

Upgrading to brainCloud from PlayFab

Player Inventory



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Introduction

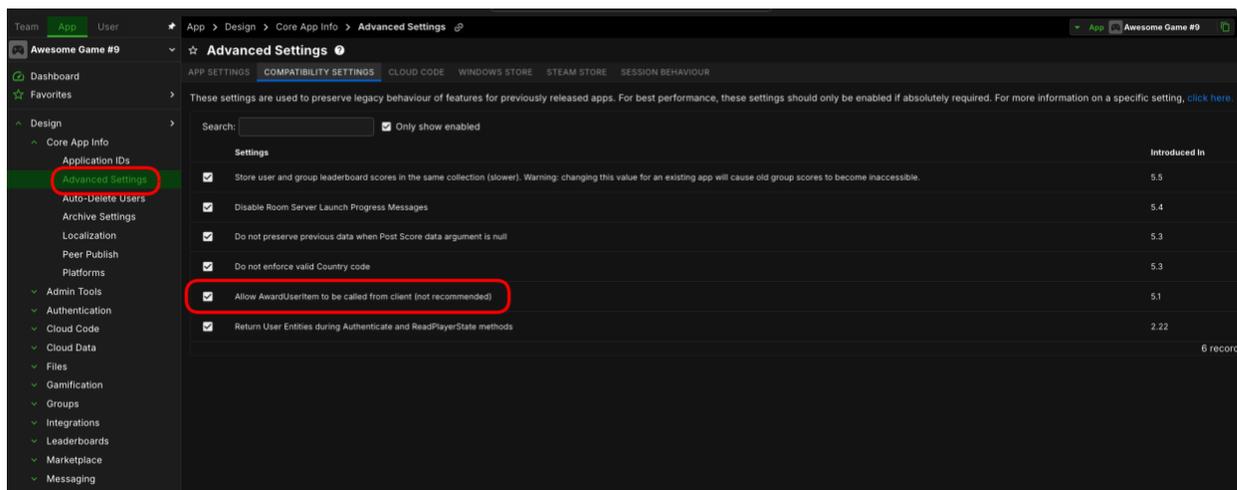
In the previous guide [Economy and Catalogues](#), we explored how economy features work in brainCloud and the setup of the Item Catalog and Cash Product Store Offers. This guide will continue from there, covering general examples of player inventory management, such as granting/rewarding items and trading.

Granting Items

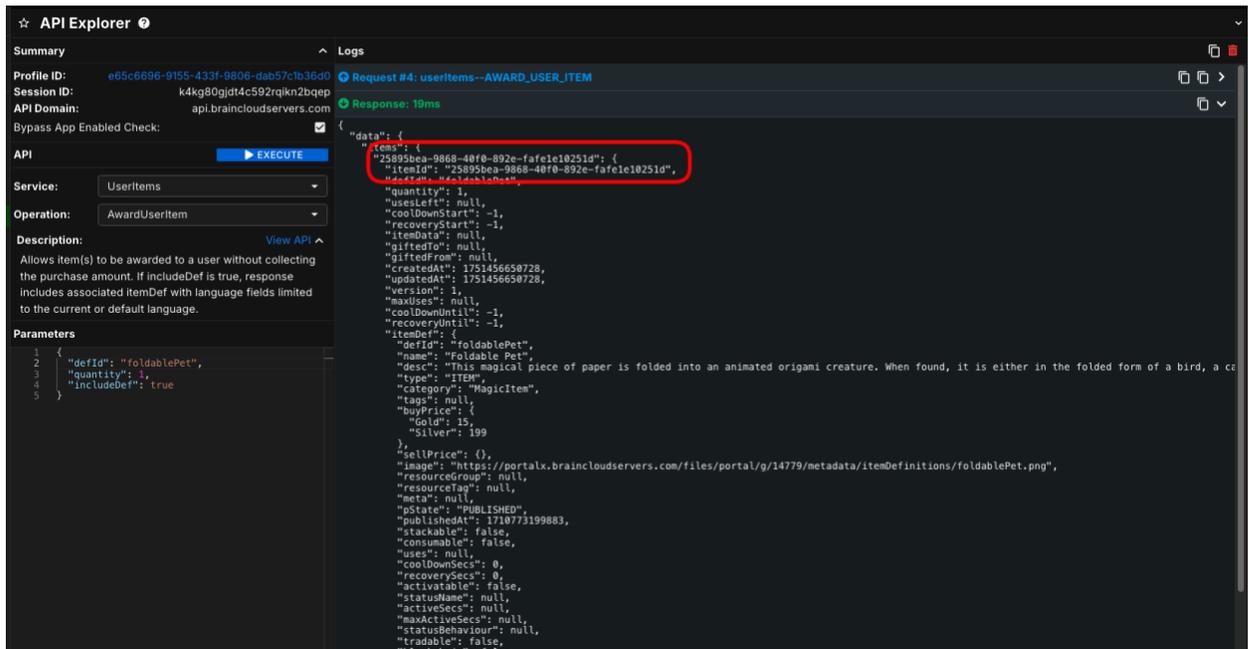
Some basic examples of granting/awarding items were covered in the Economy guide, but we'll revisit these requests with more detail here.

Outside purchasing from a third-party store, you can award items to a player using the [AwardUserItem](#) request. This is similar to PlayFab's **GrantItemsToUser**, but it works with one user and one item at a time.

It's crucial to note that, by default, you typically don't want to allow items to be awarded from the client, so brainCloud disables this feature. Instead, use a custom cloud-code script to validate the item before awarding it, preventing cheating. If you wish to bypass this protection, you *can* enable/disable client access to **AwardUserItem** from the **Core App Info** → **Advanced Settings** menu.

