPointInsideCell](#) (bool yIsUpAxis, Vector3 point)
Checks if the given point is inside the cell.
- bool [IsPointNearCell](#) (bool yIsUpAxis, Vector3 point)
Checks if the given point is near the cell.

Public Attributes

- byte [Id](#)
Represents the unique ID of the cell.
- Vector3 [Center](#)
Represents the center, top-left or bottom-right position of the cell or the size of the cell.
- ENodeType [NodeType](#)
Describes the current node type of the cell tree node.
- [CellTreeNode](#) [Parent](#)
Reference to the parent node.
- List< [CellTreeNode](#) > [Childs](#)
A list containing all child nodes.

8.7.1 Detailed Description

Represents a single node of the tree.

8.7.2 Constructor & Destructor Documentation

8.7.2.1 [CellTreeNode](#) ()

Default constructor.

8.7.2.2 [CellTreeNode](#) (byte id, ENodeType nodeType, [CellTreeNode](#) parent)

Constructor to define the ID and the node type as well as setting a parent node.

Parameters

<i>id</i>	The ID of the cell is used as the interest group.
<i>nodeType</i>	The node type of the cell tree node.

<i>parent</i>	The parent node of the cell tree node.
---------------	--

8.7.3 Member Function Documentation

8.7.3.1 void AddChild (CellTreeNode *child*)

Adds the given child to the node.

Parameters

<i>child</i>	The child which is added to the node.
--------------	---------------------------------------

8.7.3.2 void Draw ()

Draws the cell in the editor.

8.7.3.3 void GetActiveCells (List< byte > *activeCells*, bool *ylsUpAxis*, Vector3 *position*)

Gathers all cell IDs the player is currently inside or nearby.

Parameters

<i>activeCells</i>	The list to add all cell IDs to the player is currently inside or nearby.
<i>ylsUpAxis</i>	Describes if the y-axis is used as up-axis.
<i>position</i>	The current position of the player.

8.7.3.4 bool IsPointInsideCell (bool *ylsUpAxis*, Vector3 *point*)

Checks if the given point is inside the cell.

Parameters

<i>ylsUpAxis</i>	Describes if the y-axis is used as up-axis.
<i>point</i>	The point to check.

Returns

True if the point is inside the cell, false if the point is not inside the cell.

8.7.3.5 bool IsPointNearCell (bool *ylsUpAxis*, Vector3 *point*)

Checks if the given point is near the cell.

Parameters

<i>ylsUpAxis</i>	Describes if the y-axis is used as up-axis.
<i>point</i>	The point to check.

Returns

True if the point is near the cell, false if the point is too far away.

8.7.4 Member Data Documentation

8.7.4.1 Vector3 Center

Represents the center, top-left or bottom-right position of the cell or the size of the cell.

8.7.4.2 List<CellTreeNode> Childs

A list containing all child nodes.

8.7.4.3 byte Id

Represents the unique ID of the cell.

8.7.4.4 ENodeType NodeType

Describes the current node type of the cell tree node.

8.7.4.5 CellTreeNode Parent

Reference to the parent node.

8.8 ChannelCreationOptions Class Reference

Static Public Attributes

- static [ChannelCreationOptions Default](#) = new [ChannelCreationOptions\(\)](#)
Default values of channel creation options.

Properties

- bool [PublishSubscribers](#) [get, set]
Whether or not the channel to be created will allow client to keep a list of users.
- int [MaxSubscribers](#) [get, set]
Limit of the number of users subscribed to the channel to be created.

8.8.1 Member Data Documentation

8.8.1.1 ChannelCreationOptions Default = new ChannelCreationOptions() [static]

Default values of channel creation options.

8.8.2 Property Documentation

8.8.2.1 int MaxSubscribers [get], [set]

Limit of the number of users subscribed to the channel to be created.

8.8.2.2 bool PublishSubscribers [get], [set]

Whether or not the channel to be created will allow client to keep a list of users.

8.9 ChannelWellKnownProperties Class Reference

Public Attributes

- const byte **MaxSubscribers** = 255
- const byte **PublishSubscribers** = 254

8.10 ChatChannel Class Reference

A channel of communication in [Photon Chat](#), updated by [ChatClient](#) and provided as READ ONLY.

Public Member Functions

- [ChatChannel](#) (string name)
Used internally to create new channels. This does NOT create a channel on the server! Use [ChatClient.Subscribe](#).
- void [Add](#) (string sender, object message, int msgId)
Used internally to add messages to this channel.
- void [Add](#) (string[] senders, object[] messages, int lastMsgId)
Used internally to add messages to this channel.
- void [TruncateMessages](#) ()
Reduces the number of locally cached messages in this channel to the MessageLimit (if set).
- void [ClearMessages](#) ()
Clear the local cache of messages currently stored. This frees memory but doesn't affect the server.
- string [ToStringMessages](#) ()
Provides a string-representation of all messages in this channel.

Public Attributes

- readonly string [Name](#)
Name of the channel (used to subscribe and unsubscribe).
- readonly List< string > [Senders](#) = new List<string>()
Senders of messages in chronological order. Senders and Messages refer to each other by index. Senders[x] is the sender of Messages[x].
- readonly List< object > [Messages](#) = new List<object>()
Messages in chronological order. Senders and Messages refer to each other by index. Senders[x] is the sender of Messages[x].
- int [MessageLimit](#)
If greater than 0, this channel will limit the number of messages, that it caches locally.
- readonly HashSet< string > [Subscribers](#) = new HashSet<string>()
Subscribed users.

Properties

- bool [IsPrivate](#) [get, protected set]
Is this a private 1:1 channel?
- int [MessageCount](#) [get]
Count of messages this client still buffers/knows for this channel.
- int [LastMsgId](#) [get, protected set]
ID of the last message received.
- bool [PublishSubscribers](#) [get, protected set]
Whether or not this channel keeps track of the list of its subscribers.
- int [MaxSubscribers](#) [get, protected set]
Maximum number of channel subscribers. 0 means infinite.

8.10.1 Detailed Description

A channel of communication in [Photon Chat](#), updated by [ChatClient](#) and provided as READ ONLY.

Contains messages and senders to use (read!) and display by your GUI. Access these by: [ChatClient.PublicChannels](#) [ChatClient.PrivateChannels](#)

8.10.2 Constructor & Destructor Documentation

8.10.2.1 ChatChannel (string name)

Used internally to create new channels. This does NOT create a channel on the server! Use [ChatClient.Subscribe](#).

8.10.3 Member Function Documentation

8.10.3.1 void Add (string sender, object message, int msgId)

Used internally to add messages to this channel.

8.10.3.2 void Add (string[] senders, object[] messages, int lastMsgId)

Used internally to add messages to this channel.

8.10.3.3 void ClearMessages ()

Clear the local cache of messages currently stored. This frees memory but doesn't affect the server.

8.10.3.4 string ToStringMessages ()

Provides a string-representation of all messages in this channel.

Returns

All known messages in format "Sender: Message", line by line.

8.10.3.5 void TruncateMessages ()

Reduces the number of locally cached messages in this channel to the MessageLimit (if set).

8.10.4 Member Data Documentation

8.10.4.1 `int MessageLimit`

If greater than 0, this channel will limit the number of messages, that it caches locally.

8.10.4.2 `readonly List<object> Messages = new List<object>()`

Messages in chronological order. Senders and Messages refer to each other by index. Senders[x] is the sender of Messages[x].

8.10.4.3 `readonly string Name`

Name of the channel (used to subscribe and unsubscribe).

8.10.4.4 `readonly List<string> Senders = new List<string>()`

Senders of messages in chronological order. Senders and Messages refer to each other by index. Senders[x] is the sender of Messages[x].

8.10.4.5 `readonly HashSet<string> Subscribers = new HashSet<string>()`

Subscribed users.

8.10.5 Property Documentation

8.10.5.1 `bool IsPrivate` `[get]`, `[protected set]`

Is this a private 1:1 channel?

8.10.5.2 `int LastMsgId` `[get]`, `[protected set]`

ID of the last message received.

8.10.5.3 `int MaxSubscribers` `[get]`, `[protected set]`

Maximum number of channel subscribers. 0 means infinite.

8.10.5.4 `int MessageCount` `[get]`

Count of messages this client still buffers/knows for this channel.

8.10.5.5 `bool PublishSubscribers` `[get]`, `[protected set]`

Whether or not this channel keeps track of the list of its subscribers.

8.11 ChatClient Class Reference

Central class of the [Photon Chat](#) API to connect, handle channels and messages.

Inherits [IPhotonPeerListener](#).

Public Member Functions

- bool [CanChatInChannel](#) (string channelName)
Checks if this client is ready to publish messages inside a public channel.
- [ChatClient](#) ([IChatClientListener](#) listener, [ConnectionProtocol](#) protocol=[ConnectionProtocol.Udp](#))
Chat client constructor.
- bool [Connect](#) (string appld, string appVersion, [AuthenticationValues](#) authValues)
Connects this client to the [Photon Chat](#) Cloud service, which will also authenticate the user (and set a UserId).
- bool [ConnectAndSetStatus](#) (string appld, string appVersion, [AuthenticationValues](#) authValues, int status=[ChatUserStatus.Online](#), object message=null)
Connects this client to the [Photon Chat](#) Cloud service, which will also authenticate the user (and set a UserId). This also sets an online status once connected. By default it will set user status to [ChatUserStatus.Online](#). See [SetOnlineStatus\(int,object\)](#) for more information.
- void [Service](#) ()
Must be called regularly to keep connection between client and server alive and to process incoming messages.
- void [SendAcksOnly](#) ()
Obsolete: Better use [UseBackgroundWorkerForSending](#) and [Service\(\)](#).
- void [Disconnect](#) ()
Disconnects from the [Chat](#) Server by sending a "disconnect command", which prevents a timeout server-side.
- void [StopThread](#) ()
Locally shuts down the connection to the [Chat](#) Server. This resets states locally but the server will have to timeout this peer.
- bool [Subscribe](#) (string[] channels)
Sends operation to subscribe to a list of channels by name.
- bool [Subscribe](#) (string[] channels, int[] lastMsgIds)
Sends operation to subscribe to a list of channels by name and possibly retrieve messages we did not receive while unsubscribed.
- bool [Subscribe](#) (string[] channels, int messagesFromHistory)
Sends operation to subscribe client to channels, optionally fetching a number of messages from the cache.
- bool [Unsubscribe](#) (string[] channels)
Unsubscribes from a list of channels, which stops getting messages from those.
- bool [PublishMessage](#) (string channelName, object message, bool forwardAsWebhook=false)
Sends a message to a public channel which this client subscribed to.
- bool [SendPrivateMessage](#) (string target, object message, bool forwardAsWebhook=false)
Sends a private message to a single target user. Calls [OnPrivateMessage](#) on the receiving client.
- bool [SendPrivateMessage](#) (string target, object message, bool encrypt, bool forwardAsWebhook)
Sends a private message to a single target user. Calls [OnPrivateMessage](#) on the receiving client.
- bool [SetOnlineStatus](#) (int status)
Sets the user's status without changing your status-message.
- bool [SetOnlineStatus](#) (int status, object message)
Sets the user's status without changing your status-message.
- bool [AddFriends](#) (string[] friends)
Adds friends to a list on the [Chat](#) Server which will send you status updates for those.
- bool [RemoveFriends](#) (string[] friends)
Removes the provided entries from the list on the [Chat](#) Server and stops their status updates.
- string [GetPrivateChannelNameByUser](#) (string userName)

- *Get you the (locally used) channel name for the chat between this client and another user.*
- bool [TryGetChannel](#) (string channelName, bool isPrivate, out [ChatChannel](#) channel)
Simplified access to either private or public channels by name.
- bool [TryGetChannel](#) (string channelName, out [ChatChannel](#) channel)
Simplified access to all channels by name. Checks public channels first, then private ones.
- bool [Subscribe](#) (string channel, int lastMsgId=0, int messagesFromHistory=-1, [ChannelCreationOptions](#) creationOptions=null)
Subscribe to a single channel and optionally sets its well-know channel properties in case the channel is created

Public Attributes

- const int [DefaultMaxSubscribers](#) = 100
Default maximum value possible for [ChatChannel.MaxSubscribers](#) when [ChatChannel.PublishSubscribers](#) is enabled
- int [MessageLimit](#)
If greater than 0, new channels will limit the number of messages they cache locally.
- readonly Dictionary< string, [ChatChannel](#) > [PublicChannels](#)
Public channels this client is subscribed to.
- readonly Dictionary< string, [ChatChannel](#) > [PrivateChannels](#)
Private channels in which this client has exchanged messages.
- [ChatPeer](#) chatPeer = null
The [Chat](#) Peer used by this client.

Properties

- string [NameServerAddress](#) [get]
The address of last connected Name Server.
- string [FrontendAddress](#) [get]
The address of the actual chat server assigned from NameServer. Public for read only.
- string [ChatRegion](#) [get, set]
Settable only before you connect! Defaults to "EU".
- [ChatState](#) State [get]
Current state of the [ChatClient](#). Also use [CanChat](#).
- [ChatDisconnectCause](#) [DisconnectedCause](#) [get]
Disconnection cause. Check this inside [IChatClientListener.OnDisconnected](#).
- bool [CanChat](#) [get]
Checks if this client is ready to send messages.
- string [AppVersion](#) [get]
The version of your client. A new version also creates a new "virtual app" to separate players from older client versions.
- string [AppId](#) [get]
The AppID as assigned from the [Photon](#) Cloud.
- [AuthenticationValues](#) [AuthValues](#) [get, set]
Settable only before you connect!
- string [UserId](#) [get]
The unique ID of a user/person, stored in [AuthValues.UserId](#). Set it before you connect.
- bool [UseBackgroundWorkerForSending](#) [get, set]
Defines if a background thread will call [SendOutgoingCommands](#), while your code calls [Service](#) to dispatch received messages.
- ConnectionProtocol [TransportProtocol](#) [get, set]
Exposes the [TransportProtocol](#) of the used [PhotonPeer](#). Settable while not connected.
- Dictionary< ConnectionProtocol, Type > [SocketImplementationConfig](#) [get]

Defines which IPhotonSocket class to use per ConnectionProtocol.

- DebugLevel [DebugOut](#) [get, set]

Sets the level (and amount) of debug output provided by the library.

8.11.1 Detailed Description

Central class of the [Photon Chat](#) API to connect, handle channels and messages.

This class must be instantiated with a [IChatClientListener](#) instance to get the callbacks. Integrate it into your game loop by calling `Service` regularly. If the target platform supports `Threads/Tasks`, set `UseBackgroundWorkerForSending = true`, to let the [ChatClient](#) keep the connection by sending from an independent thread.

Call `Connect` with an `AppId` that is setup as [Photon Chat](#) application. Note: `Connect` covers multiple messages between this client and the servers. A short workflow will connect you to a chat server.

Each [ChatClient](#) resembles a user in chat (set in `Connect`). Each user automatically subscribes a channel for incoming private messages and can message any other user privately. Before you publish messages in any non-private channel, that channel must be subscribed.

`PublicChannels` is a list of subscribed channels, containing messages and senders. `PrivateChannels` contains all incoming and sent private messages.

8.11.2 Constructor & Destructor Documentation

8.11.2.1 ChatClient (IChatClientListener listener, ConnectionProtocol protocol = ConnectionProtocol.Udp)

[Chat](#) client constructor.

Parameters

<i>listener</i>	The chat listener implementation.
<i>protocol</i>	Connection protocol to be used by this client. Default is <code>ConnectionProtocol.Udp</code> .

8.11.3 Member Function Documentation

8.11.3.1 bool AddFriends (string[] friends)

Adds friends to a list on the [Chat](#) Server which will send you status updates for those.

`AddFriends` and `RemoveFriends` enable clients to handle their friend list in the [Photon Chat](#) server. Having users on your friends list gives you access to their current online status (and whatever info your client sets in it).

Each user can set an online status consisting of an integer and an arbitrary (serializable) object. The object can be null, `Hashtable`, `object[]` or anything else [Photon](#) can serialize.

The status is published automatically to friends (anyone who set your user ID with `AddFriends`).

[Photon](#) flushes friends-list when a chat client disconnects, so it has to be set each time. If your community API gives you access to online status already, you could filter and set online friends in `AddFriends`.

Actual friend relations are not persistent and have to be stored outside of [Photon](#).

Parameters

<i>friends</i>	Array of friend userIDs.
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Returns

If the operation could be sent.

8.11.3.2 `bool CanChatInChannel (string channelName)`

Checks if this client is ready to publish messages inside a public channel.

Parameters

<i>channelName</i>	The channel to do the check with.
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Returns

Whether or not this client is ready to publish messages inside the public channel with the specified channel↔ Name.

8.11.3.3 `bool Connect (string appld, string appVersion, AuthenticationValues authValues)`

Connects this client to the [Photon Chat](#) Cloud service, which will also authenticate the user (and set a UserId).

Parameters

<i>appld</i>	Get your Photon Chat Appld from the Dashboard .
<i>appVersion</i>	Any version string you make up. Used to separate users and variants of your clients, which might be incompatible.
<i>authValues</i>	Values for authentication. You can leave this null, if you set a UserId before. If you set authValues, they will override any UserId set before.

Returns

8.11.3.4 `bool ConnectAndSetStatus (string appld, string appVersion, AuthenticationValues authValues, int status = ChatUserStatus.Online, object message = null)`

Connects this client to the [Photon Chat](#) Cloud service, which will also authenticate the user (and set a UserId). This also sets an online status once connected. By default it will set user status to [ChatUserStatus.Online](#). See [SetOnlineStatus\(int,object\)](#) for more information.

Parameters

<i>appld</i>	Get your Photon Chat Appld from the Dashboard .
<i>appVersion</i>	Any version string you make up. Used to separate users and variants of your clients, which might be incompatible.
<i>authValues</i>	Values for authentication. You can leave this null, if you set a UserId before. If you set authValues, they will override any UserId set before.
<i>status</i>	User status to set when connected. Predefined states are in class ChatUserStatus . Other values can be used at will.
<i>message</i>	Optional status Also sets a status-message which your friends can get.

Returns

If the connection attempt could be sent at all.

8.11.3.5 `void Disconnect ()`

Disconnects from the [Chat](#) Server by sending a "disconnect command", which prevents a timeout server-side.

8.11.3.6 `string GetPrivateChannelNameByUser (string userName)`

Get you the (locally used) channel name for the chat between this client and another user.

Parameters

<i>userName</i>	Remote user's name or UserId.
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Returns

The (locally used) channel name for a private channel.

8.11.3.7 bool PublishMessage (string *channelName*, object *message*, bool *forwardAsWebhook* = false)

Sends a message to a public channel which this client subscribed to.

Before you publish to a channel, you have to subscribe it. Everyone in that channel will get the message.

Parameters

<i>channelName</i>	Name of the channel to publish to.
<i>message</i>	Your message (string or any serializable data).
<i>forwardAsWebhook</i>	Optionally, public messages can be forwarded as webhooks. Configure webhooks for your Chat app to use this.

Returns

False if the client is not yet ready to send messages.

8.11.3.8 bool RemoveFriends (string[] *friends*)

Removes the provided entries from the list on the [Chat](#) Server and stops their status updates.

[Photon](#) flushes friends-list when a chat client disconnects. Unless you want to remove individual entries, you don't have to RemoveFriends.

AddFriends and RemoveFriends enable clients to handle their friend list in the [Photon Chat](#) server. Having users on your friends list gives you access to their current online status (and whatever info your client sets in it).

Each user can set an online status consisting of an integer and an arbitrary (serializable) object. The object can be null, Hashtable, object[] or anything else [Photon](#) can serialize.

The status is published automatically to friends (anyone who set your user ID with AddFriends).

[Photon](#) flushes friends-list when a chat client disconnects, so it has to be set each time. If your community API gives you access to online status already, you could filter and set online friends in AddFriends.

Actual friend relations are not persistent and have to be stored outside of [Photon](#).

AddFriends and RemoveFriends enable clients to handle their friend list in the [Photon Chat](#) server. Having users on your friends list gives you access to their current online status (and whatever info your client sets in it).

Each user can set an online status consisting of an integer and an arbitrary (serializable) object. The object can be null, Hashtable, object[] or anything else [Photon](#) can serialize.

The status is published automatically to friends (anyone who set your user ID with AddFriends).

Actual friend relations are not persistent and have to be stored outside of [Photon](#).

Parameters

<i>friends</i>	Array of friend userIDs.
----------------	--------------------------

Returns

If the operation could be sent.

8.11.3.9 void SendAcksOnly ()

Obsolete: Better use UseBackgroundWorkerForSending and [Service\(\)](#).

8.11.3.10 bool SendPrivateMessage (string target, object message, bool forwardAsWebhook = false)

Sends a private message to a single target user. Calls OnPrivateMessage on the receiving client.

Parameters

<i>target</i>	Username to send this message to.
<i>message</i>	The message you want to send. Can be a simple string or anything serializable.
<i>forwardAsWebhook</i>	Optionally, private messages can be forwarded as webhooks. Configure webhooks for your Chat app to use this.

Returns

True if this clients can send the message to the server.

8.11.3.11 bool SendPrivateMessage (string target, object message, bool encrypt, bool forwardAsWebhook)

Sends a private message to a single target user. Calls OnPrivateMessage on the receiving client.

Parameters

<i>target</i>	Username to send this message to.
<i>message</i>	The message you want to send. Can be a simple string or anything serializable.
<i>encrypt</i>	Optionally, private messages can be encrypted. Encryption is not end-to-end as the server decrypts the message.
<i>forwardAsWebhook</i>	Optionally, private messages can be forwarded as webhooks. Configure webhooks for your Chat app to use this.

Returns

True if this clients can send the message to the server.

8.11.3.12 void Service ()

Must be called regularly to keep connection between client and server alive and to process incoming messages.

This method limits the effort it does automatically using the private variable msDeltaForServiceCalls. That value is lower for connect and multiplied by 4 when chat-server connection is ready.

8.11.3.13 bool SetOnlineStatus (int status)

Sets the user's status without changing your status-message.

The predefined status values can be found in class [ChatUserStatus](#). State [ChatUserStatus.Invisible](#) will make you offline for everyone and send no message.

You can set custom values in the status integer. Aside from the pre-configured ones, all states will be considered visible and online. Else, no one would see the custom state.

This overload does not change the set message.

Parameters

<i>status</i>	Predefined states are in class ChatUserStatus . Other values can be used at will.
---------------	---

Returns

True if the operation gets called on the server.

8.11.3.14 bool SetOnlineStatus (int *status*, object *message*)

Sets the user's status without changing your status-message.

The predefined status values can be found in class [ChatUserStatus](#). State [ChatUserStatus.Invisible](#) will make you offline for everyone and send no message.

You can set custom values in the status integer. Aside from the pre-configured ones, all states will be considered visible and online. Else, no one would see the custom state.

The message object can be anything that [Photon](#) can serialize, including (but not limited to) Hashtable, object[] and string. This value is defined by your own conventions.

Parameters

<i>status</i>	Predefined states are in class ChatUserStatus . Other values can be used at will.
<i>message</i>	Also sets a status-message which your friends can get.

Returns

True if the operation gets called on the server.

8.11.3.15 void StopThread ()

Locally shuts down the connection to the [Chat](#) Server. This resets states locally but the server will have to timeout this peer.

8.11.3.16 bool Subscribe (string[] *channels*)

Sends operation to subscribe to a list of channels by name.

Parameters

<i>channels</i>	List of channels to subscribe to. Avoid null or empty values.
-----------------	---

Returns

If the operation could be sent at all (Example: Fails if not connected to [Chat](#) Server).

8.11.3.17 bool Subscribe (string[] *channels*, int[] *lastMsgIds*)

Sends operation to subscribe to a list of channels by name and possibly retrieve messages we did not receive while unsubscribed.

Parameters

<i>channels</i>	List of channels to subscribe to. Avoid null or empty values.
<i>lastMsgIds</i>	ID of last message received per channel. Useful when re subscribing to receive only messages we missed.

Returns

If the operation could be sent at all (Example: Fails if not connected to [Chat Server](#)).

8.11.3.18 `bool Subscribe (string[] channels, int messagesFromHistory)`

Sends operation to subscribe client to channels, optionally fetching a number of messages from the cache.

Subscribes channels will forward new messages to this user. Use `PublishMessage` to do so. The messages cache is limited but can be useful to get into ongoing conversations, if that's needed.

Parameters

<i>channels</i>	List of channels to subscribe to. Avoid null or empty values.
<i>messagesFromHistory</i>	0: no history. 1 and higher: number of messages in history. -1: all available history.

Returns

If the operation could be sent at all (Example: Fails if not connected to [Chat Server](#)).

8.11.3.19 `bool Subscribe (string channel, int lastMsgId = 0, int messagesFromHistory = -1, ChannelCreationOptions creationOptions = null)`

Subscribe to a single channel and optionally sets its well-know channel properties in case the channel is created

Parameters

<i>channel</i>	name of the channel to subscribe to
<i>lastMsgId</i>	ID of the last received message from this channel when re subscribing to receive only missed messages, default is 0
<i>messagesFromHistory</i>	how many missed messages to receive from history, default is none/-1
<i>creationOptions</i>	options to be used in case the channel to subscribe to will be created.

Returns

8.11.3.20 `bool TryGetChannel (string channelName, bool isPrivate, out ChatChannel channel)`

Simplified access to either private or public channels by name.

Parameters

<i>channelName</i>	Name of the channel to get. For private channels, the channel-name is composed of both user's names.
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<i>isPrivate</i>	Define if you expect a private or public channel.
<i>channel</i>	Out parameter gives you the found channel, if any.

Returns

True if the channel was found.

8.11.3.21 bool TryGetChannel (string *channelName*, out ChatChannel *channel*)

Simplified access to all channels by name. Checks public channels first, then private ones.

Parameters

<i>channelName</i>	Name of the channel to get.
<i>channel</i>	Out parameter gives you the found channel, if any.

Returns

True if the channel was found.

8.11.3.22 bool Unsubscribe (string[] *channels*)

Unsubscribes from a list of channels, which stops getting messages from those.

The client will remove these channels from the PublicChannels dictionary once the server sent a response to this request.

The request will be sent to the server and [IChatClientListener.OnUnsubscribed](#) gets called when the server actually removed the channel subscriptions.

Unsubscribe will fail if you include null or empty channel names.

Parameters

<i>channels</i>	Names of channels to unsubscribe.
-----------------	-----------------------------------

Returns

False, if not connected to a chat server.

8.11.4 Member Data Documentation**8.11.4.1 ChatPeer chatPeer = null**

The [Chat](#) Peer used by this client.

8.11.4.2 const int DefaultMaxSubscribers = 100

Default maximum value possible for [ChatChannel.MaxSubscribers](#) when [ChatChannel.PublishSubscribers](#) is enabled

8.11.4.3 int MessageLimit

If greater than 0, new channels will limit the number of messages they cache locally.

This can be useful to limit the amount of memory used by chats. You can set a MessageLimit per channel but this value gets applied to new ones.

Note: Changing this value, does not affect ChatChannels that are already in use!

8.11.4.4 readonly Dictionary<string, ChatChannel> PrivateChannels

Private channels in which this client has exchanged messages.

8.11.4.5 readonly Dictionary<string, ChatChannel> PublicChannels

Public channels this client is subscribed to.

8.11.5 Property Documentation

8.11.5.1 string Appld [get]

The AppID as assigned from the [Photon](#) Cloud.

8.11.5.2 string AppVersion [get]

The version of your client. A new version also creates a new "virtual app" to separate players from older client versions.

8.11.5.3 AuthenticationValues AuthValues [get], [set]

Settable only before you connect!

8.11.5.4 bool CanChat [get]

Checks if this client is ready to send messages.

8.11.5.5 string ChatRegion [get], [set]

Settable only before you connect! Defaults to "EU".

8.11.5.6 DebugLevel DebugOut [get], [set]

Sets the level (and amount) of debug output provided by the library.

This affects the callbacks to [IChatClientListener.DebugReturn](#). Default Level: Error.

8.11.5.7 ChatDisconnectCause DisconnectedCause [get]

Disconnection cause. Check this inside [IChatClientListener.OnDisconnected](#).

8.11.5.8 string FrontendAddress [get]

The address of the actual chat server assigned from NameServer. Public for read only.

8.11.5.9 string NameServerAddress [get]

The address of last connected Name Server.

8.11.5.10 Dictionary<ConnectionProtocol, Type> SocketImplementationConfig [get]

Defines which IPhtonSocket class to use per ConnectionProtocol.

Several platforms have special Socket implementations and slightly different APIs. To accomodate this, switching the socket implementation for a network protocol was made available. By default, UDP and TCP have socket implementations assigned.

You only need to set the SocketImplementationConfig once, after creating a PhotonPeer and before connecting. If you switch the TransportProtocol, the correct implementation is being used.

8.11.5.11 ChatState State [get]

Current state of the [ChatClient](#). Also use CanChat.

8.11.5.12 ConnectionProtocol TransportProtocol [get], [set]

Exposes the TransportProtocol of the used PhotonPeer. Settable while not connected.

8.11.5.13 bool UseBackgroundWorkerForSending [get], [set]

Defines if a background thread will call SendOutgoingCommands, while your code calls Service to dispatch received messages.

The benefit of using a background thread to call SendOutgoingCommands is this:

Even if your game logic is being paused, the background thread will keep the connection to the server up. On a lower level, acknowledgements and pings will prevent a server-side timeout while (e.g.) Unity loads assets.

Your game logic still has to call Service regularly, or else incoming messages are not dispatched. As this typically triggers UI updates, it's easier to call Service from the main/UI thread.

8.11.5.14 string UserId [get]

The unique ID of a user/person, stored in AuthValues.UserId. Set it before you connect.

This value wraps AuthValues.UserId. It's not a nickname and we assume users with the same userID are the same person.

8.12 ChatEventCode Class Reference

Wraps up internally used constants in [Photon Chat](#) events. You don't have to use them directly usually.

Public Attributes

- const byte [ChatMessages](#) = 0
(0) Event code for messages published in public channels.
- const byte [Users](#) = 1
(1) Not Used.
- const byte [PrivateMessage](#) = 2
(2) Event code for messages published in private channels
- const byte [FriendsList](#) = 3
(3) Not Used.
- const byte [StatusUpdate](#) = 4

- (4) Event code for status updates.
- const byte [Subscribe](#) = 5
 - (5) Event code for subscription acks.
- const byte [Unsubscribe](#) = 6
 - (6) Event code for unsubscribe acks.
- const byte [UserSubscribed](#) = 8
 - (7) Event code for new user subscription to a channel where [ChatChannel.PublishSubscribers](#) is enabled.
- const byte [UserUnsubscribed](#) = 9
 - (8) Event code for when user unsubscribes from a channel where [ChatChannel.PublishSubscribers](#) is enabled.

8.12.1 Detailed Description

Wraps up internally used constants in [Photon Chat](#) events. You don't have to use them directly usually.

8.12.2 Member Data Documentation

8.12.2.1 const byte ChatMessages = 0

(0) Event code for messages published in public channels.

8.12.2.2 const byte FriendsList = 3

(3) Not Used.

8.12.2.3 const byte PrivateMessage = 2

(2) Event code for messages published in private channels

8.12.2.4 const byte StatusUpdate = 4

(4) Event code for status updates.

8.12.2.5 const byte Subscribe = 5

(5) Event code for subscription acks.

8.12.2.6 const byte Unsubscribe = 6

(6) Event code for unsubscribe acks.

8.12.2.7 const byte Users = 1

(1) Not Used.

8.12.2.8 const byte UserSubscribed = 8

(7) Event code for new user subscription to a channel where [ChatChannel.PublishSubscribers](#) is enabled.

8.12.2.9 const byte UserUnsubscribed = 9

(8) Event code for when user unsubscribes from a channel where [ChatChannel.PublishSubscribers](#) is enabled.

8.13 ChatOperationCode Class Reference

Wraps up codes for operations used internally in [Photon Chat](#). You don't have to use them directly usually.

Public Attributes

- const byte [Authenticate](#) = 230
(230) Operation Authenticate.
- const byte [Subscribe](#) = 0
(0) Operation to subscribe to chat channels.
- const byte [Unsubscribe](#) = 1
(1) Operation to unsubscribe from chat channels.
- const byte [Publish](#) = 2
(2) Operation to publish a message in a chat channel.
- const byte [SendPrivate](#) = 3
(3) Operation to send a private message to some other user.
- const byte [ChannelHistory](#) = 4
(4) Not used yet.
- const byte [UpdateStatus](#) = 5
(5) Set your (client's) status.
- const byte [AddFriends](#) = 6
(6) Add friends the list of friends that should update you of their status.
- const byte [RemoveFriends](#) = 7
(7) Remove friends from list of friends that should update you of their status.

8.13.1 Detailed Description

Wraps up codes for operations used internally in [Photon Chat](#). You don't have to use them directly usually.

8.13.2 Member Data Documentation

8.13.2.1 const byte AddFriends = 6

(6) Add friends the list of friends that should update you of their status.

8.13.2.2 const byte Authenticate = 230

(230) Operation Authenticate.

8.13.2.3 const byte ChannelHistory = 4

(4) Not used yet.

8.13.2.4 const byte Publish = 2

(2) Operation to publish a message in a chat channel.

8.13.2.5 const byte RemoveFriends = 7

(7) Remove friends from list of friends that should update you of their status.

8.13.2.6 const byte SendPrivate = 3

(3) Operation to send a private message to some other user.

8.13.2.7 const byte Subscribe = 0

(0) Operation to subscribe to chat channels.

8.13.2.8 const byte Unsubscribe = 1

(1) Operation to unsubscribe from chat channels.

8.13.2.9 const byte UpdateStatus = 5

(5) Set your (client's) status.

8.14 ChatParameterCode Class Reference

Wraps up codes for parameters (in operations and events) used internally in [Photon Chat](#). You don't have to use them directly usually.

Public Attributes

- const byte [Channels](#) = 0
(0) Array of chat channels.
- const byte [Channel](#) = 1
(1) Name of a single chat channel.
- const byte [Messages](#) = 2
(2) Array of chat messages.
- const byte [Message](#) = 3
(3) A single chat message.
- const byte [Senders](#) = 4
(4) Array of names of the users who sent the array of chat messages.
- const byte [Sender](#) = 5
(5) Name of a the user who sent a chat message.
- const byte [ChannelUserCount](#) = 6
(6) Not used.
- const byte [UserId](#) = 225
(225) Name of user to send a (private) message to.
- const byte [MsgId](#) = 8
(8) Id of a message.

- const byte [MsgIds](#) = 9
(9) Not used.
- const byte [Secret](#) = 221
(221) Secret token to identify an authorized user.
- const byte [SubscribeResults](#) = 15
(15) Subscribe operation result parameter. A bool[] with result per channel.
- const byte [Status](#) = 10
(10) Status
- const byte [Friends](#) = 11
(11) Friends
- const byte [SkipMessage](#) = 12
(12) SkipMessage is used in SetOnlineStatus and if true, the message is not being broadcast.
- const byte [HistoryLength](#) = 14
(14) Number of message to fetch from history. 0: no history. 1 and higher: number of messages in history. -1: all history.
- const byte [WebFlags](#) = 21
(21) WebFlags object for changing behaviour of webhooks from client.
- const byte [Properties](#) = 22
(22) Properties of channel or user.
- const byte [ChannelSubscribers](#) = 23
(23) Array of UserIds of users already subscribed to a channel.

8.14.1 Detailed Description

Wraps up codes for parameters (in operations and events) used internally in [Photon Chat](#). You don't have to use them directly usually.

8.14.2 Member Data Documentation

8.14.2.1 const byte Channel = 1

(1) Name of a single chat channel.

8.14.2.2 const byte Channels = 0

(0) Array of chat channels.

8.14.2.3 const byte ChannelSubscribers = 23

(23) Array of UserIds of users already subscribed to a channel.

Used in Subscribe event when PublishSubscribers is enabled. Does not include local user who just subscribed. Maximum length is ([ChatChannel.MaxSubscribers](#) - 1).

8.14.2.4 const byte ChannelUserCount = 6

(6) Not used.

8.14.2.5 const byte Friends = 11

(11) Friends

8.14.2.6 const byte HistoryLength = 14

(14) Number of message to fetch from history. 0: no history. 1 and higher: number of messages in history. -1: all history.

8.14.2.7 const byte Message = 3

(3) A single chat message.

8.14.2.8 const byte Messages = 2

(2) Array of chat messages.

8.14.2.9 const byte MsgId = 8

(8) Id of a message.

8.14.2.10 const byte MsgIds = 9

(9) Not used.

8.14.2.11 const byte Properties = 22

(22) Properties of channel or user.

In event [ChatEventCode.Subscribe](#) it's always channel properties.

8.14.2.12 const byte Secret = 221

(221) Secret token to identify an authorized user.

The code is used in LoadBalancing and copied over here.

8.14.2.13 const byte Sender = 5

(5) Name of a the user who sent a chat message.

8.14.2.14 const byte Senders = 4

(4) Array of names of the users who sent the array of chat messages.

8.14.2.15 const byte SkipMessage = 12

(12) SkipMessage is used in SetOnlineStatus and if true, the message is not being broadcast.

8.14.2.16 const byte Status = 10

(10) Status

8.14.2.17 const byte SubscribeResults = 15

(15) Subscribe operation result parameter. A bool[] with result per channel.

8.14.2.18 const byte UserId = 225

(225) Name of user to send a (private) message to.

The code is used in LoadBalancing and copied over here.

8.14.2.19 const byte WebFlags = 21

(21) WebFlags object for changing behaviour of webhooks from client.

8.15 ChatPeer Class Reference

Provides basic operations of the [Photon Chat](#) server. This internal class is used by public [ChatClient](#).

Inherits PhotonPeer.

Public Member Functions

- [ChatPeer](#) (IPhotonPeerListener listener, ConnectionProtocol protocol)
Chat Peer constructor.
- bool [Connect](#) ()
Connects to NameServer.
- bool [AuthenticateOnNameServer](#) (string appld, string appVersion, string region, [AuthenticationValues](#) auth↔
Values)
Authenticates on NameServer.

Public Attributes

- const string [NameServerHost](#) = "ns.exitgames.com"
Name Server Host Name for Photon Cloud. Without port and without any prefix.
- const string [NameServerHttp](#) = "http://ns.exitgamescloud.com:80/photon/n"
Name Server for HTTP connections to the Photon Cloud. Includes prefix and port.

Properties

- string [NameServerAddress](#) [get]
Name Server Address for Photon Cloud (based on current protocol). You can use the default values and usually won't have to set this value.

8.15.1 Detailed Description

Provides basic operations of the [Photon Chat](#) server. This internal class is used by public [ChatClient](#).

8.15.2 Constructor & Destructor Documentation

8.15.2.1 ChatPeer (IPhotonPeerListener *listener*, ConnectionProtocol *protocol*)

[Chat](#) Peer constructor.

Parameters

<i>listener</i>	Chat listener implementation.
<i>protocol</i>	Protocol to be used by the peer.

8.15.3 Member Function Documentation

8.15.3.1 `bool AuthenticateOnNameServer (string appld, string appVersion, string region, AuthenticationValues authValues)`

Authenticates on NameServer.

Returns

If the authentication operation request could be sent.

8.15.3.2 `bool Connect ()`

Connects to NameServer.

Returns

If the connection attempt could be sent.

8.15.4 Member Data Documentation

8.15.4.1 `const string NameServerHost = "ns.exitgames.com"`

Name Server Host Name for [Photon](#) Cloud. Without port and without any prefix.

8.15.4.2 `const string NameServerHttp = "http://ns.exitgamescloud.com:80/photon/n"`

Name Server for HTTP connections to the [Photon](#) Cloud. Includes prefix and port.

8.15.5 Property Documentation

8.15.5.1 `string NameServerAddress` [get]

Name Server Address for [Photon](#) Cloud (based on current protocol). You can use the default values and usually won't have to set this value.

8.16 ChatUserStatus Class Reference

Contains commonly used status values for SetOnlineStatus. You can define your own.

Public Attributes

- `const int Offline = 0`
(0) *Offline.*
- `const int Invisible = 1`
(1) *Be invisible to everyone. Sends no message.*

- const int **Online** = 2
(2) Online and available.
- const int **Away** = 3
(3) Online but not available.
- const int **DND** = 4
(4) Do not disturb.
- const int **LFG** = 5
(5) Looking For Game/Group. Could be used when you want to be invited or do matchmaking.
- const int **Playing** = 6
(6) Could be used when in a room, playing.

8.16.1 Detailed Description

Contains commonly used status values for SetOnlineStatus. You can define your own.

While "online" (value 2 and up), the status message will be sent to anyone who has you on his friend list.

Define custom online status values as you like with these rules: 0: Means "offline". It will be used when you are not connected. In this status, there is no status message. 1: Means "invisible" and is sent to friends as "offline". They see status 0, no message but you can chat. 2: And any higher value will be treated as "online". Status can be set.

8.16.2 Member Data Documentation

8.16.2.1 const int Away = 3

(3) Online but not available.

8.16.2.2 const int DND = 4

(4) Do not disturb.

8.16.2.3 const int Invisible = 1

(1) Be invisible to everyone. Sends no message.

8.16.2.4 const int LFG = 5

(5) Looking For Game/Group. Could be used when you want to be invited or do matchmaking.

8.16.2.5 const int Offline = 0

(0) Offline.

8.16.2.6 const int Online = 2

(2) Online and available.

8.16.2.7 const int Playing = 6

(6) Could be used when in a room, playing.

8.17 ConnectAndJoinRandom Class Reference

Simple component to call `ConnectUsingSettings` and to get into a PUN room easily.

Inherits [MonoBehaviourPunCallbacks](#).

Public Member Functions

- void **Start** ()
- void **ConnectNow** ()
- override void [OnConnectedToMaster](#) ()
Called when the client is connected to the Master Server and ready for matchmaking and other tasks.
- override void [OnJoinedLobby](#) ()
Called on entering a lobby on the Master Server. The actual room-list updates will call `OnRoomListUpdate`.
- override void [OnJoinRandomFailed](#) (short returnCode, string message)
Called when a previous `OpJoinRandom` call failed on the server.
- override void [OnDisconnected](#) ([DisconnectCause](#) cause)
Called after disconnecting from the [Photon](#) server. It could be a failure or intentional
- override void [OnJoinedRoom](#) ()
Called when the `LoadBalancingClient` entered a room, no matter if this client created it or simply joined.

Public Attributes

- bool [AutoConnect](#) = true
Connect automatically? If false you can set this to true later on or call `ConnectUsingSettings` in your own scripts.
- byte [Version](#) = 1
Used as [PhotonNetwork.GameVersion](#).

Additional Inherited Members

8.17.1 Detailed Description

Simple component to call `ConnectUsingSettings` and to get into a PUN room easily.

A custom inspector provides a button to connect in PlayMode, should `AutoConnect` be false.

8.17.2 Member Function Documentation

8.17.2.1 override void OnConnectedToMaster () [virtual]

Called when the client is connected to the Master Server and ready for matchmaking and other tasks.

The list of available rooms won't become available unless you join a lobby via [LoadBalancingClient.OpJoinLobby](#). You can join rooms and create them even without being in a lobby. The default lobby is used in that case.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.17.2.2 override void OnDisconnected ([DisconnectCause](#) cause) [virtual]

Called after disconnecting from the [Photon](#) server. It could be a failure or intentional

The reason for this disconnect is provided as `DisconnectCause`.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.17.2.3 override void OnJoinedLobby () [virtual]

Called on entering a lobby on the Master Server. The actual room-list updates will call OnRoomListUpdate.

While in the lobby, the roomlist is automatically updated in fixed intervals (which you can't modify in the public cloud). The room list gets available via OnRoomListUpdate.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.17.2.4 override void OnJoinedRoom () [virtual]

Called when the LoadBalancingClient entered a room, no matter if this client created it or simply joined.

When this is called, you can access the existing players in [Room.Players](#), their custom properties and [Room.CustomProperties](#).

In this callback, you could create player objects. For example in Unity, instantiate a prefab for the player.

If you want a match to be started "actively", enable the user to signal "ready" (using OpRaiseEvent or a Custom Property).

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.17.2.5 override void OnJoinRandomFailed (short *returnCode*, string *message*) [virtual]

Called when a previous OpJoinRandom call failed on the server.

The most common causes are that a room is full or does not exist (due to someone else being faster or closing the room).

When using multiple lobbies (via OpJoinLobby or a TypedLobby parameter), another lobby might have more/fitting rooms.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.17.3 Member Data Documentation**8.17.3.1** bool AutoConnect = true

Connect automatically? If false you can set this to true later on or call ConnectUsingSettings in your own scripts.

8.17.3.2 byte Version = 1

Used as [PhotonNetwork.GameVersion](#).

8.18 ConnectionCallbacksContainer Class Reference

Container type for callbacks defined by [IConnectionCallbacks](#). See LoadBalancingCallbackTargets.

Inherits List< [IConnectionCallbacks](#) >, and [IConnectionCallbacks](#).

Public Member Functions

- void **AddCallbackTarget** ([IConnectionCallbacks](#) target)
- void **RemoveCallbackTarget** ([IConnectionCallbacks](#) target)
- void **OnConnected** ()
Called to signal that the "low level connection" got established but before the client can call operation on the server.
- void **OnConnectedToMaster** ()
Called when the client is connected to the Master Server and ready for matchmaking and other tasks.
- void **OnRegionListReceived** ([RegionHandler](#) regionHandler)
Called when the Name Server provided a list of regions for your title.
- void **OnDisconnected** ([DisconnectCause](#) cause)
Called after disconnecting from the [Photon](#) server. It could be a failure or an explicit disconnect call
- void **OnCustomAuthenticationResponse** (Dictionary< string, object > data)
Called when your Custom Authentication service responds with additional data.
- void **OnCustomAuthenticationFailed** (string debugMessage)
Called when the custom authentication failed. Followed by disconnect!

8.18.1 Detailed Description

Container type for callbacks defined by [IConnectionCallbacks](#). See [LoadBalancingCallbackTargets](#).

While the interfaces of callbacks wrap up the methods that will be called, the container classes implement a simple way to call a method on all registered objects.

8.18.2 Member Function Documentation

8.18.2.1 void OnConnected ()

Called to signal that the "low level connection" got established but before the client can call operation on the server.

After the (low level transport) connection is established, the client will automatically send the Authentication operation, which needs to get a response before the client can call other operations.

Your logic should wait for either: [OnRegionListReceived](#) or [OnConnectedToMaster](#).

This callback is useful to detect if the server can be reached at all (technically). Most often, it's enough to implement [OnDisconnected\(DisconnectCause cause\)](#) and check for the cause.

This is not called for transitions from the masterserver to game servers.

Implements [IConnectionCallbacks](#).

8.18.2.2 void OnConnectedToMaster ()

Called when the client is connected to the Master Server and ready for matchmaking and other tasks.

The list of available rooms won't become available unless you join a lobby via [LoadBalancingClient.OpJoinLobby](#). You can join rooms and create them even without being in a lobby. The default lobby is used in that case.

Implements [IConnectionCallbacks](#).

8.18.2.3 void OnCustomAuthenticationFailed (string debugMessage)

Called when the custom authentication failed. Followed by disconnect!

Custom Authentication can fail due to user-input, bad tokens/secrets. If authentication is successful, this method is not called. Implement [OnJoinedLobby\(\)](#) or [OnConnectedToMaster\(\)](#) (as usual).

During development of a game, it might also fail due to wrong configuration on the server side. In those cases, logging the debugMessage is very important.

Unless you setup a custom authentication service for your app (in the [Dashboard](#)), this won't be called!

Parameters

<i>debugMessage</i>	Contains a debug message why authentication failed. This has to be fixed during development.
---------------------	--

Implements [IConnectionCallbacks](#).

8.18.2.4 void OnCustomAuthenticationResponse (Dictionary< string, object > data)

Called when your Custom Authentication service responds with additional data.

Custom Authentication services can include some custom data in their response. When present, that data is made available in this callback as Dictionary. While the keys of your data have to be strings, the values can be either string or a number (in Json). You need to make extra sure, that the value type is the one you expect. Numbers become (currently) int64.

Example: void OnCustomAuthenticationResponse(Dictionary<string, object> data) { ... }

<https://doc.photonengine.com/en-us/realtime/current/reference/custom-authentication>

Implements [IConnectionCallbacks](#).

8.18.2.5 void OnDisconnected (DisconnectCause cause)

Called after disconnecting from the [Photon](#) server. It could be a failure or an explicit disconnect call

The reason for this disconnect is provided as DisconnectCause.

Implements [IConnectionCallbacks](#).

8.18.2.6 void OnRegionListReceived (RegionHandler regionHandler)

Called when the Name Server provided a list of regions for your title.

Check the [RegionHandler](#) class description, to make use of the provided values.

Parameters

<i>regionHandler</i>	The currently used RegionHandler .
----------------------	--

Implements [IConnectionCallbacks](#).

8.19 ConnectionHandler Class Reference

Inherited by PhotonHandler.

Public Member Functions

- void **StartFallbackSendAckThread** ()
- void **StopFallbackSendAckThread** ()
- bool [RealtimeFallbackThread](#) ()

A thread which runs independent from the Update() calls. Keeps connections online while loading or in background. See PhotonNetwork.BackgroundTimeout.

Public Attributes

- int [KeepAliveInBackground](#) = 60000
Defines for how long the Fallback Thread should keep the connection, before it may time out as usual.

Properties

- [LoadBalancingClient Client](#) [get, set]
Photon client to log information and statistics from.
- int [CountSendAcksOnly](#) [get]
Counts how often the Fallback Thread called SendAcksOnly, which is purely of interest to monitor if the game logic called SendOutgoingCommands as intended.
- bool [FallbackThreadRunning](#) [get]

8.19.1 Member Function Documentation

8.19.1.1 bool RealtimeFallbackThread ()

A thread which runs independent from the Update() calls. Keeps connections online while loading or in background. See PhotonNetwork.BackgroundTimeout.

8.19.2 Member Data Documentation

8.19.2.1 int KeepAliveInBackground = 60000

Defines for how long the Fallback Thread should keep the connection, before it may time out as usual.

We want to the Client to keep it's connection when an app is in the background (and doesn't call Update / Service Clients should not keep their connection indefinitely in the background, so after some milliseconds, the Fallback Thread should stop keeping it up.

8.19.3 Property Documentation

8.19.3.1 LoadBalancingClient Client [get], [set]

[Photon](#) client to log information and statistics from.

8.19.3.2 int CountSendAcksOnly [get]

Counts how often the Fallback Thread called SendAcksOnly, which is purely of interest to monitor if the game logic called SendOutgoingCommands as intended.

8.20 CountdownTimer Class Reference

This is a basic [CountdownTimer](#). In order to start the timer, the MasterClient can add a certain entry to the Custom Room Properties, which contains the property's name 'StartTime' and the actual start time describing the moment, the timer has been started. To have a synchronized timer, the best practice is to use [PhotonNetwork.Time](#). In order to subscribe to the CountdownTimerHasExpired event you can call [CountdownTimer.OnCountdownTimerHasExpired](#) += OnCountdownTimerIsExpired; from Unity's OnEnable function for example. For unsubscribing simply call [CountdownTimer.OnCountdownTimerHasExpired](#) -= OnCountdownTimerIsExpired;. You can do this from Unity's OnDisable function for example.

Inherits [MonoBehaviourPunCallbacks](#).

Public Member Functions

- delegate void [CountdownTimerHasExpired](#) ()
OnCountdownTimerHasExpired delegate.
- void **Start** ()
- void **Update** ()
- override void [OnRoomPropertiesUpdate](#) (Hashtable propertiesThatChanged)
Called when a room's custom properties changed. The propertiesThatChanged contains all that was set via [Room.SetCustomProperties](#).

Public Attributes

- const string **CountdownStartTime** = "StartTime"
- Text **Text**
- float **Countdown** = 5.0f

Events

- static [CountdownTimerHasExpired](#) [OnCountdownTimerHasExpired](#)
Called when the timer has expired.

Additional Inherited Members

8.20.1 Detailed Description

This is a basic [CountdownTimer](#). In order to start the timer, the MasterClient can add a certain entry to the Custom Room Properties, which contains the property's name 'StartTime' and the actual start time describing the moment, the timer has been started. To have a synchronized timer, the best practice is to use [PhotonNetwork.Time](#). In order to subscribe to the CountdownTimerHasExpired event you can call [CountdownTimer.OnCountdownTimerHasExpired](#) += OnCountdownTimerIsExpired; from Unity's OnEnable function for example. For unsubscribing simply call [CountdownTimer.OnCountdownTimerHasExpired](#) -= OnCountdownTimerIsExpired;. You can do this from Unity's OnDisable function for example.

8.20.2 Member Function Documentation

8.20.2.1 delegate void CountdownTimerHasExpired ()

OnCountdownTimerHasExpired delegate.

8.20.2.2 override void OnRoomPropertiesUpdate (Hashtable *propertiesThatChanged*) [virtual]

Called when a room's custom properties changed. The propertiesThatChanged contains all that was set via [Room.SetCustomProperties](#).

Since v1.25 this method has one parameter: Hashtable propertiesThatChanged.

Changing properties must be done by [Room.SetCustomProperties](#), which causes this callback locally, too.

Parameters

<i>propertiesThatChanged</i>	
------------------------------	--

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.20.3 Event Documentation

8.20.3.1 CountdownTimerHasExpired OnCountdownTimerHasExpired [static]

Called when the timer has expired.

8.21 CullArea Class Reference

Represents the cull area used for network culling.

Inherits MonoBehaviour.

Public Member Functions

- void [OnDrawGizmos](#) ()
Creates the cell hierarchy in editor and draws the cell view.
- List< byte > [GetActiveCells](#) (Vector3 position)
Gets a list of all cell IDs the player is currently inside or nearby.

Public Attributes

- const int **MAX_NUMBER_OF_SUBDIVISIONS** = 3
- readonly byte [FIRST_GROUP_ID](#) = 1
This represents the first ID which is assigned to the first created cell. If you already have some interest groups blocking this first ID, feel free to change it. However increasing the first group ID decreases the maximum amount of allowed cells. Allowed values are in range from 1 to 250.
- readonly int[] [SUBDIVISION_FIRST_LEVEL_ORDER](#) = new int[4] { 0, 1, 1, 1 }
This represents the order in which updates are sent. The number represents the subdivision of the cell hierarchy:
- readonly int[] [SUBDIVISION_SECOND_LEVEL_ORDER](#) = new int[8] { 0, 2, 1, 2, 0, 2, 1, 2 }
This represents the order in which updates are sent. The number represents the subdivision of the cell hierarchy:
- readonly int[] [SUBDIVISION_THIRD_LEVEL_ORDER](#) = new int[12] { 0, 3, 2, 3, 1, 3, 2, 3, 1, 3, 2, 3 }
This represents the order in which updates are sent. The number represents the subdivision of the cell hierarchy:
- Vector2 **Center**
- Vector2 **Size** = new Vector2(25.0f, 25.0f)
- Vector2[] **Subdivisions** = new Vector2[MAX_NUMBER_OF_SUBDIVISIONS]
- int **NumberOfSubdivisions**
- bool **YIsUpAxis** = false
- bool **RecreateCellHierarchy** = false

Properties

- int **CellCount** [get]
- [CellTree](#) **CellTree** [get]
- Dictionary< int, GameObject > **Map** [get]

8.21.1 Detailed Description

Represents the cull area used for network culling.

8.21.2 Member Function Documentation

8.21.2.1 List<byte> GetActiveCells (Vector3 *position*)

Gets a list of all cell IDs the player is currently inside or nearby.

