



ARIS MOBILE API - TECHNICAL INTRODUCTION

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This document applies to ARIS Version 10.0 and to all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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1 Introduction

This document provides additional information for accessing an ARIS repository via the ARIS API. It should be considered as a supplement to the official API documentation available on every running ARIS Connect Server and ARIS Design Server under

<http://<servername:port>/apidocs>.

2 General principles

- The ARIS RESTful APIs are designed to access an ARIS repository by apps typically running on mobile devices. It is not meant as a replacement for other ways to access an ARIS repository, for example, the ARIS Report API. Therefore it has various limitations with respect to functionality that you might have expected.
- Every call to the API is atomic: either the operation succeeds or fails.
- Every call to the API requires a valid API cookie/token from ARIS User Management.
- Many calls have obligatory and/or optional URL parameters. All parameter values must be URL-encoded as they may contain special characters.
- If URL parameters are passed that are unknown or not the correct ones for the specific method or misspelled, then they are silently ignored. This may lead to an unexpected outcome of the requested operation.
- Many calls require a database language as parameter. If not given, the fallback language of the current database is used.
- Many operations require an ARIS method filter GUID as parameter. If not given, a specific auto-selection mechanism chooses the right filter, similar to a login on the Connect portal. It is strongly recommended to pass the desired filter as parameter which is also much faster.
- The result objects may contain method data, for example, **typename**. Method data is delivered in the language from the client's HTTP header ("accept-language"). Alternatively, you can pass an optional URL parameter **methodlanguage** in order to set the method language directly.
- There is an absolute result size limit (depending on the license, typically 5,000 items).
- Date parameters must be provided and are returned in UTC in the RFC 3339 Internet format YYYY-MM-DD, and for timestamps in UTC in the RFC 3339 Internet Zulu time format is needed YYYY-MM-DD'T'HH:MM:SS'Z', for example, 2014-01-22T08:22:55Z.

3 Login/Logout

For all API calls, a valid token from ARIS User Management (also known as UMC) is required. The token must be obtained by calling a dedicated method from the UMC API. It is not allowed to use a standard UMC token obtained by logging in to the Connect portal.

The token must be included in all subsequent API calls as URL parameter (umcsession) or added as cookie to the HTTP request.

The endpoint for obtaining the UMC token depends on the ARIS version:

For ARIS 10 SR 12 and later: http(s)://<servername:port>/umc/api/v1/tokens

Required URL parameters are:

- tenant
- name
- password

For ARIS 10 SR 11 and earlier: http(s)://<servername:port>/umc/api/tokens

Required URL parameters are:

- tenant
- name
- password
- key

(This key must be requested from Software AG for certifying the app via
<https://www.ariscommunity.com/arlis-access-certification-inquiry-form>)

EXAMPLE

POST

`http://<servername:port>/umc/api/tokens?tenant=default&name=system&password=manager&key=lsjflskjfssj`

Remarks

- A typical problem is that the client programmer forgets to urlencode all parameters.
- The token obtained from the login operation can be used for as many subsequent API calls as desired. When no more requests will be performed it is strongly recommended to explicit "logout" again by deleting the token with a call to

DELETE

`https://<servername:port>/umc/api/tokens/<token>`

Note: The endpoint for deleting a token is always

`http(s)://<servername:port>/umc/api/tokens` (regardless of the ARIS version)

4 Get information on available databases

GET

`http://<servername:port>/abs/api/databases?language=en&attributes=all`

This call returns a list of all available databases for the current user. It is the same list that a user would see when opening ARIS Architect.

For each database, its name, main group GUID, and some interesting flags are returned. It is also possible to retrieve the maintained attributes by using the URL parameter **attributes**. You can find more about attributes in section **Retrieval (page 22)**.

EXAMPLE FOR DATABASE ITEM

```
{  
  "kind": "DATABASE",  
  "name": "United Motor Group",  
  "isversioned": true,  
  "maingroup_guid": "4a713de0-5d02-11e3-0fda-fd81e986d7e2"  
}
```

Note: A type **ARIS Access Full** or **ARIS Access Read-only** license is required for this operation.

GET

`http://<servername:port>/abs/api/databases/United%20Motor%20Group?language=en&attributes=all`

This call returns more detailed information for the given database name: main-group GUID, **isversioned flag** and **ispublished** flag, all maintained attributes in database language EN as well as a list of all allowed method filters and database languages. Exactly one database language will have the flag **isalternative = true** which means that it will be used as the fallback database language if a request does not pass the URL parameter **language**.

In case of a versionable database, the existing change lists are returned as well.

EXAMPLE FOR METHOD FILTER ITEM

```
{  
  "kind": "METHODFILTER",  
  "guid": "dd838074-ac29-11d4-85b8-00005a4053ff",  
  "name": "Entire method",  
  "description": "All method content is available."  
}
```

EXAMPLE FOR DATABASE LANGUAGE ITEM

```
{  
  "kind": "DBLANGUAGE",  
  "language": "en_US",  
  "isalternative": true  
}
```

EXAMPLE FOR CHANGLIST ITEM

```
{  
  "kind": "CHANGELIST",  
  "changelist_number": 1,  
  "user": "internal",  
  "description": "initial revision after restore from basic archive file.",  
  "submit_time": "2015-04-07T16:11:13Z"  
}
```

5 API Docs ComparePair

Note: The ComparePair feature is not part of the ARIS Repository REST API but is related to CONNECT Portal Functionality. It is included here for convenience.

