PlanogramBuilder API v1 Reference Guide

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Introduction

Foreword

The typical audience of this guide is developers of applications needing to interact with a PlanogramBuilder database for exporting data, importing data or both.

Please note that zVisuel does not provide such development services.

Scope

The goal of the PlanogramBuilder database API is to provide all methods necessary to achieve from third party code the same results as when using the Database task in PlanogramBuilder.

gRPC

This API is based on gRPC which allows

- Simple and unambiguous service definition.
- Easier abstraction than HTTP used with legacy REST APIs.
- Usable in many programming languages with familiar syntax in all languages.
- Very fast communication thanks to HTTP/2 and binary format for messages.

Developers not yet familiarized with gRPC can find a list of sources in Useful Links.

Service URL

The service is available at https://planoapi.zvisuel.com.

Service definition

The service definition (.proto file) to be used by consumers of the API is available here: https://planogrambuilder.zvisuel.com/api/planoapiv1.proto.

Minor releases (such as v1.1, v1.2, etc.) are made available at the same URI.

Default values

As per gRPC specifications the default values for fields without explicit initialization are as follows:

Type	Default value
int32	0
float	0.0
string	empty string
enumerations	first enumerator

The API is designed so that, for most fields in requests, the actual default values match the description of their corresponding properties in Database Item properties. Exceptions to this rule are explicitly noted in the description of the methods.

Measurement unit

The values of all fields representing a dimension are expressed in cm.

Error fields

All responses include an *error* field consisting of an error code and a human-readable message.

The error codes are listed in PlanoAPIErrorCode. Every method can return the codes *PAE_OK* and *PAE_UNAUTHENTICATED* so these errors aren't repeated in the description of the methods.

In all cases (also for *PAE_OK*) the error message includes the name of the method just invoked; this is useful for having a trace when debugging for example.

List methods

The List methods takes a range of indices [2] as input and return a list of entities (database items or files) that match the input. The range is a half-open interval such as [*start_ind*, *end_ind*) where *start_ind* is the index of the first entity and *end_ind* the index of the entity succeeding the last one.

- -1 is a special value allowed for *end_ind* to specify an unbounded end.
- In all cases the total count of entities (irrespective of the range) is returned in a field named *total_size*.

Examples

- Request entities 3, 4, 5: *start_ind* = 3, *end_ind* = 6.
- Request full list: *start_ind* = 0, *end_ind* = -1.

- Request full list size but no actual entity: *start_ind* = 0, *end_ind* = 0.

Refresh methods

Each item (product, accessory, material) has remote files [3] associated with it: a thumbnail picture file and a 3D model file. These files are automatically generated when a new item is created with a *Create* method or modified with an *Update* method. After uploading new images these files aren't updated, though. In this case a *Refresh* method must be invoked to force the generation.

Common

PlanoAPIBoolean

Enumeration used instead of the native type *bool.* Allows using proper default values for missing fields.

Name	Description
PAB_UNSPECIFIED	For requests, let the API use the default value for the field. Never used for responses.
PAB_FALSE	Same as *bool* value *false*.
PAB_TRUE	Same as *bool* value *true*.

PlanoAPIErrorCode

Enumeration of standard error codes.

Name	Description
PAE_OK	Not an error. Returned on success.
PAE_UNKNOWN	Unknown error.
PAE_INVALID_ARGUMENT	The client specified an invalid value for a field.
PAE_NOT_FOUND	Some requested entity (database item or file) was not found.
PAE_ALREADY_EXISTS	The entity that a client attempted to create (database item or file) already exists.
PAE_PERMISSION_DENIED	The caller does not have permission to execute the specified operation.
PAE_OUT_OF_RANGE	The client specified a value for a numerical field outside its valid range.
PAE_INTERNAL	Internal errors. This means that some invariants expected by the underlying system have been broken.

PAE_UNAUTHENTICATED	The request does not have valid authorization for the operation.

PlanoAPIError

Field	Type	Description	Range / max. length
code	PlanoAPIErrorCode	Code of the error.	-
message	string	Human-readable short explanation.	1000

Classification

Embodies properties described in Item classification properties.