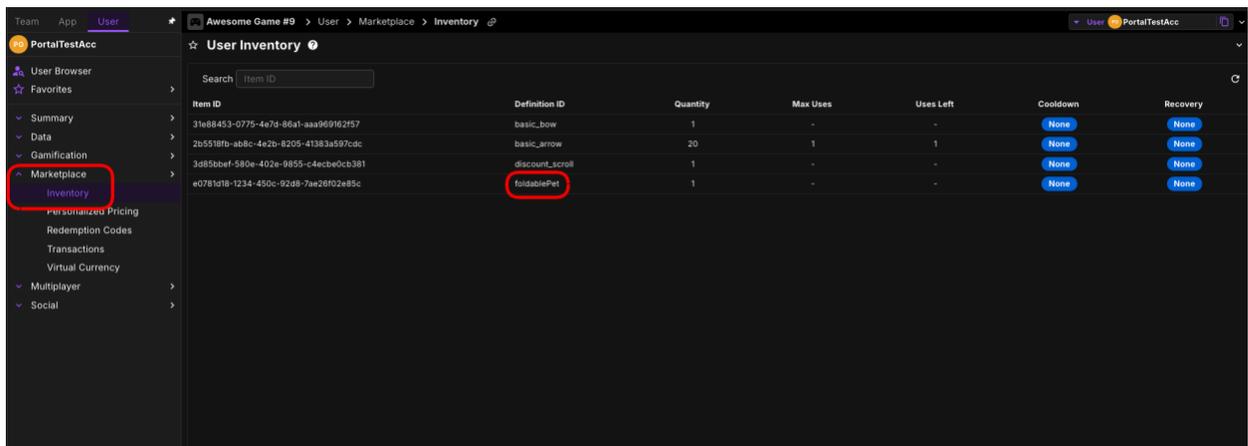


We can test this feature using the API Explorer. More information about the API Explorer is available in the [Cloud Scripts Document](#). We will be using the **UserItems** service for this example.



You can see the response includes various information about the item. One of the most important attributes is the unique item ID. Keep note of this, as we'll use it later.

To verify delivery, go to the user's account dashboard and click on the **Marketplace** → **Inventory** menu.



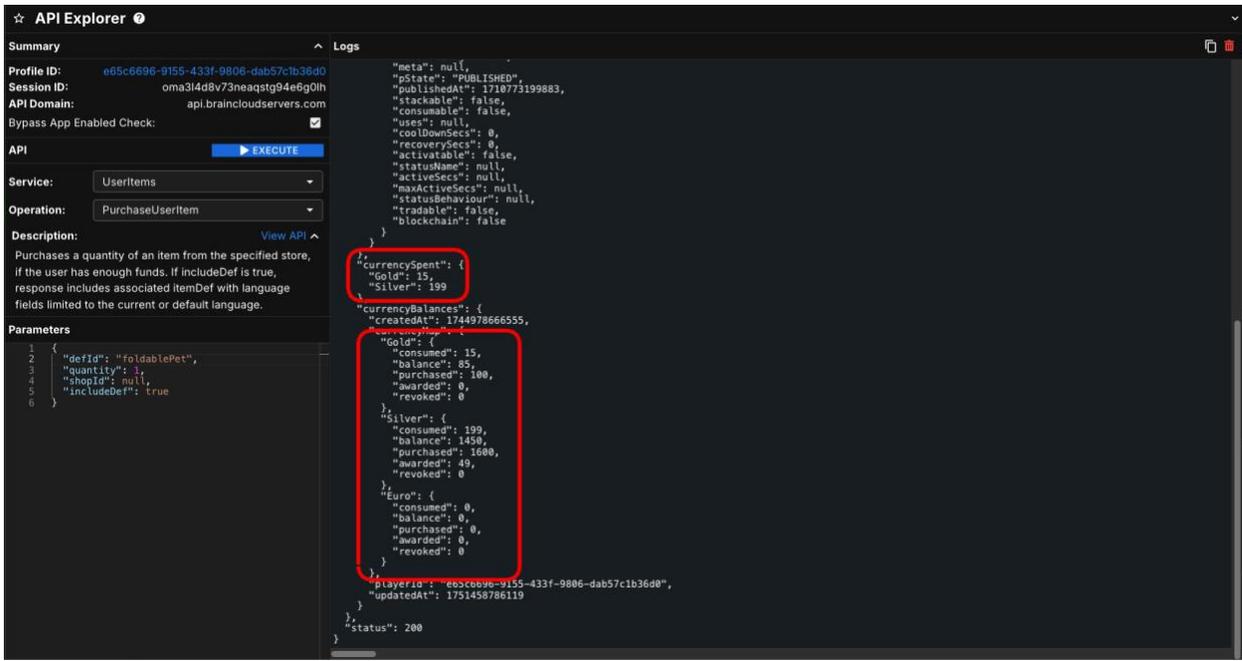
Getting/Checking Item Details

PlayFab provides the **GetCharacterInventory** API, allowing players to receive a list of available inventory items. brainCloud offers two requests for this: [GetUserItem](#) retrieving details for a

single item using its unique item ID, and [GetUserItemsPage](#), returning a paginated, filterable list of items.

Buying Items

We've explored how to award an item for free to a user, but what if a player is purchasing from an ingame NPC store with virtual currency? Here, the player is granted the item, and their virtual currency is consumed instead of real-money. With PlayFab, this involves using both **GrantItemsToUser** and **SubtractUserVirtualCurrency**. In brainCloud, you can achieve this with the [PurchaseUserItem](#) request. The response from this request will include the currency consumed and a summary of the player's new balance.