5.1 Get a list of database comparison pairs

GET

```
/publishing/databaseComparePair  
http://<servername:port>/abs/publishing/databaseComparePair
```

This call returns a list of all available database pairs.

EXAMPLE

```
[  
  {  
    "name": "A",  
    "user": null,  
    "description": null,  
    "sourceDatabaseName": "test_mv",  
    "sourceVersion": 1,  
    "targetDatabaseName": "test_mv",  
    "targetVersion": 2,  
    "enabled": true  
  }  
]
```

GET

```
/api/databaseComparePair(dbPairName)  
http://<servername:port>/abs/publishing/databaseComparePair/A
```

Parameter

```
dbPairName = A      // Name of the database pair
```

Gets a database pair for comparison by its name.

This call returns a single database pair if one is found.

The information detail is exactly the same as in **get databaseComparePair**.

No new information is provided.

EXAMPLE

```
{  
  "kind": "RESULT",  
  "request": "abs#getDatabaseComparePair",  
  "status": "OK",  
  "item_count": 1,  
  "items": [ {  
    "kind": "DATABASE",  
    "name": "A",  
    "user": null,  
    "description": null,  
    "sourceName": "test_mv",  
    "sourceVersion": 1,  
    "targetName": "test_mv",  
    "targetVersion": 2,  
    "enabled": false  
  } ]  
}
```

5.2 Create a database comparison pair

POST

/api/databaseComparePair

http://<servername:port>/databaseComparePair?name=A&user=test&description=test%20description&sourceDatabaseName=United%20Motor%20Group&sourceVersion=1&targetName=United%20Motor%20Group&targetVersion=2

Parameter

databasePairName	= A	//Name of the database pair
user	= ""	//Name of the responsible user
description	= ""	//Description of the pair
sourceDatabaseName	= Test_mv	//Name of the source database
sourceVersion	= 1	//Version of the source database
targetDatabaseName	= Test_mv	//Name of the target database
targetVersion	= 2	//Version of the target database
enabled	= true	//Enable the database pair

This call returns a list of a newly created database pair.

For each pair a name, a short description, and the responsible user can be saved.

The unique name of the database pair is required.

The source database must be unique. The target database can be referenced in several pairs.

For source and target, the database and version must exist, but the databases do not need to be published.

The versions do not have to be different either, but if the source and the target database are the same, they can be exchanged.

Database pairs with the same name or the same source database overwrite older ones.

EXAMPLE

```
{
  "kind": "RESULT",
  "request": "abs#createDatabaseComparePair",
  "status": "OK",
  "item_count": 1,
  "items": [ {
    "kind": "DATABASE",
    "name": "A",
    "user": "",
    "description": "",
    "sourceName": "test_mv",
    "sourceVersion": 1,
    "targetName": "test_mv",
    "targetVersion": 2,
    "enabled": true
  } ]
}
```

5.3 Toggle the enable state of a database comparison pair

PATCH

<http://<servername:port>/abs/api/databaseComparePair/A>

Parameter

dbPairName = A //Name of the database pair

This call returns the updated database pair.

This method toggles the enabled value of the database pair and is a simple way to change the state in the background.

EXAMPLE

```
{  
  "kind": "RESULT",  
  "request": "abs#createDatabaseComparePair",  
  "status": "OK",  
  "item_count": 1,  
  "items": [ {  
      "kind": "DATABASE",  
      "name": "A",  
      "user": null,  
      "description": null,  
      "sourceName": "test_mv",  
      "sourceVersion": 1,  
      "targetName": "test_mv",  
      "targetVersion": 2,  
      "enabled": true  
    } ]  
}
```

5.4 Delete a database comparison pair

DELETE

/api/databaseComparePair

http://<servername:port>/abs/api/databaseComparePair

Parameter

```
sourceDatabaseName      = test_mv    //Name of the source database
sourceVersion           = 1          //Version of the source database
targetDatabaseName      = test_mv    //Name of the target database
targetVersion           = 2          //Version of the target database
```

http://<servername:port>/abs/api/databaseComparePair?sourceDatabaseName=test_mv&sourceVersion=1&targetName=test_mv&targetVersion=2

EXAMPLE

```
{
  "kind": "RESULT",
  "request": "abs#deleteDatabaseComparePair",
  "status": "OK",
  "item_count": 0,
  "items": []
}
```

This call returns null if everything is correct. Otherwise, all errors will be returned. The given parameter searches and deletes all pairs. If the databases are the same, source and target are exchangeable. All found database pairs are deleted even if it should just be one in the first place.

DELETE

/api/databaseComparePair/{dbPairName}

http://<servername:port>/abs/publishing/databaseComparePair/A

Parameter

```
databasePairName = A      //Name of the database pair
```

Deletes a database pair with the pair name. Only one database name is required for this call. This call returns **null** if everything is correct. Otherwise, all errors are returned. The given parameter searches and deletes all pairs.

