Infrastructure Administration

IGS ZeRo Services Operation

Infrastructure Administration

1.4 Edition

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Revision History			
Revision	**Date**	**Author**	**Reference**
1.0	31.3.2023	A. Farkaš	First initial release
1.1	26.5.2023	A. Farkaš	Addded /appinstances and /appschemas endpoints
1.2	26.6.2023	A. Farkaš	Changed template and structure to reflect other P2020 documentation
1.3	15.9.2023	A. Farkaš	Added /accounts endpoint
1.4	15.8.2024	A. Farkaš	Changed /appinstances/{key} to {name}

Table of Contents

Preface

Audience

This guide is intended for resource administrators and target system integration teams.

Reference Documents

For information about installing and using Oracle Identity and Access Management, visit the following Oracle Help Center page:

- *https://docs.oracle.com/en/middleware/idm/suite/12.2.1.3/index.html*

Confidentiality

The material contained in this documentation represents proprietary, confidential information pertaining to Oracle products and methods.

The audience agrees that the information in this documentation shall not be disclosed outside of Oracle, and shall not be duplicated, used, or disclosed for any purpose other than to evaluate this procedure.

Typographical Conventions

The following table describes the typographic changes that are used in this document.

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Symbol Conventions

The following table explains symbols that might be used in this document.

Symbol	Meaning
[ ]	Contains optional arguments and command options.
{	}	Contains a set of choices for a required command option.

Symbol	Meaning
${ }	Indicates a variable reference.
-	Joins simultaneous multiple keystrokes.
+	Joins consecutive multiple keystrokes.
>	Indicates menu item selection in a graphical user interface.

About the Services

The IGS ZeRo Services implementation is based on loosely defined requirements for integrating P20 ZeRo platform with existing OIM deployment at BKA.

The following sections contain description of available endpoints, examples of API requests and responses currently supported in the IGS ZeRo Services, along with important notes and constraints to consider in your design.

Resource Entitlements

The `/entitlements` endpoint can be used for `GET` method to search or lookup individual entitlements provided by the BKA Identity Management implementation. The `/entitlements` endpoint is read only.

> **Authorization**
>
> Any access to any method provided by this resource **MUST** be authorized by an access token.
>
> Accessing the endpoint requires valid user by providing Basic Authentication or Bearer/SAML/OAuth token issued by BKA services, the authenticated user needs to be member of `viewer` or `administrator` Java(tm) Platform, Enterprise Edition (Java EE) roles.

The following API operations are supported by the IGS ZeRo Services `/entitlements` endpoint implementation:

- Search Entitlements
- Lookup Entitlement

Search Entitlements

This endpoint provides the ability to query existing entitlements grouped by application instance names. Request supports pagination and filtering, see the Query Parameters and Filtering section for more information.

Request

> **Permission**
>
> There are no elevated permission required to access this resource method.

GET	/entitlements/

Request Header

Name	Type	Value
accept	string	application/json
content-type	string	application/json

Query Parameters

Name	Type	Required	Description
start	integer	no	The 1-based index of the first query result to return. A value less than 1 is interpreted as 1.

Name	Type	Required	Description
items	integer	no	Specifies the desired maximum number of query results per batch.
			A negative value is interpreted as 0.
			A value of 0 indicates that no resource results are to be returned.
filter	string	no	See Filtering section.

Filtering

Filters support the following attributes to be filtered on (LHS):

- **key** (numerical value)
- **code**
- **name**
- **active** (boolean value)
- **displayName**
- **description**
- **createDate** (temporal value)
- **updateDate** (temporal value)
- **itResourceName**
- **appInstanceName**
- **appInstanceDisplayName**

The default type is "text value" unless stated otherwise.

For general filtering information see Filters chapter.

Response

The representation of the entitlements found based on input filter. The entitlements are grouped by **application instance names**.