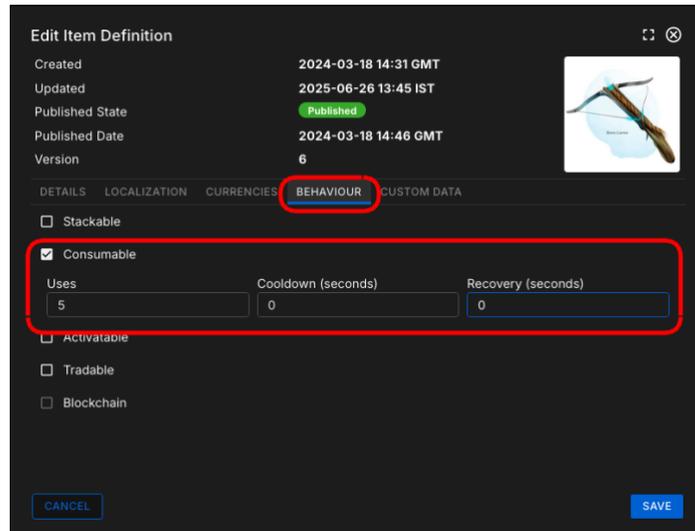


Consuming & Revoking Items

You can remove items from a player's inventory using the [DropUserItem](#) request. This functions similarly to PlayFab's **RevokeInventoryItem**. However, if the item is stackable, **DropUserItem** will only remove one count from the stack until it reaches zero, acting also as a replacement for PlayFab's **ConsumeItem** call.

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brainCloud provides another request related to consuming items: the [UseUserItem](#) request, which can be used to consume an item and remove it from the player's inventory, or, if configured to be consumable, reduce its "uses" by one.



This flexible feature includes cooldowns and recovery periods for such items without needing custom cloud-code. You can read more about item behaviours [here](#).

Trading Items

brainCloud offers APIs for gifting, selling, and receiving items from other players, which can replace the PlayFab trading API. However, to replace the specific trading flow PlayFab uses, custom cloud-code scripts are needed. We'll explore how to achieve that. Check out our guide here [Cloud Scripts Document](#) for more information on how to work with script before we continue.

Important

For this example, we'll use requests specific to trading. These require items to have their behavior set to "tradeable" for transfer between players.

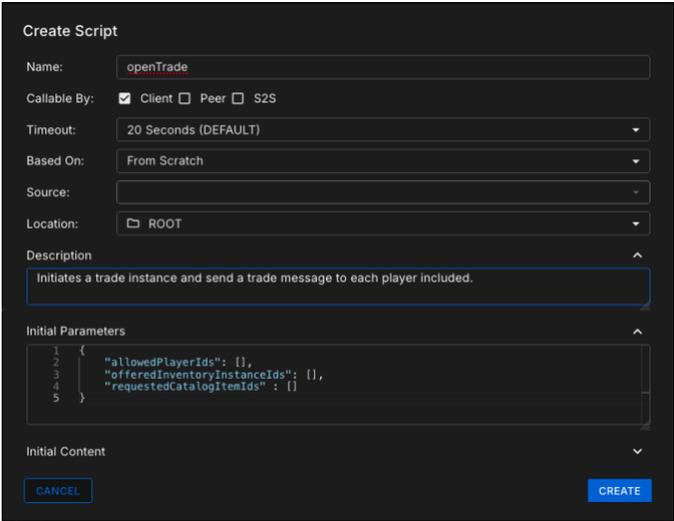
Open Trade

The PlayFab trading flow starts with the **OpenTrade** API. This request sends a list of item instance IDs the player wishes to trade, a list of requested items, and the players they wish to invite to the trade.

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Note
 With PlayFab, if the requested item ID array is empty, the **OpenTrade** API will gift items to players who accept the trade. If this flow exists in your game, you can use the [GivItemToUser](#) request instead of this custom example.

To begin, create a new custom cloud-code script called **openTrade**. Ensure this script is callable from the client.



Our script will perform the following actions:

1. Check if the player owns all the items they are offering.
2. Verify the requested items are valid (found in the item catalog).
3. Create an object for this trade log using custom entities.
4. Send trade details to all players.