EXAMPLE

```
{  
"kind": "RESULT",  
"request": "abs#deleteDatabaseComparePair",  
"status": "OK",  
"item_count": 0,  
"items": []  
}
```

6 Get an item

The ARIS API offers to retrieve groups, objects (definitions) and models. The desired item must be identified by its ARIS GUID or a full CONNECT item-id (for example, **c.process.United Motor Group.CibrcP1SEdsnKQALzQzOTg.-1**).

Identifying via group path + name is unsupported as this is possibly ambiguous.

EXAMPLE

GET

```
http://<servername:port>/abs/api/groups/United%20Motor%20Group/1191ae90-02f7-11d  
c-2729-000bcd0cce4e
```

By default, only the name attribute (AT_NAME) is included in the response. If you need more attributes, the URL parameter **attributes** must be given. Possible values are

- **all**: all non-empty attributes
- a comma-separated list of attribute type numbers, API names or type-GUIDs (all of these can be arbitrarily mixed)

Example: attributes = 1, AT_DESC, AT_AUTH // attribute name, description, author

Remarks

Connections are not supported.

Note: It is also possible to retrieve HTTP portal links that can be directly used in the browser to access the item via the CONNECT portal. Add URL parameter **withportallinks = true**.

PORTAL LINK EXAMPLES (FOR A MODEL)

```
{  
  "kind": "LINK",  
  "method": "GET",  
  "href": "http://<servername:port>/#default/item/c.process.United Motor  
Group.CibrcP1SEdsnKQALzQzOTg.-1",  
  "rel": "ITEM_MODEL" // CONNECT Item View  
},  
  
{  
  "kind": "LINK",  
  "method": "GET",  
  "href": "http://<servername:port>/#default/repository/a.model.United Motor  
Group.CibrcP1SEdsnKQALzQzOTg.-1",  
  "rel": "REPO_MODEL" // CONNECT Repository View  
},  
  
{  
  "kind": "LINK",  
  "method": "GET",  
  "href": "http://<servername:port>/#default/thinclient/c.process.United Motor  
Group.CibrcP1SEdsnKQALzQzOTg.-1",  
  "rel": "TC_MODEL" // CONNECT Designer View  
},  
  
{  
  "kind": "LINK",  
  "method": "GET",  
  "href": "http://<servername:port>/abs/downloadClient/arис_database.jsp?configuration=ARIS&apps  
erver=myserver&database=United%20Motor%20Group&guid=0a26eb70-fd52-11db-2729-  
000bcd0cce4e&language=en_US&tenant=default",  
  "rel": "DC_MODEL" // CONNECT Download client  
}
```

7 Get group children

A group usually contains children, that is, subgroups as well as models and objects.

GET

`http://<servername:port>/abs/api/groups/United%20Motor%20Group/4a713de0-5d02-11e3-0fda-fd81e986d7e2/children`

This call returns all subgroups of the group identified by the given GUID or CONNECT item-iD.

If you additionally need the models and/or objects in the group, you can add the URL parameters **withmodels=true** or **withobjects=true**.

GET

`http://<servername:port>/abs/api/groups/United%20Motor%20Group/4a713de0-5d02-11e3-0fda-fd81e986d7e2/children?withmodels=true&withobjects=true`

Remark

It is also possible to retrieve an entire subtree by passing the URL parameter **recursive=true**.

Note

There is an absolute result size limit of 5,000 items (regardless of the page size you choose and how many paging requests are sent). If a group contains more than 5,000 children, you will not be able to retrieve them all.

Depending on the ARIS license, other size limits may apply.

8 Get content of a model

The content of a model consists of occurrences (= model objects, model connections). They can be retrieved in a **getModel** call by passing the URL parameter **withcontent=true**.

GET

```
http://<servername:port>/abs/api/models/United%20Motor%20Group/88ba40a0-cfb6-11e0-2556-5c260a398437?withcontent=true
```

Remarks

Model objects/model connections are a blend of data from the occurrence and definition levels. They do not contain any graphical information, such as dimension (width, height), and no coordinates of positions and connection paths.

EXAMPLE FOR MODEL OBJECT ITEM

```
{
  "kind": "MODELOBJECT",
  "occid": "(7wLHfY8btgy:u:L+6PmFOGfzQQ4:x:L+33+c)",
  "guid": "d734eb6f-cf14-11e0-2556-5c260a398437",
  "link": {
    "kind": "LINK",
    "method": "GET",
    "href": "http://<servername:port>/abs/api/objects/United Motor Group/d734eb6f-cf14-11e0-2556-5c260a398437?language=en_US&methodfilter=dd838074-ac29-11d4-85b8- 00005a4053ff",
    "rel": "OBJECT"
  },
  "type": 239,
  "typename": "Strategy",
  "apiname": "OT_STAT",
  "symbol": 1627,
  "symbolname": "Tactic",
  "symbol_apiname": "ST_TACTIC",
  "attributes": [
    {
      "kind": "ATTRIBUTE",
      "id": "6S4A4i43Hh0:p:L=1=1033:1:s",
      "typename": "Name",
      "type": 1,
      "apiname": "AT_NAME",
      "language": "en_US",
      "value": "Reduce operational costs in Supply Chain"
    }
  ]
}
```