Parameters

<i>position</i>	The current position of the player.
-----------------	-------------------------------------

Returns

A list containing all cell IDs the player is currently inside or nearby.

8.21.2.2 void OnDrawGizmos ()

Creates the cell hierarchy in editor and draws the cell view.

8.21.3 Member Data Documentation

8.21.3.1 readonly byte FIRST_GROUP_ID = 1

This represents the first ID which is assigned to the first created cell. If you already have some interest groups blocking this first ID, feel free to change it. However increasing the first group ID decreases the maximum amount of allowed cells. Allowed values are in range from 1 to 250.

8.21.3.2 readonly int [] SUBDIVISION_FIRST_LEVEL_ORDER = new int[4] { 0, 1, 1, 1 }

This represents the order in which updates are sent. The number represents the subdivision of the cell hierarchy:

- 0: message is sent to all players
- 1: message is sent to players who are interested in the matching cell of the first subdivision If there is only one subdivision we are sending one update to all players before sending three consequent updates only to players who are in the same cell or interested in updates of the current cell.

8.21.3.3 readonly int [] SUBDIVISION_SECOND_LEVEL_ORDER = new int[8] { 0, 2, 1, 2, 0, 2, 1, 2 }

This represents the order in which updates are sent. The number represents the subdivision of the cell hierarchy:

- 0: message is sent to all players
- 1: message is sent to players who are interested in the matching cell of the first subdivision
- 2: message is sent to players who are interested in the matching cell of the second subdivision If there are two subdivisions we are sending every second update only to players who are in the same cell or interested in updates of the current cell.

8.21.3.4 readonly int [] SUBDIVISION_THIRD_LEVEL_ORDER = new int[12] { 0, 3, 2, 3, 1, 3, 2, 3, 1, 3, 2, 3 }

This represents the order in which updates are sent. The number represents the subdivision of the cell hierarchy:

- 0: message is sent to all players
- 1: message is sent to players who are interested in the matching cell of the first subdivision
- 2: message is sent to players who are interested in the matching cell of the second subdivision
- 3: message is sent to players who are interested in the matching cell of the third subdivision If there are two subdivisions we are sending every second update only to players who are in the same cell or interested in updates of the current cell.

8.22 CullingHandler Class Reference

Handles the network culling.

Inherits MonoBehaviour, and [IPunObservable](#).

Public Member Functions

- void [OnPhotonSerializeView](#) ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)

This time OnPhotonSerializeView is not used to send or receive any kind of data. It is used to change the currently active group of the [PhotonView](#) component, making it work together with PUN more directly. Keep in mind that this function is only executed, when there is at least one more player in the room.

8.22.1 Detailed Description

Handles the network culling.

8.22.2 Member Function Documentation

8.22.2.1 void OnPhotonSerializeView (PhotonStream stream, PhotonMessageInfo info)

This time OnPhotonSerializeView is not used to send or receive any kind of data. It is used to change the currently active group of the [PhotonView](#) component, making it work together with PUN more directly. Keep in mind that this function is only executed, when there is at least one more player in the room.

Implements [IPunObservable](#).

8.23 DefaultPool Class Reference

The default implementation of a PrefabPool for PUN, which actually Instantiates and Destroys GameObjects but pools a resource.

Inherits [IPunPrefabPool](#).

Public Member Functions

- GameObject [Instantiate](#) (string prefabId, Vector3 position, Quaternion rotation)

Returns an inactive instance of a networked GameObject, to be used by PUN.

- void [Destroy](#) (GameObject gameObject)

Simply destroys a GameObject.

Public Attributes

- readonly Dictionary< string, GameObject > [ResourceCache](#) = new Dictionary<string, GameObject>()

Contains a GameObject per prefabId, to speed up instantiation.

8.23.1 Detailed Description

The default implementation of a PrefabPool for PUN, which actually Instantiates and Destroys GameObjects but pools a resource.

This pool is not actually storing GameObjects for later reuse. Instead, it's destroying used GameObjects. However, prefabs will be loaded from a Resources folder and cached, which speeds up Instantiation a bit.

The ResourceCache is public, so it can be filled without relying on the Resources folders.

8.23.2 Member Function Documentation

8.23.2.1 void Destroy (GameObject *gameObject*)

Simply destroys a GameObject.

Parameters

<i>gameObject</i>	The GameObject to get rid of.
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Implements [IPunPrefabPool](#).

8.23.2.2 GameObject Instantiate (string *prefabId*, Vector3 *position*, Quaternion *rotation*)

Returns an inactive instance of a networked GameObject, to be used by PUN.

Parameters

<i>prefabId</i>	String identifier for the networked object.
<i>position</i>	Location of the new object.
<i>rotation</i>	Rotation of the new object.

Returns

Implements [IPunPrefabPool](#).

8.23.3 Member Data Documentation

8.23.3.1 readonly Dictionary<string, GameObject> ResourceCache = new Dictionary<string, GameObject>()

Contains a GameObject per prefabId, to speed up instantiation.

8.24 EncryptionDataParameters Class Reference

Public Attributes

- const byte [Mode](#) = 0
Key for encryption mode
- const byte [Secret1](#) = 1
Key for first secret
- const byte [Secret2](#) = 2
Key for second secret

8.24.1 Member Data Documentation

8.24.1.1 const byte Mode = 0

Key for encryption mode

8.24.1.2 const byte Secret1 = 1

Key for first secret

8.24.1.3 const byte Secret2 = 2

Key for second secret

8.25 EnterRoomParams Class Reference

Public Attributes

- string **RoomName**
- [RoomOptions](#) **RoomOptions**
- [TypedLobby](#) **Lobby**
- Hashtable **PlayerProperties**
- bool **CreateIfNotExists**
- bool **RejoinOnly**
- string[] **ExpectedUsers**

8.26 ErrorCode Class Reference

[ErrorCode](#) defines the default codes associated with [Photon](#) client/server communication.

Public Attributes

- const int [Ok](#) = 0
(0) is always "OK", anything else an error or specific situation.
- const int [OperationNotAllowedInCurrentState](#) = -3
(-3) Operation can't be executed yet (e.g. OpJoin can't be called before being authenticated, RaiseEvent can't be used before getting into a room).
- const int [InvalidOperationCode](#) = -2
(-2) The operation you called is not implemented on the server (application) you connect to. Make sure you run the fitting applications.
- const int [InvalidOperation](#) = -2
(-2) The operation you called could not be executed on the server.
- const int [InternalServerError](#) = -1
(-1) Something went wrong in the server. Try to reproduce and contact Exit Games.
- const int [InvalidAuthentication](#) = 0x7FFF
(32767) Authentication failed. Possible cause: AppId is unknown to [Photon](#) (in cloud service).
- const int [GameIdAlreadyExists](#) = 0x7FFF - 1
(32766) GameId (name) already in use (can't create another). Change name.
- const int [GameFull](#) = 0x7FFF - 2
(32765) Game is full. This rarely happens when some player joined the room before your join completed.
- const int [GameClosed](#) = 0x7FFF - 3
(32764) Game is closed and can't be joined. Join another game.
- const int **AlreadyMatched** = 0x7FFF - 4
- const int [ServerFull](#) = 0x7FFF - 5
(32762) Not in use currently.
- const int [UserBlocked](#) = 0x7FFF - 6

- (32761) Not in use currently.

 - const int [NoRandomMatchFound](#) = 0x7FFF - 7

(32760) Random matchmaking only succeeds if a room exists that's neither closed nor full. Repeat in a few seconds or create a new room.
- const int [GameDoesNotExist](#) = 0x7FFF - 9

(32758) Join can fail if the room (name) is not existing (anymore). This can happen when players leave while you join.
- const int [MaxCcuReached](#) = 0x7FFF - 10

(32757) Authorization on the [Photon](#) Cloud failed because the concurrent users (CCU) limit of the app's subscription is reached.
- const int [InvalidRegion](#) = 0x7FFF - 11

(32756) Authorization on the [Photon](#) Cloud failed because the app's subscription does not allow to use a particular region's server.
- const int [CustomAuthenticationFailed](#) = 0x7FFF - 12

(32755) Custom Authentication of the user failed due to setup reasons (see Cloud Dashboard) or the provided user data (like username or token). Check error message for details.
- const int [AuthenticationTicketExpired](#) = 0x7FFF - 13

(32753) The Authentication ticket expired. Usually, this is refreshed behind the scenes. Connect (and authorize) again.
- const int [PluginReportedError](#) = 0x7FFF - 15

(32752) A server-side plugin (or webhook) failed to execute and reported an error. Check the `OperationResponse.DebugMessage`.
- const int [PluginMismatch](#) = 0x7FFF - 16

(32751) CreateGame/JoinGame/Join operation fails if expected plugin does not correspond to loaded one.
- const int [JoinFailedPeerAlreadyJoined](#) = 32750

(32750) for join requests. Indicates the current peer already called join and is joined to the room.
- const int [JoinFailedFoundInactiveJoiner](#) = 32749

(32749) for join requests. Indicates the list of InactiveActors already contains an actor with the requested ActorNr or UserId.
- const int [JoinFailedWithRejoinerNotFound](#) = 32748

(32748) for join requests. Indicates the list of Actors (active and inactive) did not contain an actor with the requested ActorNr or UserId.
- const int [JoinFailedFoundExcludedUserId](#) = 32747

(32747) for join requests. Note: for future use - Indicates the requested UserId was found in the ExcludedList.
- const int [JoinFailedFoundActiveJoiner](#) = 32746

(32746) for join requests. Indicates the list of ActiveActors already contains an actor with the requested ActorNr or UserId.
- const int [HttpLimitReached](#) = 32745

(32745) for SetProperties and RaiseEvent (if flag HttpForward is true) requests. Indicates the maximum allowed http requests per minute was reached.
- const int [ExternalHttpCallFailed](#) = 32744

(32744) for WebRpc requests. Indicates the call to the external service failed.
- const int [SlotError](#) = 32742

(32742) Server error during matchmaking with slot reservation. E.g. the reserved slots can not exceed MaxPlayers.
- const int [InvalidEncryptionParameters](#) = 32741

(32741) Server will react with this error if invalid encryption parameters provided by token

8.26.1 Detailed Description

[ErrorCode](#) defines the default codes associated with [Photon](#) client/server communication.

8.26.2 Member Data Documentation

8.26.2.1 `const int AuthenticationTicketExpired = 0x7FF1`

(32753) The Authentication ticket expired. Usually, this is refreshed behind the scenes. Connect (and authorize) again.

8.26.2.2 `const int CustomAuthenticationFailed = 0x7FFF - 12`

(32755) Custom Authentication of the user failed due to setup reasons (see Cloud Dashboard) or the provided user data (like username or token). Check error message for details.

8.26.2.3 `const int ExternalHttpRequestFailed = 32744`

(32744) for WebRpc requests. Indicates the the call to the external service failed.

8.26.2.4 `const int GameClosed = 0x7FFF - 3`

(32764) Game is closed and can't be joined. Join another game.

8.26.2.5 `const int GameDoesNotExist = 0x7FFF - 9`

(32758) Join can fail if the room (name) is not existing (anymore). This can happen when players leave while you join.

8.26.2.6 `const int GameFull = 0x7FFF - 2`

(32765) Game is full. This rarely happens when some player joined the room before your join completed.

8.26.2.7 `const int GameldAlreadyExists = 0x7FFF - 1`

(32766) Gameld (name) already in use (can't create another). Change name.

8.26.2.8 `const int HttpLimitReached = 32745`

(32745) for SetProperty and RaiseEvent (if flag HttpForward is true) requests. Indicates the maximum allowed http requests per minute was reached.

8.26.2.9 `const int InternalServerError = -1`

(-1) Something went wrong in the server. Try to reproduce and contact Exit Games.

8.26.2.10 `const int InvalidAuthentication = 0x7FFF`

(32767) Authentication failed. Possible cause: AppId is unknown to [Photon](#) (in cloud service).

8.26.2.11 `const int InvalidEncryptionParameters = 32741`

(32741) Server will react with this error if invalid encryption parameters provided by token

8.26.2.12 `const int InvalidOperation = -2`

(-2) The operation you called could not be executed on the server.

Make sure you are connected to the server you expect.

This code is used in several cases: The arguments/parameters of the operation might be out of range, missing entirely or conflicting. The operation you called is not implemented on the server (application). Server-side plugins affect the available operations.

8.26.2.13 `const int InvalidOperationCode = -2`

(-2) The operation you called is not implemented on the server (application) you connect to. Make sure you run the fitting applications.

8.26.2.14 `const int InvalidRegion = 0x7FFF - 11`

(32756) Authorization on the [Photon](#) Cloud failed because the app's subscription does not allow to use a particular region's server.

Some subscription plans for the [Photon](#) Cloud are region-bound. Servers of other regions can't be used then. Check your master server address and compare it with your [Photon](#) Cloud Dashboard's info. <https://dashboard.photonengine.com>

OpAuthorize is part of connection workflow but only on the [Photon](#) Cloud, this error can happen. Self-hosted [Photon](#) servers with a CCU limited license won't let a client connect at all.

8.26.2.15 `const int JoinFailedFoundActiveJoiner = 32746`

(32746) for join requests. Indicates the list of ActiveActors already contains an actor with the requested ActorNr or UserId.

8.26.2.16 `const int JoinFailedFoundExcludedUserId = 32747`

(32747) for join requests. Note: for future use - Indicates the requested UserId was found in the ExcludedList.

8.26.2.17 `const int JoinFailedFoundInactiveJoiner = 32749`

(32749) for join requests. Indicates the list of InactiveActors already contains an actor with the requested ActorNr or UserId.

8.26.2.18 `const int JoinFailedPeerAlreadyJoined = 32750`

(32750) for join requests. Indicates the current peer already called join and is joined to the room.

8.26.2.19 `const int JoinFailedWithRejoinerNotFound = 32748`

(32748) for join requests. Indicates the list of Actors (active and inactive) did not contain an actor with the requested ActorNr or UserId.

8.26.2.20 `const int MaxCcuReached = 0x7FFF - 10`

(32757) Authorization on the [Photon](#) Cloud failed because the concurrent users (CCU) limit of the app's subscription is reached.

Unless you have a plan with "CCU Burst", clients might fail the authentication step during connect. Affected client are unable to call operations. Please note that players who end a game and return to the master server will disconnect and re-connect, which means that they just played and are rejected in the next minute / re-connect. This is a temporary measure. Once the CCU is below the limit, players will be able to connect an play again.

OpAuthorize is part of connection workflow but only on the [Photon](#) Cloud, this error can happen. Self-hosted [Photon](#) servers with a CCU limited license won't let a client connect at all.

8.26.2.21 `const int NoRandomMatchFound = 0x7FFF - 7`

(32760) Random matchmaking only succeeds if a room exists thats neither closed nor full. Repeat in a few seconds or create a new room.

8.26.2.22 `const int Ok = 0`

(0) is always "OK", anything else an error or specific situation.

8.26.2.23 `const int OperationNotAllowedInCurrentState = -3`

(-3) Operation can't be executed yet (e.g. OpJoin can't be called before being authenticated, RaiseEvent cant be used before getting into a room).

Before you call any operations on the Cloud servers, the automated client workflow must complete its authorization. In PUN, wait until State is: JoinedLobby or ConnectedToMasterserver

8.26.2.24 `const int PluginMismatch = 0x7FFF - 16`

(32751) CreateGame/JoinGame/Join operation fails if expected plugin does not correspond to loaded one.

8.26.2.25 `const int PluginReportedError = 0x7FFF - 15`

(32752) A server-side plugin (or webhook) failed to execute and reported an error. Check the OperationResponse.↔ DebugMessage.

8.26.2.26 `const int ServerFull = 0x7FFF - 5`

(32762) Not in use currently.

8.26.2.27 `const int SlotError = 32742`

(32742) Server error during matchmaking with slot reservation. E.g. the reserved slots can not exceed MaxPlayers.

8.26.2.28 `const int UserBlocked = 0x7FFF - 6`

(32761) Not in use currently.

8.27 ErrorCode Class Reference

[ErrorCode](#) defines the default codes associated with [Photon](#) client/server communication.

Public Attributes

- const int [Ok](#) = 0
(0) is always "OK", anything else an error or specific situation.
- const int [OperationNotAllowedInCurrentState](#) = -3
(-3) Operation can't be executed yet (e.g. [OpJoin](#) can't be called before being authenticated, [RaiseEvent](#) can't be used before getting into a room).
- const int [InvalidOperationCode](#) = -2
(-2) The operation you called is not implemented on the server (application) you connect to. Make sure you run the fitting applications.
- const int [InternalServerError](#) = -1
(-1) Something went wrong in the server. Try to reproduce and contact Exit Games.
- const int [InvalidAuthentication](#) = 0x7FFF
(32767) Authentication failed. Possible cause: AppId is unknown to [Photon](#) (in cloud service).
- const int [GameldAlreadyExists](#) = 0x7FFF - 1
(32766) Gameld (name) already in use (can't create another). Change name.
- const int [GameFull](#) = 0x7FFF - 2
(32765) Game is full. This rarely happens when some player joined the room before your join completed.
- const int [GameClosed](#) = 0x7FFF - 3
(32764) Game is closed and can't be joined. Join another game.
- const int [ServerFull](#) = 0x7FFF - 5
(32762) Not in use currently.
- const int [UserBlocked](#) = 0x7FFF - 6
(32761) Not in use currently.
- const int [NoRandomMatchFound](#) = 0x7FFF - 7
(32760) Random matchmaking only succeeds if a room exists thats neither closed nor full. Repeat in a few seconds or create a new room.
- const int [GameDoesNotExist](#) = 0x7FFF - 9
(32758) Join can fail if the room (name) is not existing (anymore). This can happen when players leave while you join.
- const int [MaxCcuReached](#) = 0x7FFF - 10
(32757) Authorization on the [Photon](#) Cloud failed becaus the concurrent users (CCU) limit of the app's subscription is reached.
- const int [InvalidRegion](#) = 0x7FFF - 11
(32756) Authorization on the [Photon](#) Cloud failed because the app's subscription does not allow to use a particular region's server.
- const int [CustomAuthenticationFailed](#) = 0x7FFF - 12
(32755) Custom Authentication of the user failed due to setup reasons (see Cloud Dashboard) or the provided user data (like username or token). Check error message for details.

8.27.1 Detailed Description

[ErrorCode](#) defines the default codes associated with [Photon](#) client/server communication.

8.27.2 Member Data Documentation

8.27.2.1 const int CustomAuthenticationFailed = 0x7FFF - 12

(32755) Custom Authentication of the user failed due to setup reasons (see Cloud Dashboard) or the provided user data (like username or token). Check error message for details.

8.27.2.2 const int GameClosed = 0x7FFF - 3

(32764) Game is closed and can't be joined. Join another game.

8.27.2.3 `const int GameDoesNotExist = 0x7FFF - 9`

(32758) Join can fail if the room (name) is not existing (anymore). This can happen when players leave while you join.

8.27.2.4 `const int GameFull = 0x7FFF - 2`

(32765) Game is full. This rarely happens when some player joined the room before your join completed.

8.27.2.5 `const int GameldAlreadyExists = 0x7FFF - 1`

(32766) Gameld (name) already in use (can't create another). Change name.

8.27.2.6 `const int InternalServerError = -1`

(-1) Something went wrong in the server. Try to reproduce and contact Exit Games.

8.27.2.7 `const int InvalidAuthentication = 0x7FFF`

(32767) Authentication failed. Possible cause: Appld is unknown to [Photon](#) (in cloud service).

8.27.2.8 `const int InvalidOperationCode = -2`

(-2) The operation you called is not implemented on the server (application) you connect to. Make sure you run the fitting applications.

8.27.2.9 `const int InvalidRegion = 0x7FFF - 11`

(32756) Authorization on the [Photon](#) Cloud failed because the app's subscription does not allow to use a particular region's server.

Some subscription plans for the [Photon](#) Cloud are region-bound. Servers of other regions can't be used then. Check your master server address and compare it with your [Photon](#) Cloud Dashboard's info. <https://cloud.photonengine.com/dashboard>

OpAuthorize is part of connection workflow but only on the [Photon](#) Cloud, this error can happen. Self-hosted [Photon](#) servers with a CCU limited license won't let a client connect at all.

8.27.2.10 `const int MaxCcuReached = 0x7FFF - 10`

(32757) Authorization on the [Photon](#) Cloud failed because the concurrent users (CCU) limit of the app's subscription is reached.

Unless you have a plan with "CCU Burst", clients might fail the authentication step during connect. Affected client are unable to call operations. Please note that players who end a game and return to the master server will disconnect and re-connect, which means that they just played and are rejected in the next minute / re-connect. This is a temporary measure. Once the CCU is below the limit, players will be able to connect an play again.

OpAuthorize is part of connection workflow but only on the [Photon](#) Cloud, this error can happen. Self-hosted [Photon](#) servers with a CCU limited license won't let a client connect at all.

8.27.2.11 `const int NoRandomMatchFound = 0x7FFF - 7`

(32760) Random matchmaking only succeeds if a room exists that's neither closed nor full. Repeat in a few seconds or create a new room.

8.27.2.12 `const int Ok = 0`

(0) is always "OK", anything else an error or specific situation.

8.27.2.13 `const int OperationNotAllowedInCurrentState = -3`

(-3) Operation can't be executed yet (e.g. `OpJoin` can't be called before being authenticated, `RaiseEvent` can't be used before getting into a room).

Before you call any operations on the Cloud servers, the automated client workflow must complete its authorization. In PUN, wait until State is: `JoinedLobby` or `ConnectedToMaster`

8.27.2.14 `const int ServerFull = 0x7FFF - 5`

(32762) Not in use currently.

8.27.2.15 `const int UserBlocked = 0x7FFF - 6`

(32761) Not in use currently.

8.28 EventCode Class Reference

Class for constants. These values are for events defined by [Photon](#) Loadbalancing.

Public Attributes

- `const byte GameList = 230`
(230) Initial list of RoomInfos (in lobby on Master)
- `const byte GameListUpdate = 229`
(229) Update of RoomInfos to be merged into "initial" list (in lobby on Master)
- `const byte QueueState = 228`
(228) Currently not used. State of queueing in case of server-full
- `const byte Match = 227`
(227) Currently not used. Event for matchmaking
- `const byte AppStats = 226`
(226) Event with stats about this application (players, rooms, etc)
- `const byte LobbyStats = 224`
(224) This event provides a list of lobbies with their player and game counts.
- `const byte AzureNodeInfo = 210`
(210) Internally used in case of hosting by Azure
- `const byte Join = (byte)255`
(255) Event Join: someone joined the game. The new actorNumber is provided as well as the properties of that actor (if set in OpJoin).
- `const byte Leave = (byte)254`
(254) Event Leave: The player who left the game can be identified by the actorNumber.

- const byte [PropertiesChanged](#) = (byte)253
(253) When you call `OpSetProperties` with the broadcast option "on", this event is fired. It contains the properties being set.
- const byte [SetProperties](#) = (byte)253
(253) When you call `OpSetProperties` with the broadcast option "on", this event is fired. It contains the properties being set.
- const byte [ErrorInfo](#) = 251
(252) When player left game unexpected and the room has a `playerTtl != 0`, this event is fired to let everyone know about the timeout.
- const byte [CacheSliceChanged](#) = 250
(250) Sent by [Photon](#) when the event cache slice was changed. Done by `OpRaiseEvent`.
- const byte [AuthEvent](#) = 223
(223) Sent by [Photon](#) to update a token before it times out.

8.28.1 Detailed Description

Class for constants. These values are for events defined by [Photon](#) Loadbalancing.

They start at 255 and go DOWN. Your own in-game events can start at 0. [Pun](#) uses these constants internally.

8.28.2 Member Data Documentation

8.28.2.1 const byte AppStats = 226

(226) Event with stats about this application (players, rooms, etc)

8.28.2.2 const byte AuthEvent = 223

(223) Sent by [Photon](#) to update a token before it times out.

8.28.2.3 const byte AzureNodeInfo = 210

(210) Internally used in case of hosting by Azure

8.28.2.4 const byte CacheSliceChanged = 250

(250) Sent by [Photon](#) when the event cache slice was changed. Done by `OpRaiseEvent`.

8.28.2.5 const byte ErrorInfo = 251

(252) When player left game unexpected and the room has a `playerTtl != 0`, this event is fired to let everyone know about the timeout.

Obsolete. Replaced by `Leave`. `public const byte Disconnect = LiteEventCode.Disconnect;`

(251) Sent by [Photon](#) Cloud when a plugin-call or webhook-call failed. Usually, the execution on the server continues, despite the issue. Contains: [ParameterCode.Info](#).

See also

<https://doc.photonengine.com/en-us/realtime/current/reference/webhooks::options>

8.28.2.6 `const byte GameList = 230`

(230) Initial list of RoomInfos (in lobby on Master)

8.28.2.7 `const byte GameListUpdate = 229`

(229) Update of RoomInfos to be merged into "initial" list (in lobby on Master)

8.28.2.8 `const byte Join = (byte)255`

(255) Event Join: someone joined the game. The new actorNumber is provided as well as the properties of that actor (if set in OpJoin).

8.28.2.9 `const byte Leave = (byte)254`

(254) Event Leave: The player who left the game can be identified by the actorNumber.

8.28.2.10 `const byte LobbyStats = 224`

(224) This event provides a list of lobbies with their player and game counts.

8.28.2.11 `const byte Match = 227`

(227) Currently not used. Event for matchmaking

8.28.2.12 `const byte PropertiesChanged = (byte)253`

(253) When you call OpSetProperties with the broadcast option "on", this event is fired. It contains the properties being set.

8.28.2.13 `const byte QueueState = 228`

(228) Currently not used. State of queueing in case of server-full

8.28.2.14 `const byte SetProperties = (byte)253`

(253) When you call OpSetProperties with the broadcast option "on", this event is fired. It contains the properties being set.

8.29 EventSystemSpawner Class Reference

Event system spawner. Will add an EventSystem GameObject with an EventSystem component and a StandaloneInputModule component Use this in additive scene loading context where you would otherwise get a "Multiple eventsystem in scene... this is not supported" error from Unity

Inherits MonoBehaviour.

8.29.1 Detailed Description

Event system spawner. Will add an EventSystem GameObject with an EventSystem component and a StandaloneInputModule component Use this in additive scene loading context where you would otherwise get a "Multiple eventsystem in scene... this is not supported" error from Unity

8.30 Extensions Class Reference

This static class defines some useful extension methods for several existing classes (e.g. Vector3, float and others).

Static Public Member Functions

- static void [Merge](#) (this IDictionary target, IDictionary addHash)
Merges all keys from addHash into the target. Adds new keys and updates the values of existing keys in target.
- static void [MergeStringKeys](#) (this IDictionary target, IDictionary addHash)
Merges keys of type string to target Hashtable.
- static string [ToStringFull](#) (this IDictionary origin)
Helper method for debugging of IDictionary content, including type-information. Using this is not performant.
- static string [ToStringFull< T >](#) (this List< T > data)
Helper method for debugging of List< T > content. Using this is not performant.
- static string [ToStringFull](#) (this object[] data)
Helper method for debugging of object[] content. Using this is not performant.
- static Hashtable [StripToStringKeys](#) (this IDictionary original)
This method copies all string-typed keys of the original into a new Hashtable.
- static void [StripKeysWithNullValues](#) (this IDictionary original)
This removes all key-value pairs that have a null-reference as value. [Photon](#) properties are removed by setting their value to null. Changes the original passed IDictionary!
- static bool [Contains](#) (this int[] target, int nr)
Checks if a particular integer value is in an int-array.

8.30.1 Detailed Description

This static class defines some useful extension methods for several existing classes (e.g. Vector3, float and others).

8.30.2 Member Function Documentation

8.30.2.1 static bool Contains (this int[] target, int nr) [static]

Checks if a particular integer value is in an int-array.

This might be useful to look up if a particular actorNumber is in the list of players of a room.

Parameters

<i>target</i>	The array of ints to check.
<i>nr</i>	The number to lookup in target.

Returns

True if nr was found in target.

8.30.2.2 `static void Merge (this IDictionary target, IDictionary addHash)` `[static]`

Merges all keys from addHash into the target. Adds new keys and updates the values of existing keys in target.

Parameters

<i>target</i>	The IDictionary to update.
<i>addHash</i>	The IDictionary containing data to merge into target.

8.30.2.3 static void MergeStringKeys (this IDictionary *target*, IDictionary *addHash*) [static]

Merges keys of type string to target Hashtable.

Does not remove keys from target (so non-string keys CAN be in target if they were before).

Parameters

<i>target</i>	The target IDictionary passed in plus all string-typed keys from the addHash.
<i>addHash</i>	A IDictionary that should be merged partly into target to update it.

8.30.2.4 static void StripKeysWithNullValues (this IDictionary *original*) [static]

This removes all key-value pairs that have a null-reference as value. [Photon](#) properties are removed by setting their value to null. Changes the original passed IDictionary!

Parameters

<i>original</i>	The IDictionary to strip of keys with null-values.
-----------------	--

8.30.2.5 static Hashtable StripToStringKeys (this IDictionary *original*) [static]

This method copies all string-typed keys of the original into a new Hashtable.

Does not recurse (!) into hashes that might be values in the root-hash. This does not modify the original.

Parameters

<i>original</i>	The original IDictionary to get string-typed keys from.
-----------------	---

Returns

New Hashtable containing only string-typed keys of the original.

8.30.2.6 static string ToStringFull (this IDictionary *origin*) [static]

Helper method for debugging of IDictionary content, including type-information. Using this is not performant.

Should only be used for debugging as necessary.

Parameters

<i>origin</i>	Some Dictionary or Hashtable.
---------------	-------------------------------

Returns

String of the content of the IDictionary.

8.30.2.7 static string ToStringFull (this object[] *data*) [static]

Helper method for debugging of object[] content. Using this is not performant.

Should only be used for debugging as necessary.

Parameters

<i>data</i>	Any object[].
-------------	---------------

Returns

A comma-separated string containing each value's ToString().

8.30.2.8 `static string ToStringFull< T > (this List< T > data) [static]`

Helper method for debugging of List<T> content. Using this is not performant.

Should only be used for debugging as necessary.

Parameters

<i>data</i>	Any List<T> where T implements ToString().
-------------	--

Returns

A comma-separated string containing each value's ToString().

8.31 FriendInfo Class Reference

Used to store info about a friend's online state and in which room he/she is.

Public Member Functions

- override string **ToString** ()

Properties

- string **Name** [get]
- string **UserId** [get, protected set]
- bool **IsOnline** [get, protected set]
- string **Room** [get, protected set]
- bool **IsInRoom** [get]

8.31.1 Detailed Description

Used to store info about a friend's online state and in which room he/she is.

8.32 GamePropertyKey Class Reference

Class for constants. These (byte) values are for "well known" room/game properties used in [Photon](#) Loadbalancing.

Public Attributes

- const byte [MaxPlayers](#) = 255
(255) Max number of players that "fit" into this room. 0 is for "unlimited".
- const byte [IsVisible](#) = 254

- (254) Makes this room listed or not in the lobby on master.

 - const byte `IsOpen` = 253

(253) Allows more players to join a room (or not).
- const byte `PlayerCount` = 252

(252) Current count of players in the room. Used only in the lobby on master.
- const byte `Removed` = 251

(251) True if the room is to be removed from room listing (used in update to room list in lobby on master)
- const byte `PropsListedInLobby` = 250

(250) A list of the room properties to pass to the `RoomInfo` list in a lobby. This is used in `CreateRoom`, which defines this list once per room.
- const byte `CleanupCacheOnLeave` = 249

(249) Equivalent of Operation Join parameter `CleanupCacheOnLeave`.
- const byte `MasterClientId` = (byte)248

(248) Code for `MasterClientId`, which is synced by server. When sent as `op-parameter` this is (byte)203. As room property this is (byte)248.
- const byte `ExpectedUsers` = (byte)247

(247) Code for `ExpectedUsers` in a room. Matchmaking keeps a slot open for the players with these `userIDs`.
- const byte `PlayerTtl` = (byte)246

(246) `Player` Time To Live. How long any player can be inactive (due to disconnect or leave) before the user gets removed from the playlist (freeing a slot).
- const byte `EmptyRoomTtl` = (byte)245

(245) `Room` Time To Live. How long a room stays available (and in server-memory), after the last player becomes inactive. After this time, the room gets persisted or destroyed.

8.32.1 Detailed Description

Class for constants. These (byte) values are for "well known" room/game properties used in `Photon` Loadbalancing. `Pun` uses these constants internally. "Custom properties" have to use a string-type as key. They can be assigned at will.

8.32.2 Member Data Documentation

8.32.2.1 const byte CleanupCacheOnLeave = 249

(249) Equivalent of Operation Join parameter `CleanupCacheOnLeave`.

8.32.2.2 const byte EmptyRoomTtl = (byte)245

(245) `Room` Time To Live. How long a room stays available (and in server-memory), after the last player becomes inactive. After this time, the room gets persisted or destroyed.

8.32.2.3 const byte ExpectedUsers = (byte)247

(247) Code for `ExpectedUsers` in a room. Matchmaking keeps a slot open for the players with these `userIDs`.

8.32.2.4 const byte IsOpen = 253

(253) Allows more players to join a room (or not).

8.32.2.5 `const byte IsVisible = 254`

(254) Makes this room listed or not in the lobby on master.

8.32.2.6 `const byte MasterClientId = (byte)248`

(248) Code for MasterClientId, which is synced by server. When sent as op-parameter this is (byte)203. As room property this is (byte)248.

Tightly related to [ParameterCode.MasterClientId](#).

8.32.2.7 `const byte MaxPlayers = 255`

(255) Max number of players that "fit" into this room. 0 is for "unlimited".

8.32.2.8 `const byte PlayerCount = 252`

(252) Current count of players in the room. Used only in the lobby on master.

8.32.2.9 `const byte PlayerTtl = (byte)246`

(246) [Player](#) Time To Live. How long any player can be inactive (due to disconnect or leave) before the user gets removed from the playerlist (freeing a slot).

8.32.2.10 `const byte PropsListedInLobby = 250`

(250) A list of the room properties to pass to the [RoomInfo](#) list in a lobby. This is used in CreateRoom, which defines this list once per room.

8.32.2.11 `const byte Removed = 251`

(251) True if the room is to be removed from room listing (used in update to room list in lobby on master)

8.33 [GraphicTogglesOnTransition](#) Class Reference

Use this on toggles texts to have some color transition on the text depending on the isOn State.

Inherits [MonoBehaviour](#), [IPointerEnterHandler](#), and [IPointerExitHandler](#).

Public Member Functions

- void **OnPointerEnter** (PointerEventData eventData)
- void **OnPointerExit** (PointerEventData eventData)
- void **OnEnable** ()
- void **OnDisable** ()
- void **OnValueChanged** (bool isOn)

Public Attributes

- Toggle **toggle**
- Color **NormalOnColor** = Color.white
- Color **NormalOffColor** = Color.black
- Color **HoverOnColor** = Color.black
- Color **HoverOffColor** = Color.black

8.33.1 Detailed Description

Use this on toggles texts to have some color transition on the text depending on the isOn State.

8.34 IChatClientListener Interface Reference

Callback interface for [Chat](#) client side. Contains callback methods to notify your app about updates. Must be provided to new [ChatClient](#) in constructor

Public Member Functions

- void [DebugReturn](#) (DebugLevel level, string message)
All debug output of the library will be reported through this method. Print it or put it in a buffer to use it on-screen.
- void [OnDisconnected](#) ()
Disconnection happened.
- void [OnConnected](#) ()
Client is connected now.
- void [OnChatStateChange](#) ([ChatState](#) state)
The [ChatClient](#)'s state changed. Usually, OnConnected and OnDisconnected are the callbacks to react to.
- void [OnGetMessages](#) (string channelName, string[] senders, object[] messages)
Notifies app that client got new messages from server Number of senders is equal to number of messages in 'messages'. Sender with number '0' corresponds to message with number '0', sender with number '1' corresponds to message with number '1' and so on
- void [OnPrivateMessage](#) (string sender, object message, string channelName)
Notifies client about private message
- void [OnSubscribed](#) (string[] channels, bool[] results)
Result of Subscribe operation. Returns subscription result for every requested channel name.
- void [OnUnsubscribed](#) (string[] channels)
Result of Unsubscribe operation. Returns for channel name if the channel is now unsubscribed.
- void [OnStatusUpdate](#) (string user, int status, bool gotMessage, object message)
New status of another user (you get updates for users set in your friends list).
- void [OnUserSubscribed](#) (string channel, string user)
A user has subscribed to a public chat channel
- void [OnUserUnsubscribed](#) (string channel, string user)
A user has unsubscribed from a public chat channel

8.34.1 Detailed Description

Callback interface for [Chat](#) client side. Contains callback methods to notify your app about updates. Must be provided to new [ChatClient](#) in constructor

8.34.2 Member Function Documentation

8.34.2.1 void DebugReturn (DebugLevel *level*, string *message*)

All debug output of the library will be reported through this method. Print it or put it in a buffer to use it on-screen.

Parameters

<i>level</i>	DebugLevel (severity) of the message.
<i>message</i>	Debug text. Print to System.Console or screen.

8.34.2.2 void OnChatStateChange (ChatState *state*)

The [ChatClient](#)'s state changed. Usually, OnConnected and OnDisconnected are the callbacks to react to.

Parameters

<i>state</i>	The new state.
--------------	----------------

8.34.2.3 void OnConnected ()

Client is connected now.

Clients have to be connected before they can send their state, subscribe to channels and send any messages.

8.34.2.4 void OnDisconnected ()

Disconnection happened.

8.34.2.5 void OnGetMessages (string *channelName*, string[] *senders*, object[] *messages*)

Notifies app that client got new messages from server Number of senders is equal to number of messages in 'messages'. Sender with number '0' corresponds to message with number '0', sender with number '1' corresponds to message with number '1' and so on

Parameters

<i>channelName</i>	channel from where messages came
<i>senders</i>	list of users who sent messages
<i>messages</i>	list of messages it self

8.34.2.6 void OnPrivateMessage (string *sender*, object *message*, string *channelName*)

Notifies client about private message

Parameters

<i>sender</i>	user who sent this message
<i>message</i>	message it self
<i>channelName</i>	channelName for private messages (messages you sent yourself get added to a channel per target username)

8.34.2.7 void OnStatusUpdate (string *user*, int *status*, bool *gotMessage*, object *message*)

New status of another user (you get updates for users set in your friends list).

Parameters

<i>user</i>	Name of the user.
<i>status</i>	New status of that user.
<i>gotMessage</i>	True if the status contains a message you should cache locally. False: This status update does not include a message (keep any you have).
<i>message</i>	Message that user set.

8.34.2.8 void OnSubscribed (string[] channels, bool[] results)

Result of Subscribe operation. Returns subscription result for every requested channel name.

If multiple channels sent in Subscribe operation, OnSubscribed may be called several times, each call with part of sent array or with single channel in "channels" parameter. Calls order and order of channels in "channels" parameter may differ from order of channels in "channels" parameter of Subscribe operation.

Parameters

<i>channels</i>	Array of channel names.
<i>results</i>	Per channel result if subscribed.

8.34.2.9 void OnUnsubscribed (string[] channels)

Result of Unsubscribe operation. Returns for channel name if the channel is now unsubscribed.

If multiple channels sent in Unsubscribe operation, OnUnsubscribed may be called several times, each call with part of sent array or with single channel in "channels" parameter. Calls order and order of channels in "channels" parameter may differ from order of channels in "channels" parameter of Unsubscribe operation.

Parameters

<i>channels</i>	Array of channel names that are no longer subscribed.
-----------------	---

8.34.2.10 void OnUserSubscribed (string channel, string user)

A user has subscribed to a public chat channel

Parameters

<i>channel</i>	Name of the chat channel
<i>user</i>	UserId of the user who subscribed

8.34.2.11 void OnUserUnsubscribed (string channel, string user)

A user has unsubscribed from a public chat channel

Parameters

<i>channel</i>	Name of the chat channel
<i>user</i>	UserId of the user who unsubscribed

8.35 IConnectionCallbacks Interface Reference

Collection of "organizational" callbacks for the [Realtime](#) Api to cover: Connection and Regions.

Inherited by [MonoBehaviourPunCallbacks](#), [OnJoinedInstantiate](#), [ConnectionCallbacksContainer](#), and [SupportLogger](#).

Public Member Functions

- void [OnConnected](#) ()
Called to signal that the "low level connection" got established but before the client can call operation on the server.
- void [OnConnectedToMaster](#) ()
Called when the client is connected to the Master Server and ready for matchmaking and other tasks.
- void [OnDisconnected](#) ([DisconnectCause](#) cause)
Called after disconnecting from the [Photon](#) server. It could be a failure or an explicit disconnect call
- void [OnRegionListReceived](#) ([RegionHandler](#) regionHandler)
Called when the Name Server provided a list of regions for your title.
- void [OnCustomAuthenticationResponse](#) (Dictionary< string, object > data)
Called when your Custom Authentication service responds with additional data.
- void [OnCustomAuthenticationFailed](#) (string debugMessage)
Called when the custom authentication failed. Followed by disconnect!

8.35.1 Detailed Description

Collection of "organizational" callbacks for the [Realtime](#) Api to cover: Connection and Regions.

Classes that implement this interface must be registered to get callbacks for various situations.

To register for callbacks, `PhotonNetwork.AddCallbackTarget(<Your Component implementing this interface>);` To stop getting callbacks, `PhotonNetwork.RemoveCallbackTarget(<Your Component implementing this interface>);`

You can also simply override `MonoBehaviourPunCallbacks` which will provide you with Magic Callbacks (like Unity would call `Start()`, `Update()` on a `MonoBehaviour`)

8.35.2 Member Function Documentation

8.35.2.1 void OnConnected ()

Called to signal that the "low level connection" got established but before the client can call operation on the server.

After the (low level transport) connection is established, the client will automatically send the Authentication operation, which needs to get a response before the client can call other operations.

Your logic should wait for either: `OnRegionListReceived` or `OnConnectedToMaster`.

This callback is useful to detect if the server can be reached at all (technically). Most often, it's enough to implement [OnDisconnected\(DisconnectCause cause\)](#) and check for the cause.

This is not called for transitions from the masterserver to game servers.

Implemented in [ConnectionCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoinedInstantiate](#).

8.35.2.2 void OnConnectedToMaster ()

Called when the client is connected to the Master Server and ready for matchmaking and other tasks.

The list of available rooms won't become available unless you join a lobby via [LoadBalancingClient.OpJoinLobby](#). You can join rooms and create them even without being in a lobby. The default lobby is used in that case.

Implemented in [ConnectionCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), [OnJoinedInstantiate](#), and [ConnectAndJoinRandom](#).

8.35.2.3 void OnCustomAuthenticationFailed (string *debugMessage*)

Called when the custom authentication failed. Followed by disconnect!

Custom Authentication can fail due to user-input, bad tokens/secrets. If authentication is successful, this method is not called. Implement OnJoinedLobby() or [OnConnectedToMaster\(\)](#) (as usual).

During development of a game, it might also fail due to wrong configuration on the server side. In those cases, logging the debugMessage is very important.

Unless you setup a custom authentication service for your app (in the [Dashboard](#)), this won't be called!

Parameters

<i>debugMessage</i>	Contains a debug message why authentication failed. This has to be fixed during development.
---------------------	--

Implemented in [ConnectionCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoined↵Instantiate](#).

8.35.2.4 void OnCustomAuthenticationResponse (Dictionary< string, object > *data*)

Called when your Custom Authentication service responds with additional data.

Custom Authentication services can include some custom data in their response. When present, that data is made available in this callback as Dictionary. While the keys of your data have to be strings, the values can be either string or a number (in Json). You need to make extra sure, that the value type is the one you expect. Numbers become (currently) int64.

Example: void OnCustomAuthenticationResponse(Dictionary<string, object> data) { ... }

<https://doc.photonengine.com/en-us/realtime/current/reference/custom-authentication>

Implemented in [ConnectionCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoined↵Instantiate](#).

8.35.2.5 void OnDisconnected (DisconnectCause *cause*)

Called after disconnecting from the [Photon](#) server. It could be a failure or an explicit disconnect call

The reason for this disconnect is provided as DisconnectCause.

Implemented in [ConnectionCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), [OnJoined↵Instantiate](#), and [ConnectAndJoinRandom](#).

8.35.2.6 void OnRegionListReceived (RegionHandler *regionHandler*)

Called when the Name Server provided a list of regions for your title.

Check the [RegionHandler](#) class description, to make use of the provided values.

Parameters

<i>regionHandler</i>	The currently used RegionHandler .
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Implemented in [ConnectionCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoined↵Instantiate](#).

8.36 InRoomCallbacks Interface Reference

Collection of "in room" callbacks for the [Realtime](#) Api to cover: Players entering or leaving, property updates and Master Client switching.

Inherited by [MonoBehaviourPunCallbacks](#), [PhotonHandler](#), [InRoomCallbacksContainer](#), and [SupportLogger](#).

Public Member Functions

- void [OnPlayerEnteredRoom](#) ([Player](#) newPlayer)
Called when a remote player entered the room. This [Player](#) is already added to the playlist.
- void [OnPlayerLeftRoom](#) ([Player](#) otherPlayer)
Called when a remote player left the room or became inactive. Check otherPlayer.IsInactive.
- void [OnRoomPropertiesUpdate](#) (Hashtable propertiesThatChanged)
Called when a room's custom properties changed. The propertiesThatChanged contains all that was set via [Room](#).↔ [SetCustomProperties](#).
- void [OnPlayerPropertiesUpdate](#) ([Player](#) targetPlayer, Hashtable changedProps)
Called when custom player-properties are changed. [Player](#) and the changed properties are passed as object[].
- void [OnMasterClientSwitched](#) ([Player](#) newMasterClient)
Called after switching to a new MasterClient when the current one leaves.

8.36.1 Detailed Description

Collection of "in room" callbacks for the [Realtime](#) Api to cover: Players entering or leaving, property updates and Master Client switching.

The callback to get events is in a separate interface: [IOnEventCallback](#).

To register for callbacks, `PhotonNetwork.AddCallbackTarget(<Your Component implementing this interface>);` To stop getting callbacks, `PhotonNetwork.RemoveCallbackTarget(<Your Component implementing this interface>);`

You can also simply override `MonoBehaviourPunCallbacks` which will provide you with Magic Callbacks (like Unity would call `Start()`, `Update()` on a `MonoBehaviour`)

8.36.2 Member Function Documentation

8.36.2.1 void OnMasterClientSwitched ([Player](#) newMasterClient)

Called after switching to a new MasterClient when the current one leaves.

This is not called when this client enters a room. The former MasterClient is still in the player list when this method get called.

Implemented in [MonoBehaviourPunCallbacks](#), and [SupportLogger](#).

8.36.2.2 void OnPlayerEnteredRoom ([Player](#) newPlayer)

Called when a remote player entered the room. This [Player](#) is already added to the playlist.

If your game starts with a certain number of players, this callback can be useful to check the `Room.playerCount` and find out if you can start.

Implemented in [MonoBehaviourPunCallbacks](#), [SupportLogger](#), [PlayerNumbering](#), and [PunTeams](#).

8.36.2.3 void OnPlayerLeftRoom ([Player](#) otherPlayer)

Called when a remote player left the room or became inactive. Check `otherPlayer.IsInactive`.

If another player leaves the room or if the server detects a lost connection, this callback will be used to notify your game logic.

Depending on the room's setup, players may become inactive, which means they may return and retake their spot in the room. In such cases, the [Player](#) stays in the [Room.Players](#) dictionary.

If the player is not just inactive, it gets removed from the [Room.Players](#) dictionary, before the callback is called.
Implemented in [MonoBehaviourPunCallbacks](#), [SupportLogger](#), [PlayerNumbering](#), and [PunTeams](#).

8.36.2.4 void OnPlayerPropertiesUpdate ([Player](#) *targetPlayer*, Hashtable *changedProps*)

Called when custom player-properties are changed. [Player](#) and the changed properties are passed as object[].
Changing properties must be done by [Player.SetCustomProperties](#), which causes this callback locally, too.

Parameters

<i>targetPlayer</i>	Contains Player that changed.
<i>changedProps</i>	Contains the properties that changed.

Implemented in [MonoBehaviourPunCallbacks](#), [SupportLogger](#), [PlayerNumbering](#), and [PunTeams](#).

8.36.2.5 void OnRoomPropertiesUpdate (Hashtable *propertiesThatChanged*)

Called when a room's custom properties changed. The *propertiesThatChanged* contains all that was set via [Room.SetCustomProperties](#).

Since v1.25 this method has one parameter: Hashtable *propertiesThatChanged*.
Changing properties must be done by [Room.SetCustomProperties](#), which causes this callback locally, too.

Parameters

<i>propertiesThatChanged</i>	
------------------------------	--

Implemented in [MonoBehaviourPunCallbacks](#), [PunTurnManager](#), [SupportLogger](#), and [CountdownTimer](#).

8.37 ILobbyCallbacks Interface Reference

Collection of "organizational" callbacks for the [Realtime](#) Api to cover the Lobby.

Inherited by [MonoBehaviourPunCallbacks](#), [OnJoinedInstantiate](#), [LobbyCallbacksContainer](#), and [SupportLogger](#).

Public Member Functions

- void [OnJoinedLobby](#) ()
Called on entering a lobby on the Master Server. The actual room-list updates will call OnRoomListUpdate.
- void [OnLeftLobby](#) ()
Called after leaving a lobby.
- void [OnRoomListUpdate](#) (List< [RoomInfo](#) > roomList)
Called for any update of the room-listing while in a lobby (InLobby) on the Master Server.
- void [OnLobbyStatisticsUpdate](#) (List< [TypedLobbyInfo](#) > lobbyStatistics)
Called when the Master Server sent an update for the Lobby Statistics, updating PhotonNetwork.LobbyStatistics.

8.37.1 Detailed Description

Collection of "organizational" callbacks for the [Realtime](#) Api to cover the Lobby.

Classes that implement this interface must be registered to get callbacks for various situations.

To register for callbacks, [PhotonNetwork.AddCallbackTarget](#)(<Your Component implementing this interface>); To stop getting callbacks, [PhotonNetwork.RemoveCallbackTarget](#)(<Your Component implementing this interface>);

You can also simply override `MonoBehaviourPunCallbacks` which will provide you with Magic Callbacks (like Unity would call `Start()`, `Update()` on a `MonoBehaviour`)

8.37.2 Member Function Documentation

8.37.2.1 void OnJoinedLobby ()

Called on entering a lobby on the Master Server. The actual room-list updates will call `OnRoomListUpdate`.

While in the lobby, the roomlist is automatically updated in fixed intervals (which you can't modify in the public cloud). The room list gets available via `OnRoomListUpdate`.

Implemented in [MonoBehaviourPunCallbacks](#), [SupportLogger](#), [OnJoinedInstantiate](#), and [ConnectAndJoinRandom](#).

8.37.2.2 void OnLeftLobby ()

Called after leaving a lobby.

When you leave a lobby, `OpCreateRoom` and `OpJoinRandomRoom` automatically refer to the default lobby.

Implemented in [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoinedInstantiate](#).

8.37.2.3 void OnLobbyStatisticsUpdate (List< TypedLobbyInfo > lobbyStatistics)

Called when the Master Server sent an update for the Lobby Statistics, updating `PhotonNetwork.LobbyStatistics`.

This callback has two preconditions: `EnableLobbyStatistics` must be set to true, before this client connects. And the client has to be connected to the Master Server, which is providing the info about lobbies.

Implemented in [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoinedInstantiate](#).

8.37.2.4 void OnRoomListUpdate (List< RoomInfo > roomList)

Called for any update of the room-listing while in a lobby (InLobby) on the Master Server.

Each item is a [RoomInfo](#) which might include custom properties (provided you defined those as lobby-listed when creating a room). Not all types of lobbies provide a listing of rooms to the client. Some are silent and specialized for server-side matchmaking.

Implemented in [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoinedInstantiate](#).

8.38 IMatchmakingCallbacks Interface Reference

Collection of "organizational" callbacks for the [Realtime](#) Api to cover Matchmaking.

Inherited by [MonoBehaviourPunCallbacks](#), [PhotonHandler](#), [OnJoinedInstantiate](#), [MatchMakingCallbacksContainer](#), and [SupportLogger](#).

Public Member Functions

- void [OnFriendListUpdate](#) (List< [FriendInfo](#) > friendList)
Called when the server sent the response to a FindFriends request.
- void [OnCreatedRoom](#) ()
Called when this client created a room and entered it. [OnJoinedRoom\(\)](#) will be called as well.
- void [OnCreateRoomFailed](#) (short returnCode, string message)
Called when the server couldn't create a room (OpCreateRoom failed).

- void [OnJoinedRoom](#) ()

Called when the [LoadBalancingClient](#) entered a room, no matter if this client created it or simply joined.

- void [OnJoinRoomFailed](#) (short *returnCode*, string *message*)

Called when a previous [OpJoinRoom](#) call failed on the server.

- void [OnJoinRandomFailed](#) (short *returnCode*, string *message*)

Called when a previous [OpJoinRandom](#) call failed on the server.

- void [OnLeftRoom](#) ()

Called when the local user/client left a room, so the game's logic can clean up it's internal state.

8.38.1 Detailed Description

Collection of "organizational" callbacks for the [Realtime](#) Api to cover Matchmaking.

Classes that implement this interface must be registered to get callbacks for various situations.

To register for callbacks, `PhotonNetwork.AddCallbackTarget(<Your Component implementing this interface>);` To stop getting callbacks, `PhotonNetwork.RemoveCallbackTarget(<Your Component implementing this interface>);`

You can also simply override `MonoBehaviourPunCallbacks` which will provide you with Magic Callbacks (like Unity would call `Start()`, `Update()` on a `MonoBehaviour`)

8.38.2 Member Function Documentation

8.38.2.1 void [OnCreatedRoom](#) ()

Called when this client created a room and entered it. [OnJoinedRoom\(\)](#) will be called as well.

This callback is only called on the client which created a room (see [OpCreateRoom](#)).

As any client might close (or drop connection) anytime, there is a chance that the creator of a room does not execute [OnCreatedRoom](#).

If you need specific room properties or a "start signal", implement [OnMasterClientSwitched\(\)](#) and make each new `MasterClient` check the room's state.

Implemented in [MatchMakingCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoined↵Instantiate](#).

8.38.2.2 void [OnCreateRoomFailed](#) (short *returnCode*, string *message*)

Called when the server couldn't create a room ([OpCreateRoom](#) failed).

Creating a room may fail for various reasons. Most often, the room already exists (roomname in use) or the [Room↵Options](#) clash and it's impossible to create the room.

When creating a room fails on a Game Server: The client will cache the failure internally and returns to the Master Server before it calls the fail-callback. This way, the client is ready to find/create a room at the moment of the callback. In this case, the client skips calling [OnConnectedToMaster](#) but returning to the Master Server will still call [OnConnected](#). Treat callbacks of [OnConnected](#) as pure information that the client could connect.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implemented in [MatchMakingCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoined↵Instantiate](#).

8.38.2.3 void OnFriendListUpdate (List< FriendInfo > friendList)

Called when the server sent the response to a FindFriends request.

After calling OpFindFriends, the Master Server will cache the friend list and send updates to the friend list. The friends includes the name, userId, online state and the room (if any) for each requested user/friend.

Use the friendList to update your UI and store it, if the UI should highlight changes.

Implemented in [MatchMakingCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoinedInstantiate](#).

8.38.2.4 void OnJoinedRoom ()

Called when the [LoadBalancingClient](#) entered a room, no matter if this client created it or simply joined.

When this is called, you can access the existing players in [Room.Players](#), their custom properties and [Room.CustomProperties](#).