Additionally, it would be useful to include item details in the response, so we'll add those while validating each item. Add the following code to your new script.

```
"use strict";

function main() {
  var response = {};
```

```
const allowedPlayerIds = data.allowedPlayerIds;

let offeredInventoryInstanceIds = data.offeredInventoryInstanceIds;

let requestedCatalogItemIds = data.requestedCatalogItemIds;

// defId services //

const userItemsProxy = bridge.getUserItemsServiceProxy();
const itemCatalogProxy = bridge.getItemCatalogServiceProxy();
const customEntityProxy = bridge.getCustomEntityServiceProxy();
const messagingProxy = bridge.getMessagingServiceProxy();

// trade log params //

const logTTL = 604800000; // 1 week in ms //

const isOwned = false;

const entityType = "TradeLogs";

const acl = { "other": 2 };

// [1] - Check the player owns the unique item //
offeredInventoryInstanceIds.forEach((uniqueId, index) => {

  let getUserItemResp = userItemsProxy.getUserItem(uniqueId, false);

  if (getUserItemResp.status !== 200) {

    // your error here //

    // throw or return error;

  }

  offeredInventoryInstanceIds[index] = getUserItemResp.data.item;

});

// [2] - Check all the item IDs are valid //

requestedCatalogItemIds.forEach((defId, index) => {

  let itemDefResp = itemCatalogProxy.getCatalogItemDefinition(defId);

  if (itemDefResp.status !== 200) {

    // your error here //
```

```
        // throw or return error;
    }

    requestedCatalogItemIds[index] = itemDefResp.data;
});

// [3] - Create new Trade Object //
let tradeLog = {

    requestedCatalogItemIds: requestedCatalogItemIds,

    offeredInventoryInstanceIds : offeredInventoryInstanceIds,

    allowedPlayerIds: allowedPlayerIds,

    status: "OFFERED",

    initiatedBy: bridge.getProfileId()

};

const createEntityResp = customEntityProxy.createEntity(entityType, tradeLog, acl,
logTTL, isOwned);

if (createEntityResp.status !== 200) {

    // your error here //

    // throw or return error;

}

tradeLog.tradeEntity = createEntityResp.data;

// [4] - Send messages to each player with the trade log details //
const sendMessResp = messagingProxy.sendMessage(allowedPlayerIds, tradeLog);

if (sendMessResp.status !== 200) {

    // your error here //

    // throw or return error;

}

response.tradeLog = tradeLog;

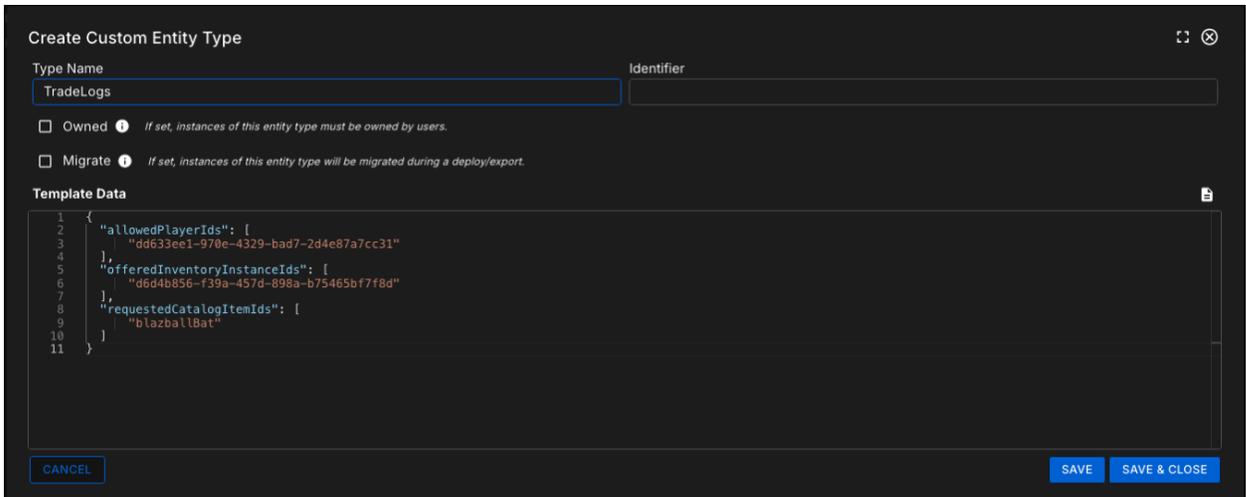
return response;
}
```

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```
main();
```

Note that in the example above, we've set a TTL for the trade log of one week. There's no reason for trades to remain longer, and we don't want the collection to store old or completed trades, so this helps clear them out.

Next, create a custom entity for the trade logs collection. To do this, go to the **Cloud Data** → **Custom Entities** menu and create a new custom entity collection.



Create Custom Entity Type

Type Name: TradeLogs Identifier: [empty]

Owned ⓘ If set, instances of this entity type must be owned by users.

Migrate ⓘ If set, instances of this entity type will be migrated during a deploy/export.

Template Data

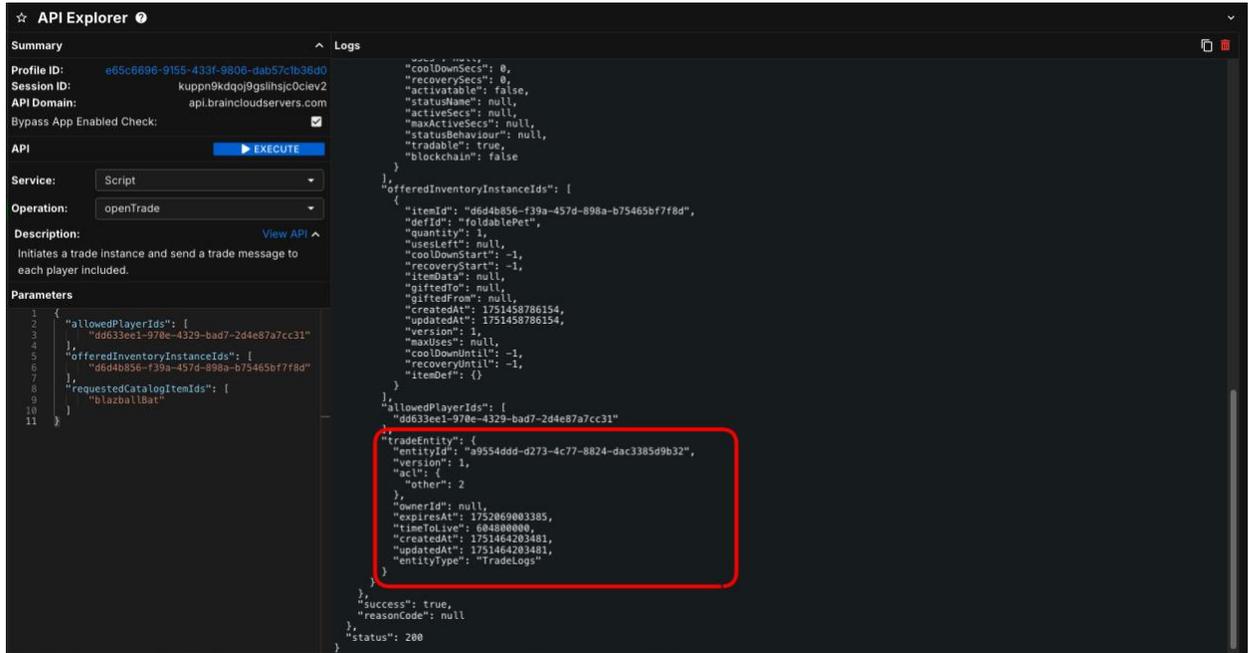
```