Example

GET	/entitlements/?start=2&items=3

Example response indicates there are 600 items in total (no filter was supplied, only paging) and the 3 items starting at index 2 (i.e. items indexed 2, 3 and 4) are returned. These belong to application instance **IDSAccount** so the entitlement objects are enclosed within an appropriate envelope.

```
{
    "total": 600,
    "start": 2,
    "items": 3,
    "result": [
        {
            "appInstanceName": "IDSAccount",
            "entitlements": [
                {
                    "key": "2",
                    "code": "28~cn=authenticationServices,cn=Groups,cn=OracleContext,dc=pre",
```

```
                "name": "AM.IDS Endpoint~authenticationServices",
                "active": true,
                "displayName": "authenticationServices",
                "description": null,
                "createDate": "2020-04-27 10:15:37",
                "updateDate": "2020-04-27 10:15:37",
                "itResourceName": "AM.IDS Endpoint",
                "appInstanceName": "IDSAccount",
                "appInstanceDisplayName": "Identity Store Account"
            },
            {
                "key": "3",
                "code": "28~cn=OracleDASGroupPriv,cn=Groups,cn=OracleContext,dc=pre",
                "name": "AM.IDS Endpoint~OracleDASGroupPriv",
                "active": true,
                "displayName": "OracleDASGroupPriv",
                "description": null,
                "createDate": "2020-04-27 10:15:37",
                "updateDate": "2020-04-27 10:15:37",
                "itResourceName": "AM.IDS Endpoint",
                "appInstanceName": "IDSAccount",
                "appInstanceDisplayName": "Identity Store Account"
            },
            {
                "key": "4",
                "code": "28~cn=OracleDASUserPriv,cn=Groups,cn=OracleContext,dc=pre",
                "name": "AM.IDS Endpoint~OracleDASUserPriv",
                "active": true,
                "displayName": "OracleDASUserPriv",
                "description": null,
                "createDate": "2020-04-27 10:15:37",
                "updateDate": "2020-04-27 10:15:37",
                "itResourceName": "AM.IDS Endpoint",
                "appInstanceName": "IDSAccount",
                "appInstanceDisplayName": "Identity Store Account"
            }
        ]
    }
  ]
}
```

Output data is in form of:

Envelope

Name	Type	Required	Description
total	integer	yes	Non-negative integer. Specifies the total number of results matching the query.
start	integer	yes	The 1-based index of the first result in the current set of query results.
items	integer	yes	Non-negative integer. Specifies the number of query results that are returned in a query response page.
result	Resource array	yes	The resource array of the populated result set.

Resource

Name	Type	Required	Description
appInstanceName	string	yes	The name of the application instance the following entitlements belong to.
entitlements	Entitlements array	yes	The list of the entitlement objects belonging to this application instance.

Entitlements

Name	Type	Required	Description
key	string	yes	The identifier key for this entitlement.
code	string	yes	The internal code for this entitlement.
name	string	yes	The name for this entitlement.
active	boolean	yes	The activation status of the entitlement.
displayName	string	yes	The name for this entitlement suitable for GUI displaying purpose.
description	string	yes, can be null	The description of the entitlement, if filled in.
createDate	timestamp	yes	The date and time of this entitlement creation.
updateDate	timestamp	yes	The date and time of the last update of this entitlement.
itResourceName	string	yes	The name of the associated IT resource.
appInstanceName	string	yes	The name of the associated application instance.
appInstanceDisplayName	string	yes	The name of the associated application instance suitable for GUI displaying purpose.

Possible Errors

Error	Condition
401 Unauthorized	No or invalid authentication was provided.

Error	Condition
403 Forbidden	Request was authenticated but authorization was not passed (authenticated user lacks role required to acces the resource).
503 Service Unavailable	Other processing error occured including invalid filter syntax. Response `description` attribute contains more details.

Lookup Entitlement

This endpoint provides the ability to lookup existing entitlement identified by a key. Request does not support pagination and filtering.

Request

> **Permission**
>
> There are no elevated permission required to access this resource method.

GET	/entitlements/{key}

Request Header

Name	Type	Value
accept	string	application/json
content-type	string	application/json

Query Parameters

Name	Type	Required	Description
none			

Response

The representation of the entitlement with the given **key**.

Example

GET	/entitlements/3

```
{
    "key": "3",
    "code": "28~cn=OracleDASGroupPriv,cn=Groups,cn=OracleContext,dc=pre",
    "name": "AM.IDS Endpoint~OracleDASGroupPriv",
    "active": true,
    "displayName": "OracleDASGroupPriv",
```

```
    "description": null,
    "createDate": "2020-04-27 10:15:37",
    "updateDate": "2020-04-27 10:15:37",
    "itResourceName": "AM.IDS Endpoint",
    "appInstanceName": "IDSAccount",
    "appInstanceDisplayName": "Identity Store Account"
}
```

Output data is in form of:

Entitlement

Name	Type	Required	Description
key	string	yes	The identifier key for this entitlement.
code	string	yes	The internal code for this entitlement.
name	string	yes	The name for this entitlement.
active	boolean	yes	The activation status of the entitlement.
displayName	string	yes	The name for this entitlement suitable for GUI displaying purpose.
description	string	yes, can be null	The description of the entitlement, if filled in.
createDate	timestamp	yes	The date and time of this entitlement creation.
updateDate	timestamp	yes	The date and time of the last update of this entitlement.
itResourceName	string	yes	The name of the associated IT resource.
appInstanceName	string	yes	The name of the associated application instance.
appInstanceDisplayName	string	yes	The name of the associated application instance suitable for GUI displaying purpose.

Possible Errors

Error	Condition
401 Unauthorized	No or invalid authentication was provided.
403 Forbidden	Request was authenticated but authorization was not passed (authenticated user lacks role required to acces the resource).

Error	Condition
404 Not Found	Requested entitlement was not found.
503 Service Unavailable	Other processing error occured including invalid filter syntax. Response `description` attribute contains more details.

Resource Application Instances

The `/appinstances` endpoint can be used for `GET` method to search or lookup individual application instances provided by the BKA Identity Management implementation. The `/appinstances` endpoint is read only.

> **Authorization**
>
> Any access to any method provided by this resource **MUST** be authorized by an access token.
>
> Accessing the endpoint requires valid user by providing Basic Authentication or Bearer/SAML/OAuth token issued by BKA services, the authenticated user needs to be member of `viewer` or `administrator` Java(tm) Platform, Enterprise Edition (Java EE) roles.

The following API operations are supported by the IGS ZeRo Services `/appinstances` endpoint implementation:

- Search Application Instances
- Lookup Application Instances

Search Application Instances

This endpoint provides the ability to query existing application instances. Request supports pagination and filtering, see the Query Parameters and Filtering section for more information.

GET	/appinstances/

Request Header

Name	Type	Value
accept	string	application/json
content-type	string	application/json

Query Parameters

Name	Type	Required	Description
start	integer	no	The 1-based index of the first query result to return. A value less than 1 is interpreted as 1.
items	integer	no	Specifies the desired maximum number of query results per batch. A negative value is interpreted as 0. A value of 0 indicates that no resource results are to be returned.

Name	Type	Required	Description
filter	string	no	See Filtering section.

Filtering

Filters support the following attributes to be filtered on (LHS):

- **key** (numerical value)
- **name**
- **displayName**
- **description** (boolean value)
- **itResourceName**
- **createDate** (temporal value)
- **updateDate** (temporal value)

The default type is "text value" unless stated otherwise.

For general filtering information see Filters chapter.

The representation of the entitlements found based on input filter. The entitlements are grouped by **application instance names**.

Example

GET	/appinstances/?start=2&items=3

Example response indicates there are 49 items in total (no filter was supplied, only paging) and the 3 items starting at index 2 (i.e. items indexed 2, 3 and 4) are returned.

```
{
    "total": 49,
    "start": 2,
    "items": 3,
    "result": [
        {
            "key": 2,
            "name": "CTSAccount",
            "displayName": "eFBS Citrix Terminal Services",
            "description": "An account assignable to identities that need access to hosted applications at C
            "itResourceName": "TS.ADS Endpoint",
            "createDate": "2020-04-22 15:45:08",
            "updateDate": "2020-04-22 15:45:09"
        },
        {
            "key": 3,
            "name": "eFBSAccountProduction",
            "displayName": "eFBS Account Production",
            "description": "An account assignable to identities that need permissions in eFBS Production.",
            "itResourceName": "eFBS.Endpoint.Production",
            "createDate": "2020-04-22 15:45:45",
            "updateDate": "2021-08-26 16:57:17"
        },
        {
            "key": 4,
            "name": "eFBSAccountEducation",
            "displayName": "eFBS Account Education",
            "description": "An account assignable to identities that need permissions in eFBS.",
            "itResourceName": "eFBS.Endpoint.Education",
            "createDate": "2020-04-22 15:45:50",
```

```
            "updateDate": "2021-08-26 16:57:25"
        }
    ]
}
```

Output data is in form of:

Envelope

Name	Type	Required	Description
total	integer	yes	Non-negative integer. Specifies the total number of results matching the query.
start	integer	yes	The 1-based index of the first result in the current set of query results.
items	integer	yes	Non-negative integer. Specifies the number of query results that are returned in a query response page.
result	Resource array	yes	The resource array of the populated result set.