In this callback, you could create player objects. For example in Unity, instantiate a prefab for the player.

If you want a match to be started "actively", enable the user to signal "ready" (using OpRaiseEvent or a Custom Property).

Implemented in [MatchMakingCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), [PlayerNumbering](#), [ConnectAndJoinRandom](#), [PunTeams](#), and [OnJoinedInstantiate](#).

8.38.2.5 void OnJoinRandomFailed (short returnCode, string message)

Called when a previous OpJoinRandom call failed on the server.

The most common causes are that a room is full or does not exist (due to someone else being faster or closing the room).

This operation is only ever sent to the Master Server. Once a room is found by the Master Server, the client will head off to the designated Game Server and use the operation Join on the Game Server.

When using multiple lobbies (via OpJoinLobby or a [TypedLobby](#) parameter), another lobby might have more/fitting rooms.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implemented in [MatchMakingCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), [OnJoinedInstantiate](#), and [ConnectAndJoinRandom](#).

8.38.2.6 void OnJoinRoomFailed (short returnCode, string message)

Called when a previous OpJoinRoom call failed on the server.

Joining a room may fail for various reasons. Most often, the room is full or does not exist anymore (due to someone else being faster or closing the room).

When joining a room fails on a Game Server: The client will cache the failure internally and returns to the Master Server before it calls the fail-callback. This way, the client is ready to find/create a room at the moment of the callback. In this case, the client skips calling OnConnectedToMaster but returning to the Master Server will still call OnConnected. Treat callbacks of OnConnected as pure information that the client could connect.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implemented in [MatchMakingCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), and [OnJoined↔Instantiate](#).

8.38.2.7 void OnLeftRoom ()

Called when the local user/client left a room, so the game's logic can clean up it's internal state.

When leaving a room, the [LoadBalancingClient](#) will disconnect the Game Server and connect to the Master Server. This wraps up multiple internal actions.

Wait for the callback OnConnectedToMaster, before you use lobbies and join or create rooms.

Implemented in [MatchMakingCallbacksContainer](#), [MonoBehaviourPunCallbacks](#), [SupportLogger](#), [OnJoined↔Instantiate](#), [PlayerNumbering](#), and [PunTeams](#).

8.39 InstantiateParameters Struct Reference

Public Member Functions

- **InstantiateParameters** (string prefabName, Vector3 position, Quaternion rotation, byte @group, object[] data, byte objLevelPrefix, int[] viewIDs, [Player](#) creator, int timestamp)

Public Attributes

- int[] **viewIDs**
- byte **objLevelPrefix**
- object[] **data**
- byte **group**
- Quaternion **rotation**
- Vector3 **position**
- string **prefabName**
- [Player](#) **creator**
- int **timestamp**

8.40 IOnEventCallback Interface Reference

Event callback for the [Realtime](#) Api. Covers events from the server and those sent by clients via OpRaiseEvent.

Inherited by [PunTurnManager](#).

Public Member Functions

- void [OnEvent](#) (EventData photonEvent)
Called for any incoming events.

8.40.1 Detailed Description

Event callback for the [Realtime](#) Api. Covers events from the server and those sent by clients via `OpRaiseEvent`.

Classes that implement this interface must be registered to get callbacks for various situations.

To register for callbacks, register the instance via: `LoadBalancingClient.EventReceived += instance`. To stop getting callbacks, remove the instance via: `-=`.

8.40.2 Member Function Documentation

8.40.2.1 void OnEvent ([EventData](#) *photonEvent*)

Called for any incoming events.

To receive events, implement [IOnEventCallback](#) in any class and register it via `AddCallbackTarget` (either in [LoadBalancingClient](#) or [PhotonNetwork](#)).

With the `EventData.Sender` you can look up the [Player](#) who sent the event.

It is best practice to assign an `eventCode` for each different type of content and action, so the Code will be essential to read the incoming events.

Implemented in [PunTurnManager](#).

8.41 IPunInstantiateMagicCallback Interface Reference

Public Member Functions

- void **OnPhotonInstantiate** ([PhotonMessageInfo](#) info)

8.42 IPunObservable Interface Reference

Defines the `OnPhotonSerializeView` method to make it easy to implement correctly for observable scripts.

Inherited by [PhotonAnimatorView](#), [PhotonRigidbody2DView](#), [PhotonRigidbodyView](#), [PhotonTransformView](#), [PhotonTransformViewClassic](#), [CullingHandler](#), and [SmoothSyncMovement](#).

Public Member Functions

- void **OnPhotonSerializeView** ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

8.42.1 Detailed Description

Defines the `OnPhotonSerializeView` method to make it easy to implement correctly for observable scripts.

8.43 IPunOwnershipCallbacks Interface Reference

This interface is used as definition of all callback methods of PUN, except `OnPhotonSerializeView`. Preferably, implement them individually.

Public Member Functions

- void [OnOwnershipRequest](#) ([PhotonView](#) targetView, [Player](#) requestingPlayer)
Called when another player requests ownership of a [PhotonView](#) from you (the current owner).
- void [OnOwnershipTransferred](#) ([PhotonView](#) targetView, [Player](#) previousOwner)
Called when ownership of a [PhotonView](#) is transferred to another player.

8.43.1 Detailed Description

This interface is used as definition of all callback methods of PUN, except [OnPhotonSerializeView](#). Preferably, implement them individually.

This interface is available for completeness, more than for actually implementing it in a game. You can implement each method individually in any [MonoBehaviour](#), without implementing [IPunCallbacks](#).

PUN calls all callbacks by name. Don't use implement callbacks with fully qualified name. Example: [IPunCallbacks.OnConnected](#) won't get called by Unity's [SendMessage\(\)](#).

PUN will call these methods on any script that implements them, analog to Unity's events and callbacks. The situation that triggers the call is described per method.

[OnPhotonSerializeView](#) is NOT called like these callbacks! It's usage frequency is much higher and it is implemented in: [IPunObservable](#).

8.43.2 Member Function Documentation

8.43.2.1 void [OnOwnershipRequest](#) ([PhotonView](#) targetView, [Player](#) requestingPlayer)

Called when another player requests ownership of a [PhotonView](#) from you (the current owner).

The parameter viewAndPlayer contains:

[PhotonView](#) view = viewAndPlayer[0] as [PhotonView](#);

[Player](#) requestingPlayer = viewAndPlayer[1] as [Player](#);

Parameters

<i>targetView</i>	PhotonView for which ownership gets requested.
<i>requestingPlayer</i>	Player who requests ownership.

8.43.2.2 void [OnOwnershipTransferred](#) ([PhotonView](#) targetView, [Player](#) previousOwner)

Called when ownership of a [PhotonView](#) is transferred to another player.

The parameter viewAndPlayers contains:

[PhotonView](#) view = viewAndPlayers[0] as [PhotonView](#);

[Player](#) newOwner = viewAndPlayers[1] as [Player](#);

[Player](#) oldOwner = viewAndPlayers[2] as [Player](#);

```
void OnOwnershipTransferred(object[] viewAndPlayers) {} //
```

Parameters

<i>targetView</i>	PhotonView for which ownership changed.
-------------------	---

<i>previousOwner</i>	Player who was the previous owner (or null, if none).
----------------------	---

8.44 IPunPrefabPool Interface Reference

Defines an interface for object pooling, used in PhotonNetwork.Instantiate and [PhotonNetwork.Destroy](#).

Inherited by [DefaultPool](#).

Public Member Functions

- **GameObject** [Instantiate](#) (string prefabId, Vector3 position, Quaternion rotation)
Called to get an instance of a prefab. Must return valid, disabled GameObject with [PhotonView](#).
- void [Destroy](#) (GameObject gameObject)
Called to destroy (or just return) the instance of a prefab. It's disabled and the pool may reset and cache it for later use in Instantiate.

8.44.1 Detailed Description

Defines an interface for object pooling, used in PhotonNetwork.Instantiate and [PhotonNetwork.Destroy](#).

To apply your custom [IPunPrefabPool](#), set [PhotonNetwork.PrefabPool](#).

The pool has to return a valid, disabled GameObject when PUN calls Instantiate. Also, the position and rotation must be applied.

Note that Awake and Start are only called once by Unity, so scripts on re-used GameObjects should make use of OnEnable and or OnDisable. When OnEnable gets called, the [PhotonView](#) is already updated to the new values.

To be able to enable a GameObject, Instantiate must return an inactive object.

Before PUN "destroys" GameObjects, it will disable them.

If a component implements [IPunInstantiateMagicCallback](#), PUN will call OnPhotonInstantiate when the networked object gets instantiated. If no components implement this on a prefab, PUN will optimize the instantiation and no longer looks up [IPunInstantiateMagicCallback](#) via GetComponents.

8.44.2 Member Function Documentation

8.44.2.1 void Destroy (GameObject *gameObject*)

Called to destroy (or just return) the instance of a prefab. It's disabled and the pool may reset and cache it for later use in Instantiate.

A pool needs some way to find out which type of GameObject got returned via [Destroy\(\)](#). It could be a tag, name, a component or anything similar.

Parameters

<i>gameObject</i>	The instance to destroy.
-------------------	--------------------------

Implemented in [DefaultPool](#).

8.44.2.2 GameObject Instantiate (string *prefabId*, Vector3 *position*, Quaternion *rotation*)

Called to get an instance of a prefab. Must return valid, disabled GameObject with [PhotonView](#).

Parameters

<i>prefabId</i>	The id of this prefab.
<i>position</i>	The position for the instance.
<i>rotation</i>	The rotation for the instance.

Returns

A disabled instance to use by PUN or null if the prefabId is unknown.

Implemented in [DefaultPool](#).

8.45 IPunTurnManagerCallbacks Interface Reference

Public Member Functions

- void [OnTurnBegins](#) (int turn)
Called the turn begins event.
- void [OnTurnCompleted](#) (int turn)
Called when a turn is completed (finished by all players)
- void [OnPlayerMove](#) ([Player](#) player, int turn, object move)
Called when a player moved (but did not finish the turn)
- void [OnPlayerFinished](#) ([Player](#) player, int turn, object move)
When a player finishes a turn (includes the action/move of that player)
- void [OnTurnTimeEnds](#) (int turn)
Called when a turn completes due to a time constraint (timeout for a turn)

8.45.1 Member Function Documentation

8.45.1.1 void OnPlayerFinished ([Player](#) player, int turn, object move)

When a player finishes a turn (includes the action/move of that player)

Parameters

<i>player</i>	Player reference
<i>turn</i>	Turn index
<i>move</i>	Move Object data

8.45.1.2 void OnPlayerMove ([Player](#) player, int turn, object move)

Called when a player moved (but did not finish the turn)

Parameters

<i>player</i>	Player reference
<i>turn</i>	Turn Index
<i>move</i>	Move Object data

8.45.1.3 void OnTurnBegins (int turn)

Called the turn begins event.

Parameters

<i>turn</i>	Turn Index
-------------	------------

8.45.1.4 void OnTurnCompleted (int *turn*)

Called when a turn is completed (finished by all players)

Parameters

<i>turn</i>	Turn Index
-------------	------------

8.45.1.5 void OnTurnTimeEnds (int *turn*)

Called when a turn completes due to a time constraint (timeout for a turn)

Parameters

<i>turn</i>	Turn index
-------------	------------

8.46 IWebRpcCallback Interface Reference

Interface for "WebRpc" callbacks for the [Realtime](#) Api. Currently includes only responses for Web RPCs.

Inherited by WebRpcCallbacksContainer.

Public Member Functions

- void [OnWebRpcResponse](#) (OperationResponse response)

Called by PUN when the response to a WebRPC is available. See PhotonNetwork.WebRPC.

8.46.1 Detailed Description

Interface for "WebRpc" callbacks for the [Realtime](#) Api. Currently includes only responses for Web RPCs.

Classes that implement this interface must be registered to get callbacks for various situations.

To register for callbacks, use the LoadBalancingClient.WebRpcCallbackTargets and Add() the instance. To stop getting callbacks, Remove() the instance.

8.46.2 Member Function Documentation

8.46.2.1 void OnWebRpcResponse (OperationResponse *response*)

Called by PUN when the response to a WebRPC is available. See PhotonNetwork.WebRPC.

Important: The response.ReturnCode is 0 if [Photon](#) was able to reach your web-service.

The content of the response is what your web-service sent. You can create a [WebRpcResponse](#) from it.

Example: [WebRpcResponse](#) webResponse = new WebRpcResponse(operationResponse);

Please note: Class OperationResponse is in a namespace which needs to be "used":
using ExitGames.Client.Photon; // includes OperationResponse (and other classes)

8.47 LoadBalancingClient Class Reference

This class implements the [Photon](#) LoadBalancing workflow by using a [LoadBalancingPeer](#). It keeps a state and will automatically execute transitions between the Master and Game Servers.

Inherits [IPhotonPeerListener](#).

Public Member Functions

- [LoadBalancingClient](#) (ConnectionProtocol protocol=ConnectionProtocol.Udp)
Creates a [LoadBalancingClient](#) with UDP protocol or the one specified.
- [LoadBalancingClient](#) (string masterAddress, string appld, string gameVersion, ConnectionProtocol protocol=ConnectionProtocol.Udp)
Creates a [LoadBalancingClient](#), setting various values needed before connecting.
- virtual bool [Connect](#) ()
Starts the "process" to connect to a Master Server, using MasterServerAddress and Appld properties.
- bool [ConnectToNameServer](#) ()
Connects to the NameServer for [Photon](#) Cloud, where a region and server list can be obtained.
- bool [ConnectToRegionMaster](#) (string region)
Connects you to a specific region's Master Server, using the Name Server to find the IP.
- bool [ReconnectToMaster](#) ()
Can be used to reconnect to the master server after a disconnect.
- bool [ReconnectAndRejoin](#) ()
Can be used to return to a room quickly, by directly reconnecting to a game server to rejoin a room.
- void [Disconnect](#) ()
Disconnects this client from any server and sets this.State if the connection is successfully closed.
- void [Service](#) ()
This method dispatches all available incoming commands and then sends this client's outgoing commands. It uses DispatchIncomingCommands and SendOutgoingCommands to do that.
- bool [OpFindFriends](#) (string[] friendsToFind)
Request the rooms and online status for a list of friends. All clients should set a unique UserId before connecting. The result is available in this.FriendList.
- bool [OpJoinLobby](#) ([TypedLobby](#) lobby)
If already connected to a Master Server, this joins the specified lobby. This request triggers an [OnOperation←Response\(\)](#) call and the callback OnJoinedLobby().
- bool [OpLeaveLobby](#) ()
Opposite of joining a lobby. You don't have to explicitly leave a lobby to join another (client can be in one max, at any time).
- bool [OpJoinRandomRoom](#) ([OpJoinRandomRoomParams](#) opJoinRandomRoomParams=null)
Joins a random room that matches the filter. Will callback: OnJoinedRoom or OnJoinRandomFailed.
- bool [OpCreateRoom](#) ([EnterRoomParams](#) enterRoomParams)
Creates a new room. Will callback: OnCreatedRoom and OnJoinedRoom or OnCreateRoomFailed.
- bool [OpJoinOrCreateRoom](#) ([EnterRoomParams](#) enterRoomParams)
Joins a specific room by name and creates it on demand. Will callback: OnJoinedRoom or OnJoinRoomFailed.
- bool [OpJoinRoom](#) ([EnterRoomParams](#) enterRoomParams)
Joins a room by name. Will callback: OnJoinedRoom or OnJoinRoomFailed.
- bool [OpRejoinRoom](#) (string roomName)
Rejoins a room by roomName (using the userID internally to return). Will callback: OnJoinedRoom or OnJoinRoom←Failed.
- bool [OpLeaveRoom](#) (bool becomeInactive, bool sendAuthCookie=false)
Leaves the current room, optionally telling the server that the user is just becoming inactive. Will callback: OnLeft←Room.
- bool [OpGetGameList](#) ([TypedLobby](#) typedLobby, string sqlLobbyFilter)

- Gets a list of games matching a SQL-like where clause.*
- bool [OpSetCustomPropertiesOfActor](#) (int actorNr, Hashtable propertiesToSet, Hashtable expectedProperties=null, [WebFlags](#) webFlags=null)
 - Updates and synchronizes a [Player](#)'s Custom Properties. Optionally, expectedProperties can be provided as condition.*
- bool [OpSetCustomPropertiesOfRoom](#) (Hashtable propertiesToSet, Hashtable expectedProperties=null, [WebFlags](#) webFlags=null)
 - Updates and synchronizes this [Room](#)'s Custom Properties. Optionally, expectedProperties can be provided as condition.*
- bool [OpSetPropertiesOfRoom](#) (Hashtable gameProperties, Hashtable expectedProperties=null, [WebFlags](#) webFlags=null)
 - Internally used to cache and set properties (including well known properties).*
- virtual bool [OpRaiseEvent](#) (byte eventCode, object customEventContent, [RaiseEventOptions](#) raiseEventOptions, SendOptions sendOptions)
 - Send an event with custom code/type and any content to the other players in the same room.*
- virtual bool [OpChangeGroups](#) (byte[] groupsToRemove, byte[] groupsToAdd)
 - Operation to handle this client's interest groups (for events in room).*
- void [ChangeLocalID](#) (int newID)
 - Internally used to set the LocalPlayer's ID (from -1 to the actual in-room ID).*
- virtual void [DebugReturn](#) (DebugLevel level, string message)
 - Debug output of low level api (and this client).*
- virtual void [OnOperationResponse](#) (OperationResponse operationResponse)
 - Uses the OperationResponses provided by the server to advance the internal state and call ops as needed.*
- virtual void [OnStatusChanged](#) (StatusCode statusCode)
 - Uses the connection's statusCodes to advance the internal state and call operations as needed.*
- virtual void [OnEvent](#) (EventData photonEvent)
 - Uses the photonEvent's provided by the server to advance the internal state and call ops as needed.*
- virtual void [OnMessage](#) (object message)
 - In [Photon](#) 4, "raw messages" will get their own callback method in the interface. Not used yet.*
- bool [OpWebRpc](#) (string uriPath, object parameters, bool sendAuthCookie=false)
 - This operation makes [Photon](#) call your custom web-service by path/name with the given parameters (converted into Json).*
- void [AddCallbackTarget](#) (object target)
 - Registers an object for callbacks for the implemented callback-interfaces.*
- void [RemoveCallbackTarget](#) (object target)
 - Unregisters an object from callbacks for the implemented callback-interfaces.*

Public Attributes

- [AuthModeOption](#) [AuthMode](#) = [AuthModeOption.Auth](#)
 - Enables the new Authentication workflow.*
- [EncryptionMode](#) [EncryptionMode](#) = [EncryptionMode.PayloadEncryption](#)
 - Defines how the communication gets encrypted.*
- [ConnectionProtocol](#) [ExpectedProtocol](#) = [ConnectionProtocol.Udp](#)
 - The protocol which will be used on Master- and Gameserver.*
- string [NameServerHost](#) = "ns.exitgames.com"
 - Name Server Host Name for [Photon](#) Cloud. Without port and without any prefix.*
- string [NameServerHttp](#) = "http://ns.exitgames.com:80/photon/n"
 - Name Server for HTTP connections to the [Photon](#) Cloud. Includes prefix and port.*
- [ConnectionCallbacksContainer](#) [ConnectionCallbackTargets](#) = new [ConnectionCallbacksContainer](#)()
 - Wraps up the target objects for a group of callbacks, so they can be called conveniently.*
- [MatchMakingCallbacksContainer](#) [MatchMakingCallbackTargets](#) = new [MatchMakingCallbacksContainer](#)()

Wraps up the target objects for a group of callbacks, so they can be called conveniently.

- bool [EnableLobbyStatistics](#)

If enabled, the client will get a list of available lobbies from the Master Server.

- [RegionHandler](#) [RegionHandler](#)

Contains the list if enabled regions this client may use. Null, unless the client got a response to [OpGetRegions](#).

Properties

- [LoadBalancingPeer](#) [LoadBalancingPeer](#) [get]

The client uses a [LoadBalancingPeer](#) as API to communicate with the server. This is public for ease-of-use: Some methods like [OpRaiseEvent](#) are not relevant for the connection state and don't need a override.

- string [AppVersion](#) [get, set]

The version of your client. A new version also creates a new "virtual app" to separate players from older client versions.

- string [AppId](#) [get, set]

The AppId as assigned from the [Photon](#) Cloud. If you host yourself, this is the "regular" [Photon](#) Server Application Name (most likely: "LoadBalancing").

- [AuthenticationValues](#) [AuthValues](#) [get, set]

User authentication values to be sent to the [Photon](#) server right after connecting.

- bool [IsUsingNameServer](#) [get, set]

True if this client uses a NameServer to get the Master Server address.

- string [NameServerAddress](#) [get]

Name Server Address for [Photon](#) Cloud (based on current protocol). You can use the default values and usually won't have to set this value.

- bool [UseAlternativeUdpPorts](#) [get, set]

Use the alternative ports for UDP connections in the Public Cloud (27000 to 27003).

- string [CurrentServerAddress](#) [get]

The currently used server address (if any). The type of server is define by Server property.

- string [MasterServerAddress](#) [get, set]

Your Master Server address. In PhotonCloud, call [ConnectToRegionMaster\(\)](#) to find your Master Server.

- string [GameServerAddress](#) [get, set]

The game server's address for a particular room. In use temporarily, as assigned by master.

- [ServerConnection](#) [Server](#) [get]

The server this client is currently connected or connecting to.

- [ClientState](#) [State](#) [get, set]

Current state this client is in. Careful: several states are "transitions" that lead to other states.

- bool [IsConnected](#) [get]

Returns if this client is currently connected or connecting to some type of server.

- bool [IsConnectedAndReady](#) [get]

A refined version of [IsConnected](#) which is true only if your connection is ready to send operations.

- [DisconnectCause](#) [DisconnectedCause](#) [get, protected set]

Summarizes (aggregates) the different causes for disconnects of a client.

- bool [InLobby](#) [get]

Internal value if the client is in a lobby.

- [TypedLobby](#) [CurrentLobby](#) [get, set]

The lobby this client currently uses. Defined when joining a lobby or creating rooms

- [Player](#) [LocalPlayer](#) [get, set]

The local player is never null but not valid unless the client is in a room, too. The ID will be -1 outside of rooms.

- string [NickName](#) [get, set]

The nickname of the player (synced with others). Same as [client.LocalPlayer.NickName](#).

- string [UserId](#) [get, set]

- An ID for this user. Sent in *OpAuthenticate* when you connect. If not set, the *PlayerName* is applied during connect.
- **Room** *CurrentRoom* [get]

The current room this client is connected to (null if none available).
- bool *InRoom* [get]

Is true while being in a room (*this.state == ClientState.Joined*).
- int *PlayersOnMasterCount* [get, set]

Statistic value available on master server: Players on master (looking for games).
- int *PlayersInRoomsCount* [get, set]

Statistic value available on master server: Players in rooms (playing).
- int *RoomsCount* [get, set]

Statistic value available on master server: Rooms currently created.
- bool *IsFetchingFriendList* [get]

Internal flag to know if the client currently fetches a friend list.
- string *CloudRegion* [get]

The cloud region this client connects to. Set by *ConnectToRegionMaster()*. Not set if you don't use a *NameServer*!

Events

- Action< *ClientState*, *ClientState* > *StateChanged*

Register a method to be called when this client's *ClientState* gets set.
- Action< *EventData* > *EventReceived*

Register a method to be called when an event got dispatched. Gets called after the *LoadBalancingClient* handled the internal events first.
- Action< *OperationResponse* > *OpResponseReceived*

Register a method to be called when an operation response is received.

8.47.1 Detailed Description

This class implements the *Photon* LoadBalancing workflow by using a *LoadBalancingPeer*. It keeps a state and will automatically execute transitions between the Master and Game Servers.

This class (and the *Player* class) should be extended to implement your own game logic. You can override *CreatePlayer* as "factory" method for *Players* and return your own *Player* instances. The State of this class is essential to know when a client is in a lobby (or just on the master) and when in a game where the actual gameplay should take place. Extension notes: An extension of this class should override the methods of the *IPhotonPeerListener*, as they are called when the state changes. Call *base.method* first, then pick the operation or state you want to react to and put it in a switch-case. We try to provide demo to each platform where this api can be used, so lookout for those.

8.47.2 Constructor & Destructor Documentation

8.47.2.1 LoadBalancingClient (ConnectionProtocol protocol = ConnectionProtocol.Udp)

Creates a *LoadBalancingClient* with UDP protocol or the one specified.

Parameters

<i>protocol</i>	Specifies the network protocol to use for connections.
-----------------	--

8.47.2.2 LoadBalancingClient (string masterAddress, string appld, string gameVersion, ConnectionProtocol protocol = ConnectionProtocol.Udp)

Creates a *LoadBalancingClient*, setting various values needed before connecting.

Parameters

<i>masterAddress</i>	The Master Server's address to connect to. Used in Connect.
<i>appld</i>	The Appld of this title. Needed for the Photon Cloud. Find it in the Dashboard.
<i>gameVersion</i>	A version for this client/build. In the Photon Cloud, players are separated by Appld, Game↔Version and Region .
<i>protocol</i>	Specifies the network protocol to use for connections.

8.47.3 Member Function Documentation

8.47.3.1 void AddCallbackTarget (object *target*)

Registers an object for callbacks for the implemented callback-interfaces.

The covered callback interfaces are: [IConnectionCallbacks](#), [IMatchmakingCallbacks](#), [ILobbyCallbacks](#), [IInRoom↔Callbacks](#), [IOnEventCallback](#) and [IWebRpcCallback](#).

See: *The object that registers to get callbacks from this client.*

8.47.3.2 void ChangeLocalID (int *newID*)

Internally used to set the LocalPlayer's ID (from -1 to the actual in-room ID).

Parameters

<i>newID</i>	New actor ID (a.k.a actorNr) assigned when joining a room.
--------------	--

8.47.3.3 virtual bool Connect () [virtual]

Starts the "process" to connect to a Master Server, using MasterServerAddress and Appld properties.

To connect to the [Photon](#) Cloud, use [ConnectToRegionMaster\(\)](#).

The process to connect includes several steps: the actual connecting, establishing encryption, authentication (of app and optionally the user) and connecting to the MasterServer

Users can connect either anonymously or use "Custom Authentication" to verify each individual player's login. Custom Authentication in [Photon](#) uses external services and communities to verify users. While the client provides a user's info, the service setup is done in the [Photon](#) Cloud Dashboard. The parameter authValues will set this.↔AuthValues and use them in the connect process.

Connecting to the [Photon](#) Cloud might fail due to:

- Network issues ([OnStatusChanged\(\)](#) [StatusCode.ExceptionOnConnect](#))
- [Region](#) not available ([OnOperationResponse\(\)](#) for OpAuthenticate with ReturnCode == [ErrorCode.Invalid↔Region](#))
- Subscription CCU limit reached ([OnOperationResponse\(\)](#) for OpAuthenticate with ReturnCode == [Error↔Code.MaxCcuReached](#))

8.47.3.4 bool ConnectToNameServer ()

Connects to the NameServer for [Photon](#) Cloud, where a region and server list can be obtained.

OpGetRegions

Returns

If the workflow was started or failed right away.

8.47.3.5 `bool ConnectToRegionMaster (string region)`

Connects you to a specific region's Master Server, using the Name Server to find the IP.

Returns

If the operation could be sent. If false, no operation was sent.

8.47.3.6 `virtual void DebugReturn (DebugLevel level, string message)` [virtual]

Debug output of low level api (and this client).

This method is not responsible to keep up the state of a [LoadBalancingClient](#). Calling base.DebugReturn on overrides is optional.

8.47.3.7 `void Disconnect ()`

Disconnects this client from any server and sets this.State if the connection is successfully closed.

8.47.3.8 `virtual void OnEvent (EventData photonEvent)` [virtual]

Uses the photonEvent's provided by the server to advance the internal state and call ops as needed.

This method is essential to update the internal state of a [LoadBalancingClient](#). Overriding methods must call base.OnEvent.

8.47.3.9 `virtual void OnMessage (object message)` [virtual]

In [Photon](#) 4, "raw messages" will get their own callback method in the interface. Not used yet.

8.47.3.10 `virtual void OnOperationResponse (OperationResponse operationResponse)` [virtual]

Uses the OperationResponses provided by the server to advance the internal state and call ops as needed.

When this method finishes, it will call your OnOpResponseAction (if any). This way, you can get any operation response without overriding this class.

To implement a more complex game/app logic, you should implement your own class that inherits the [Load↔BalancingClient](#). Override this method to use your own operation-responses easily.

This method is essential to update the internal state of a [LoadBalancingClient](#), so overriding methods must call base.OnOperationResponse().

Parameters

<i>operation↔Response</i>	Contains the server's response for an operation called by this peer.
---------------------------	--

8.47.3.11 `virtual void OnStatusChanged (StatusCode statusCode)` [virtual]

Uses the connection's statusCodes to advance the internal state and call operations as needed.

This method is essential to update the internal state of a [LoadBalancingClient](#). Overriding methods must call base.OnStatusChanged.

8.47.3.12 virtual bool OpChangeGroups (byte[] groupsToRemove, byte[] groupsToAdd) [virtual]

Operation to handle this client's interest groups (for events in room).

Note the difference between passing null and byte[0]: null won't add/remove any groups. byte[0] will add/remove all (existing) groups. First, removing groups is executed. This way, you could leave all groups and join only the ones provided.

Changes become active not immediately but when the server executes this operation (approximately RTT/2).

Parameters

<i>groupsToRemove</i>	Groups to remove from interest. Null will not remove any. A byte[0] will remove all.
<i>groupsToAdd</i>	Groups to add to interest. Null will not add any. A byte[0] will add all current.

Returns

If operation could be enqueued for sending. Sent when calling: Service or SendOutgoingCommands.

8.47.3.13 bool OpCreateRoom (EnterRoomParams enterRoomParams)

Creates a new room. Will callback: OnCreatedRoom and OnJoinedRoom or OnCreateRoomFailed.

When successful, the client will enter the specified room and callback both OnCreatedRoom and OnJoinedRoom. In all error cases, OnCreateRoomFailed gets called.

Creating a room will fail if the room name is already in use or when the [RoomOptions](#) clashing with one another. Check the [EnterRoomParams](#) reference for the various room creation options.

This method can only be called while the client is connected to a Master Server so you should implement the callback OnConnectedToMaster. Check the return value to make sure the operation will be called on the server. Note: There will be no callbacks if this method returned false.

When you're in the room, this client's State will become [ClientState.Joined](#).

When entering a room, this client's [Player](#) Custom Properties will be sent to the room. Use LocalPlayer.SetCustomProperties to set them, even while not yet in the room. Note that the player properties will be cached locally and are not wiped when leaving a room.

You can define an array of expectedUsers, to block player slots in the room for these users. The corresponding feature in [Photon](#) is called "Slot Reservation" and can be found in the doc pages.

Parameters

<i>enterRoomParams</i>	Definition of properties for the room to create.
------------------------	--

Returns

If the operation could be sent currently (requires connection to Master Server).

8.47.3.14 bool OpFindFriends (string[] friendsToFind)

Request the rooms and online status for a list of friends. All clients should set a unique UserId before connecting. The result is available in this.FriendList.

Used on Master Server to find the rooms played by a selected list of users. The result will be stored in LoadBalancingClient.FriendList, which is null before the first server response.

Users identify themselves by setting a UserId in the [LoadBalancingClient](#) instance. This will send the ID in OpAuthenticate during connect (to master and game servers). Note: Changing a player's name doesn't make sense when using a friend list.

The list of usernames must be fetched from some other source (not provided by [Photon](#)).

Internal: The server response includes 2 arrays of info (each index matching a friend from the request): [Parameter↔ Code.FindFriendsResponseOnlineList](#) = bool[] of online states [ParameterCode.FindFriendsResponseRoomIdList](#) = string[] of room names (empty string if not in a room)

Parameters

<i>friendsToFind</i>	Array of friend's names (make sure they are unique).
----------------------	--

Returns

If the operation could be sent (requires connection).

8.47.3.15 bool OpGetGameList (TypedLobby typedLobby, string sqlLobbyFilter)

Gets a list of games matching a SQL-like where clause.

Operation is only available for lobbies of type SqlLobby. This is an async request which triggers a [OnOperation↔ Response\(\)](#) call.

https://doc.photonengine.com/en-us/realtime/current/reference/matchmaking-and-lobby::sql_lobby_type

Parameters

<i>typedLobby</i>	The lobby to query. Has to be of type SqlLobby.
<i>sqlLobbyFilter</i>	The sql query statement.

Returns

If the operation could be sent (has to be connected).

8.47.3.16 bool OpJoinLobby (TypedLobby lobby)

If already connected to a Master Server, this joins the specified lobby. This request triggers an [OnOperation↔ Response\(\)](#) call and the callback OnJoinedLobby().

Parameters

<i>lobby</i>	The lobby to join. Use null for default lobby.
--------------	--

Returns

If the operation could be sent. False, if the client is not IsConnectedAndReady or when it's not connected to a Master Server.

8.47.3.17 bool OpJoinOrCreateRoom (EnterRoomParams enterRoomParams)

Joins a specific room by name and creates it on demand. Will callback: OnJoinedRoom or OnJoinRoomFailed.

Useful when players make up a room name to meet in: All involved clients call the same method and whoever is first, also creates the room.

When successful, the client will enter the specified room. The client which creates the room, will callback both OnCreatedRoom and OnJoinedRoom. Clients that join an existing room will only callback OnJoinedRoom. In all error cases, OnJoinRoomFailed gets called.

Joining a room will fail, if the room is full, closed or when the user already is present in the room (checked by userId).

To return to a room, use OpRejoinRoom.

This method can only be called while the client is connected to a Master Server so you should implement the callback `OnConnectedToMaster`. Check the return value to make sure the operation will be called on the server. Note: There will be no callbacks if this method returned false.

This client's State is set to `ClientState.Joining` immediately, when the operation could be called. In the background, the client will switch servers and call various related operations.

When you're in the room, this client's State will become `ClientState.Joined`.

If you set room properties in `roomOptions`, they get ignored when the room is existing already. This avoids changing the room properties by late joining players.

When entering a room, this client's `Player` Custom Properties will be sent to the room. Use `LocalPlayer.SetCustomProperties` to set them, even while not yet in the room. Note that the player properties will be cached locally and are not wiped when leaving a room.

You can define an array of `expectedUsers`, to block player slots in the room for these users. The corresponding feature in `Photon` is called "Slot Reservation" and can be found in the doc pages.

Parameters

<code>enterRoom↔ Params</code>	Definition of properties for the room to create or join.
------------------------------------	--

Returns

If the operation could be sent currently (requires connection to Master Server).

8.47.3.18 bool OpJoinRandomRoom (OpJoinRandomRoomParams opJoinRandomRoomParams = null)

Joins a random room that matches the filter. Will callback: `OnJoinedRoom` or `OnJoinRandomFailed`.

Used for random matchmaking. You can join any room or one with specific properties defined in `opJoinRandomRoomParams`.

You can use `expectedCustomRoomProperties` and `expectedMaxPlayers` as filters for accepting rooms. If you set `expectedCustomRoomProperties`, a room must have the exact same key values set at Custom Properties. You need to define which Custom `Room` Properties will be available for matchmaking when you create a room. See: `OpCreateRoom(string roomName, RoomOptions roomOptions, TypedLobby lobby)`

This operation fails if no rooms are fitting or available (all full, closed or not visible). It may also fail when actually joining the room which was found. Rooms may close, become full or empty anytime.

This method can only be called while the client is connected to a Master Server so you should implement the callback `OnConnectedToMaster`. Check the return value to make sure the operation will be called on the server. Note: There will be no callbacks if this method returned false.

This client's State is set to `ClientState.Joining` immediately, when the operation could be called. In the background, the client will switch servers and call various related operations.

When you're in the room, this client's State will become `ClientState.Joined`.

When entering a room, this client's `Player` Custom Properties will be sent to the room. Use `LocalPlayer.SetCustomProperties` to set them, even while not yet in the room. Note that the player properties will be cached locally and are not wiped when leaving a room.

More about matchmaking: <https://doc.photonengine.com/en-us/realtime/current/reference/matchmaking>

You can define an array of `expectedUsers`, to block player slots in the room for these users. The corresponding feature in `Photon` is called "Slot Reservation" and can be found in the doc pages.

Parameters

<i>opJoin↔</i> <i>RandomRoom↔</i> <i>Params</i>	Optional definition of properties to filter rooms in random matchmaking.
---	--

Returns

If the operation could be sent currently (requires connection to Master Server).

8.47.3.19 bool OpJoinRoom (EnterRoomParams enterRoomParams)

Joins a room by name. Will callback: OnJoinedRoom or OnJoinRoomFailed.

Useful when using lobbies or when players follow friends or invite each other.

When successful, the client will enter the specified room and callback via OnJoinedRoom. In all error cases, On↔JoinRoomFailed gets called.

Joining a room will fail if the room is full, closed, not existing or when the user already is present in the room (checked by userId).

To return to a room, use OpRejoinRoom. When players invite each other and it's unclear who's first to respond, use OpJoinOrCreateRoom instead.

This method can only be called while the client is connected to a Master Server so you should implement the callback OnConnectedToMaster. Check the return value to make sure the operation will be called on the server. Note: There will be no callbacks if this method returned false.

A room's name has to be unique (per region, appid and gameversion). When your title uses a global matchmaking or invitations (e.g. an external solution), keep regions and the game versions in mind to join a room.

This client's State is set to [ClientState.Joining](#) immediately, when the operation could be called. In the background, the client will switch servers and call various related operations.

When you're in the room, this client's State will become [ClientState.Joined](#).

When entering a room, this client's [Player](#) Custom Properties will be sent to the room. Use LocalPlayer.Set↔CustomProperties to set them, even while not yet in the room. Note that the player properties will be cached locally and are not wiped when leaving a room.

You can define an array of expectedUsers, to reserve player slots in the room for friends or party members. The corresponding feature in [Photon](#) is called "Slot Reservation" and can be found in the doc pages.

Parameters

<i>enterRoom↔</i> <i>Params</i>	Definition of properties for the room to join.
------------------------------------	--

Returns

If the operation could be sent currently (requires connection to Master Server).

8.47.3.20 bool OpLeaveLobby ()

Opposite of joining a lobby. You don't have to explicitly leave a lobby to join another (client can be in one max, at any time).

Returns

If the operation could be sent (has to be connected).

8.47.3.21 `bool OpLeaveRoom (bool becomeInactive, bool sendAuthCookie = false)`

Leaves the current room, optionally telling the server that the user is just becoming inactive. Will callback: `OnLeftRoom`.

`OpLeaveRoom` skips execution when the room is null or the server is not `GameServer` or the client is disconnecting from GS already. `OpLeaveRoom` returns false in those cases and won't change the state, so check return of this method.

In some cases, this method will skip the `OpLeave` call and just call `Disconnect()`, which not only leaves the room but also the server. `Disconnect` also triggers a leave and so that workflow is quicker.

Parameters

<i>becomeInactive</i>	If true, this player becomes inactive in the game and can return later (if <code>PlayerTTL</code> of the room is <code>!= 0</code>).
<i>sendAuthCookie</i>	<code>WebFlag</code> : Securely transmit the encrypted object <code>AuthCookie</code> to the web service in <code>Path</code> Leave webhook when available

Returns

If the current room could be left (impossible while not in a room).

8.47.3.22 `virtual bool OpRaiseEvent (byte eventCode, object customEventContent, RaiseEventOptions raiseEventOptions, SendOptions sendOptions) [virtual]`

Send an event with custom code/type and any content to the other players in the same room.

Parameters

<i>eventCode</i>	Identifies this type of event (and the content). Your game's event codes can start with 0.
<i>customEventContent</i>	Any serializable datatype (including <code>Hashtable</code> like the other <code>OpRaiseEvent</code> overloads).
<i>raiseEventOptions</i>	Contains used send options. If you pass null, the default options will be used.
<i>sendOptions</i>	Send options for reliable, encryption etc

Returns

If operation could be enqueued for sending. Sent when calling: `Service` or `SendOutgoingCommands`.

8.47.3.23 `bool OpRejoinRoom (string roomName)`

Rejoins a room by `roomName` (using the `userID` internally to return). Will callback: `OnJoinedRoom` or `OnJoinRoomFailed`.

Used to return to a room, before this user was removed from the players list. Internally, the `userID` will be checked by the server, to make sure this user is in the room (active or inactive).

In contrast to `join`, this operation never adds a players to a room. It will attempt to retake an existing spot in the playerlist or fail. This makes sure the client doesn't accidentally join a room when the game logic meant to re-activate an existing actor in an existing room.

This method will fail on the server, when the room does not exist, can't be loaded (persistent rooms) or when the `userId` is not in the player list of this room. This will lead to a callback `OnJoinRoomFailed`.

Rejoining room will not send any player properties. Instead client will receive up-to-date ones from server. If you want to set new player properties, do it once rejoined.

8.47.3.24 `bool OpSetCustomPropertiesOfActor (int actorNr, Hashtable propertiesToSet, Hashtable expectedProperties = null, WebFlags webFlags = null)`

Updates and synchronizes a [Player](#)'s Custom Properties. Optionally, expectedProperties can be provided as condition.

Custom Properties are a set of string keys and arbitrary values which is synchronized for the players in a [Room](#). They are available when the client enters the room, as they are in the response of OpJoin and OpCreate.

Custom Properties either relate to the (current) [Room](#) or a [Player](#) (in that [Room](#)).

Both classes locally cache the current key/values and make them available as property: CustomProperties. This is provided only to read them. You must use the method SetCustomProperties to set/modify them.

Any client can set any Custom Properties anytime (when in a room). It's up to the game logic to organize how they are best used.

You should call SetCustomProperties only with key/values that are new or changed. This reduces traffic and performance.

Unless you define some expectedProperties, setting key/values is always permitted. In this case, the property-setting client will not receive the new values from the server but instead update its local cache in SetCustomProperties.

If you define expectedProperties, the server will skip updates if the server property-cache does not contain all expectedProperties with the same values. In this case, the property-setting client will get an update from the server and update it's cached key/values at about the same time as everyone else.

The benefit of using expectedProperties can be only one client successfully sets a key from one known value to another. As example: Store who owns an item in a Custom Property "ownedBy". It's 0 initially. When multiple players reach the item, they all attempt to change "ownedBy" from 0 to their actorNumber. If you use expectedProperties {"ownedBy", 0} as condition, the first player to take the item will have it (and the others fail to set the ownership).

Properties get saved with the game state for Turnbased games (which use IsPersistent = true).

Parameters

<i>actorNr</i>	Defines which player the Custom Properties belong to. ActorID of a player.
<i>propertiesToSet</i>	Hashtable of Custom Properties that changes.
<i>expectedProperties</i>	Provide some keys/values to use as condition for setting the new values. Client must be in room.
<i>webFlags</i>	Defines if the set properties should be forwarded to a WebHook. Client must be in room.

8.47.3.25 `bool OpSetCustomPropertiesOfRoom (Hashtable propertiesToSet, Hashtable expectedProperties = null, WebFlags webFlags = null)`

Updates and synchronizes this [Room](#)'s Custom Properties. Optionally, expectedProperties can be provided as condition.

Custom Properties are a set of string keys and arbitrary values which is synchronized for the players in a [Room](#). They are available when the client enters the room, as they are in the response of OpJoin and OpCreate.

Custom Properties either relate to the (current) [Room](#) or a [Player](#) (in that [Room](#)).

Both classes locally cache the current key/values and make them available as property: CustomProperties. This is provided only to read them. You must use the method SetCustomProperties to set/modify them.

Any client can set any Custom Properties anytime (when in a room). It's up to the game logic to organize how they are best used.

You should call SetCustomProperties only with key/values that are new or changed. This reduces traffic and performance.

Unless you define some expectedProperties, setting key/values is always permitted. In this case, the property-setting client will not receive the new values from the server but instead update its local cache in SetCustomProperties.

Properties.

If you define `expectedProperties`, the server will skip updates if the server property-cache does not contain all `expectedProperties` with the same values. In this case, the property-setting client will get an update from the server and update it's cached key/values at about the same time as everyone else.

The benefit of using `expectedProperties` can be only one client successfully sets a key from one known value to another. As example: Store who owns an item in a Custom Property "ownedBy". It's 0 initially. When multiple players reach the item, they all attempt to change "ownedBy" from 0 to their actorNumber. If you use `expectedProperties {"ownedBy", 0}` as condition, the first player to take the item will have it (and the others fail to set the ownership).

Properties get saved with the game state for Turnbased games (which use `IsPersistent = true`).

Parameters

<i>propertiesToSet</i>	Hashtable of Custom Properties that changes.
<i>expectedProperties</i>	Provide some keys/values to use as condition for setting the new values.
<i>webFlags</i>	Defines web flags for an optional PathProperties webhook.

8.47.3.26 `bool OpSetPropertiesOfRoom (Hashtable gameProperties, Hashtable expectedProperties = null, WebFlags webFlags = null)`

Internally used to cache and set properties (including well known properties).

Requires being in a room (because this attempts to send an operation which will fail otherwise).

8.47.3.27 `bool OpWebRpc (string uriPath, object parameters, bool sendAuthCookie = false)`

This operation makes [Photon](#) call your custom web-service by path/name with the given parameters (converted into Json).

A WebRPC calls a custom, http-based function on a server you provide. The uriPath is relative to a "base path" which is configured server-side. The sent parameters get converted from C# types to Json. Vice versa, the response of the web-service will be converted to C# types and sent back as normal operation response.

To use this feature, you have to setup your server:

For a [Photon](#) Cloud application, [visit the Dashboard](#) and setup "WebHooks". The BaseUrl is used for WebRPCs as well.

The response by [Photon](#) will call `OnOperationResponse()` with Code: `OperationCode.WebRpc`. To get this response, you can derive the [LoadBalancingClient](#), or (much easier) you set a suitable `OnOpResponseAction` to be called.

It's important to understand that the `OperationResponse` tells you if the WebRPC could be called or not but the content of the response will contain the values the web-service sent (if any). If the web-service could not execute the request, it might return another error and a message. This is inside the `OperationResponse`.

The class [WebRpcResponse](#) is a helper-class that extracts the most valuable content from the WebRPC response.

To get a WebRPC response, set a `OnOpResponseAction`:

```
this.OnOpResponseAction = this.OpResponseHandler;
```

It could look like this:

```
public void OpResponseHandler(OperationResponse operationResponse)
{
    if (operationResponse.OperationCode == OperationCode.WebRpc)
    {
        if (operationResponse.ReturnCode != 0)
        {
            Console.WriteLine("WebRpc failed. Response: " + operationResponse.ToStringFull());
        }
    }
}
```

```

        else
        {
            WebRpcResponse webResponse = new WebRpcResponse(operationResponse);
            Console.WriteLine(webResponse.DebugMessage);    // message from the webserver

            // do something with the response...
        }
    }
}

```

Parameters

<i>uriPath</i>	The url path to call, relative to the baseUrl configured on Photon's server-side.
<i>parameters</i>	The parameters to send to the web-service method.
<i>sendAuthCookie</i>	Defines if the authentication cookie gets sent to a WebHook (if setup).

8.47.3.28 bool ReconnectAndRejoin ()

Can be used to return to a room quickly, by directly reconnecting to a game server to rejoin a room.

Rejoining room will not send any player properties. Instead client will receive up-to-date ones from server. If you want to set new player properties, do it once rejoined.

Returns

False, if the conditions are not met. Then, this client does not attempt the ReconnectAndRejoin.

8.47.3.29 bool ReconnectToMaster ()

Can be used to reconnect to the master server after a disconnect.

Common use case: Press the Lock Button on a iOS device and you get disconnected immediately.

8.47.3.30 void RemoveCallbackTarget (object target)

Unregisters an object from callbacks for the implemented callback-interfaces.

The covered callback interfaces are: [IConnectionCallbacks](#), [IMatchmakingCallbacks](#), [ILobbyCallbacks](#), [IInRoomCallbacks](#), [IOnEventCallback](#) and [IWebRpcCallback](#).

See: [.Net Callbacks](#)

Parameters

<i>target</i>	The object that unregisters from getting callbacks.
---------------	---

8.47.3.31 void Service ()

This method dispatches all available incoming commands and then sends this client's outgoing commands. It uses [DispatchIncomingCommands](#) and [SendOutgoingCommands](#) to do that.

The [Photon](#) client libraries are designed to fit easily into a game or application. The application is in control of the context (thread) in which incoming events and responses are executed and has full control of the creation of UDP/TCP packages.

Sending packages and dispatching received messages are two separate tasks. Service combines them into one method at the cost of control. It calls [DispatchIncomingCommands](#) and [SendOutgoingCommands](#).

Call this method regularly (2..20 times a second).

This will Dispatch ANY received commands (unless a reliable command in-order is still missing) and events AND will send queued outgoing commands. Fewer calls might be more effective if a device cannot send many packets per second, as multiple operations might be combined into one package.

You could replace Service by:

```
while (DispatchIncomingCommands()); //Dispatch until everything is Dispatched...
SendOutgoingCommands(); //Send a UDP/TCP package with outgoing messages
```

See also

PhotonPeer.DispatchIncomingCommands, PhotonPeer.SendOutgoingCommands

8.47.4 Member Data Documentation

8.47.4.1 AuthModeOption AuthMode = AuthModeOption.Auth

Enables the new Authentication workflow.

8.47.4.2 ConnectionCallbacksContainer ConnectionCallbackTargets = new ConnectionCallbacksContainer()

Wraps up the target objects for a group of callbacks, so they can be called conveniently.

By using Add or Remove, objects can "subscribe" or "unsubscribe" for this group of callbacks.

8.47.4.3 bool EnableLobbyStatistics

If enabled, the client will get a list of available lobbies from the Master Server.

Set this value before the client connects to the Master Server. While connected to the Master Server, a change has no effect.

Implement OptionalInfoCallbacks.OnLobbyStatisticsUpdate, to get the list of used lobbies.

The lobby statistics can be useful if your title dynamically uses lobbies, depending (e.g.) on current player activity or such. In this case, getting a list of available lobbies, their room-count and player-count can be useful info.

ConnectUsingSettings sets this to the PhotonServerSettings value.

8.47.4.4 EncryptionMode EncryptionMode = EncryptionMode.PayloadEncryption

Defines how the communication gets encrypted.

8.47.4.5 ConnectionProtocol ExpectedProtocol = ConnectionProtocol.Udp

The protocol which will be used on Master- and Gameserver.

When using AuthMode = AuthModeOption.AuthOnceWss, the client uses a wss-connection on the Nameserver but another protocol on the other servers. As the Nameserver sends an address, which is different per protocol, it needs to know the expected protocol.

summary>Simplifies getting the token for connect/init requests, if this feature is enabled.

8.47.4.6 MatchMakingCallbacksContainer MatchMakingCallbackTargets = new MatchMakingCallbacksContainer()

Wraps up the target objects for a group of callbacks, so they can be called conveniently.

By using Add or Remove, objects can "subscribe" or "unsubscribe" for this group of callbacks.

8.47.4.7 `string NameServerHost = "ns.exitgames.com"`

Name Server Host Name for [Photon](#) Cloud. Without port and without any prefix.

8.47.4.8 `string NameServerHttp = "http://ns.exitgames.com:80/photon/n"`

Name Server for HTTP connections to the [Photon](#) Cloud. Includes prefix and port.

8.47.4.9 `RegionHandler RegionHandler`

Contains the list if enabled regions this client may use. Null, unless the client got a response to `OpGetRegions`.

8.47.5 Property Documentation

8.47.5.1 `string AppId` `[get]`, `[set]`

The AppID as assigned from the [Photon](#) Cloud. If you host yourself, this is the "regular" [Photon](#) Server Application Name (most likely: "LoadBalancing").

8.47.5.2 `string AppVersion` `[get]`, `[set]`

The version of your client. A new version also creates a new "virtual app" to separate players from older client versions.

8.47.5.3 `AuthenticationValues AuthValues` `[get]`, `[set]`

User authentication values to be sent to the [Photon](#) server right after connecting.

Set this property or pass [AuthenticationValues](#) by `Connect(..., authValues)`.

8.47.5.4 `string CloudRegion` `[get]`

The cloud region this client connects to. Set by [ConnectToRegionMaster\(\)](#). Not set if you don't use a NameServer!

8.47.5.5 `TypedLobby CurrentLobby` `[get]`, `[set]`

The lobby this client currently uses. Defined when joining a lobby or creating rooms

8.47.5.6 `Room CurrentRoom` `[get]`

The current room this client is connected to (null if none available).

8.47.5.7 `string CurrentServerAddress` `[get]`

The currently used server address (if any). The type of server is define by `Server` property.

8.47.5.8 `DisconnectCause DisconnectedCause` `[get]`, `[protected set]`

Summarizes (aggregates) the different causes for disconnects of a client.

A disconnect can be caused by: errors in the network connection or some vital operation failing (which is considered "high level"). While operations always trigger a call to `OnOperationResponse`, connection related changes are treated in `OnStatusChanged`. The `DisconnectCause` is set in either case and summarizes the causes for any disconnect in a single state value which can be used to display (or debug) the cause for disconnection.

8.47.5.9 `string GameServerAddress` `[get]`, `[set]`

The game server's address for a particular room. In use temporarily, as assigned by master.

8.47.5.10 `bool InLobby` `[get]`

Internal value if the client is in a lobby.

This is used to re-set `this.State`, when joining/creating a room fails.

8.47.5.11 `bool InRoom` `[get]`

Is true while being in a room (`this.state == ClientState.Joined`).

Aside from polling this value, game logic should implement [IMatchmakingCallbacks](#) in some class and react when that gets called.

`OpRaiseEvent`, `OpLeave` and some other operations can only be used (successfully) when the client is in a room. PUN's `PhotonNetwork.InRoom` will support being `InRoom` in it's offline mode (by providing it's own property).

8.47.5.12 `bool IsConnected` `[get]`

Returns if this client is currently connected or connecting to some type of server.

This is even true while switching servers. Use `IsConnectedAndReady` to check only for those states that enable you to send Operations.

8.47.5.13 `bool IsConnectedAndReady` `[get]`

A refined version of `IsConnected` which is true only if your connection is ready to send operations.

Not all operations can be called on all types of servers. If an operation is unavailable on the currently connected server, this will result in a `OperationResponse` with `ErrorCode` `!= 0`.

Examples: The `NameServer` allows `OpGetRegions` which is not available anywhere else. The `MasterServer` does not allow you to send events (`OpRaiseEvent`) and on the `GameServer` you are unable to join a lobby (`OpJoinLobby`).

To check which server you are on, use: `PhotonNetwork.Server`.

8.47.5.14 `bool IsFetchingFriendList` `[get]`

Internal flag to know if the client currently fetches a friend list.

8.47.5.15 `bool IsUsingNameServer` `[get]`, `[set]`

True if this client uses a `NameServer` to get the Master Server address.

This value is public, despite being an internal value, which should only be set by this client or PUN.

8.47.5.16 LoadBalancingPeer LoadBalancingPeer [get]

The client uses a [LoadBalancingPeer](#) as API to communicate with the server. This is public for ease-of-use: Some methods like `OpRaiseEvent` are not relevant for the connection state and don't need a override.

8.47.5.17 Player LocalPlayer [get], [set]

The local player is never null but not valid unless the client is in a room, too. The ID will be -1 outside of rooms.

8.47.5.18 string MasterServerAddress [get], [set]

Your Master Server address. In PhotonCloud, call [ConnectToRegionMaster\(\)](#) to find your Master Server.

In the [Photon](#) Cloud, explicit definition of a Master Server Address is not best practice. The [Photon](#) Cloud has a "Name Server" which redirects clients to a specific Master Server (per [Region](#) and AppId).