1  {
2  "allowedPlayerIds": [
3    "dd633ee1-970e-4329-bad7-2d4e87a7cc31"
4  ],
5  "offeredInventoryInstanceIds": [
6    "d6d4b856-f39a-457d-898a-b75465bf7f8d"
7  ],
8  "requestedCatalogItemIds": [
9    "blazballBat"
10 ]
11 }

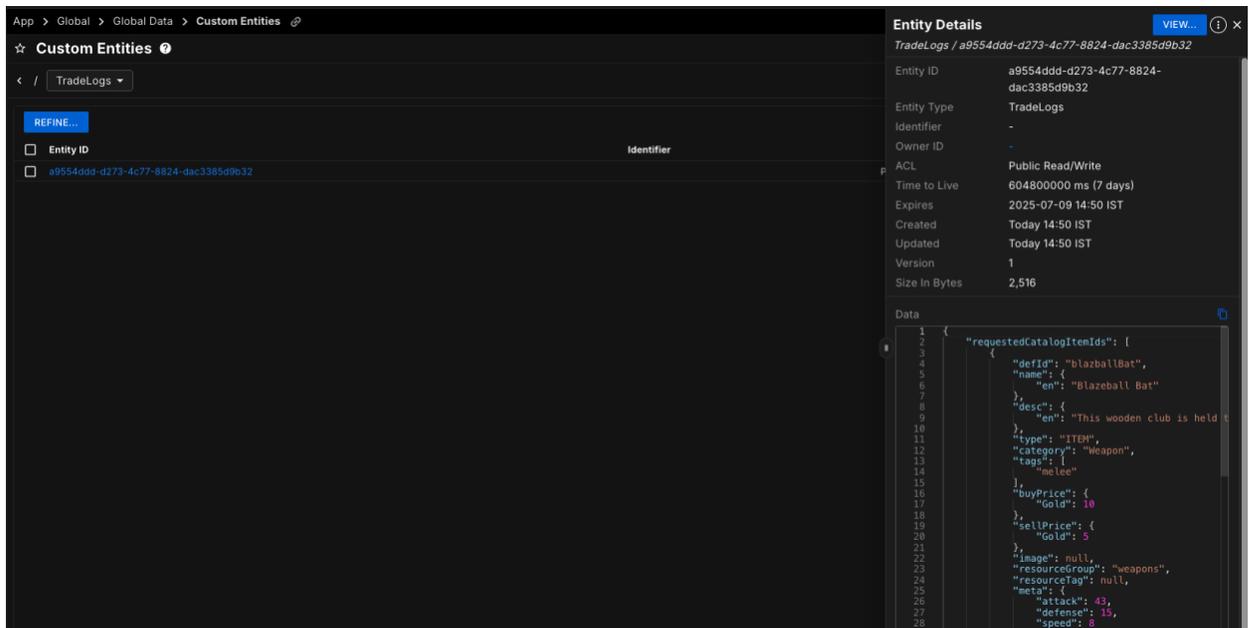
```

CANCEL SAVE SAVE & CLOSE

Now we can test this example using the API Explorer. You'll see in the response that we get the entity ID for the trade log. The players who received messages about the trade also get this ID and can use it to look up the trade in the future.



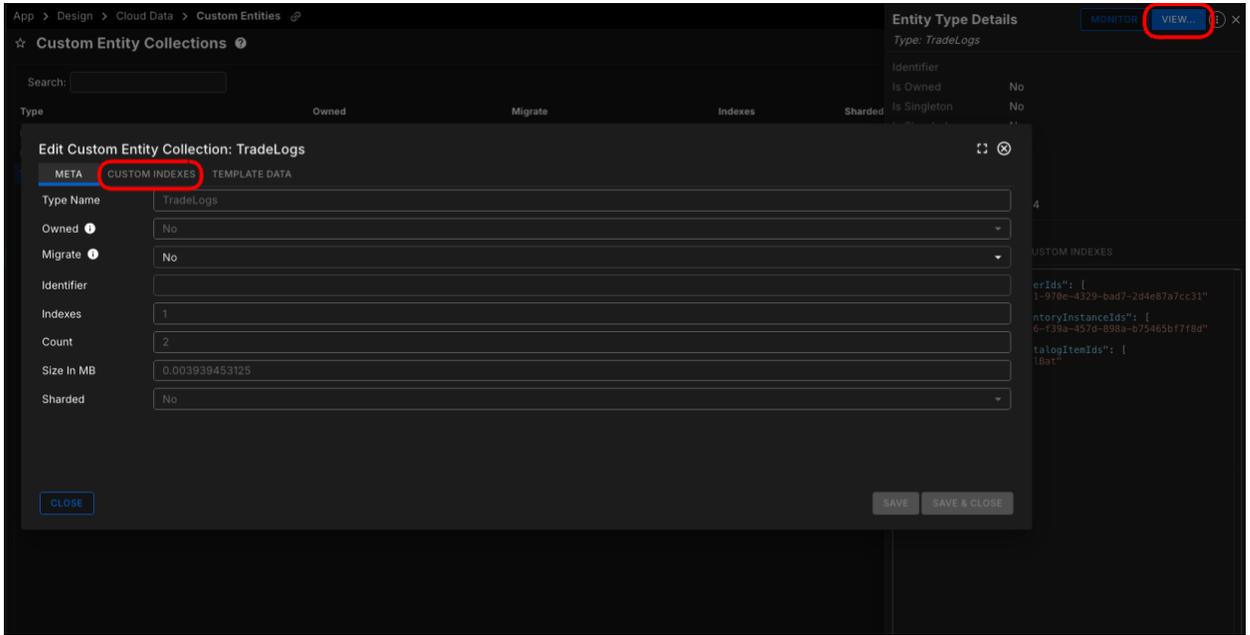
You can confirm that the trade log was stored by going to the entity collection and clicking on the document. You'll see a summary of the log in the right-hand side panel.



