# Google Billing Extension

## Contents

## Extension’s Features

- Connect to the Google Store
- Query products/subscription/purchase information
- Purchase products/subscriptions
- Acknowledge/Consume purchases
- Verify purchases using signature/own server (Verification)

## Setup

The Google Play Billing extension requires no setup apart from filling out the correct public key to your application in the **Game Options -> Android -> Packaging -> Google Licensing Public Key** field; make sure this information is correct and you should be good to go.

# Quick Start Guide

This section aims to deliver an easy and simple set of examples that should help you get started with your first project using the Google Play Billing extension. One thing to note before starting is that some function calls trigger async responses, which can be listened to using the **ASYNC IN-APP PURCHASE** event.

## Initialization

The first thing to look for when creating a Google Play Billing project in GameMaker Studio using this extension is initializing your API.

```
// Before executing any other code we first need to initialize the Google Play
// Billing API. This initialization is done with a simple function call and
// requires no arguments.
GPBilling_Init();

// After initialization you can connect to the store, this is necessary since
// we cannot buy/query products if we are not connected to our account. This
// function will trigger an ASYNC IN-APP PURCHASE event (similar to all the
// functions that trigger events in this extension).
var _error = GPBilling_ConnectToStore();

// The return value of this function can be 'gpb_error_unknown' or
// 'gpb_no_error' (these are constants, for more info see: Error Type)
if (_error == gpb_error_unknown)
{
      // At this point we know there was an error while requesting for
      // connection, and we can act accordingly.
}
else
{
      // The connection request was successful and we should look for a
      // callback response from it.
}
```

Given that the code above didn't produce any errors, we can listen to the callback response using the Async In-App Purchase event, following the code below:

```
switch(async_load[?"id"])
{
      // @triggered by GPBilling_ConnectToStore()
      case gpb_store_connect:

            // At this point we have just finished connecting to the store so
            // we can now add products/subscriptions. Only the ones that are
            // added locally can be purchased and queried.
            GPBilling_AddProduct("single_time_purchase");
            GPBilling_AddProduct("consumable_purchase");
            GPBilling_AddSubscription("subscription_purchase");
```

```
            // After adding the products you want to use locally. you can now
            // query their information. This is required if you want to use
            // any of the GPBilling_Sku_* functions.
            GPBilling_QueryProducts();
            GPBilling_QuerySubscriptions();

            break;

      // @triggered by GPBilling_ConnectToStore()
      case gpb_store_connect_failed:

            // At this point we have failed to connect to the store.
            // You can now add logic to handle the problem.
            break;
}
```

## Querying Purchases

Another important step while developing an app with IAP is to track what was purchased and what was not. Maybe you want to make sure the user cannot buy something that was already bought or you want to check if a user has bought a given subscription. We can do this using the following steps:

1. Connect to the store (see: Initialization)
2. Add the products/subscriptions locally (see: Initialization)
3. Use the GPBilling_QueryPurchases() function with a given sku type (Sku Type)

Let's jump into the fully documented code sample below:

```
// After the first two steps are complete we can now use the extension
// functionality to help with the process.

// Query an array of purchases of type "inapp" (consumables/permanent)
var queryJson = GPBilling_QueryPurchases(gpb_purchase_skutype_inapp);

// If there is an error during the query the function returns an empty string
// so we need to check for that.
if (queryJson != "")
{
	// Now we can proceed. We will use json_parse since it generates
	// structs/arrays that are easier to handle and don't need manual
	// disposal.
	var queryData = json_parse(queryJson);

	// The query data now has a 'success' variable that holds a boolean
	// depending on whether or not the query was successful.
	if (queryData.success)
	{
		// We can now access the 'purchases' array that stores a list of
		// all the products owned by the user.
		var purchasesArray = queryData.purchases;

		// Loop through the array of purchases
		var purchase, purchasesCount = array_length(purchasesArray);
		for (var i = 0; i < purchasesCount; i++)
		{
			purchase = purchasesArray[i];

			// Now we have access to all the purchase data that can be
			// stored for later use; please refer to the previous
			// version's documentation for more details.
			//
			//    purchase.orderId
			//    purchase.packageName
			//    purchase.productId
			//    purchase.purchaseTime
			//    purchase.purchaseState
			//    purchase.autoRenewing
```

```
                    //    purchase.acknowledged
                    //
              }
        }
        else
        {
              // Data query was not successful at this point so there is an
              // extra property available - 'responseCode' - that will store one
              // of the Google Play Store error codes (Error Type).
        }
}
```

Follow the same procedure for subscriptions replacing `gpb_purchase_skutype_inapp` with the other constant available to the API `gpb_purchase_skutype_subs`, the data collected on both runs will give you all the information you need on owned items.

## One-time Purchases

There are three types of IAPs you might use in your project; this section will deal with one-time purchases. These purchases are bought only once and cannot be bought anymore after that. The life-cycle of this type of purchase is:

1. Connect to the store (see: Initialization)
2. Add the products/subscriptions locally (see: Initialization)
3. Purchasing the product
4. Waiting for a receipt callback & verifying the purchase (see: Verification)
5. Acknowledging the purchase
6. Waiting for a acknowledge callback
7. Rewarding the user with the corresponding item.

These steps are essential for correct use of the API. For a quick set-up let's look into the fully documented code sample provided below (the first two steps can be checked above).

Step 3 - For this specific case we are using a button click to trigger the purchase; you can use whatever method you see fit.

```
// Early exit if the operating system is not Android
// This check will prevent the IAP code to run if we are running the project
// in an unsupported operating system.
if (os_type != os_android) exit;

// Early exit if there is no connection to the store.
if (!GPBilling_IsStoreConnected()) exit;

// Proceed to purchase the product
// We need to make sure we added the product locally using the correct SKU
// identifier so this product is available for purchase.
var _error = GPBilling_PurchaseProduct("single_time_purchase");

// The function above returns an error code that can be checked against the
// gbp_error_* constants.
switch(_error)
{
	case gpb_error_not_initialised:
		// The API has not been initialised yet.
		break;
	case gpb_error_no_sku:
		// There are no SKUs in the product/subscription list.
		break;
	case gpb_error_selected_sku_list_empty:
		// There are no SKUs in the product list (although there might be
		// in the subscription list).
		break;
	case gpb_no_error:
		// There were no errors, we should expect a response callback
		break;
}
```

Step 4/5 - Given that the code above didn't produce any errors we can listen to the callback response using the Async In-App Purchase event, following the code below:

```
switch(async_load[?"id"])
{
	// @triggered by GPBilling_PurchaseProduct()
	case gpb_iap_receipt:

		// At this point we just finished a purchase and are now
		// triggering a receipt event.

		// We look at the async load for a 'response_json', since it is a
		// json string we can use 'json_parse' on it.
		var responseData = json_parse(async_load[?"response_json"]);

		// There is a 'success' variable that holds a boolean depending on
		// whether or not the purchase was successful.
		if (responseData.success)
		{
			var purchases = responseData.purchases;
			var purchasesCount = array_length(purchases);

			// We will loop through everything because there could be
			// more than one purchase being triggered.
			for(var i = 0; i < purchasesCount; i++)
			{
				var purchase = purchases[i];

				var sku = purchase.productId;

				// At this point we will check if this SKU corresponds
				// to the purchase we just made, ideally this should
				// be done using a more automated approach.
				if (sku != "single_time_purchase") continue;

				var token = purchase.purchaseToken;

				// At this point we should now verify the purchase
				// there is a section on that later (Verification)
				if (__yourVerificationMethod__)
				{
					// At this point the purchase was verified and
					// we should now proceed to acknowledgement
					var err = GPBilling_AcknowledgePurchase(token);

					// We will store the purchase token so we can
					// check the acknowledgement event, this is not
					// the ideal method to use.
					global.singleTimePurchaseToken = token;

					// The return value from the function call above
					// is either: gpb_error_unknown or gpb_no_error.
```

```
                        }
                    }
                }
                break;
}
```

Step 6/7 - Given that the code above didn't produce any errors we can listen to the callback response using the Async In-App Purchase event and reward the user accordingly, following the code below:

```
switch(async_load[? "id"])
{
      case gpb_acknowledge_purchase_response:

            // Convert JSON string into data struct
            var responseData = json_parse(async_load[?"response_json"]);

            // Check if tokens match
            if (responseData.purchaseToken == global.singleTimePurchaseToken)
            {
                  // At this point we know the event refers to this in-app
                  // purchase. Now we need to check if there are any errors.
                  if (responseData.responseCode == gpb_no_error)
                  {
                        // At this point the purchase acknowledgement
                        // succeeded. We can now REWARD THE USER.
                  }
                  else
                  {
                        // At this point the purchase acknowledgement
                        // failed. We can act accordingly.
                  }
            }
            break;
}
```

## Consumables

One other type of IAPs is the consumables; this section will deal with them. These purchases can be bought multiple times. The life-cycle of this type of purchase is mostly similar to the previous section (One-time Purchases) with just a couple changes:

1. Connect to the store (see: Initialization)
2. Add the products/subscriptions locally (see: Initialization)
3. Purchasing the product (see: One-time Purchases)
4. Waiting for a receipt callback & verifying the purchase (see: Verification)
5. **Consume the purchase**
6. **Waiting for a Consume callback**
7. Rewarding the user with the corresponding item.

These steps are essential for a correct use of the API. For a quick set up let's look into the fully documented code sample provided below.