8.47.5.19 string NameServerAddress [get]

Name Server Address for [Photon](#) Cloud (based on current protocol). You can use the default values and usually won't have to set this value.

8.47.5.20 string NickName [get], [set]

The nickname of the player (synced with others). Same as `client.LocalPlayer.NickName`.

8.47.5.21 int PlayersInRoomsCount [get], [set]

Statistic value available on master server: Players in rooms (playing).

8.47.5.22 int PlayersOnMasterCount [get], [set]

Statistic value available on master server: Players on master (looking for games).

8.47.5.23 int RoomsCount [get], [set]

Statistic value available on master server: Rooms currently created.

8.47.5.24 ServerConnection Server [get]

The server this client is currently connected or connecting to.

Each server (NameServer, MasterServer, GameServer) allow some operations and reject others.

8.47.5.25 ClientState State [get], [set]

Current state this client is in. Careful: several states are "transitions" that lead to other states.

8.47.5.26 bool UseAlternativeUdpPorts [get], [set]

Use the alternative ports for UDP connections in the Public Cloud (27000 to 27003).

This should be used when players have issues with connection stability. Some players reported better connectivity for Steam games. The effect might vary, which is why the alternative ports are not the new default.

The alternative (server) ports are 27000 up to 27003.

The values are applied by replacing any incoming server-address string accordingly. You only need to set this to true though.

This value does not affect TCP or WebSocket connections.

8.47.5.27 `string UserId` `[get]`, `[set]`

An ID for this user. Sent in `OpAuthenticate` when you connect. If not set, the `PlayerName` is applied during connect.

On connect, if the `UserId` is null or empty, the client will copy the `PlayName` to `UserId`. If `PlayerName` is not set either (before connect), the server applies a temporary ID which stays unknown to this client and other clients.

The `UserId` is what's used in `FindFriends` and for fetching data for your account (with `WebHooks` e.g.).

By convention, set this ID before you connect, not while being connected. There is no error but the ID won't change while being connected.

8.47.6 Event Documentation

8.47.6.1 `Action<EventData> EventReceived`

Register a method to be called when an event got dispatched. Gets called after the [LoadBalancingClient](#) handled the internal events first.

This is an alternative to extending [LoadBalancingClient](#) to override `OnEvent()`.

Note that `OnEvent` is calling `EventReceived` after it handled internal events first. That means for example: Joining players will already be in the player list but leaving players will already be removed from the room.

8.47.6.2 `Action<OperationResponse> OpResponseReceived`

Register a method to be called when an operation response is received.

This is an alternative to extending [LoadBalancingClient](#) to override `OnOperationResponse()`.

Note that `OnOperationResponse` gets executed before your `Action` is called. That means for example: The `OpJoinLobby` response already set the state to "JoinedLobby" and the response to `OpLeave` already triggered the `Disconnect` before this is called.

8.47.6.3 `Action<ClientState, ClientState> StateChanged`

Register a method to be called when this client's `ClientState` gets set.

This can be useful to react to being connected, joined into a room, etc.

8.48 LoadBalancingPeer Class Reference

A `LoadbalancingPeer` provides the operations and enum definitions needed to use the loadbalancing server application which is also used in [Photon](#) Cloud.

Inherits `PhotonPeer`.

Public Member Functions

- [LoadBalancingPeer](#) (ConnectionProtocol protocolType)
Creates a Peer with specified connection protocol. You need to set the Listener before using the peer.
- [LoadBalancingPeer](#) (IPhotonPeerListener listener, ConnectionProtocol protocolType)
Creates a Peer with specified connection protocol and a Listener for callbacks.
- virtual bool **OpGetRegions** (string appld)
- virtual bool [OpJoinLobby](#) ([TypedLobby](#) lobby=null)
Joins the lobby on the Master Server, where you get a list of RoomInfos of currently open rooms. This is an async request which triggers a OnOperationResponse() call.
- virtual bool [OpLeaveLobby](#) ()
Leaves the lobby on the Master Server. This is an async request which triggers a OnOperationResponse() call.
- virtual bool [OpCreateRoom](#) ([EnterRoomParams](#) opParams)
Creates a room (on either Master or Game Server). The OperationResponse depends on the server the peer is connected to: Master will return a Game Server to connect to. Game Server will return the joined [Room](#)'s data. This is an async request which triggers a OnOperationResponse() call.
- virtual bool [OpJoinRoom](#) ([EnterRoomParams](#) opParams)
Joins a room by name or creates new room if room with given name not exists. The OperationResponse depends on the server the peer is connected to: Master will return a Game Server to connect to. Game Server will return the joined [Room](#)'s data. This is an async request which triggers a OnOperationResponse() call.
- virtual bool [OpJoinRandomRoom](#) ([OpJoinRandomRoomParams](#) opJoinRandomRoomParams)
Operation to join a random, available room. Overloads take additional player properties. This is an async request which triggers a OnOperationResponse() call. If all rooms are closed or full, the OperationResponse will have a returnCode of [ErrorCode.NoRandomMatchFound](#). If successful, the OperationResponse contains a gameserver address and the name of some room.
- virtual bool [OpLeaveRoom](#) (bool becomeInactive, bool sendAuthCookie=false)
Leaves a room with option to come back later or "for good".
- virtual bool [OpGetGameList](#) ([TypedLobby](#) lobby, string queryData)
Gets a list of games matching a SQL-like where clause.
- virtual bool [OpFindFriends](#) (string[] friendsToFind)
Request the rooms and online status for a list of friends (each client must set a unique username via OpAuthenticate).
- bool **OpSetCustomPropertiesOfActor** (int actorNr, Hashtable actorProperties)
- bool **OpSetCustomPropertiesOfRoom** (Hashtable gameProperties)
- virtual bool [OpAuthenticate](#) (string appld, string appVersion, [AuthenticationValues](#) authValues, string regionCode, bool getLobbyStatistics)
Sends this app's appld and appVersion to identify this application server side. This is an async request which triggers a OnOperationResponse() call.
- virtual bool [OpAuthenticateOnce](#) (string appld, string appVersion, [AuthenticationValues](#) authValues, string regionCode, [EncryptionMode](#) encryptionMode, ConnectionProtocol expectedProtocol)
Sends this app's appld and appVersion to identify this application server side. This is an async request which triggers a OnOperationResponse() call.
- virtual bool [OpChangeGroups](#) (byte[] groupsToRemove, byte[] groupsToAdd)
Operation to handle this client's interest groups (for events in room).
- virtual bool [OpRaiseEvent](#) (byte eventCode, object customEventContent, [RaiseEventOptions](#) raiseEventOptions, SendOptions sendOptions)
Send an event with custom code/type and any content to the other players in the same room.
- virtual bool [OpSettings](#) (bool receiveLobbyStats)
Internally used operation to set some "per server" settings. This is for the Master Server.

Protected Member Functions

- void **OpSetPropertyOfRoom** (byte propCode, object value)

8.48.1 Detailed Description

A LoadbalancingPeer provides the operations and enum definitions needed to use the loadbalancing server application which is also used in [Photon](#) Cloud.

Internally used by PUN. The [LoadBalancingPeer](#) does not keep a state, instead this is done by a [LoadBalancingClient](#).

8.48.2 Constructor & Destructor Documentation

8.48.2.1 LoadBalancingPeer (ConnectionProtocol *protocolType*)

Creates a Peer with specified connection protocol. You need to set the Listener before using the peer.

Each connection protocol has its own default networking ports for [Photon](#).

Parameters

<i>protocolType</i>	The preferred option is UDP.
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8.48.2.2 LoadBalancingPeer (IPhotonPeerListener *listener*, ConnectionProtocol *protocolType*)

Creates a Peer with specified connection protocol and a Listener for callbacks.

8.48.3 Member Function Documentation

8.48.3.1 virtual bool OpAuthenticate (string *appld*, string *appVersion*, AuthenticationValues *authValues*, string *regionCode*, bool *getLobbyStatistics*) [virtual]

Sends this app's *appld* and *appVersion* to identify this application server side. This is an async request which triggers a `OnOperationResponse()` call.

This operation makes use of encryption, if that is established before. See: `EstablishEncryption()`. Check encryption with `IsEncryptionAvailable`. This operation is allowed only once per connection (multiple calls will have [ErrorCode](#) != Ok).

Parameters

<i>appld</i>	Your application's name or ID to authenticate. This is assigned by Photon Cloud (webpage).
<i>appVersion</i>	The client's version (clients with differing client <i>appVersions</i> are separated and players don't meet).
<i>authValues</i>	Contains all values relevant for authentication. Even without account system (external Custom Auth), the clients are allowed to identify themselves.
<i>regionCode</i>	Optional region code, if the client should connect to a specific Photon Cloud Region .
<i>getLobbyStatistics</i>	Set to true on Master Server to receive "Lobby Statistics" events.

Returns

If the operation could be sent (has to be connected).

8.48.3.2 virtual bool OpAuthenticateOnce (string *appld*, string *appVersion*, AuthenticationValues *authValues*, string *regionCode*, EncryptionMode *encryptionMode*, ConnectionProtocol *expectedProtocol*) [virtual]

Sends this app's *appld* and *appVersion* to identify this application server side. This is an async request which triggers a `OnOperationResponse()` call.

This operation makes use of encryption, if that is established before. See: [EstablishEncryption\(\)](#). Check encryption with [IsEncryptionAvailable](#). This operation is allowed only once per connection (multiple calls will have [ErrorCode](#) != Ok).

Parameters

<i>appld</i>	Your application's name or ID to authenticate. This is assigned by Photon Cloud (webpage).
<i>appVersion</i>	The client's version (clients with differing client appVersions are separated and players don't meet).
<i>authValues</i>	Optional authentication values. The client can set no values or a UserId or some parameters for Custom Authentication by a server.
<i>regionCode</i>	Optional region code, if the client should connect to a specific Photon Cloud Region .
<i>encryptionMode</i>	
<i>expected↔ Protocol</i>	

Returns

If the operation could be sent (has to be connected).

8.48.3.3 virtual bool OpChangeGroups (byte[] groupsToRemove, byte[] groupsToAdd) [virtual]

Operation to handle this client's interest groups (for events in room).

Note the difference between passing null and byte[0]: null won't add/remove any groups. byte[0] will add/remove all (existing) groups. First, removing groups is executed. This way, you could leave all groups and join only the ones provided.

Changes become active not immediately but when the server executes this operation (approximately RTT/2).

Parameters

<i>groupsTo↔ Remove</i>	Groups to remove from interest. Null will not remove any. A byte[0] will remove all.
<i>groupsToAdd</i>	Groups to add to interest. Null will not add any. A byte[0] will add all current.

Returns

If operation could be enqueued for sending. Sent when calling: [Service](#) or [SendOutgoingCommands](#).

8.48.3.4 virtual bool OpCreateRoom (EnterRoomParams opParams) [virtual]

Creates a room (on either Master or Game Server). The [OperationResponse](#) depends on the server the peer is connected to: Master will return a Game Server to connect to. Game Server will return the joined [Room](#)'s data. This is an async request which triggers a [OnOperationResponse\(\)](#) call.

If the room is already existing, the [OperationResponse](#) will have a [returnCode](#) of [ErrorCode.GameAlreadyExists](#).

8.48.3.5 virtual bool OpFindFriends (string[] friendsToFind) [virtual]

Request the rooms and online status for a list of friends (each client must set a unique username via [Op↔Authenticate](#)).

Used on Master Server to find the rooms played by a selected list of users. Users identify themselves by using [Op↔Authenticate](#) with a unique username. The list of usernames must be fetched from some other source (not provided by [Photon](#)).

The server response includes 2 arrays of info (each index matching a friend from the request): [Parameter↔Code.FindFriendsResponseOnlineList](#) = bool[] of online states [ParameterCode.FindFriendsResponseRoomIdList](#) = string[] of room names (empty string if not in a room)

Parameters

<i>friendsToFind</i>	Array of friend's names (make sure they are unique).
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Returns

If the operation could be sent (requires connection).

8.48.3.6 virtual bool OpGetGameList (TypedLobby lobby, string queryData) [virtual]

Gets a list of games matching a SQL-like where clause.

Operation is only available in lobbies of type SqlLobby. This is an async request which triggers a OnOperationResponse() call. Returned game list is stored in RoomInfoList.

https://doc.photonengine.com/en-us/realtime/current/reference/matchmaking-and-lobby::sql_lobby_type

Parameters

<i>lobby</i>	The lobby to query. Has to be of type SqlLobby.
<i>queryData</i>	The sql query statement.

Returns

If the operation could be sent (has to be connected).

8.48.3.7 virtual bool OpJoinLobby (TypedLobby lobby = null) [virtual]

Joins the lobby on the Master Server, where you get a list of RoomInfos of currently open rooms. This is an async request which triggers a OnOperationResponse() call.

Parameters

<i>lobby</i>	The lobby join to.
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Returns

If the operation could be sent (has to be connected).

8.48.3.8 virtual bool OpJoinRandomRoom (OpJoinRandomRoomParams opJoinRandomRoomParams) [virtual]

Operation to join a random, available room. Overloads take additional player properties. This is an async request which triggers a OnOperationResponse() call. If all rooms are closed or full, the OperationResponse will have a returnCode of [ErrorCode.NoRandomMatchFound](#). If successful, the OperationResponse contains a gameserver address and the name of some room.

Returns

If the operation could be sent currently (requires connection).

8.48.3.9 virtual bool OpJoinRoom (EnterRoomParams opParams) [virtual]

Joins a room by name or creates new room if room with given name not exists. The OperationResponse depends on the server the peer is connected to: Master will return a Game Server to connect to. Game Server will return the joined [Room](#)'s data. This is an async request which triggers a OnOperationResponse() call.

If the room is not existing (anymore), the OperationResponse will have a returnCode of [ErrorCode.GameDoesNotExist](#). Other possible ErrorCodes are: GameClosed, GameFull.

Returns

If the operation could be sent (requires connection).

8.48.3.10 virtual bool OpLeaveLobby () [virtual]

Leaves the lobby on the Master Server. This is an async request which triggers a OnOperationResponse() call.

Returns

If the operation could be sent (requires connection).

8.48.3.11 virtual bool OpLeaveRoom (bool *becomeInactive*, bool *sendAuthCookie* = false) [virtual]

Leaves a room with option to come back later or "for good".

Parameters

<i>becomeInactive</i>	Async games can be re-joined (loaded) later on. Set to false, if you want to abandon a game entirely.
<i>sendAuthCookie</i>	WebFlag: Securely transmit the encrypted object AuthCookie to the web service in Path↔ Leave webhook when available

Returns

If the operation can be send currently.

8.48.3.12 virtual bool OpRaiseEvent (byte *eventCode*, object *customEventContent*, RaiseEventOptions *raiseEventOptions*, SendOptions *sendOptions*) [virtual]

Send an event with custom code/type and any content to the other players in the same room.

This override explicitly uses another parameter order to not mix it up with the implementation for Hashtable only.

Parameters

<i>eventCode</i>	Identifies this type of event (and the content). Your game's event codes can start with 0.
<i>customEvent↔ Content</i>	Any serializable datatype (including Hashtable like the other OpRaiseEvent overloads).
<i>raiseEvent↔ Options</i>	Contains (slightly) less often used options. If you pass null, the default options will be used.
<i>sendOptions</i>	Send options for reliable, encryption etc

Returns

If operation could be enqueued for sending. Sent when calling: Service or SendOutgoingCommands.

8.48.3.13 virtual bool OpSettings (bool *receiveLobbyStats*) [virtual]

Internally used operation to set some "per server" settings. This is for the Master Server.

Parameters

<i>receiveLobby↔ Stats</i>	Set to true, to get Lobby Statistics (lists of existing lobbies).
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Returns

False if the operation could not be sent.

8.49 MatchMakingCallbacksContainer Class Reference

Container type for callbacks defined by [IMatchmakingCallbacks](#). See MatchMakingCallbackTargets.

Inherits List< [IMatchmakingCallbacks](#) >, and [IMatchmakingCallbacks](#).

Public Member Functions

- void **AddCallbackTarget** ([IMatchmakingCallbacks](#) target)
- void **RemoveCallbackTarget** ([IMatchmakingCallbacks](#) target)
- void **OnCreatedRoom** ()
Called when this client created a room and entered it. [OnJoinedRoom\(\)](#) will be called as well.
- void **OnJoinedRoom** ()
Called when the [LoadBalancingClient](#) entered a room, no matter if this client created it or simply joined.
- void **OnCreateRoomFailed** (short returnCode, string message)
Called when the server couldn't create a room (OpCreateRoom failed).
- void **OnJoinRandomFailed** (short returnCode, string message)
Called when a previous OpJoinRandom call failed on the server.
- void **OnJoinRoomFailed** (short returnCode, string message)
Called when a previous OpJoinRoom call failed on the server.
- void **OnLeftRoom** ()
Called when the local user/client left a room, so the game's logic can clean up it's internal state.
- void **OnFriendListUpdate** (List< [FriendInfo](#) > friendList)
Called when the server sent the response to a FindFriends request.

8.49.1 Detailed Description

Container type for callbacks defined by [IMatchmakingCallbacks](#). See MatchMakingCallbackTargets.

While the interfaces of callbacks wrap up the methods that will be called, the container classes implement a simple way to call a method on all registered objects.

8.49.2 Member Function Documentation

8.49.2.1 void OnCreatedRoom ()

Called when this client created a room and entered it. [OnJoinedRoom\(\)](#) will be called as well.

This callback is only called on the client which created a room (see OpCreateRoom).

As any client might close (or drop connection) anytime, there is a chance that the creator of a room does not execute OnCreatedRoom.

If you need specific room properties or a "start signal", implement OnMasterClientSwitched() and make each new MasterClient check the room's state.

Implements [IMatchmakingCallbacks](#).

8.49.2.2 void OnCreateRoomFailed (short *returnCode*, string *message*)

Called when the server couldn't create a room (OpCreateRoom failed).

Creating a room may fail for various reasons. Most often, the room already exists (roomname in use) or the [Room↔Options](#) clash and it's impossible to create the room.

When creating a room fails on a Game Server: The client will cache the failure internally and returns to the Master Server before it calls the fail-callback. This way, the client is ready to find/create a room at the moment of the callback. In this case, the client skips calling OnConnectedToMaster but returning to the Master Server will still call OnConnected. Treat callbacks of OnConnected as pure information that the client could connect.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.49.2.3 void OnFriendListUpdate (List< **FriendInfo > *friendList*)**

Called when the server sent the response to a FindFriends request.

After calling OpFindFriends, the Master Server will cache the friend list and send updates to the friend list. The friends includes the name, userId, online state and the room (if any) for each requested user/friend.

Use the friendList to update your UI and store it, if the UI should highlight changes.

Implements [IMatchmakingCallbacks](#).

8.49.2.4 void OnJoinedRoom ()

Called when the [LoadBalancingClient](#) entered a room, no matter if this client created it or simply joined.

When this is called, you can access the existing players in [Room.Players](#), their custom properties and [Room↔CustomProperties](#).

In this callback, you could create player objects. For example in Unity, instantiate a prefab for the player.

If you want a match to be started "actively", enable the user to signal "ready" (using OpRaiseEvent or a Custom Property).

Implements [IMatchmakingCallbacks](#).

8.49.2.5 void OnJoinRandomFailed (short *returnCode*, string *message*)

Called when a previous OpJoinRandom call failed on the server.

The most common causes are that a room is full or does not exist (due to someone else being faster or closing the room).

This operation is only ever sent to the Master Server. Once a room is found by the Master Server, the client will head off to the designated Game Server and use the operation Join on the Game Server.

When using multiple lobbies (via OpJoinLobby or a [TypedLobby](#) parameter), another lobby might have more/fitting rooms.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.49.2.6 void OnJoinRoomFailed (short *returnCode*, string *message*)

Called when a previous OpJoinRoom call failed on the server.

Joining a room may fail for various reasons. Most often, the room is full or does not exist anymore (due to someone else being faster or closing the room).

When joining a room fails on a Game Server: The client will cache the failure internally and returns to the Master Server before it calls the fail-callback. This way, the client is ready to find/create a room at the moment of the callback. In this case, the client skips calling OnConnectedToMaster but returning to the Master Server will still call OnConnected. Treat callbacks of OnConnected as pure information that the client could connect.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.49.2.7 void OnLeftRoom ()

Called when the local user/client left a room, so the game's logic can clean up it's internal state.

When leaving a room, the [LoadBalancingClient](#) will disconnect the Game Server and connect to the Master Server. This wraps up multiple internal actions.

Wait for the callback OnConnectedToMaster, before you use lobbies and join or create rooms.

Implements [IMatchmakingCallbacks](#).

8.50 MonoBehaviourPun Class Reference

This class adds the property photonView, while logging a warning when your game still uses the networkView.

Inherits MonoBehaviour.

Inherited by [MonoBehaviourPunCallbacks](#), [MoveByKeys](#), [OnClickDestroy](#), [OnClickRpc](#), and [SmoothSync↔Movement](#).

Properties

- [PhotonView photonView](#) [get]

A cached reference to a [PhotonView](#) on this GameObject.

8.50.1 Detailed Description

This class adds the property photonView, while logging a warning when your game still uses the networkView.

8.50.2 Property Documentation

8.50.2.1 PhotonView photonView [get]

A cached reference to a [PhotonView](#) on this GameObject.

If you intend to work with a [PhotonView](#) in a script, it's usually easier to write this.photonView.

If you intend to remove the [PhotonView](#) component from the GameObject but keep this Photon.MonoBehaviour, avoid this reference or modify this code to use PhotonView.Get(obj) instead.

8.51 MonoBehaviourPunCallbacks Class Reference

This class provides a .photonView and all callbacks/events that PUN can call. Override the events/methods you want to use.

Inherits [MonoBehaviourPun](#), [IConnectionCallbacks](#), [IMatchmakingCallbacks](#), [ILnRoomCallbacks](#), and [ILobbyCallbacks](#).

Inherited by [ConnectAndJoinRandom](#), [CountdownTimer](#), [PlayerNumbering](#), [PunTeams](#), and [PunTurnManager](#).

Public Member Functions

- virtual void **OnEnable** ()
- virtual void **OnDisable** ()
- virtual void **OnConnected** ()
Called to signal that the raw connection got established but before the client can call operation on the server.
- virtual void **OnLeftRoom** ()
Called when the local user/client left a room, so the game's logic can clean up it's internal state.
- virtual void **OnMasterClientSwitched** ([Player](#) newMasterClient)
Called after switching to a new MasterClient when the current one leaves.
- virtual void **OnCreateRoomFailed** (short returnCode, string message)
Called when the server couldn't create a room (OpCreateRoom failed).
- virtual void **OnJoinRoomFailed** (short returnCode, string message)
Called when a previous OpJoinRoom call failed on the server.
- virtual void **OnCreatedRoom** ()
Called when this client created a room and entered it. [OnJoinedRoom\(\)](#) will be called as well.
- virtual void **OnJoinedLobby** ()
Called on entering a lobby on the Master Server. The actual room-list updates will call OnRoomListUpdate.
- virtual void **OnLeftLobby** ()
Called after leaving a lobby.
- virtual void **OnDisconnected** ([DisconnectCause](#) cause)
Called after disconnecting from the [Photon](#) server. It could be a failure or intentional
- virtual void **OnRegionListReceived** ([RegionHandler](#) regionHandler)
Called when the Name Server provided a list of regions for your title.
- virtual void **OnRoomListUpdate** (List< [RoomInfo](#) > roomList)
Called for any update of the room-listing while in a lobby (InLobby) on the Master Server.
- virtual void **OnJoinedRoom** ()
Called when the LoadBalancingClient entered a room, no matter if this client created it or simply joined.
- virtual void **OnPlayerEnteredRoom** ([Player](#) newPlayer)
Called when a remote player entered the room. This Player is already added to the playerlist.
- virtual void **OnPlayerLeftRoom** ([Player](#) otherPlayer)
Called when a remote player left the room or became inactive. Check otherPlayer.IsInactive.
- virtual void **OnJoinRandomFailed** (short returnCode, string message)
Called when a previous OpJoinRandom call failed on the server.

- virtual void [OnConnectedToMaster](#) ()
Called when the client is connected to the Master Server and ready for matchmaking and other tasks.
- virtual void [OnRoomPropertiesUpdate](#) (Hashtable propertiesThatChanged)
Called when a room's custom properties changed. The propertiesThatChanged contains all that was set via [Room.SetCustomProperties](#).
- virtual void [OnPlayerPropertiesUpdate](#) (Player target, Hashtable changedProps)
Called when custom player-properties are changed. Player and the changed properties are passed as object[].
- virtual void [OnFriendListUpdate](#) (List< [FriendInfo](#) > friendList)
Called when the server sent the response to a FindFriends request.
- virtual void [OnCustomAuthenticationResponse](#) (Dictionary< string, object > data)
Called when your Custom Authentication service responds with additional data.
- virtual void [OnCustomAuthenticationFailed](#) (string debugMessage)
Called when the custom authentication failed. Followed by disconnect!
- virtual void [OnWebRpcResponse](#) (OperationResponse response)
- virtual void [OnLobbyStatisticsUpdate](#) (List< [TypedLobbyInfo](#) > lobbyStatistics)
Called when the Master Server sent an update for the Lobby Statistics, updating PhotonNetwork.LobbyStatistics.

Additional Inherited Members

8.51.1 Detailed Description

This class provides a .photonView and all callbacks/events that PUN can call. Override the events/methods you want to use.

By extending this class, you can implement individual methods as override.

Visual Studio and MonoDevelop should provide the list of methods when you begin typing "override". **Your implementation does not have to call "base.method()".**

This class implements all callback interfaces and extends [Photon.Pun.MonoBehaviourPun](#).

8.51.2 Member Function Documentation

8.51.2.1 virtual void OnConnected () [virtual]

Called to signal that the raw connection got established but before the client can call operation on the server.

After the (low level transport) connection is established, the client will automatically send the Authentication operation, which needs to get a response before the client can call other operations.

Your logic should wait for either: OnRegionListReceived or OnConnectedToMaster.

This callback is useful to detect if the server can be reached at all (technically). Most often, it's enough to implement [OnDisconnected\(\)](#).

This is not called for transitions from the masterserver to game servers.

Implements [IConnectionCallbacks](#).

8.51.2.2 virtual void OnConnectedToMaster () [virtual]

Called when the client is connected to the Master Server and ready for matchmaking and other tasks.

The list of available rooms won't become available unless you join a lobby via [LoadBalancingClient.OpJoinLobby](#). You can join rooms and create them even without being in a lobby. The default lobby is used in that case.

Implements [IConnectionCallbacks](#).

Reimplemented in [ConnectAndJoinRandom](#).

8.51.2.3 `virtual void OnCreatedRoom () [virtual]`

Called when this client created a room and entered it. [OnJoinedRoom\(\)](#) will be called as well.

This callback is only called on the client which created a room (see [OpCreateRoom](#)).

As any client might close (or drop connection) anytime, there is a chance that the creator of a room does not execute [OnCreatedRoom](#).

If you need specific room properties or a "start signal", implement [OnMasterClientSwitched\(\)](#) and make each new [MasterClient](#) check the room's state.

Implements [IMatchmakingCallbacks](#).

8.51.2.4 `virtual void OnCreateRoomFailed (short returnCode, string message) [virtual]`

Called when the server couldn't create a room ([OpCreateRoom](#) failed).

The most common cause to fail creating a room, is when a title relies on fixed room-names and the room already exists.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.51.2.5 `virtual void OnCustomAuthenticationFailed (string debugMessage) [virtual]`

Called when the custom authentication failed. Followed by disconnect!

Custom Authentication can fail due to user-input, bad tokens/secrets. If authentication is successful, this method is not called. Implement [OnJoinedLobby\(\)](#) or [OnConnectedToMaster\(\)](#) (as usual).

During development of a game, it might also fail due to wrong configuration on the server side. In those cases, logging the [debugMessage](#) is very important.

Unless you setup a custom authentication service for your app (in the [Dashboard](#)), this won't be called!

Parameters

<i>debugMessage</i>	Contains a debug message why authentication failed. This has to be fixed during development.
---------------------	--

Implements [IConnectionCallbacks](#).

8.51.2.6 `virtual void OnCustomAuthenticationResponse (Dictionary< string, object > data) [virtual]`

Called when your Custom Authentication service responds with additional data.

Custom Authentication services can include some custom data in their response. When present, that data is made available in this callback as Dictionary. While the keys of your data have to be strings, the values can be either string or a number (in Json). You need to make extra sure, that the value type is the one you expect. Numbers become (currently) int64.

Example: `void OnCustomAuthenticationResponse(Dictionary<string, object> data) { ... }`

<https://doc.photonengine.com/en-us/realtime/current/reference/custom-authentication>

Implements [IConnectionCallbacks](#).

8.51.2.7 virtual void OnDisconnected (DisconnectCause *cause*) [virtual]

Called after disconnecting from the [Photon](#) server. It could be a failure or intentional

The reason for this disconnect is provided as DisconnectCause.

Implements [IConnectionCallbacks](#).

Reimplemented in [ConnectAndJoinRandom](#).

8.51.2.8 virtual void OnFriendListUpdate (List< FriendInfo > *friendList*) [virtual]

Called when the server sent the response to a FindFriends request.

After calling OpFindFriends, the Master Server will cache the friend list and send updates to the friend list. The friends includes the name, userId, online state and the room (if any) for each requested user/friend.

Use the friendList to update your UI and store it, if the UI should highlight changes.

Implements [IMatchmakingCallbacks](#).

8.51.2.9 virtual void OnJoinedLobby () [virtual]

Called on entering a lobby on the Master Server. The actual room-list updates will call OnRoomListUpdate.

While in the lobby, the roomlist is automatically updated in fixed intervals (which you can't modify in the public cloud). The room list gets available via OnRoomListUpdate.

Implements [ILobbyCallbacks](#).

Reimplemented in [ConnectAndJoinRandom](#).

8.51.2.10 virtual void OnJoinedRoom () [virtual]

Called when the LoadBalancingClient entered a room, no matter if this client created it or simply joined.

When this is called, you can access the existing players in [Room.Players](#), their custom properties and [Room.CustomProperties](#).

In this callback, you could create player objects. For example in Unity, instantiate a prefab for the player.

If you want a match to be started "actively", enable the user to signal "ready" (using OpRaiseEvent or a Custom Property).

Implements [IMatchmakingCallbacks](#).

Reimplemented in [PlayerNumbering](#), [ConnectAndJoinRandom](#), and [PunTeams](#).

8.51.2.11 virtual void OnJoinRandomFailed (short *returnCode*, string *message*) [virtual]

Called when a previous OpJoinRandom call failed on the server.

The most common causes are that a room is full or does not exist (due to someone else being faster or closing the room).

When using multiple lobbies (via OpJoinLobby or a TypedLobby parameter), another lobby might have more/fitting rooms.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

Reimplemented in [ConnectAndJoinRandom](#).

8.51.2.12 `virtual void OnJoinRoomFailed (short returnCode, string message) [virtual]`

Called when a previous OpJoinRoom call failed on the server.

The most common causes are that a room is full or does not exist (due to someone else being faster or closing the room).

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.51.2.13 `virtual void OnLeftLobby () [virtual]`

Called after leaving a lobby.

When you leave a lobby, OpCreateRoom and OpJoinRandomRoom automatically refer to the default lobby.

Implements [ILobbyCallbacks](#).

8.51.2.14 `virtual void OnLeftRoom () [virtual]`

Called when the local user/client left a room, so the game's logic can clean up it's internal state.

When leaving a room, the LoadBalancingClient will disconnect the Game Server and connect to the Master Server. This wraps up multiple internal actions.

Wait for the callback OnConnectedToMaster, before you use lobbies and join or create rooms.

Implements [IMatchmakingCallbacks](#).

Reimplemented in [PlayerNumbering](#), and [PunTeams](#).

8.51.2.15 `virtual void OnLobbyStatisticsUpdate (List< TypedLobbyInfo > lobbyStatistics) [virtual]`

Called when the Master Server sent an update for the Lobby Statistics, updating PhotonNetwork.LobbyStatistics.

This callback has two preconditions: EnableLobbyStatistics must be set to true, before this client connects. And the client has to be connected to the Master Server, which is providing the info about lobbies.

Implements [ILobbyCallbacks](#).

8.51.2.16 `virtual void OnMasterClientSwitched (Player newMasterClient) [virtual]`

Called after switching to a new MasterClient when the current one leaves.

This is not called when this client enters a room. The former MasterClient is still in the player list when this method get called.

Implements [IInRoomCallbacks](#).

8.51.2.17 `virtual void OnPlayerEnteredRoom (Player newPlayer) [virtual]`

Called when a remote player entered the room. This Player is already added to the playerlist.

If your game starts with a certain number of players, this callback can be useful to check the Room.playerCount and find out if you can start.

Implements [IInRoomCallbacks](#).

Reimplemented in [PlayerNumbering](#), and [PunTeams](#).

8.51.2.18 `virtual void OnPlayerLeftRoom (Player otherPlayer) [virtual]`

Called when a remote player left the room or became inactive. Check otherPlayer.IsInactive.

If another player leaves the room or if the server detects a lost connection, this callback will be used to notify your game logic.

Depending on the room's setup, players may become inactive, which means they may return and retake their spot in the room. In such cases, the Player stays in the [Room.Players](#) dictionary.

If the player is not just inactive, it gets removed from the [Room.Players](#) dictionary, before the callback is called.

Implements [IInRoomCallbacks](#).

Reimplemented in [PlayerNumbering](#), and [PunTeams](#).

8.51.2.19 `virtual void OnPlayerPropertiesUpdate (Player target, Hashtable changedProps) [virtual]`

Called when custom player-properties are changed. Player and the changed properties are passed as object[].

Changing properties must be done by [Player.SetCustomProperties](#), which causes this callback locally, too.

Parameters

<i>targetPlayer</i>	Contains Player that changed.
<i>changedProps</i>	Contains the properties that changed.

Implements [IInRoomCallbacks](#).

Reimplemented in [PlayerNumbering](#), and [PunTeams](#).

8.51.2.20 `virtual void OnRegionListReceived (RegionHandler regionHandler) [virtual]`

Called when the Name Server provided a list of regions for your title.

Check the RegionHandler class description, to make use of the provided values.

Parameters

<i>regionHandler</i>	The currently used RegionHandler.
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Implements [IConnectionCallbacks](#).

8.51.2.21 `virtual void OnRoomListUpdate (List< RoomInfo > roomList) [virtual]`

Called for any update of the room-listing while in a lobby (InLobby) on the Master Server.

Each item is a RoomInfo which might include custom properties (provided you defined those as lobby-listed when creating a room). Not all types of lobbies provide a listing of rooms to the client. Some are silent and specialized for server-side matchmaking.

Implements [ILobbyCallbacks](#).

8.51.2.22 virtual void OnRoomPropertiesUpdate (Hashtable *propertiesThatChanged*) [virtual]

Called when a room's custom properties changed. The *propertiesThatChanged* contains all that was set via [Room.SetCustomProperties](#).

Since v1.25 this method has one parameter: Hashtable *propertiesThatChanged*.

Changing properties must be done by [Room.SetCustomProperties](#), which causes this callback locally, too.

Parameters

<i>propertiesThatChanged</i>	
------------------------------	--

Implements [IInRoomCallbacks](#).

Reimplemented in [PunTurnManager](#), and [CountdownTimer](#).

8.52 MoveByKeys Class Reference

Very basic component to move a GameObject by WASD and Space.

Inherits [MonoBehaviourPun](#).

Public Member Functions

- void **Start** ()
- void **FixedUpdate** ()

Public Attributes

- float **Speed** = 10f
- float **JumpForce** = 200f
- float **JumpTimeout** = 0.5f

Additional Inherited Members

8.52.1 Detailed Description

Very basic component to move a GameObject by WASD and Space.

Requires a [PhotonView](#). Disables itself on GameObjects that are not owned on Start.

Speed affects movement-speed. JumpForce defines how high the object "jumps". JumpTimeout defines after how many seconds you can jump again.

8.53 OnClickDestroy Class Reference

Destroys the networked GameObject either by [PhotonNetwork.Destroy](#) or by sending an RPC which calls [Object.Destroy\(\)](#).

Inherits [MonoBehaviourPun](#), and [IPointerClickHandler](#).

Public Member Functions

- IEnumerator **DestroyRpc** ()

Public Attributes

- PointerEventData.InputButton **Button**
- KeyCode **ModifierKey**
- bool **DestroyByRpc**

Additional Inherited Members

8.53.1 Detailed Description

Destroys the networked GameObject either by [PhotonNetwork.Destroy](#) or by sending an RPC which calls `Object.Destroy()`.

Using an RPC to Destroy a GameObject is typically a bad idea. It allows any player to Destroy a GameObject and may cause errors.

A client has to clean up the server's event-cache, which contains events for Instantiate and buffered RPCs related to the GO.

A buffered RPC gets cleaned up when the sending player leaves the room, so players joining later won't get those buffered RPCs. This in turn, may mean they don't destroy the GO due to coming later.

Vice versa, a GameObject Instantiate might get cleaned up when the creating player leaves a room. This way, the GameObject that a RPC targets might become lost.

It makes sense to test those cases. Many are not breaking errors and you just have to be aware of them.

Gets `OnClick()` calls by Unity's `IPointerClickHandler`. Needs a `PhysicsRaycaster` on the camera. See: <https://docs.unity3d.com/ScriptReference/EventSystems.IPointerClickHandler.html>

8.54 OnClickInstantiate Class Reference

Instantiates a networked GameObject on click.

Inherits `MonoBehaviour`, and `IPointerClickHandler`.

Public Types

- enum **InstantiateOption**

Public Attributes

- PointerEventData.InputButton **Button**
- KeyCode **ModifierKey**
- GameObject **Prefab**

8.54.1 Detailed Description

Instantiates a networked GameObject on click.

Gets `OnClick()` calls by Unity's `IPointerClickHandler`. Needs a `PhysicsRaycaster` on the camera. See: <https://docs.unity3d.com/ScriptReference/EventSystems.IPointerClickHandler.html>

8.55 OnClickRpc Class Reference

This component will instantiate a network GameObject when in a room and the user click on that component's GameObject. Uses PhysicsRaycaster for positioning.

Inherits [MonoBehaviour](#), and [IPointerClickHandler](#).

Public Member Functions

- void **ClickRpc** ()
- IEnumerator **ClickFlash** ()

Public Attributes

- PointerEventData.InputButton **Button**
- KeyCode **ModifierKey**
- [RpcTarget](#) **Target**

Additional Inherited Members

8.55.1 Detailed Description

This component will instantiate a network GameObject when in a room and the user click on that component's GameObject. Uses PhysicsRaycaster for positioning.

8.56 OnEscapeQuit Class Reference

This component will quit the application when escape key is pressed

Inherits [MonoBehaviour](#).

Public Member Functions

- void **Update** ()

8.56.1 Detailed Description

This component will quit the application when escape key is pressed

8.57 OnJoinedInstantiate Class Reference

This component will instantiate a network GameObject when a room is joined

Inherits [MonoBehaviour](#), [IConnectionCallbacks](#), [IMatchmakingCallbacks](#), and [ILobbyCallbacks](#).

Public Member Functions

- virtual void **OnEnable** ()
- virtual void **OnDisable** ()
- void [OnJoinedRoom](#) ()

Called when the LoadBalancingClient entered a room, no matter if this client created it or simply joined.

- void **OnConnected** ()
Called to signal that the "low level connection" got established but before the client can call operation on the server.
- void **OnCustomAuthenticationResponse** (Dictionary< string, object > data)
Called when your Custom Authentication service responds with additional data.
- void **OnCustomAuthenticationFailed** (string debugMessage)
Called when the custom authentication failed. Followed by disconnect!
- void **OnConnectedToMaster** ()
Called when the client is connected to the Master Server and ready for matchmaking and other tasks.
- void **OnDisconnected** (DisconnectCause cause)
Called after disconnecting from the Photon server. It could be a failure or an explicit disconnect call
- void **OnRegionListReceived** (RegionHandler regionHandler)
Called when the Name Server provided a list of regions for your title.
- void **OnRoomListUpdate** (List< RoomInfo > roomList)
Called for any update of the room-listing while in a lobby (InLobby) on the Master Server.
- void **OnFriendListUpdate** (List< FriendInfo > friendList)
Called when the server sent the response to a FindFriends request.
- void **OnJoinedLobby** ()
Called on entering a lobby on the Master Server. The actual room-list updates will call OnRoomListUpdate.
- void **OnLeftLobby** ()
Called after leaving a lobby.
- void **OnLobbyStatisticsUpdate** (List< TypedLobbyInfo > lobbyStatistics)
Called when the Master Server sent an update for the Lobby Statistics, updating PhotonNetwork.LobbyStatistics.
- void **OnCreatedRoom** ()
Called when this client created a room and entered it. OnJoinedRoom() will be called as well.
- void **OnCreateRoomFailed** (short returnCode, string message)
Called when the server couldn't create a room (OpCreateRoom failed).
- void **OnJoinRoomFailed** (short returnCode, string message)
Called when a previous OpJoinRoom call failed on the server.
- void **OnJoinRandomFailed** (short returnCode, string message)
Called when a previous OpJoinRandom call failed on the server.
- void **OnLeftRoom** ()
Called when the local user/client left a room, so the game's logic can clean up it's internal state.

Public Attributes

- Transform **SpawnPosition**
- float **PositionOffset** = 2.0f
- GameObject[] **PrefabsToInstantiate**

8.57.1 Detailed Description

This component will instantiate a network GameObject when a room is joined

8.57.2 Member Function Documentation

8.57.2.1 void OnConnected ()

Called to signal that the "low level connection" got established but before the client can call operation on the server.

After the (low level transport) connection is established, the client will automatically send the Authentication operation, which needs to get a response before the client can call other operations.

Your logic should wait for either: OnRegionListReceived or OnConnectedToMaster.

This callback is useful to detect if the server can be reached at all (technically). Most often, it's enough to implement [OnDisconnected\(DisconnectCause cause\)](#) and check for the cause.

This is not called for transitions from the masterserver to game servers.

Implements [IConnectionCallbacks](#).

8.57.2.2 void OnConnectedToMaster ()

Called when the client is connected to the Master Server and ready for matchmaking and other tasks.

The list of available rooms won't become available unless you join a lobby via [LoadBalancingClient.OpJoinLobby](#). You can join rooms and create them even without being in a lobby. The default lobby is used in that case.

Implements [IConnectionCallbacks](#).

8.57.2.3 void OnCreatedRoom ()

Called when this client created a room and entered it. [OnJoinedRoom\(\)](#) will be called as well.

This callback is only called on the client which created a room (see [OpCreateRoom](#)).

As any client might close (or drop connection) anytime, there is a chance that the creator of a room does not execute [OnCreatedRoom](#).

If you need specific room properties or a "start signal", implement [OnMasterClientSwitched\(\)](#) and make each new MasterClient check the room's state.

Implements [IMatchmakingCallbacks](#).

8.57.2.4 void OnCreateRoomFailed (short *returnCode*, string *message*)

Called when the server couldn't create a room ([OpCreateRoom](#) failed).

Creating a room may fail for various reasons. Most often, the room already exists (roomname in use) or the Room↔Options clash and it's impossible to create the room.

When creating a room fails on a Game Server: The client will cache the failure internally and returns to the Master Server before it calls the fail-callback. This way, the client is ready to find/create a room at the moment of the callback. In this case, the client skips calling [OnConnectedToMaster](#) but returning to the Master Server will still call [OnConnected](#). Treat callbacks of [OnConnected](#) as pure information that the client could connect.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.57.2.5 void OnCustomAuthenticationFailed (string *debugMessage*)

Called when the custom authentication failed. Followed by disconnect!

Custom Authentication can fail due to user-input, bad tokens/secrets. If authentication is successful, this method is not called. Implement [OnJoinedLobby\(\)](#) or [OnConnectedToMaster\(\)](#) (as usual).

During development of a game, it might also fail due to wrong configuration on the server side. In those cases, logging the debugMessage is very important.

Unless you setup a custom authentication service for your app (in the [Dashboard](#)), this won't be called!

Parameters

<i>debugMessage</i>	Contains a debug message why authentication failed. This has to be fixed during development.
---------------------	--

Implements [IConnectionCallbacks](#).

8.57.2.6 void OnCustomAuthenticationResponse (Dictionary< string, object > data)

Called when your Custom Authentication service responds with additional data.

Custom Authentication services can include some custom data in their response. When present, that data is made available in this callback as Dictionary. While the keys of your data have to be strings, the values can be either string or a number (in Json). You need to make extra sure, that the value type is the one you expect. Numbers become (currently) int64.

Example: void OnCustomAuthenticationResponse(Dictionary<string, object> data) { ... }

<https://doc.photonengine.com/en-us/realtime/current/reference/custom-authentication>

Implements [IConnectionCallbacks](#).

8.57.2.7 void OnDisconnected (DisconnectCause cause)

Called after disconnecting from the [Photon](#) server. It could be a failure or an explicit disconnect call

The reason for this disconnect is provided as DisconnectCause.

Implements [IConnectionCallbacks](#).

8.57.2.8 void OnFriendListUpdate (List< FriendInfo > friendList)

Called when the server sent the response to a FindFriends request.

After calling OpFindFriends, the Master Server will cache the friend list and send updates to the friend list. The friends includes the name, userId, online state and the room (if any) for each requested user/friend.

Use the friendList to update your UI and store it, if the UI should highlight changes.

Implements [IMatchmakingCallbacks](#).

8.57.2.9 void OnJoinedLobby ()

Called on entering a lobby on the Master Server. The actual room-list updates will call OnRoomListUpdate.

While in the lobby, the roomlist is automatically updated in fixed intervals (which you can't modify in the public cloud). The room list gets available via OnRoomListUpdate.

Implements [ILobbyCallbacks](#).

8.57.2.10 void OnJoinedRoom ()

Called when the LoadBalancingClient entered a room, no matter if this client created it or simply joined.

When this is called, you can access the existing players in [Room.Players](#), their custom properties and [Room.CustomProperties](#).

In this callback, you could create player objects. For example in Unity, instantiate a prefab for the player.

If you want a match to be started "actively", enable the user to signal "ready" (using [OpRaiseEvent](#) or a Custom Property).

Implements [IMatchmakingCallbacks](#).

8.57.2.11 void OnJoinRandomFailed (short *returnCode*, string *message*)

Called when a previous [OpJoinRandom](#) call failed on the server.

The most common causes are that a room is full or does not exist (due to someone else being faster or closing the room).

This operation is only ever sent to the Master Server. Once a room is found by the Master Server, the client will head off to the designated Game Server and use the operation [Join](#) on the Game Server.

When using multiple lobbies (via [OpJoinLobby](#) or a [TypedLobby](#) parameter), another lobby might have more/fitting rooms.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.57.2.12 void OnJoinRoomFailed (short *returnCode*, string *message*)

Called when a previous [OpJoinRoom](#) call failed on the server.

Joining a room may fail for various reasons. Most often, the room is full or does not exist anymore (due to someone else being faster or closing the room).

When joining a room fails on a Game Server: The client will cache the failure internally and returns to the Master Server before it calls the fail-callback. This way, the client is ready to find/create a room at the moment of the callback. In this case, the client skips calling [OnConnectedToMaster](#) but returning to the Master Server will still call [OnConnected](#). Treat callbacks of [OnConnected](#) as pure information that the client could connect.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.57.2.13 void OnLeftLobby ()

Called after leaving a lobby.

When you leave a lobby, [OpCreateRoom](#) and [OpJoinRandomRoom](#) automatically refer to the default lobby.

Implements [ILobbyCallbacks](#).

8.57.2.14 void OnLeftRoom ()

Called when the local user/client left a room, so the game's logic can clean up it's internal state.

When leaving a room, the [LoadBalancingClient](#) will disconnect the Game Server and connect to the Master Server. This wraps up multiple internal actions.

Wait for the callback `OnConnectedToMaster`, before you use lobbies and join or create rooms.

Implements [IMatchmakingCallbacks](#).

8.57.2.15 void OnLobbyStatisticsUpdate (List< TypedLobbyInfo > lobbyStatistics)

Called when the Master Server sent an update for the Lobby Statistics, updating `PhotonNetwork.LobbyStatistics`.

This callback has two preconditions: `EnableLobbyStatistics` must be set to true, before this client connects. And the client has to be connected to the Master Server, which is providing the info about lobbies.

Implements [ILobbyCallbacks](#).

8.57.2.16 void OnRegionListReceived (RegionHandler regionHandler)

Called when the Name Server provided a list of regions for your title.

Check the `RegionHandler` class description, to make use of the provided values.

Parameters

<i>regionHandler</i>	The currently used <code>RegionHandler</code> .
----------------------	---

Implements [IConnectionCallbacks](#).

8.57.2.17 void OnRoomListUpdate (List< RoomInfo > roomList)

Called for any update of the room-listing while in a lobby (`InLobby`) on the Master Server.

Each item is a `RoomInfo` which might include custom properties (provided you defined those as lobby-listed when creating a room). Not all types of lobbies provide a listing of rooms to the client. Some are silent and specialized for server-side matchmaking.

Implements [ILobbyCallbacks](#).

8.58 OnPointerOverTooltip Class Reference

Set focus to a given `photonView` when pointed is over

Inherits `MonoBehaviour`, `IPointerEnterHandler`, and `IPointerExitHandler`.

8.58.1 Detailed Description

Set focus to a given `photonView` when pointed is over

8.59 OnStartDelete Class Reference

This component will destroy the `GameObject` it is attached to (in `Start()`).

Inherits `MonoBehaviour`.

8.59.1 Detailed Description

This component will destroy the `GameObject` it is attached to (in `Start()`).

8.60 OpCode Class Reference

Class for constants. Contains operation codes. [Pun](#) uses these constants internally.

Public Attributes

- const byte **ExchangeKeysForEncryption** = 250
- const byte **Join** = 255
(255) Code for OpJoin, to get into a room.
- const byte **AuthenticateOnce** = 231
(231) Authenticates this peer and connects to a virtual application
- const byte **Authenticate** = 230
(230) Authenticates this peer and connects to a virtual application
- const byte **JoinLobby** = 229
(229) Joins lobby (on master)
- const byte **LeaveLobby** = 228
(228) Leaves lobby (on master)
- const byte **CreateGame** = 227
(227) Creates a game (or fails if name exists)
- const byte **JoinGame** = 226
(226) Join game (by name)
- const byte **JoinRandomGame** = 225
(225) Joins random game (on master)
- const byte **Leave** = (byte)254
(254) Code for OpLeave, to get out of a room.
- const byte **RaiseEvent** = (byte)253
(253) Raise event (in a room, for other actors/players)
- const byte **SetProperties** = (byte)252
(252) Set Properties (of room or actor/player)
- const byte **GetProperties** = (byte)251
(251) Get Properties
- const byte **ChangeGroups** = (byte)248
(248) Operation code to change interest groups in Rooms (Lite application and extending ones).
- const byte **FindFriends** = 222
(222) Request the rooms and online status for a list of friends (by name, which should be unique).
- const byte **GetLobbyStats** = 221
(221) Request statistics about a specific list of lobbies (their user and game count).
- const byte **GetRegions** = 220
(220) Get list of regional servers from a NameServer.
- const byte **WebRpc** = 219
(219) WebRpc Operation.
- const byte **ServerSettings** = 218
(218) Operation to set some server settings. Used with different parameters on various servers.
- const byte **GetGameList** = 217
(217) Get the game list matching a supplied sql filter (SqlListLobby only)

8.60.1 Detailed Description

Class for constants. Contains operation codes. [Pun](#) uses these constants internally.

8.60.2 Member Data Documentation

8.60.2.1 `const byte Authenticate = 230`

(230) Authenticates this peer and connects to a virtual application

8.60.2.2 `const byte AuthenticateOnce = 231`

(231) Authenticates this peer and connects to a virtual application

8.60.2.3 `const byte ChangeGroups = (byte)248`

(248) Operation code to change interest groups in Rooms (Lite application and extending ones).

8.60.2.4 `const byte CreateGame = 227`

(227) Creates a game (or fails if name exists)

8.60.2.5 `const byte FindFriends = 222`

(222) Request the rooms and online status for a list of friends (by name, which should be unique).

8.60.2.6 `const byte GetGameList = 217`

(217) Get the game list matching a supplied sql filter (SqlListLobby only)

8.60.2.7 `const byte GetLobbyStats = 221`

(221) Request statistics about a specific list of lobbies (their user and game count).

8.60.2.8 `const byte GetProperties = (byte)251`

(251) Get Properties

8.60.2.9 `const byte GetRegions = 220`

(220) Get list of regional servers from a NameServer.

8.60.2.10 `const byte Join = 255`

(255) Code for OpJoin, to get into a room.

8.60.2.11 `const byte JoinGame = 226`

(226) Join game (by name)

8.60.2.12 `const byte JoinLobby = 229`

(229) Joins lobby (on master)

8.60.2.13 `const byte JoinRandomGame = 225`

(225) Joins random game (on master)

8.60.2.14 `const byte Leave = (byte)254`

(254) Code for OpLeave, to get out of a room.

8.60.2.15 `const byte LeaveLobby = 228`

(228) Leaves lobby (on master)

8.60.2.16 `const byte RaiseEvent = (byte)253`

(253) Raise event (in a room, for other actors/players)

8.60.2.17 `const byte ServerSettings = 218`

(218) Operation to set some server settings. Used with different parameters on various servers.

8.60.2.18 `const byte SetPropertyes = (byte)252`

(252) Set Properties (of room or actor/player)

8.60.2.19 `const byte WebRpc = 219`

(219) WebRpc Operation.

8.61 OpJoinRandomRoomParams Class Reference

Public Attributes

- Hashtable **ExpectedCustomRoomProperties**
- byte **ExpectedMaxPlayers**
- [MatchmakingMode](#) **MatchingType**
- [TypedLobby](#) **TypedLobby**
- string **SqlLobbyFilter**
- string[] **ExpectedUsers**

8.62 ParameterCode Class Reference

Class for constants. Codes for parameters of Operations and Events.

Public Attributes

- const byte [SuppressRoomEvents](#) = 237
(237) A bool parameter for creating games. If set to true, no room events are sent to the clients on join and leave. Default: false (and not sent).
- const byte [EmptyRoomTTL](#) = 236

- (236) Time To Live (TTL) for a room when the last player leaves. Keeps room in memory for case a player re-joins soon. In milliseconds.

 - const byte **PlayerTTL** = 235
- (235) Time To Live (TTL) for an 'actor' in a room. If a client disconnects, this actor is inactive first and removed after this timeout. In milliseconds.

 - const byte **EventForward** = 234
- (234) Optional parameter of *OpRaiseEvent* and *OpSetCustomProperties* to forward the event/operation to a web-service.

 - const byte **IsComingBack** = (byte)233
- (233) Optional parameter of *OpLeave* in async games. If false, the player does abandons the game (forever). By default players become inactive and can re-join.

 - const byte **IsInactive** = (byte)233
- (233) Used in *EvLeave* to describe if a user is inactive (and might come back) or not. In rooms with *PlayerTTL*, becoming inactive is the default case.

 - const byte **CheckUserOnJoin** = (byte)232
- (232) Used when creating rooms to define if any userid can join the room only once.

 - const byte **ExpectedValues** = (byte)231
- (231) Code for "Check And Swap" (CAS) when changing properties.

 - const byte **Address** = 230
- (230) Address of a (game) server to use.

