

درس مبانی اینترنت اشياء

گزارش پروژه

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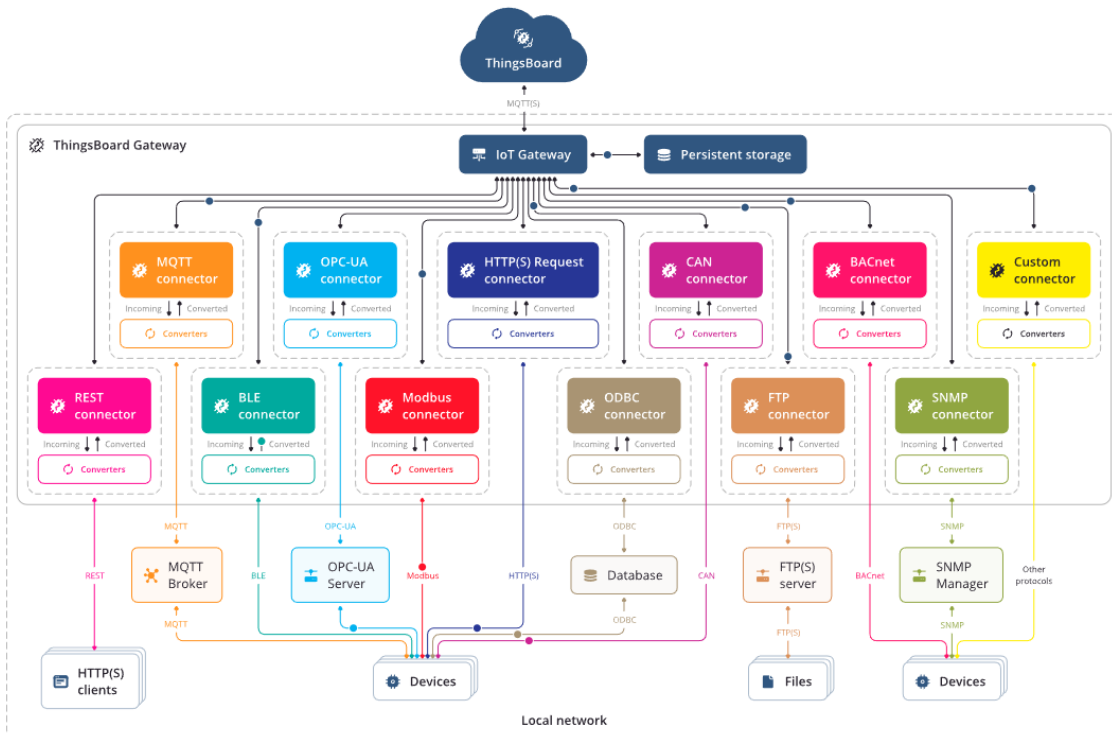
Factory-sim

Prosys OPC UA Browser

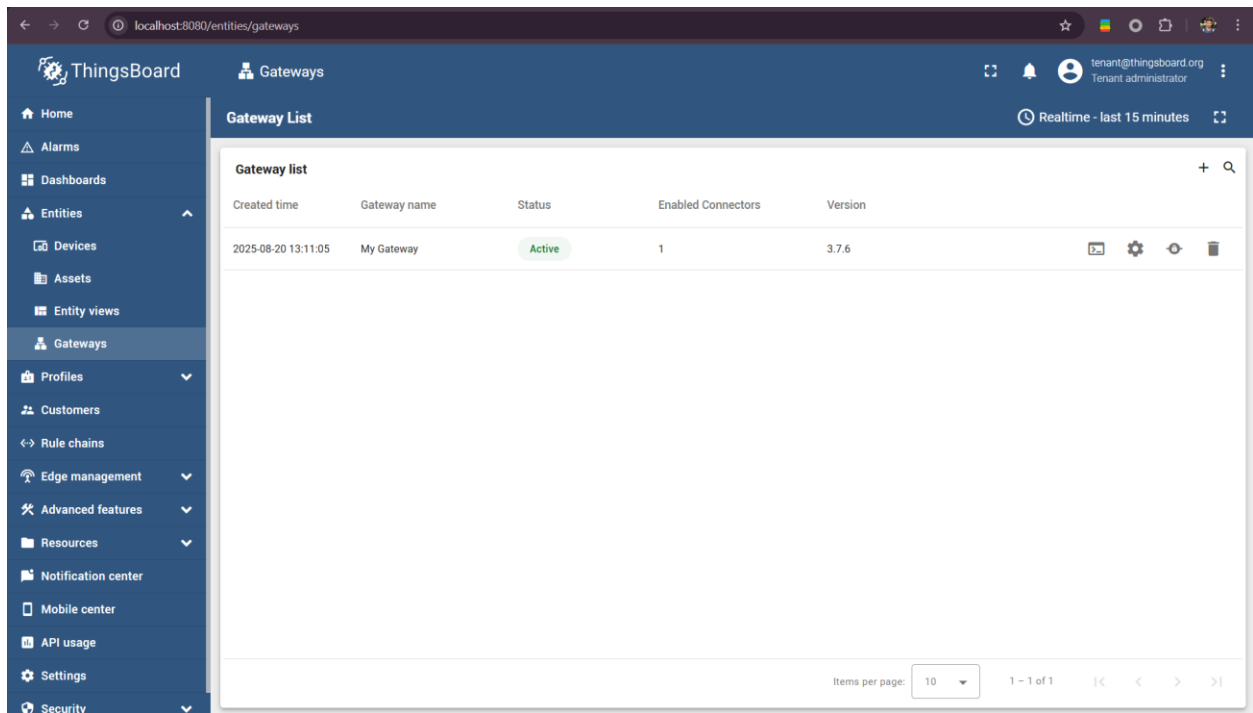
The screenshot shows the Prosys OPC UA Browser interface. The left pane displays a tree view of objects under 'MyObject', including ArmX, ArmY, ArmZ, GripperForce, and various joint angles. The main pane shows a data table with 16 rows of data. The table has columns for NodeID, DisplayName, Value, DataType, SourceTimestamp, ServerTimestamp, StatusCode, and Graph. The data represents a factory simulation with various components and their states.