Step 5 - For this specific case we will start the guide mid-way through since you can follow the previous section to understand how it works. The main changes occur after the purchase has been verified.

```
// At this point we should now verify the purchase
// there is a section on that later (Verification)
if (__yourVerificationMethod__)
{
	// At this point the purchase was verified and
	// we should now proceed to consume it.
	var err = GPBilling_ConsumePurchase(token);

	// We will store the purchase token so we can
	// check the consumption event (this is not
	// the ideal method to use).
	global.consumablePurchaseToken = token;

	// The return value from the function call above
	// is either: gpb_error_unknown or gpb_no_error.
}
```

Step 6/7 - Given that the code above didn't produce any errors we can listen to the callback response using the Async In-App Purchase event and reward the user accordingly, following the code below:

```
switch(async_load[? "id"])
{
	case gpb_consume_purchase_response:

		// Convert JSON string into data struct
		var responseData = json_parse(async_load[?"response_json"]);
```

```
            // Check if tokens match
            if (responseData.purchaseToken == global.consumablePurchaseToken)
            {
                  // At this point we know the event refers to this in-app
                  // purchase. Now we need to check if the purchase
                  // consumption was successful (there is a 'success'
                  // property we can use for that purpose).
                  if (responseData.success)
                  {
                        // At this point the purchase was successfully
                        // consumed succeeded. We can now REWARD THE USER.
                  }
                  else
                  {
                        // At this point the purchase failed to be consumed.
                        // We can act accordingly.
                  }
            }
            break;
}
```

## Subscriptions

The last type of IAP you might encounter are subscriptions; this section will deal with how to purchase subscriptions. These purchases are bought and remain unavailable until the subscription period ends . The life-cycle of this type of purchase is:

1. Connect to the store (see: Initialization)
2. Add the products/subscriptions locally (see: Initialization)
3. **Purchasing the subscription**
4. Waiting for a receipt callback & verifying the purchase (see: Verification)
5. Acknowledging the purchased (see: One-time Purchases)
6. Waiting for a acknowledge callback (see: One-time Purchases)
7. Rewarding the user with the corresponding item (see: One-time Purchases)

These steps are essential for correct use of the API. For a quick set up let's look into the fully documented code sample provided below.

Step 3 - For this guide the only change occurs during purchase and we shall cover the changes from previous purchase.

```
// Early exit if the operating system is not Android
// This check will prevent the IAP code to run if we are running the project
// in an unsupported operating system.
if (os_type != os_android) exit;

// Early exit if there is no connection to the store.
if (!GPBilling_IsStoreConnected()) exit;

// Proceed to purchase the product
// We need to make sure we added the product locally using the correct SKU
// identifier so this product is available for purchase.
var _error = GPBilling_PurchaseSubscription("subscription_purchase");

// The function above returns also a error code that can be checked against
// the gbp_error_* constants
switch(_error)
{
      case gpb_error_not_initialised:
            // The API has not been initialised yet.
            break;
      case gpb_error_no_sku:
            // There are no SKUs in the product/subscription list.
            break;
      case gpb_error_selected_sku_list_empty:
            // There are no SKUs in the product list (although there might be
            // in the subscription list).
            break;
      case gpb_no_error:
            // There were no errors, we should expect a response callback
            break;
}
```

The main difference is in the ‘`GPBilling_PurchaseSubscription`’ function; this function must be used when we want to purchase an item that is a subscription.

## Verification

The verification step in a purchase life-cycle is very important and might be the entry point for spoofing your game. We can have two approaches for that; firstly, a more academic implementation that is more vulnerable and not recommended for enterprise standards, and secondly a more advanced implementation that requires the use of a personal server.

### [SIMPLE VERSION]

For the simple version (the one used in the demo) we can use the **purchaseToken** to verify the purchase following the code below:

```
// This is purely an example. Verifying in this manner is less secure and
// prone to spoofing. Ideally, developers will verify all IAPs - consumable,
// subs and entitlements - using their own server.

// The first step is to get the signature for the given token
var signature = GPBilling_Purchase_GetSignature(token);

// Then we query the json information from the purchase
var purchaseJsonStr = GPBilling_Purchase_GetOriginalJson(token);

// Then we call the function 'GPBilling_Purchase_VerifySignature' that will
// take both previously queried values and verifies the signature
if(GPBilling_Purchase_VerifySignature(purchaseJsonStr, signature))
{
      // At this point the purchase was verified and we should now proceed to
      // acknowledge or consume it.
}
```

As you can see the main problem with this approach is that we are passing the signature and a plain json file with purchase information around and that is not a good idea.

### [ADVANCED VERSION]

For the advanced version a complete “How To” will not be explained since it would be necessary to build your own server and implementations may vary depending on your project.

1. You will need to implement a server capable of handling http requests
2. Use google auth protocol API to contact Google Store and perform verification.
3. Then from the client side (GameMaker Studio) you can create an **http_get** request building your own url and querying the server for verification.

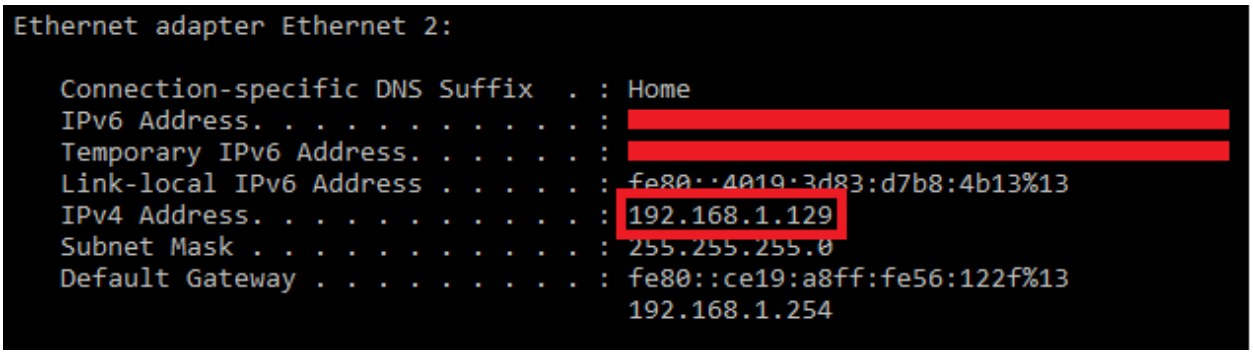
This is implemented in the demo project but is commented out, but you can go in and test it if you need to. To debug the provided IAP verification server follow these simple steps:

1. make sure you have **node-js** installed on your system (installation)

2. extract the **”nodejs-verification-server.zip”** into a folder of your liking (desktop)
3. using a command prompt navigate to the **“nodejs-verification-server”** folder
4. use the command **npm install** (to install the dependencies)
5. follow the instructions in the file **private/credentials.js** to create your API access key.
6. use the command **npm start** (to start the server)

Now follow these next steps on the client side (GameMaker Studio project):

1. Go to the **Async IAP Event** inside **Obj_GooglePlayBilling** and un-comment the code block that is there.
2. Replace the **address** value with your local machine IP address (you can check that using **ipconfig** in your command prompt window). An example for the address we can use is **“192.168.1.129”**.




3. You should now go to the **Game Options -> Android -> Permissions -> Inject to Android Application Tag**, and add the following code there:

```
android:usesCleartextTraffic="true"
```

4. Running the example project and buying the subscription will validate the subscription successfully and pop up the async message box.

**NOTE:** This is a demo implementation of a dedicated server to verify your purchases. The included server is able to check both subscriptions and in-app purchases (consumables & single-time) and should give you an idea of how google API interaction should be handled.

# Functions

## GPBilling_Init

**Changes**

This function **will not be called automatically anymore** and must be manually called before any other Billing API functions.

**Description**

This function will initialize the Google Play Billing API.

**Syntax**

```
GPBilling_Init();
```

**Returns**

N/A

**Example**

N/A

# GPBilling_ConnectToStore

**Description**

This function will attempt to connect the Google Play Billing API with the Play store. When you call this function, it will return one the constants listed below to inform you of the status of the connection attempt. This function ***must be called before calling any other IAP functions*** and the return status should be **gpb_no_error**. This does not, however, mean that the Store is available, only that the connection *attempt* has been successful. Before you can successfully define, query or purchase any products, you must ensure that the connection is valid.

To check the availability of the Play Store, the function will also trigger one of two callbacks in the **Asynchronous IAP Event** (when the initial returned status is **gpb_no_error**). In this event, the async_load DS map will have the following constants returned for the "**id**" key:

| Constant | Actual Value | Description |
|---|---|---|
| gpb_store_connect | 2005 | The API has connected to the Google Play store. |
| gpb_store_connect_failed | 2006 | The API has failed to connect to the Google Play store. |

**Syntax**

```
GPBilling_ConnectToStore();
```

**Returns**

Constant

| Constant | Actual Value | Description |
|---|---|---|
| gpb_error_unknown | -1 | There was an unknown error preventing the Billing API from creating a connection request. |
| gpb_no_error | 0 | The Billing API has created a connection request correctly. |

**Extended Example**

In this extended example, we first send an API request to connect to the store in some event. This would normally be done in the Create Event of a dedicated controller object that is one of the first things created in your game:

```
global.IAP_Enabled = false;
var _init = GPBilling_ConnectToStore();
if _init == gpb_error_unknown
    {
    show_debug_message("ERROR - Billing API Has Not Connected!");
    alarm[0] = room_speed * 10;
    }
```

Note that if the connection request has failed, then we can – for example - call an alarm, where we can call this same code again to test for store connection periodically.