 - const byte **PeerCount** = 229
- (229) Count of players in this application in a rooms (used in stats event)

 - const byte **GameCount** = 228
- (228) Count of games in this application (used in stats event)

 - const byte **MasterPeerCount** = 227
- (227) Count of players on the master server (in this app, looking for rooms)

 - const byte **UserId** = 225
- (225) User's ID

 - const byte **ApplicationId** = 224
- (224) Your application's ID: a name on your own *Photon* or a GUID on the *Photon* Cloud

 - const byte **Position** = 223
- (223) Not used currently (as "Position"). If you get queued before connect, this is your position

 - const byte **MatchMakingType** = 223
- (223) Modifies the matchmaking algorithm used for *OpJoinRandom*. Allowed parameter values are defined in enum *MatchmakingMode*.

 - const byte **GameList** = 222
- (222) List of *RoomInfos* about open / listed rooms

 - const byte **Secret** = 221
- (221) Internally used to establish encryption

 - const byte **AppVersion** = 220
- (220) Version of your application

 - const byte **AzureNodeInfo** = 210
- (210) Internally used in case of hosting by Azure

 - const byte **AzureLocalNodeId** = 209
- (209) Internally used in case of hosting by Azure

 - const byte **AzureMasterNodeId** = 208
- (208) Internally used in case of hosting by Azure

 - const byte **RoomName** = (byte)255
- (255) Code for the *gameId/roomName* (a unique name per room). Used in *OpJoin* and similar.

 - const byte **Broadcast** = (byte)250
- (250) Code for broadcast parameter of *OpSetProperties* method.

 - const byte **ActorList** = (byte)252

- (252) Code for list of players in a room. Currently not used.

 - const byte **ActorNr** = (byte)254
- (254) Code of the Actor of an operation. Used for property get and set.

 - const byte **PlayerProperties** = (byte)249
- (249) Code for property set (Hashtable).

 - const byte **CustomEventContent** = (byte)245
- (245) Code of data/custom content of an event. Used in OpRaiseEvent.

 - const byte **Data** = (byte)245
- (245) Code of data of an event. Used in OpRaiseEvent.

 - const byte **Code** = (byte)244
- (244) Code used when sending some code-related parameter, like OpRaiseEvent's event-code.

 - const byte **GameProperties** = (byte)248
- (248) Code for property set (Hashtable).

 - const byte **Properties** = (byte)251
- (251) Code for property-set (Hashtable). This key is used when sending only one set of properties. If either **Actor↔Properties** or **GameProperties** are used (or both), check those keys.

 - const byte **TargetActorNr** = (byte)253
- (253) Code of the target Actor of an operation. Used for property set. Is 0 for game

 - const byte **ReceiverGroup** = (byte)246
- (246) Code to select the receivers of events (used in Lite, Operation RaiseEvent).

 - const byte **Cache** = (byte)247
- (247) Code for caching events while raising them.

 - const byte **CleanupCacheOnLeave** = (byte)241
- (241) Bool parameter of CreateGame Operation. If true, server cleans up roomcache of leaving players (their cached events get removed).

 - const byte **Group** = 240
- (240) Code for "group" operation-parameter (as used in Op RaiseEvent).

 - const byte **Remove** = 239
- (239) The "Remove" operation-parameter can be used to remove something from a list. E.g. remove groups from player's interest groups.

 - const byte **PublishUserId** = 239
- (239) Used in Op Join to define if UserIds of the players are broadcast in the room. Useful for FindFriends and reserving slots for expected users.

 - const byte **Add** = 238
- (238) The "Add" operation-parameter can be used to add something to some list or set. E.g. add groups to player's interest groups.

 - const byte **Info** = 218
- (218) Content for **EventCode.ErrorInfo** and internal debug operations.

 - const byte **ClientAuthenticationType** = 217
- (217) This key's (byte) value defines the target custom authentication type/service the client connects with. Used in OpAuthenticate

 - const byte **ClientAuthenticationParams** = 216
- (216) This key's (string) value provides parameters sent to the custom authentication type/service the client connects with. Used in OpAuthenticate

 - const byte **JoinMode** = 215
- (215) Makes the server create a room if it doesn't exist. OpJoin uses this to always enter a room, unless it exists and is full/closed.

 - const byte **ClientAuthenticationData** = 214
- (214) This key's (string or byte[]) value provides parameters sent to the custom authentication service setup in **Photon Dashboard**. Used in OpAuthenticate

 - const byte **MasterClientId** = (byte)203
- (203) Code for MasterClientId, which is synced by server. When sent as op-parameter this is code 203.

 - const byte **FindFriendsRequestList** = (byte)1

- (1) Used in Op FindFriends request. Value must be string[] of friends to look up.
- const byte [FindFriendsResponseOnlineList](#) = (byte)1
 - (1) Used in Op FindFriends response. Contains bool[] list of online states (false if not online).
- const byte [FindFriendsResponseRoomIdList](#) = (byte)2
 - (2) Used in Op FindFriends response. Contains string[] of room names ("" where not known or no room joined).
- const byte [LobbyName](#) = (byte)213
 - (213) Used in matchmaking-related methods and when creating a room to name a lobby (to join or to attach a room to).
- const byte [LobbyType](#) = (byte)212
 - (212) Used in matchmaking-related methods and when creating a room to define the type of a lobby. Combined with the lobby name this identifies the lobby.
- const byte [LobbyStats](#) = (byte)211
 - (211) This (optional) parameter can be sent in Op Authenticate to turn on Lobby Stats (info about lobby names and their user- and game-counts). See: PhotonNetwork.Lobbies
- const byte [Region](#) = (byte)210
 - (210) Used for region values in OpAuth and OpGetRegions.
- const byte [UriPath](#) = 209
 - (209) Path of the WebRPC that got called. Also known as "WebRpc Name". Type: string.
- const byte [WebRpcParameters](#) = 208
 - (208) Parameters for a WebRPC as: Dictionary<string, object>. This will get serialized to JSON.
- const byte [WebRpcReturnCode](#) = 207
 - (207) ReturnCode for the WebRPC, as sent by the web service (not by Photon, which uses ErrorCode). Type: byte.
- const byte [WebRpcReturnMessage](#) = 206
 - (206) Message returned by WebRPC server. Analog to Photon's debug message. Type: string.
- const byte [CacheSliceIndex](#) = 205
 - (205) Used to define a "slice" for cached events. Slices can easily be removed from cache. Type: int.
- const byte [Plugins](#) = 204
 - (204) Informs the server of the expected plugin setup.
- const byte [NickName](#) = 202
 - (202) Used by the server in Operation Responses, when it sends the nickname of the client (the user's nickname).
- const byte [PluginName](#) = 201
 - (201) Informs user about name of plugin load to game
- const byte [PluginVersion](#) = 200
 - (200) Informs user about version of plugin load to game
- const byte [ExpectedProtocol](#) = 195
 - (195) Protocol which will be used by client to connect master/game servers. Used for nameserver.
- const byte [CustomInitData](#) = 194
 - (194) Set of custom parameters which are sent in auth request.
- const byte [EncryptionMode](#) = 193
 - (193) How are we going to encrypt data.
- const byte [EncryptionData](#) = 192
 - (192) Parameter of Authentication, which contains encryption keys (depends on AuthMode and EncryptionMode).
- const byte [RoomOptionFlags](#) = 191
 - (191) An int parameter summarizing several boolean room-options with bit-flags.

8.62.1 Detailed Description

Class for constants. Codes for parameters of Operations and Events.

[Pun](#) uses these constants internally.

8.62.2 Member Data Documentation

8.62.2.1 `const byte ActorList = (byte)252`

(252) Code for list of players in a room. Currently not used.

8.62.2.2 `const byte ActorNr = (byte)254`

(254) Code of the Actor of an operation. Used for property get and set.

8.62.2.3 `const byte Add = 238`

(238) The "Add" operation-parameter can be used to add something to some list or set. E.g. add groups to player's interest groups.

8.62.2.4 `const byte Address = 230`

(230) Address of a (game) server to use.

8.62.2.5 `const byte ApplicationId = 224`

(224) Your application's ID: a name on your own [Photon](#) or a GUID on the [Photon](#) Cloud

8.62.2.6 `const byte AppVersion = 220`

(220) Version of your application

8.62.2.7 `const byte AzureLocalNodeId = 209`

(209) Internally used in case of hosting by Azure

8.62.2.8 `const byte AzureMasterNodeId = 208`

(208) Internally used in case of hosting by Azure

8.62.2.9 `const byte AzureNodeInfo = 210`

(210) Internally used in case of hosting by Azure

8.62.2.10 `const byte Broadcast = (byte)250`

(250) Code for broadcast parameter of OpSetProperties method.

8.62.2.11 `const byte Cache = (byte)247`

(247) Code for caching events while raising them.

8.62.2.12 `const byte CacheSliceIndex = 205`

(205) Used to define a "slice" for cached events. Slices can easily be removed from cache. Type: int.

8.62.2.13 const byte CheckUserOnJoin = (byte)232

(232) Used when creating rooms to define if any userid can join the room only once.

8.62.2.14 const byte CleanupCacheOnLeave = (byte)241

(241) Bool parameter of CreateGame Operation. If true, server cleans up roomcache of leaving players (their cached events get removed).

8.62.2.15 const byte ClientAuthenticationData = 214

(214) This key's (string or byte[]) value provides parameters sent to the custom authentication service setup in [Photon](#) Dashboard. Used in OpAuthenticate

8.62.2.16 const byte ClientAuthenticationParams = 216

(216) This key's (string) value provides parameters sent to the custom authentication type/service the client connects with. Used in OpAuthenticate

8.62.2.17 const byte ClientAuthenticationType = 217

(217) This key's (byte) value defines the target custom authentication type/service the client connects with. Used in OpAuthenticate

8.62.2.18 const byte Code = (byte)244

(244) Code used when sending some code-related parameter, like OpRaiseEvent's event-code.

This is not the same as the Operation's code, which is no longer sent as part of the parameter Dictionary in [Photon](#) 3.

8.62.2.19 const byte CustomEventContent = (byte)245

(245) Code of data/custom content of an event. Used in OpRaiseEvent.

8.62.2.20 const byte CustomInitData = 194

(194) Set of custom parameters which are sent in auth request.

8.62.2.21 const byte Data = (byte)245

(245) Code of data of an event. Used in OpRaiseEvent.

8.62.2.22 const byte EmptyRoomTTL = 236

(236) Time To Live (TTL) for a room when the last player leaves. Keeps room in memory for case a player re-joins soon. In milliseconds.

8.62.2.23 const byte EncryptionData = 192

(192) Parameter of Authentication, which contains encryption keys (depends on AuthMode and EncryptionMode).

8.62.2.24 const byte EncryptionMode = 193

(193) How are we going to encrypt data.

8.62.2.25 const byte EventForward = 234

(234) Optional parameter of OpRaiseEvent and OpSetCustomProperties to forward the event/operation to a web-service.

8.62.2.26 const byte ExpectedProtocol = 195

(195) Protocol which will be used by client to connect master/game servers. Used for nameserver.

8.62.2.27 const byte ExpectedValues = (byte)231

(231) Code for "Check And Swap" (CAS) when changing properties.

8.62.2.28 const byte FindFriendsRequestList = (byte)1

(1) Used in Op FindFriends request. Value must be string[] of friends to look up.

8.62.2.29 const byte FindFriendsResponseOnlineList = (byte)1

(1) Used in Op FindFriends response. Contains bool[] list of online states (false if not online).

8.62.2.30 const byte FindFriendsResponseRoomIdList = (byte)2

(2) Used in Op FindFriends response. Contains string[] of room names ("" where not known or no room joined).

8.62.2.31 const byte GameCount = 228

(228) Count of games in this application (used in stats event)

8.62.2.32 const byte GameList = 222

(222) List of RoomInfos about open / listed rooms

8.62.2.33 const byte GameProperties = (byte)248

(248) Code for property set (Hashtable).

8.62.2.34 const byte Group = 240

(240) Code for "group" operation-parameter (as used in Op RaiseEvent).

8.62.2.35 const byte Info = 218

(218) Content for [EventCode.ErrorInfo](#) and internal debug operations.

8.62.2.36 const byte IsComingBack = (byte)233

(233) Optional parameter of OpLeave in async games. If false, the player does abandons the game (forever). By default players become inactive and can re-join.

8.62.2.37 const byte IsInactive = (byte)233

(233) Used in EvLeave to describe if a user is inactive (and might come back) or not. In rooms with PlayerTTL, becoming inactive is the default case.

8.62.2.38 const byte JoinMode = 215

(215) Makes the server create a room if it doesn't exist. OpJoin uses this to always enter a room, unless it exists and is full/closed.

(215) The JoinMode enum defines which variant of joining a room will be executed: Join only if available, create if not exists or re-join.

Replaces CreateIfNotExists which was only a bool-value.

8.62.2.39 const byte LobbyName = (byte)213

(213) Used in matchmaking-related methods and when creating a room to name a lobby (to join or to attach a room to).

8.62.2.40 const byte LobbyStats = (byte)211

(211) This (optional) parameter can be sent in Op Authenticate to turn on Lobby Stats (info about lobby names and their user- and game-counts). See: PhotonNetwork.Lobbies

8.62.2.41 const byte LobbyType = (byte)212

(212) Used in matchmaking-related methods and when creating a room to define the type of a lobby. Combined with the lobby name this identifies the lobby.

8.62.2.42 const byte MasterClientId = (byte)203

(203) Code for MasterClientId, which is synced by server. When sent as op-parameter this is code 203.

Tightly related to [GamePropertyKey.MasterClientId](#).

8.62.2.43 const byte MasterPeerCount = 227

(227) Count of players on the master server (in this app, looking for rooms)

8.62.2.44 const byte MatchMakingType = 223

(223) Modifies the matchmaking algorithm used for OpJoinRandom. Allowed parameter values are defined in enum MatchmakingMode.

8.62.2.45 const byte NickName = 202

(202) Used by the server in Operation Responses, when it sends the nickname of the client (the user's nickname).

8.62.2.46 const byte PeerCount = 229

(229) Count of players in this application in a rooms (used in stats event)

8.62.2.47 const byte PlayerProperties = (byte)249

(249) Code for property set (Hashtable).

8.62.2.48 const byte PlayerTTL = 235

(235) Time To Live (TTL) for an 'actor' in a room. If a client disconnects, this actor is inactive first and removed after this timeout. In milliseconds.

8.62.2.49 const byte PluginName = 201

(201) Informs user about name of plugin load to game

8.62.2.50 const byte Plugins = 204

(204) Informs the server of the expected plugin setup.

The operation will fail in case of a plugin mismatch returning error code PluginMismatch 32751(0x7FFF - 16). Setting string[]{} means the client expects no plugin to be setup. Note: for backwards compatibility null omits any check.

8.62.2.51 const byte PluginVersion = 200

(200) Informs user about version of plugin load to game

8.62.2.52 const byte Position = 223

(223) Not used currently (as "Position"). If you get queued before connect, this is your position

8.62.2.53 const byte Properties = (byte)251

(251) Code for property-set (Hashtable). This key is used when sending only one set of properties. If either [Actor↔Properties](#) or GameProperties are used (or both), check those keys.

8.62.2.54 const byte PublishUserId = 239

(239) Used in Op Join to define if UserIds of the players are broadcast in the room. Useful for FindFriends and reserving slots for expected users.

8.62.2.55 const byte ReceiverGroup = (byte)246

(246) Code to select the receivers of events (used in Lite, Operation RaiseEvent).

8.62.2.56 const byte Region = (byte)210

(210) Used for region values in OpAuth and OpGetRegions.

8.62.2.57 const byte Remove = 239

(239) The "Remove" operation-parameter can be used to remove something from a list. E.g. remove groups from player's interest groups.

8.62.2.58 const byte RoomName = (byte)255

(255) Code for the gameId/roomName (a unique name per room). Used in OpJoin and similar.

8.62.2.59 const byte RoomOptionFlags = 191

(191) An int parameter summarizing several boolean room-options with bit-flags.

8.62.2.60 const byte Secret = 221

(221) Internally used to establish encryption

8.62.2.61 const byte SuppressRoomEvents = 237

(237) A bool parameter for creating games. If set to true, no room events are sent to the clients on join and leave. Default: false (and not sent).

8.62.2.62 const byte TargetActorNr = (byte)253

(253) Code of the target Actor of an operation. Used for property set. Is 0 for game

8.62.2.63 const byte UriPath = 209

(209) Path of the WebRPC that got called. Also known as "WebRpc Name". Type: string.

8.62.2.64 const byte UserId = 225

(225) User's ID

8.62.2.65 const byte WebRpcParameters = 208

(208) Parameters for a WebRPC as: Dictionary<string, object>. This will get serialized to JSON.

8.62.2.66 const byte WebRpcReturnCode = 207

(207) ReturnCode for the WebRPC, as sent by the web service (not by [Photon](#), which uses [ErrorCode](#)). Type: byte.

8.62.2.67 const byte WebRpcReturnMessage = 206

(206) Message returned by WebRPC server. Analog to [Photon](#)'s debug message. Type: string.

8.63 ParameterCode Class Reference

Class for constants. Codes for parameters of Operations and Events.

Public Attributes

- const byte [ApplicationId](#) = 224
(224) Your application's ID: a name on your own [Photon](#) or a GUID on the [Photon](#) Cloud
- const byte [Secret](#) = 221
(221) Internally used to establish encryption
- const byte [AppVersion](#) = 220
(220) Version of your application
- const byte [ClientAuthenticationType](#) = 217
(217) This key's (byte) value defines the target custom authentication type/service the client connects with. Used in [OpAuthenticate](#)
- const byte [ClientAuthenticationParams](#) = 216
(216) This key's (string) value provides parameters sent to the custom authentication type/service the client connects with. Used in [OpAuthenticate](#)
- const byte [ClientAuthenticationData](#) = 214
(214) This key's (string or byte[]) value provides parameters sent to the custom authentication service setup in [Photon](#) Dashboard. Used in [OpAuthenticate](#)
- const byte [Region](#) = 210
(210) Used for region values in [OpAuth](#) and [OpGetRegions](#).
- const byte [Address](#) = 230
(230) Address of a (game) server to use.
- const byte [UserId](#) = 225
(225) User's ID

8.63.1 Detailed Description

Class for constants. Codes for parameters of Operations and Events.

8.63.2 Member Data Documentation

8.63.2.1 const byte Address = 230

(230) Address of a (game) server to use.

8.63.2.2 const byte ApplicationId = 224

(224) Your application's ID: a name on your own [Photon](#) or a GUID on the [Photon](#) Cloud

8.63.2.3 const byte AppVersion = 220

(220) Version of your application

8.63.2.4 const byte ClientAuthenticationData = 214

(214) This key's (string or byte[]) value provides parameters sent to the custom authentication service setup in [Photon](#) Dashboard. Used in [OpAuthenticate](#)

8.63.2.5 const byte ClientAuthenticationParams = 216

(216) This key's (string) value provides parameters sent to the custom authentication type/service the client connects with. Used in [OpAuthenticate](#)

8.63.2.6 const byte ClientAuthenticationType = 217

(217) This key's (byte) value defines the target custom authentication type/service the client connects with. Used in OpAuthenticate

8.63.2.7 const byte Region = 210

(210) Used for region values in OpAuth and OpGetRegions.

8.63.2.8 const byte Secret = 221

(221) Internally used to establish encryption

8.63.2.9 const byte UserId = 225

(225) User's ID

8.64 PhotonAnimatorView Class Reference

This class helps you to synchronize Mecanim animations Simply add the component to your GameObject and make sure that the [PhotonAnimatorView](#) is added to the list of observed components

Inherits MonoBehaviour, and [IPunObservable](#).

Classes

- class [SynchronizedLayer](#)
- class [SynchronizedParameter](#)

Public Types

- enum **ParameterType**
- enum **SynchronizeType**

Public Member Functions

- void [CacheDiscreteTriggers](#) ()
Caches the discrete triggers values for keeping track of raised triggers, and will be reseted after the sync routine got performed
- bool [DoesLayerSynchronizeTypeExist](#) (int layerIndex)
Check if a specific layer is configured to be synchronize
- bool [DoesParameterSynchronizeTypeExist](#) (string name)
Check if the specified parameter is configured to be synchronized
- List< [SynchronizedLayer](#) > [GetSynchronizedLayers](#) ()
Get a list of all synchronized layers
- List< [SynchronizedParameter](#) > [GetSynchronizedParameters](#) ()
Get a list of all synchronized parameters
- SynchronizeType [GetLayerSynchronizeType](#) (int layerIndex)
Gets the type how the layer is synchronized
- SynchronizeType [GetParameterSynchronizeType](#) (string name)

Gets the type how the parameter is synchronized

- void [SetLayerSynchronized](#) (int layerIndex, SynchronizeType synchronizeType)

Sets the how a layer should be synchronized

- void [SetParameterSynchronized](#) (string name, ParameterType type, SynchronizeType synchronizeType)

Sets the how a parameter should be synchronized

- void [OnPhotonSerializeView](#) ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

8.64.1 Detailed Description

This class helps you to synchronize Mecanim animations. Simply add the component to your GameObject and make sure that the [PhotonAnimatorView](#) is added to the list of observed components.

When Using Trigger Parameters, make sure the component that sets the trigger is higher in the stack of Components on the GameObject than '[PhotonAnimatorView](#)'. Triggers are raised true during one frame only.

8.64.2 Member Function Documentation

8.64.2.1 void CacheDiscreteTriggers ()

Caches the discrete triggers values for keeping track of raised triggers, and will be reseted after the sync routine got performed.

8.64.2.2 bool DoesLayerSynchronizeTypeExist (int layerIndex)

Check if a specific layer is configured to be synchronize.

Parameters

<i>layerIndex</i>	Index of the layer.
-------------------	---------------------

Returns

True if the layer is synchronized.

8.64.2.3 bool DoesParameterSynchronizeTypeExist (string name)

Check if the specified parameter is configured to be synchronized.

Parameters

<i>name</i>	The name of the parameter.
-------------	----------------------------

Returns

True if the parameter is synchronized.

8.64.2.4 SynchronizeType GetLayerSynchronizeType (int layerIndex)

Gets the type how the layer is synchronized.

Parameters

<i>layerIndex</i>	Index of the layer.
-------------------	---------------------

Returns

Disabled/Discrete/Continuous

8.64.2.5 SynchronizeType GetParameterSynchronizeType (string *name*)

Gets the type how the parameter is synchronized

Parameters

<i>name</i>	The name of the parameter.
-------------	----------------------------

Returns

Disabled/Discrete/Continuous

8.64.2.6 List<SynchronizedLayer> GetSynchronizedLayers ()

Get a list of all synchronized layers

Returns

List of [SynchronizedLayer](#) objects

8.64.2.7 List<SynchronizedParameter> GetSynchronizedParameters ()

Get a list of all synchronized parameters

Returns

List of [SynchronizedParameter](#) objects

8.64.2.8 void OnPhotonSerializeView (PhotonStream *stream*, PhotonMessageInfo *info*)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

This method will be called in scripts that are assigned as Observed component of a [PhotonView](#).

[PhotonNetwork.SerializationRate](#) affects how often this method is called.

[PhotonNetwork.SendRate](#) affects how often packages are sent by this client.

Implementing this method, you can customize which data a [PhotonView](#) regularly synchronizes. Your code defines what is being sent (content) and how your data is used by receiving clients.

Unlike other callbacks, *OnPhotonSerializeView* only gets called when it is assigned to a [PhotonView](#) as PhotonView.observed script.

To make use of this method, the [PhotonStream](#) is essential. It will be in "writing" mode" on the client that controls a PhotonView (PhotonStream.IsWriting == true) and in "reading mode" on the remote clients that just receive that the controlling client sends.

If you skip writing any value into the stream, PUN will skip the update. Used carefully, this can conserve bandwidth and messages (which have a limit per room/second).

Note that OnPhotonSerializeView is not called on remote clients when the sender does not send any update. This can't be used as "x-times per second Update()".

Implements [IPunObservable](#).

8.64.2.9 void SetLayerSynchronized (int *layerIndex*, SynchronizeType *synchronizeType*)

Sets the how a layer should be synchronized

Parameters

<i>layerIndex</i>	Index of the layer.
<i>synchronizeType</i>	Disabled/Discrete/Continuous

8.64.2.10 void SetParameterSynchronized (string *name*, ParameterType *type*, SynchronizeType *synchronizeType*)

Sets the how a parameter should be synchronized

Parameters

<i>name</i>	The name of the parameter.
<i>type</i>	The type of the parameter.
<i>synchronizeType</i>	Disabled/Discrete/Continuous

8.65 PhotonLagSimulationGui Class Reference

This MonoBehaviour is a basic GUI for the [Photon](#) client's network-simulation feature. It can modify lag (fixed delay), jitter (random lag) and packet loss.

Inherits MonoBehaviour.

Public Member Functions

- void **Start** ()
- void **OnGUI** ()

Public Attributes

- Rect [WindowRect](#) = new Rect(0, 100, 120, 100)
Positioning rect for window.
- int [WindowId](#) = 101
Unity GUI Window ID (must be unique or will cause issues).
- bool [Visible](#) = true
Shows or hides GUI (does not affect settings).

Properties

- PhotonPeer [Peer](#) [get, set]
The peer currently in use (to set the network simulation).

8.65.1 Detailed Description

This MonoBehaviour is a basic GUI for the [Photon](#) client's network-simulation feature. It can modify lag (fixed delay), jitter (random lag) and packet loss.

8.65.2 Member Data Documentation

8.65.2.1 bool Visible = true

Shows or hides GUI (does not affect settings).

8.65.2.2 int WindowId = 101

Unity GUI Window ID (must be unique or will cause issues).

8.65.2.3 Rect WindowRect = new Rect(0, 100, 120, 100)

Positioning rect for window.

8.65.3 Property Documentation

8.65.3.1 PhotonPeer Peer [get], [set]

The peer currently in use (to set the network simulation).

8.66 PhotonMessageInfo Struct Reference

Container class for info about a particular message, RPC or update.

Public Member Functions

- **PhotonMessageInfo** ([Player](#) player, int timestamp, [PhotonView](#) view)
- override string **ToString** ()

Public Attributes

- readonly [Player](#) **Sender**
The sender of a message / event. May be null.
- readonly [PhotonView](#) **photonView**

Properties

- double **timestamp** [get]
- double **SentServerTime** [get]
- int **SentServerTimestamp** [get]

8.66.1 Detailed Description

Container class for info about a particular message, RPC or update.

8.66.2 Member Data Documentation

8.66.2.1 readonly Player Sender

The sender of a message / event. May be null.

8.67 PhotonNetwork Class Reference

The main class to use the [PhotonNetwork](#) plugin. This class is static.

Static Public Member Functions

- static bool [ConnectUsingSettings](#) ()
Connect to [Photon](#) as configured in the PhotonServerSettings file.
- static bool [ConnectToMaster](#) (string masterServerAddress, int port, string appId)
Connect to a [Photon](#) Master Server by address, port, appId.
- static bool [ConnectToBestCloudServer](#) ()
Connect to the [Photon](#) Cloud region with the lowest ping (on platforms that support Unity's Ping).
- static bool [ConnectToRegion](#) (string region)
Connects to the [Photon](#) Cloud region of choice.
- static void [Disconnect](#) ()
Makes this client disconnect from the photon server, a process that leaves any room and calls OnDisconnected on completion.
- static bool [Reconnect](#) ()
Can be used to reconnect to the master server after a disconnect.
- static void [NetworkStatisticsReset](#) ()
Resets the traffic stats and re-enables them.
- static string [NetworkStatisticsToString](#) ()
Only available when NetworkStatisticsEnabled was used to gather some stats.
- static int [GetPing](#) ()
The current roundtrip time to the photon server.
- static void [FetchServerTimestamp](#) ()
Refreshes the server timestamp (async operation, takes a roundtrip).
- static void [SendAllOutgoingCommands](#) ()
Can be used to immediately send the RPCs and Instantiates just called, so they are on their way to the other players.
- static bool [CloseConnection](#) ([Player](#) kickPlayer)
Request a client to disconnect (KICK). Only the master client can do this
- static bool [SetMasterClient](#) ([Player](#) masterClientPlayer)
Asks the server to assign another player as Master Client of your current room.
- static bool [JoinRandomRoom](#) ()
Joins a random room that matches the filter. Will callback: OnJoinedRoom or OnJoinRandomFailed.
- static bool [JoinRandomRoom](#) (Hashtable expectedCustomRoomProperties, byte expectedMaxPlayers)
Joins a random room that matches the filter. Will callback: OnJoinedRoom or OnJoinRandomFailed.
- static bool [JoinRandomRoom](#) (Hashtable expectedCustomRoomProperties, byte expectedMaxPlayers, [MatchmakingMode](#) matchingType, [TypedLobby](#) typedLobby, string sqlLobbyFilter, string[] expectedUsers=null)
Joins a random room that matches the filter. Will callback: OnJoinedRoom or OnJoinRandomFailed.
- static bool [CreateRoom](#) (string roomName, [RoomOptions](#) roomOptions=null, [TypedLobby](#) typedLobby=null, string[] expectedUsers=null)
Creates a new room. Will callback: OnCreatedRoom and OnJoinedRoom or OnCreateRoomFailed.

- static bool **JoinOrCreateRoom** (string roomName, [RoomOptions](#) roomOptions, [TypedLobby](#) typedLobby, string[] expectedUsers=null)
Joins a specific room by name and creates it on demand. Will callback: OnJoinedRoom or OnJoinRoomFailed.
- static bool **JoinRoom** (string roomName, string[] expectedUsers=null)
Joins a room by name. Will callback: OnJoinedRoom or OnJoinRoomFailed.
- static bool **RejoinRoom** (string roomName)
Rejoins a room by roomName (using the userID internally to return). Will callback: OnJoinedRoom or OnJoinRoomFailed.
- static bool **ReconnectAndRejoin** ()
When the client lost connection during gameplay, this method attempts to reconnect and rejoin the room.
- static bool **LeaveRoom** (bool becomeInactive=true)
Leave the current room and return to the Master Server where you can join or create rooms (see remarks).
- static bool **JoinLobby** ()
On MasterServer this joins the default lobby which list rooms currently in use.
- static bool **JoinLobby** ([TypedLobby](#) typedLobby)
On a Master Server you can join a lobby to get lists of available rooms.
- static bool **LeaveLobby** ()
Leave a lobby to stop getting updates about available rooms.
- static bool **FindFriends** (string[] friendsToFind)
Requests the rooms and online status for a list of friends and saves the result in PhotonNetwork.Friends.
- static bool **GetCustomRoomList** ([TypedLobby](#) typedLobby, string sqlLobbyFilter)
Fetches a custom list of games from the server, matching a SQL-like "where" clause, then triggers OnRoomListUpdate callback.
- static void **SetPlayerCustomProperties** (Hashtable customProperties)
Sets this (local) player's properties and synchronizes them to the other players (don't modify them directly).
- static void **RemovePlayerCustomProperties** (string[] customPropertiesToDelete)
Locally removes Custom Properties of "this" player. Important: This does not synchronize the change! Useful when you switch rooms.
- static bool **RaiseEvent** (byte eventCode, object eventContent, [RaiseEventOptions](#) raiseEventOptions, SendOptions sendOptions)
Sends fully customizable events in a room. Events consist of at least an EventCode (0..199) and can have content.
- static bool **AllocateViewID** ([PhotonView](#) view)
Allocates a viewID for the current/local player.
- static bool **AllocateSceneViewID** ([PhotonView](#) view)
Enables the Master Client to allocate a viewID that is valid for scene objects.
- static GameObject **Instantiate** (string prefabName, Vector3 position, Quaternion rotation, byte group=0, object[] data=null)
- static GameObject **InstantiateSceneObject** (string prefabName, Vector3 position, Quaternion rotation, byte group=0, object[] data=null)
- static void **Destroy** ([PhotonView](#) targetView)
Network-Destroy the GameObject associated with the [PhotonView](#), unless the [PhotonView](#) is static or not under this client's control.
- static void **Destroy** (GameObject targetGo)
Network-Destroy the GameObject, unless it is static or not under this client's control.
- static void **DestroyPlayerObjects** ([Player](#) targetPlayer)
Network-Destroy all GameObjects, PhotonViews and their RPCs of targetPlayer. Can only be called on local player (for "self") or Master Client (for anyone).
- static void **DestroyPlayerObjects** (int targetPlayerId)
Network-Destroy all GameObjects, PhotonViews and their RPCs of this player (by ID). Can only be called on local player (for "self") or Master Client (for anyone).
- static void **DestroyAll** ()
Network-Destroy all GameObjects, PhotonViews and their RPCs in the room. Removes anything buffered from the server. Can only be called by Master Client (for anyone).

- static void **RemoveRPCs** (Player targetPlayer)
Remove all buffered RPCs from server that were sent by targetPlayer. Can only be called on local player (for "self") or Master Client (for anyone).
- static void **RemoveRPCs** (PhotonView targetPhotonView)
Remove all buffered RPCs from server that were sent via targetPhotonView. The Master Client and the owner of the targetPhotonView may call this.
- static HashSet< GameObject > **FindGameObjectsWithComponent** (Type type)
Finds the GameObjects with Components of a specific type (using FindObjectsOfType).
- static void **SetInterestGroups** (byte group, bool enabled)
Enable/disable receiving events from a given Interest Group.
- static void **LoadLevel** (int levelNumber)
Wraps loading a level to pause the network message-queue. Optionally syncs the loaded level in a room.
- static void **LoadLevel** (string levelName)
Wraps loading a level to pause the network message-queue. Optionally syncs the loaded level in a room.
- static bool **WebRpc** (string name, object parameters, bool sendAuthCookie=false)
This operation makes Photon call your custom web-service by name (path) with the given parameters.
- static void **AddCallbackTarget** (object target)
Registers an object for callbacks for the implemented callback-interfaces.
- static void **RemoveCallbackTarget** (object target)
Removes the target object from callbacks for its implemented callback-interfaces.
- static void **DestroyPlayerObjects** (int playerId, bool localOnly)
Destroys all Instantiates and RPCs locally and (if not localOnly) sends EvDestroy(player) and clears related events in the server buffer.
- static void **DestroyAll** (bool localOnly)
- static bool **LocalCleanPhotonView** (PhotonView view)
- static PhotonView **GetPhotonView** (int viewID)
- static void **RegisterPhotonView** (PhotonView netView)
- static void **OpCleanActorRpcBuffer** (int actorNumber)
Removes the RPCs of someone else (to be used as master). This won't clean any local caches. It just tells the server to forget a player's RPCs and instantiates.
- static void **OpRemoveCompleteCacheOfPlayer** (int actorNumber)
Instead removing RPCs or Instantiates, this removed everything cached by the actor.
- static void **OpRemoveCompleteCache** ()
- static void **CleanRpcBufferIfMine** (PhotonView view)
- static void **OpCleanRpcBuffer** (PhotonView view)
Cleans server RPCs for PhotonView (without any further checks).
- static void **RemoveRPCsInGroup** (int group)
Remove all buffered RPCs from server that were sent in the targetGroup, if this is the Master Client or if this controls the individual PhotonView.
- static void **SetLevelPrefix** (byte prefix)
Sets level prefix for PhotonViews instantiated later on. Don't set it if you need only one!
- static void **SetInterestGroups** (byte[] disableGroups, byte[] enableGroups)
Enable/disable receiving on given Interest Groups (applied to PhotonViews).
- static void **SetSendingEnabled** (byte group, bool enabled)
Enable/disable sending on given group (applied to PhotonViews)
- static void **SetSendingEnabled** (byte[] disableGroups, byte[] enableGroups)
Enable/disable sending on given groups (applied to PhotonViews)

Public Attributes

- const string **PunVersion** = "2.7"
Version number of PUN. Used in the AppVersion, which separates your playerbase in matchmaking.
- const int **SyncViewId** = 0
- const int **SyncCompressed** = 1
- const int **SyncNullValues** = 2
- const int **SyncFirstValue** = 3

Static Public Attributes

- static **LoadBalancingClient NetworkingClient**
The LoadBalancingClient is part of *Photon Realtime* and wraps up multiple servers and states for PUN.
- static readonly int **MAX_VIEW_IDS** = 1000
The maximum number of assigned PhotonViews per player (or scene). See the *General Documentation* topic "*Limitations*" on how to raise this limitation.
- static **ServerSettings PhotonServerSettings** = (ServerSettings)Resources.Load(PhotonNetwork.ServerSettingsFileName, typeof(ServerSettings))
Serialized server settings, written by the Setup Wizard for use in ConnectUsingSettings.
- static **ConnectMethod ConnectMethod** = ConnectMethod.NotCalled
Tracks, which Connect method was called last.
- static **PunLogLevel LogLevel** = PunLogLevel.ErrorsOnly
Controls how verbose PUN is.
- static float **PrecisionForVectorSynchronization** = 0.000099f
The minimum difference that a Vector2 or Vector3(e.g. a transforms rotation) needs to change before we send it via a PhotonView's OnSerialize/ObservingComponent.
- static float **PrecisionForQuaternionSynchronization** = 1.0f
The minimum angle that a rotation needs to change before we send it via a PhotonView's OnSerialize/ObservingComponent.
- static float **PrecisionForFloatSynchronization** = 0.01f
The minimum difference between floats before we send it via a PhotonView's OnSerialize/ObservingComponent.
- static bool **UseRpcMonoBehaviourCache**
While enabled, the MonoBehaviours on which we call RPCs are cached, avoiding costly GetComponent<MonoBehaviour>() calls.
- static int **ObjectsInOneUpdate** = 10
Defines how many OnPhotonSerialize()-calls might get summarized in one message.

Properties

- static string **GameVersion** [get, set]
Version number of your game. Setting this updates the AppVersion, which separates your playerbase in matchmaking.
- static string **AppVersion** [get]
Sent to Photon Server to specify the "Virtual Appld".
- static string **ServerAddress** [get]
Currently used server address (no matter if master or game server).
- static string **CloudRegion** [get]
Currently used Cloud Region (if any). As long as the client is not on a Master Server or Game Server, the region is not yet defined.
- static string **BestRegionSummaryInPreferences** [get, set]
Used to store and access the "Best Region Summary" in the Player Preferences.
- static bool **IsConnected** [get]

- False until you connected to [Photon](#) initially. True in offline mode, while connected to any server and even while switching servers.*
- static bool [IsConnectedAndReady](#) [get]

A refined version of connected which is true only if your connection to the server is ready to accept operations like join, leave, etc.
 - static [ClientState](#) [NetworkClientState](#) [get]

Directly provides the network-level client state, unless in [OfflineMode](#).
 - static [ServerConnection](#) [Server](#) [get]

The server (type) this client is currently connected or connecting to.
 - static [AuthenticationValues](#) [AuthValues](#) [get, set]

A user's authentication values used during connect.
 - static [TypedLobby](#) [CurrentLobby](#) [get]

The lobby that will be used when PUN joins a lobby or creates a game. This is defined when joining a lobby or creating rooms
 - static [Room](#) [CurrentRoom](#) [get]

Get the room we're currently in (also when in [OfflineMode](#)). Null if we aren't in any room.
 - static [Player](#) [LocalPlayer](#) [get]

This client's [Player](#) instance is always available, unless the app shuts down.
 - static string [NickName](#) [get, set]

Set to synchronize the player's nickname with everyone in the room(s) you enter. This sets [PhotonNetwork.player.NickName](#).
 - static [Player\[\]](#) [PlayerList](#) [get]

A sorted copy of the players-list of the current room. This is using Linq, so better cache this value. Update when players join / leave.
 - static [Player\[\]](#) [PlayerListOthers](#) [get]

A sorted copy of the players-list of the current room, excluding this client. This is using Linq, so better cache this value. Update when players join / leave.
 - static bool [OfflineMode](#) [get, set]

Offline mode can be set to re-use your multiplayer code in singleplayer game modes. When this is on [PhotonNetwork](#) will not create any connections and there is near to no overhead. Mostly usefull for reusing RPC's and [PhotonNetwork.Instantiate](#)
 - static bool [AutomaticallySyncScene](#) [get, set]

Defines if all clients in a room should load the same level as the Master Client (if that used [PhotonNetwork.LoadLevel](#)).
 - static bool [EnableLobbyStatistics](#) [get]

If enabled, the client will get a list of available lobbies from the Master Server.
 - static bool [InLobby](#) [get]

True while this client is in a lobby.
 - static int [SendRate](#) [get, set]

Defines how many times per second [PhotonNetwork](#) should send a package. If you change this, do not forget to also change 'SerializationRate'.
 - static int [SerializationRate](#) [get, set]

Defines how many times per second [OnPhotonSerialize](#) should be called on [PhotonViews](#).
 - static bool [IsMessageQueueRunning](#) [get, set]

Can be used to pause dispatching of incoming evtents (RPCs, Instantiates and anything else incoming).
 - static double [Time](#) [get]

[Photon](#) network time, synched with the server.
 - static int [ServerTimestamp](#) [get]

The current server's millisecond timestamp.
 - static float [KeepAliveInBackground](#) [get, set]

Defines how many seconds PUN keeps the connection after Unity's [OnApplicationPause\(true\)](#) call. Default: 60 seconds.
 - static float [BackgroundTimeout](#) [get, set]
 - static bool [IsMasterClient](#) [get]

- Are we the master client?*

 - static [Player MasterClient](#) [get]
 - The Master Client of the current room or null (outside of rooms).*
 - static bool [InRoom](#) [get]
 - Is true while being in a room (NetworkClientState == ClientState.Joined).*
 - static int [CountOfPlayersOnMaster](#) [get]
 - The count of players currently looking for a room (available on MasterServer in 5sec intervals).*
 - static int [CountOfPlayersInRooms](#) [get]
 - Count of users currently playing your app in some room (sent every 5sec by Master Server). Use PhotonNetwork.↔ PlayerList.Length or PhotonNetwork.CurrentRoom.PlayerCount to get the count of players in the room you're in!*
 - static int [CountOfPlayers](#) [get]
 - The count of players currently using this application (available on MasterServer in 5sec intervals).*
 - static int [CountOfRooms](#) [get]
 - The count of rooms currently in use (available on MasterServer in 5sec intervals).*
 - static bool [NetworkStatisticsEnabled](#) [get, set]
 - Enables or disables the collection of statistics about this client's traffic.*
 - static int [ResentReliableCommands](#) [get]
 - Count of commands that got repeated (due to local repeat-timing before an ACK was received).*
 - static bool [CrcCheckEnabled](#) [get, set]
 - Crc checks can be useful to detect and avoid issues with broken datagrams. Can be enabled while not connected.*
 - static int [PacketLossByCrcCheck](#) [get]
 - If CrcCheckEnabled, this counts the incoming packages that don't have a valid CRC checksum and got rejected.*
 - static int [MaxResendsBeforeDisconnect](#) [get, set]
 - Defines the number of times a reliable message can be resent before not getting an ACK for it will trigger a disconnect. Default: 5.*
 - static int [QuickResends](#) [get, set]
 - In case of network loss, reliable messages can be repeated quickly up to 3 times.*
 - static bool [UseAlternativeUdpPorts](#) [get, set]
 - Switch to alternative ports for a UDP connection to the Public Cloud.*
 - static [PhotonView\[\] PhotonViews](#) [get]
 - Gets the photon views.*
 - static [IPunPrefabPool PrefabPool](#) [get, set]
 - An Object Pool can be used to keep and reuse instantiated object instances. Replaces Unity's default Instantiate and Destroy methods.*
 - static float [LevelLoadingProgress](#) [get]
 - Gets the networked level loading progress. Value will be zero until the first loading, and remain at one in between loadings Use [PhotonNetwork.LoadLevel\(\)](#) to initiate a networked level Loading*

8.67.1 Detailed Description

The main class to use the [PhotonNetwork](#) plugin. This class is static.

8.67.2 Member Function Documentation

8.67.2.1 static void AddCallbackTarget (object *target*) [static]

Registers an object for callbacks for the implemented callback-interfaces.

The covered callback interfaces are: IConnectionCallbacks, IMatchmakingCallbacks, ILobbyCallbacks, IInRoom↔ Callbacks, IOnEventCallback and IWebRpcCallback.

See: [.Net Callbacks](#)

Parameters

<i>target</i>	The object that registers to get callbacks from PUN's LoadBalancingClient.
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8.67.2.2 static bool AllocateSceneViewID (PhotonView view) [static]

Enables the Master Client to allocate a viewID that is valid for scene objects.

Returns

8.67.2.3 static bool AllocateViewID (PhotonView view) [static]

Allocates a viewID for the current/local player.

Returns

8.67.2.4 static bool CloseConnection (Player kickPlayer) [static]

Request a client to disconnect (KICK). Only the master client can do this

Only the target player gets this event. That player will disconnect automatically, which is what the others will notice, too.

Parameters

<i>kickPlayer</i>	The Player to kick.
-------------------	---------------------

8.67.2.5 static bool ConnectToBestCloudServer () [static]

Connect to the [Photon](#) Cloud region with the lowest ping (on platforms that support Unity's Ping).

Will save the result of pinging all cloud servers in PlayerPrefs. Calling this the first time can take +-2 seconds. The ping result can be overridden via PhotonNetwork.OverrideBestCloudServer(..) This call can take up to 2 seconds if it is the first time you are using this, all cloud servers will be pinged to check for the best region.

The PUN Setup Wizard stores your appId in a settings file and applies a server address/port. To connect to the [Photon](#) Cloud, a valid AppId must be in the settings file (shown in the [Photon](#) Cloud Dashboard). <https://dashboard.photonengine.com>

Connecting to the [Photon](#) Cloud might fail due to:

- Invalid AppId
- Network issues
- Invalid region
- Subscription CCU limit reached
- etc.

In general check out the DisconnectCause from the [IConnectionCallbacks.OnDisconnected](#) callback.

Returns

If this client is going to connect to cloud server based on ping. Even if true, this does not guarantee a connection but the attempt is being made.

8.67.2.6 static bool ConnectToMaster (string *masterServerAddress*, int *port*, string *appId*) [static]

Connect to a [Photon](#) Master Server by address, port, appId.

To connect to the [Photon](#) Cloud, a valid AppId must be in the settings file (shown in the [Photon](#) Cloud Dashboard).
<https://dashboard.photonengine.com>

Connecting to the [Photon](#) Cloud might fail due to:

- Invalid AppId
- Network issues
- Invalid region
- Subscription CCU limit reached
- etc.

In general check out the DisconnectCause from the [IConnectionCallbacks.OnDisconnected](#) callback.

Parameters

<i>masterServer↔ Address</i>	The server's address (either your own or Photon Cloud address).
<i>port</i>	The server's port to connect to.
<i>appId</i>	Your application ID (Photon Cloud provides you with a GUID for your game).

8.67.2.7 static bool ConnectToRegion (string *region*) [static]

Connects to the [Photon](#) Cloud region of choice.

8.67.2.8 static bool ConnectUsingSettings () [static]

Connect to [Photon](#) as configured in the PhotonServerSettings file.

Implement IConnectionCallbacks, to make your game logic aware of state changes. Especially, IConnection↔Callbacks.ConnectedToMasterserver is useful to react when the client can do matchmaking.

This method will disable OfflineMode (which won't destroy any instantiated GOs) and it will set IsMessageQueue↔Running to true.

Your [Photon](#) configuration is created by the PUN Wizard and contains the AppId, region for [Photon](#) Cloud games, the server address among other things.

To ignore the settings file, set the relevant values and connect by calling ConnectToMaster, ConnectToRegion.

To connect to the [Photon](#) Cloud, a valid AppId must be in the settings file (shown in the [Photon](#) Cloud Dashboard).
<https://dashboard.photonengine.com>

Connecting to the [Photon](#) Cloud might fail due to:

- Invalid AppId
- Network issues
- Invalid region
- Subscription CCU limit reached
- etc.

In general check out the DisconnectCause from the [IConnectionCallbacks.OnDisconnected](#) callback.

8.67.2.9 `static bool CreateRoom (string roomName, RoomOptions roomOptions = null, TypedLobby typedLobby = null, string[] expectedUsers = null) [static]`

Creates a new room. Will callback: OnCreatedRoom and OnJoinedRoom or OnCreateRoomFailed.

When successful, this calls the callbacks OnCreatedRoom and OnJoinedRoom (the latter, cause you join as first player). In all error cases, OnCreateRoomFailed gets called.

Creating a room will fail if the room name is already in use or when the RoomOptions clashing with one another. Check the EnterRoomParams reference for the various room creation options.

If you don't want to create a unique room-name, pass null or "" as name and the server will assign a roomName (a GUID as string).

This method can only be called while the client is connected to a Master Server so you should implement the callback OnConnectedToMaster. Check the return value to make sure the operation will be called on the server. Note: There will be no callbacks if this method returned false.

More about PUN matchmaking: <https://doc.photonengine.com/en-us/pun/v2/lobby-and-matchmaking/matchmaking>

Parameters

<i>roomName</i>	Unique name of the room to create. Pass null or "" to make the server generate a name.
<i>roomOptions</i>	Common options for the room like MaxPlayers, initial custom room properties and similar. See RoomOptions type..
<i>typedLobby</i>	If null, the room is automatically created in the currently used lobby (which is "default" when you didn't join one explicitly).
<i>expectedUsers</i>	Optional list of users (by UserId) who are expected to join this game and who you want to block a slot for.

Returns

If the operation got queued and will be sent.

8.67.2.10 `static void Destroy (PhotonView targetView) [static]`

Network-Destroy the GameObject associated with the PhotonView, unless the PhotonView is static or not under this client's control.

Destroying a networked GameObject while in a Room includes:

- Removal of the Instantiate call from the server's room buffer.
- Removing RPCs buffered for PhotonViews that got created indirectly with the PhotonNetwork.Instantiate call.
- Sending a message to other clients to remove the GameObject also (affected by network lag).

Usually, when you leave a room, the GOs get destroyed automatically. If you have to destroy a GO while not in a room, the Destroy is only done locally.

Destroying networked objects works only if they got created with PhotonNetwork.Instantiate(). Objects loaded with a scene are ignored, no matter if they have PhotonView components.

The GameObject must be under this client's control:

- Instantiated and owned by this client.
- Instantiated objects of players who left the room are controlled by the Master Client.
- Scene-owned game objects are controlled by the Master Client.
- GameObject can be destroyed while client is not in a room.

Returns

Nothing. Check error debug log for any issues.

8.67.2.11 `static void Destroy (GameObject targetGo) [static]`

Network-Destroy the GameObject, unless it is static or not under this client's control.

Destroying a networked GameObject includes:

- Removal of the Instantiate call from the server's room buffer.
- Removing RPCs buffered for PhotonViews that got created indirectly with the PhotonNetwork.Instantiate call.
- Sending a message to other clients to remove the GameObject also (affected by network lag).

Usually, when you leave a room, the GOs get destroyed automatically. If you have to destroy a GO while not in a room, the Destroy is only done locally.

Destroying networked objects works only if they got created with PhotonNetwork.Instantiate(). Objects loaded with a scene are ignored, no matter if they have [PhotonView](#) components.

The GameObject must be under this client's control:

- Instantiated and owned by this client.
- Instantiated objects of players who left the room are controlled by the Master Client.
- Scene-owned game objects are controlled by the Master Client.
- GameObject can be destroyed while client is not in a room.

Returns

Nothing. Check error debug log for any issues.

8.67.2.12 `static void DestroyAll () [static]`

Network-Destroy all GameObjects, PhotonViews and their RPCs in the room. Removes anything buffered from the server. Can only be called by Master Client (for anyone).

Can only be called by Master Client (for anyone). Unlike the Destroy methods, this will remove anything from the server's room buffer. If your game buffers anything beyond Instantiate and RPC calls, that will be cleaned as well from server.

Destroying all includes:

- Remove anything from the server's room buffer (Instantiate, RPCs, anything buffered).
- Sending a message to other clients to destroy everything locally, too (affected by network lag).

Destroying networked objects works only if they got created with PhotonNetwork.Instantiate(). Objects loaded with a scene are ignored, no matter if they have [PhotonView](#) components.

Returns

Nothing. Check error debug log for any issues.

8.67.2.13 static void DestroyPlayerObjects (int playerId, bool localOnly) [static]

Destroys all Instantiates and RPCs locally and (if not localOnly) sends EvDestroy(player) and clears related events in the server buffer.

8.67.2.14 static void DestroyPlayerObjects (Player targetPlayer) [static]

Network-Destroy all GameObjects, PhotonViews and their RPCs of targetPlayer. Can only be called on local player (for "self") or Master Client (for anyone).

Destroying a networked GameObject includes:

- Removal of the Instantiate call from the server's room buffer.
- Removing RPCs buffered for PhotonViews that got created indirectly with the PhotonNetwork.Instantiate call.
- Sending a message to other clients to remove the GameObject also (affected by network lag).

Destroying networked objects works only if they got created with PhotonNetwork.Instantiate(). Objects loaded with a scene are ignored, no matter if they have [PhotonView](#) components.

Returns

Nothing. Check error debug log for any issues.

8.67.2.15 static void DestroyPlayerObjects (int targetPlayerId) [static]

Network-Destroy all GameObjects, PhotonViews and their RPCs of this player (by ID). Can only be called on local player (for "self") or Master Client (for anyone).

Destroying a networked GameObject includes:

- Removal of the Instantiate call from the server's room buffer.
- Removing RPCs buffered for PhotonViews that got created indirectly with the PhotonNetwork.Instantiate call.
- Sending a message to other clients to remove the GameObject also (affected by network lag).

Destroying networked objects works only if they got created with PhotonNetwork.Instantiate(). Objects loaded with a scene are ignored, no matter if they have [PhotonView](#) components.

Returns

Nothing. Check error debug log for any issues.

8.67.2.16 static void Disconnect () [static]

Makes this client disconnect from the photon server, a process that leaves any room and calls OnDisconnected on completion.

When you disconnect, the client will send a "disconnecting" message to the server. This speeds up leave/disconnect messages for players in the same room as you (otherwise the server would timeout this client's connection). When used in OfflineMode, the state-change and event-call OnDisconnected are immediate. Offline mode is set to false as well. Once disconnected, the client can connect again. Use ConnectUsingSettings.

8.67.2.17 static void FetchServerTimestamp () [static]

Refreshes the server timestamp (async operation, takes a roundtrip).

Can be useful if a bad connection made the timestamp unusable or imprecise.

8.67.2.18 static bool FindFriends (string[] *friendsToFind*) [static]

Requests the rooms and online status for a list of friends and saves the result in PhotonNetwork.Friends.

Works only on Master Server to find the rooms played by a selected list of users.

The result will be stored in PhotonNetwork.Friends when available. That list is initialized on first use of OpFindFriends (before that, it is null). To refresh the list, call FindFriends again (in 5 seconds or 10 or 20).

Users identify themselves by setting a unique userId in the [PhotonNetwork.AuthValues](#). See remarks of AuthenticationValues for info about how this is set and used.

The list of friends must be fetched from some other source (not provided by Photon).

Internal: The server response includes 2 arrays of info (each index matching a friend from the request): [ParameterCode.FindFriendsResponseOnlineList](#) = bool[] of online states [ParameterCode.FindFriendsResponseRoomIdList](#) = string[] of room names (empty string if not in a room)

Parameters

<i>friendsToFind</i>	Array of friend (make sure to use unique NickName or AuthValues).
----------------------	---

Returns

If the operation could be sent (requires connection, only one request is allowed at any time). Always false in offline mode.

8.67.2.19 static HashSet<GameObject> FindGameObjectsWithComponent (Type *type*) [static]

Finds the GameObjects with Components of a specific type (using FindObjectsOfType).

Parameters

<i>type</i>	Type must be a Component
-------------	--------------------------

Returns

HashSet with GameObjects that have a specific type of Component.

8.67.2.20 static bool GetCustomRoomList (TypedLobby *typedLobby*, string *sqlLobbyFilter*) [static]

Fetches a custom list of games from the server, matching a SQL-like "where" clause, then triggers OnRoomListUpdate callback.

