

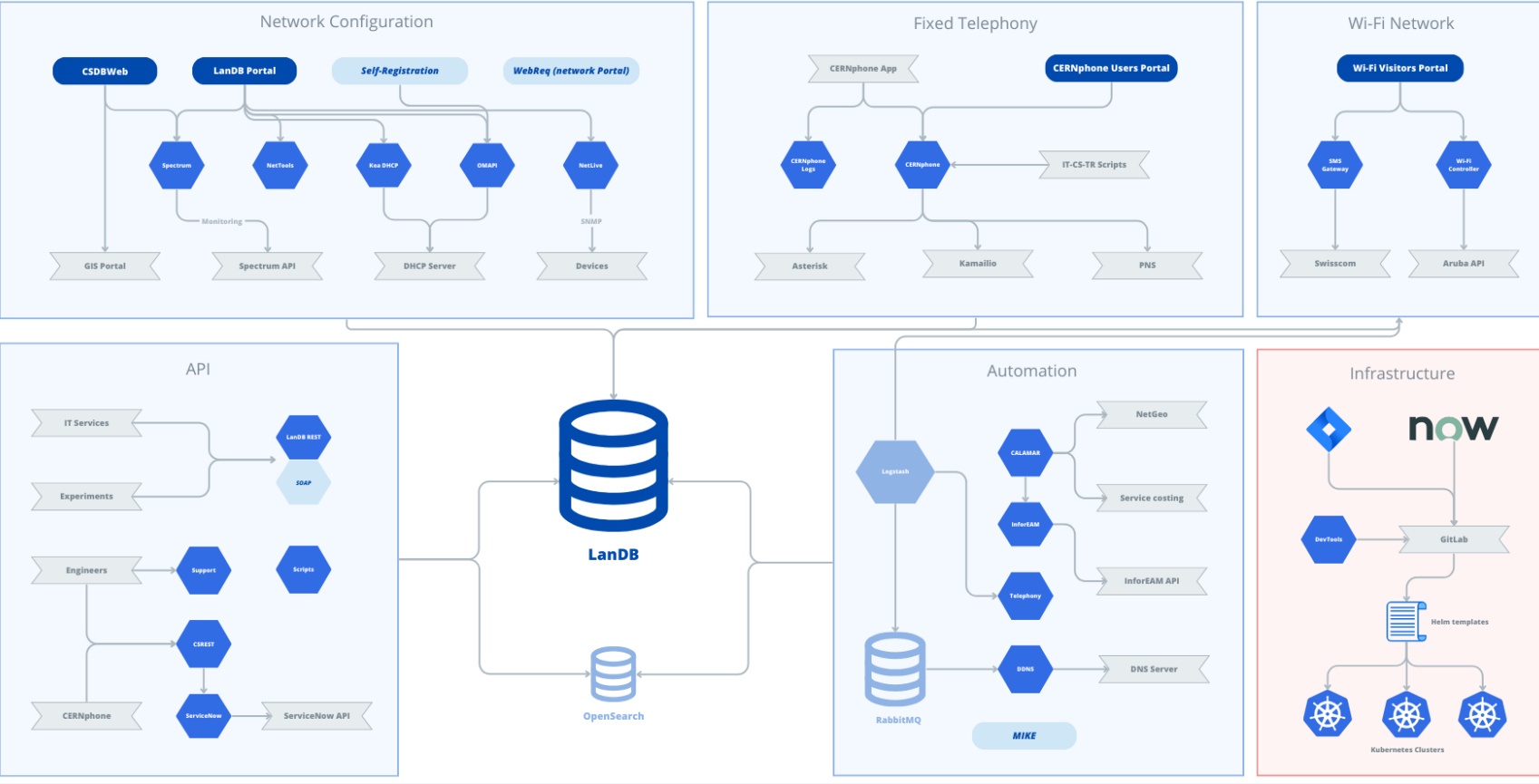
# LanDB REST API

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# LanDB ecosystem

## Software for Network and Telecom



10/2023

# SOAP API

- Has been stable for years
- Used by CS, experiments, cloud team, many others
- 50.000 WRITE requests per day
- 1.600.000 READ requests per day