Assuming the API has correctly requested a store connection, it will trigger an Asynchronous IAP Event where you can check to see if the API has successfully connected to the Google Play store or not:

```
var _eventId = async_load[? "id"];
switch (_eventId)
    {
    case gpb_store_connect:
        // Store has connected so here you would generally add the products
        global.IAP_Enabled = true;
        GPBilling_AddProduct(global.IAP_PurchaseID[0]);
        GPBilling_AddSubscription(global.IAP_PurchaseID[1]);
        // Etc…
        break;
    case gpb_store_connect_failed:
        // Store has failed to connect, so try again periodically
        alarm[0] = room_speed * 10;
        break;
    }
```

In the above example, if the store connection fails, you'll see we call an alarm event, setting it to count down 10 seconds. In this event we can then try to initialise the store once more using the same code that we have in the Create Event, shown above.

## GPBilling_IsStoreConnected

**Description**

This function will check to see if the Google Play Billing API currently has a connection to the Google Play store. The function will return `true` if it is and `false` if it is not. Note that if there is *no* connection, ***you should not permit any further Google Play Billing API function calls*** and you could also disable or hide any purchase options for the user in your game UI until connection has been re-established.

In general, you should always call this function and check connectivity before doing any interactions with the Billing API.

**Syntax**

```
GPBilling_IsStoreConnected();
```

**Returns**

Boolean

**Example**

```
if mouse_check_button_pressed(mb_left) &&
    {
    if instance_position(mouse_x, mouse_y, id)
        {
        if GPBilling_IsStoreConnected() && global.IAP_Enabled == true
            {
            GPBilling_PurchaseProduct(global.IAP_PurchaseID[0]);
            }
        else
            {
            global.IAP_Enabled == false;
            alarm[0] = room_speed * 10;
            }
        }
    }
```

# GPBilling_AddProduct

## Description

This function can be used to add a **consumable** product to the internal product list for purchase. You supply the Product ID (as a string, the same as the product ID on the Google Play Console for the game), and the function will return one of the constants listed below.

For subscription products, you should be using the function GPBilling_AddSubscription().

Note, there is no difference between a consumable and a non-consumable product as far as the API is concerned. So, for non-consumable IAPs – like a "no ads" IAP, for example – you simply don't call the GPBilling_ConsumeProduct() function on it. However, non-consumables should still be acknowledged using the GPBilling_AcknowledgePurchase() function when purchased.

## Syntax

```
GPBilling_AddProduct(product_id);
```

| Argument | Description | Data Type |
|---|---|---|
| product_id | The product ID (SKU) of the IAP product being added. | String |

## Returns

Constant

| Constant | Actual Value | Description |
|---|---|---|
| gpb_error_unknown | -1 | This error indicates that the product being added is not unique (ie: the product ID has already been added to the internal product list). |
| gpb_no_error | 0 | The product was successfully added to the internal product list. |

**Cont.../**

`GPBilling_AddProduct` **Cont.../**

**Example**

The following code is being called from the Asynchronous IAP Event when it has been triggered by the function GPBilling_ConnectToStore().

```
var _eventId = async_load[? "id"];
switch (_eventId)
    {
    case gpb_store_connect:
        GPBilling_AddProduct(global.IAP_PurchaseID[0]);
        GPBilling_AddSubscription(global.IAP_PurchaseID[1]);
        GPBilling_QueryProducts();
        break;
    }
```

# GPBilling_AddSubscription

## Description

This function can be used to add a **subscription** product to the internal product list for purchase. You supply the Product ID (as a string, the same as the product ID on the Google Play console for the game), and the function will return one of the constants listed below.

For consumable products, you should be using the function GPBilling_AddProduct().

## Syntax

```
GPBilling_AddSubscription(product_id);
```

| Argument | Description | Data Type |
|---|---|---|
| product_id | The product ID (SKU) of the IAP product being added. | String |

## Returns

Constant

| Constant | Actual Value | Description |
|---|---|---|
| gpb_error_unknown | -1 | This error indicates that the product being added is not unique (i.e.: the product ID has already been added to the internal product list). |
| gpb_no_error | 0 | The product was successfully added to the internal product list. |

**Example**

The following code is being called from the Asynchronous IAP Event when it has been triggered by the function GPBilling_ConnectToStore().

```
var _eventId = async_load[? “id”];
switch (_eventId)
    {
    case gpb_store_connect:
        GPBilling_AddProduct(global.IAP_PurchaseID[0]);
        GPBilling_AddSubscription(global.IAP_PurchaseID[1]);
        GPBilling_QueryProducts();
        break;
    }
```

## GPBilling_QueryProducts

**Description**

This function can be used to query the state of any **consumable** products (for subscriptions, please use the function GPBilling_QuerySubscriptions()). This function will generate an Asynchronous IAP Event where the async_load DS map "**id**" key holds the constant **gpb_product_data_response**, as well as the key "**json_response**". This key contains a JSON object string, which – when decoded using json_decode() – will contain DS map. This map will have the key "**success**" - which will be true if the query has been successfully processed, and false otherwise – as well as the key "**skuDetails**" (only if "success" is true). The "skuDetails" key will, in turn, hold a DS list ID where each entry into the list contains a DS map ID with the details for each of the activated IAP products.

The DS map for each individual product will contain the following keys:

- "**skuDetailsToken**" – This is a unique token created by Google for the details request.
- "**productId**" – The product ID (SKU, a string) as listed on the Google Play console for the game.
- "**type**" – The IAP type for the product. Will be one of the following constants:

| Constant | Actual Value | Description |
|---|---|---|
| gpb_purchase_skutype_inapp | "inapp" | This constant indicates that the product is a consumable purchase. |
| gpb_purchase_skutype_subs | "subs" | This constant indicates that the product is a subscription purchase. |

- "**price**" – Returns *formatted* price of the item (a string), including its currency sign. The price does not include tax.
- "**price_amount_micros**" – Returns the price in *micro-units* (an integer), where 1,000,000 micro-units equals one unit of the currency. For example, if the price is "€7.99", then the price in micros is "7990000". This value represents the localised and rounded price for a particular currency.

- "**price_currency_code**" – Returns the ISO 4217 currency code for the price and original price (a string). For example, if the price is specified in British pounds sterling, then the code returned would be "GBP".

- "**title**" – Returns the title of the product (a string) as defined in the Google Play console.

- "**description**" – Returns the product description (a string) as defined in the Google Play console.

**NOTE**: *You should NOT call this function at the same time as the equivalent subscription query, as this may cause the Google API to error. Instead, call one function, and then in the Asynchronous IAP Event callback, call the other function if you need to.*

## Syntax

```
GPBilling_QueryProducts();
```

## Returns

N/A

## Extended Example

The following code is being called from the Asynchronous IAP Event when it has been triggered by the function GPBilling_ConnectToStore().

```
var _eventId = async_load[? "id"];
switch (_eventId)
    {
    case gpb_store_connect:
        GPBilling_AddProduct(global.IAP_PurchaseID[0]);
        GPBilling_AddProduct(global.IAP_PurchaseID[1]);
        GPBilling_QueryProducts();
        break;
    }
```

The query products function will then trigger another call to the Asynchronous IAP Event, which can be parsed by adding another case to the switch, this time checking the `async_load` key "**id**" for the constant **`gpb_product_data_response`**. Something like this:

```
case gpb_product_data_response:
    var _json = async_load[? "response_json"];
    var _map = json_decode(_json);
    if _map[? "success"] == true
        {
        var _plist = _map[? "skuDetails"];
        for (var i = 0; i < ds_list_size(_plist); ++i;)
            {
            var _pmap = _plist[| i];
            var _num = 0;
            while(_pmap[? "productId"] != global.IAP_PurchaseID[_num])
                {
                ++_num;
                }
            global.IAP_ProductData[_num, 0] = _pmap[? "price"];
            global.IAP_ProductData[_num, 1] = _pmap[? "title"];
            global.IAP_ProductData[_num, 2] = _pmap[? "description"];
            }
        GPBilling_QuerySubscriptions();
        }
    ds_map_destroy(_map);
    break;
```

Note that after parsing the returned product data, we then call the equivalent query function for subscriptions, and then when that triggers another asynchronous callback we'd call the function `GPBilling_QueryPurchases()` to check for any purchases that haven't been consumed.

# GPBilling_QuerySubscriptions

**Description**

This function can be used to query the state of any **subscription** products (for consumables, please use the function `GPBilling_QueryProducts()`). This function will generate an Asynchronous IAP Event where the `async_load` DS map "**id**" key holds the constant **`gpb_subscription_data_response`**, as well as the key "**json_response**". This key contains a JSON object string, which – when decoded using `json_decode()` – will contain DS map. This map will have the key "**success**" - which will be `true` if the query has been successfully processed, and `false` otherwise – as well as the key "**skuDetails**" (only if "success" is `true`). The "skuDetails" key will, in turn, hold a DS list ID where each entry into the list contains a DS map ID with the details for each of the activated IAP products.

The DS map for each individual product will contain the following keys:

- "**skuDetailsToken**" – This is a unique token created by Google for the details request.
- "**productId**" – The subscription product ID (SKU, a string) as listed on the Google Play console for the game.
- "**type**" – The IAP type for the product. Will be one of the following constants:

| Constant | Actual Value | Description |
|---|---|---|
| gpb_purchase_skutype_inapp | "inapp" | This constant indicates that the product is a consumable purchase. |
| gpb_purchase_skutype_subs | "subs" | This constant indicates that the product is a subscription purchase. |

- "**price**" – Returns *formatted* price of the subscription (a string), including its currency sign. The price does not include tax.
- "**price_amount_micros**" – Returns the price in *micro-units* (an integer), where 1,000,000 micro-units equals one unit of the currency. For example, if the price is "€7.99", then the price in micros is "7990000". This value represents the localized, rounded price for a particular currency.

- "**price_currency_code**" – Returns the ISO 4217 currency code for the price and original price (a string). For example, if the price is specified in British pounds sterling, then the code returned would be "GBP".

- "**title**" – Returns the title of the subscription product (a string) as defined in the Google Play console.