Operation is only available for lobbies of type SqlLobby. This is an async request.

Note: You don't have to join a lobby to query it. Rooms need to be "attached" to a lobby, which can be done via the typedLobby parameter in CreateRoom, JoinOrCreateRoom, etc..

When done, OnRoomListUpdate gets called.

https://doc.photonengine.com/en-us/pun/v2/lobby-and-matchmaking/matchmaking-and-lobby::sql_lobby_type

Parameters

<i>typedLobby</i>	The lobby to query. Has to be of type SqlLobby.
<i>sqlLobbyFilter</i>	The sql query statement.

Returns

If the operation could be sent (has to be connected).

8.67.2.21 static int GetPing () [static]

The current roundtrip time to the photon server.

Returns

Roundtrip time (to server and back).

8.67.2.22 static bool JoinLobby () [static]

On MasterServer this joins the default lobby which list rooms currently in use.

The room list is sent and refreshed by the server. You can access this cached list by PhotonNetwork.GetRoomList().

Per room you should check if it's full or not before joining. Photon also lists rooms that are full, unless you close and hide them (room.open = false and room.visible = false).

In best case, you make your clients join random games, as described here: <https://doc.photonengine.com/en-us/pun/v2/lobby-and-matchmaking/matchmaking-and-lobby>

You can show your current players and room count without joining a lobby (but you must be on the master server). Use: CountOfPlayers, CountOfPlayersOnMaster, CountOfPlayersInRooms and CountOfRooms.

You can use more than one lobby to keep the room lists shorter. See [JoinLobby\(TypedLobby lobby\)](#). When creating new rooms, they will be "attached" to the currently used lobby or the default lobby.

You can use JoinRandomRoom without being in a lobby!

8.67.2.23 static bool JoinLobby (TypedLobby typedLobby) [static]

On a Master Server you can join a lobby to get lists of available rooms.

The room list is sent and refreshed by the server. You can access this cached list by PhotonNetwork.GetRoomList().

Any client can "make up" any lobby on the fly. Splitting rooms into multiple lobbies will keep each list shorter. However, having too many lists might ruin the matchmaking experience.

In best case, you create a limited number of lobbies. For example, create a lobby per game-mode: "koth" for king of the hill and "ffa" for free for all, etc.

There is no listing of lobbies at the moment.

Sql-typed lobbies offer a different filtering model for random matchmaking. This might be more suited for skillbased-games. However, you will also need to follow the conventions for naming filterable properties in sql-lobbies! Both is explained in the matchmaking doc linked below.

In best case, you make your clients join random games, as described here: <https://doc.photonengine.com/en-us/realtime/current/reference/matchmaking-and-lobby>

Per room you should check if it's full or not before joining. Photon does list rooms that are full, unless you close and hide them (room.open = false and room.visible = false).

You can show your games current players and room count without joining a lobby (but you must be on the master server). Use: CountOfPlayers, CountOfPlayersOnMaster, CountOfPlayersInRooms and CountOfRooms.

When creating new rooms, they will be "attached" to the currently used lobby or the default lobby.

You can use JoinRandomRoom without being in a lobby!

Parameters

<i>typedLobby</i>	A typed lobby to join (must have name and type).
-------------------	--

8.67.2.24 `static bool JoinOrCreateRoom (string roomName, RoomOptions roomOptions, TypedLobby typedLobby, string[] expectedUsers = null) [static]`

Joins a specific room by name and creates it on demand. Will callback: OnJoinedRoom or OnJoinRoomFailed.

Useful when players make up a room name to meet in: All involved clients call the same method and whoever is first, also creates the room.

When successful, the client will enter the specified room. The client which creates the room, will callback both OnCreatedRoom and OnJoinedRoom. Clients that join an existing room will only callback OnJoinedRoom. In all error cases, OnJoinRoomFailed gets called.

Joining a room will fail, if the room is full, closed or when the user already is present in the room (checked by `userId`).

To return to a room, use `OpRejoinRoom`.

This method can only be called while the client is connected to a Master Server so you should implement the callback `OnConnectedToMaster`. Check the return value to make sure the operation will be called on the server. Note: There will be no callbacks if this method returned false.

If you set room properties in `roomOptions`, they get ignored when the room is existing already. This avoids changing the room properties by late joining players.

You can define an array of `expectedUsers`, to block player slots in the room for these users. The corresponding feature in [Photon](#) is called "Slot Reservation" and can be found in the doc pages.

More about PUN matchmaking: <https://doc.photonengine.com/en-us/pun/v2/lobby-and-matchmaking/matchmaking>

Parameters

<i>roomName</i>	Name of the room to join. Must be non null.
<i>roomOptions</i>	Options for the room, in case it does not exist yet. Else these values are ignored.
<i>typedLobby</i>	Lobby you want a new room to be listed in. Ignored if the room was existing and got joined.
<i>expectedUsers</i>	Optional list of users (by <code>UserId</code>) who are expected to join this game and who you want to block a slot for.

Returns

If the operation got queued and will be sent.

8.67.2.25 `static bool JoinRandomRoom () [static]`

Joins a random room that matches the filter. Will callback: OnJoinedRoom or OnJoinRandomFailed.

Used for random matchmaking. You can join any room or one with specific properties defined in `opJoinRandomRoomParams`.

This operation fails if no rooms are fitting or available (all full, closed, in another lobby or not visible). It may also fail when actually joining the room which was found. Rooms may close, become full or empty anytime.

This method can only be called while the client is connected to a Master Server so you should implement the callback `OnConnectedToMaster`. Check the return value to make sure the operation will be called on the server. Note: There will be no callbacks if this method returned false.

More about PUN matchmaking: <https://doc.photonengine.com/en-us/pun/v2/lobby-and-matchmaking/matchmaking>

8.67.2.26 `static bool JoinRandomRoom (Hashtable expectedCustomRoomProperties, byte expectedMaxPlayers) [static]`

Joins a random room that matches the filter. Will callback: OnJoinedRoom or OnJoinRandomFailed.

Used for random matchmaking. You can join any room or one with specific properties defined in `opJoinRandomRoomParams`.

This operation fails if no rooms are fitting or available (all full, closed, in another lobby or not visible). It may also fail when actually joining the room which was found. Rooms may close, become full or empty anytime.

This method can only be called while the client is connected to a Master Server so you should implement the callback `OnConnectedToMaster`. Check the return value to make sure the operation will be called on the server. Note: There will be no callbacks if this method returned false.

More about PUN matchmaking: <https://doc.photonengine.com/en-us/pun/v2/lobby-and-matchmaking/matchmaking>

Parameters

<i>expectedCustomRoomProperties</i>	Filters for rooms that match these custom properties (string keys and values). To ignore, pass null.
<i>expectedMaxPlayers</i>	Filters for a particular maxplayer setting. Use 0 to accept any maxPlayer value.

Returns

If the operation got queued and will be sent.

```
8.67.2.27 static bool JoinRandomRoom ( Hashtable expectedCustomRoomProperties, byte expectedMaxPlayers,
    MatchmakingMode matchingType, TypedLobby typedLobby, string sqlLobbyFilter, string[] expectedUsers =
    null ) [static]
```

Joins a random room that matches the filter. Will callback: `OnJoinedRoom` or `OnJoinRandomFailed`.

Used for random matchmaking. You can join any room or one with specific properties defined in `opJoinRandomRoomParams`.

This operation fails if no rooms are fitting or available (all full, closed, in another lobby or not visible). It may also fail when actually joining the room which was found. Rooms may close, become full or empty anytime.

This method can only be called while the client is connected to a Master Server so you should implement the callback `OnConnectedToMaster`. Check the return value to make sure the operation will be called on the server. Note: There will be no callbacks if this method returned false.

More about PUN matchmaking: <https://doc.photonengine.com/en-us/pun/v2/lobby-and-matchmaking/matchmaking>

Parameters

<i>expectedCustomRoomProperties</i>	Filters for rooms that match these custom properties (string keys and values). To ignore, pass null.
<i>expectedMaxPlayers</i>	Filters for a particular maxplayer setting. Use 0 to accept any maxPlayer value.
<i>matchingType</i>	Selects one of the available matchmaking algorithms. See <code>MatchmakingMode</code> enum for options.
<i>typedLobby</i>	The lobby in which you want to lookup a room. Pass null, to use the default lobby. This does not join that lobby and neither sets the lobby property.
<i>sqlLobbyFilter</i>	A filter-string for SQL-typed lobbies.
<i>expectedUsers</i>	Optional list of users (by <code>UserId</code>) who are expected to join this game and who you want to block a slot for.

Returns

If the operation got queued and will be sent.

```
8.67.2.28 static bool JoinRoom ( string roomName, string[] expectedUsers = null ) [static]
```

Joins a room by name. Will callback: `OnJoinedRoom` or `OnJoinRoomFailed`.

Useful when using lobbies or when players follow friends or invite each other.

When successful, the client will enter the specified room and callback via `OnJoinedRoom`. In all error cases, `OnJoinRoomFailed` gets called.

Joining a room will fail if the room is full, closed, not existing or when the user already is present in the room (checked by `userId`).

To return to a room, use `OpRejoinRoom`. When players invite each other and it's unclear who's first to respond, use `OpJoinOrCreateRoom` instead.

This method can only be called while the client is connected to a Master Server so you should implement the callback `OnConnectedToMaster`. Check the return value to make sure the operation will be called on the server. Note: There will be no callbacks if this method returned false.

More about PUN matchmaking: <https://doc.photonengine.com/en-us/pun/v2/lobby-and-matchmaking/matchmaking>

`OnJoinRoomFailed` `OnJoinedRoom`

Parameters

<i>roomName</i>	Unique name of the room to join.
<i>expectedUsers</i>	Optional list of users (by <code>UserId</code>) who are expected to join this game and who you want to block a slot for.

Returns

If the operation got queued and will be sent.

8.67.2.29 static bool LeaveLobby () [static]

Leave a lobby to stop getting updates about available rooms.

This does not reset `PhotonNetwork.lobby`! This allows you to join this particular lobby later easily.

The values `CountOfPlayers`, `CountOfPlayersOnMaster`, `CountOfPlayersInRooms` and `CountOfRooms` are received even without being in a lobby.

You can use `JoinRandomRoom` without being in a lobby.

8.67.2.30 static bool LeaveRoom (bool becomeInactive = true) [static]

Leave the current room and return to the Master Server where you can join or create rooms (see remarks).

This will clean up all (network) `GameObjects` with a `PhotonView`, unless you changed `autoCleanUp` to false. Returns to the Master Server.

In `OfflineMode`, the local "fake" room gets cleaned up and `OnLeftRoom` gets called immediately.

In a room with `playerTTL < 0`, `LeaveRoom` just turns a client inactive. The player stays in the room's player list and can return later on. Setting `becomeInactive` to false deliberately, means to "abandon" the room, despite the `playerTTL` allowing you to come back.

In a room with `playerTTL == 0`, `become inactive` has no effect (clients are removed from the room right away).

Parameters

<i>becomeInactive</i>	If this client becomes inactive in a room with <code>playerTTL < 0</code> . Defaults to true.
-----------------------	--

8.67.2.31 static void LoadLevel (int levelNumber) [static]

Wraps loading a level to pause the network message-queue. Optionally syncs the loaded level in a room.

To sync the loaded level in a room, set [PhotonNetwork.AutomaticallySyncScene](#) to true. The Master Client of a room will then sync the loaded level with every other player in the room.

While loading levels, it makes sense to not dispatch messages received by other players. This method takes care of that by setting [PhotonNetwork.IsMessageQueueRunning](#) = false and enabling the queue when the level was loaded.

You should make sure you don't fire RPCs before you load another scene (which doesn't contain the same Game↔Objects and PhotonViews). You can call this in OnJoinedRoom.

This uses SceneManager.LoadSceneAsync().

Check the progress of the LevelLoading using [PhotonNetwork.LevelLoadingProgress](#) (-1 means no loading, then it ranges from 0 to 1)

Parameters

<i>levelNumber</i>	Number of the level to load. When using level numbers, make sure they are identical on all clients.
--------------------	---

8.67.2.32 static void LoadLevel (string *levelName*) [static]

Wraps loading a level to pause the network message-queue. Optionally syncs the loaded level in a room.

While loading levels, it makes sense to not dispatch messages received by other players. This method takes care of that by setting [PhotonNetwork.IsMessageQueueRunning](#) = false and enabling the queue when the level was loaded.

To sync the loaded level in a room, set [PhotonNetwork.AutomaticallySyncScene](#) to true. The Master Client of a room will then sync the loaded level with every other player in the room.

You should make sure you don't fire RPCs before you load another scene (which doesn't contain the same Game↔Objects and PhotonViews). You can call this in OnJoinedRoom.

This uses SceneManager.LoadSceneAsync().

Check the progress of the LevelLoading using [PhotonNetwork.LevelLoadingProgress](#) (-1 means no loading, then it ranges from 0 to 1)

Parameters

<i>levelName</i>	Name of the level to load. Make sure it's available to all clients in the same room.
------------------	--

8.67.2.33 static void NetworkStatisticsReset () [static]

Resets the traffic stats and re-enables them.

8.67.2.34 static string NetworkStatisticsToString () [static]

Only available when NetworkStatisticsEnabled was used to gather some stats.

Returns

A string with vital networking statistics.

8.67.2.35 static void OpCleanActorRpcBuffer (int *actorNumber*) [static]

Removes the RPCs of someone else (to be used as master). This won't clean any local caches. It just tells the server to forget a player's RPCs and instantiates.

Parameters

<i>actorNumber</i>	
--------------------	--

8.67.2.36 static void OpCleanRpcBuffer (**PhotonView** view) [static]

Cleans server RPCs for [PhotonView](#) (without any further checks).

8.67.2.37 static void OpRemoveCompleteCacheOfPlayer (int *actorNumber*) [static]

Instead removing RPCs or Instantiates, this removed everything cached by the actor.

Parameters

<i>actorNumber</i>	
--------------------	--

8.67.2.38 static bool RaiseEvent (byte *eventCode*, object *eventContent*, **RaiseEventOptions** *raiseEventOptions*, **SendOptions** *sendOptions*) [static]

Sends fully customizable events in a room. Events consist of at least an EventCode (0..199) and can have content.

To receive events, implement [IOnEventCallback](#) in any class and register it via [PhotonNetwork.AddCallbackTarget](#). See [IOnEventCallback.OnEvent](#).

The eventContent is optional. If set, eventContent must be a "serializable type", something that the client can turn into a byte[] basically. Most basic types and arrays of them are supported, including Unity's Vector2, Vector3, Quaternion. Transforms are not supported.

You can turn a class into a "serializable type" by following the example in CustomTypes.cs.

The RaiseEventOptions have some (less intuitive) combination rules: If you set targetActors (an array of Player.ID values), the receivers parameter gets ignored. When using event caching, the targetActors, receivers and interest↵ Group can't be used. Buffered events go to all. When using cachingOption removeFromRoomCache, the eventCode and content are actually not sent but used as filter.

Parameters

<i>eventCode</i>	A byte identifying the type of event. You might want to use a code per action or to signal which content can be expected. Allowed: 0..199.
<i>eventContent</i>	Some serializable object like string, byte, integer, float (etc) and arrays of those. Hashtables with byte keys are good to send variable content.
<i>raiseEvent↵ Options</i>	Allows more complex usage of events. If null, RaiseEventOptions.Default will be used (which is fine).
<i>sendOptions</i>	Send options for reliable, encryption etc..

Returns

False if event could not be sent.

8.67.2.39 static bool Reconnect () [static]

Can be used to reconnect to the master server after a disconnect.

After losing connection, you can use this to connect a client to the region Master Server again. Cache the room name you're in and use RejoinRoom(roomname) to return to a game. Common use case: Press the Lock Button on a iOS device and you get disconnected immediately.

8.67.2.40 static bool ReconnectAndRejoin () [static]

When the client lost connection during gameplay, this method attempts to reconnect and rejoin the room.

This method re-connects directly to the game server which was hosting the room PUN was in before. If the room was shut down in the meantime, PUN will call OnJoinRoomFailed and return this client to the Master Server.

Check the return value, if this client will attempt a reconnect and rejoin (if the conditions are met). If Reconnect↵AndRejoin returns false, you can still attempt a Reconnect and Rejoin.

Similar to [PhotonNetwork.RejoinRoom](#), this requires you to use unique IDs per player (the UserID).

Rejoining room will not send any player properties. Instead client will receive up-to-date ones from server. If you want to set new player properties, do it once rejoined.

Returns

False, if there is no known room or game server to return to. Then, this client does not attempt the Reconnect↵AndRejoin.

8.67.2.41 static bool RejoinRoom (string roomName) [static]

Rejoins a room by roomName (using the userID internally to return). Will callback: OnJoinedRoom or OnJoin↵RoomFailed.

After losing connection, you might be able to return to a room and continue playing, if the client is reconnecting fast enough. Use [Reconnect\(\)](#) and this method. Cache the room name you're in and use RejoinRoom(roomname) to return to a game.

Note: To be able to Rejoin any room, you need to use UserIDs! You also need to set [RoomOptions.PlayerTtl](#).

Important: Instantiate() and use of RPCs is not yet supported. The ownership rules of PhotonViews prevent a seamless return to a game, if you use PhotonViews. Use Custom Properties and RaiseEvent with event caching instead.

Common use case: Press the Lock Button on a iOS device and you get disconnected immediately.

Rejoining room will not send any player properties. Instead client will receive up-to-date ones from server. If you want to set new player properties, do it once rejoined.

8.67.2.42 static void RemoveCallbackTarget (object target) [static]

Removes the target object from callbacks for its implemented callback-interfaces.

The covered callback interfaces are: IConnectionCallbacks, IMatchmakingCallbacks, ILobbyCallbacks, IInRoom↵Callbacks, IOnEventCallback and IWebRpcCallback.

See: [.Net Callbacks](#)

Parameters

<i>target</i>	The object that unregisters from getting callbacks.
---------------	---

8.67.2.43 static void RemovePlayerCustomProperties (string[] customPropertiesToDelete) [static]

Locally removes Custom Properties of "this" player. Important: This does not synchronize the change! Useful when you switch rooms.

Use this method with care. It can create inconsistencies of state between players! This only changes the player.↵customProperties locally. This can be useful to clear your Custom Properties between games (let's say they store which turn you made, kills, etc).

[SetPlayerCustomProperties\(\)](#) syncs and can be used to set values to null while in a room. That can be considered "removed" while in a room.

If customPropertiesToDelete is null or has 0 entries, all Custom Properties are deleted (replaced with a new Hashtable). If you specify keys to remove, those will be removed from the Hashtable but other keys are unaffected.

Parameters

<i>custom↔ PropertiesTo↔ Delete</i>	List of Custom Property keys to remove. See remarks.
---	--

8.67.2.44 static void RemoveRPCs (**Player** *targetPlayer*) [static]

Remove all buffered RPCs from server that were sent by targetPlayer. Can only be called on local player (for "self") or Master Client (for anyone).

This method requires either:

- This is the targetPlayer's client.
- This client is the Master Client (can remove any Player's RPCs).

If the targetPlayer calls RPCs at the same time that this is called, network lag will determine if those get buffered or cleared like the rest.

Parameters

<i>targetPlayer</i>	This player's buffered RPCs get removed from server buffer.
---------------------	---

8.67.2.45 static void RemoveRPCs (**PhotonView** *targetPhotonView*) [static]

Remove all buffered RPCs from server that were sent via targetPhotonView. The Master Client and the owner of the targetPhotonView may call this.

This method requires either:

- The targetPhotonView is owned by this client (Instantiated by it).
- This client is the Master Client (can remove any [PhotonView](#)'s RPCs).

Parameters

<i>targetPhoton↔ View</i>	RPCs buffered for this PhotonView get removed from server buffer.
-------------------------------	---

8.67.2.46 static void RemoveRPCsInGroup (**int** *group*) [static]

Remove all buffered RPCs from server that were sent in the targetGroup, if this is the Master Client or if this controls the individual [PhotonView](#).

This method requires either:

- This client is the Master Client (can remove any RPCs per group).
- Any other client: each [PhotonView](#) is checked if it is under this client's control. Only those RPCs are removed.

Parameters

<i>group</i>	Interest group that gets all RPCs removed.
--------------	--

8.67.2.47 static void SendAllOutgoingCommands () [static]

Can be used to immediately send the RPCs and Instantiates just called, so they are on their way to the other players.

This could be useful if you do a RPC to load a level and then load it yourself. While loading, no RPCs are sent to others, so this would delay the "load" RPC. You can send the RPC to "others", use this method, disable the message queue (by IsMessageQueueRunning) and then load.

8.67.2.48 static void SetInterestGroups (byte[] disableGroups, byte[] enableGroups) [static]

Enable/disable receiving on given Interest Groups (applied to PhotonViews).

A client can tell the server which Interest Groups it's interested in. The server will only forward events for those Interest Groups to that client (saving bandwidth and performance).

See: <https://doc.photonengine.com/en-us/pun/v2/gameplay/interestgroups>

See: <https://doc.photonengine.com/en-us/pun/v2/demos-and-tutorials/package-demos/culling->

Parameters

<i>disableGroups</i>	The interest groups to disable (or null).
<i>enableGroups</i>	The interest groups to enable (or null).

8.67.2.49 static void SetInterestGroups (byte group, bool enabled) [static]

Enable/disable receiving events from a given Interest Group.

A client can tell the server which Interest Groups it's interested in. The server will only forward events for those Interest Groups to that client (saving bandwidth and performance).

See: <https://doc.photonengine.com/en-us/pun/v2/gameplay/interestgroups>

See: <https://doc.photonengine.com/en-us/pun/v2/demos-and-tutorials/package-demos/culling->

Parameters

<i>group</i>	The interest group to affect.
<i>enabled</i>	Sets if receiving from group to enabled (or not).

8.67.2.50 static void SetLevelPrefix (byte prefix) [static]

Sets level prefix for PhotonViews instantiated later on. Don't set it if you need only one!

Important: If you don't use multiple level prefixes, simply don't set this value. The default value is optimized out of the traffic.

This won't affect existing PhotonViews (they can't be changed yet for existing PhotonViews).

Messages sent with a different level prefix will be received but not executed. This affects RPCs, Instantiates and synchronization.

Be aware that PUN never resets this value, you'll have to do so yourself.

Parameters

<i>prefix</i>	Max value is short.MaxValue = 255
---------------	-----------------------------------

8.67.2.51 static bool SetMasterClient (*Player masterClientPlayer*) [static]

Asks the server to assign another player as Master Client of your current room.

RPCs and RaiseEvent have the option to send messages only to the Master Client of a room. SetMasterClient affects which client gets those messages.

This method calls an operation on the server to set a new Master Client, which takes a roundtrip. In case of success, this client and the others get the new Master Client from the server.

SetMasterClient tells the server which current Master Client should be replaced with the new one. It will fail, if anything switches the Master Client moments earlier. There is no callback for this error. All clients should get the new Master Client assigned by the server anyways.

See also: [PhotonNetwork.MasterClient](#)

On v3 servers: The [ReceiverGroup.MasterClient](#) (usable in RPCs) is not affected by this (still points to lowest player.ID in room). Avoid using this enum value (and send to a specific player instead).

If the current Master Client leaves, PUN will detect a new one by "lowest player ID". Implement OnMasterClient↔ Switched to get a callback in this case. The PUN-selected Master Client might assign a new one.

Make sure you don't create an endless loop of Master-assigning! When selecting a custom Master Client, all clients should point to the same player, no matter who actually assigns this player.

Locally the Master Client is immediately switched, while remote clients get an event. This means the game is temporarily without Master Client like when a current Master Client leaves.

When switching the Master Client manually, keep in mind that this user might leave and not do it's work, just like any Master Client.

Parameters

<i>masterClient↔ Player</i>	The player to become the next Master Client.
---------------------------------	--

Returns

False when this operation couldn't be done. Must be in a room (not in OfflineMode).

8.67.2.52 static void SetPlayerCustomProperties (*Hashtable customProperties*) [static]

Sets this (local) player's properties and synchronizes them to the other players (don't modify them directly).

While in a room, your properties are synced with the other players. CreateRoom, JoinRoom and JoinRandomRoom will all apply your player's custom properties when you enter the room. The whole Hashtable will get sent. Minimize the traffic by setting only updated key/values.

If the Hashtable is null, the custom properties will be cleared. Custom properties are never cleared automatically, so they carry over to the next room, if you don't change them.

Don't set properties by modifying PhotonNetwork.player.customProperties!

Parameters

<i>custom↔ Properties</i>	Only string-typed keys will be used from this hashtable. If null, custom properties are all deleted.
-------------------------------	--

8.67.2.53 static void SetSendingEnabled (byte *group*, bool *enabled*) [static]

Enable/disable sending on given group (applied to PhotonViews)

This does not interact with the [Photon](#) server-side. It's just a client-side setting to suppress updates, should they be sent to one of the blocked groups.

This setting is not particularly useful, as it means that updates literally never reach the server or anyone else. Use with care.

Parameters

<i>group</i>	The interest group to affect.
<i>enabled</i>	Sets if sending to group is enabled (or not).

8.67.2.54 static void SetSendingEnabled (byte[] *disableGroups*, byte[] *enableGroups*) [static]

Enable/disable sending on given groups (applied to PhotonViews)

This does not interact with the [Photon](#) server-side. It's just a client-side setting to suppress updates, should they be sent to one of the blocked groups.

This setting is not particularly useful, as it means that updates literally never reach the server or anyone else. Use with care.

Parameters

<i>enableGroups</i>	The interest groups to enable sending on (or null).
<i>disableGroups</i>	The interest groups to disable sending on (or null).

8.67.2.55 static bool WebRpc (string *name*, object *parameters*, bool *sendAuthCookie* = false) [static]

This operation makes [Photon](#) call your custom web-service by name (path) with the given parameters.

This is a server-side feature which must be setup in the [Photon](#) Cloud Dashboard prior to use. <https://docs.photonengine.com/en-us/pun/v2/gameplay/web-extensions/webrpc> The Parameters will be converted into JSON format, so make sure your parameters are compatible.

See [Photon.Realtime.IWebRpcCallback.OnWebRpcResponse](#) on how to get a response.

It's important to understand that the OperationResponse only tells if the WebRPC could be called. The content of the response contains any values your web-service sent and the error/success code. In case the web-service failed, an error code and a debug message are usually inside the OperationResponse.

The class WebRpcResponse is a helper-class that extracts the most valuable content from the WebRPC response.

Example callback implementation:

```
public void OnWebRpcResponse(OperationResponse response)
{
    WebRpcResponse webResponse = new WebRpcResponse(operationResponse);
    if (webResponse.ReturnCode != 0) { //...
    }

    switch (webResponse.Name) { //...
    }
    // and so on
}
```

8.67.3 Member Data Documentation

8.67.3.1 **ConnectMethod** **ConnectMethod** = **ConnectMethod.NotCalled** [static]

Tracks, which Connect method was called last.

ConnectToMaster sets this to ConnectToMaster. ConnectToRegion sets this to ConnectToRegion. ConnectToBestCloudServer sets this to ConnectToBest. [PhotonNetwork.ConnectUsingSettings](#) will call either ConnectToMaster, ConnectToRegion or ConnectToBest, depending on the settings.

8.67.3.2 **PunLogLevel** **LogLevel** = **PunLogLevel.ErrorsOnly** [static]

Controls how verbose PUN is.

8.67.3.3 **readonly int** **MAX_VIEW_IDS** = 1000 [static]

The maximum number of assigned PhotonViews *per player* (or scene). See the [General Documentation](#) topic "Limitations" on how to raise this limitation.

8.67.3.4 **LoadBalancingClient** **NetworkingClient** [static]

The LoadBalancingClient is part of [Photon Realtime](#) and wraps up multiple servers and states for PUN.

8.67.3.5 **int** **ObjectsInOneUpdate** = 10 [static]

Defines how many OnPhotonSerialize()-calls might get summarized in one message.

A low number increases overhead, a high number might mean fragmentation.

8.67.3.6 **ServerSettings** **PhotonServerSettings** = (**ServerSettings**)Resources.Load(PhotonNetwork.ServerSettingsFileName, typeof(**ServerSettings**)) [static]

Serialized server settings, written by the Setup Wizard for use in ConnectUsingSettings.

8.67.3.7 **float** **PrecisionForFloatSynchronization** = 0.01f [static]

The minimum difference between floats before we send it via a [PhotonView](#)'s OnSerialize/ObservingComponent.

8.67.3.8 **float** **PrecisionForQuaternionSynchronization** = 1.0f [static]

The minimum angle that a rotation needs to change before we send it via a [PhotonView](#)'s OnSerialize/ObservingComponent.

8.67.3.9 **float** **PrecisionForVectorSynchronization** = 0.000099f [static]

The minimum difference that a Vector2 or Vector3(e.g. a transforms rotation) needs to change before we send it via a [PhotonView](#)'s OnSerialize/ObservingComponent.

Note that this is the sqrMagnitude. E.g. to send only after a 0.01 change on the Y-axis, we use 0.01f*0.01f=0.0001f. As a remedy against float inaccuracy we use 0.000099f instead of 0.0001f.

8.67.3.10 `const string PunVersion = "2.7"`

Version number of PUN. Used in the AppVersion, which separates your playerbase in matchmaking.

8.67.3.11 `bool UseRpcMonoBehaviourCache` `[static]`

While enabled, the MonoBehaviours on which we call RPCs are cached, avoiding costly `GetComponent<MonoBehaviour>()` calls.

RPCs are called on the MonoBehaviours of a target [PhotonView](#). Those have to be found via `GetComponent`.

When set this to true, the list of MonoBehaviours gets cached in each [PhotonView](#). You can use `PhotonView.RefreshRpcMonoBehaviourCache()` to manually refresh a [PhotonView](#)'s list of MonoBehaviours on demand (when a new MonoBehaviour gets added to a networked GameObject, e.g.).

8.67.4 Property Documentation**8.67.4.1** `string AppVersion` `[static], [get]`

Sent to [Photon](#) Server to specify the "Virtual AppId".

Sent with the operation Authenticate. When using PUN, you should set the GameVersion or use [ConnectUsingSettings\(\)](#).

8.67.4.2 `AuthenticationValues AuthValues` `[static], [get], [set]`

A user's authentication values used during connect.

Set these before calling Connect if you want custom authentication. These values set the userId, if and how that userId gets verified (server-side), etc..

If authentication fails for any values, PUN will call your implementation of `OnCustomAuthenticationFailed(string debugMessage)`. See [Photon.Realtime.IConnectionCallbacks.OnCustomAuthenticationFailed](#).

8.67.4.3 `bool AutomaticallySyncScene` `[static], [get], [set]`

Defines if all clients in a room should load the same level as the Master Client (if that used [PhotonNetwork.LoadLevel](#)).

To synchronize the loaded level, the Master Client should use [PhotonNetwork.LoadLevel](#). All clients will load the new scene immediately when they enter a room (even before the callback `OnJoinedRoom`) or on change.

Internally, a Custom Room Property is set for the loaded scene. When a client reads that and is not in the same scene yet, it will immediately pause the Message Queue ([PhotonNetwork.IsMessageQueueRunning](#) = false) and load. When the scene finished loading, PUN will automatically re-enable the Message Queue.

8.67.4.4 `string BestRegionSummaryInPreferences` `[static], [get], [set]`

Used to store and access the "Best Region Summary" in the Player Preferences.

8.67.4.5 `string CloudRegion` `[static], [get]`

Currently used Cloud Region (if any). As long as the client is not on a Master Server or Game Server, the region is not yet defined.

8.67.4.6 int CountOfPlayers [static], [get]

The count of players currently using this application (available on MasterServer in 5sec intervals).

8.67.4.7 int CountOfPlayersInRooms [static], [get]

Count of users currently playing your app in some room (sent every 5sec by Master Server). Use `PhotonNetwork.PlayerList.Length` or `PhotonNetwork.CurrentRoom.PlayerCount` to get the count of players in the room you're in!

8.67.4.8 int CountOfPlayersOnMaster [static], [get]

The count of players currently looking for a room (available on MasterServer in 5sec intervals).

8.67.4.9 int CountOfRooms [static], [get]

The count of rooms currently in use (available on MasterServer in 5sec intervals).

While inside the lobby you can also check the count of listed rooms as: `PhotonNetwork.GetRoomList().Length`. Since PUN v1.25 this is only based on the statistic event [Photon](#) sends (counting all rooms).

8.67.4.10 bool CrcCheckEnabled [static], [get], [set]

Crc checks can be useful to detect and avoid issues with broken datagrams. Can be enabled while not connected.

8.67.4.11 TypedLobby CurrentLobby [static], [get]

The lobby that will be used when PUN joins a lobby or creates a game. This is defined when joining a lobby or creating rooms

The default lobby uses an empty string as name. So when you connect or leave a room, PUN automatically gets you into a lobby again.

Check [PhotonNetwork.InLobby](#) if the client is in a lobby. (masterServerAndLobby)

8.67.4.12 Room CurrentRoom [static], [get]

Get the room we're currently in (also when in OfflineMode). Null if we aren't in any room.

LoadBalancing Client is not aware of the [Photon](#) Offline Mode, so never use `PhotonNetwork.NetworkingClient.CurrentRoom` will be null if you are using OffLine Mode, while [PhotonNetwork.CurrentRoom](#) will be set when offlineMode is true

8.67.4.13 bool EnableLobbyStatistics [static], [get]

If enabled, the client will get a list of available lobbies from the Master Server.

Set this value before the client connects to the Master Server. While connected to the Master Server, a change has no effect.

Implement `OptionalInfoCallbacks.OnLobbyStatisticsUpdate`, to get the list of used lobbies.

The lobby statistics can be useful if your title dynamically uses lobbies, depending (e.g.) on current player activity or such. In this case, getting a list of available lobbies, their room-count and player-count can be useful info.

`ConnectUsingSettings` sets this to the `PhotonServerSettings` value.

8.67.4.14 string GameVersion [static], [get], [set]

Version number of your game. Setting this updates the AppVersion, which separates your playerbase in matchmaking.

In PUN, the GameVersion is only one component of the [LoadBalancingClient.AppVersion](#). Setting the GameVersion will also set the [LoadBalancingClient.AppVersion](#) to: value+'_'+ [PhotonNetwork.PunVersion](#).

The AppVersion is used to split your playerbase as needed. One AppId may have various AppVersions and each is a separate set of users for matchmaking.

The AppVersion gets sent in the "Authenticate" step. This means you can set the GameVersion right after calling ConnectUsingSettings (e.g.) and the new value will be used on the server. Once the client is connected, authentication is done and the value won't be sent to the server anymore.

8.67.4.15 bool InLobby [static], [get]

True while this client is in a lobby.

Implement IPunCallbacks.OnRoomListUpdate() for a notification when the list of rooms becomes available or updated.

You are automatically leaving any lobby when you join a room! Lobbies only exist on the Master Server (whereas rooms are handled by Game Servers).

8.67.4.16 bool InRoom [static], [get]

Is true while being in a room (NetworkClientState == ClientState.Joined).

Aside from polling this value, game logic should implement IMatchmakingCallbacks in some class and react when that gets called.

Many actions can only be executed in a room, like Instantiate or Leave, etc.

A client can join a room in offline mode. In that case, don't use [LoadBalancingClient.InRoom](#), which does not cover offline mode.

8.67.4.17 bool IsConnected [static], [get]

False until you connected to [Photon](#) initially. True in offline mode, while connected to any server and even while switching servers.

8.67.4.18 bool IsConnectedAndReady [static], [get]

A refined version of connected which is true only if your connection to the server is ready to accept operations like join, leave, etc.

8.67.4.19 bool IsMasterClient [static], [get]

Are we the master client?

8.67.4.20 bool IsMessageQueueRunning [static], [get], [set]

Can be used to pause dispatching of incoming events (RPCs, Instantiates and anything else incoming).

While IsMessageQueueRunning == false, the OnPhotonSerializeView calls are not done and nothing is sent by a client. Also, incoming messages will be queued until you re-activate the message queue.

This can be useful if you first want to load a level, then go on receiving data of PhotonViews and RPCs. The client will go on receiving and sending acknowledgements for incoming packages and your RPCs/Events. This adds "lag" and can cause issues when the pause is longer, as all incoming messages are just queued.

8.67.4.21 float **KeepAliveInBackground** [static], [get], [set]

Defines how many seconds PUN keeps the connection after Unity's `OnApplicationPause(true)` call. Default: 60 seconds.

It's best practice to disconnect inactive apps/connections after a while but to also allow users to take calls, etc.. We think a reasonable background timeout is 60 seconds.

To handle the timeout, implement: `OnDisconnected()`, as usual. Your application will "notice" the background disconnect when it becomes active again (running the `Update()` loop).

If you need to separate this case from others, you need to track if the app was in the background (there is no special callback by PUN).

Info: PUN is running a "fallback thread" to send ACKs to the server, even when Unity is not calling `Update()` regularly. This helps keeping the connection while loading scenes and assets and when the app is in the background.

Note: Some platforms (e.g. iOS) don't allow to keep a connection while the app is in background. In those cases, this value does not change anything, the app immediately loses connection in background.

Unity's `OnApplicationPause()` callback is broken in some exports (Android) of some Unity versions. Make sure `OnApplicationPause()` gets the callbacks you expect on the platform you target! Check `PhotonHandler.OnApplicationPause(bool pause)` to see the implementation.

8.67.4.22 float **LevelLoadingProgress** [static], [get]

Gets the networked level loading progress. Value will be zero until the first loading, and remain at one in between loadings Use [PhotonNetwork.LoadLevel\(\)](#) to initiate a networked level Loading

The level loading progress. Ranges from 0 to 1

8.67.4.23 **Player LocalPlayer** [static], [get]

This client's Player instance is always available, unless the app shuts down.

Useful (e.g.) to set the Custom Player Properties or the NickName for this client anytime. When the client joins a room, the Custom Properties and other values are synced.

8.67.4.24 **Player MasterClient** [static], [get]

The Master Client of the current room or null (outside of rooms).

Can be used as "authoritative" client/player to make descisions, run AI or other.

If the current Master Client leaves the room (leave/disconnect), the server will quickly assign someone else. If the current Master Client times out (closed app, lost connection, etc), messages sent to this client are effectively lost for the others! A timeout can take 10 seconds in which no Master Client is active.

Implement the method `IPunCallbacks.OnMasterClientSwitched` to be called when the Master Client switched.

Use [PhotonNetwork.SetMasterClient](#), to switch manually to some other player / client.

With `OfflineMode == true`, this always returns the `PhotonNetwork.player`.

8.67.4.25 int MaxResendsBeforeDisconnect [static], [get], [set]

Defines the number of times a reliable message can be resent before not getting an ACK for it will trigger a disconnect. Default: 5.

Less resends mean quicker disconnects, while more can lead to much more lag without helping. Min: 3. Max: 10.

8.67.4.26 ClientState NetworkClientState [static], [get]

Directly provides the network-level client state, unless in OfflineMode.

In context of PUN, you should usually use `IsConnected` or `IsConnectedAndReady`.

This is the lower level connection state. Keep in mind that PUN uses more than one server, so the client may become `Disconnected`, even though it's just switching servers.

While `OfflineMode` is true, this is `ClientState.Joined` (after create/join) or `ConnectedToMasterserver` in all other cases.

8.67.4.27 bool NetworkStatisticsEnabled [static], [get], [set]

Enables or disables the collection of statistics about this client's traffic.

If you encounter issues with clients, the traffic stats are a good starting point to find solutions. Only with enabled stats, you can use `GetVitalStats`

8.67.4.28 string NickName [static], [get], [set]

Set to synchronize the player's nickname with everyone in the room(s) you enter. This sets `PhotonNetwork.player.NickName`.

The `NickName` is just a nickname and does not have to be unique or backed up with some account.

Set the value any time (e.g. before you connect) and it will be available to everyone you play with.

Access the names of players by: [Player.NickName](#).

[PhotonNetwork.PlayerListOthers](#) is a list of other players - each contains the `NickName` the remote player set.

8.67.4.29 bool OfflineMode [static], [get], [set]

Offline mode can be set to re-use your multiplayer code in singleplayer game modes. When this is on [PhotonNetwork](#) will not create any connections and there is near to no overhead. Mostly usefull for reusing RPC's and `PhotonNetwork.Instantiate`

8.67.4.30 int PacketLossByCrcCheck [static], [get]

If `CrcCheckEnabled`, this counts the incoming packages that don't have a valid CRC checksum and got rejected.

8.67.4.31 PhotonView[] PhotonViews [static], [get]

Gets the photon views.

This is an expensive operation as it returns a copy of the internal list.

The photon views.

8.67.4.32 `Player[] PlayerList` `[static], [get]`

A sorted copy of the players-list of the current room. This is using Linq, so better cache this value. Update when players join / leave.

8.67.4.33 `Player[] PlayerListOthers` `[static], [get]`

A sorted copy of the players-list of the current room, excluding this client. This is using Linq, so better cache this value. Update when players join / leave.

8.67.4.34 `IPunPrefabPool PrefabPool` `[static], [get], [set]`

An Object Pool can be used to keep and reuse instantiated object instances. Replaces Unity's default Instantiate and Destroy methods.

Defaults to the [DefaultPool](#) type. To use a GameObject pool, implement [IPunPrefabPool](#) and assign it here. Prefabs are identified by name.

8.67.4.35 `int QuickResends` `[static], [get], [set]`

In case of network loss, reliable messages can be repeated quickly up to 3 times.

When reliable messages get lost more than once, subsequent repeats are delayed a bit to allow the network to recover.

With this option, the repeats 2 and 3 can be sped up. This can help avoid timeouts but also it increases the speed in which gaps are closed.

When you set this, increase [PhotonNetwork.MaxResendsBeforeDisconnect](#) to 6 or 7.

8.67.4.36 `int ResentReliableCommands` `[static], [get]`

Count of commands that got repeated (due to local repeat-timing before an ACK was received).

If this value increases a lot, there is a good chance that a timeout disconnect will happen due to bad conditions.

8.67.4.37 `int SendRate` `[static], [get], [set]`

Defines how many times per second [PhotonNetwork](#) should send a package. If you change this, do not forget to also change 'SerializationRate'.

Less packages are less overhead but more delay. Setting the SendRate to 50 will create up to 50 packages per second (which is a lot!). Keep your target platform in mind: mobile networks are slower and less reliable.

8.67.4.38 `int SerializationRate` `[static], [get], [set]`

Defines how many times per second `OnPhotonSerialize` should be called on `PhotonViews`.

Choose this value in relation to [PhotonNetwork.SendRate](#). `OnPhotonSerialize` will create updates and messages to be sent.

A lower rate takes up less performance but will cause more lag.

8.67.4.39 `ServerConnection Server` `[static], [get]`

The server (type) this client is currently connected or connecting to.

[Photon](#) uses 3 different roles of servers: Name Server, Master Server and Game Server.

8.67.4.40 `string ServerAddress` `[static], [get]`

Currently used server address (no matter if master or game server).

8.67.4.41 `int ServerTimestamp` `[static], [get]`

The current server's millisecond timestamp.

This can be useful to sync actions and events on all clients in one room. The timestamp is based on the server's `Environment.TickCount`.

It will overflow from a positive to a negative value every so often, so be careful to use only time-differences to check the Time delta when things happen.

This is the basis for [PhotonNetwork.Time](#).

8.67.4.42 `double Time` `[static], [get]`

[Photon](#) network time, synched with the server.

v1.55

This time value depends on the server's `Environment.TickCount`. It is different per server but inside a Room, all clients should have the same value (Rooms are on one server only).

This is not a `DateTime`!

Use this value with care:

It can start with any positive value.

It will "wrap around" from 4294967.295 to 0!

8.67.4.43 `bool UseAlternativeUdpPorts` `[static], [get], [set]`

Switch to alternative ports for a UDP connection to the Public Cloud.

This should be used when a customer has issues with connection stability. Some players reported better connectivity for Steam games. The effect might vary, which is why the alternative ports are not the new default.

The alternative (server) ports are 27000 up to 27003.

The values are applied by replacing any incoming server-address string accordingly. You only need to set this to true though.

This value does not affect TCP or WebSocket connections.

8.68 PhotonPing Class Reference

Inherits `IDisposable`.

Inherited by [PingMono](#).

Public Member Functions

- virtual bool **StartPing** (string ip)
- virtual bool **Done** ()
- virtual void **Dispose** ()

Public Attributes

- string **DebugString** = ""
- bool **Successful**

8.69 PhotonRigidbody2DView Class Reference

Inherits MonoBehaviour, and [IPunObservable](#).

Public Member Functions

- void **Awake** ()
- void **FixedUpdate** ()
- void **OnPhotonSerializeView** ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

Public Attributes

- bool **m_SynchronizeVelocity** = true
- bool **m_SynchronizeAngularVelocity** = false
- bool **m_TeleportEnabled** = false
- float **m_TeleportIfDistanceGreaterThan** = 3.0f

8.69.1 Member Function Documentation

8.69.1.1 void OnPhotonSerializeView ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

This method will be called in scripts that are assigned as Observed component of a [PhotonView](#).

[PhotonNetwork.SerializationRate](#) affects how often this method is called.

[PhotonNetwork.SendRate](#) affects how often packages are sent by this client.

Implementing this method, you can customize which data a [PhotonView](#) regularly synchronizes. Your code defines what is being sent (content) and how your data is used by receiving clients.

Unlike other callbacks, *OnPhotonSerializeView* only gets called when it is assigned to a [PhotonView](#) as [PhotonView.observed](#) script.

To make use of this method, the [PhotonStream](#) is essential. It will be in "writing" mode" on the client that controls a [PhotonView](#) ([PhotonStream.IsWriting](#) == true) and in "reading mode" on the remote clients that just receive that the controlling client sends.

If you skip writing any value into the stream, PUN will skip the update. Used carefully, this can conserve bandwidth and messages (which have a limit per room/second).

Note that [OnPhotonSerializeView](#) is not called on remote clients when the sender does not send any update. This can't be used as "x-times per second Update()".

Implements [IPunObservable](#).

8.70 PhotonRigidbodyView Class Reference

Inherits MonoBehaviour, and [IPunObservable](#).

Public Member Functions

- void **Awake** ()
- void **FixedUpdate** ()
- void **OnPhotonSerializeView** ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

Public Attributes

- bool **m_SynchronizeVelocity** = true
- bool **m_SynchronizeAngularVelocity** = false
- bool **m_TeleportEnabled** = false
- float **m_TeleportIfDistanceGreaterThan** = 3.0f

8.70.1 Member Function Documentation

8.70.1.1 void OnPhotonSerializeView ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

This method will be called in scripts that are assigned as Observed component of a [PhotonView](#).

[PhotonNetwork.SerializationRate](#) affects how often this method is called.

[PhotonNetwork.SendRate](#) affects how often packages are sent by this client.

Implementing this method, you can customize which data a [PhotonView](#) regularly synchronizes. Your code defines what is being sent (content) and how your data is used by receiving clients.

Unlike other callbacks, *OnPhotonSerializeView only gets called when it is assigned to a [PhotonView](#) as PhotonView.observed script.*

To make use of this method, the [PhotonStream](#) is essential. It will be in "writing" mode" on the client that controls a PhotonView (PhotonStream.IsWriting == true) and in "reading mode" on the remote clients that just receive that the controlling client sends.

If you skip writing any value into the stream, PUN will skip the update. Used carefully, this can conserve bandwidth and messages (which have a limit per room/second).

Note that OnPhotonSerializeView is not called on remote clients when the sender does not send any update. This can't be used as "x-times per second Update()".

Implements [IPunObservable](#).

8.71 PhotonStatsGui Class Reference

Basic GUI to show traffic and health statistics of the connection to [Photon](#), toggled by shift+tab.

Inherits MonoBehaviour.

Public Member Functions

- void **Start** ()
- void **Update** ()
Checks for shift+tab input combination (to toggle statsOn).
- void **OnGUI** ()
- void **TrafficStatsWindow** (int windowID)

Public Attributes

- bool **statsWindowOn** = true
Shows or hides GUI (does not affect if stats are collected).
- bool **statsOn** = true
Option to turn collecting stats on or off (used in [Update\(\)](#)).
- bool **healthStatsVisible**
Shows additional "health" values of connection.
- bool **trafficStatsOn**
Shows additional "lower level" traffic stats.
- bool **buttonsOn**
Show buttons to control stats and reset them.
- Rect **statsRect** = new Rect(0, 100, 200, 50)
Positioning rect for window.
- int **WindowId** = 100
Unity GUI Window ID (must be unique or will cause issues).

8.71.1 Detailed Description

Basic GUI to show traffic and health statistics of the connection to [Photon](#), toggled by shift+tab.

The shown health values can help identify problems with connection losses or performance. Example: If the time delta between two consecutive `SendOutgoingCommands` calls is a second or more, chances rise for a disconnect being caused by this (because acknowledgements to the server need to be sent in due time).

8.71.2 Member Function Documentation

8.71.2.1 void Update ()

Checks for shift+tab input combination (to toggle statsOn).

8.71.3 Member Data Documentation

8.71.3.1 bool buttonsOn

Show buttons to control stats and reset them.

8.71.3.2 bool healthStatsVisible

Shows additional "health" values of connection.

8.71.3.3 bool statsOn = true

Option to turn collecting stats on or off (used in [Update\(\)](#)).

8.71.3.4 Rect statsRect = new Rect(0, 100, 200, 50)

Positioning rect for window.

8.71.3.5 bool statsWindowOn = true

Shows or hides GUI (does not affect if stats are collected).

8.71.3.6 bool trafficStatsOn

Shows additional "lower level" traffic stats.

8.71.3.7 int WindowId = 100

Unity GUI Window ID (must be unique or will cause issues).

8.72 PhotonStream Class Reference

This container is used in OnPhotonSerializeView() to either provide incoming data of a [PhotonView](#) or for you to provide it.

Public Member Functions

- [PhotonStream](#) (bool write, object[] incomingData)
Creates a stream and initializes it. Used by PUN internally.
- void **SetReadStream** (object[] incomingData, byte pos=0)
- object [ReceiveNext](#) ()
Read next piece of data from the stream when IsReading is true.
- object [PeekNext](#) ()
Read next piece of data from the stream without advancing the "current" item.
- void [SendNext](#) (object obj)
Add another piece of data to send it when IsWriting is true.
- bool **CopyToListAndClear** (List< object > target)
- object[] [ToArray](#) ()
Turns the stream into a new object[].
- void [Serialize](#) (ref bool myBool)
Will read or write the value, depending on the stream's IsWriting value.
- void [Serialize](#) (ref int myInt)
Will read or write the value, depending on the stream's IsWriting value.
- void [Serialize](#) (ref string value)
Will read or write the value, depending on the stream's IsWriting value.
- void [Serialize](#) (ref char value)
Will read or write the value, depending on the stream's IsWriting value.
- void [Serialize](#) (ref short value)
Will read or write the value, depending on the stream's IsWriting value.
- void [Serialize](#) (ref float obj)
Will read or write the value, depending on the stream's IsWriting value.
- void [Serialize](#) (ref [Player](#) obj)
Will read or write the value, depending on the stream's IsWriting value.

- void [Serialize](#) (ref Vector3 obj)
Will read or write the value, depending on the stream's IsWriting value.
- void [Serialize](#) (ref Vector2 obj)
Will read or write the value, depending on the stream's IsWriting value.
- void [Serialize](#) (ref Quaternion obj)
Will read or write the value, depending on the stream's IsWriting value.

Properties

- bool [IsWriting](#) [get]
If true, this client should add data to the stream to send it.
- bool [IsReading](#) [get]
If true, this client should read data send by another client.
- int [Count](#) [get]
Count of items in the stream.

8.72.1 Detailed Description

This container is used in [OnPhotonSerializeView\(\)](#) to either provide incoming data of a [PhotonView](#) or for you to provide it.

The [IsWriting](#) property will be true if this client is the "owner" of the [PhotonView](#) (and thus the [GameObject](#)). Add data to the stream and it's sent via the server to the other players in a room. On the receiving side, [IsWriting](#) is false and the data should be read.

Send as few data as possible to keep connection quality up. An empty [PhotonStream](#) will not be sent.

Use either [Serialize\(\)](#) for reading and writing or [SendNext\(\)](#) and [ReceiveNext\(\)](#). The latter two are just explicit read and write methods but do about the same work as [Serialize\(\)](#). It's a matter of preference which methods you use.

8.72.2 Constructor & Destructor Documentation

8.72.2.1 [PhotonStream](#) (bool write, object[] incomingData)

Creates a stream and initializes it. Used by PUN internally.

8.72.3 Member Function Documentation

8.72.3.1 object [PeekNext](#) ()

Read next piece of data from the stream without advancing the "current" item.

8.72.3.2 object [ReceiveNext](#) ()

Read next piece of data from the stream when [IsReading](#) is true.

8.72.3.3 void [SendNext](#) (object obj)

Add another piece of data to send it when [IsWriting](#) is true.

8.72.3.4 void [Serialize](#) (ref bool myBool)

Will read or write the value, depending on the stream's [IsWriting](#) value.

8.72.3.5 void Serialize (ref int *myInt*)

Will read or write the value, depending on the stream's IsWriting value.

8.72.3.6 void Serialize (ref string *value*)

Will read or write the value, depending on the stream's IsWriting value.

8.72.3.7 void Serialize (ref char *value*)

Will read or write the value, depending on the stream's IsWriting value.

8.72.3.8 void Serialize (ref short *value*)

Will read or write the value, depending on the stream's IsWriting value.

8.72.3.9 void Serialize (ref float *obj*)

Will read or write the value, depending on the stream's IsWriting value.

8.72.3.10 void Serialize (ref Player *obj*)

Will read or write the value, depending on the stream's IsWriting value.

8.72.3.11 void Serialize (ref Vector3 *obj*)

Will read or write the value, depending on the stream's IsWriting value.

8.72.3.12 void Serialize (ref Vector2 *obj*)

Will read or write the value, depending on the stream's IsWriting value.

8.72.3.13 void Serialize (ref Quaternion *obj*)

Will read or write the value, depending on the stream's IsWriting value.

8.72.3.14 object [] ToArray ()

Turns the stream into a new object[].

8.72.4 Property Documentation**8.72.4.1 int Count [get]**

Count of items in the stream.

8.72.4.2 bool IsReading [get]

If true, this client should read data send by another client.

8.72.4.3 bool IsWriting [get]

If true, this client should add data to the stream to send it.

8.73 PhotonStreamQueue Class Reference

The [PhotonStreamQueue](#) helps you poll object states at higher frequencies than what [PhotonNetwork.SendRate](#) dictates and then sends all those states at once when [Serialize\(\)](#) is called. On the receiving end you can call [Deserialize\(\)](#) and then the stream will roll out the received object states in the same order and timeStep they were recorded in.

Public Member Functions

- [PhotonStreamQueue](#) (int sampleRate)
Initializes a new instance of the [PhotonStreamQueue](#) class.
- void [Reset](#) ()
Resets the [PhotonStreamQueue](#). You need to do this whenever the amount of objects you are observing changes
- void [SendNext](#) (object obj)
Adds the next object to the queue. This works just like [PhotonStream.SendNext](#)
- bool [HasQueuedObjects](#) ()
Determines whether the queue has stored any objects
- object [ReceiveNext](#) ()
Receives the next object from the queue. This works just like [PhotonStream.ReceiveNext](#)
- void [Serialize](#) ([PhotonStream](#) stream)
Serializes the specified stream. Call this in your OnPhotonSerializeView method to send the whole recorded stream.
- void [Deserialize](#) ([PhotonStream](#) stream)
Deserializes the specified stream. Call this in your OnPhotonSerializeView method to receive the whole recorded stream.