**Why do we need a new API now?**



# Because we can

- **In the previous years a lot of effort to consolidate and standardize access to LanDB**
- **Now all\* our applications use a common layer that handles all the validations and core business logic**
- **Most of the entities are in this common-services layer now**

**But most importantly...**

# Because we **really** should

- **SOAP API is not as old as LanDB... But old enough to drink legally.**
- **Retiring SOAP, and the underlying Perl and PL/SQL code means LanDB can evolve faster to better match the modern networking needs**
- **Improved user experience – modern, flexible and extendable API**
- **Modern infrastructure – improved logging and monitoring**
- **Needs to be battle tested before LS3, as that's when experiments can migrate**

# Using the API

<https://landb.docs.cern.ch/api/rest/>

# Environments

- **Production**

- Base url: <https://landb.cern.ch/api/>
- Swagger UI: <https://network-services-its-internal.cern.ch/swagger-ui/?urls.primaryName=LanDB+REST>

- **QA**

- Base url: <https://landb-qa.cern.ch/api/>
- Swagger UI: <https://network-services-its-internal.cern.ch/swagger-ui/?urls.primaryName=LanDB+REST>
- Data periodically refreshed from production. We can refresh before big campaigns so you can test your scripts with real data

# Authentication

- **Using the new SSO and JWT tokens**
- **Registering an API client in application portal**
  - **Recommended way**
  - No need for manual action (2fa)
  - <https://application-portal.web.cern.ch/>
  - <https://auth.docs.cern.ch/user-documentation/oidc/api-access/>
- **Personal / existing service account**
  - Using the auth-get-user-token utility
  - <https://auth.docs.cern.ch/applications/command-line-tools/#auth-get-user-token>



# Registering an API client 1/3

## Add an Application [Documentation](#)



**Application Identifier \***  
test-landb-rest-client

**Name \***  
TEST LanDB REST API

**Home Page**  
Home Page e.g. https://myapp.cern.ch

**Description**  
IT-CS-CT testing client for LanDB REST API

**Category ?**  
Official

**Administrator Group**  
  csdb-admin

[Next step: SSO Registration](#)

# Registering an API client 2/3

New CERN SSO Registration [Documentation](#)

Which protocol does your application use for authentication?

- Security Assertion Markup Language (SAML)
- OpenID Connect (OIDC)
- Do not register SSO

Please complete the following information

**Redirect URI(s)**

Specify the URI(s) where users will be redirected after authenticating, e.g. "https://test.cern.ch/\*". For native apps, they should start with 'ch.cern', e.g. "ch.cern.myapp:/oauth2redirect"

http://localhost



https://mysite.cern.ch/\*



**Base URL**

Specify the URL that the SSO will use to redirect or link back to your application.

http://localhost

**Client Secret Configuration**

My application cannot store a client secret safely

If your application is a single page application (or similar client side code), it cannot store a client secret safely and must be configured as a Public Client. You will not be given a client secret.

My application will need to get tokens using its own client ID and secret

An application may need to acquire a token for itself (rather than for users) by logging in with its client ID and secret using the Client Credentials Flow. This is typically done if a client needs to access a protected API.

[Back to: Application Details](#)

[Submit](#)

# Registering an API client 3/3

## Successful Registration

Your Application has been registered ✓

Make sure that you store the following clientID and secret safely.

Client ID test-landb-rest-client Copy

Client Secret Copy

You can find CERN SSO configuration details in our [User Docs](#).

For help securing your application, take a look at the [Documentation](#).

# Getting and using the token

```
[nkotsola@lxplus917 ~]$ auth-get-user-token -c qa-microservice-landb-rest -o token -x  
CERN SINGLE SIGN-ON  
  
On your tablet, phone or computer, go to:  
https://auth.cern.ch/auth/realms/cern/device  
and enter the following code:  
UGWN-FXRQ  
  
You may also open the following link directly and follow the instructions:  
https://auth.cern.ch/auth/realms/cern/device?user\_code=UGWN-FXRQ  
  
Waiting for login...  
█
```

```
nkotsola@:~$ TOKEN=$(curl --location --request POST "https://auth.cern.ch/auth/realms/cern/api-access/token" \  
--header 'Content-Type: application/x-www-form-urlencoded' \  
--data-urlencode 'grant_type=client_credentials' \  
--data-urlencode "client_id=${APPLICATION_CLIENT_ID}" \  
--data-urlencode "client_secret=${APPLICATION_CLIENT_SECRET}" \  
--data-urlencode "audience=qa-microservice-landb-rest" \  
| jq -r .access_token)
```

```
nkotsola@:~$ curl -X "GET" "https://landb-qa.cern.ch/api/beta/devices/MY_DEVICE_NAME" -H "Authorization: Bearer $TOKEN"
```