EXAMPLE FOR MODEL CONNECTION ITEM

```
{  
  "kind": "MODELCONNECTION",  
  "occid": "(7wLHfY8btgy:u:L+-6xM00A_0oEz:y:L+34+c)",  
  "type": 67,  
  "typename": "encompasses",  
  "apiname": "CT_SUBS_1",  
  "source_guid": "c7ca78b0-abcf-11e0-7ee8-5c260a398437",  
  "target_guid": "289b0560-ac64-11e0-7ee8-5c260a398437",  
  "source_link": {  
    "kind": "LINK",  
    "method": "GET",  
    "href": "http://<servername:port>/abs/api/objects/United Motor Group/c7ca78b0-abcf-11e0-7ee8-5c260a398437?language=en_US&methodfilter=dd838074-ac29-11d4-85b8-00005a4053ff",  
    "rel": "OBJECT"  
  },  
  "target_link": {  
    "kind": "LINK",  
    "method": "GET",  
    "href": "http://<servername:port>/abs/api/objects/United Motor Group/289b0560-ac64-11e0-7ee8-5c260a398437?language=en_US&methodfilter=dd838074-ac29-11d4-85b8-00005a4053ff",  
    "rel": "OBJECT"  
  },  
  "source_occid": "(7wLHfY8btgy:u:L+-7cJgUsuG4Td:x:L+33+c)",  
  "target_occid": "(7wLHfY8btgy:u:L+-2apRUFiN0WT:x:L+33+c)"  
}
```

9 Create an item

The API offers support for creating groups and objects. For objects, groups and models, it is possible to create attributes (or more correctly formulated in ARIS terminology: it is possible to maintain attributes with a value). You can add multiple attributes in the same call. For all added attributes, the same database language will be used (from URL parameter **language**). Furthermore, it is possible to create an assignment relationship between an existing object and an existing model.

Note: The creation of models is not supported.

EXAMPLE

Create a new object of type **43** (OT_ORG_UNIT) with two attributes (AT_NAME and AT_DESC). Database language = English; parent group = 4a713de0-5d02-11e3-0fda-fd81e986d7e2 (= main group)

POST

```
http://<servername:port>/abs/api/objects/United%20Motor%20Group?language=en&parent=4a 713de0-5d02-11e3-0fda-fd81e986d7e2
```

Request body:

```
{
  "kind": "OBJECT",
  "type": 43,
  "attributes": [
    {
      "kind": "ATTRIBUTE",
      "type": 1,
      "value": "My first OrgUnit"
    },
    {
      "kind": "ATTRIBUTE",
      "type": 9,
      "value": "This is the long description"
    }
  ]
}
```

Remarks

The "kind" entries in the request body are redundant and not required.

There is a slight difference in the behavior whether creating an object or a group with a duplicate name.

- If you create a new group with the name **X** and there is already a group **X** in the desired parent group, then the new group will automatically be renamed to **X(1)**.
- If you create a new object with name **X** and there is already an object **X** in the desired parent group, then the new object has the name **X**, so there are two objects with the name **X**.

10 Create model content

Models cannot be created via the ARIS Mobile API, but you can create model objects and model connections. When creating a new connection, it is possible to use objects that are created in the same request. As they do not have an ID yet, you must define a temporary occ-id (starting with #) and use these temporary occ-ids when defining source and target of the new connection.

EXAMPLE

PUT

`http://<servername:port>/abs/api/models/United%20Motor%20Group/42ad5380-3d0e-11e5-6479-22000b630ca4`

Request body:

```
{  
  "modelobjects": [  
    {  
      "kind": "MODELOBJECT",  
      "occid": "#1",  
      "type": 22,  
      "symbol": 335,  
      "attributes": [  
        {  
          "kind": "ATTRIBUTE",  
          "type": 1,  
          "value": "new function via model update"  
        }  
      ]  
    },  
    {  
      "kind": "MODELOBJECT",  
      "occid": "#2",  
      "type": 18,  
      "symbol": 1,  
      "attributes": [  
        {  
          "kind": "ATTRIBUTE",  
          "type": 1,  
          "value": "new event via model update"  
        }  
      ]  
    }  
  ],  
  "modelconnections": [  
    {  
      "kind": "MODEL CONNECTION",  
      "type": 44,  
      "source_occid": "#1",  
      "target_occid": "#2"  
    }  
  ]  
}
```

Remarks

- When creating objects as shown above, a new definition object is created. If you want to reuse an already existing object, provide the GUID, for example,

```
{  
  "kind": "MODELOBJECT",  
  "occid": "#1",  
  "guid": "4686bd20-3d0e-11e5-6479-22000b630ca4"  
  "type": 22,  
  "symbol": 335  
}
```

- As model objects and model connections are created without any positional information, they will be located one above the other in the upper left corner of the model. It is possible to enforce an automatic layout of the model when it is opened for the first time in ARIS Architect/Designer by passing the URL parameter **layoutonopen=true**.

Note: A user with **ARIS Mobile Access** license can only create one model object or one model connection in a single request.

11 Delete model content

Model objects or model connections can be deleted from a model via their occ-ids. If you delete a model object, then all affected model connections are deleted automatically (no need to include them in the request).

DELETE

```
http://<servername:port>/abs/api/models/United%20Motor%20Group/1672a301-3d14-  
11e5-6479-22000b630ca4/objects?occid=(-703yxAzzRgN%3Au%3AL%2B-7RaSdNnA6hr%3Ax%3A  
L%2B33%2Bc)
```

Remarks

- Occ-IDs often contain special characters. It is important to ensure properly urlencoded values.
- In the request path, make sure to have **/objects** or **/connections** at the end, otherwise the model itself will be deleted!