8.73.1 Detailed Description

The [PhotonStreamQueue](#) helps you poll object states at higher frequencies than what [PhotonNetwork.SendRate](#) dictates and then sends all those states at once when [Serialize\(\)](#) is called. On the receiving end you can call [Deserialize\(\)](#) and then the stream will roll out the received object states in the same order and timeStep they were recorded in.

8.73.2 Constructor & Destructor Documentation

8.73.2.1 PhotonStreamQueue (int sampleRate)

Initializes a new instance of the [PhotonStreamQueue](#) class.

Parameters

<i>sampleRate</i>	How many times per second should the object states be sampled
-------------------	---

8.73.3 Member Function Documentation

8.73.3.1 void Deserialize (PhotonStream stream)

Deserializes the specified stream. Call this in your OnPhotonSerializeView method to receive the whole recorded stream.

Parameters

<i>stream</i>	The PhotonStream you receive as a parameter in OnPhotonSerializeView
---------------	--

8.73.3.2 bool HasQueuedObjects ()

Determines whether the queue has stored any objects

8.73.3.3 object ReceiveNext ()

Receives the next object from the queue. This works just like [PhotonStream.ReceiveNext](#)

Returns

8.73.3.4 void Reset ()

Resets the [PhotonStreamQueue](#). You need to do this whenever the amount of objects you are observing changes

8.73.3.5 void SendNext (object obj)

Adds the next object to the queue. This works just like [PhotonStream.SendNext](#)

Parameters

<i>obj</i>	The object you want to add to the queue
------------	---

8.73.3.6 void Serialize (PhotonStream stream)

Serializes the specified stream. Call this in your OnPhotonSerializeView method to send the whole recorded stream.

Parameters

<i>stream</i>	The PhotonStream you receive as a parameter in OnPhotonSerializeView
---------------	--

8.74 PhotonTransformView Class Reference

Inherits [MonoBehaviour](#), and [IPunObservable](#).

Public Member Functions

- void **Awake** ()
- void **Update** ()
- void **OnPhotonSerializeView** ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)

Called by PUN several times per second, so that your script can write and read synchronization data for the [Photon↔View](#).

Public Attributes

- bool **m_SynchronizePosition** = true
- bool **m_SynchronizeRotation** = true
- bool **m_SynchronizeScale** = false

8.74.1 Member Function Documentation

8.74.1.1 void OnPhotonSerializeView (PhotonStream stream, PhotonMessageInfo info)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

This method will be called in scripts that are assigned as Observed component of a [PhotonView](#).

[PhotonNetwork.SerializationRate](#) affects how often this method is called.

[PhotonNetwork.SendRate](#) affects how often packages are sent by this client.

Implementing this method, you can customize which data a [PhotonView](#) regularly synchronizes. Your code defines what is being sent (content) and how your data is used by receiving clients.

Unlike other callbacks, *OnPhotonSerializeView* only gets called when it is assigned to a [PhotonView](#) as PhotonView.observed script.

To make use of this method, the [PhotonStream](#) is essential. It will be in "writing" mode" on the client that controls a PhotonView (PhotonStream.IsWriting == true) and in "reading mode" on the remote clients that just receive that the controlling client sends.

If you skip writing any value into the stream, PUN will skip the update. Used carefully, this can conserve bandwidth and messages (which have a limit per room/second).

Note that OnPhotonSerializeView is not called on remote clients when the sender does not send any update. This can't be used as "x-times per second Update()".

Implements [IPunObservable](#).

8.75 PhotonTransformViewClassic Class Reference

This class helps you to synchronize position, rotation and scale of a GameObject. It also gives you many different options to make the synchronized values appear smooth, even when the data is only send a couple of times per second. Simply add the component to your GameObject and make sure that the [PhotonTransformViewClassic](#) is added to the list of observed components

Inherits MonoBehaviour, and [IPunObservable](#).

Public Member Functions

- void [SetSynchronizedValues](#) (Vector3 speed, float turnSpeed)
These values are synchronized to the remote objects if the interpolation mode or the extrapolation mode SynchronizeValues is used. Your movement script should pass on the current speed (in units/second) and turning speed (in angles/second) so the remote object can use them to predict the objects movement.
- void [OnPhotonSerializeView](#) ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)
Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

Public Attributes

- [PhotonTransformViewPositionModel](#) **m_PositionModel** = new [PhotonTransformViewPositionModel](#)()

- [PhotonTransformViewRotationModel](#) **m_RotationModel** = new [PhotonTransformViewRotationModel](#)()
- [PhotonTransformViewScaleModel](#) **m_ScaleModel** = new [PhotonTransformViewScaleModel](#)()

8.75.1 Detailed Description

This class helps you to synchronize position, rotation and scale of a [GameObject](#). It also gives you many different options to make the synchronized values appear smooth, even when the data is only send a couple of times per second. Simply add the component to your [GameObject](#) and make sure that the [PhotonTransformViewClassic](#) is added to the list of observed components

8.75.2 Member Function Documentation

8.75.2.1 void OnPhotonSerializeView ([PhotonStream](#) *stream*, [PhotonMessageInfo](#) *info*)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

This method will be called in scripts that are assigned as Observed component of a [PhotonView](#).

[PhotonNetwork.SerializationRate](#) affects how often this method is called.

[PhotonNetwork.SendRate](#) affects how often packages are sent by this client.

Implementing this method, you can customize which data a [PhotonView](#) regularly synchronizes. Your code defines what is being sent (content) and how your data is used by receiving clients.

Unlike other callbacks, *OnPhotonSerializeView* only gets called when it is assigned to a [PhotonView](#) as [PhotonView.observed](#) script.

To make use of this method, the [PhotonStream](#) is essential. It will be in "writing" mode" on the client that controls a [PhotonView](#) ([PhotonStream.IsWriting](#) == true) and in "reading mode" on the remote clients that just receive that the controlling client sends.

If you skip writing any value into the stream, PUN will skip the update. Used carefully, this can conserve bandwidth and messages (which have a limit per room/second).

Note that *OnPhotonSerializeView* is not called on remote clients when the sender does not send any update. This can't be used as "x-times per second Update()".

Implements [IPunObservable](#).

8.75.2.2 void SetSynchronizedValues ([Vector3](#) *speed*, float *turnSpeed*)

These values are synchronized to the remote objects if the interpolation mode or the extrapolation mode *SynchronizeValues* is used. Your movement script should pass on the current speed (in units/second) and turn-speed (in angles/second) so the remote object can use them to predict the objects movement.

Parameters

<i>speed</i>	The current movement vector of the object in units/second.
<i>turnSpeed</i>	The current turn speed of the object in angles/second.

8.76 PhotonTransformViewPositionControl Class Reference

Public Member Functions

- [PhotonTransformViewPositionControl](#) ([PhotonTransformViewPositionModel](#) model)
- void [SetSynchronizedValues](#) ([Vector3](#) speed, float turnSpeed)

These values are synchronized to the remote objects if the interpolation mode or the extrapolation mode SynchronizeValues is used. Your movement script should pass on the current speed (in units/second) and turning speed (in angles/second) so the remote object can use them to predict the objects movement.

- Vector3 [UpdatePosition](#) (Vector3 *currentPosition*)
Calculates the new position based on the values setup in the inspector
- Vector3 [GetNetworkPosition](#) ()
Gets the last position that was received through the network
- Vector3 [GetExtrapolatedPositionOffset](#) ()
Calculates an estimated position based on the last synchronized position, the time when the last position was received and the movement speed of the object
- void **OnPhotonSerializeView** (Vector3 *currentPosition*, [PhotonStream](#) *stream*, [PhotonMessageInfo](#) *info*)

8.76.1 Member Function Documentation

8.76.1.1 Vector3 GetExtrapolatedPositionOffset ()

Calculates an estimated position based on the last synchronized position, the time when the last position was received and the movement speed of the object

Returns

Estimated position of the remote object

8.76.1.2 Vector3 GetNetworkPosition ()

Gets the last position that was received through the network

Returns

8.76.1.3 void SetSynchronizedValues (Vector3 *speed*, float *turnSpeed*)

These values are synchronized to the remote objects if the interpolation mode or the extrapolation mode SynchronizeValues is used. Your movement script should pass on the current speed (in units/second) and turning speed (in angles/second) so the remote object can use them to predict the objects movement.

Parameters

<i>speed</i>	The current movement vector of the object in units/second.
<i>turnSpeed</i>	The current turn speed of the object in angles/second.

8.76.1.4 Vector3 UpdatePosition (Vector3 *currentPosition*)

Calculates the new position based on the values setup in the inspector

Parameters

<i>currentPosition</i>	The current position.
------------------------	-----------------------

Returns

The new position.

8.77 PhotonTransformViewPositionModel Class Reference

Public Types

- enum **InterpolateOptions**
- enum **ExtrapolateOptions**

Public Attributes

- bool **SynchronizeEnabled**
- bool **TeleportEnabled** = true
- float **TeleportIfDistanceGreaterThan** = 3f
- InterpolateOptions **InterpolateOption** = InterpolateOptions.EstimatedSpeed
- float **InterpolateMoveTowardsSpeed** = 1f
- float **InterpolateLerpSpeed** = 1f
- ExtrapolateOptions **ExtrapolateOption** = ExtrapolateOptions.Disabled
- float **ExtrapolateSpeed** = 1f
- bool **ExtrapolateIncludingRoundTripTime** = true
- int **ExtrapolateNumberOfStoredPositions** = 1

8.78 PhotonTransformViewRotationControl Class Reference

Public Member Functions

- **PhotonTransformViewRotationControl** ([PhotonTransformViewRotationModel](#) model)
- Quaternion [GetNetworkRotation](#) ()
Gets the last rotation that was received through the network
- Quaternion **GetRotation** (Quaternion currentRotation)
- void **OnPhotonSerializeView** (Quaternion currentRotation, [PhotonStream](#) stream, [PhotonMessageInfo](#) info)

8.78.1 Member Function Documentation

8.78.1.1 Quaternion GetNetworkRotation ()

Gets the last rotation that was received through the network

Returns

8.79 PhotonTransformViewRotationModel Class Reference

Public Types

- enum **InterpolateOptions**

Public Attributes

- bool **SynchronizeEnabled**
- InterpolateOptions **InterpolateOption** = InterpolateOptions.RotateTowards
- float **InterpolateRotateTowardsSpeed** = 180
- float **InterpolateLerpSpeed** = 5

8.80 PhotonTransformViewScaleControl Class Reference

Public Member Functions

- **PhotonTransformViewScaleControl** ([PhotonTransformViewScaleModel](#) model)
- [Vector3](#) **GetNetworkScale** ()
Gets the last scale that was received through the network
- [Vector3](#) **GetScale** ([Vector3](#) currentScale)
- void **OnPhotonSerializeView** ([Vector3](#) currentScale, [PhotonStream](#) stream, [PhotonMessageInfo](#) info)

8.80.1 Member Function Documentation

8.80.1.1 [Vector3](#) GetNetworkScale ()

Gets the last scale that was received through the network

Returns

8.81 PhotonTransformViewScaleModel Class Reference

Public Types

- enum **InterpolateOptions**

Public Attributes

- bool **SynchronizeEnabled**
- [InterpolateOptions](#) **InterpolateOption** = [InterpolateOptions.Disabled](#)
- float **InterpolateMoveTowardsSpeed** = 1f
- float **InterpolateLerpSpeed**

8.82 PhotonView Class Reference

A [PhotonView](#) identifies an object across the network (viewID) and configures how the controlling client updates remote instances.

Inherits [MonoBehaviour](#).

Public Member Functions

- void [RequestOwnership](#) ()
Depending on the [PhotonView](#)'s OwnershipTransfer setting, any client can request to become owner of the [PhotonView](#).
- void [TransferOwnership](#) ([Player](#) newOwner)
Transfers the ownership of this [PhotonView](#) (and GameObject) to another player.
- void [TransferOwnership](#) (int newOwnerId)
Transfers the ownership of this [PhotonView](#) (and GameObject) to another player.
- void **SerializeView** ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)
- void **DeserializeView** ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)

- void **RefreshRpcMonoBehaviourCache** ()
Can be used to refresh the list of MonoBehaviours on this GameObject while [PhotonNetwork.UseRpcMonoBehaviourCache](#) is true.
- void **RPC** (string methodName, [RpcTarget](#) target, params object[] parameters)
Call a RPC method of this GameObject on remote clients of this room (or on all, including this client).
- void **RpcSecure** (string methodName, [RpcTarget](#) target, bool encrypt, params object[] parameters)
Call a RPC method of this GameObject on remote clients of this room (or on all, including this client).
- void **RPC** (string methodName, [Player](#) targetPlayer, params object[] parameters)
Call a RPC method of this GameObject on remote clients of this room (or on all, including this client).
- void **RpcSecure** (string methodName, [Player](#) targetPlayer, bool encrypt, params object[] parameters)
Call a RPC method of this GameObject on remote clients of this room (or on all, including this client).
- override string **ToString** ()

Static Public Member Functions

- static [PhotonView](#) **Get** (Component component)
- static [PhotonView](#) **Get** (GameObject gameObj)
- static [PhotonView](#) **Find** (int viewID)

Public Attributes

- byte **Group** = 0
- bool **OwnershipWasTransferred**
Flag to check if ownership of this photonView was set during the lifecycle. Used for checking when joining late if event with mismatched owner and sender needs addressing.
- int **prefixField** = -1
- ViewSynchronization **Synchronization**
- [OwnershipOption](#) **OwnershipTransfer** = [OwnershipOption.Fixed](#)
Defines if ownership of this [PhotonView](#) is fixed, can be requested or simply taken.
- List< Component > **ObservedComponents**
- int **InstantiationId**

Properties

- int **Prefix** [get, set]
- object[] **InstantiationData** [get, set]
This is the InstantiationData that was passed when calling PhotonNetwork.Instantiate (if that was used to spawn this prefab)*
- int **ViewID** [get, set]
The ID of the [PhotonView](#). Identifies it in a networked game (per room).
- bool **IsSceneView** [get]
True if the [PhotonView](#) was loaded with the scene (game object) or instantiated with InstantiateSceneObject.
- [Player](#) **Owner** [get]
The owner of a [PhotonView](#) is the player who created the GameObject with that view. Objects in the scene don't have an owner.
- int **OwnerActorNr** [get, set]
- [Player](#) **Controller** [get]
- int **ControllerActorNr** [get]
- bool **IsOwnerActive** [get]
- int **CreatorActorNr** [get]
- bool **IsMine** [get]
True if the [PhotonView](#) is "mine" and can be controlled by this client.

8.82.1 Detailed Description

A [PhotonView](#) identifies an object across the network (viewID) and configures how the controlling client updates remote instances.

8.82.2 Member Function Documentation

8.82.2.1 void RefreshRpcMonoBehaviourCache ()

Can be used to refresh the list of MonoBehaviours on this GameObject while [PhotonNetwork.UseRpcMonoBehaviourCache](#) is true.

Set [PhotonNetwork.UseRpcMonoBehaviourCache](#) to true to enable the caching. Uses [this.GetComponents<MonoBehaviour>\(\)](#) to get a list of MonoBehaviours to call RPCs on (potentially).

While [PhotonNetwork.UseRpcMonoBehaviourCache](#) is false, this method has no effect, because the list is refreshed when a RPC gets called.

8.82.2.2 void RequestOwnership ()

Depending on the [PhotonView](#)'s OwnershipTransfer setting, any client can request to become owner of the [PhotonView](#).

Requesting ownership can give you control over a [PhotonView](#), if the OwnershipTransfer setting allows that. The current owner might have to implement [IPunCallbacks.OnOwnershipRequest](#) to react to the ownership request.

The owner/controller of a [PhotonView](#) is also the client which sends position updates of the GameObject.

8.82.2.3 void RPC (string *methodName*, [RpcTarget](#) *target*, params object[] *parameters*)

Call a RPC method of this GameObject on remote clients of this room (or on all, including this client).

Remote Procedure Calls are an essential tool in making multiplayer games with PUN. It enables you to make every client in a room call a specific method.

RPC calls can target "All" or the "Others". Usually, the target "All" gets executed locally immediately after sending the RPC. The "[*ViaServer](#)" options send the RPC to the server and execute it on this client when it's sent back. Of course, calls are affected by this client's lag and that of remote clients.

Each call automatically is routed to the same [PhotonView](#) (and GameObject) that was used on the originating client.

See: Remote Procedure Calls.

Parameters

<i>methodName</i>	The name of a fitting method that has the RPC attribute.
<i>target</i>	The group of targets and the way the RPC gets sent.
<i>parameters</i>	The parameters that the RPC method has (must fit this call!).

8.82.2.4 void RPC (string *methodName*, [Player](#) *targetPlayer*, params object[] *parameters*)

Call a RPC method of this GameObject on remote clients of this room (or on all, including this client).

Remote Procedure Calls are an essential tool in making multiplayer games with PUN. It enables you to make every client in a room call a specific method.

This method allows you to make an RPC calls on a specific player's client. Of course, calls are affected by this client's lag and that of remote clients.

Each call automatically is routed to the same [PhotonView](#) (and GameObject) that was used on the originating client.

See: Remote Procedure Calls.

Parameters

<i>methodName</i>	The name of a fitting method that was has the RPC attribute.
<i>targetPlayer</i>	The group of targets and the way the RPC gets sent.
<i>parameters</i>	The parameters that the RPC method has (must fit this call!).

8.82.2.5 void RpcSecure (string *methodName*, RpcTarget *target*, bool *encrypt*, params object[] *parameters*)

Call a RPC method of this GameObject on remote clients of this room (or on all, including this client).

Remote Procedure Calls are an essential tool in making multiplayer games with PUN. It enables you to make every client in a room call a specific method.

RPC calls can target "All" or the "Others". Usually, the target "All" gets executed locally immediately after sending the RPC. The "*ViaServer" options send the RPC to the server and execute it on this client when it's sent back. Of course, calls are affected by this client's lag and that of remote clients.

Each call automatically is routed to the same [PhotonView](#) (and GameObject) that was used on the originating client.

See: Remote Procedure Calls.

param name="methodName">The name of a fitting method that was has the RPC attribute.

param name="target">The group of targets and the way the RPC gets sent.

param name="encrypt">

param name="parameters">The parameters that the RPC method has (must fit this call!).

8.82.2.6 void RpcSecure (string *methodName*, Player *targetPlayer*, bool *encrypt*, params object[] *parameters*)

Call a RPC method of this GameObject on remote clients of this room (or on all, including this client).

Remote Procedure Calls are an essential tool in making multiplayer games with PUN. It enables you to make every client in a room call a specific method.

This method allows you to make an RPC calls on a specific player's client. Of course, calls are affected by this client's lag and that of remote clients.

Each call automatically is routed to the same [PhotonView](#) (and GameObject) that was used on the originating client.

See: Remote Procedure Calls.

param name="methodName">The name of a fitting method that was has the RPC attribute.

param name="targetPlayer">The group of targets and the way the RPC gets sent.

param name="encrypt">

param name="parameters">The parameters that the RPC method has (must fit this call!).

8.82.2.7 void TransferOwnership (Player *newOwner*)

Transfers the ownership of this [PhotonView](#) (and GameObject) to another player.

The owner/controller of a [PhotonView](#) is also the client which sends position updates of the GameObject.

8.82.2.8 void TransferOwnership (int *newOwnerId*)

Transfers the ownership of this [PhotonView](#) (and GameObject) to another player.

The owner/controller of a [PhotonView](#) is also the client which sends position updates of the GameObject.

8.82.3 Member Data Documentation

8.82.3.1 OwnershipOption OwnershipTransfer = OwnershipOption.Fixed

Defines if ownership of this [PhotonView](#) is fixed, can be requested or simply taken.

Note that you can't edit this value at runtime. The options are described in enum `OwnershipOption`. The current owner has to implement `IPunCallbacks.OnOwnershipRequest` to react to the ownership request.

8.82.3.2 bool OwnershipWasTransferred

Flag to check if ownership of this `photonView` was set during the lifecycle. Used for checking when joining late if event with mismatched owner and sender needs addressing.

`true` if owner ship was transfered; otherwise, `false`.

8.82.4 Property Documentation

8.82.4.1 object [] InstantiationData [get], [set]

This is the `InstantiationData` that was passed when calling `PhotonNetwork.Instantiate*` (if that was used to spawn this prefab)

8.82.4.2 bool IsMine [get]

True if the [PhotonView](#) is "mine" and can be controlled by this client.

PUN has an ownership concept that defines who can control and destroy each [PhotonView](#). True in case the owner matches the local Player. True if this is a scene photonview on the Master client.

8.82.4.3 bool IsSceneView [get]

True if the [PhotonView](#) was loaded with the scene (game object) or instantiated with `InstantiateSceneObject`.

Scene objects are not owned by a particular player but belong to the scene. Thus they don't get destroyed when their creator leaves the game and the current Master Client can control them (whoever that is). The ownerid is 0 (player IDs are 1 and up).

8.82.4.4 Player Owner [get]

The owner of a [PhotonView](#) is the player who created the `GameObject` with that view. Objects in the scene don't have an owner.

The owner/controller of a [PhotonView](#) is also the client which sends position updates of the `GameObject`.

Ownership can be transferred to another player with [PhotonView.TransferOwnership](#) or any player can request ownership by calling the [PhotonView](#)'s `RequestOwnership` method. The current owner has to implement `IPunCallbacks.OnOwnershipRequest` to react to the ownership request.

8.82.4.5 int ViewID [get], [set]

The ID of the [PhotonView](#). Identifies it in a networked game (per room).

See: Network Instantiation

8.83 PingMono Class Reference

Uses C# Socket class from System.Net.Sockets (as Unity usually does).

Inherits [PhotonPing](#).

Public Member Functions

- override bool [StartPing](#) (string ip)
Sends a "Photon Ping" to a server.
- override bool **Done** ()
- override void **Dispose** ()

Additional Inherited Members

8.83.1 Detailed Description

Uses C# Socket class from System.Net.Sockets (as Unity usually does).

Incompatible with Windows 8 Store/Phone API.

8.83.2 Member Function Documentation

8.83.2.1 override bool StartPing (string ip) [virtual]

Sends a "Photon Ping" to a server.

Parameters

<i>ip</i>	Address in IPv4 or IPv6 format. An address containing a '.' will be interpreted as IPv4.
-----------	--

Returns

True if the [Photon](#) Ping could be sent.

Reimplemented from [PhotonPing](#).

8.84 Player Class Reference

Summarizes a "player" within a room, identified (in that room) by ID (or "actorNumber").

Public Member Functions

- [Player Get](#) (int id)
Get a [Player](#) by ActorNumber (Player.ID).
- [Player GetNext](#) ()
Gets this [Player](#)'s next [Player](#), as sorted by ActorNumber (Player.ID). Wraps around.
- [Player GetNextFor](#) ([Player](#) currentPlayer)
Gets a [Player](#)'s next [Player](#), as sorted by ActorNumber (Player.ID). Wraps around.
- [Player GetNextFor](#) (int currentPlayerId)
Gets a [Player](#)'s next [Player](#), as sorted by ActorNumber (Player.ID). Wraps around.
- virtual void [InternalCacheProperties](#) (Hashtable properties)

Caches properties for new Players or when updates of remote players are received. Use [SetCustomProperties\(\)](#) for a synced update.

- override string [ToString](#) ()
Brief summary string of the [Player](#). Includes name or player.ID and if it's the Master Client.
- string [ToStringFull](#) ()
String summary of the [Player](#): player.ID, name and all custom properties of this user.
- override bool [Equals](#) (object p)
If players are equal (by [GetHashCode](#), which returns this.ID).
- override int [GetHashCode](#) ()
Accompanies Equals, using the ID (actorNumber) as hashCode to return.
- void [SetCustomProperties](#) (Hashtable propertiesToSet, Hashtable expectedValues=null, [WebFlags](#) webFlags=null)
Updates and synchronizes this [Player](#)'s Custom Properties. Optionally, expectedProperties can be provided as condition.

Public Attributes

- readonly bool [IsLocal](#)
Only one player is controlled by each client. Others are not local.
- object [TagObject](#)
Can be used to store a reference that's useful to know "by player".

Properties

- int [ActorNumber](#) [get]
Identifier of this player in current room. Also known as: actorNumber or actorNumber. It's -1 outside of rooms.
- string [NickName](#) [get, set]
Non-unique nickname of this player. Synced automatically in a room.
- string [UserId](#) [get, set]
UserId of the player, available when the room got created with [RoomOptions.PublishUserId](#) = true.
- bool [IsMasterClient](#) [get]
True if this player is the Master Client of the current room.
- bool [IsInactive](#) [get, set]
If this player is active in the room (and getting events which are currently being sent).
- Hashtable [CustomProperties](#) [get, set]
Read-only cache for custom properties of player. Set via [Player.SetCustomProperties](#).

8.84.1 Detailed Description

Summarizes a "player" within a room, identified (in that room) by ID (or "actorNumber").

Each player has a actorNumber, valid for that room. It's -1 until assigned by server (and client logic).

8.84.2 Member Function Documentation

8.84.2.1 override bool Equals (object p)

If players are equal (by [GetHashCode](#), which returns this.ID).

8.84.2.2 Player Get (int id)

Get a [Player](#) by ActorNumber (Player.ID).

Parameters

<i>id</i>	ActorNumber of the a player in this room.
-----------	---

Returns

[Player](#) or null.

8.84.2.3 override int GetHashCode ()

Accompanies Equals, using the ID (actorNumber) as hashCode to return.

8.84.2.4 [Player](#) GetNext ()

Gets this [Player](#)'s next [Player](#), as sorted by ActorNumber (Player.ID). Wraps around.

Returns

[Player](#) or null.

8.84.2.5 [Player](#) GetNextFor ([Player](#) currentPlayer)

Gets a [Player](#)'s next [Player](#), as sorted by ActorNumber (Player.ID). Wraps around.

Useful when you pass something to the next player. For example: passing the turn to the next player.

Parameters

<i>currentPlayer</i>	The Player for which the next is being needed.
----------------------	--

Returns

[Player](#) or null.

8.84.2.6 [Player](#) GetNextFor (int currentPlayerId)

Gets a [Player](#)'s next [Player](#), as sorted by ActorNumber (Player.ID). Wraps around.

Useful when you pass something to the next player. For example: passing the turn to the next player.

Parameters

<i>currentPlayerId</i>	The ActorNumber (Player.ID) for which the next is being needed.
------------------------	---

Returns

[Player](#) or null.

8.84.2.7 virtual void InternalCacheProperties (Hashtable properties) [virtual]

Caches properties for new Players or when updates of remote players are received. Use [SetCustomProperties\(\)](#) for a synced update.

This only updates the CustomProperties and doesn't send them to the server. Mostly used when creating new remote players, where the server sends their properties.

8.84.2.8 `void SetCustomProperties (Hashtable propertiesToSet, Hashtable expectedValues = null, WebFlags webFlags = null)`

Updates and synchronizes this [Player](#)'s Custom Properties. Optionally, `expectedProperties` can be provided as condition.

Custom Properties are a set of string keys and arbitrary values which is synchronized for the players in a [Room](#). They are available when the client enters the room, as they are in the response of `OpJoin` and `OpCreate`.

Custom Properties either relate to the (current) [Room](#) or a [Player](#) (in that [Room](#)).

Both classes locally cache the current key/values and make them available as property: `CustomProperties`. This is provided only to read them. You must use the method `SetCustomProperties` to set/modify them.

Any client can set any Custom Properties anytime (when in a room). It's up to the game logic to organize how they are best used.

You should call `SetCustomProperties` only with key/values that are new or changed. This reduces traffic and performance.

Unless you define some `expectedProperties`, setting key/values is always permitted. In this case, the property-setting client will not receive the new values from the server but instead update its local cache in `SetCustomProperties`.

If you define `expectedProperties`, the server will skip updates if the server property-cache does not contain all `expectedProperties` with the same values. In this case, the property-setting client will get an update from the server and update its cached key/values at about the same time as everyone else.

The benefit of using `expectedProperties` can be only one client successfully sets a key from one known value to another. As example: Store who owns an item in a Custom Property "ownedBy". It's 0 initially. When multiple players reach the item, they all attempt to change "ownedBy" from 0 to their `actorNumber`. If you use `expectedProperties {"ownedBy", 0}` as condition, the first player to take the item will have it (and the others fail to set the ownership).

Properties get saved with the game state for Turnbased games (which use `IsPersistent = true`).

Parameters

<i>propertiesToSet</i>	Hashtable of Custom Properties to be set.
<i>expectedValues</i>	If non-null, these are the property-values the server will check as condition for this update.
<i>webFlags</i>	Defines if this <code>SetCustomProperties</code> -operation gets forwarded to your <code>WebHooks</code> . Client must be in room.

8.84.2.9 `override string ToString ()`

Brief summary string of the [Player](#). Includes name or `player.ID` and if it's the Master Client.

8.84.2.10 `string ToStringFull ()`

String summary of the [Player](#): `player.ID`, name and all custom properties of this user.

Use with care and not every frame! Converts the `customProperties` to a `String` on every single call.

8.84.3 Member Data Documentation

8.84.3.1 `readonly bool IsLocal`

Only one player is controlled by each client. Others are not local.

8.84.3.2 object TagObject

Can be used to store a reference that's useful to know "by player".

Example: Set a player's character as Tag by assigning the GameObject on Instantiate.

8.84.4 Property Documentation

8.84.4.1 int ActorNumber [get]

Identifier of this player in current room. Also known as: actorNumber or actorNumber. It's -1 outside of rooms.

The ID is assigned per room and only valid in that context. It will change even on leave and re-join. IDs are never re-used per room.

8.84.4.2 Hashtable CustomProperties [get], [set]

Read-only cache for custom properties of player. Set via [Player.SetCustomProperties](#).

Don't modify the content of this Hashtable. Use SetCustomProperties and the properties of this class to modify values. When you use those, the client will sync values with the server.

[SetCustomProperties](#)

8.84.4.3 bool IsInactive [get], [set]

If this player is active in the room (and getting events which are currently being sent).

Inactive players keep their spot in a room but otherwise behave as if offline (no matter what their actual connection status is). The room needs a PlayerTTL != 0. If a player is inactive for longer than PlayerTTL, the server will remove this player from the room. For a client "rejoining" a room, is the same as joining it: It gets properties, cached events and then the live events.

8.84.4.4 bool IsMasterClient [get]

True if this player is the Master Client of the current room.

See also: [PhotonNetwork.MasterClient](#).

8.84.4.5 string NickName [get], [set]

Non-unique nickname of this player. Synced automatically in a room.

A player might change his own playername in a room (it's only a property). Setting this value updates the server and other players (using an operation).

8.84.4.6 string UserId [get], [set]

UserId of the player, available when the room got created with [RoomOptions.PublishUserId](#) = true.

Useful for PhotonNetwork.FindFriends and blocking slots in a room for expected players (e.g. in [PhotonNetwork.CreateRoom](#)).

8.85 PlayerNumbering Class Reference

Implements consistent numbering in a room/game with help of room properties. Access them by `Player.GetPlayer↔Number()` extension.

Inherits [MonoBehaviourPunCallbacks](#).

Public Member Functions

- delegate void [PlayerNumberingChanged](#) ()
OnPlayerNumberingChanged delegate. Use
- void **Awake** ()
- override void [OnJoinedRoom](#) ()
Called when the LoadBalancingClient entered a room, no matter if this client created it or simply joined.
- override void [OnLeftRoom](#) ()
Called when the local user/client left a room, so the game's logic can clean up it's internal state.
- override void [OnPlayerEnteredRoom](#) ([Player](#) newPlayer)
Called when a remote player entered the room. This Player is already added to the playerlist.
- override void [OnPlayerLeftRoom](#) ([Player](#) otherPlayer)
Called when a remote player left the room or became inactive. Check otherPlayer.IsInactive.
- override void [OnPlayerPropertiesUpdate](#) ([Player](#) targetPlayer, Hashtable changedProps)
Called when custom player-properties are changed. Player and the changed properties are passed as object[].
- void [RefreshData](#) ()
Internal call Refresh the cached data and call the OnPlayerNumberingChanged delegate.

Public Attributes

- const string [RoomPlayerIndexedProp](#) = "pNr"
Defines the room custom property name to use for room player indexing tracking.
- bool [dontDestroyOnLoad](#) = false
dont destroy on load flag for this Component's GameObject to survive Level Loading.

Static Public Attributes

- static [PlayerNumbering](#) instance
The instance. EntryPoint to query about Room Indexing.
- static [Player](#)[] **SortedPlayers**

Events

- static [PlayerNumberingChanged](#) [OnPlayerNumberingChanged](#)
Called everytime the room Indexing was updated. Use this for discrete updates. Always better than brute force calls every frame.

Additional Inherited Members

8.85.1 Detailed Description

Implements consistent numbering in a room/game with help of room properties. Access them by `Player.GetPlayer↔Number()` extension.

indexing ranges from 0 to the maximum number of Players. indexing remains for the player while in room. If a Player is numbered 2 and player numbered 1 leaves, numbered 1 become vacant and will assigned to the future player joining (the first available vacant number is assigned when joining)

8.85.2 Member Function Documentation

8.85.2.1 `override void OnJoinedRoom () [virtual]`

Called when the LoadBalancingClient entered a room, no matter if this client created it or simply joined.

When this is called, you can access the existing players in [Room.Players](#), their custom properties and [Room.CustomProperties](#).

In this callback, you could create player objects. For example in Unity, instantiate a prefab for the player.

If you want a match to be started "actively", enable the user to signal "ready" (using `OpRaiseEvent` or a Custom Property).

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.85.2.2 `override void OnLeftRoom () [virtual]`

Called when the local user/client left a room, so the game's logic can clean up it's internal state.

When leaving a room, the LoadBalancingClient will disconnect the Game Server and connect to the Master Server. This wraps up multiple internal actions.

Wait for the callback `OnConnectedToMaster`, before you use lobbies and join or create rooms.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.85.2.3 `override void OnPlayerEnteredRoom (Player newPlayer) [virtual]`

Called when a remote player entered the room. This Player is already added to the playerlist.

If your game starts with a certain number of players, this callback can be useful to check the `Room.playerCount` and find out if you can start.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.85.2.4 `override void OnPlayerLeftRoom (Player otherPlayer) [virtual]`

Called when a remote player left the room or became inactive. Check `otherPlayer.IsInactive`.

If another player leaves the room or if the server detects a lost connection, this callback will be used to notify your game logic.

Depending on the room's setup, players may become inactive, which means they may return and retake their spot in the room. In such cases, the Player stays in the [Room.Players](#) dictionary.

If the player is not just inactive, it gets removed from the [Room.Players](#) dictionary, before the callback is called.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.85.2.5 `override void OnPlayerPropertiesUpdate (Player target, Hashtable changedProps) [virtual]`

Called when custom player-properties are changed. Player and the changed properties are passed as object[].

Changing properties must be done by [Player.SetCustomProperties](#), which causes this callback locally, too.

Parameters

<i>targetPlayer</i>	Contains Player that changed.
<i>changedProps</i>	Contains the properties that changed.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.85.2.6 delegate void PlayerNumberingChanged ()

OnPlayerNumberingChanged delegate. Use

8.85.2.7 void RefreshData ()

Internal call Refresh the cached data and call the OnPlayerNumberingChanged delegate.

8.85.3 Member Data Documentation

8.85.3.1 bool dontDestroyOnLoad = false

dont destroy on load flag for this Component's GameObject to survive Level Loading.

8.85.3.2 PlayerNumbering instance [static]

The instance. EntryPoint to query about Room Indexing.

8.85.3.3 const string RoomPlayerIndexedProp = "pNr"

Defines the room custom property name to use for room player indexing tracking.

8.85.4 Event Documentation

8.85.4.1 PlayerNumberingChanged OnPlayerNumberingChanged [static]

Called everytime the room Indexing was updated. Use this for discrete updates. Always better than brute force calls every frame.

8.86 PlayerNumberingExtensions Class Reference

Extension used for PlayerRoomIndexing and Player class.

Static Public Member Functions

- static int [GetPlayerNumber](#) (this [Player](#) player)

Extension for Player class to wrap up access to the player's custom property. Make sure you use the delegate 'OnPlayerNumberingChanged' to know when you can query the PlayerNumber. Numbering can changes over time or not be yet assigned during the initial phase (when player creates a room for example)

- static void [SetPlayerNumber](#) (this [Player](#) player, int playerNumber)

Sets the player number. It's not recommended to manually interfere with the playerNumbering, but possible.

8.86.1 Detailed Description

Extension used for PlayerRoomIndexing and Player class.

8.86.2 Member Function Documentation

8.86.2.1 static int GetPlayerNumber (this **Player** *player*) [static]

Extension for Player class to wrap up access to the player's custom property. Make sure you use the delegate 'OnPlayerNumberingChanged' to know when you can query the PlayerNumber. Numbering can change over time or not be yet assigned during the initial phase (when player creates a room for example)

Returns

persistent index in room. -1 for no indexing

8.86.2.2 static void SetPlayerNumber (this **Player** *player*, int *playerNumber*) [static]

Sets the player number. It's not recommended to manually interfere with the playerNumbering, but possible.

Parameters

<i>player</i>	Player.
<i>playerNumber</i>	Player number.

8.87 PointedAtGameObjectInfo Class Reference

Display ViewId, OwnerActorNr, IsCeneView and IsMine when clicked.

Inherits MonoBehaviour.

Public Member Functions

- void **SetFocus** ([PhotonView](#) pv)
- void **RemoveFocus** ([PhotonView](#) pv)

Public Attributes

- Text **text**

Static Public Attributes

- static [PointedAtGameObjectInfo](#) **Instance**

8.87.1 Detailed Description

Display ViewId, OwnerActorNr, IsCeneView and IsMine when clicked.

8.88 Program Class Reference

8.89 PunExtensions Class Reference

Small number of extension methods that make it easier for PUN to work cross-Unity-versions.

Static Public Member Functions

- static ParameterInfo[] **GetCachedParameters** (this MethodInfo mo)
- static PhotonView[] **GetPhotonViewsInChildren** (this UnityEngine.GameObject go)
- static PhotonView **GetPhotonView** (this UnityEngine.GameObject go)
- static bool **AlmostEquals** (this Vector3 target, Vector3 second, float sqrMagnitudePrecision)
compares the squared magnitude of target - second to given float value
- static bool **AlmostEquals** (this Vector2 target, Vector2 second, float sqrMagnitudePrecision)
compares the squared magnitude of target - second to given float value
- static bool **AlmostEquals** (this Quaternion target, Quaternion second, float maxAngle)
compares the angle between target and second to given float value
- static bool **AlmostEquals** (this float target, float second, float floatDiff)
compares two floats and returns true if their difference is less than floatDiff

Static Public Attributes

- static Dictionary< MethodInfo, ParameterInfo[]> **ParametersOfMethods** = new Dictionary<MethodInfo, ParameterInfo[]>()

8.89.1 Detailed Description

Small number of extension methods that make it easier for PUN to work cross-Unity-versions.

8.89.2 Member Function Documentation

8.89.2.1 static bool AlmostEquals (this Vector3 *target*, Vector3 *second*, float *sqrMagnitudePrecision*) [static]

compares the squared magnitude of target - second to given float value

8.89.2.2 static bool AlmostEquals (this Vector2 *target*, Vector2 *second*, float *sqrMagnitudePrecision*) [static]

compares the squared magnitude of target - second to given float value

8.89.2.3 static bool AlmostEquals (this Quaternion *target*, Quaternion *second*, float *maxAngle*) [static]

compares the angle between target and second to given float value

8.89.2.4 static bool AlmostEquals (this float *target*, float *second*, float *floatDiff*) [static]

compares two floats and returns true if their difference is less than floatDiff

8.90 PunPlayerScores Class Reference

Scoring system for PhotonPlayer

Inherits MonoBehaviour.

Public Attributes

- const string **PlayerScoreProp** = "score"

8.90.1 Detailed Description

Scoring system for PhotonPlayer

8.91 PunRPC Class Reference

Replacement for RPC attribute with different name. Used to flag methods as remote-callable.

Inherits Attribute.

8.91.1 Detailed Description

Replacement for RPC attribute with different name. Used to flag methods as remote-callable.

8.92 PunTeams Class Reference

Implements teams in a room/game with help of player properties. Access them by Player.GetTeam extension.

Inherits [MonoBehaviourPunCallbacks](#).

Public Types

- enum [Team](#) : byte
Enum defining the teams available. First team should be neutral (it's the default value any field of this enum gets).

Public Member Functions

- void **Start** ()
- override void **OnDisable** ()
- override void [OnJoinedRoom](#) ()
Needed to update the team lists when joining a room.
- override void [OnLeftRoom](#) ()
Called when the local user/client left a room, so the game's logic can clean up it's internal state.
- override void [OnPlayerPropertiesUpdate](#) ([Player](#) targetPlayer, Hashtable changedProps)
Refreshes the team lists. It could be a non-team related property change, too.
- override void [OnPlayerLeftRoom](#) ([Player](#) otherPlayer)
Called when a remote player left the room or became inactive. Check otherPlayer.IsInactive.
- override void [OnPlayerEnteredRoom](#) ([Player](#) newPlayer)
Called when a remote player entered the room. This Player is already added to the playerlist.
- void **UpdateTeams** ()

Public Attributes

- const string [TeamPlayerProp](#) = "team"

Defines the player custom property name to use for team affinity of "this" player.

Static Public Attributes

- static Dictionary< [Team](#), List< [Player](#) > > [PlayersPerTeam](#)

The main list of teams with their player-lists. Automatically kept up to date.

Additional Inherited Members

8.92.1 Detailed Description

Implements teams in a room/game with help of player properties. Access them by [Player.GetTeam](#) extension.

Teams are defined by enum [Team](#). Change this to get more / different teams. There are no rules when / if you can join a team. You could add this in [JoinTeam](#) or something.

8.92.2 Member Enumeration Documentation

8.92.2.1 enum [Team](#) : byte [strong]

Enum defining the teams available. First team should be neutral (it's the default value any field of this enum gets).

8.92.3 Member Function Documentation

8.92.3.1 override void [OnJoinedRoom](#) () [virtual]

Needed to update the team lists when joining a room.

Called by PUN. See enum [MonoBehaviourPunCallbacks](#) for an explanation.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.92.3.2 override void [OnLeftRoom](#) () [virtual]

Called when the local user/client left a room, so the game's logic can clean up it's internal state.

When leaving a room, the [LoadBalancingClient](#) will disconnect the Game Server and connect to the Master Server. This wraps up multiple internal actions.

Wait for the callback [OnConnectedToMaster](#), before you use lobbies and join or create rooms.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.92.3.3 override void [OnPlayerEnteredRoom](#) ([Player](#) *newPlayer*) [virtual]

Called when a remote player entered the room. This [Player](#) is already added to the playerlist.

If your game starts with a certain number of players, this callback can be useful to check the [Room.playerCount](#) and find out if you can start.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.92.3.4 override void OnPlayerLeftRoom ([Player](#) *otherPlayer*) [virtual]

Called when a remote player left the room or became inactive. Check [otherPlayer.IsInactive](#).

If another player leaves the room or if the server detects a lost connection, this callback will be used to notify your game logic.

Depending on the room's setup, players may become inactive, which means they may return and retake their spot in the room. In such cases, the [Player](#) stays in the [Room.Players](#) dictionary.

If the player is not just inactive, it gets removed from the [Room.Players](#) dictionary, before the callback is called.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.92.3.5 override void OnPlayerPropertiesUpdate ([Player](#) *targetPlayer*, [Hashtable](#) *changedProps*) [virtual]

Refreshes the team lists. It could be a non-team related property change, too.

Called by PUN. See enum [MonoBehaviourPunCallbacks](#) for an explanation.

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.92.4 Member Data Documentation

8.92.4.1 Dictionary<[Team](#), List<[Player](#)>> [PlayersPerTeam](#) [static]

The main list of teams with their player-lists. Automatically kept up to date.

Note that this is static. Can be accessed by [PunTeam.PlayersPerTeam](#). You should not modify this.

8.92.4.2 const string [TeamPlayerProp](#) = "team"

Defines the player custom property name to use for team affinity of "this" player.

8.93 PunTurnManager Class Reference

[Pun](#) turnBased Game manager. Provides an Interface ([IPunTurnManagerCallbacks](#)) for the typical turn flow and logic, between players Provides Extensions for [Player](#), [Room](#) and [RoomInfo](#) to feature dedicated api for TurnBased Needs

Inherits [MonoBehaviourPunCallbacks](#), and [IOnEventCallback](#).

Public Member Functions

- void [BeginTurn](#) ()
Tells the TurnManager to begins a new turn.
- void [SendMove](#) (object move, bool finished)
Call to send an action. Optionally finish the turn, too. The move object can be anything. Try to optimize though and only send the strict minimum set of information to define the turn move.
- bool [GetPlayerFinishedTurn](#) ([Player](#) player)
Gets if the player finished the current turn.
- void [OnEvent](#) ([EventData](#) photonEvent)
Called by PhotonNetwork.OnEventCall registration
- override void [OnRoomPropertiesUpdate](#) ([Hashtable](#) propertiesThatChanged)
Called by PhotonNetwork

Public Attributes

- float `TurnDuration` = 20f
The duration of the turn in seconds.
- `IPunTurnManagerCallbacks` `TurnManagerListener`
The turn manager listener. Set this to your own script instance to catch Callbacks
- const byte `TurnManagerEventOffset` = 0
The turn manager event offset event message byte. Used internally for defining data in Room Custom Properties
- const byte `EvMove` = 1 + `TurnManagerEventOffset`
The Move event message byte. Used internally for saving data in Room Custom Properties
- const byte `EvFinalMove` = 2 + `TurnManagerEventOffset`
The Final Move event message byte. Used internally for saving data in Room Custom Properties

Properties

- int `Turn` [get]
Wraps accessing the "turn" custom properties of a room.
- float `ElapsedTimeInTurn` [get]
Gets the elapsed time in the current turn in seconds
- float `RemainingSecondsInTurn` [get]
Gets the remaining seconds for the current turn. Ranges from 0 to TurnDuration
- bool `IsCompletedByAll` [get]
Gets a value indicating whether the turn is completed by all.
- bool `IsFinishedByMe` [get]
Gets a value indicating whether the current turn is finished by me.
- bool `IsOver` [get]
Gets a value indicating whether the current turn is over. That is the ElapsedTimeInTurn is greater or equal to the TurnDuration

8.93.1 Detailed Description

`Pun` turnBased Game manager. Provides an Interface (`IPunTurnManagerCallbacks`) for the typical turn flow and logic, between players Provides Extensions for Player, Room and RoomInfo to feature dedicated api for TurnBased Needs

8.93.2 Member Function Documentation

8.93.2.1 void BeginTurn ()

Tells the TurnManager to begins a new turn.

8.93.2.2 bool GetPlayerFinishedTurn (*Player player*)

Gets if the player finished the current turn.

Returns

`true`, if player finished the current turn, `false` otherwise.

Parameters

<i>player</i>	The Player to check for
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8.93.2.3 void OnEvent (*EventData photonEvent*)

Called by PhotonNetwork.OnEventCall registration

Parameters

<i>photonEvent</i>	Photon event.
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Implements [IOnEventCallback](#).

8.93.2.4 override void OnRoomPropertiesUpdate (*Hashtable propertiesThatChanged*) [virtual]

Called by [PhotonNetwork](#)

Parameters

<i>propertiesThat↔ Changed</i>	Properties that changed.
------------------------------------	--------------------------

Reimplemented from [MonoBehaviourPunCallbacks](#).

8.93.2.5 void SendMove (*object move*, *bool finished*)

Call to send an action. Optionally finish the turn, too. The move object can be anything. Try to optimize though and only send the strict minimum set of information to define the turn move.

Parameters

<i>move</i>	
<i>finished</i>	

8.93.3 Member Data Documentation

8.93.3.1 const byte EvFinalMove = 2 + TurnManagerEventOffset

The Final Move event message byte. Used internally for saving data in Room Custom Properties

8.93.3.2 const byte EvMove = 1 + TurnManagerEventOffset

The Move event message byte. Used internally for saving data in Room Custom Properties

8.93.3.3 float TurnDuration = 20f

The duration of the turn in seconds.

8.93.3.4 const byte TurnManagerEventOffset = 0

The turn manager event offset event message byte. Used internally for defining data in Room Custom Properties

8.93.3.5 IPunTurnManagerCallbacks TurnManagerListener

The turn manager listener. Set this to your own script instance to catch Callbacks

8.93.4 Property Documentation

8.93.4.1 float ElapsedTimeInTurn [get]

Gets the elapsed time in the current turn in seconds

The elapsed time in the turn.

8.93.4.2 bool IsCompletedByAll [get]

Gets a value indicating whether the turn is completed by all.

`true` if this turn is completed by all; otherwise, `false`.

8.93.4.3 bool IsFinishedByMe [get]

Gets a value indicating whether the current turn is finished by me.

`true` if the current turn is finished by me; otherwise, `false`.

8.93.4.4 bool IsOver [get]

Gets a value indicating whether the current turn is over. That is the ElapsedTimeInTurn is greater or equal to the TurnDuration

`true` if the current turn is over; otherwise, `false`.

8.93.4.5 float RemainingSecondsInTurn [get]

Gets the remaining seconds for the current turn. Ranges from 0 to TurnDuration

The remaining seconds for the current turn

8.93.4.6 int Turn [get]

Wraps accessing the "turn" custom properties of a room.

The turn index

8.94 RaiseEventOptions Class Reference

Aggregates several less-often used options for operation RaiseEvent. See field descriptions for usage details.

Public Attributes

- [EventCaching CachingOption](#)

Defines if the server should simply send the event, put it in the cache or remove events that are like this one.

- `byte` [InterestGroup](#)

The number of the Interest Group to send this to. 0 goes to all users but to get 1 and up, clients must subscribe to the group first.

- `int[] TargetActors`
A list of `Player.ActorNumbers` to send this event to. You can implement events that just go to specific users this way.
- `ReceiverGroup Receivers`
Sends the event to All, MasterClient or Others (default). Be careful with MasterClient, as the client might disconnect before it got the event and it gets lost.
- `byte SequenceChannel`
Events are ordered per "channel". If you have events that are independent of others, they can go into another sequence or channel.
- `WebFlags Flags = WebFlags.Default`
Optional flags to be used in `Photon` client SDKs with `Op RaiseEvent` and `Op SetProperties`.

Static Public Attributes

- static readonly `RaiseEventOptions Default = new RaiseEventOptions()`
Default options: `CachingOption: DoNotCache`, `InterestGroup: 0`, `targetActors: null`, `receivers: Others`, `sequence↔Channel: 0`.

8.94.1 Detailed Description

Aggregates several less-often used options for operation `RaiseEvent`. See field descriptions for usage details.

8.94.2 Member Data Documentation

8.94.2.1 EventCaching CachingOption

Defines if the server should simply send the event, put it in the cache or remove events that are like this one.

When using option: `SliceSetIndex`, `SlicePurgeIndex` or `SlicePurgeUpToIndex`, set a `CacheSliceIndex`. All other options except `SequenceChannel` get ignored.

8.94.2.2 readonly RaiseEventOptions Default = new RaiseEventOptions() [static]

Default options: `CachingOption: DoNotCache`, `InterestGroup: 0`, `targetActors: null`, `receivers: Others`, `sequence↔Channel: 0`.

8.94.2.3 WebFlags Flags = WebFlags.Default

Optional flags to be used in `Photon` client SDKs with `Op RaiseEvent` and `Op SetProperties`.

Introduced mainly for webhooks 1.2 to control behavior of forwarded HTTP requests.

8.94.2.4 byte InterestGroup

The number of the Interest Group to send this to. 0 goes to all users but to get 1 and up, clients must subscribe to the group first.

8.94.2.5 ReceiverGroup Receivers

Sends the event to All, MasterClient or Others (default). Be careful with MasterClient, as the client might disconnect before it got the event and it gets lost.

8.94.2.6 byte SequenceChannel

Events are ordered per "channel". If you have events that are independent of others, they can go into another sequence or channel.

8.94.2.7 int[] TargetActors

A list of Player.ActorNumbers to send this event to. You can implement events that just go to specific users this way.

8.95 Region Class Reference

Public Member Functions

- **Region** (string code, string address)
- override string **ToString** ()

Properties

- string **Code** [get]
- string **Cluster** [get]
Unlike the CloudRegionCode, this may contain cluster information.
- string **HostAndPort** [get, set]
- int **Ping** [get, set]
- bool **WasPinged** [get]

8.95.1 Property Documentation

8.95.1.1 string Cluster [get]

Unlike the CloudRegionCode, this may contain cluster information.

8.96 RegionHandler Class Reference

Provides methods to work with Photon's regions (Photon Cloud) and can be use to find the one with best ping.

Public Member Functions

- void **SetRegions** (OperationResponse opGetRegions)
- bool **PingMinimumOfRegions** (Action< RegionHandler > onCompleteCallback, string previousSummary)

Properties

- List< Region > **EnabledRegions** [get, set]
A list of region names for the Photon Cloud. Set by the result of OpGetRegions().
- Region **BestRegion** [get]
When PingMinimumOfRegions was called and completed, the BestRegion is identified by best ping.
- string **SummaryToCache** [get]
This value summarizes the results of pinging the currently available EnabledRegions (after PingMinimumOfRegions finished).
- bool **IsPinging** [get]

8.96.1 Detailed Description

Provides methods to work with [Photon](#)'s regions ([Photon](#) Cloud) and can be use to find the one with best ping.

When a client uses a Name Server to fetch the list of available regions, the [LoadBalancingClient](#) will create a [RegionHandler](#) and provide it via the OnRegionListReceived callback.

Your logic can decide to either connect to one of those regional servers, or it may use PingMinimumOfRegions to test which region provides the best ping.

It makes sense to make clients "sticky" to a region when one gets selected. This can be achieved by storing the SummaryToCache value, once ping was done. When the client connects again, the previous SummaryToCache helps limiting the number of regions to ping. In best case, only the previously selected region gets re-pinged and if the current ping is not much worse, this one region is used again.

8.96.2 Property Documentation

8.96.2.1 Region BestRegion [get]

When PingMinimumOfRegions was called and completed, the BestRegion is identified by best ping.

8.96.2.2 List<Region> EnabledRegions [get], [set]

A list of region names for the [Photon](#) Cloud. Set by the result of OpGetRegions().

Implement ILoadBalancingCallbacks and register for the callbacks to get OnRegionListReceived(RegionHandler regionHandler). You can also put a "case OperationCode.GetRegions:" into your OnOperationResponse method to notice when the result is available.

8.96.2.3 string SummaryToCache [get]

This value summarizes the results of pinging the currently available EnabledRegions (after PingMinimumOfRegions finished).

8.97 RegionPinger Class Reference

Public Member Functions

- **RegionPinger** ([Region](#) region, Action< [Region](#) > onDoneCallback)
- bool **Start** ()

Static Public Member Functions

- static string [ResolveHost](#) (string hostName)
Attempts to resolve a hostname into an IP string or returns empty string if that fails.

Public Attributes

- int **CurrentAttempt** = 0

Static Public Attributes

- static int **Attempts** = 5

- static bool **IgnoreInitialAttempt** = true
- static int **MaxMilliseconsPerPing** = 800
- static int **PingWhenFailed** = Attempts * MaxMilliseconsPerPing

Properties

- bool **Done** [get]

8.97.1 Member Function Documentation

8.97.1.1 static string ResolveHost (string *hostName*) [static]

Attempts to resolve a hostname into an IP string or returns empty string if that fails.

To be compatible with most platforms, the address family is checked like this:
if (ipAddress.AddressFamily.ToString().Contains("6")) // ipv6...

