

Running KLD on OS X

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Install MongoDB Community Edition on OS X

Install Homebrew

```
/usr/bin/ruby -e "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/master/install)"
```

Update Homebrew

```
brew update
```

Install MongoDB

```
brew install mongodb
```

Install Node.js on OS X

<https://nodejs.org/en/download/>

Install JDK on OS X

https://docs.oracle.com/javase/8/docs/technotes/guides/install/mac_jdk.html

Install KLD on OS X

Download GIT client for OS X at <https://git-scm.com/download/mac>

```
git clone https://github.com/koneksys/KLD.git
cd KLD
cd api
npm install
cd ../middleware
npm install
cd ../client
npm install
```

Run KLD on OS X

Instruction: Run each process in different terminal

Create directory for MongoDB (KLD user database)

```
mkdir -p ~/database
```

Run MongoDB

```
sudo mongod --dbpath ~/database
```

Run KLD Middleware

```
cd KLD/middleware
npm start conf/conf.js
```

Run KLD API Server

```
cd KLD/api
npm start conf/conf.js
```

Run KLD Client. *There are 3 ways you can run KLD client in different contexts.*

Run KLD Client in Development Mode

With Development Mode, you will run a simple web server that watches all KLD client source files. Each source file will be watched by the KLD build system and entire KLD client web app will be built automatically and the result of the change will be updated on the web browser in real-time when developers make a change on files under src folder.

```
cd KLD/client
```

```
npm start
```

```
Open http://localhost:9000
```

Run KLD Client using Built-In Node.js web server

With Built-In Node.js web server, you will run KLD client using a built-In Node.js based web server. Yuri have the build KLD client source files using “npm run build”, which the built files will be saved in asset.default folder. You can start the web server using “npm run server” command line.

```
cd KLD/client
```

```
npm run build
```

```
npm run server
```

```
Open http://localhost:3000
```

Run KLD Client on an Apache Web Server

You can reuse Apache Web Server to run KLD client which allows you configure advanced web application deployment.

```
cd KLD/client
```

```
npm run build
```

```
use “asset.default” folder as an Apache document root folder
```

If you want to setup an Apache virtual host, the following is the example of KLD client virtual host setting. To assume that your server IP is 192.168.0.100 and your KLD GIT repo is relocated at /var/www/KLD

```
NameVirtualHost 192.168.0.100
<VirtualHost 192.168.0.100:80>
    ServerName 192.168.0.100
    DocumentRoot /var/www/KLD/client/asset.default
    RewriteEngine On
    RewriteCond %{DOCUMENT_ROOT}%{REQUEST_URI} -f [OR]
    RewriteCond %{DOCUMENT_ROOT}%{REQUEST_URI} -d
    RewriteRule ^ - [L]
    RewriteRule ^ /index.html
</VirtualHost>
```

Create sample organization and user account database

```
cd KLD/api
```

```
npm run orgadd ExampleCompany http://example.com info@example.com "We are ExampleCompany"
```

```
npm run useradd demo@example.com demo ExampleCompany true
```

Open KLD Client

<http://localhost:9000/> for development mode

<http://localhost:3000/> for built-in Node.js web server

Login account

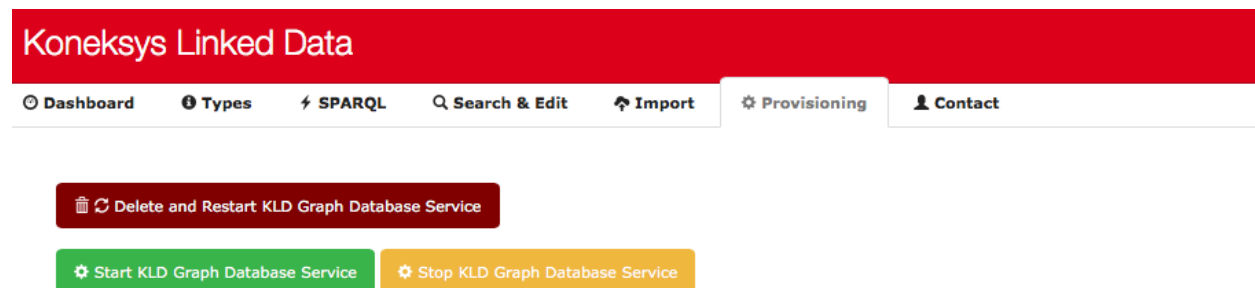
user: demo@example.com

password: demo

Before using KLD client, initialize KLD Graph Database Service is required.

If it is the first time to run KLD on your machine, you have to initialize KLD graph database by clicking “Delete and Restart KLD Graph Database Service” button.

If you already initialized KLD Graph Database Service, you can start and stop KLD Graph Database Service using the two buttons “Start” and “Stop”



Generic Linked Data Use Cases in KLD

KLD provides generic use cases of using linked data for your data. The following are 4 basic use cases you use KLD to manage your data in a semantic form.

Import RDF resources

You can import RDF/XML files by going to Import > From RDF/XML. There is a number of test RDF/XML files available in *KLD/middleware/exampleRDF*, which allows you can experience KLD features.

The screenshot shows the 'Koneksys Linked Data' interface. The top navigation bar includes 'Dashboard', 'Types', 'SPARQL', 'Search & Edit', 'Import', 'Provisioning', and 'Contact'. The 'Import' tab is active, and the 'From RDF/XML' sub-tab is selected. A 'Choose Files' button is on the left. A table lists several RDF files for import:

Name	Size	Progress
city.rdf	2,248.49 KB	<div></div>
sidemo_househeat_blocks.rdf	368.99 KB	<div></div>
sidemo_househeat_inputports.rdf	17.45 KB	<div></div>
sidemo_househeat_lines.rdf	39.73 KB	<div></div>
sidemo_househeat_outputports.rdf	15.49 KB	<div></div>
sidemo_househeat_parameters.rdf	268.50 KB	<div></div>

Below the table is an 'Upload progress:' bar and three buttons: 'Upload all', 'Cancel all', and 'Remove all'.

In addition, importing RDF resources from an OSLC adapter is supported in KLD but the current KLD implementation **ONLY TESTED** with OSLC Adapter Simulink (<https://github.com/ld4mbse/oslc-adapter-simulink>). You have to install and run OSLC Adapter Simulink on the same machine for experiencing this feature. Other OSLC adapter supports will be updated on KLD Github.

The screenshot shows the 'Koneksys Linked Data' interface with the 'Import' tab and 'From OSLC Adapter' sub-tab selected. A text input field is labeled 'OSLC Service Provider Catalog URI (Only Tested with oslc-adapter-simulink)' with a placeholder 'Please enter OSLC Service Provider Catalog URI'. A 'Lookup' button is next to it. Below, a text input field contains 'ServiceCatalogUri=http://localhost:8080/oslc4jsimulink/services/catalog/singleton'. A red bar indicates 'Import Resources From All Service Providers'. Below this, a table lists 'Available OSLC Service Providers' with columns for model names: model2, sidemo_househeat, model11, model11AfterRT4, model11AfterRT, TwoDOFRobotDynCon, model3, model4, and model1. The table shows details for 'model2':

Service Provider Name	model2
Service Provider URI	http://localhost:8080/oslc4jsimulink/services/serviceProviders/model2

An 'Import' button is located at the bottom right of the table.

Browse RDF resources

Browsing RDF resources can be used when you have RDF resources in the KLD graph database. Browsing RDF resources with KLD will start at available RDF types in the system, which you can see all types at the left side in Types tab, and then you can browse all instances of each type through list and visualization interface.

Koneksys Linked Data demo@example.com

Dashboard Types SPARQL Search & Edit Import Provisioning Contact

Resource Types

search types

City (9,966)

Block (34)

InputPort (35)

Line (30)

OutputPort (30)

Parameter (476)

ResponseInfo (5)

Statement (576)

34 Linked data resources of Block

List Visualization

Thermostat (6)

House::OutdoorTempTout (5)

Thermostat::Terr (5)

Heater::HeaterAirTemperature (5)

PlotResults (5)

Heater::HeatGain (6)

House::R-value (5)

Heater (6)

Integrator (6)

SetPoint (6)

FahrenheittoCelsius (5)

DailyTempVariation (5)

House::Sum2 (6)

House::RoomTempTroom (5)

Heater::Integrator (6)

Heater::On::Off (5)

House::Divide (6)

Thermostat::Blowerswitch (5)

Heater::Sum2 (6)

Heater::HeaterSwitch (6)

Sum (6)

CostCalculator (6)

BusCreator (6)

Pages 1

Koneksys Linked Data demo@example.com

Dashboard Types SPARQL Search & Edit Import Provisioning Contact

Resource Types

search types

City (9,966)

Block (34)

InputPort (35)

Line (30)

OutputPort (30)

Parameter (476)

ResponseInfo (5)

Statement (576)

34 Linked data resources of Block

List Visualization

34 instances

Thermostat (6)

House::OutdoorTempTout (5)

House::Sum2 (6)

Sum1 (6)

Thermostat::Terr (5)

House::RoomTempTroom (5)

House::HeaterQDotIn (5)

Heater::HeaterAirTemperature (5)

House::Integrator (6)

House::1::Mc (6)

PlotResults (5)

Heater::On::Off (5)

MoreInfo (4)

Heater::HeatGain (6)

House::Divide (6)

House (6)

House::R-value (5)

Thermostat::Blowerswitch (5)

Thermostat::Relay1 (6)

Heater (6)

Heater::Sum2 (6)

Heater::Troom (6)

type (1)

parameter (15)

inputPort (1)

name (1)

type (1)

Search RDF resources

Searching RDF resources with your specific words can be done by Search feature which allows you to perform full-text search over entire graph database in the system. The scope of the full-text search to find a matched word in resource URIs and literal values using a very fast search technique using SOLR search server.

Koneksys Linked Data

demo@example.com

Dashboard

Types

SPARQL

Search & Edit

Import

Provisioning

Contact

Full-Text Search

Edit

Highlight

Resource Type Filter (8)

Show URI

Filter resource types

Block

City

Line

OutputPort

Parameter

ResponseInfo

Statement

History (1)

Search triples

Your search **block** is matched to 5 predicates. Show

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

...

>

<

Showing 1 to 10 of 1,831 linked data resources in Dataset=union

Subject	Predicate	Object
<div>House::ActiveVariantBlock</div> <div><http://localhost:8181/osl4jsimulink/services/sidem_househeat/parameters/House::ActiveVariantBlock></div>	<div>rdftype</div> <div><http://www.w3.org/1999/02/22-rdf-syntax-ns#type></div>	<div>Parameter</div> <div><http://mathworks.com/simulink/rdf#Parameter></div>
<div>House::ActiveVariantBlock</div> <div><http://localhost:8181/osl4jsimulink/services/sidem_househeat/parameters/House::ActiveVariantBlock></div>	<div>simulink_parameter:name</div> <div><http://mathworks.com/simulink/rdf#Parameter/name></div>	<div>default</div> <div><http://example.com/demo@example.com/default></div>
<div>House::ActiveVariantBlock</div> <div><http://localhost:8181/osl4jsimulink/services/sidem_househeat/parameters/House::ActiveVariantBlock></div>	<div>simulink_parameter:value</div> <div><http://mathworks.com/simulink/rdf#Parameter/value></div>	<div>default</div> <div><http://example.com/demo@example.com/default></div>
<div>House::MemberBlock</div> <div><http://localhost:8181/osl4jsimulink/services/sidem_househeat/parameters/House::MemberBlock></div>	<div>rdftype</div> <div><http://www.w3.org/1999/02/22-rdf-syntax-ns#type></div>	<div>Parameter</div> <div><http://mathworks.com/simulink/rdf#Parameter></div>
<div>House::MemberBlock</div> <div><http://localhost:8181/osl4jsimulink/services/sidem_househeat/parameters/House::MemberBlock></div>	<div>simulink_parameter:name</div> <div><http://mathworks.com/simulink/rdf#Parameter/name></div>	<div>default</div> <div><http://example.com/demo@example.com/default></div>
<div>House::MemberBlock</div> <div><http://localhost:8181/osl4jsimulink/services/sidem_househeat/parameters/House::MemberBlock></div>	<div>simulink_parameter:value</div> <div><http://mathworks.com/simulink/rdf#Parameter/value></div>	<div>default</div> <div><http://example.com/demo@example.com/default></div>
<div>MoreInfo:BlockChoice</div> <div><http://localhost:8181/osl4jsimulink/services/sidem_househeat/parameters/MoreInfo:BlockChoice></div>	<div>rdftype</div> <div><http://www.w3.org/1999/02/22-rdf-syntax-ns#type></div>	<div>Parameter</div> <div><http://mathworks.com/simulink/rdf#Parameter></div>

Edit RDF resources

KLD allows you edit RDF resources using drag and drop interface.

Koneksys Linked Datademo@example.com

DashboardTypesSPARQLSearch & EditImportProvisioningContact

Full-Text SearchEdit

Saved Workspace (3)

House::ActiveVariantBlockhttp://localhost:8181/oslc4jsimulink/services/sldemo_househeat/parameters/House::ActiveVariantBlock

simulink_parameter:namehttp://mathworks.com/simulink/rdf#Parameter/name

Parameterhttp://mathworks.com/simulink/rdf#Parameter

User Resource Types (8)

RDF (1)

RDFS (3)

OWL (1)

OSLC RM (15)

Subject	Predicate	Object	Actions
House::ActiveVariantBlockhttp://localhost:8181/oslc4jsimulink/services/sldemo_househeat/parameters/House::ActiveVariantBlockundefined	oslc_rm:specifiedByhttp://open-services.net/ns/rm#specifiedByThe subject is specified by the object. For example, a model element might make a requirement collection more precise.		

+ - Clear Save All

Query RDF resources using SPARQL

A semantic analysis using SAPRQL can be done by the built-in KLD SPARQL client. You can query RDF resource using SPARQL that will performed the query on the KLD graph database directly.

Koneksys Linked Datademo@example.com

DashboardTypesSPARQLSearch & EditImportProvisioningContact

Question Categories

SELECT * WHERE {?s ?p ?o}

Execute

Results dataHTML | JSON

SELECT * WHERE {?s ?p ?o}

About 25,181 results

http://dbpedia.org/resource/Kian	http://dbpedia.org/ontology#country	http://dbpedia.org/resource/Iran
http://dbpedia.org/resource/Kian	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://dbpedia.org/ontology/City
http://dbpedia.org/resource/Arbor_Creek_Saskatoon	http://dbpedia.org/ontology#country	http://dbpedia.org/resource/Canada
http://dbpedia.org/resource/Arbor_Creek_Saskatoon	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://dbpedia.org/ontology/City
http://dbpedia.org/resource/Grosvenor_Park_Saskatoon	http://dbpedia.org/ontology#country	http://dbpedia.org/resource/Canada
http://dbpedia.org/resource/Grosvenor_Park_Saskatoon	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://dbpedia.org/ontology/City
http://dbpedia.org/resource/Jamakhandi	http://dbpedia.org/ontology#country	http://dbpedia.org/resource/India
http://dbpedia.org/resource/Jamakhandi	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://dbpedia.org/ontology/City
http://dbpedia.org/resource/Adelaide/Churchill_Saskatoon	http://dbpedia.org/ontology#country	http://dbpedia.org/resource/Canada
http://dbpedia.org/resource/Adelaide/Churchill_Saskatoon	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://dbpedia.org/ontology/City
http://dbpedia.org/resource/Akole	http://dbpedia.org/ontology#country	http://dbpedia.org/resource/India
http://dbpedia.org/resource/Akole	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://dbpedia.org/ontology/City
http://dbpedia.org/resource/Athani_Karnataka	http://dbpedia.org/ontology#country	http://dbpedia.org/resource/India
http://dbpedia.org/resource/Athani_Karnataka	http://www.w3.org/1999/02/22-rdf-syntax-ns#type	http://dbpedia.org/ontology/City
http://dbpedia.org/resource/Bailly_Howrah	http://dbpedia.org/ontology#country	http://dbpedia.org/resource/India
Open #localhost:9000/# on this page in a new tab	http://www.w3.org/1998/C22121rdf:KeyType#type	http://dbpedia.org/ontology/City