- "**description**" – Returns the subscription product description (a string) as defined in the Google Play console.

**NOTE**: *You should NOT call this function at the same time as the equivalent products query, as this may cause the Google API to error. Instead, call one function, and then in the Asynchronous IAP Event callback, call the other function if you need to.*

## Syntax

```
GPBilling_QuerySubscriptions();
```

## Returns

N/A

## Extended Example

The following code is being called from the Asynchronous IAP Event when it has been triggered by the function GPBilling_ConnectToStore().

```
var _eventId = async_load[? "id"];
switch (_eventId)
    {
    case gpb_store_connect:
        GPBilling_AddSubscription(global.IAP_PurchaseID[0]);
        GPBilling_AddSubscription(global.IAP_PurchaseID[1]);
        GPBilling_QuerySubscriptions();
        break;
    }
```

The query subscriptions function will then trigger another call to the Asynchronous IAP Event, which can be parsed by adding another case to the switch, this time checking the `async_load` key "**id**" for the constant **`gpb_subscription_data_response`**, something like this:

```
case gpb_subscription_data_response:
    var _json = async_load[? "response_json"];
    var _map = json_decode(_json);
    if _map[? "success"] == true
        {
        var _plist = _map[? "skuDetails"];
        for (var i = 0; i < ds_list_size(_plist); ++i;)
            {
            var _pmap = _plist[| i];
            var _num = 0;
            while(_pmap[? "productId"] != global.IAP_PurchaseID[_num])
                {
                ++_num;
                }
            global.IAP_PurchaseData[_num, 0] = _pmap[? "price"];
            global.IAP_PurchaseData[_num, 1] = _pmap[? "title"];
            global.IAP_PurchaseData[_num, 2] = _pmap[? "description"];
            }
        GPBilling_QueryPurchases(gpb_purchase_skutype_inapp);
        }
    ds_map_destroy(_map);
    break;
```

Note that after parsing the returned subscription data, we then call the function GPBilling_QueryPurchases() to check for any purchases that haven't been consumed. If you haven't already queried consumable products, then you should probably do that first, then in the corresponding Asynchronous IAP Event callback, you'd check the purchase status.

# GPBilling_QueryPurchases [DEPRECATED]

**Description**

This function is used for querying the purchase state of the different products available for your game. This function should always be called before permitting any in-app purchases, preferable near the startup of the game itself. The function takes one of the following constants as the "type" argument:

| Constant | Actual Value | Description |
|---|---|---|
| gpb_purchase_skutype_inapp | "inapp" | This constant indicates that you are querying the purchase state of consumable products. |
| gpb_purchase_skutype_subs | "subs" | This constant indicates that you are querying the purchase state of subscription products. |

Unlike some of the other Billing functions, this one does not generate a callback event, but will instead immediately return a JSON string which can be decoded using the `json_decode()` function. The initial JSON top-level DS map will have the following keys:

- "**success**" – This will be either `true` or `false` depending on whether the purchase query succeeded or not.

If "success" is `false`, then there will be an additional key:

- "**responseCode**" – This is an integer value that corresponds to one of the Google Play Store response codes listed here. Note that if a purchase has been cancelled, you'll get "success: false" and "responseCode:1", for "USER_CANCELLED".

If "success" is `true`, then the additional key will be:

- "**purchases**" – This is a DS list ID, where each entry in the list corresponds to a DS map for an individual purchase.

When the "purchases" key exists, this can then be looped through (as shown in the extended example below) to get the individual DS maps with the product and purchase information. Each purchase map will contain the following keys:

- "**orderId**" - Returns a unique order identifier for the transaction (a string). This identifier corresponds to the Google payments order ID.

- "**packageName**" - Returns the application package from which the purchase originated (a string).

**Cont.../**

`GPBilling_QueryPurchases` **Cont.../**

- "**productId**" - Returns the product ID (SKU, a string).
- "**purchaseTime**" - Returns the time the product was purchased (an integer). This is in milliseconds since the epoch (Jan 1, 1970).
- "**purchaseState**" - Returns the state of purchase (an integer). Possible values are:
  - 0 – Un-Specified State
  - 1 – Purchased
  - 2 – Pending
- "**purchaseToken**" - Returns a token that uniquely identifies a purchase for a given item and user pair (a string). This should be used for any server verification.
- "**autoRenewing**" - Indicates whether the subscription renews automatically (boolean, will always be false for non-subscription purchases).
- "**acknowledged**" - The acknowledgement state of the in-app product. Possible (integer) values are:
  - 0 - Yet to be acknowledged
  - 1 – Acknowledged

Purchases that have been made but not consumed will have a "purchaseState" of 1 for purchased, while purchases that are in progress but not yet resolved will have a state of 2 for pending.

Keep in mind that any NON-consumable purchases will also have the purchased state (1), as the Google Billing API makes no distinction between consumable and non-consumable and it's up to you to decide when and if a purchase is consumed. However, **all purchases must be *acknowledged* within 2 days of purchase, even if they are not being consumed**. This is done automatically when a consumable is used, however for non-consumables this must be done using the function `GPBilling_AcknowledgePurchase()`. If you do not acknowledge a purchase within 2 days, it will be refunded.

**Syntax**

```
GPBilling_QueryPurchases(type);
```

| Argument | Description | Data Type |
|---|---|---|
| type | The type of product to be queried. | Constant (see the description above) |

**Returns**

String (JSON)

**Extended Example**

For this example, we would first want to connect to the store, then add products and then query the product status, before checking the purchase state of each product. So, for example, we'd have a Create Event like this:

```
global.IAP_Enabled = false;
var _init = GPBilling_ConnectToStore();
if _init == gpb_error_unknown
    {
    show_debug_message("ERROR - Billing API Has Not Connected!");
    alarm[0] = room_speed * 10;
    }
```

Assuming the API has correctly requested a store connection, it will trigger an Asynchronous IAP Event where you can check to see if the API has successfully connected to the Google Play store or not, and then add each of the products that you want to be available to the user, and then query the product details:

```
var _eventId = async_load[? "id"];
switch (_eventId)
    {
    case gpb_store_connect:
        global.IAP_Enabled = true;
        GooglePlayBilling_AddProduct(global.IAP_PurchaseID[0]);
        GooglePlayBilling_AddProduct(global.IAP_PurchaseID[1]);
        GPBilling_QueryProducts();
        break;
    }
```

The query products function will then trigger another Asynchronous IAP event, and we can add another `case` to our `switch` statement where we can check the state of any purchases from those that we've added, and consume or acknowledge any purchased product as required:

```
case gpb_product_data_response:
    if async_load[? “success”] == true
        {
        var _json = GPBilling_QueryPurchases();
        var _jsonmap = json_decode(_json);
        if _jsonmap[? “success”] == true
            {
            var _list = _jsonmap[? "purchases"];
            var _sz = ds_list_size(_list);
            for (var i = 0; i < _sz; ++i;)
                {
                var _map = _list[| i];
                if _map[? “purchaseState”] == 1
                    {
                    var _pid = _map[? “productId”];
                    var _token = map[? “purchaseToken”];
                    var _add = false;
                    if _pid == global.IAP_PurchaseID[0]
                        {
                        GPBilling_ConsumeProduct(_token);
                        _add = true;
                        }
                    else if _pid == global.IAP_PurchaseID[1]
                        {
                        if _map[? “acknowledged”] == 0
                            {
                            GPBilling_AcknowledgePurchase(_token);
                            _add = true;
                            }
                        }
                    if _add
                        {
                        ds_list_add(global.CurrentTokens, _token);
                        ds_list_add(global.CurrentProduct, _pid);
                        }
                    }
                }
            }
        ds_map_destroy(_jsonmap);
        }
    break;
```

Note that we store the purchase tokens and product IDs of those products we consume or acknowledge in global ds lists. This is done so that we can track the purchases correctly when the consumed or acknowledged response comes back (see the functions `GPBilling_AcknowledgePurchase()` and `GPBilling_ConsumeProduct()` for more details).

## GPBilling_QueryPurchasesAsync [NEW]

**Description**

This function replaces GPBilling_QueryPurchases and works in an asynchronous manner. Is used for querying the purchase state of the different products available for your game. This function should always be called before permitting any in-app purchases, preferable near the startup of the game itself. The function takes one of the following constants as the "type" argument:

| Constant | Actual Value | Description |
|---|---|---|
| gpb_purchase_skutype_inapp | "inapp" | This constant indicates that you are querying the purchase state of consumable products. |
| gpb_purchase_skutype_subs | "subs" | This constant indicates that you are querying the purchase state of subscription products. |

This function will generate an Asynchronous IAP Event where the async_load DS map "**id**" key holds the constant **gpb_query_purchase_async**, a "**sku_type**" key that contains the argument provided during the function call, as well as the key "**response_json**". This key contains a JSON object string, which – when decoded using json_decode() – will contain a DS map. This map will have the key "**success**" - which will be true if the query has been successfully processed, and false otherwise – as well as the key "**purchases**" (only if "success" is true).

- "**success**" – This will be either true or false depending on whether the purchase query succeeded or not.

If "success" is true, then the additional key will be:

- "**purchases**" – This is a DS list ID, where each entry in the list corresponds to a DS map for an individual purchase.

When the "purchases" key exists, this can then be looped through (as shown in the extended example below) to get the individual DS maps with the product and purchase information. Each purchase map will contain the following keys:

- "**orderId**" - Returns a unique order identifier for the transaction (a string). This identifier corresponds to the Google payments order ID.

- "**packageName**" - Returns the application package from which the purchase originated (a string).