Parameters

<i>hostName</i>	Hostname to resolve.
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Returns

IP string or empty string if resolution fails

8.98 Room Class Reference

This class represents a room a client joins/joined.

Inherits [RoomInfo](#).

Public Member Functions

- [Room](#) (string roomName, [RoomOptions](#) options, bool isOffline=false)
Creates a [Room](#) (representation) with given name and properties and the "listing options" as provided by parameters.
- virtual void [SetCustomProperties](#) (Hashtable propertiesToSet, Hashtable expectedProperties=null, [WebFlags](#) webFlags=null)
Updates and synchronizes this [Room](#)'s Custom Properties. Optionally, expectedProperties can be provided as condition.
- void [SetPropertiesListedInLobby](#) (string[] [propertiesListedInLobby](#))
Enables you to define the properties available in the lobby if not all properties are needed to pick a room.
- bool [SetMasterClient](#) ([Player](#) masterClientPlayer)
Asks the server to assign another player as Master Client of your current room.
- virtual bool [AddPlayer](#) ([Player](#) player)
Checks if the player is in the room's list already and calls [StorePlayer\(\)](#) if not.
- virtual [Player](#) [StorePlayer](#) ([Player](#) player)
Updates a player reference in the Players dictionary (no matter if it existed before or not).
- virtual [Player](#) [GetPlayer](#) (int id)
Tries to find the player with given actorNumber (a.k.a. ID). Only useful when in a [Room](#), as IDs are only valid per [Room](#).
- void [ClearExpectedUsers](#) ()
Attempts to remove all current expected users from the server's Slot Reservation list.
- override string [ToString](#) ()

Returns a summary of this [Room](#) instance as string.

- new string [ToStringFull](#) ()

Returns a summary of this [Room](#) instance as longer string, including Custom Properties.

Properties

- [LoadBalancingClient](#) [LoadBalancingClient](#) [get, set]
A reference to the [LoadBalancingClient](#) which is currently keeping the connection and state.
- new string [Name](#) [get, set]
The name of a room. Unique identifier (per region and virtual appid) for a room/match.
- bool [IsOffline](#) [get]
- new bool [IsOpen](#) [get, set]
Defines if the room can be joined.
- new bool [IsVisible](#) [get, set]
Defines if the room is listed in its lobby.
- new byte [MaxPlayers](#) [get, set]
Sets a limit of players to this room. This property is synced and shown in lobby, too. If the room is full (players count == maxplayers), joining this room will fail.
- new byte [PlayerCount](#) [get]
The count of players in this [Room](#) (using this.Players.Count).
- Dictionary< int, [Player](#) > [Players](#) [get]
While inside a [Room](#), this is the list of players who are also in that room.
- string[] [ExpectedUsers](#) [get]
List of users who are expected to join this room. In matchmaking, [Photon](#) blocks a slot for each of these UserIDs out of the MaxPlayers.
- int [PlayerTtl](#) [get, set]
[Player](#) Time To Live. How long any player can be inactive (due to disconnect or leave) before the user gets removed from the playerlist (freeing a slot).
- int [EmptyRoomTtl](#) [get, set]
[Room](#) Time To Live. How long a room stays available (and in server-memory), after the last player becomes inactive. After this time, the room gets persisted or destroyed.
- int [MasterClientId](#) [get]
The ID (actorNumber, actorNumber) of the player who's the master of this [Room](#). Note: This changes when the current master leaves the room.
- string[] [PropertiesListedInLobby](#) [get]
Gets a list of custom properties that are in the [RoomInfo](#) of the Lobby. This list is defined when creating the room and can't be changed afterwards. Compare: [LoadBalancingClient.OpCreateRoom\(\)](#)
- bool [AutoCleanUp](#) [get]
Gets if this room uses autoCleanUp to remove all (buffered) RPCs and instantiated GameObjects when a player leaves.

Additional Inherited Members

8.98.1 Detailed Description

This class represents a room a client joins/joined.

Contains a list of current players, their properties and those of this room, too. A room instance has a number of "well known" properties like IsOpen, MaxPlayers which can be changed. Your own, custom properties can be set via [SetCustomProperties\(\)](#) while being in the room.

Typically, this class should be extended by a game-specific implementation with logic and extra features.

8.98.2 Constructor & Destructor Documentation

8.98.2.1 `Room (string roomName, RoomOptions options, bool isOffline = false)`

Creates a `Room` (representation) with given name and properties and the "listing options" as provided by parameters.

Parameters

<i>roomName</i>	Name of the room (can be null until it's actually created on server).
<i>options</i>	Room options.

8.98.3 Member Function Documentation

8.98.3.1 virtual bool AddPlayer ([Player](#) *player*) [virtual]

Checks if the player is in the room's list already and calls [StorePlayer\(\)](#) if not.

Parameters

<i>player</i>	The new player - identified by ID.
---------------	------------------------------------

Returns

False if the player could not be added (cause it was in the list already).

8.98.3.2 void ClearExpectedUsers ()

Attempts to remove all current expected users from the server's Slot Reservation list.

Note that this operation can conflict with new/other users joining. They might be adding users to the list of expected users before or after this client called ClearExpectedUsers.

This room's expectedUsers value will update, when the server sends a successful update.

Internals: This methods wraps up setting the ExpectedUsers property of a room.

8.98.3.3 virtual [Player](#) GetPlayer (int *id*) [virtual]

Tries to find the player with given actorNumber (a.k.a. ID). Only useful when in a [Room](#), as IDs are only valid per [Room](#).

Parameters

<i>id</i>	ID to look for.
-----------	-----------------

Returns

The player with the ID or null.

8.98.3.4 virtual void SetCustomProperties (Hashtable *propertiesToSet*, Hashtable *expectedProperties* = null, [WebFlags](#) *webFlags* = null) [virtual]

Updates and synchronizes this [Room](#)'s Custom Properties. Optionally, expectedProperties can be provided as condition.

Custom Properties are a set of string keys and arbitrary values which is synchronized for the players in a [Room](#). They are available when the client enters the room, as they are in the response of OpJoin and OpCreate.

Custom Properties either relate to the (current) [Room](#) or a [Player](#) (in that [Room](#)).

Both classes locally cache the current key/values and make them available as property: CustomProperties. This is provided only to read them. You must use the method SetCustomProperties to set/modify them.

Any client can set any Custom Properties anytime (when in a room). It's up to the game logic to organize how they are best used.

You should call `SetCustomProperties` only with key/values that are new or changed. This reduces traffic and performance.

Unless you define some `expectedProperties`, setting key/values is always permitted. In this case, the property-setting client will not receive the new values from the server but instead update its local cache in `SetCustomProperties`.

If you define `expectedProperties`, the server will skip updates if the server property-cache does not contain all `expectedProperties` with the same values. In this case, the property-setting client will get an update from the server and update its cached key/values at about the same time as everyone else.

The benefit of using `expectedProperties` can be only one client successfully sets a key from one known value to another. As example: Store who owns an item in a Custom Property "ownedBy". It's 0 initially. When multiple players reach the item, they all attempt to change "ownedBy" from 0 to their `actorNumber`. If you use `expectedProperties` {"ownedBy", 0} as condition, the first player to take the item will have it (and the others fail to set the ownership).

Properties get saved with the game state for Turnbased games (which use `IsPersistent` = true).

Parameters

<i>propertiesToSet</i>	Hashtable of Custom Properties that changes.
<i>expectedProperties</i>	Provide some keys/values to use as condition for setting the new values. Client must be in room.
<i>webFlags</i>	Defines if this <code>SetCustomProperties</code> -operation gets forwarded to your WebHooks. Client must be in room.

8.98.3.5 `bool SetMasterClient (Player masterClientPlayer)`

Asks the server to assign another player as Master Client of your current room.

`RaiseEvent` has the option to send messages only to the Master Client of a room. `SetMasterClient` affects which client gets those messages.

This method calls an operation on the server to set a new Master Client, which takes a roundtrip. In case of success, this client and the others get the new Master Client from the server.

`SetMasterClient` tells the server which current Master Client should be replaced with the new one. It will fail, if anything switches the Master Client moments earlier. There is no callback for this error. All clients should get the new Master Client assigned by the server anyways.

See also: `MasterClientId`

Parameters

<i>masterClientPlayer</i>	The player to become the next Master Client.
---------------------------	--

Returns

False when this operation couldn't be done currently. Requires a v4 [Photon](#) Server.

8.98.3.6 `void SetPropertyListedInLobby (string[] propertiesListedInLobby)`

Enables you to define the properties available in the lobby if not all properties are needed to pick a room.

Limit the amount of properties sent to users in the lobby to improve speed and stability.

Parameters

<i>properties↔ ListedInLobby</i>	An array of custom room property names to forward to the lobby.
--------------------------------------	---

8.98.3.7 virtual Player StorePlayer (Player player) [virtual]

Updates a player reference in the Players dictionary (no matter if it existed before or not).

Parameters

<i>player</i>	The Player instance to insert into the room.
---------------	--

8.98.3.8 override string ToString ()

Returns a summary of this [Room](#) instance as string.

Returns

Summary of this [Room](#) instance.

8.98.3.9 new string ToStringFull ()

Returns a summary of this [Room](#) instance as longer string, including Custom Properties.

Returns

Summary of this [Room](#) instance.

8.98.4 Property Documentation

8.98.4.1 bool AutoCleanUp [get]

Gets if this room uses autoCleanUp to remove all (buffered) RPCs and instantiated GameObjects when a player leaves.

8.98.4.2 int EmptyRoomTtl [get], [set]

[Room](#) Time To Live. How long a room stays available (and in server-memory), after the last player becomes inactive. After this time, the room gets persisted or destroyed.

8.98.4.3 string[] ExpectedUsers [get]

List of users who are expected to join this room. In matchmaking, [Photon](#) blocks a slot for each of these UserIDs out of the MaxPlayers.

The corresponding feature in [Photon](#) is called "Slot Reservation" and can be found in the doc pages. Define expected players in the PhotonNetwork methods: CreateRoom, JoinRoom and JoinOrCreateRoom.

8.98.4.4 new bool IsOpen [get], [set]

Defines if the room can be joined.

This does not affect listing in a lobby but joining the room will fail if not open. If not open, the room is excluded from random matchmaking. Due to racing conditions, found matches might become closed while users are trying to join. Simply re-connect to master and find another. Use property "IsVisible" to not list the room.

As part of [RoomInfo](#) this can't be set. As part of a [Room](#) (which the player joined), the setter will update the server and all clients.

8.98.4.5 `new bool isVisible` `[get], [set]`

Defines if the room is listed in its lobby.

Rooms can be created invisible, or changed to invisible. To change if a room can be joined, use property: open.

As part of [RoomInfo](#) this can't be set. As part of a [Room](#) (which the player joined), the setter will update the server and all clients.

8.98.4.6 `LoadBalancingClient LoadBalancingClient` `[get], [set]`

A reference to the [LoadBalancingClient](#) which is currently keeping the connection and state.

8.98.4.7 `int MasterClientId` `[get]`

The ID (actorNumber, actorNumber) of the player who's the master of this [Room](#). Note: This changes when the current master leaves the room.

8.98.4.8 `new byte MaxPlayers` `[get], [set]`

Sets a limit of players to this room. This property is synced and shown in lobby, too. If the room is full (players count == maxplayers), joining this room will fail.

As part of [RoomInfo](#) this can't be set. As part of a [Room](#) (which the player joined), the setter will update the server and all clients.

8.98.4.9 `new string Name` `[get], [set]`

The name of a room. Unique identifier (per region and virtual appid) for a room/match.

The name can't be changed once it's set by the server.

8.98.4.10 `new byte PlayerCount` `[get]`

The count of players in this [Room](#) (using this.Players.Count).

8.98.4.11 `Dictionary<int, Player> Players` `[get]`

While inside a [Room](#), this is the list of players who are also in that room.

8.98.4.12 `int PlayerTtl` `[get], [set]`

[Player](#) Time To Live. How long any player can be inactive (due to disconnect or leave) before the user gets removed from the playerlist (freeing a slot).

8.98.4.13 `string [] PropertiesListedInLobby` `[get]`

Gets a list of custom properties that are in the [RoomInfo](#) of the Lobby. This list is defined when creating the room and can't be changed afterwards. Compare: [LoadBalancingClient.OpCreateRoom\(\)](#)

You could name properties that are not set from the beginning. Those will be synced with the lobby when added later on.

8.99 RoomInfo Class Reference

A simplified room with just the info required to list and join, used for the room listing in the lobby. The properties are not settable (IsOpen, MaxPlayers, etc).

Inherited by [Room](#).

Public Member Functions

- override bool [Equals](#) (object other)
Makes [RoomInfo](#) comparable (by name).
- override int [GetHashCode](#) ()
Accompanies Equals, using the name's GetHashCode as return.
- override string [ToString](#) ()
Returns most interesting room values as string.
- string [ToStringFull](#) ()
Returns most interesting room values as string, including custom properties.

Public Attributes

- bool [RemovedFromList](#)
Used in lobby, to mark rooms that are no longer listed (for being full, closed or hidden).
- int [masterClientId](#)
Backing field for master client id (actorNumber). defined by server in room props and ev leave.

Protected Attributes

- byte [maxPlayers](#) = 0
Backing field for property.
- int [emptyRoomTtl](#) = 0
Backing field for property.
- int [playerTtl](#) = 0
Backing field for property.
- string[] [expectedUsers](#)
Backing field for property.
- bool [isOpen](#) = true
Backing field for property.
- bool [isVisible](#) = true
Backing field for property.
- bool [autoCleanUp](#) = true
Backing field for property. False unless the GameProperty is set to true (else it's not sent).
- string [name](#)
Backing field for property.
- string[] [propertiesListedInLobby](#)
Backing field for property.

Properties

- Hashtable [CustomProperties](#) [get]
Read-only "cache" of custom properties of a room. Set via [Room.SetCustomProperties](#) (not available for [RoomInfo](#) class!).
- string [Name](#) [get]
The name of a room. Unique identifier for a room/match (per Appld + game-Version).
- int [PlayerCount](#) [get]
Count of players currently in room. This property is overwritten by the [Room](#) class (used when you're in a [Room](#)).
- byte [MaxPlayers](#) [get]
The limit of players for this room. This property is shown in lobby, too. If the room is full (players count == maxplayers), joining this room will fail.
- bool [IsOpen](#) [get]
Defines if the room can be joined. This does not affect listing in a lobby but joining the room will fail if not open. If not open, the room is excluded from random matchmaking. Due to racing conditions, found matches might become closed even while you join them. Simply re-connect to master and find another. Use property "IsVisible" to not list the room.
- bool [IsVisible](#) [get]
Defines if the room is listed in its lobby. Rooms can be created invisible, or changed to invisible. To change if a room can be joined, use property: open.

8.99.1 Detailed Description

A simplified room with just the info required to list and join, used for the room listing in the lobby. The properties are not settable (IsOpen, MaxPlayers, etc).

This class resembles info about available rooms, as sent by the Master server's lobby. Consider all values as readonly. None are synced (only updated by events by server).

8.99.2 Member Function Documentation

8.99.2.1 override bool Equals (object *other*)

Makes [RoomInfo](#) comparable (by name).

8.99.2.2 override int GetHashCode ()

Accompanies Equals, using the name's hashCode as return.

Returns

8.99.2.3 override string ToString ()

Returns most interesting room values as string.

Returns

Summary of this [RoomInfo](#) instance.

8.99.2.4 string ToStringFull ()

Returns most interesting room values as string, including custom properties.

Returns

Summary of this [RoomInfo](#) instance.

8.99.3 Member Data Documentation

8.99.3.1 bool autoCleanUp = true [protected]

Backing field for property. False unless the GameProperty is set to true (else it's not sent).

8.99.3.2 int emptyRoomTtl = 0 [protected]

Backing field for property.

8.99.3.3 string [] expectedUsers [protected]

Backing field for property.

8.99.3.4 bool isOpen = true [protected]

Backing field for property.

8.99.3.5 bool isVisible = true [protected]

Backing field for property.

8.99.3.6 int masterClientId

Backing field for master client id (actorNumber). defined by server in room props and ev leave.

8.99.3.7 byte maxPlayers = 0 [protected]

Backing field for property.

8.99.3.8 string name [protected]

Backing field for property.

8.99.3.9 int playerTtl = 0 [protected]

Backing field for property.

8.99.3.10 string [] propertiesListedInLobby [protected]

Backing field for property.

8.99.3.11 bool RemovedFromList

Used in lobby, to mark rooms that are no longer listed (for being full, closed or hidden).

8.99.4 Property Documentation

8.99.4.1 Hashtable CustomProperties [get]

Read-only "cache" of custom properties of a room. Set via [Room.SetCustomProperties](#) (not available for [RoomInfo](#) class!).

All keys are string-typed and the values depend on the game/application.

[Room.SetCustomProperties](#)

8.99.4.2 bool IsOpen [get]

Defines if the room can be joined. This does not affect listing in a lobby but joining the room will fail if not open. If not open, the room is excluded from random matchmaking. Due to racing conditions, found matches might become closed even while you join them. Simply re-connect to master and find another. Use property "IsVisible" to not list the room.

As part of [RoomInfo](#) this can't be set. As part of a [Room](#) (which the player joined), the setter will update the server and all clients.

8.99.4.3 bool IsVisible [get]

Defines if the room is listed in its lobby. Rooms can be created invisible, or changed to invisible. To change if a room can be joined, use property: open.

As part of [RoomInfo](#) this can't be set. As part of a [Room](#) (which the player joined), the setter will update the server and all clients.

8.99.4.4 byte MaxPlayers [get]

The limit of players for this room. This property is shown in lobby, too. If the room is full (players count == maxplayers), joining this room will fail.

As part of [RoomInfo](#) this can't be set. As part of a [Room](#) (which the player joined), the setter will update the server and all clients.

8.99.4.5 string Name [get]

The name of a room. Unique identifier for a room/match (per AppId + game-Version).

8.99.4.6 int PlayerCount [get]

Count of players currently in room. This property is overwritten by the [Room](#) class (used when you're in a [Room](#)).

8.100 RoomOptions Class Reference

Wraps up common room properties needed when you create rooms. Read the individual entries for more details.

Public Attributes

- byte [MaxPlayers](#)
Max number of players that can be in the room at any time. 0 means "no limit".
- int [PlayerTtl](#)
Time To Live (TTL) for an 'actor' in a room. If a client disconnects, this actor is inactive first and removed after this timeout. In milliseconds.
- int [EmptyRoomTtl](#)
Time To Live (TTL) for a room when the last player leaves. Keeps room in memory for case a player re-joins soon. In milliseconds.
- Hashtable [CustomRoomProperties](#)
The room's custom properties to set. Use string keys!
- string[] [CustomRoomPropertiesForLobby](#) = new string[0]
Defines the custom room properties that get listed in the lobby.
- string[] [Plugins](#)
Inform the server of the expected plugin setup.

Properties

- bool [IsVisible](#) [get, set]
Defines if this room is listed in the lobby. If not, it also is not joined randomly.
- bool [IsOpen](#) [get, set]
Defines if this room can be joined at all.
- bool [CleanupCacheOnLeave](#) [get, set]
Removes a user's events and properties from the room when a user leaves.
- bool [SuppressRoomEvents](#) [get, set]
Tells the server to skip room events for joining and leaving players.
- bool [PublishUserId](#) [get, set]
Defines if the UserIds of players get "published" in the room. Useful for FindFriends, if players want to play another game together.
- bool [DeleteNullProperties](#) [get, set]
Optionally, properties get deleted, when null gets assigned as value. Defaults to off / false.
- bool [BroadcastPropsChangeToAll](#) [get, set]
By default, property changes are sent back to the client that's setting them to avoid de-sync when properties are set concurrently.

8.100.1 Detailed Description

Wraps up common room properties needed when you create rooms. Read the individual entries for more details.

This directly maps to the fields in the [Room](#) class.

8.100.2 Member Data Documentation

8.100.2.1 Hashtable CustomRoomProperties

The room's custom properties to set. Use string keys!

Custom room properties are any key-values you need to define the game's setup. The shorter your keys are, the better. Example: Map, Mode (could be "m" when used with "Map"), TileSet (could be "t").

8.100.2.2 string [] CustomRoomPropertiesForLobby = new string[0]

Defines the custom room properties that get listed in the lobby.

Name the custom room properties that should be available to clients that are in a lobby. Use with care. Unless a custom property is essential for matchmaking or user info, it should not be sent to the lobby, which causes traffic and delays for clients in the lobby.

Default: No custom properties are sent to the lobby.

8.100.2.3 int EmptyRoomTtl

Time To Live (TTL) for a room when the last player leaves. Keeps room in memory for case a player re-joins soon. In milliseconds.

8.100.2.4 byte MaxPlayers

Max number of players that can be in the room at any time. 0 means "no limit".

8.100.2.5 int PlayerTtl

Time To Live (TTL) for an 'actor' in a room. If a client disconnects, this actor is inactive first and removed after this timeout. In milliseconds.

8.100.2.6 string [] Plugins

Informs the server of the expected plugin setup.

The operation will fail in case of a plugin mismatch returning error code `PluginMismatch 32757(0x7FFF - 10)`. Setting `string[]{}` means the client expects no plugin to be setup. Note: for backwards compatibility null omits any check.

8.100.3 Property Documentation**8.100.3.1 bool BroadcastPropsChangeToAll [get], [set]**

By default, property changes are sent back to the client that's setting them to avoid de-sync when properties are set concurrently.

This option is enabled by default to fix this scenario:

1) On server, room property ABC is set to value FOO, which triggers notifications to all the clients telling them that the property changed. 2) While that notification is in flight, a client sets the ABC property to value BAR. 3) Client receives notification from the server and changes its local copy of ABC to FOO. 4) Server receives the set operation and changes the official value of ABC to BAR, but never notifies the client that sent the set operation that the value is now BAR.

Without this option, the client that set the value to BAR never hears from the server that the official copy has been updated to BAR, and thus gets stuck with a value of FOO.

8.100.3.2 bool CleanupCacheOnLeave [get], [set]

Removes a user's events and properties from the room when a user leaves.

This makes sense when in rooms where players can't place items in the room and just vanish entirely. When you disable this, the event history can become too long to load if the room stays in use indefinitely. Default: true. Cleans up the cache and props of leaving users.

8.100.3.3 bool DeleteNullProperties [get], [set]

Optionally, properties get deleted, when null gets assigned as value. Defaults to off / false.

When Op SetProperties is setting a key's value to null, the server and clients should remove the key/value from the Custom Properties. By default, the server keeps the keys (and null values) and sends them to joining players.

Important: Only when SetProperties does a "broadcast", the change (key, value = null) is sent to clients to update accordingly. This applies to Custom Properties for rooms and actors/players.

8.100.3.4 bool IsOpen [get], [set]

Defines if this room can be joined at all.

If a room is closed, no player can join this. As example this makes sense when 3 of 4 possible players start their gameplay early and don't want anyone to join during the game. The room can still be listed in the lobby (set isVisible to control lobby-visibility).

8.100.3.5 bool IsVisible [get], [set]

Defines if this room is listed in the lobby. If not, it also is not joined randomly.

A room that is not visible will be excluded from the room lists that are sent to the clients in lobbies. An invisible room can be joined by name but is excluded from random matchmaking.

Use this to "hide" a room and simulate "private rooms". Players can exchange a roomname and create it invisible to avoid anyone else joining it.

8.100.3.6 bool PublishUserId [get], [set]

Defines if the UserIds of players get "published" in the room. Useful for FindFriends, if players want to play another game together.

When you set this to true, [Photon](#) will publish the UserIds of the players in that room. In that case, you can use PhotonPlayer.userId, to access any player's userID. This is useful for FindFriends and to set "expected users" to reserve slots in a room (see [PhotonNetwork.JoinRoom](#) e.g.).

8.100.3.7 bool SuppressRoomEvents [get], [set]

Tells the server to skip room events for joining and leaving players.

Using this makes the client unaware of the other players in a room. That can save some traffic if you have some server logic that updates players but it can also limit the client's usability.

8.101 SceneManagerHelper Class Reference

Properties

- static string **ActiveSceneName** [get]
- static int **ActiveSceneBuildIndex** [get]

8.102 ScoreExtensions Class Reference

Static Public Member Functions

- static void **SetScore** (this [Player](#) player, int newScore)

- static void **AddScore** (this [Player](#) player, int scoreToAddToCurrent)
- static int **GetScore** (this [Player](#) player)

8.103 ServerSettings Class Reference

Collection of connection-relevant settings, used internally by [PhotonNetwork.ConnectUsingSettings](#).

Inherits ScriptableObject.

Public Member Functions

- void [UseCloud](#) (string cloudAppid, string code="")
Sets appid and region code in the AppSettings. Used in Editor.
- override string [ToString](#) ()
String summary of the AppSettings.

Static Public Member Functions

- static bool [IsAppId](#) (string val)
Checks if a string is a Guid by attempting to create one.
- static void [ResetBestRegionCodeInPreferences](#) ()
Sets the "best region summary" in the preferences to null. On next start, the client will ping all available.

Public Attributes

- [AppSettings](#) **AppSettings**
- bool **StartInOfflineMode**
- [PunLogLevel](#) **PunLogging** = [PunLogLevel.ErrorsOnly](#)
- bool **EnableSupportLogger**
- bool **RunInBackground** = true
- List< string > **RpcList** = new List<string>()

Properties

- static string [BestRegionSummaryInPreferences](#) [get]
Gets the "best region summary" from the preferences.

8.103.1 Detailed Description

Collection of connection-relevant settings, used internally by [PhotonNetwork.ConnectUsingSettings](#).

Includes the AppSettings class from the [Realtime](#) APIs plus some other, PUN-relevant, settings.

8.103.2 Member Function Documentation

8.103.2.1 static bool IsAppId (string val) [static]

Checks if a string is a Guid by attempting to create one.

Parameters

<i>val</i>	The potential guid to check.
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Returns

True if new Guid(*val*) did not fail.

8.103.2.2 static void ResetBestRegionCodeInPreferences () [static]

Sets the "best region summary" in the preferences to null. On next start, the client will ping all available.

8.103.2.3 override string ToString ()

String summary of the AppSettings.

8.103.2.4 void UseCloud (string *cloudAppid*, string *code* = " ")

Sets appid and region code in the AppSettings. Used in Editor.

8.103.3 Property Documentation

8.103.3.1 string BestRegionSummaryInPreferences [static],[get]

Gets the "best region summary" from the preferences.

The best region code in preferences.

8.104 SmoothSyncMovement Class Reference

Smoothed out movement for network gameobjects

Inherits [MonoBehaviourPun](#), and [IPunObservable](#).

Public Member Functions

- void **Awake** ()
- void **OnPhotonSerializeView** ([PhotonStream](#) stream, [PhotonMessageInfo](#) info)
Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).
- void **Update** ()

Public Attributes

- float **SmoothingDelay** = 5

Additional Inherited Members

8.104.1 Detailed Description

Smoothed out movement for network gameobjects

8.104.2 Member Function Documentation

8.104.2.1 void OnPhotonSerializeView (PhotonStream stream, PhotonMessageInfo info)

Called by PUN several times per second, so that your script can write and read synchronization data for the [PhotonView](#).

This method will be called in scripts that are assigned as Observed component of a [PhotonView](#).

[PhotonNetwork.SerializationRate](#) affects how often this method is called.

[PhotonNetwork.SendRate](#) affects how often packages are sent by this client.

Implementing this method, you can customize which data a [PhotonView](#) regularly synchronizes. Your code defines what is being sent (content) and how your data is used by receiving clients.

Unlike other callbacks, *OnPhotonSerializeView only gets called when it is assigned to a [PhotonView](#) as PhotonView.observed script.*

To make use of this method, the [PhotonStream](#) is essential. It will be in "writing" mode" on the client that controls a PhotonView (PhotonStream.IsWriting == true) and in "reading mode" on the remote clients that just receive that the controlling client sends.

If you skip writing any value into the stream, PUN will skip the update. Used carefully, this can conserve bandwidth and messages (which have a limit per room/second).

Note that OnPhotonSerializeView is not called on remote clients when the sender does not send any update. This can't be used as "x-times per second Update()".

Implements [IPunObservable](#).

8.105 StatesGui Class Reference

Output detailed information about [Pun](#) Current states, using the old Unity UI framework.

Inherits MonoBehaviour.

Public Attributes

- Rect **GuiOffset** = new Rect(250, 0, 300, 300)
- bool **DontDestroy** = true
- bool **ServerTimestamp**
- bool **DetailedConnection**
- bool **Server**
- bool **AppVersion**
- bool **UserId**
- bool **Room**
- bool **RoomProps**
- bool **LocalPlayer**
- bool **PlayerProps**
- bool **Others**
- bool **Buttons**
- bool **ExpectedUsers**

8.105.1 Detailed Description

Output detailed information about [Pun](#) Current states, using the old Unity UI framework.

8.106 SupportLogger Class Reference

Helper class to debug log basic information about [Photon](#) client and vital traffic statistics.

Inherits [IConnectionCallbacks](#), [IInRoomCallbacks](#), [IMatchmakingCallbacks](#), and [ILobbyCallbacks](#).

Public Member Functions

- void [LogStats](#) ()
Debug logs vital traffic statistics about the attached [Photon](#) Client.
- void [OnConnected](#) ()
Called to signal that the "low level connection" got established but before the client can call operation on the server.
- void [OnConnectedToMaster](#) ()
Called when the client is connected to the Master Server and ready for matchmaking and other tasks.
- void [OnFriendListUpdate](#) (List< [FriendInfo](#) > friendList)
Called when the server sent the response to a FindFriends request.
- void [OnJoinedLobby](#) ()
Called on entering a lobby on the Master Server. The actual room-list updates will call OnRoomListUpdate.
- void [OnLeftLobby](#) ()
Called after leaving a lobby.
- void [OnCreateRoomFailed](#) (short returnCode, string message)
Called when the server couldn't create a room (OpCreateRoom failed).
- void [OnJoinedRoom](#) ()
Called when the [LoadBalancingClient](#) entered a room, no matter if this client created it or simply joined.
- void [OnJoinRoomFailed](#) (short returnCode, string message)
Called when a previous OpJoinRoom call failed on the server.
- void [OnJoinRandomFailed](#) (short returnCode, string message)
Called when a previous OpJoinRandom call failed on the server.
- void [OnCreatedRoom](#) ()
Called when this client created a room and entered it. [OnJoinedRoom\(\)](#) will be called as well.
- void [OnLeftRoom](#) ()
Called when the local user/client left a room, so the game's logic can clean up it's internal state.
- void [OnDisconnected](#) ([DisconnectCause](#) cause)
Called after disconnecting from the [Photon](#) server. It could be a failure or an explicit disconnect call
- void [OnRegionListReceived](#) ([RegionHandler](#) regionHandler)
Called when the Name Server provided a list of regions for your title.
- void [OnRoomListUpdate](#) (List< [RoomInfo](#) > roomList)
Called for any update of the room-listing while in a lobby (InLobby) on the Master Server.
- void [OnPlayerEnteredRoom](#) ([Player](#) newPlayer)
Called when a remote player entered the room. This [Player](#) is already added to the playerlist.
- void [OnPlayerLeftRoom](#) ([Player](#) otherPlayer)
Called when a remote player left the room or became inactive. Check otherPlayer.IsInactive.
- void [OnRoomPropertiesUpdate](#) (Hashtable propertiesThatChanged)
Called when a room's custom properties changed. The propertiesThatChanged contains all that was set via [Room.SetCustomProperties](#).
- void [OnPlayerPropertiesUpdate](#) ([Player](#) targetPlayer, Hashtable changedProps)
Called when custom player-properties are changed. [Player](#) and the changed properties are passed as object[].
- void [OnMasterClientSwitched](#) ([Player](#) newMasterClient)
Called after switching to a new MasterClient when the current one leaves.
- void [OnCustomAuthenticationResponse](#) (Dictionary< string, object > data)
Called when your Custom Authentication service responds with additional data.

- void [OnCustomAuthenticationFailed](#) (string debugMessage)
Called when the custom authentication failed. Followed by disconnect!
- void [OnLobbyStatisticsUpdate](#) (List< [TypedLobbyInfo](#) > lobbyStatistics)
Called when the Master Server sent an update for the Lobby Statistics, updating PhotonNetwork.LobbyStatistics.

Public Attributes

- bool [LogTrafficStats](#)
Toggle to enable or disable traffic statistics logging.

Properties

- [LoadBalancingClient Client](#) [get, set]
Photon client to log information and statistics from.

8.106.1 Detailed Description

Helper class to debug log basic information about [Photon](#) client and vital traffic statistics.

Set [SupportLogger.Client](#) for this to work.

8.106.2 Member Function Documentation

8.106.2.1 void LogStats ()

Debug logs vital traffic statistics about the attached [Photon](#) Client.

8.106.2.2 void OnConnected ()

Called to signal that the "low level connection" got established but before the client can call operation on the server.

After the (low level transport) connection is established, the client will automatically send the Authentication operation, which needs to get a response before the client can call other operations.

Your logic should wait for either: [OnRegionListReceived](#) or [OnConnectedToMaster](#).

This callback is useful to detect if the server can be reached at all (technically). Most often, it's enough to implement [OnDisconnected\(DisconnectCause cause\)](#) and check for the cause.

This is not called for transitions from the masterserver to game servers.

Implements [IConnectionCallbacks](#).

8.106.2.3 void OnConnectedToMaster ()

Called when the client is connected to the Master Server and ready for matchmaking and other tasks.

The list of available rooms won't become available unless you join a lobby via [LoadBalancingClient.OpJoinLobby](#). You can join rooms and create them even without being in a lobby. The default lobby is used in that case.

Implements [IConnectionCallbacks](#).

8.106.2.4 void OnCreatedRoom ()

Called when this client created a room and entered it. [OnJoinedRoom\(\)](#) will be called as well.

This callback is only called on the client which created a room (see [OpCreateRoom](#)).

As any client might close (or drop connection) anytime, there is a chance that the creator of a room does not execute [OnCreatedRoom](#).

If you need specific room properties or a "start signal", implement [OnMasterClientSwitched\(\)](#) and make each new [MasterClient](#) check the room's state.

Implements [IMatchmakingCallbacks](#).

8.106.2.5 void OnCreateRoomFailed (short *returnCode*, string *message*)

Called when the server couldn't create a room ([OpCreateRoom](#) failed).

Creating a room may fail for various reasons. Most often, the room already exists (roomname in use) or the [Room↔Options](#) clash and it's impossible to create the room.

When creating a room fails on a Game Server: The client will cache the failure internally and returns to the Master Server before it calls the fail-callback. This way, the client is ready to find/create a room at the moment of the callback. In this case, the client skips calling [OnConnectedToMaster](#) but returning to the Master Server will still call [OnConnected](#). Treat callbacks of [OnConnected](#) as pure information that the client could connect.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.106.2.6 void OnCustomAuthenticationFailed (string *debugMessage*)

Called when the custom authentication failed. Followed by disconnect!

Custom Authentication can fail due to user-input, bad tokens/secrets. If authentication is successful, this method is not called. Implement [OnJoinedLobby\(\)](#) or [OnConnectedToMaster\(\)](#) (as usual).

During development of a game, it might also fail due to wrong configuration on the server side. In those cases, logging the [debugMessage](#) is very important.

Unless you setup a custom authentication service for your app (in the [Dashboard](#)), this won't be called!

Parameters

<i>debugMessage</i>	Contains a debug message why authentication failed. This has to be fixed during development.
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Implements [IConnectionCallbacks](#).

8.106.2.7 void OnCustomAuthenticationResponse (Dictionary< string, object > *data*)

Called when your Custom Authentication service responds with additional data.

Custom Authentication services can include some custom data in their response. When present, that data is made available in this callback as Dictionary. While the keys of your data have to be strings, the values can be either string or a number (in Json). You need to make extra sure, that the value type is the one you expect. Numbers become (currently) int64.

Example: `void OnCustomAuthenticationResponse(Dictionary<string, object> data) { ... }`

<https://doc.photonengine.com/en-us/realtime/current/reference/custom-authentication>

Implements [IConnectionCallbacks](#).

8.106.2.8 void OnDisconnected (DisconnectCause *cause*)

Called after disconnecting from the [Photon](#) server. It could be a failure or an explicit disconnect call

The reason for this disconnect is provided as DisconnectCause.

Implements [IConnectionCallbacks](#).

8.106.2.9 void OnFriendListUpdate (List< FriendInfo > *friendList*)

Called when the server sent the response to a FindFriends request.

After calling OpFindFriends, the Master Server will cache the friend list and send updates to the friend list. The friends includes the name, userId, online state and the room (if any) for each requested user/friend.

Use the friendList to update your UI and store it, if the UI should highlight changes.

Implements [IMatchmakingCallbacks](#).

8.106.2.10 void OnJoinedLobby ()

Called on entering a lobby on the Master Server. The actual room-list updates will call OnRoomListUpdate.

While in the lobby, the roomlist is automatically updated in fixed intervals (which you can't modify in the public cloud). The room list gets available via OnRoomListUpdate.

Implements [ILobbyCallbacks](#).

8.106.2.11 void OnJoinedRoom ()

Called when the [LoadBalancingClient](#) entered a room, no matter if this client created it or simply joined.

When this is called, you can access the existing players in [Room.Players](#), their custom properties and [Room.CustomProperties](#).

In this callback, you could create player objects. For example in Unity, instantiate a prefab for the player.

If you want a match to be started "actively", enable the user to signal "ready" (using OpRaiseEvent or a Custom Property).

Implements [IMatchmakingCallbacks](#).

8.106.2.12 void OnJoinRandomFailed (short *returnCode*, string *message*)

Called when a previous OpJoinRandom call failed on the server.

The most common causes are that a room is full or does not exist (due to someone else being faster or closing the room).

This operation is only ever sent to the Master Server. Once a room is found by the Master Server, the client will head off to the designated Game Server and use the operation Join on the Game Server.

When using multiple lobbies (via OpJoinLobby or a [TypedLobby](#) parameter), another lobby might have more/fitting rooms.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.106.2.13 void OnJoinRoomFailed (short *returnCode*, string *message*)

Called when a previous OpJoinRoom call failed on the server.

Joining a room may fail for various reasons. Most often, the room is full or does not exist anymore (due to someone else being faster or closing the room).

When joining a room fails on a Game Server: The client will cache the failure internally and returns to the Master Server before it calls the fail-callback. This way, the client is ready to find/create a room at the moment of the callback. In this case, the client skips calling OnConnectedToMaster but returning to the Master Server will still call OnConnected. Treat callbacks of OnConnected as pure information that the client could connect.

Parameters

<i>returnCode</i>	Operation ReturnCode from the server.
<i>message</i>	Debug message for the error.

Implements [IMatchmakingCallbacks](#).

8.106.2.14 void OnLeftLobby ()

Called after leaving a lobby.

When you leave a lobby, OpCreateRoom and OpJoinRandomRoom automatically refer to the default lobby.

Implements [ILobbyCallbacks](#).

8.106.2.15 void OnLeftRoom ()

Called when the local user/client left a room, so the game's logic can clean up it's internal state.

When leaving a room, the [LoadBalancingClient](#) will disconnect the Game Server and connect to the Master Server. This wraps up multiple internal actions.

Wait for the callback OnConnectedToMaster, before you use lobbies and join or create rooms.

Implements [IMatchmakingCallbacks](#).

8.106.2.16 void OnLobbyStatisticsUpdate (List< TypedLobbyInfo > *lobbyStatistics*)

Called when the Master Server sent an update for the Lobby Statistics, updating PhotonNetwork.LobbyStatistics.

This callback has two preconditions: EnableLobbyStatistics must be set to true, before this client connects. And the client has to be connected to the Master Server, which is providing the info about lobbies.

Implements [ILobbyCallbacks](#).

8.106.2.17 void OnMasterClientSwitched (Player *newMasterClient*)

Called after switching to a new MasterClient when the current one leaves.

This is not called when this client enters a room. The former MasterClient is still in the player list when this method get called.

Implements [IInRoomCallbacks](#).

8.106.2.18 void OnPlayerEnteredRoom (Player *newPlayer*)

Called when a remote player entered the room. This [Player](#) is already added to the playerlist.

If your game starts with a certain number of players, this callback can be useful to check the `Room.playerCount` and find out if you can start.

Implements [IInRoomCallbacks](#).

8.106.2.19 void OnPlayerLeftRoom (Player *otherPlayer*)

Called when a remote player left the room or became inactive. Check `otherPlayer.IsInactive`.

If another player leaves the room or if the server detects a lost connection, this callback will be used to notify your game logic.

Depending on the room's setup, players may become inactive, which means they may return and retake their spot in the room. In such cases, the [Player](#) stays in the [Room.Players](#) dictionary.

If the player is not just inactive, it gets removed from the [Room.Players](#) dictionary, before the callback is called.

Implements [IInRoomCallbacks](#).

8.106.2.20 void OnPlayerPropertiesUpdate (Player *targetPlayer*, Hashtable *changedProps*)

Called when custom player-properties are changed. [Player](#) and the changed properties are passed as object[].

Changing properties must be done by [Player.SetCustomProperties](#), which causes this callback locally, too.

Parameters

<i>targetPlayer</i>	Contains Player that changed.
<i>changedProps</i>	Contains the properties that changed.

Implements [IInRoomCallbacks](#).

8.106.2.21 void OnRegionListReceived (RegionHandler *regionHandler*)

Called when the Name Server provided a list of regions for your title.

Check the [RegionHandler](#) class description, to make use of the provided values.

Parameters

<i>regionHandler</i>	The currently used RegionHandler .
----------------------	--

Implements [IConnectionCallbacks](#).

8.106.2.22 void OnRoomListUpdate (List< RoomInfo > *roomList*)

Called for any update of the room-listing while in a lobby (InLobby) on the Master Server.

Each item is a [RoomInfo](#) which might include custom properties (provided you defined those as lobby-listed when creating a room). Not all types of lobbies provide a listing of rooms to the client. Some are silent and specialized for server-side matchmaking.

Implements [ILobbyCallbacks](#).

8.106.2.23 void OnRoomPropertiesUpdate (Hashtable *propertiesThatChanged*)

Called when a room's custom properties changed. The `propertiesThatChanged` contains all that was set via [Room.SetCustomProperties](#).

Since v1.25 this method has one parameter: Hashtable propertiesThatChanged.
Changing properties must be done by [Room.SetCustomProperties](#), which causes this callback locally, too.

Parameters

<i>propertiesThatChanged</i>	
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Implements [IInRoomCallbacks](#).

8.106.3 Member Data Documentation

8.106.3.1 bool LogTrafficStats

Toggle to enable or disable traffic statistics logging.

8.106.4 Property Documentation

8.106.4.1 LoadBalancingClient Client [get], [set]

[Photon](#) client to log information and statistics from.

8.107 PhotonAnimatorView.SynchronizedLayer Class Reference

Public Attributes

- SynchronizeType **SynchronizeType**
- int **LayerIndex**

8.108 PhotonAnimatorView.SynchronizedParameter Class Reference

Public Attributes

- ParameterType **Type**
- SynchronizeType **SynchronizeType**
- string **Name**

8.109 TabViewManager.Tab Class Reference

Public Attributes

- string **ID** = ""
- Toggle **Toggle**
- RectTransform **View**

8.110 TabViewManager.TabChangeEvent Class Reference

[Tab](#) change event.

Inherits [UnityEvent< string >](#).

8.110.1 Detailed Description

[Tab](#) change event.

8.111 TabViewManager Class Reference

[Tab](#) view manager. Handles [Tab](#) views activation and deactivation, and provides a Unity Event Callback when a tab was selected.

Inherits MonoBehaviour.

Classes

- class [Tab](#)
- class [TabChangeEvent](#)
[Tab](#) change event.

Public Member Functions

- void [SelectTab](#) (string id)
Selects a given tab.

Public Attributes

- ToggleGroup [ToggleGroup](#)
The toggle group component target.
- [Tab](#)[] [Tabs](#)
all the tabs for this group
- [TabChangeEvent](#) [OnTabChanged](#)
The on tab changed Event.

Protected Attributes

- [Tab](#) [CurrentTab](#)

8.111.1 Detailed Description

[Tab](#) view manager. Handles [Tab](#) views activation and deactivation, and provides a Unity Event Callback when a tab was selected.

8.111.2 Member Function Documentation

8.111.2.1 void SelectTab (string id)

Selects a given tab.

Parameters

<i>id</i>	Tab Id
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8.111.3 Member Data Documentation

8.111.3.1 TabChangeEvent OnTabChanged

The on tab changed Event.

8.111.3.2 Tab [] Tabs

all the tabs for this group

8.111.3.3 ToggleGroup ToggleGroup

The toggle group component target.

8.112 TeamExtensions Class Reference

Extension used for [PunTeams](#) and Player class. Wraps access to the player's custom property.

Static Public Member Functions

- static [PunTeams.Team](#) [GetTeam](#) (this [Player](#) player)
Extension for Player class to wrap up access to the player's custom property.
- static void [SetTeam](#) (this [Player](#) player, [PunTeams.Team](#) team)
Switch that player's team to the one you assign.

8.112.1 Detailed Description

Extension used for [PunTeams](#) and Player class. Wraps access to the player's custom property.

8.112.2 Member Function Documentation

8.112.2.1 static [PunTeams.Team](#) [GetTeam](#) (this [Player](#) *player*) [static]

Extension for Player class to wrap up access to the player's custom property.

Returns

[PunTeam.Team](#).none if no team was found (yet).

8.112.2.2 static void [SetTeam](#) (this [Player](#) *player*, [PunTeams.Team](#) *team*) [static]

Switch that player's team to the one you assign.

Internally checks if this player is in that team already or not. Only team switches are actually sent.

Parameters

<i>player</i>	
<i>team</i>	

8.113 TextButtonTransition Class Reference

Use this on Button texts to have some color transition on the text as well without corrupting button's behaviour.

Inherits MonoBehaviour, IPointerEnterHandler, and IPointerExitHandler.

Public Member Functions

- void **Awake** ()
- void **OnEnable** ()
- void **OnDisable** ()
- void **OnPointerEnter** (PointerEventData eventData)
- void **OnPointerExit** (PointerEventData eventData)

Public Attributes

- Selectable [Selectable](#)
The selectable Component.
- Color [NormalColor](#) = Color.white
The color of the normal of the transition state.
- Color [HoverColor](#) = Color.black
The color of the hover of the transition state.

8.113.1 Detailed Description

Use this on Button texts to have some color transition on the text as well without corrupting button's behaviour.

8.113.2 Member Data Documentation

8.113.2.1 Color HoverColor = Color.black

The color of the hover of the transition state.

8.113.2.2 Color NormalColor = Color.white

The color of the normal of the transition state.

8.113.2.3 Selectable Selectable

The selectable Component.

8.114 TextToggleIsOnTransition Class Reference

Use this on toggles texts to have some color transition on the text depending on the isOn State.

Inherits MonoBehaviour, IPointerEnterHandler, and IPointerExitHandler.

Public Member Functions

- void **OnEnable** ()
- void **OnDisable** ()
- void **OnValueChanged** (bool isOn)
- void **OnPointerEnter** (PointerEventData eventData)
- void **OnPointerExit** (PointerEventData eventData)

Public Attributes

- Toggle **toggle**
The toggle Component.
- Color **NormalOnColor** = Color.white
The color of the normal on transition state.
- Color **NormalOffColor** = Color.black
The color of the normal off transition state.
- Color **HoverOnColor** = Color.black
The color of the hover on transition state.
- Color **HoverOffColor** = Color.black
The color of the hover off transition state.

8.114.1 Detailed Description

Use this on toggles texts to have some color transition on the text depending on the isOn State.

8.114.2 Member Data Documentation

8.114.2.1 Color HoverOffColor = Color.black

The color of the hover off transition state.

8.114.2.2 Color HoverOnColor = Color.black

The color of the hover on transition state.

8.114.2.3 Color NormalOffColor = Color.black

The color of the normal off transition state.

8.114.2.4 Color NormalOnColor = Color.white

The color of the normal on transition state.

8.114.2.5 Toggle toggle

The toggle Component.

8.115 TurnExtensions Class Reference

Static Public Member Functions

- static void [SetTurn](#) (this [Room](#) room, int turn, bool setStartTime=false)
Sets the turn.
- static int [GetTurn](#) (this [RoomInfo](#) room)
Gets the current turn from a RoomInfo
- static int [GetTurnStart](#) (this [RoomInfo](#) room)
Returns the start time when the turn began. This can be used to calculate how long it's going on.
- static int [GetFinishedTurn](#) (this [Player](#) player)
gets the player's finished turn (from the ROOM properties)
- static void [SetFinishedTurn](#) (this [Player](#) player, int turn)
Sets the player's finished turn (in the ROOM properties)

Static Public Attributes

- static readonly string [TurnPropKey](#) = "Turn"
currently ongoing turn number
- static readonly string [TurnStartPropKey](#) = "TStart"
start (server) time for currently ongoing turn (used to calculate end)
- static readonly string [FinishedTurnPropKey](#) = "FToA"
Finished Turn of Actor (followed by number)

8.115.1 Member Function Documentation

8.115.1.1 static int GetFinishedTurn (this [Player](#) *player*) [static]

gets the player's finished turn (from the ROOM properties)

Returns

The finished turn index

Parameters

<i>player</i>	Player reference
---------------	------------------

8.115.1.2 static int GetTurn (this [RoomInfo](#) *room*) [static]

Gets the current turn from a RoomInfo

Returns

The turn index

Parameters

<i>room</i>	RoomInfo reference
-------------	--------------------

8.115.1.3 `static int GetTurnStart (this RoomInfo room) [static]`

Returns the start time when the turn began. This can be used to calculate how long it's going on.

Returns

The turn start.

Parameters

<i>room</i>	Room.
-------------	-------

8.115.1.4 `static void SetFinishedTurn (this Player player, int turn) [static]`

Sets the player's finished turn (in the ROOM properties)

Parameters

<i>player</i>	Player Reference
<i>turn</i>	Turn Index

8.115.1.5 `static void SetTurn (this Room room, int turn, bool setStartTime = false) [static]`

Sets the turn.

Parameters

<i>room</i>	Room reference
<i>turn</i>	Turn index
<i>setStartTime</i>	If set to <code>true</code> set start time.

8.115.2 Member Data Documentation**8.115.2.1** `readonly string FinishedTurnPropKey = "FToA" [static]`

Finished Turn of Actor (followed by number)

8.115.2.2 `readonly string TurnPropKey = "Turn" [static]`

currently ongoing turn number

8.115.2.3 `readonly string TurnStartPropKey = "TStart" [static]`

start (server) time for currently ongoing turn (used to calculate end)

8.116 TypedLobby Class Reference

Refers to a specific lobby (and type) on the server.

Inherited by [TypedLobbyInfo](#).

Public Member Functions

- **TypedLobby** (string name, [LobbyType](#) type)
- override string **ToString** ()

Public Attributes

- string [Name](#)
Name of the lobby this game gets added to. Default: null, attached to default lobby. Lobbies are unique per lobbyName plus lobbyType, so the same name can be used when several types are existing.
- [LobbyType](#) Type
Type of the (named)lobby this game gets added to

Static Public Attributes

- static readonly [TypedLobby](#) **Default** = new [TypedLobby](#)()

Properties

- bool **IsDefault** [get]

8.116.1 Detailed Description

Refers to a specific lobby (and type) on the server.

The name and type are the unique identifier for a lobby.

Join a lobby via `PhotonNetwork.JoinLobby(TypedLobby lobby)`.

The current lobby is stored in `PhotonNetwork.lobby`.

8.116.2 Member Data Documentation

8.116.2.1 string Name

Name of the lobby this game gets added to. Default: null, attached to default lobby. Lobbies are unique per lobbyName plus lobbyType, so the same name can be used when several types are existing.

8.116.2.2 LobbyType Type

Type of the (named)lobby this game gets added to

8.117 TypedLobbyInfo Class Reference

Inherits [TypedLobby](#).

Public Member Functions

- override string **ToString** ()

Public Attributes

- int **PlayerCount**
- int **RoomCount**

Additional Inherited Members

8.118 WebFlags Class Reference

Optional flags to be used in [Photon](#) client SDKs with Op RaiseEvent and Op SetProperties. Introduced mainly for webhooks 1.2 to control behavior of forwarded HTTP requests.

Public Member Functions

- **WebFlags** (byte webhookFlags)

Public Attributes

- byte **WebhookFlags**
- const byte **HttpForwardConst** = 0x01
- const byte **SendAuthCookieConst** = 0x02
- const byte **SendSyncConst** = 0x04
- const byte **SendStateConst** = 0x08

Static Public Attributes

- static readonly [WebFlags](#) **Default** = new [WebFlags](#)(0)

Properties

- bool [HttpForward](#) [get, set]
Indicates whether to forward HTTP request to web service or not.
- bool [SendAuthCookie](#) [get, set]
Indicates whether to send AuthCookie of actor in the HTTP request to web service or not.
- bool [SendSync](#) [get, set]
Indicates whether to send HTTP request synchronously or asynchronously to web service.
- bool [SendState](#) [get, set]
Indicates whether to send serialized game state in HTTP request to web service or not.

8.118.1 Detailed Description

Optional flags to be used in [Photon](#) client SDKs with Op RaiseEvent and Op SetProperties. Introduced mainly for webhooks 1.2 to control behavior of forwarded HTTP requests.

8.118.2 Property Documentation

8.118.2.1 bool HttpForward [get], [set]

Indicates whether to forward HTTP request to web service or not.

8.118.2.2 `bool SendAuthCookie` [get], [set]

Indicates whether to send AuthCookie of actor in the HTTP request to web service or not.

8.118.2.3 `bool SendState` [get], [set]

Indicates whether to send serialized game state in HTTP request to web service or not.

8.118.2.4 `bool SendSync` [get], [set]

Indicates whether to send HTTP request synchronously or asynchronously to web service.

8.119 WebRpcResponse Class Reference

Reads an operation response of a WebRpc and provides convenient access to most common values.

Public Member Functions

- [WebRpcResponse](#) (OperationResponse response)
An OperationResponse for a WebRpc is needed to read it's values.
- string [ToStringFull](#) ()
Turns the response into an easier to read string.

Properties

- string [Name](#) [get]
Name of the WebRpc that was called.
- int [ReturnCode](#) [get]
ReturnCode of the WebService that answered the WebRpc.
- string [DebugMessage](#) [get]
Might be empty or null.
- Dictionary< string, object > [Parameters](#) [get]
Other key/values returned by the webservice that answered the WebRpc.

8.119.1 Detailed Description

Reads an operation response of a WebRpc and provides convenient access to most common values.

See [LoadBalancingClient.OpWebRpc](#).

Create a [WebRpcResponse](#) to access common result values.

The operationResponse.OperationCode should be: [OperationCode.WebRpc](#).

8.119.2 Constructor & Destructor Documentation

8.119.2.1 `WebRpcResponse (OperationResponse response)`

An OperationResponse for a WebRpc is needed to read it's values.

8.119.3 Member Function Documentation

8.119.3.1 string ToStringFull ()

Turns the response into an easier to read string.

Returns

String resembling the result.

8.119.4 Property Documentation

8.119.4.1 string DebugMessage [get]

Might be empty or null.

8.119.4.2 string Name [get]

Name of the WebRpc that was called.

8.119.4.3 Dictionary<string, object> Parameters [get]

Other key/values returned by the webservice that answered the WebRpc.

8.119.4.4 int ReturnCode [get]

ReturnCode of the WebService that answered the WebRpc.

1 is: "OK" for WebRPCs.

-1 is: No ReturnCode by WebRpc service (check OperationResponse.ReturnCode).

Other ReturnCodes are defined by the individual WebRpc and service.

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