Resource

Name	Type	Required	Description
key	string	yes	The identifier key for this application instance.
name	string	yes	The name for this application instance.
displayName	string	yes	The name for this application instance suitable for GUI displaying purpose.
description	string	yes, can be null	The description of the entitlement, if filled in.
itResourceName	string	yes	The name of the associated IT resource.
createDate	timestamp	yes	The date and time of this entitlement creation.
updateDate	timestamp	yes	The date and time of the last update of this entitlement.

Possible Errors

Error	Condition
401 Unauthorized	No or invalid authentication was provided.
403 Forbidden	Request was authenticated but authorization was not passed (authenticated user lacks role required to acces the resource).
503 Service Unavailable	Other processing error occured including invalid filter syntax. Response `description` attribute contains more details.

Lookup Application Instance

This endpoint provides the ability to lookup existing application instance identified by a key. Request does not support pagination and filtering.

Request

> **Permission**
>
> There are no elevated permission required to access this resource method.

GET	/appinstances/{key}

Request Header

Name	Type	Value
accept	string	application/json
content-type	string	application/json

Query Parameters

Name	Type	Required	Description
none			

Response

The representation of the application instance with the given **key**.

Example

GET	/appinstances/2

```
{
    "key": 2,
    "name": "CTSAccount",
    "displayName": "eFBS Citrix Terminal Services",
    "description": "An account assignable to identities that need access to hosted
                    applications at Citrix Terminal Server where permissions for access
                    those applications are backed by Microsoft Active Directory.",
    "itResourceName": "TS.ADS Endpoint",
    "createDate": "2020-04-22 15:45:08",
    "updateDate": "2020-04-22 15:45:09"
}
```

Output data is in form of:

Application Instance

Name	Type	Required	Description
key	string	yes	The identifier key for this application instance.
name	string	yes	The name for this application instance.
displayName	string	yes	The name for this application instance suitable for GUI displaying purpose.
description	string	yes, can be null	The description of the application instance, if filled in.
itResourceName	string	yes	The name of the associated IT resource.
createDate	timestamp	yes	The date and time of this application instance creation.
updateDate	timestamp	yes	The date and time of the last update of this application instance.

Possible Errors

Error	Condition
401 Unauthorized	No or invalid authentication was provided.
403 Forbidden	Request was authenticated but authorization was not passed (authenticated user lacks role required to acces the resource).
404 Not Found	Requested application instance was not found.
503 Service Unavailable	Other processing error occured including invalid filter syntax. Response `description` attribute contains more details.

Resource Application Instance Schema

The `/appschemas` endpoint can be used for `GET` method to request lookup of schema provided by the BKA Identity Management application instance. The `/appschemas` endpoint is read only.

> **Authorization**
>
> Any access to any method provided by this resource **MUST** be authorized by an access token.
>
> Accessing the endpoint requires valid user by providing Basic Authentication or Bearer/SAML/ OAuth token issued by BKA services, the authenticated user needs to be member of `viewer` or `administrator` Java(tm) Platform, Enterprise Edition (Java EE) roles.

The following API operations are supported by the IGS ZeRo Services `/appschemas` endpoint implementation:

- Lookup Application Instance Schema

Lookup Application Schema

This endpoint provides the ability to lookup existing application instance identified by a key. Request does not support pagination and filtering.

Request

> **Permission**
>
> There are no elevated permission required to access this resource method.

GET	/appschema/{name}

Request Header

Name	Type	Value
accept	string	application/json
content-type	string	application/json

Query Parameters

Name	Type	Required	Description
none			

Response

The representation of the schema for application instance with the given **name**.