**Cont.../**

`GPBilling_QueryPurchases` **Cont.../**

- "**productId**" - Returns the product ID (SKU, a string).
- "**purchaseTime**" - Returns the time the product was purchased (an integer). This is in milliseconds since the epoch (Jan 1, 1970).
- "**purchaseState**" - Returns the state of purchase (an integer). Possible values are:
  - 0 – Un-Specified State
  - 1 – Purchased
  - 2 – Pending
- "**purchaseToken**" - Returns a token that uniquely identifies a purchase for a given item and user pair (a string). This should be used for any server verification.
- "**autoRenewing**" - Indicates whether the subscription renews automatically (boolean, will always be false for non-subscription purchases).
- "**acknowledged**" - The acknowledgement state of the in-app product. Possible (integer) values are:
  - 0 - Yet to be acknowledged
  - 1 – Acknowledged

Purchases that have been made but not consumed will have a "purchaseState" of 1 for purchased, while purchases that are in progress but not yet resolved will have a state of 2 for pending.

Keep in mind that any NON-consumable purchases will also have the purchased state (1), as the Google Billing API makes no distinction between consumable and non-consumable and it's up to you to decide when and if a purchase is consumed. However, **all purchases must be *acknowledged* within 2 days of purchase, even if they are not being consumed**. This is done automatically when a consumable is used, however for non-consumables this must be done using the function `GPBilling_AcknowledgePurchase()`. If you do not acknowledge a purchase within 2 days, it will be refunded.

**Syntax**

```
GPBilling_QueryPurchasesAsync(type);
```

| Argument | Description | Data Type |
|---|---|---|
| type | The type of product to be queried. | Constant (see the description above) |

**Returns**

N/A

**Extended Example**

For this example, we would first want to connect to the store, then add products and then query the product status, before checking the purchase state of each product. So, for example, we'd have a Create Event like this:

```
global.IAP_Enabled = false;
var _init = GPBilling_ConnectToStore();
if _init == gpb_error_unknown
{
    show_debug_message("ERROR - Billing API Has Not Connected!");
    alarm[0] = room_speed * 10;
}
```

Assuming the API has correctly requested a store connection, it will trigger an Asynchronous IAP Event where you can check to see if the API has successfully connected to the Google Play store or not, and then add each of the products that you want to be available to the user, and then query the product details:

```
var _eventId = async_load[? "id"];
switch (_eventId)
{
    case gpb_store_connect:
        global.IAP_Enabled = true;
        GooglePlayBilling_AddProduct(global.IAP_PurchaseID[0]);
        GooglePlayBilling_AddProduct(global.IAP_PurchaseID[1]);
        GPBilling_QueryProducts();
        break;
}
```

The query products function will then trigger another Asynchronous IAP event, and we can add another `case` to our `switch` statement where we can check the state of any purchases from those that we've added, and consume or acknowledge any purchased product as required:

```
case gpb_product_data_response:
    if async_load[? "success"] == true
```

**Cont.../**

GPBilling_QueryPurchases **Cont.../**

```
                {
                    GPBilling_QueryPurchasesAsync();
                }
                break;


            case gpb_query_purchase_async:
                if async_load[? “success”] == true
                {
                    var _json = json_decode(async_load[? “response_json”]);
                    if _jsonmap[? “success”] == true
                    {
                        var _list = _jsonmap[? "purchases"];
                        for (var i = 0; i < ds_list_size(_list); ++i;)
                        {
                            var _map = _list[| i];
                            if _map[? “purchaseState”] == 1
                            {
                                var _pid = _map[? “productId”];
                                var _token = map[? “purchaseToken”];
                                var _add = false;
                                if _pid == global.IAP_PurchaseID[0]
                                {
                                    GPBilling_ConsumeProduct(_token);
                                    _add = true;
                                }
                                else if _pid == global.IAP_PurchaseID[1]
                                {
                                    if _map[? “acknowledged”] == 0
                                    {
                                        GPBilling_AcknowledgePurchase(_token);
                                        _add = true;
                                    }
                                }
                                if _add
                                {
                                    ds_list_add(global.CurrentTokens, _token);
                                    ds_list_add(global.CurrentProduct, _pid);
                                }
                            }
                        }
                    }
                    ds_map_destroy(_jsonmap);
                }
                break;
```

We store the purchase tokens and product IDs of those products we consume or acknowledge in global ds lists. This is done so that we can track the purchases correctly when the consumed or acknowledged response comes back (see the functions GPBilling_AcknowledgePurchase() and GPBilling_ConsumeProduct() for more details).

# GPBilling_PurchaseProduct

**Description**

This function will send a purchase request to the Billing API and attempt to purchase the product with the given ID. The ID value should be a string and is the product identifier name on the Google Play console, for example “buy_100_gold”. The function will return one of the constants listed below to indicate the initial status of the purchase request, and then an Asynchronous IAP Event will be triggered with the callback.

The Async IAP Event callback will return the `async_load` DS map, which will contain an “**id**” key with the constant **`gpb_iap_receipt`** for a purchase request, as well as the key “**response_json**”, which will contain a JSON formatted string with the purchase data. This JSON can then be decoded using the function `json_decode()` and parsed to retrieve the different elements of the purchase data.

The decoded JSON will be a DS map with two keys: “**success**” – which will be `true` or `false` depending on whether the purchase request was successful – and “**purchases**” (this will not exist if the “success” key returns `false`). The value held in the “purchases” key will be a DS list ID, where each list entry corresponds to an individual purchase DS map, so you should iterate through the list and parse the map data from each entry.

The DS map for each individual purchase will contain the following keys:

- “**orderId**” - Returns a unique order identifier for the transaction (a string). This identifier corresponds to the Google payments order ID.
- “**packageName**” - Returns the application package from which the purchase originated (a string).
- “**productId**” - Returns the product ID (SKU, a string).
- “**purchaseTime**” - Returns the time the product was purchased (an integer). This is in milliseconds since the epoch (Jan 1, 1970).
- “**purchaseState**” - Returns the state of purchase (an integer). Possible values are:
  - 0 – Un-Specified State
  - 1 – Purchased
  - 2 – Pending
- “**purchaseToken**” - Returns a token that uniquely identifies a purchase for a given item and user pair (a string). This should be used for any server verification.

- "**autoRenewing**" - Indicates whether the subscription renews automatically (boolean, will always be false for non-subscription purchases).

- "**acknowledged**" - The acknowledgement state of the in-app product. Possible values are:
    - 0 - Yet to be acknowledged
    - 1 – Acknowledged

Keep in mind that any NON-consumable purchases will also have the purchased state (1), as the Google Billing API makes no distinction between consumable and non-consumable and it's up to you to decide when and if a purchase is consumed. However, **all purchases must be *acknowledged* within 2 days of purchase, even if they are not being consumed**. This is done automatically when a consumable is used, however for non-consumables this must be done using the function GPBilling_AcknowledgePurchase(). If you do not acknowledge a purchase within 2 days, it will be refunded.

**Syntax**

```
GPBilling_PurchaseProduct(product_id);
```

| Argument | Description | Data Type |
|---|---|---|
| product_id | The ID of the product as shown on the Google Play console. | String |

**Returns**

Constant

| Constant | Error Code | Description |
|---|---|---|
| gpb_error_not_initialised | 1 | The Billing API has not been initialised before calling this function. |
| gpb_error_no_skus | 2 | There are no SKUs in the product list *nor* the subscription list. |
| gpb_error_selected_sku_list_empty | 3 | You have tried to purchase a product when there is no product in the list (although there |

| | | |
|---|---|---|
| | | may be subscriptions in the list) |
| gpb_no_error | 0 | The Billing API has been initialised correctly. |

**Cont.../**

GPBilling_PurchaseProduct **Cont.../**

**Extended Example**

The following code would be used in (for example, but not limited to) a mouse pressed event to purchase a product:

```
if GPBilling_StoreIsConnected()
    {
    var _chk = GPBilling_PurchaseProduct(global.IAP_PurchaseID[0]);
    if _chk != gpb_no_error
        {
        // Purchase unavailable, add failsafe code if required
        }
    }
```

You would then have something like the following code in the **IAP Asynchronous Event** to deal with the purchase callback (note that the following code shows a simple purchase verification scheme, however you should ideally verify the purchase with an http call to your server, supplying the returned token string, and then consume the purchase when you receive verification in the Asynchronous HTTP Event):

```
var _eventId = async_load[? "id"];
switch (eventId)
    {
    case gpb_iap_receipt:
        var _json = async_load[? "response_json"];
        var _map = json_decode(response_json);
        if _map[? “success”] == true
            {
            if ds_map_exists(_map, "purchases")
                {
                var _plist = ds_map_find_value(_map, "purchases");
                for (var i = 0; i < ds_list_size(purchases);  ++i;)
                    {
                    var _pmap = _plist[| i];
                    var _ptoken = _pmap[? "purchaseToken"];
                    var _sig = GPBilling_Purchase_GetSignature(_ptoken);
                    var _pjson = GPBilling_Purchase_GetOriginalJson(_ptoken);
                    if GPBilling_Purchase_VerifySignature(_pjson, _sig)
                        {
                        GPBilling_ConsumeProduct(_ptoken);
                        ds_list_add(global.CurrentTokens, _ptoken);
                        ds_list_add(global.CurrentProducts, _pmap[? "productId"]);
                        }
```

```
                    }
                }
            }
        ds_map_destroy(_map);
        break;
    }
```

Note that we store the purchase tokens and product IDs of those products we consume or acknowledge in global ds lists. This is done so that we can track the purchases correctly when the consumed or acknowledged response comes back (see the functions GPBilling_AcknowledgePurchase() and GPBilling_ConsumeProduct() for more details).