Field	Type	Description	Range / max. length
level1	string	Classification level 1	50
level2	string	Classification level 2	50
level3	string	Classification level 3	50

Authentication

All methods of the API (but SignIn) require an access token in their request message for authorization. If the token is invalid, a method does nothing and returns the PlanoAPIErrorCode *PAE_UNAUTHENTICATED.*

- Access tokens are allocated with SignIn and released with SignOut.
- The previous token is revoked if the same user signs in again before to sign out, i.e., only a single application using the API can safely run at a time for a given user.
- Tokens are revoked 60 minutes after their allocation.
- Tokens are independent from regular PlanogramBuilder access tokens, i.e., the same user can use PlanogramBuilder and another application based on the API simultaneously.

SignIn

Description

Obtains a token to be used for authorization when invoking all other methods. Typically, the first method called in any code consuming the PlanogramBuilder API.

Request

Field	Type	Description	Range / max. length

account_id	string	Same as **Account ID** in Launch PlanogramBuilder.	60
username	string	Same as **User Name** in Launch PlanogramBuilder.	40
password	string	Same as **Password** in Launch PlanogramBuilder.	40

Response

Field	Type	Description	Range / max. length
access_token	string	Authentication	43
error	PlanoAPIError	Error fields	-

Errors

- *PAE_NOT_FOUND* if *account_id* is invalid.
- *PAE_UNAUTHENTICATED* if the login (*username*, *password* pair) is invalid.
- *PAE_PERMISSION_DENIED*
  - if the user isn't a PlanogramBuilder Administrator.
  - if the account is invalid (for ex. after end of subscription).
  - if the product is PlanogramBuilder Light.

SignOut

Releases the token used for authorization. Typically, the last method called in any code consuming the PlanogramBuilder API.

Request

Field	Type	Description	Range / max. length
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
error	PlanoAPIError	Error fields	-

Errors

None.

Products

ProductBehavior

Enumeration of behaviors as defined in Product behaviors.

Name	Description
PB_STANDARD	standard
PB_PEGGED	pegged
PB_STACKABLE	stackable
PB_TESTER	tester

Product

Embodies all product properties available in Database Item properties.

Field	Type	Description	Range / max. length
reference	string	Reference	50
enabled	PlanoAPIBoolean	Enabled	-
classification	Classification	Item classification properties	50
name	string	Name	500
custom_properties	string list	Custom properties	500
width	float	Width Default value = 0.0.	[0.0, 1e4]
height	float	Height Default value = 0.0.	[0.0, 1e4]
depth	float	Depth Default value = 0.0.	[0.0,1e4]
shape	string	Shape	100
images	string list	Images	100
color	string	Color	[0, 0xFFFFFF]
behavior	ProductBehavior	Product behaviors	-
collisions	PlanoAPIBoolean	Collisions	-
facings_deep	int32	Facings deep	[0, 150]
width_gap	float	Width gap	[-1e4, 1e4]
height_gap	float	Height gap	[-1e4, 1e4]
depth_gap	float	Depth gap	[-1e4, 1e4]

lateral_offset	float	Lateral offset	[-1e4, 1e4]
vertical_offset	float	Vertical offset Default value = 0.0.	[-1e4, 1e4]

CreateProduct

Description

Creates a new product based on a template and returns it.

Request

Field	Type	Description	Range / max. length
product	Product	Template product.	-
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
Product	Product	Newly created product.	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_ALREADY_EXISTS* if an existing product is defined with the same reference [1].
- *PAE_OUT_OF_RANGE* if the value of a numerical field is outside its valid range.
- *PAE_INVALID_ARGUMENT* if the value of a field is invalid.

DeleteProduct

Description

Takes a reference and deletes the specified product.

Request

Field	Type	Description	Range / max. length
reference	string	Reference	50
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length

| error | PlanoAPIError | Error fields | - |

Errors

- ▪ *PAE_NOT_FOUND* if no product in the database is defined with the requested reference [1].