# Authorization

- Access rights are the same as for LanDB portal
- You can add your registered application client as a member to groups in the [groups portal](#), which is responsible for a device for example
- Special roles and permissions may be given to groups and applications on request, depending on the usecase and requirements. Contact us.

Add an user or group ✕

✉ If you want to add a member by mail, write user's mail in the search. The mail domain must be different than: @cern.ch

Type at least 2 characters of:

- the identity's email address, login or name (first or last name)
- the group's name or identifier

test-landb-rest-client

| Identifier                                       | Type        | Action                              |
|--|-------------|-------------------------------------|
| TEST LanDB REST API (app:test-landb-rest-client) | Application | <input checked="" type="checkbox"/> |

< 1 >

# Versioning

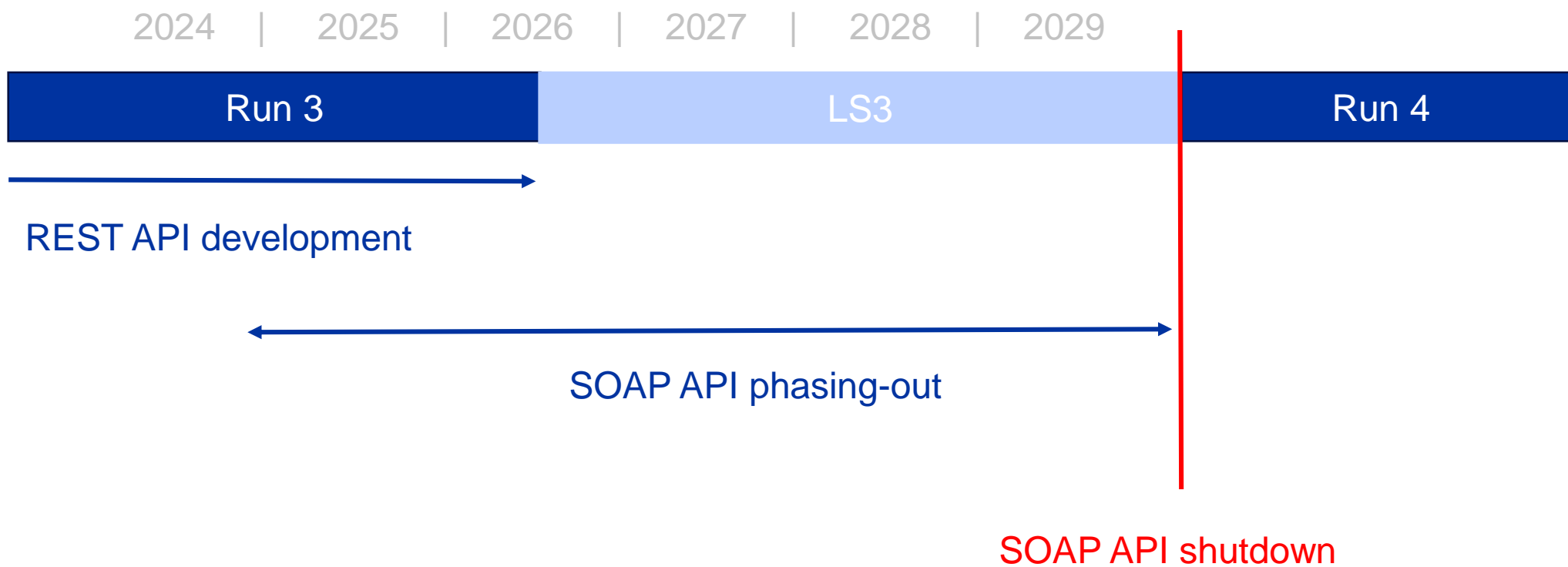
| Version | Base URL  |
|---------|---|
| beta    | <a href="https://landb.cern.ch/api/beta">https://landb.cern.ch/api/beta</a> |
| v1      | <a href="https://landb.cern.ch/api/v1">https://landb.cern.ch/api/v1</a>     |