## GPBilling_PurchaseSubscription

**Description**

This function will send a subscription purchase request to the Billing API and attempt to subscribe to the product with the given ID. The ID value should be a string and is the subscription identifier name on the Google Play console, for example “improved_version”. The function will return one of the constants listed below to indicate the initial status of the subscription request, and then an Asynchronous IAP Event will be triggered with the callback.

The Async IAP Event callback will return the `async_load` DS map, which will contain an “**id**” key with the constant **`gpb_iap_receipt`** for a purchase request, as well as the key “**response_json**”, which will contain a JSON formatted string with the purchase data. This JSON can then be decoded using the function `json_decode()` and parsed to retrieve the different elements of the purchase data.

The decoded JSON will be a DS map with two keys: “**success**” – which will be `true` or `false` depending on whether the purchase request was successful – and “**purchases**” (this will not exist if the “success” key returns `false`). The value held in the “purchases” key will be a DS list ID, where each list entry corresponds to an individual purchase DS map, so you should iterate through the list and parse the map data from each entry.

The DS map for each individual purchase will contain the following keys:

- “**orderId**” - Returns a unique order identifier for the transaction (a string). This identifier corresponds to the Google payments order ID.
- “**packageName**” - Returns the application package from which the purchase originated (a string).
- “**productId**” - Returns the subscription ID (SKU, a string).
- “**purchaseTime**” - Returns the time the subscription was purchased (an integer). This is in milliseconds since the epoch (Jan 1, 1970).
- “**purchaseState**” - Returns the state of purchase (an integer). Possible values are:
  - 0 – Un-Specified State
  - 1 – Purchased
  - 2 – Pending
- “**purchaseToken**” - Returns a token that uniquely identifies a subscription purchase for a given item and user pair (a string). This should be used for any server verification.

- "**autoRenewing**" - Indicates whether the subscription renews automatically (boolean, will always be false for non-subscription purchases).

- "**acknowledged**" - The acknowledgement state of the subscription. Possible values are:
  - 0 - Yet to be acknowledged
  - 1 – Acknowledged

Keep in mind that **all subscription purchases must be *acknowledged* within 2 days of purchase**, using the function `GPBilling_AcknowledgePurchase()`. If you do not acknowledge a purchase within 2 days, it will be refunded. Also note that after the initial purchase, the subscription will be renewed automatically by Google, and all you have to do is query the subscription state each time the game starts to unlock or block any additional content as required.

**IMPORTANT!** *Setting up and using subscriptions requires an external server to be able to communicate with your app and with the Google Play servers for verification and other purposes. This is outside of the scope of this documentation and instead we refer you to the following documents:*

- Google Developer Docs: Add Subscription-Specific Features
- Google Developer Docs: Verify A Purchase On A Server

**Syntax**

```
GPBilling_PurchaseSubscription(product_id);
```

| Argument | Description | Data Type |
|---|---|---|
| product_id | The ID of the product as shown on the Google Play console. | String |

**Returns**

Constant

| Constant | Error Code | Description |
|---|---|---|
| gpb_error_not_initialised | 1 | The Billing API has not been initialised before calling this function. |
| gpb_error_no_skus | 2 | There are no SKUs in the product list or subscription list. |
| gpb_error_selected_sku_list_empty | 3 | You have tried to purchase a subscription when there is no subscription in the list (although there may be products in the list) |
| gpb_no_error | 0 | The Billing API has been initialised correctly. |

**Extended Example**

The following code would be used in (for example, but not limited to) a mouse pressed event to purchase a product:

```
if GPBilling_StoreIsConnected()
    {
    var _chk = GPBilling_PurchaseSubscription(global.IAP_PurchaseID[0]);
    if _chk != gpb_no_error
        {
        // Purchase unavailable, add failsafe code if required
        }
    }
```

You would then have something like the following code in the **IAP Asynchronous Event** to deal with the purchase callback (note that the following code shows a simple purchase verification scheme, however you should ideally verify the purchase with an http call to your server, supplying the returned token string, and then consume the purchase only when you receive verification in the Asynchronous HTTP Event):

```
var _eventId = async_load[? "id"];
switch (eventId)
    {
    case gpb_iap_receipt:
        var _json = async_load[? "response_json"];
        var _map = json_decode(response_json);
        if _map[? “success”] == true
            {
            if ds_map_exists(_map, "purchases")
                {
                var _plist = ds_map_find_value(_map, "purchases");
                for (var i = 0; i < ds_list_size(purchases);  ++i;)
                    {
                    var _pmap = _plist[| i];
                    var _ptoken = _pmap[? "purchaseToken"];
                    var _sig = GPBilling_Purchase_GetSignature(_ptoken);
                    ds_list_add(global.CurrentTokens, _ptoken);
                    ds_list_addglobal.CurrentProduct, _pmap[? “productId”]);
                    // SERVER VERIFICATION CODE HERE
                    // Here you would send the token and signature to
                    // your servers for verification with the Google
                    // Play API and then return the result, which would
                    // then be received in an Asynchronous HTTP event.
                    // Once received, the subscription can then
                    // be acknowledged, and content/bonuses etc…
                    // can be unlocked in your game
                    }
                }
            }
        ds_map_destroy(_map);
        break;
    }
```

Note that we store the purchase tokens and product IDs of those products we consume or acknowledge in global ds lists. This is done so that we can track the purchases correctly when the consumed or acknowledged response comes back (see the functions GPBilling_AcknowledgePurchase() and GPBilling_ConsumeProduct() for more details).

## GPBilling_AcknowledgePurchase

**Changes**

The **"response_json"** apart from the **"responseCode"** also has the corresponding **"purchaseToken"** information.

**Description**

This function will acknowledge a purchase or subscription. When you receive notification that a purchase has been made, it needs to be acknowledged with the Google servers within 2 days otherwise it is refunded. This is done automatically for consumable purchases when you call the function `GPBilling_ConsumeProduct()`, but for non-consumable and subscriptions, you must call this function to let Google know the purchase has been received correctly.

On calling the function initially, it will return one of the constants listed below to inform you of the request status, and if this is **`gpb_no_error`** then an Asynchronous IAP Event will be triggered where the `async_load` DS map will have the key "**id**" which will correspond to the extension constant **`gpb_acknowledge_purchase_response`**. Additionally, the map will have the key "**response_json**" which will be a JSON string that can be converted into a DS map using the `json_decode()` function.

The decoded JSON will be a DS map which will have a key "**responseCode**", which can be checked before proceeding to deal with the acknowledgement response and also a reference to the purchase token (under the key **"purchaseToken"**). This key will have one of the following integer values:

- -3 – The request has reached the maximum timeout before Google Play responds
- -2 – Requested feature is not supported by Play Store on the current device.
- -1 – The Play Store service is not connected currently
- 0 – Success
- 1 – User has cancelled the action
- 2 – Network connection is down
- 4 – Requested product is not available for purchase
- 6 – Fatal error during the API action
- 7 – Failure to purchase since item is already owned
- 8 – Failure to consume since item is not owned

**Syntax**

```
GPBilling_AcknowledgePurchase(purchase_token);
```

| Argument | Description | Data Type |
|---|---|---|

| | | |
|---|---|---|
| purchase_token | The unique string token for the purchase being acknowledged. | String |

**Returns**

Constant

| Constant | Actual Value | Description |
|---|---|---|
| gpb_error_unknown | -1 | There was an unknown error preventing the Billing API from creating an acknowledgment request. |
| gpb_no_error | 0 | The Billing API has created an acknowledgment request correctly. |

**Example**

This example shows how you'd deal with the callback in the Asynchronous IAP event for an acknowledged product (for an example of when the GPBilling_AcknowledgePurchase() function should be called, see the Extended Example for the function GPBilling_PurchaseSubscription()):

```
var _eventId = async_load[? "id"];
switch (eventId)
    {
    case gpb_acknowledge_purchase_response:
        var _map = json_decode(async_load[? “response_json”]);
        var _num = -1;
        if map[? “responseCode”] == 0
            {
            var _sz = ds_list_size(global.CurrentProducts);
            for (var i = 0; i < _sz; ++i;)
                {
                if global.CurrentProducts[| i] == global.IAP_ProductID[0]
                    {
                    global.NoAds = true;
                    _num = i;
                    break;
                    }
                // Add further checks for other products here...
```

```
            }
        if _num > -1
            {
            ds_list_delete(global.CurrentProducts, _num);
            ds_list_delete(global.CurrentTokens, _num);
            }
        }
    else
        {
        // Parse the other response codes here
        // and react appropriately
        }
    ds_map_destroy(_map);
    break;
}
```

## GPBilling_ConsumeProduct

**Changes**

The **"response_json"** apart from the **"responseCode"** also has the corresponding **"purchaseToken"** information.

**Description**

This function will consume a purchase. When you receive notification that a purchase has been made, it needs to be consumed or acknowledged with the Google servers within 2 days otherwise it is refunded. Consumable purchases are acknowledged automatically when you call this function, but for non-consumable and subscription purchases, see the function `GPBilling_AcknowledgePurchase()`.

On calling the function initially, it will return one of the constants listed below to inform you of the request status, and if this is **`gpb_no_error`** then an Asynchronous IAP Event will be triggered where the `async_load` DS map will have the key "**id**" which will correspond to the extension constant **`gpb_product_consume_response`**. Additionally, the map will have the key "**response_json**" which will be a JSON string that can be converted into a DS map using the `json_decode()` function.

The decoded JSON will be a DS map which will have *either* the key "**responseCode**" (if there is an error) or the key "**purchaseToken**", which will be the purchase token string of the consumed product and also a reference to the purchase token (under the key **"purchaseToken"**).