GetProduct

Description

Takes a reference and returns the specified product.

Request

Field	Type	Description	Range / max. length
reference	string	Reference	50
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
Product	Product	Requested product.	-
error	PlanoAPIError	Error fields	-

Errors

- ▪ *PAE_NOT_FOUND* if no product in the database is defined with the requested reference [1].

ListProducts

Description

Returns a list of all products with indices [2] in the specified range [*start_ind*, *end_ind*).

Request

Field	Type	Description	Range / max. length
start_ind	int32	List methods	[0, *total_size*-1]
end_ind	int32	List methods	[-1, *total_size*]
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length

products	Product list	Requested products.	-
total_size	int32	List methods	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_OUT_OF_RANGE* if the requested range is invalid.

RefreshProduct

Description

Updates the remote files [3] associated with the specified product as described in Refresh methods.

Request

Field	Type	Description	Range / max. length
reference	string	Reference	50
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
error	PlanoAPIError	Error fields	-

Errors

- *PAE_NOT_FOUND* if no product in the database is defined with the requested reference [1].

UpdateProduct

Description

Updates the specified product according to a template and returns it.

Request

Field	Type	Description	Range / max. length
product	Product	Template product.	-
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
product	Product	Updated product.	-
error	PlanoAPIError	Error fields	-

Errors

- ▪ *PAE_NOT_FOUND* if no product in the database is defined with the requested reference [1].
- ▪ *PAE_OUT_OF_RANGE* if the value of a numerical field is outside its valid range.
- ▪ *PAE_INVALID_ARGUMENT* if the value of a field is invalid.

Accessories

AccessoryBehavior

Enumeration of behaviors as defined in Accessory behaviors.

Name	Description
AB_PANEL	panel
AB_BAY_HEADER	bay header
AB_DIVIDER	divider
AB_ON_DISPLAY	ondisplay
AB_PRESENTER	presenter
AB_SHAPE_DEFINED	shape defined
AB_SHELF_BADGE	shelf badge
AB_SHELF_STRIP	shelf strip
AB_STICKER	sticker
AB_TAG	tag

Accessory

Embodies all accessory properties available in Database Item properties.

Field	Type	Description	Range / max. length
reference	string	Reference	50
enabled	PlanoAPIBoolean	Enabled	-
classification	Classification	Item classification properties	50
name	string	Name	500

custom_properties	string list	Custom properties	500
behavior	AccessoryBehavior	Accessory behaviors	-
width	float	Width Default value = 0.0.	[0.0, 1e4]
height	float	Height Default value = 0.0.	[0.0, 1e4]
depth	float	Depth Default value = 0.0.	[0.0, 1e4]
shape	string	Shape	100
images	string list	Images	100
color	string	Color	[0, 0xFFFFFF]
text_height	float	Text height	[0.0, 1e4]
text_color	string	Text color	[0, 0xFFFFFF]
collisions	PlanoAPIBoolean	Collisions	-
caption	string	Caption	100

CreateAccessory

Description

Creates a new accessory based on a template and returns it.

Request

Field	Type	Description	Range / max. length
accessory	Accessory	Template accessory.	-
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
accessory	Accessory	Newly created accessory.	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_ALREADY_EXISTS* if an existing accessory is defined with the same reference [1].
- *PAE_OUT_OF_RANGE* if the value of a numerical field is outside its valid range.
- *PAE_INVALID_ARGUMENT* if the value of a field is invalid.

DeleteAccessory

Description

Takes a reference and deletes the specified accessory.

Request

Field	Type	Description	Range / max. length
reference	string	Reference	50
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
error	PlanoAPIError	Error fields	-

Errors

- *PAE_NOT_FOUND* if no accessory in the database is defined with the requested reference [1].

GetAccessory

Description

Takes a reference and returns the specified accessory.

Request

Field	Type	Description	Range / max. length
reference	string	Reference	50
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
accessory	Accessory	Requested accessory.	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_NOT_FOUND* if no accessory in the database is defined with the requested reference [1].