Note: A user with **ARIS Mobile Access** license can only delete one model object or one model connection in a single request (automatically deleted model connections are not counted).

12 Attributes

Attributes are no top-level items and are tightly bound to their parent item (object, group, model). You can retrieve attributes only along with its parent item to which they belong.

Attributes can be identified by an integer type number (for example, 1), the API name (for example, AT_NAME) or a type GUID. These type identifiers can be freely mixed in the same request and even in the same parameter, for example, in the URL parameter **attributes**.

Attributes are maintained in the database language as given by the URL parameter **language**. If no such parameter is given, the default language of the current database is used.

Remarks

- Currently, only a limited subset of attribute types is supported, especially integer, float, text, timestamp, time, value attributes, binary.
- Binary data must be sent as BASE64 encoded string.

12.1 Retrieval

You cannot retrieve an attribute on its own. You must retrieve the parent item (for example, a object or a model to which the attribute belongs) by using an appropriate get-request and specifying the attribute type(s) (URL parameter **attributes**) you want to have in the response. If no attribute type is given, the value of the **Name** attribute (AT_NAME) is returned by default (but not in case of a database).

EXAMPLES

Get the model with GUID **bf2a9d60-7cb8-11dc-2729-000bcd0cce4e** with all maintained attributes.

GET

```
http://<servername:port>/abs/api/models/United%20Motor%20Group/bf2a9d60-7cb8-11d  
c-2729-000bcd0cce4e?language=en&attributes=all
```

Get the model with the attributes **Name** (AT_NAME, type number 1), **Description** (AT_DESC), and **Status** (AT_STATE_1). Attributes can be specified by type numbers or API names/type GUIDs. These can be freely mixed in a comma-separated list.

GET

```
http://<servername:port>/abs/api/models/United%20Motor%20Group/bf2a9d60-7cb8-11d  
c-2729-000bcd0cce4e?language=en&attributes=1,AT_DESC,AT_STATE_1
```

Get the details of the database **United Motor Group** including all maintained attributes.

GET

```
http://<servername:port>/abs/api/databases/United%20Motor%20Group?language=en&at  
tributes=all
```

12.2 Creation

You can create an attribute for all items (except databases) together with its parent in the same request.

EXAMPLE

Create an object with the two attributes **name** and **description**.

POST

```
http://<servername:port>/abs/api/objects/United%20Motor%20Group?language=en
&parent=4a713de0-5d02-11e3-0fda-fd81e986d7e2
```

Request body:

```
{
  "kind": "OBJECT",
  "type": 43,
  "attributes":
  [
    {
      {
        "kind": "ATTRIBUTE",
        "type": "AT_NAME",
        "value": "I am an OrgUnit!"
      },
      {
        "kind": "ATTRIBUTE",
        "type": 9,
        "value": "This is the long description"
      }
    ]
}
```

12.3 Updating or creation for existing item

If you want to add a new attribute to an already existing item or if you want to update the value of an existing attribute, you must do an update operation (PUT) on the parent item (not supported for a database item).

EXAMPLE

Update the name of an existing object and add the author attribute.

PUT

`http://<servername:port>/abs/api/objects/United%20Motor%20Group/b7e90c56-00cf-11e2-21d1-5c260a628455?language=en`

Request body:

```
{  
  "attributes": [  
    {  
      "kind": "ATTRIBUTE",  
      "type": 1,  
      "value": "Just renamed it"  
    },  
    {  
      "kind": "ATTRIBUTE",  
      "type": "AT_AUTH",  
      "value": "I am the author"  
    }  
  ]  
}
```

12.4 Deleting an attribute

Deleting an attribute cannot be done via an update operation on the parent item. Instead, the dedicated DELETE operation must be used (not supported for a database item). The type numbers of the attributes to be deleted must be passed via the URL parameter **typenumbers**.

DELETE

```
http://<servername:port>/abs/api/objects/United%20Motor%20Group/b7e90c56-00cf-11e2-21d1-5c260a628455/attributes?language=en&typenumbers=AT_DESC, AT_AUTH
```

Remarks

- Do not forget to have **/attributes** at the end of the URL path, otherwise you do a DELETE on the parent object and it is gone!
- The result of a successful delete operation is simply empty with STATUS = OK, for example,

```
{  
  "kind": "RESULT",  
  "request": "abs#deleteObjectAttributes",  
  "status": "OK",  
  "item_count": 0,  
  "items": []  
}
```

Note: Only one attribute can be deleted in a single request for users with an **ARIS Mobile Access** license.

12.5 Styled values for text attributes

In ARIS, text attributes (for example, AT_DESC) can also have a styled value. If you want to retrieve text attributes with their styled value, you must set the URL parameter

withstyledtext = true. If the text attribute has got a valid styled value, it will be returned in addition to the standard value field.

A typical response would like as follows:

```
{
  "kind": "ATTRIBUTE",
  "id": "2Nc1g1Og_LN:p:L=9=1033:1:s",
  "typename": "Description/Definition",
  "type": 9,
  "apiname": "AT_DESC",
  "language": "en_US",

  "styled_value":
    "<html><body>
      <p style=\"margin-left:0;margin-bottom:0;
        margin-top:0\"><b>my&#32;updated</b>&#160;description
      </p>
    </body></html>",

  "value": "my updated description"
}
```

The styled value is HTML starting with tags **<html><body>**.