If you have the "responseCode" key, then it can be checked for one of the following integer values:

- -3 – The request has reached the maximum timeout before Google Play responds
- -2 – Requested feature is not supported by Play Store on the current device.
- -1 – The Play Store service is not connected currently
- 0 – Success
- 1 – User has cancelled the action
- 2 – Network connection is down
- 4 – Requested product is not available for purchase
- 6 – Fatal error during the API action
- 7 – Failure to purchase since item is already owned
- 8 – Failure to consume since item is not owned

**Syntax**

```
GPBilling_ConsumeProduct(purchase_token);
```

| Argument | Description | Data Type |
|---|---|---|

| | | |
|---|---|---|
| purchase_token | The unique string token for the purchase being acknowledged. | String |

**Returns**

Constant

| Constant | Actual Value | Description |
|---|---|---|
| gpb_error_unknown | -1 | There was an unknown error preventing the Billing API from creating a consume request. |
| gpb_no_error | 0 | The Billing API has created a consume request correctly. |

**Example**

This example shows how you'd deal with the callback in the Asynchronous IAP event for a consumed product (for an example of when the GPBilling_ConsumeProduct() function should be called, see the Extended Example for the function GPBilling_PurchaseProduct()):

```
var _eventId = async_load[? "id"];
switch (eventId)
    {
    case gpb_product_consume_response:
        var _map = json_decode(async_load[? "response_json"]);
        var _num = -1;
        if ds_map_exists(_map, "purchaseToken")
            {
            for (var i = 0; i < ds_list_size(global.CurrentTokens); ++i;)
                {
                if _map[? "purchaseToken"] == global.CurrentTokens[| i]
                    {
                    if global.CurrentProducts[| i] == global.IAP_ProductID[0]
                        {
                        global.Gold += 500;
                        _num = i;
                        break;
                        }
                    // Check any other products here...
                    }
                }
            if _num > -1
                {
                ds_list_delete(global.CurrentProducts, _num);
                ds_list_delete(global.CurrentTokens, _num);
                }
```

```
        }
    else
        {
        // Parse the error response codes here
        // and react appropriately
        }
    ds_map_destroy(_map);
    break;
}
```

# GPBilling_Sku_GetDescription

## Description

This function will return the descriptive text as defined on the Google Play Developer Console for the given SKU (product ID). You supply the product ID as a string, and the function will return a string with the description. Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

## Syntax

```
GPBilling_Sku_GetDescription(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _price = GPBilling_Sku_GetPrice(global.IAP_PurchaseID[0]);
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _price);
```

# GPBilling_Sku_GetFreeTrialPeriod

## Description

This function will return the Trial Period as defined on the Google Play Developer Console for the given SKU (product ID). You supply the product ID as a string, and the function will return a string in ISO 8601 format, for example "P7D" which would equate to seven days. Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

> **IMPORTANT!** *This function is only valid for subscriptions which have a trial period configured.*

## Syntax

```
GPBilling_Sku_GetFreeTrialPeriod(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

N/A

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _period = GPBilling_Sku_GetFreeTrialPeriod(global.IAP_PurchaseID[0]);
var _days = string_digits(_period);
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, "Trial Period: " + _days + " days");
```

# GPBilling_Sku_GetIconUrl

## Description

This function will return the URL for the icon of the given SKU (product ID) as created on the Google Play Developer Console. You supply the product ID as a string, and the function will return a string with the URL. You can then use the sprite_add() function to retrieve this image (which will trigger an Asynchronous Image Loaded Event) and then display it in your game.

Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

## Syntax

```
GPBilling_Sku_GetIconUrl(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Extended Example

In this example, we first call the function to get the URL of the icon for a product (probably in an Asynchronous IAP event, after querying the product details):

```
var _url = GPBilling_Sku_GetIconUrl(global.IAP_PurchaseID[0]);
iap_sprite = sprite_add(_url, 0, false, false, 0, 0);
```

This will trigger an Asynchronous Image Loaded event where you can then store the returned image for drawing:

```
if ds_map_find_value(async_load, "id") == iap_sprite
    {
    if ds_map_find_value(async_load, "status") >= 0
        {
        sprite_index = iap_sprite;
```

```
    }
}
```

# GPBilling_Sku_GetIntroductoryPrice

## Description

This function will return the introductory price as defined on the Google Play Developer Console for the given SKU (product ID). You supply the product ID as a string, and the function will return a formatted string with the price that includes the currency sign, for example "€3.99". Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

> **IMPORTANT!** *This function is only valid for subscriptions which have an introductory period configured.*

## Syntax

```
GPBilling_Sku_GetIntroductoryPrice(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _price = GPBilling_Sku_GetIntroductoryPrice(global.IAP_PurchaseID[0]);
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _price);
```

## GPBilling_Sku_GetIntroductoryPriceAmountMicros

### Description

This function will return the introductory price as defined on the Google Play Developer Console for the given SKU (product ID) in *micros*, where 1,000,000 micros equals one unit of the currency. You supply the product ID as a string, and the function will return an integer value for the price in micros, for example 7990000 (which would be 7.99 in currency). Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

> **IMPORTANT!** *This function is only valid for subscriptions which have an introductory period configured.*

### Syntax

```
GPBilling_Sku_GetIntroductoryPriceAmountMicros(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

### Returns

Integer

### Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _m = GPBilling_Sku_GetIntroductoryPriceAmountMicros(global.IAP_PurchaseID[0]);
var _c = GPBilling_Sku_GetPriceCurrencyCode(global.IAP_PurchaseID[0]);
var _val = string(_m / 1000000);
var _symbol = "";
switch (_c)
    {
    case "GBP": _symbol = "£"; break;
    case "JPY": _symbol = "¥"; break;
    case "EUR": _symbol = "€"; break;
    }
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
```

```
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _symbol + _val);
```

# GPBilling_Sku_GetIntroductoryPriceCycles

## Description

This function will return the introductory price cycles as defined on the Google Play Developer Console for the given SKU (product ID). You supply the product ID as a string, and the function will return a string of the value for the number of billing cycles that the user will pay the introductory price for, for example "3". Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

> **IMPORTANT!** *This function is only valid for subscriptions which have an introductory period configured.*

## Syntax

```
GPBilling_Sku_GetIntroductoryPriceCycles(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _price = GPBilling_Sku_GetIntroductoryPrice(global.IAP_PurchaseID[0]);
var _cycles = GPBilling_Sku_GetIntroductoryPriceCycles(global.IAP_PurchaseID[0]);
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _price)
draw_text(x, y + 80, "for " + _cycles + " months");
```

# GPBilling_Sku_GetIntroductoryPricePeriod

## Description

This function will return the introductory price period as defined on the Google Play Developer Console for the given SKU (product ID). You supply the product ID as a string, and the function will return a string in ISO 8601 format, for example "P7D" would equate to seven days. Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

> **IMPORTANT!** *This function is only valid for subscriptions which have an introductory period configured.*

## Syntax

```
GPBilling_Sku_GetIntroductoryPricePeriod(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _period = GPBilling_Sku_GetIntroductoryPricePeriod(global.IAP_PurchaseID[0]);
var _days = string_digits(_period);
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, "Offer Lasts For " + _days + " days!");
```

# GPBilling_Sku_GetOriginalJson

**Description**

This function will return the original JSON corresponding to the given SKU (product ID), containing all the details about the product. You supply the product ID as a string, and the function will return a JSON string that can be decoded into a DS map using the `json_decode()` function. The map contents will correspond to the details listed in the Google Billing documentation (see here for more information). Note that this function requires you to have called `GPBilling_QueryProducts()` or `GPBilling_QuerySubscriptions()` *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

**Syntax**

```
GPBilling_Sku_GetOriginalJson(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

**Returns**

String

**Example**

The following code can be called after querying a product to retrieve all the information about it without calling the individual SKU functions:

```
var _json = GPBilling_Sku_GetOriginalJson(global.IAP_PurchaseID[0]);
var _map = json_decode(_json);
global.IAP_PurchaseData[0, 0] = _map[? “price”];
global.IAP_PurchaseData[0, 1] = _map[? “title”];
global.IAP_PurchaseData[0, 2] = _map[? “decription”];
ds_map_destroy(_map);
```

# GPBilling_Sku_GetOriginalPrice

## Description

This function will return the original price as defined on the Google Play Developer Console for the given SKU (product ID), where the original price is the price of the item before any applicable sales have been applied. You supply the product ID as a string, and the function will return a formatted string with the price that includes the currency sign, for example "€3.99". Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

## Syntax

```
GPBilling_Sku_GetOriginalPrice(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _price = GPBilling_Sku_GetOriginalPrice(global.IAP_PurchaseID[0]);
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _price);
```

# GPBilling_Sku_GetOriginalPriceAmountMicros

## Description

This function will return the original price as defined on the Google Play Developer Console for the given SKU (product ID) in *micros*, where 1,000,000 micros equals one unit of the currency. The original price is defined as the price of the item before any applicable sales have been applied, and the value represents the localized, rounded price for a particular currency. You supply the product ID as a string, and the function will return an integer value for the price in micros, for example 7990000 (which would be 7.99 in currency). Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

## Syntax

```
GPBilling_Sku_GetOriginalPriceAmountMicros(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

Integer

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _m = GPBilling_Sku_GetOriginalPriceAmountMicros(global.IAP_PurchaseID[0]);
var _c = GPBilling_Sku_GetPriceCurrencyCode(global.IAP_PurchaseID[0]);
var _val = string(_m / 1000000);
var _symbol = "";
switch (_c)
    {
    case "GBP": _symbol = "£"; break;
    case "JPY": _symbol = "¥"; break;
    case "EUR": _symbol = "€"; break;
    }
draw_set_halign(fa_center);
```

```
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _symbol + _val);
```