ListAccessories

Description

Returns a list of all accessories with indices [2] in the specified range [*start_ind*, *end_ind*).

Request

Field	Type	Description	Range / max. length
start_ind	int32	List methods	[0, *total_size*-1]
end_ind	int32	List methods	[-1, *total_size*]
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
accessories	Accessory list	Requested accessories.	-
total_size	int32	List methods	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_OUT_OF_RANGE* if the requested range is invalid.

RefreshAccessory

Description

Updates the remote files [3] associated with the specified accessory as described in Refresh methods.

Request

Field	Type	Description	Range / max. length
reference	string	Reference	50
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
error	PlanoAPIError	Error fields	-

Errors

- *PAE_NOT_FOUND* if no accessory in the database is defined with the requested reference [1].

UpdateAccessory

Description

Updates the specified accessory according to a template and returns it.

Request

Field	Type	Description	Range / max. length
accessory	Accessory	Template accessory.	-
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
accessory	Accessory	Updated accessory.	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_NOT_FOUND* if no accessory in the database is defined with the requested reference [1].
- *PAE_OUT_OF_RANGE* if the value of a numerical field is outside its valid range.
- *PAE_INVALID_ARGUMENT* if the value of a field is invalid.

Materials

Material

Embodies all material properties available in Database Item properties.

Field	Type	Description	Range / max. length
reference	string	Reference	50
name	string	Name	500
Image1	string	Images	100
tile	PlanoAPIBoolean	Tile	-
tile_width	float	Width Default value = 0.0.	[0.0, 1e4]
tile_height	float	Height Default value = 0.0.	[0.0, 1e4]

CreateMaterial

Description

Creates a new material based on a template and returns it.

Request

Field	Type	Description	Range / max. length
material	Material	Template material.	-
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
material	Material	Newly created material.	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_ALREADY_EXISTS* if an existing material is defined with the same reference [1].
- *PAE_OUT_OF_RANGE* if the value of a numerical field is outside its valid range.
- *PAE_INVALID_ARGUMENT* if the value of a field is invalid.

DeleteMaterial

Description

Takes a reference and deletes the specified material.

Request

Field	Type	Description	Range / max. length
reference	string	Reference	50
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
error	PlanoAPIError	Error fields	-

Errors

- *PAE_NOT_FOUND* if no material in the database is defined with the requested reference [1].

GetMaterial

Description

Takes a reference and returns the specified material.

Request

Field	Type	Description	Range / max. length
reference	string	Reference	50
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
material	Material	Requested material.	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_NOT_FOUND* if no material in the database is defined with the requested reference [1].

ListMaterials

Description

Returns a list of all materials with indices [2] in the specified range [*start_ind*, *end_ind*).

Request

Field	Type	Description	Range / max. length
start_ind	int32	List methods	[0, *total_size*-1]
end_ind	int32	List methods	[-1, *total_size*]
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
materials	Material list	Requested materials.	-
total_size	int32	List methods	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_OUT_OF_RANGE* if the requested range is invalid.

RefreshMaterial

Description

Updates the remote files [3] associated with the specified material as described in Refresh methods.

Request

Field	Type	Description	Range / max. length
reference	string	Reference	50
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
error	PlanoAPIError	Error fields	-

Errors

- *PAE_NOT_FOUND* if no accessory in the database is defined with the requested reference [1].

UpdateMaterial

Description

Updates the specified material according to a template and returns it.

Request

Field	Type	Description	Range / max. length
material	Material	Template material.	-
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
material	Material	Updated material.	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_NOT_FOUND* if no material in the database is defined with the requested reference [1].
- *PAE_OUT_OF_RANGE* if the value of a numerical field is outside its valid range.

- *PAE_INVALID_ARGUMENT* if the value of a field is invalid.

File transfer

Provides access to the remote folder [3] containing the images files.

DeleteFile

Description

Deletes a file from the remote folder [3].

Request

Field	Type	Description	Range / max. length
filename	string	Name of the remote file to delete.	100
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
error	PlanoAPIError	Error fields	-

Errors

- *PAE_INVALID_ARGUMENT* if the format of *filename* is invalid (for ex. empty string).
- *PAE_NOT_FOUND* if no file in the source folder is defined with the requested filename [1].