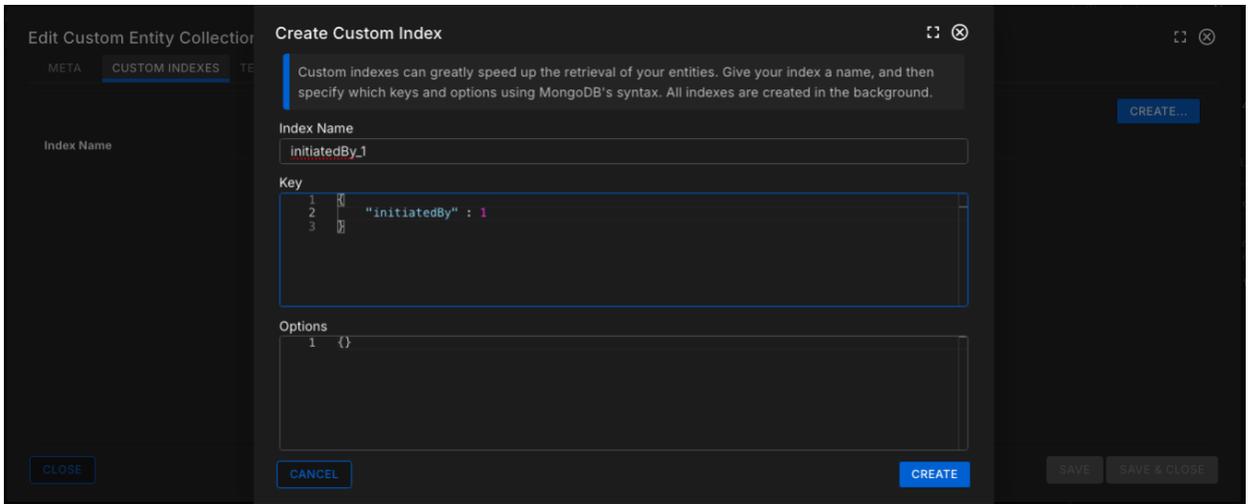
GetTradeStatus

Players can view the details of this trade anytime using the [ReadEntity](#). However, with PlayFab, there's also the option to view all of a player's trades using the **GetPlayerTrades** API. Let's see how we can modify our entity collection to allow this.

Go to your custom entity definition and click on the **View** button in the right-hand panel.



Click on the Custom Indexes tab and create a new index as below.



Next, create a new custom cloud-code script called **getPlayerTrades**. Ensure this script is callable from the client, and add the following code to your new script.