# GPBilling_Sku_GetPrice

## Description

This function will return the current price as defined on the Google Play Developer Console for the given SKU (product ID). You supply the product ID as a string, and the function will return a formatted string with the price that includes the currency sign, for example "€3.99". Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

## Syntax

```
GPBilling_Sku_GetPrice(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _price = GPBilling_Sku_GetPrice(global.IAP_PurchaseID[0]);
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _price);
```

# GPBilling_Sku_GetPriceAmountMicros

## Description

This function will return the current price as defined on the Google Play Developer Console for the given SKU (product ID) in *micros*, where 1,000,000 micros equals one unit of the currency, and the value represents the localized, rounded price for a particular currency. You supply the product ID as a string, and the function will return an integer value for the price in micros, for example 7990000 (which would be 7.99 in currency). Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

## Syntax

```
GPBilling_Sku_GetPriceAmountMicros(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _m = GPBilling_Sku_GetPriceAmountMicros(global.IAP_PurchaseID[0]);
var _c = GPBilling_Sku_GetPriceCurrencyCode(global.IAP_PurchaseID[0]);
var _val = string(_m / 1000000);
var _symbol = "";
switch (_c)
    {
    case "GBP": _symbol = "£"; break;
    case "JPY": _symbol = "¥"; break;
    case "EUR": _symbol = "€"; break;
    }
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
```

```
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _symbol + _val);
```

# GPBilling_Sku_GetPriceCurrencyCode

## Description

This function will return the currency code for the given SKU (product ID). You supply the product ID as a string, and the function will return a string in ISO 4217 format, for example "EUR" would equate the Euro currency. Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

## Syntax

```
GPBilling_Sku_GetPriceCurrencyCode(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _m = GPBilling_Sku_GetPriceAmountMicros(global.IAP_PurchaseID[0]);
var _c = GPBilling_Sku_GetPriceCurrencyCode(global.IAP_PurchaseID[0]);
var _val = string(_m / 1000000);
var _symbol = "";
switch (_c)
    {
    case "GBP": _symbol = "£"; break;
    case "JPY": _symbol = "¥"; break;
    case "EUR": _symbol = "€"; break;
    }
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
```

```
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _symbol + _val);
```

# GPBilling_Sku_GetSubscriptionPeriod

## Description

This function will return the subscription renewal period as defined on the Google Play Developer Console for the given SKU (product ID). You supply the product ID as a string, and the function will return a string in ISO 8601 format, for example "P7D" would equate to seven days. Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

**IMPORTANT!** *This function is only valid for subscription IAPs.*

## Syntax

```
GPBilling_Sku_GetSubscriptionPeriod(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _period = GPBilling_Sku_GetSubscriptionPeriod(global.IAP_PurchaseID[0]);
var _days = string_digits(_period);
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, "Renewal Period: " + _days + " days");
```

# GPBilling_Sku_GetTitle

## Description

This function will return the title of a given SKU (product ID) as defined on the Google Play Developer Console. You supply the product ID as a string, and the function will return a string with the product title. Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

## Syntax

```
GPBilling_Sku_GetTitle(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

String

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _price = GPBilling_Sku_GetPrice(global.IAP_PurchaseID[0]);
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _price);
```

# GPBilling_Sku_GetType

## Description

This function will return the in-app purchase type of a given SKU (product ID) as defined on the Google Play Developer Console. You supply the product ID as a string, and the function will return a constant with the IAP product type (see below). Note that this function requires you to have called GPBilling_QueryProducts() or GPBilling_QuerySubscriptions() *first*, but once those have returned their respective Async callbacks, this function can be used anywhere in your game code to retrieve the required information.

## Syntax

```
GPBilling_Sku_GetType(sku);
```

| Argument | Description | Data Type |
|---|---|---|
| sku | The unique SKU ID of the product. | String |

## Returns

Constant

| Constant | Actual Value | Description |
|---|---|---|
| gpb_purchase_skutype_inapp | "inapp" | The product is a consumable IAP |
| gpb_purchase_skutype_subs | "subs" | The product is a subscription IAP. |

## Example

The following code would be called in the Draw Event of an object used to display the information for a given IAP product:

```
var _name = GPBilling_Sku_GetTitle(global.IAP_PurchaseID[0]);
var _desc = GPBilling_Sku_GetDescription(global.IAP_PurchaseID[0]);
var _price = GPBilling_Sku_GetPrice(global.IAP_PurchaseID[0]);
draw_set_halign(fa_center);
draw_text(x, y + 32, _name);
draw_text(x, y + 48, _desc);
draw_text(x, y + 64, _price);
if GPBilling_Sku_GetType(global.IAP_PurchaseID[0]) == gpb_purchase_skutype_subs
```

```
{
draw_text(x, y + 80, “Subscription!”);
}
```

## GPBilling_Purchase_GetState

### Description

This function can be used to check the current state of a product purchase. You supply the unique purchase token (as a string), and the function will return one of the constants listed below to indicate the current state of the purchase.

### Syntax

```
GPBilling_Purchase_GetState(purchase_token);
```

| Argument | Description | Data Type |
|---|---|---|
| purchase_token | The purchase token for the purchase to check. | String |

### Returns

Constant

| Constant | Actual Value | Description |
|---|---|---|
| gpb_purchase_state_pending | 3002 | The purchase is still pending |
| gpb_purchase_state_purchased | 3001 | The purchase has been completed |
| gpb_purchase_state_unspecified | 3000 | The API can't retrieve the purchase status for some reason |
| gpb_error_unknown | -1 | There is an unknown issue with the Billing API (possible connection issue) |
| gpb_error_not_initialised | 1 | The Billing API has not initialised correctly. |

### Example

```
if GPBilling_Purchase_GetState(global.CurrentToken) == gpb_purchase_state_purchased
    {
    sprite_index = spr_IconConsume;
    }
```

# GPBilling_Purchase_GetSignature

**Description**

This function will return a string containing the signature of the purchase data that was signed with the private key of the developer. If the function fails, then an empty string “” will be returned.

**Syntax**

```
GPBilling_Purchase_GetSignature(purchase_token);
```

| Argument | Description | Data Type |
|---|---|---|
| purchase_token | The purchase token for the purchase to check. | String |

**Returns**

String

**Example**

```
for (var i = 0; i < ds_list_size(global.CurrentTokens); ++i;)
    {
    var _sig = GPBilling_Purchase_GetSignature(global.CurrentTokens[ i]);
    var _json = GPBilling_Purchase_GetOriginalJson(global.CurrentTokens[ i]);
    if GPBilling_Purchase_VerifySignature(_json, _sig)
        {
        GPBilling_ConsumeProduct(global.CurrentTokens[| i]);
        }
    }
```

# GPBilling_Purchase_VerifySignature

## Description

This function can be used to verify a purchase before consuming or acknowledging it. You supply a JSON string plus the unique signature for a purchase. You can retrieve these details using the GPBilling_Purchase_GetSignature() and GPBilling_Purchase_GetOriginalJson() functions, and the function will return `true` if the purchase can be verified, or `false` otherwise.

> **Warning!** *This form of verification **isn't truly secure** because it requires you to bundle purchase verification logic within your app. This logic becomes compromised if your app is reverse engineered. Instead we recommend that you create your own server to verify any product purchases.*

## Syntax

```
GPBilling_Purchase_VerifySignature(original_json, signature);
```

| Argument | Description | Data Type |
|---|---|---|
| original_json | The original JSON related to the purchase being verified | String |
| signature | The unique signature used to verify the purchase | String |

## Returns

Boolean

## Example

```
for (var i = 0; i < ds_list_size(global.CurrentTokens); ++i;)
    {
    var _sig = GPBilling_Purchase_GetSignature(global.CurrentTokens[ i]);
    var _json = GPBilling_Purchase_GetOriginalJson(global.CurrentTokens[ i]);
    if GPBilling_Purchase_VerifySignature(_json, _sig)
        {
        GPBilling_ConsumeProduct(global.CurrentTokens[| i]);
        }
    }
```

# GPBilling_Purchase_GetOriginalJson

## Description

This function will return the original JSON string related to a purchase. You supply the unique purchase token (a string) and the function will return a JSON object string that can be decoded into a DS map using the `json_decode()` function. This map will contain all the details about the given purchase. If the function fails, then an empty string "" will be returned.

## Syntax

```
GPBilling_Purchase_GetOriginalJson(purchase_token);
```

| Argument | Description | Data Type |
|---|---|---|
| purchase_token | The purchase token for the purchase to check. | String |

## Returns

String

## Example

```
for (var i = 0; i < ds_list_size(global.CurrentTokens); ++i;)
    {
    var _sig = GPBilling_Purchase_GetSignature(global.CurrentTokens[ i]);
    var _json = GPBilling_Purchase_GetOriginalJson(global.CurrentTokens[ i]);
    if GPBilling_Purchase_VerifySignature(_json, _sig)
        {
        GPBilling_ConsumeProduct(global.CurrentTokens[| i]);
        }
    }
```

# Constants

## Event Type

gpb_iap_receipt: 12001
gpb_purchase_status: 12002
gpb_product_data_response: 12003
gpb_store_connect: 12005
gpb_store_connect_failed: 12006
gpb_product_consume_response: 12007
gpb_acknowledge_purchase_response: 12008
gpb_subscription_data_response: 12009
gpb_query_purchase_async: 12010

## Error Type

gpb_error_unknown: -1
gpb_no_error: 0
gpb_error_not_initialised: 1
gpb_error_no_skus: 2
gpb_error_selected_sku_list_empty: 3

## Purchase State

gpb_purchase_state_pending: 13002
gpb_purchase_state_purchased: 13001
gpb_purchase_state_unspecified: 13000

## SKU Type

gpb_purchase_skutype_inapp: “inapp”
gpb_purchase_skutype_subs: “subs”