Example

```json
[
    {
        "name": "UD_CTS_USR_SERVER",
        "label": "AD Server",
        "required": true,
        "type": "ITResourceLookupField",
        "variantType": "long",
        "length": 0
    },
...
    {
        "name": "UD_CTS_USR_UID",
        "label": "User Id",
        "required": true,
        "type": "TextField",
        "variantType": "String",
        "length": 150
    },
...
    {
        "name": "UD_CTS_USR_FNAME",
        "label": "First Name",
        "type": "TextField",
        "variantType": "String",
        "length": 64
    },
...
    {
        "name": "UD_CTS_USR_COUNTRY",
        "label": "Country",
        "type": "LookupField",
        "variantType": "String",
        "length": 128,
        "lookupName": "Lookup.CTS.Country",
        "lookupValues": [
            {
                "decode": "Germany",
                "key": "DE"
            }
        ]
    },
...
    {
        "name": "UD_CTS_UGP",
        "attributeReference": [
            {
                "name": "UD_CTS_UGP_GROUPNAME",
                "label": "Group Name",
                "entitlement": true,
                "type": "LookupField",
                "variantType": "String",
                "length": 400,
                "lookupName": "Lookup.CTS.Group"
            }
        ]
    }
]
```

Output data is in form of:

Application Instance Schema

Name	Type	Required	Description
name	string	yes	Technical name of the schema attribute as it needs to be supplied during provisioning.
label	string	yes	The human readable name for this application instance suitable for GUI displaying purpose.
type	string	yes	Schema attribute content type suitable for GUI displaying purpose.
variantType	string	yes	Technical schema attribute content type (e.g. for syntax checking).
length	integer	yes	Maximum content length for string variants (or "0" for number type or "1" for boolean type)
required	boolean	no	Boolean flag indicating whether this is a required schema attribute for provisioning.
entitlement	boolean	no	Boolean flag indicating whether this schema attribute represents an entitlement.
lookupName	string	no	If schema attribute is a list-of-values (exactly one value from a fixed list) this is the reference to appropriate lookup.
lookupValues	boolean	no	Lookup Values array

Lookup Values

Name	Type	Required	Description
key	string	yes	The code for this lookup value as it needs to be supplied during provisioning.
decode	string	yes	The human readable key name suitable for GUI displaying purpose.

Possible Errors

Error	Condition
401 Unauthorized	No or invalid authentication was provided.

Error	Condition
403 Forbidden	Request was authenticated but authorization was not passed (authenticated user lacks role required to acces the resource).
404 Not Found	Requested application instance was not found.
503 Service Unavailable	Other processing error occured. Response `description` attribute contains more details.

If **lookupName** is provided but the **lookupValues** is not this means the appropriate schema attribute is an **entitlement** (also indicated by the **"entitlement" : true** attribute) and the appropriate values need to be retrieved using **/entitlements** endpoint.

Also, entitlements are always references to **lookupNames** and are nested (schema attribute referencing to another schema attribute).

Resource Accounts

The `/accounts` endpoint can be used for `GET` method to search accounts provisioned by the BKA Identity Management implementation. The `/accounts` endpoint is read only.

> **Authorization**
>
> Any access to any method provided by this resource **MUST** be authorized by an access token.
>
> Accessing the endpoint requires valid user by providing Basic Authentication or Bearer/SAML/OAuth token issued by BKA services, the authenticated user needs to be member of `viewer` or `administrator` Java(tm) Platform, Enterprise Edition (Java EE) roles.

The following API operations are supported by the IGS ZeRo Services `/accounts` endpoint implementation:

- List Accounts

List Accounts

This endpoint provides the ability to query existing accounts. Request supports pagination, see the Query Parameters section for more information.

Request

> **Permission**
>
> There are no elevated permission required to access this resource method.

GET	/accounts/appInstance/{name}

Request Header

Name	Type	Value
accept	string	application/json
content-type	string	application/json

Query Parameters

Name	Type	Required	Description
start	integer	no	The 1-based index of the first query result to return. A value less than 1 is interpreted as 1.
items	integer	no	Specifies the desired maximum number of query results per batch. A negative value is interpreted as 0.

Name	Type	Required	Description
			A value of 0 indicates that no resource results are to be returned.

Response

The representation of the entitlements found based on input filter. The entitlements are grouped by **application instance names**.

Example

GET	/accounts/appInstance/GDPDSZ2Account

Example response indicates there are 600 items in total (no filter was supplied, only paging) and the 3 items starting at index 2 (i.e. items indexed 2, 3 and 4) are returned. These belong to application instance **IDSAccount** so the entitlement objects are enclosed within an appropriate envelope.

```json
{
    "total": 600,
    "start": 2,
    "items": 3,
    "result": [
        {
            "id": "PROPERTY_USER_BB",
            "type": "Primary",
            "action": "modify",
            "attributes": [
                {
                    "id": "Change Date",
                    "value": ""
                },
                {
                    "id": "Path",
                    "value": ""
                },
                {
                    "id": "Time Zone",
                    "value": ""
                },
                {
                    "id": "Internal UID",
                    "value": ""
                },
                {
                    "id": "Create Date",
                    "value": ""
                },
                {
                    "id": "E-Mail",
                    "value": ""
                },
            ]
        }
    ]
}
```