- **With a new version the previous version gets deprecated**
- **Deprecation and Sunset headers**

# Available endpoints

| Endpoint        | Search | Read | Create | Update | Delete |
|-----------------|--------|------|--------|--------|--------|
| Devices         | X      | X    |        |        |        |
| DHCP client IDs |        | X    | X      | X      | X      |
| DNS zones       | X      | X    | X      | X      | X      |
| DNS records     |        | X    | X      | X      | X      |
| Resource owners | X      | X    |        |        |        |
| Sets            | X      | X    | X      | X      | X      |

# Timeline





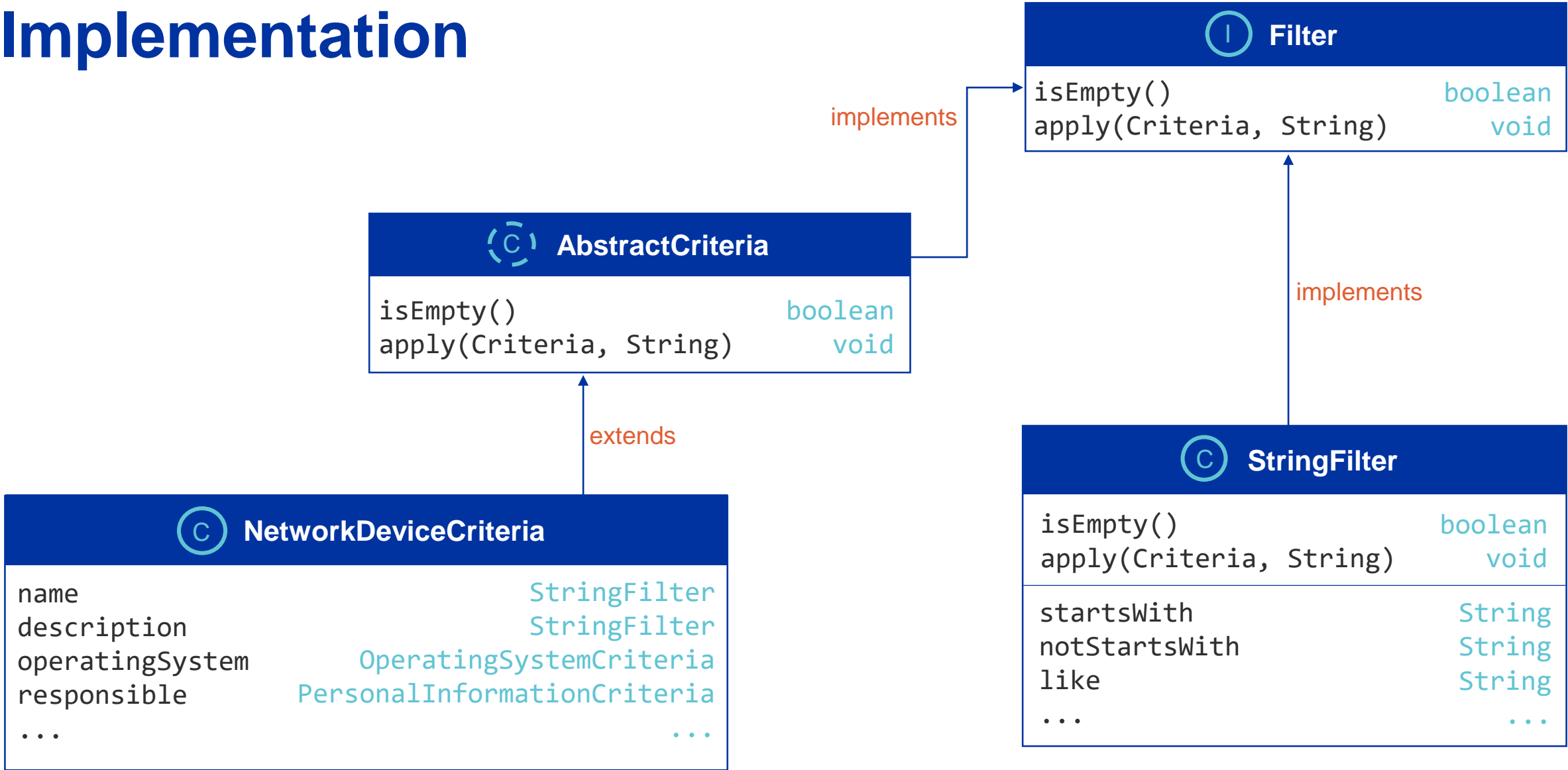
# Search endpoints

- **Documentation:** <https://lndb.docs.cern.ch/api/rest/search-endpoints.html>
- **Search criteria as URL query parameters**
  - `name.startsWith=CMS&updatedAt.gt=2024-09-01T00:00Z`
  - `location.building.eq=0031`
- **Pagination**
  - `_offset=0&_limit=100`
- **Sorting**
  - `_orderBy=NAME_ASC`
  - `_orderBy=UPDATED_AT_DESC,NAME_ASC`

# Operators

| Filter                     | Description   |
|----------------------------|---|
| eq / ne                    | Property is equal to value  |
| isNull                     | Property is null  |
| in / notIn                 | Property is in a list of values                                     |
| startsWith / notStartsWith | String property starts with value                                   |
| endsWith / notEndsWith     | String property ends with value                                     |
| contains / notContains     | String property contains value                                      |
| like / notLike             | String property matches pattern value                               |
| lt / gt                    | Numeric (also date) property is less/greater than value             |
| le / ge                    | Numeric (also date) property is less/greater than or equal to value |
| any                        | List property has any elements matching the criteria                |
| isEmpty                    | List property is empty  |

# Implementation



# Examples

How to search, read, create, update and delete

# Searching for devices – /devices

LanDB REST / Device Search Save Share