It is also possible to set a styled value when creating or updating an attribute. Simply pass **"styled_value"** with a valid HTML string.

Remarks

- The URL parameter **withstyledtext** is not required for write operations (POST, PUT).
- If a write operation (POST, PUT) contains both **value** and **styled_value**, then **styled_value** has precedence and **value** is basically ignored. According to standard ARIS behavior, **value** will then contain a plain-text representation of the HTML from **styled_value**.
- Only a basic set of HTML is supported: ****, **<i>**, **<u>**, **<strike>**, ****, ****, ****, **
, **<p>, ****, **<div>**.
- For styling information (margin, color, font-family, size), use an inline style attribute, for example,


```
<span style="font-size:48pt;">
    <span style="font-family:Kokila;">Hello World</span>
  </span>
```
- Unsupported HTML tags are silently ignored (only their text content will be considered).
- Make sure to correctly escape JSON special characters, for example, **\n** must be escaped as **\\\n** and **"** as **\"**.

- If the HTML in **styled_value** does not contain any real formatting, this will in setting a plain text value, for example,

```
<html><body><p> My name is Bond. James Bond.</p></body></html>
```

Result

"value"	:	"My name is Bond. James Bond."
---------	---	--------------------------------

"styled_value"	:	null
----------------	---	------

13 Assignments

An assignment is simply a link between an existing object and an existing model. With the ARIS Repository API, you can create and delete assignments. It is not possible to retrieve a specific assignment; assignments are always included automatically in the response when you retrieve an object.

EXAMPLE

Create an assignment

POST

```
http://<servername:port>/abs/api/objects/United Motor  
Group/6aa1b167-fac0-11de-55c7-001a6b3c820f/assignment/a39aefb0-fa1c-11db-2729-00  
0bcd0cce4e
```

objectGUID (source of assignment)

modelGUID (target of assignment)

EXAMPLE

Delete an assignment

DELETE

```
http://<servername:port>/abs/api/objects/United Motor  
Group/6aa1b167-fac0-11de-55c7-001a6b3c820f/assignment/a39aefb0-fa1c-11db-2729-00  
0bcd0cce4e
```

14 Model graphic

The ARIS API does not provide positional information when retrieving a model with its contents. But it is possible to get a model graphic. It has format PNG (Portable Network Graphics) and is returned as a BASE64-encoded string. There are two optional URL parameters **maxwidth** and **maxheight** that allow you to control the size (in image pixels) of the generated graphic.

EXAMPLE

GET

```
http://<servername:port>/abs/api/models/United%20Motor%20Group/0a26eb70-fd52-  
11db-2729-000bcd0cce4e/graphic
```

15 Finding items in the database

It is possible to search for items according to several criteria that are AND-linked, that is, they reduce the number of matching result items. You must pass the URL parameter kind to declare what to search (model or object). In addition, you can define the desired type (= comma-separated list of object type numbers or model type numbers; API names or type GUIDs are also supported) and optionally a filter criterion with respect to an attribute.

EXAMPLE

Find all models of type **13** (MT_EEPC), whose names start with **Sale** (written with small or large **s**).

GET

```
http://<servername:port>/abs/api/databases/United%20Motor%20Group/find?kind=MODE
L&typefilter=13&language=en&attrfilter=AT_NAME=Sale
```

Remarks

- Available item kinds: MODEL, OBJECT, GROUP
- For all attributes: + (isMaintained), - (isNotMaintained)
- For numbers, the usual operators are available: =, !=, >, <, >=, <=
- For Boolean: = and !=
- For text attributes: =
- **Note:** unequal (!=) is not supported because it may lead to full-table scans in the underlying database index.
- The parameter **attrfilter** may contain fully parenthesized expressions (parenthesis= { }), combined with operators AND, OR.
- Date values must be given in UTC in the RFC 3339 Internet format YYYY-MM-DD, for example, 2021-04-01
- Timestamp values must be given in UTC in the RFC 3339 Internet Zulu time format YYYY-MM- DD'T'HH:MM:SS'Z', for example, 2021-01-22T08:22:55Z

EXAMPLES FOR TIMESTAMP QUERIES

All objects changed in a given period of time

GET

```
http://<servername:port>/abs/api/databases/United%20Motor%20Group/find?kind=OBJE  
CT&language=en_US&attributes=all&attrfilter={AT_LAST_CHNG_2 >= 2017-  
07-26T00:00:00Z} AND {AT_LAST_CHNG_2 <= 2017-07-26T09:00:00Z}
```

All objects created in a given period of time

GET

```
http://<servername:port>/abs/api/databases/United%20Motor%20Group/find?kind=OBJE  
CT&language=en_US&attributes=all&attrfilter={AT_CREAT_TIME_STMP >=  
2017-07-26T00:00:00Z} AND {AT_CREAT_TIME_STMP <= 2017-07-26T09:00:00Z}
```

SEARCHING FOR TEXT: EXAMPLES FOR THE VALUE OF ATTRFILTER

```
AT_NAME      =      Jones  
9            = Human Resources // (9 = AT_DESC)  
AT_AUTH -           // (AT_AUTH not maintained)  
{AT_NAME = Jones} AND {AT_DESC = Human Resources}  
{AT_NAME = Jones} OR {AT_DESC = Human Resources}} AND {AT_AUTH -}
```

- **Important:** in case of a parenthesized expression, the search value must not contain **{ or }**. If the search value must contain a curly parenthesis, pass an escaped character, for example, **\}** when searching for text attributes.
- The normal search behavior is similar to that of standard search engines: Contents of text attributes are token-based, that is, typical separators, such as blanks or dashes (-), are ignored. If the text attribute contains tokens from the search value (regardless of order/position), this is considered a match.