```
"use strict";

function main() {
  var response = {};

  let acceptedTrades = [];
  let openedTrades = [];
  const playerId = bridge.getProfileId();

  // [1] - define query params //
  const entityType = "TradeLogs";
  const context = {
    "searchCriteria": {
      "data.initiatedBy": playerId
    }
  };
};

// [2] - query entity collection //
const customEntityProxy = bridge.getCustomEntityServiceProxy();
const getTradesResp = customEntityProxy.getEntityPage(entityType, context);
if (getTradesResp.status !== 200) {
  // your error here //
  // throw or return error;
}

// [3] - filter trades into each array //
getTradesResp.data.results.items.forEach(doc => {
  if(doc.data.status == "ACCEPTED") {
    acceptedTrades.push(doc.data);
  }
});
}
```

```

    }

    else {

        openedTrades.push(doc.data);

    }

});

// [4] - Return arrays //

response.acceptedTrades = acceptedTrades;

response.openedTrades = openedTrades;

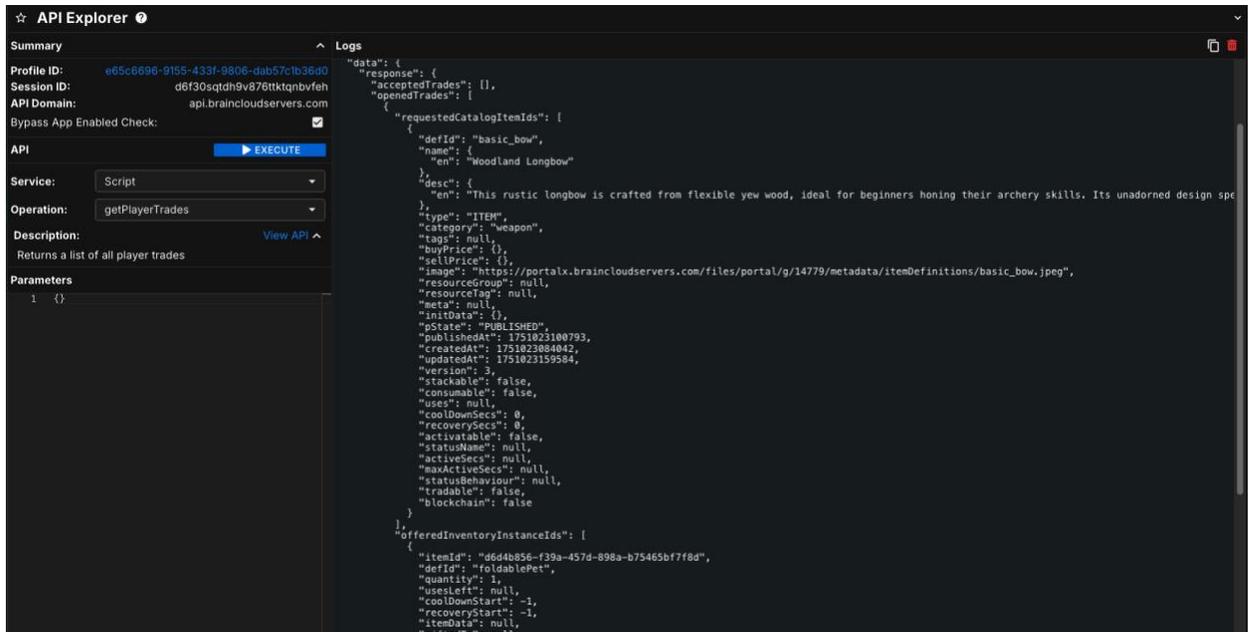
return response;

}

main();

```

Testing this new script out from the API Explorer we can see that it returns our new open trade for this player.



Cancelling Trades

Canceling trades is straightforward with the example above. To simply remove the trade, use the [DeleteEntity](#) request. However, if you want the trade log marked as "CANCELLED" but still

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readable by participants, you'll need to write a script for this. We'll explore updating a custom entity in the next example, so we'll skip the script for **CancelTrade** for now.

Accepting Trades

The final part of PlayFab's trading flow is the **AcceptTrade** API. This call swaps items between players and updates the trade log.

brainCloud offers some out-of-the-box requests which do not require custom scripts and might suit your use-case. For example, [SellItemToUser](#) could be used in a case where a player only wants to trade for virtual currency and [GiveUserItem](#) followed by [ReceiveUserItemFrom](#) can exchange items between players for free. However, to replicate PlayFab's functionality exactly, you'll need to create a custom script.

To begin, create a new custom cloud-code script called **acceptTrade**. Ensure that it's callable from the client. Our script will perform the following actions:

1. Load the trade log.
2. Check if the trade is still open.
3. Confirm the player accepting is included in the trade list.
4. Verify the player still has the items they want to exchange.
5. Deliver the items.
6. Update the trade log to mark it as accepted.
7. Send a trade update message to all players.

PlayFab's **AcceptTrade** API requires the player's unique item IDs, the trade ID, and the offering player ID. In this case, we only need the trade ID and the item IDs, as the other player's ID is already stored in the trade log.

Create Script

Name:

Callable By: Client Peer S2S

Timeout:

Based On:

Source:

Location:

Description

Accepts the trade on behalf of the player

Initial Parameters

```

1 {
2   "tradeId": "",
3   "acceptedInventoryInstanceIds": []
4 }
```

Initial Content

Add the following code to your new script.

```

"use strict";

function main() {
  var response = {};

  // params //

  const entityType = "TradeLogs";
  const logTTL = 604800000; // 1 week in ms //
  const entityId = data.tradeId;
  const acceptedInventoryInstanceIds = data.acceptedInventoryInstanceIds;
  let playerId = bridge.getProfileId();

  // define services //

  const customEntityProxy = bridge.getCustomEntityServiceProxy();
  const userItemsProxy = bridge.getUserItemsServiceProxy();
  const messagingProxy = bridge.getMessagingServiceProxy();

  // [1] - Load the trade Log //

  const readEntityResp = customEntityProxy.readEntity(entityType, entityId);
  if (readEntityResp.status !== 200) {

```

```
// your error here //

// throw or return error;
}

let entity = readEntityResp.data
let tradeLog = readEntityResp.data.data;

// [2] - Check if the trade is still open //
if(tradeLog.status == "ACCEPTED"){
    throw "your error here - trade is no longer open";
}

// [3] - Check if this player is in the list //
if(tradeLog.allowedPlayerIds.includes(playerId)){
    throw "your error here - player not found in trade";
}

// [4] - Check if current player has the item(s) submitted for the trade //
// First check if player has actually submitted items //
if(acceptedInventoryInstanceIds.length == 0){
    throw "your error here - acceptedInventoryInstanceIds empty";
}

const context = { "searchCriteria": { "itemId": { "$in" : acceptedInventoryInstanceIds
}}};

const getPlayerItems = userItemsProxy.getUserItemsPage(context, true);

if (getPlayerItems.status != 200) {
    // your error here //
    // throw or return error;
}

const playerItems = getPlayerItems.data.results.items;

if(acceptedInventoryInstanceIds.length != playerItems.length){
    throw "your error here - acceptedInventoryInstanceIds not owned";
}
```