DownloadFile

Description

Downloads remote file data [3] to the local machine.

Request

Field	Type	Description	Range / max. length
filename	string	Name of the remote file to get data from.	100
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
data	bytes	Raw file content data.	5 MiB
error	PlanoAPIError	Error fields	-

Errors

- *PAE_INVALID_ARGUMENT* if the format of *filename* is invalid (for ex. empty string).
- *PAE_NOT_FOUND* if no file in the source folder is defined with the requested filename [1].

ListFiles

Description

Returns a list of all files of the remote folder [3] with indices [2] in the specified range [*start_ind*, *end_ind*).

Request

Field	Type	Description	Range / max. length
start_ind	int32	List methods	[0, *total_size*-1]
end_ind	int32	List methods	[-1, *total_size*]
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
filenames	string list	Names of the requested files on the remote folder.	100
total_size	int32	List methods	-
error	PlanoAPIError	Error fields	-

Errors

- *PAE_OUT_OF_RANGE* if the requested range is invalid.

UploadFile

Description

Uploads data to a remote file [3].

Request

Field	Type	Description	Range / max. length
filename	string	Name of the remote file to write data to.	100
data	bytes	Raw file content data.	5 MiB
replace	PlanoAPIBoolean	Tells if an existing file with the same filename [1] can be overwritten. Default value = *PAB_TRUE*.	-
access_token	string	Authentication	43

Response

Field	Type	Description	Range / max. length
error	PlanoAPIError	Error fields	-

Errors

- *PAE_INVALID_ARGUMENT* if the format of *filename* is invalid (for ex. empty string) or *data* is *null*.
- *PAE_ALREADY_EXISTS* if a file with the same filename already exists in the destination folder and the value of *replace* is *PAB_FALSE*.

Notes

[1] Case insensitive comparison.

[2] Index of first element = 0.

[3] On the server hosting the server-side PlanogramBuilder application and database.

Examples

SignIn credentials

All examples come with a working demonstration of authentication. The values for the SignIn request fields are provided for a test user on a test account. You can use the example values as is for your early tests, but you will then replace them by your own values for *account_id*, *user_name* and *password*.

C# / .NET

Essentials

A Visual Studio 2022 C# Console App is available for download at

https://planogrambuilder.zvisuel.com/downloads/PlanoAPIv1Demo.zip

It features usage examples for all methods of the API, covering important aspects such as authentication, error handling and debugging.

Developers using already C# / .NET can adapt the example to their own application and will enjoy a very easy start. Developers on other environments can still benefit from the code in the source file *Program.cs* as an example to be ported to other languages / platforms.

To be adapted

Some code in the source file *Program.cs* must be adapted as described below.

SignIn

As explained in SignIn credentials you must provide your own values for this call:

```
response = api.SignIn(new SignInRequest { AccountId = "xxx", Username = "yyy",
  Password = "zzz" });
```

LocalFolder

If you want to test the file transfer methods, you will have to replace the value below with a path to a suitable folder on your PC:

```
static private string LocalFolder = "c:\\projects\\PlanoAPITests\\"; // path to
test image files on local PC
```

Postman

Essentials

Postman is one of the most popular API platforms. It is particularly useful to quickly test APIs, for example to discover a new API.

You can find at https://www.postman.com/planogrambuilder a workspace dedicated to PlanogramBuilder with the collection PlanogramBuilder API examples presenting usage examples for all methods of the API.

To be adapted

SignIn

As explained in SignIn credentials you must provide your own values for the SignIn message:

```
{
    "account_id": "xxx",
    "username": "yyy",
    "password": "zzz"
}
```

Useful Links

https://grpc.io/docs/what-is-grpc/introduction/

https://protobuf.dev/overview/

https://protobuf.dev/programming-guides/proto3/

https://github.com/grpc-ecosystem

https://github.com/grpc-ecosystem/awesome-grpc