Example: search expression: AT_NAME = holder certificate

will find **Holder Certificate** and **certificate holder** and **The Holder Certificate**.

- URL parameter **matchcase**: if true, searching will be case-sensitive and order of tokens is relevant
- URL parameter **exactsearch**: if true, only exact matches are returned; special characters and notably the asterisk (*) are interpreted as simple character; in addition, the order of the tokens is important.

Example: search expression: AT_NAME = holder certificate

will find **Holder Certificate** but not **certificate holder** and not **The Holder Certificate**.

- Special search patterns for text: (parameter **exactsearch** must be false)
 - **A*** returns all strings that start with **A** (**A** must be a string of length ≥ 2 , the first two characters must be letters or digits).
 - **A*B** returns all strings that start with **A** (**A** must be a string of length ≥ 2 , the first two characters must be letters or digits) and end with **B**.

IMPORTANT NOTE

The search functionality described above is not intended to load large amounts of data from an ARIS repository. Therefore, there is a result size limit (typically 5,000 items, depending on the user license). This limit is absolute, that is, it is independent on the page size you choose and how many paging requests are sent.

Example: If a search query is sent to get all models of **EPC** type and the database contains 10,000 such models, then only the first 5,000 hits can be retrieved (for example, by sending 50 paging requests with page size 100).

In general, a search request that leads to several thousand hits should always be refined with more concrete search criteria.

16 Paging

Typically, when using the database-find operation from the previous chapter, many items will be found and returned to the caller. A default page size of 100 is in effect. A different page size can be indicated with the URL parameter **pagesize**.

If there are more items to be returned than the page size allows, the response will contain an entry **next_pagetoken**. This indicates to the client that there is more data to load.

EXAMPLE

Request

```
http://<servername:port>/abs/api/databases/United%20Motor%20Group/find?kind=MODE  
L&language=en&attrfilter=AT_NAME&wildcards=true&attrcriterion==S*
```

Response

```
{  
  "kind": "RESULT",  
  "request": "abs#find",  
  "status": "OK",  
  "item_count": "100",  
  "next_pagetoken": "1:100:guid",  
  "items": [  
    ...      100 items here  
  ]  
}
```

In order to get the next page of results, the client must send the same request again and add the page token.

GET

```
http://<servername:port>/abs/api/databases/United%20Motor%20Group/find?kind=MODE  
L&language=en&attrfilter=AT_NAME&wildcards=true&attrcriterion==S*&pagetoken=1:10  
0:guid
```

Response

```
{  
  "kind": "RESULT",  
  "request": "abs#find",  
  "status": "OK",  
  "item_count": "35",  
  "items": [  
    ... remaining 35 items here  
  ]  
}
```

The second response contains no entry **next_pagetoken** --> the client knows that there are no more items to load.

Notes

- The maximum allowed page size is 500. If a page size is given that is too large, it will be silently corrected to the allowed maximum.
- Regardless of paging, there is an absolute result size limit (depending on the user license, typically 5,000 items), for example, when using page size 500, at most 10 paging requests will return data. If the total result set is larger, it is not possible to retrieve the remainder.

17 Ordering the result

If more than one item is returned by a request (for example, database-find), the items are ordered by their GUID in ascending order. Ordering by GUID itself is normally useful but this ensures a stable result, especially with respect to paging.

You can pass the URL parameter **orderby** in order to indicate a different sorting, for example,

```
...&orderby = name (order by attribute AT_NAME, ascending)  
...&orderby = -name (order by attribute AT_NAME, descending)
```

Other possible values:

- **modified** (ascending)
- **-modified** (descending)
- **path** (group path starting at main group)