GET Send [https://landb-qa.cern.ch/api/beta/devices?\\_offset=0&\\_limit=10&orderBy=CREATED\\_AT\\_DESC&location.building.eq=0031&createdAt.gt=2024-09-01T00:00Z](https://landb-qa.cern.ch/api/beta/devices?_offset=0&_limit=10&orderBy=CREATED_AT_DESC&location.building.eq=0031&createdAt.gt=2024-09-01T00:00Z)

Params • Authorization • Headers (9) Body Scripts Settings Cookies

Query Params

| <input type="checkbox"/> Key                             | Value    | Description | ⋮ Bulk Edit |
|--|----------|-------------|-------------|
| <input checked="" type="checkbox"/> _offset              | 0        |             |             |
| <input checked="" type="checkbox"/> _limit               | 10       |             |             |
| <input checked="" type="checkbox"/> location.building.eq | 0031     |             |             |
| <input type="checkbox"/> name.startsWith                 | CMS      |             |             |
| <input type="checkbox"/> type.eq                         | COMPUTER |             |             |

Body Cookies (1) Headers (13) Test Results 200 OK 2.46 s 9.82 KB Save Response ⋮

Pretty Raw Preview Visualize JSON ⋮ 🔍

```
1 [
2   {
3     "name": "TEST-DEVICE",
4     "serialNumber": null,
5     "inventoryNumber": null,
6     "tag": null,
7     "description": null,
8     "zone": null,
9     "dhcpResponse": "ALWAYS",
10    "ipv6InDnsAndFirewall": true,
11    "managerLock": "NO_LOCK",
12    "ownership": "PERSONAL",
13    "location": {
14      "building": "0031",
15      "floor": "R",
16      "room": "0007"
```



# Creating a set – /sets

LanDB REST / Set Create Save Share

POST ▼ | <https://landb-qa.cern.ch/api/beta/sets> Send ▼

Params Authorization ● Headers (11) **Body** ● Scripts Settings Cookies

none  form-data  x-www-form-urlencoded  raw  binary  GraphQL **JSON** ▼ Beautify

```
1  [{
2    "name": "KRISTIINA-TEST-SET",
3    "type": "INTERDOMAIN",
4    "networkDomain": "GPN",
5    "responsible": {
6      "type": "EGROUP",
7      "person": null,
8      "egroup": {
9        "name": "CSDB-ADMIN",
10       "email": "csdb-admin@cern.ch"
11      },
12     "reserved": null
13   },
14   "description": "set for testing",
15   "projectUrl": null,
16   "receiveNotifications": true
17 }]
```

Body Cookies (1) Headers (15) Test Results 200 OK • 1058 ms • 851 B • Save Response ⋮

**Pretty** Raw Preview Visualize **JSON** ▼ 🔍

```
1  [
2    {
3     "name": "KRISTIINA-TEST-SET",
4     "type": "INTERDOMAIN",
5     "networkDomain": "GPN",
6     "responsible": {
7       "type": "EGROUP",
8       "person": null,
9       "egroup": {
10        "name": "CSDB-ADMIN",
11        "email": "csdb-admin@cern.ch"
12      },
13     "reserved": null
14   },
15 }
```

# Updating a set – /sets/{NAME}

PUT https://landb-qa.cern.ch/api/beta/sets/KRISTIINA-TEST-SET

Send

Params Authorization Headers (11) Body Scripts Settings

Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON

Beautify

```
1 {
2   "name": "KRISTIINA-TEST-SET",
3   "type": "INTERDOMAIN",
4   "networkDomain": "GPN",
5   "responsible": {
6     "type": "EGROUP",
7     "person": null,
8     "egroup": {
9       "name": "CSDB-ADMIN",
10      "email": "csdb-admin@cern.ch"
11    },
12    "reserved": null
13  },
14  "description": "updated description",
15  "projectUrl": null,
16  "receiveNotifications": true,
17  "version": 0
18 }
```

Body Cookies (1) Headers (13) Test Results

200 OK • 621 ms • 901 B • Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "name": "KRISTIINA-TEST-SET",
3   "type": "INTERDOMAIN",
4   "networkDomain": "GPN",
5   "responsible": {
6     "type": "EGROUP",
7     "person": null,
8     "egroup": {
```



# Deleting a set – /sets/{NAME}?version={VERSION}

LanDB REST / Set Delete Save Share

**DELETE** ▼  Send ▼

Params • Authorization • Headers (9) Body Scripts Settings Cookies

Query Params

| <input checked="" type="checkbox"/> | Key     | Value | Description | ⋮ Bulk Edit |
|-------------------------------------|---------|-------|-------------|-------------|
| <input checked="" type="checkbox"/> | version | 1     |             |             |
|                                     | Key     | Value | Description |             |

Body Cookies (1) Headers (12) Test Results 200 OK • 515 ms • 472 B • Save Response ⋮

Pretty Raw Preview Visualize Text ▼

1

# What's next?

- We're working on adding new endpoints
- Try out the new API
- Give feedback [landb-feedback@cern.ch](mailto:landb-feedback@cern.ch)
- E-group [landb-rest-api-news](#)

The screenshot shows the LanDB REST API documentation page. The page has a dark header with the title 'LanDB Documentation', a search bar, and a user profile 'network/monlandb'. Below the header, there are tabs for 'LanDB Portal' and 'API'. The 'API' tab is active, showing a sidebar with navigation links: 'API', 'REST' (with sub-links: 'Getting started', 'Versions', 'Authentication', 'Search endpoints', 'Endpoints'), and 'SOAP'. The main content area is titled 'LanDB REST API' and features a 'Development' section with a blue header and a message: 'The LanDB REST API is still under development and many endpoints are not yet available. Please subscribe to the egroup landb-rest-api-news to be notified when new endpoints are available.' Below this, the base URI is given as 'https://landb.cern.ch/api/v1'. There are sections for 'Considerations' and 'Methods'. The 'Methods' section includes a table with the following data:

| Method | Description   |
|--------|---|
| GET    | Search endpoints or details endpoints, used to retrieve information about entities. |
| POST   | Create a new entity.  |
| PUT    | Update an existing entity.  |
| DELETE | Delete an existing entity.  |

On the right side of the page, there is a 'Table of contents' sidebar with links to 'Considerations', 'Methods', 'Properties', 'Entities versioning', and 'Errors'.

**Thank you!**

**Questions?**

<https://lndb.docs.cern.ch/api/rest/>



home.cern