```
}

// we should also check if the item defId is the same as requested by the initial trade
offer //

const requestedDefIds = new Set(tradeLog.requestedCatalogItemIds.map(item =>
item.defId));

const matchedItems = playerItems.filter(item => requestedDefIds.has(item.defId));

if(matchedItems.length !== tradeLog.requestedCatalogItemIds.length) {

    throw "your error here - acceptedInventoryInstanceIds does not match requested
item(s)";

}

// [5] - Deliver items to player //

acceptedInventoryInstanceIds.forEach(itemId => {

    let giveItemResp = userItemsProxy.giveUserItemTo(tradeLog.initiatedBy, itemId, 1, 1,
true);

    if (giveItemResp.status !== 200) {

        // your error here //

        // throw or return error;

    }

});

tradeLog.offeredInventoryInstanceIds.forEach(itemDef => {

    let giveItemResp = userItemsProxy.giveUserItemTo(playerId, itemDef.itemId, 1, 1,
true);

    if (giveItemResp.status !== 200) {

        // your error here //

        // throw or return error;

    }

});

// [6] - Update the trade log //

tradeLog.status = "ACCEPTED";

tradeLog.acceptedBy = playerId;

const updateLogResp = customEntityProxy.updateEntity(entityType, entityId,
entity.version, tradeLog, null, logTTL);

if (updateLogResp.status !== 200) {
```

```
// your error here //

// throw or return error;
}

// [7] - Send message to players //
const sendMessResp = messagingProxy.sendMessage([ playerId, tradeLog.initiatedBy ],
tradeLog);

if (sendMessResp.status !== 200) {

    // your error here //

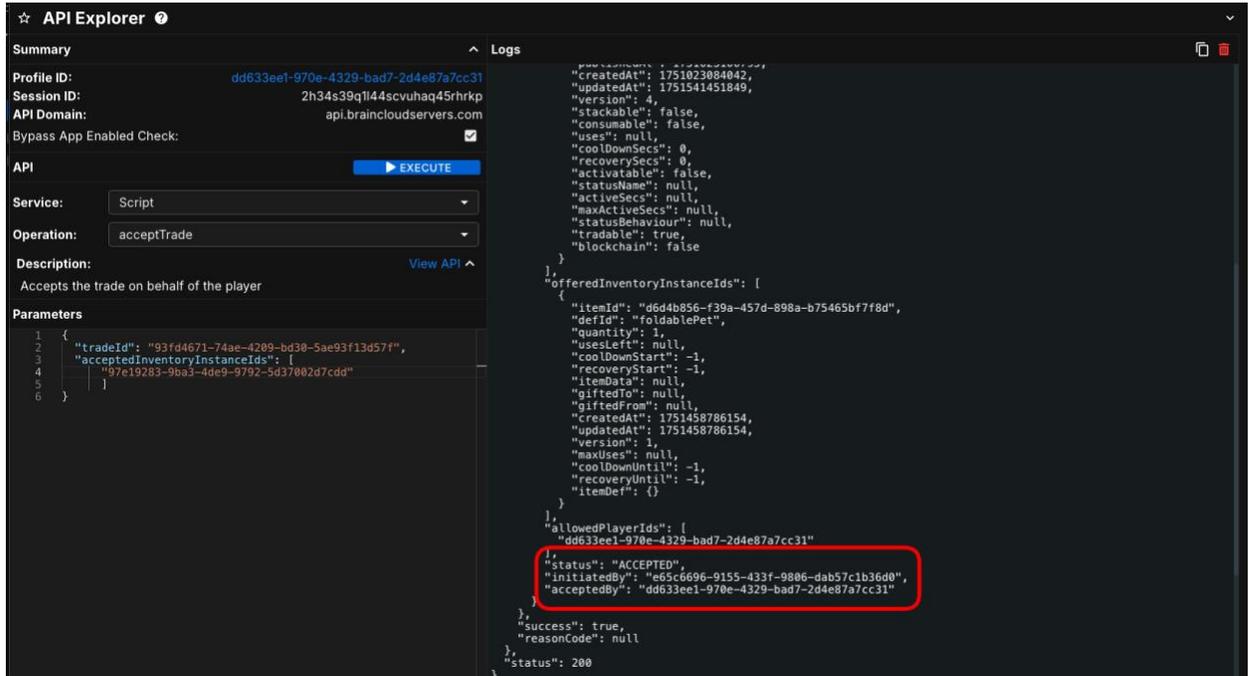
    // throw or return error;
}

response.tradeLog = tradeLog;

return response;
}

main();
```

We can test this using one of the trade log IDs created earlier. Ensure you have a valid item ID for the player accepting the trade and that both the current player and the player who initiated the offer are using items configured as tradable in the item catalog menu.



If the offer passes all the checks in the code you will see the updated trade log in the response now has the status updated and the acceptedBy field has been updated to the current player ID.

Inventory API Comparison

For quick reference, below is a table outlining all the basic PlayFab item and inventory management APIs and their corresponding requests on PlayFab.

PlayFab	brainCloud
GrantItemsToUser	AwardUserItem or PurchaseUserItem (for consuming currency)
GetCharacterInventory	GetUserItemsPage GetUserItem
RevokeInventoryItem	DropUserItem

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ConsumeItem	UseUserItem or DropUserItem
OpenTrade	Custom Cloud-Code Scripts or GiveItemToUser
GetTradeStatus	Custom Cloud-Code Scripts & ReadEntity
GetPlayerTrades	
CancelTrade	Custom Cloud-Code Scripts & DeleteEntity
AcceptTrade	Custom Cloud-Code Scripts or GiveUserItem ReceiveUserItemFrom SellItemToUser