Output data is in form of:

Envelope

Name	Type	Required	Description
total	integer	yes	Non-negative integer. Specifies the total number of results matching the query.
start	integer	yes	The 1-based index of the first result in the current set of query results.
items	integer	yes	Non-negative integer. Specifies the number of query results that are returned in a query response page.
result	Resource array	yes	The resource array of the populated result set.

Resource

Name	Type	Required	Description
id	string	yes	The name of the account (usually user name).
type	string	yes	Type of the account, can be one of "Primary", "Other", "Unknown" etc. Only one account belonging to a user may be marked as "Primary".
action	string	yes	Action indicated for the account. No meaning when GET is invoked, "modify" was chosen to be default one.
attributes	Attributes array	yes	The list of attributes for the account.
entitlements	Entitlements array	no	The list of the entitlement objects belonging to this application instance. If account has no entitlements assigned this attribute will be omitted.

Attributes

Name	Type	Required	Description
id	string	yes	The identifier (name) for this attribute.
value	string	yes	The value of the attribute.

Entitlement Namespaces

Name	Type	Required	Description
namespace	string	yes	The namespace for the following entitlements.
actions	Actions array	yes	The list of attributes for the account.

Entitlement Actions

Name	Type	Required	Description
action	string	yes	The namespace for the following entitlements.
risk	string	yes	The risk level for this entitlement, can be one of "none", "low", "medium" and "high".
attributes	Attributes array	yes	The list of attributes for the entitlement.

Possible Errors

Error	Condition
401 Unauthorized	No or invalid authentication was provided.
403 Forbidden	Request was authenticated but authorization was not passed (authenticated user lacks role required to acces the resource).
503 Service Unavailable	Other processing error occured including invalid filter syntax. Response `description` attribute contains more details.

Using Filters

The following chapter describer filtering facilities used through all **search** operations where filtering is referenced.

Filtering is employed by providing left-hand-side (LHS) **attribute**, comparison **operator** followed by right-hand-side (RHS) **value**. It is invoked by supplying the optional *filter* query parameter as follows: `filter=<LHS> <OP> <RHS>`.

LHS - Attributes

List of available attributes differs per-operation and will be listed there. In general, LHS attributes correspond to object attribute names (**case-insensitive**) as received in response JSON.

Operators

Unless specified otherwise for individual operations the following operators are available:

- **eq** (equals) for text, boolean, temporal and numerical values
- **sw** (starts with) for text values
- **eq** (ends with) for text values
- **co** (contains) for text values
- **gt** (greater than) for numerical and temporal values
- **ge** (greater than or equal) for numerical and temporal values
- **lt** (less than) for numerical and temporal values
- **le** (less than or equal) for numerical and temporal values

RHS - Values

The values are supplied in one of the following formats:

- **"string"** literal string value enclosed in double quotes
- **number** literal numerical value not enclosed in double quotes
- **"date"** literal temporal value in the format "yyyy-MM-dd", e.g. "2023-03-15
- **"date time"** literal temporal value in the format "yyyy-MM-dd HH:mm:ss "2023-03-15 12:34:56"
- **"boolean"** boolean value in the format "0" (false) or "1" (true)

Simple filters

The following are examples of valid simple filters:

- **key eq 3**
- **name sw "GDPD SZ2 End"**
- **itResourceName co "SZ2"**
- **updateDate gt "2023-02-22"**
- **createDate le "2023-02-22 13:43:46"**

Multiple filters

Simple filters can chained using **AND** and **OR** operators, or inverted using **NOT** operator. In the last case the sub-filter must be enclosed in round brackets:

- **name sw "GDPD SZ2 Endpoint" AND key eq 2**

- **name co "SZ2" OR name co "SZ3"**
- **appInstanceName co "SZ2" AND createDate gt "2022-02-12"**
- **NOT (appInstanceName co "SZ2")**
- **NOT (name co "NSIS" OR key eq 3)**

Attributes and the opeaSimple filters can chained using **AND** and **OR** operators, or inverted using **NOT** operator. In the last case the sub-filter must be enclosed in round brackets: