

Linkspers data models

Linkspers integrates a graph database used to provide a context to each acquired data making it easier to represent complex systems such as buildings and all their subsequent assets. Third party services can use this graph database to automatically (machine to machine) understand all the subsystems and assets involved.

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Introduction

The graph database is built with 4 main data models (also known as Aspect):

- Structure
- Equipment
- Point
- Product

Two are custom implemented on each site, two others are completely generic and will be found on any Linkspers's instance.

Data models are made of **Definition** (Example: "Floor") grouping **Nodes** (Example: "Level 1"). Relationships are defined between Nodes to represent Compositions or Inheritance.



Definition

Node

Each Node has a unique **identifier** (A machine name):

- For implemented data models (Structure & Product), new Nodes will be created specifically for a site.
- For generic data models (Equipment & Point), Nodes will always keep their unique id. The direct benefit is that a third party machine can always query all the elevators of a site with the following id "t0SCLJz9bE1OBamTvBBpc"

Nodes can contain additional information called **tags**, they are usually defined from the Definition and are common to every Node of a Definition.

Each Node has also a **Display Name** (Human readable)

Data Models are used to add descriptive data to live data. Although, they can be accessed directly using the API (both in reading and modifying), third party (an application) will not read directly the data models but live data or hierarchies (part of the graph database, see [here](#) for more details). Live data or hierarchies will output data models through tags. See the last part of this page to understand the result of the use of data models.

Let's explore in details each of the Data Model.

Structure Data Model

Equipment Data Model

Product Data Model

Point Data Model

Use of Data models

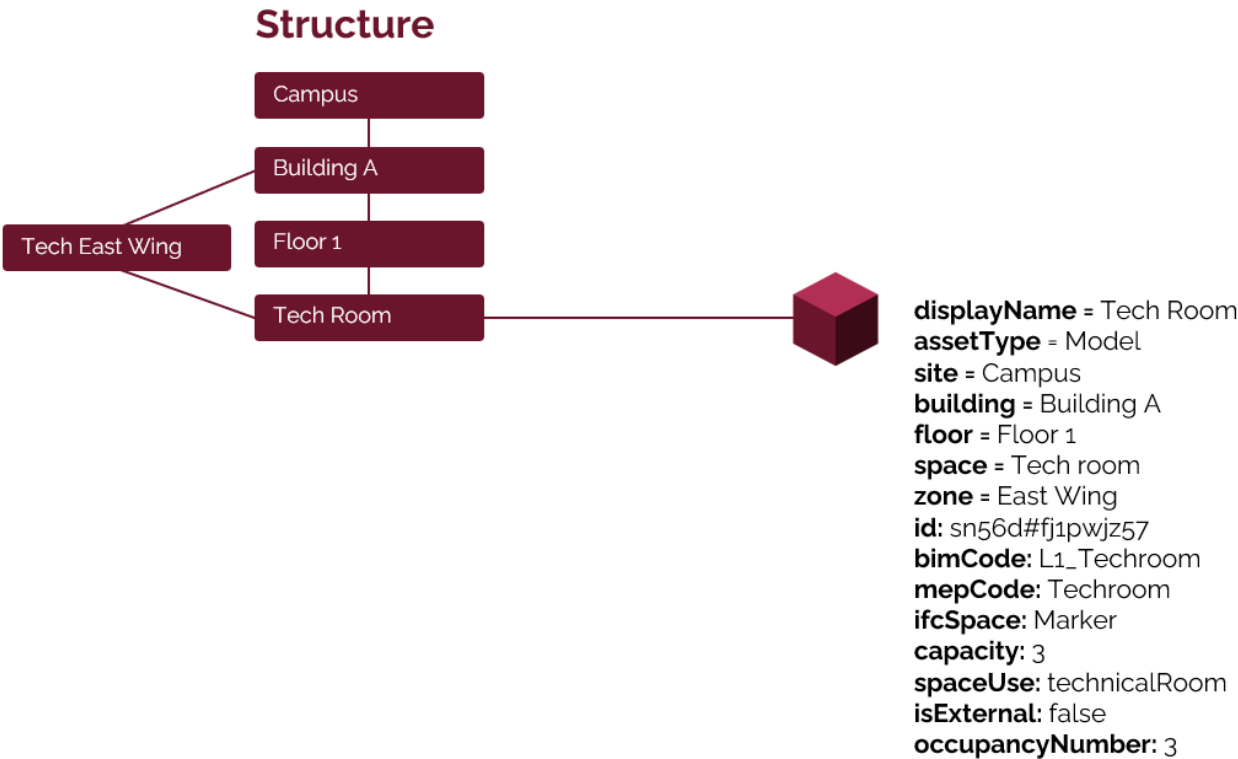
While using the API or a BOS connector, assets will be described using the 4 data models seen previously. (See [Linkspen assets](#) for more information about the definition of assets)

Definitions and Nodes are transformed respectively into key = value (key is the Definition name, value the Node name)

Example on a space

Nodes from the Structure Model are represented also as assets (a specific space for example is an asset containing related data)

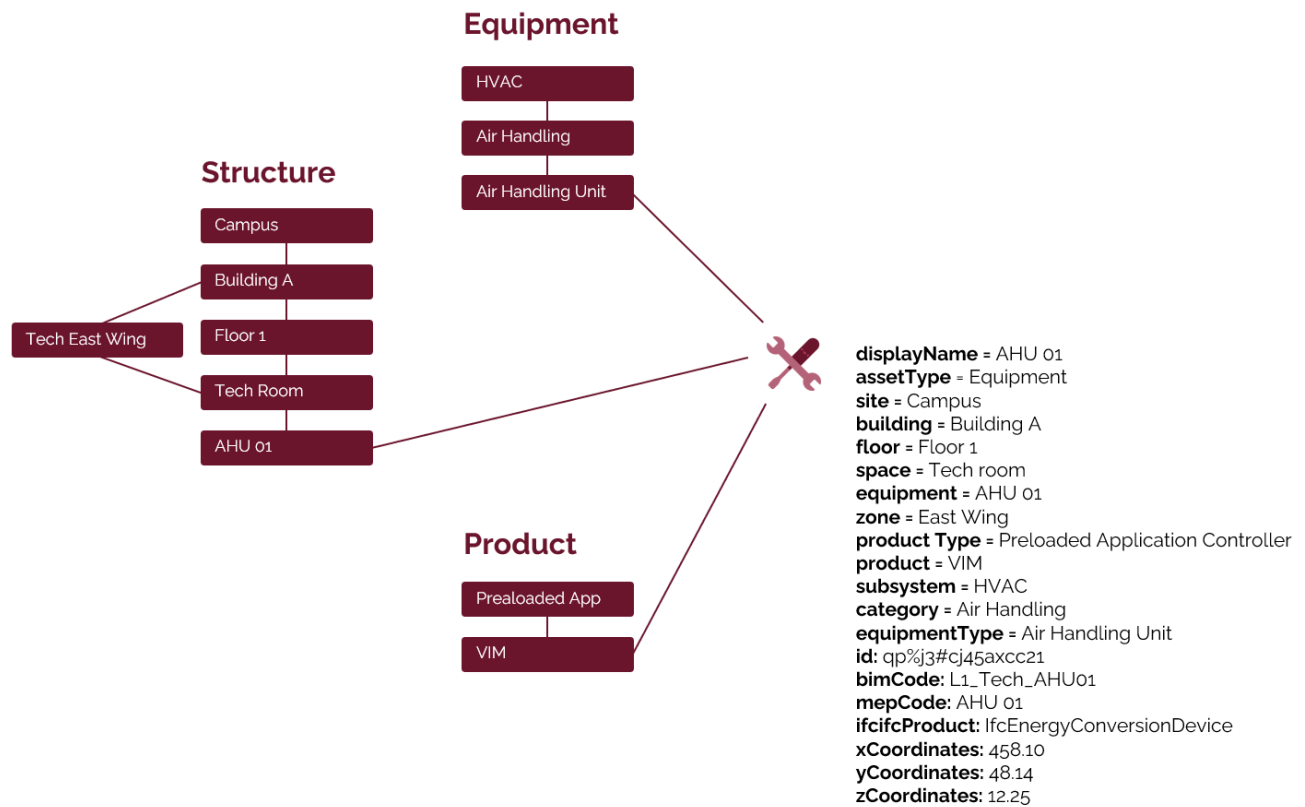
Below is an example of a space "Tech Room". Information about its ascendants (floor, building...) are available as tags.



Example on an equipment

Equipment will always be associated with the Structure and Equipment data models. They may be associated as well with the Product data model.

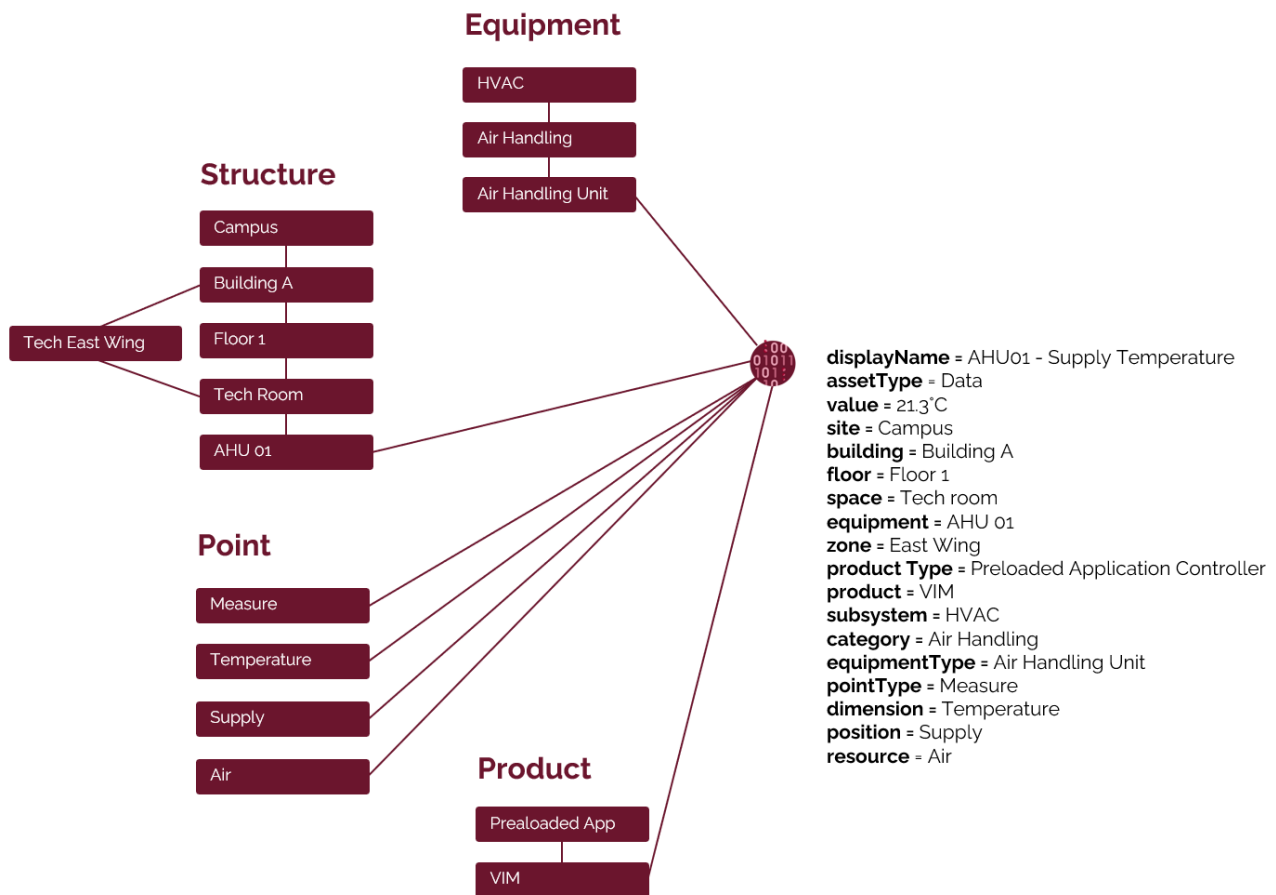
Below an example with a Air Handling Unit "AHU 01".



Example on a data point

Data points are always associated with the 4 data models seen previously.

Below an example with the supply temperature of an AHU. In general, data points contains more tags than equipment.



Depending on the support used to read the data (external database, API, MQTT...), these tags will be transformed as static information to allow a third party machine to understand each data point.

Data models access

Linksper API

Data models can be directly read or modified through the Linksper API using the `/v1/manage/models`.

The Aspect (Data Models) or the Definition can be passed as a parameters.

See [Linksper Open API Documentation](#) for more information.

Manage Create, modify delete data models content

GET `/v1/manage/models` Get all the Nodes associated to a model

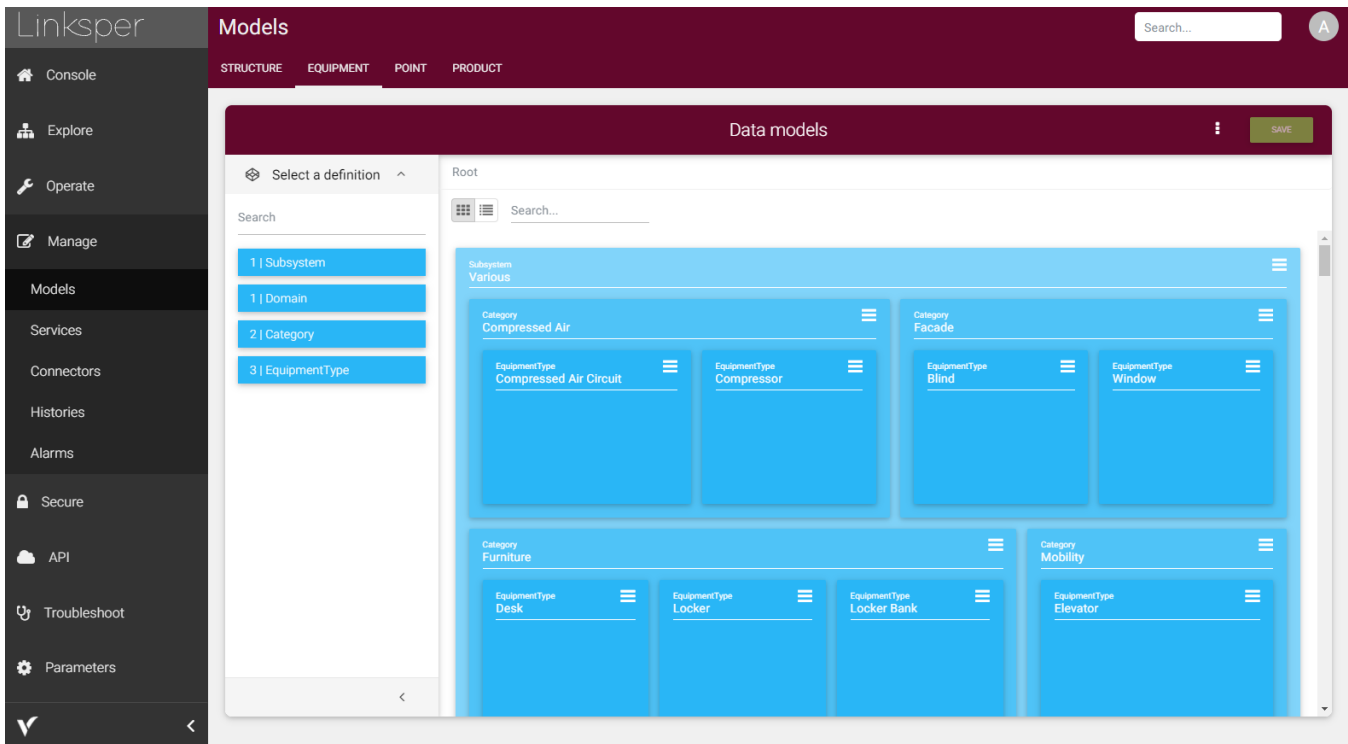
POST `/v1/manage/models` Create models

PUT `/v1/manage/models` update model

DELETE `/v1/manage/models` delete model

Administration interface

The "Linkspers Console" application allows the Master System Integrator to manage data models: add, edit or delete Nodes from each data models.



As an "open system", it is possible to modify Linkspers standardized data models such as Equipment and Point. However it is important to remember such modifications would be specific to the site and therefore not necessarily out of scope.

You can contact VayanData by email or join us on Slack discussion groups to propose your improvement on the standard so it can be globally available.