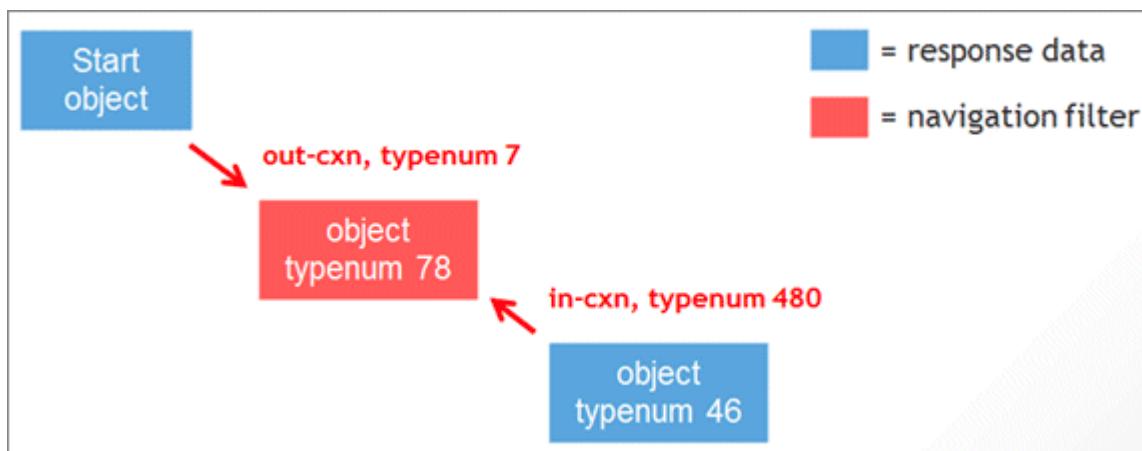
18 Generic queries

Generic queries try to offer a kind of graph-based retrieval of items. The syntax and functionality is based on the CONNECT Portal Designer query language which is used for the contents of fact sheets.

Starting from a defined item (object or model identified by GUID/CONNECT item-id or a type number), it is possible to add items that can be reached from the start item via a sequence of filter items.

The general properties of an item definition are as follows:

type	MODEL, OBJECT, CONNECTION, ASSIGNMENT, OCCURRENCE, CONNECTIONOCCURRENCE
function	FILTER, TARGET (TARGET means that objects that match this item are added to the result) (FILTER means that this item is only used for filtering; it is the default value and therefore optional)
direction	IN, OUT (only allowed for type CONNECTION)
typenum	comma-separated list of type numbers, api-names, type-GUIDs



Remarks

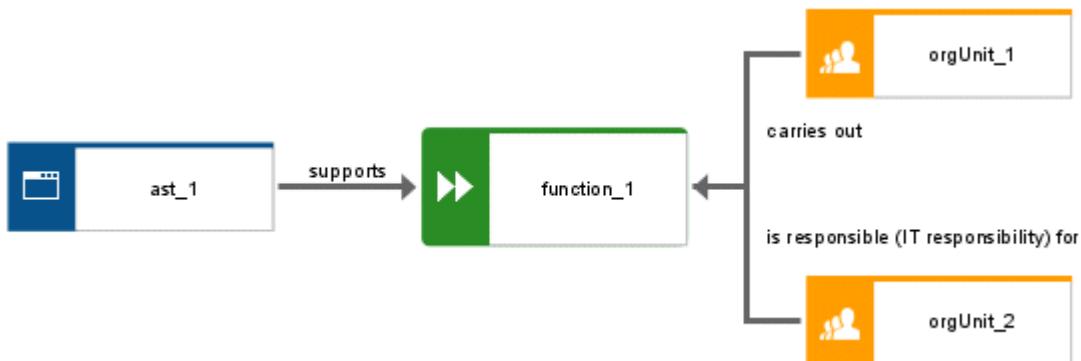
- Not all possible combinations will lead to sensible results! The syntax promises more than what is implemented.
- Item definitions normally contain other item definitions and thus form a nested path of items. Within a single path, only one item of function TARGET is allowed.
- Although a generic query is of read-only nature, it must be sent as a POST request because the query definition must be provided in the request body.
- If the start item is an object, the request URL must be ... /objects/<db>/query; in case of models, it is .../models/<db>/query.

The request body must contain the query itself as a nested list of query item definitions.

EXAMPLE 1 (STARTING FROM OBJECT)**POST**<http://<servername:port>/abs/api/objects/mydemodatabase/query>

Request body:

```
{
  "start_guids" : "a387cc60-3c34-11e5-216f-782bcb6367e0",
  "items" : [
    { "type" : "CONNECTION",
      "direction" : "IN",
      "items" : [
        {
          "type" : "OBJECT",
          "typenum" : "6,43",
          "function" : "TARGET"
        }
      ]
    }
  ]
}
```

**Result**

start function (function_1), ast_1 (type 6) , orgUnit_1 (type 43) , orgUnit_2 (type 43)

EXAMPLE 2 (STARTING FROM MODEL)

POST

<http://<servername:port>/abs/api/models/mydemodatabase/query>

Request body:

```
{  
  "start_guids" : "0a26eb70-fd52-11db-2729-000bcd0cce4e",  
  "items" : [  
    {  
      "type" : "OCCURRENCE",  
      "items" : [  
        {  
          "type" : "OBJECT",  
          "typenum" : "22",  
          "function" : "FILTER"  
        },  
        {  
          "type" : "CONNECTIONOCCURRENCE",  
          "items" : [  
            {  
              "type" : "CONNECTION",  
              "function" : "FILTER",  
              "direction" : "IN",  
              "items" : [  
                {  
                  "type" : "OBJECT",  
                  "typenum" : "43,6",  
                  "function" : "TARGET"  
                }  
              ]  
            }  
          ]  
        }  
      ]  
    }  
  ]  
}
```

Result

start model, function **Configure vehicle** (type 22), application system type COT (type 6)

19 Legal information

19.1 Documentation scope

The information provided describes the settings and features as they were at the time of publishing. Since documentation and software are subject to different production cycles, the description of settings and features may differ from actual settings and features. Information about discrepancies is provided in the Release Notes that accompany the product. Please read the Release Notes and take the information into account when installing, setting up, and using the product.

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