#	NodeID	DisplayNa...	Value	Data...	SourceTime...	ServerTime...	StatusCode	Graph *
0	ns=2;i=2	ArmX	-16.2620514...	Double	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
1	ns=2;i=3	ArmY	2.867438428...	Double	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
2	ns=2;i=4	ArmZ	-11.5624709...	Double	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
3	ns=2;i=15	GripperForce	0	Int64	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
4	ns=2;i=5	Joint1Angle	0	Int64	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
5	ns=2;i=6	Joint2Angle	0	Int64	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
6	ns=2;i=7	Joint3Angle	0	Int64	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
7	ns=2;i=8	Joint4Angle	0	Int64	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
8	ns=2;i=9	Joint5Angle	0	Int64	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
9	ns=2;i=10	Joint6Angle	305	Int64	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
10	ns=2;i=16	ProcessSt...	false	Boole...	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
11	ns=2;i=13	ProximityS...	false	Boole...	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
12	ns=2;i=17	Recipe	Pies	String	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
13	ns=2;i=14	VacuumGr...	false	Boole...	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
14	ns=2;i=12	oven_state	OFF	String	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>
15	ns=2;i=11	robot_state	IDLE	String	08/21/25 23:0...		GOOD (0x...	<input type="checkbox"/>

ThingsBoard



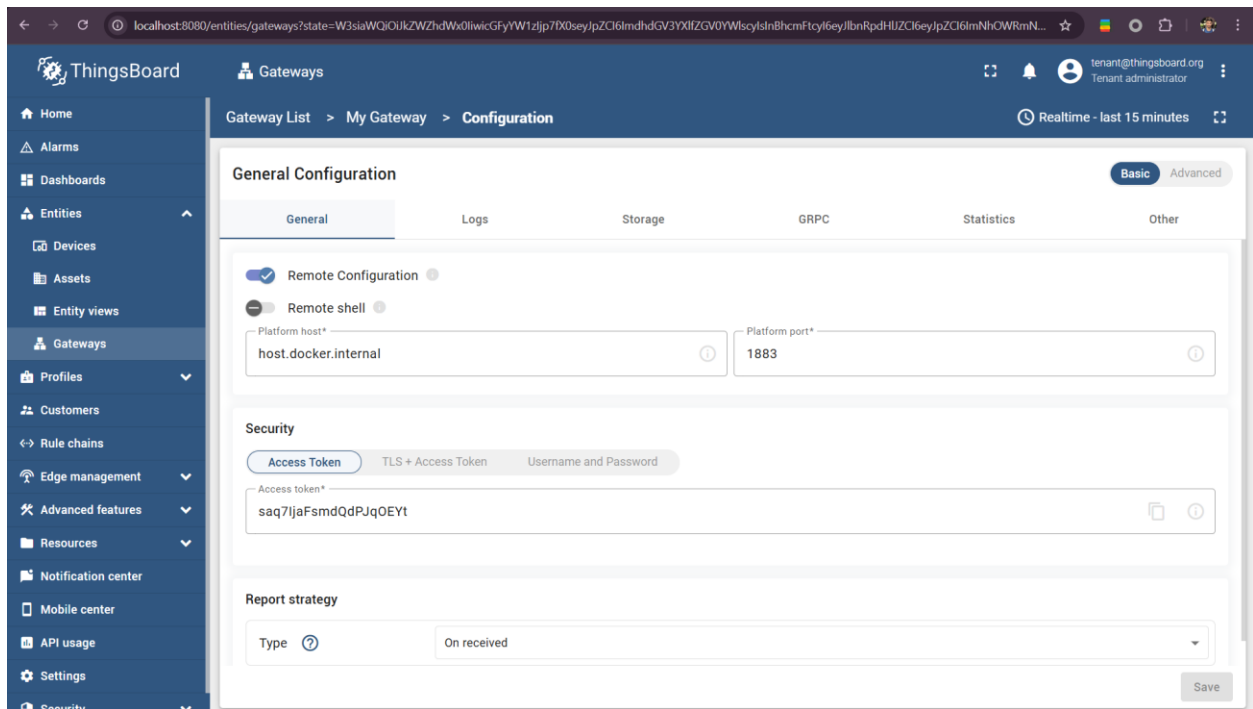
IoT Gateway



The screenshot shows the ThingsBoard web interface at the URL `localhost:8080/entities/gateways`. The left sidebar contains a navigation menu with items like Home, Alarms, Dashboards, Entities, Devices, Assets, Entity views, Gateways (selected), Profiles, Customers, Rule chains, Edge management, Advanced features, Resources, Notification center, Mobile center, API usage, Settings, and Security. The main header displays the ThingsBoard logo, the 'Gateways' title, and a user profile for 'tenant@thingsboard.org'. The 'Gateway List' section shows a table with the following data:

Created time	Gateway name	Status	Enabled Connectors	Version
2025-08-20 13:11:05	My Gateway	Active	1	3.7.6

At the bottom right of the table, there are icons for details, settings, and deletion. The pagination bar at the bottom indicates 'Items per page: 10' and '1 - 1 of 1'.



The screenshot shows the 'Configuration' page for the 'My Gateway' entity, with the URL `localhost:8080/entities/gateways?state=W3siaWQOUkZlZGZhdW0iOiJlYXV1Zjpw7X0seyJpZC6ImdhGV3YXlZGV0YWscylsnBhcmF0cyJlbnRpdHUiZC6eyJpZC6ImNhOwRmN...`. The breadcrumb trail is 'Gateway List > My Gateway > Configuration'. The page has tabs for 'Basic' (selected) and 'Advanced'. Under the 'Basic' tab, there are sub-tabs: 'General' (selected), 'Logs', 'Storage', 'GRPC', 'Statistics', and 'Other'. The 'General' configuration includes:

- Remote Configuration:** A toggle switch that is turned on.
- Remote shell:** A toggle switch that is turned off.
- Platform host:** A text input field containing 'host.docker.internal'.
- Platform port:** A text input field containing '1883'.
- Security:** A section with three tabs: 'Access Token' (selected), 'TLS + Access Token', and 'Username and Password'. The 'Access Token' tab shows an 'Access token' input field with the value 'saq7ljaFsmDQdPJqOEYt'.
- Report strategy:** A section with a 'Type' dropdown menu set to 'On received'.

A 'Save' button is located at the bottom right of the configuration panel.

OPC UA Connector

ThingsBoard

Assets

Home

Alarms

Dashboards

Entities

Devices

Assets

Entity views

Gateways

Profiles

Customers

Rule chains

Edge management

Advanced features

Resources

Notification center

Mobile center

API usage

Settings

Security

Assets

Asset profile

All

Created time

Name

Asset

2025-08-20 19:58:04

Bakery Production Line

default

Bakery Production Line

Asset details

Details

Attributes

Latest telemetry

Calculated fields

Alarms

Events

Inbound relations

Direction

To

Type

From entity type

From entity name

Contains

Device

Joint3

Contains

Device

Joint2

Contains

Device

Joint4

Contains

Device

Joint1

Contains

Device

Gripper

Contains

Device

Arm

Contains

Device

oven

Contains

Device

Joint5

Items per page

10

1 - 10 of 12

Connectors

Enabled

Name

Type

Configuration

Status

Actions

OPCUAC

OPCUA

SYNC

OPCUA Configuration v3.7.6

Basic

Advanced

General

Server

Data mapping

Name

OPCUAC

Logs configuration

Enable remote logging

Logging level

INFO

Report strategy

Save

Connectors

Enabled

Name ↑

Type

Configuration

Status

Actions

OPCUAC

OPCUA

SYNC

OPCUA Configuration v3.7.6

BasicAdvanced

General

Server*

Data mapping*

Server endpoint url

opc.tcp://host.docker.internal:4840/freeopcua/server

Timeout ⓘ

1000

ms

Security policy ⓘ

Basic128RSA15

Scan period (ms) ⓘ

3600000

Poll period (ms) ⓘ

5000

Subscription chec... ⓘ

100

Enable subscription ⓘ

Save

Connectors

Enabled

Name ↑

Type

Configuration

Status

Actions

OPCUAC

OPCUA

SYNC

OPCUA Configuration v3.7.6

BasicAdvanced

General

Server*

Data mapping*

Data mapping

Device node

Device name

Device profile

Root\Objects\2:M...

Arm

default

Root\Objects\2:M...

Joint1

default

Root\Objects\2:M...

Joint2

default

Edit

Delete

Root\Objects\2:M...

Joint3

default

Root\Objects\2:M...

Joint4

default

Root\Objects\2:M...

Joint5

default

Root\Objects\2:M...

Joint6

default

Root\Objects\2:M...

...

default

Save

Connectors

+

Enabled

Name ↑

Type

Configuration

Status

Actions

OPCUAC

OPCUA

SYNC

OPCUA Configuration v3.7.6

BasicAdvanced

GeneralServer*Data mapping*

Data mapping

+

Device node

Device name

Device profile

Root\Objects\2:M...

Joint5

default

Root\Objects\2:M...

Joint6

default

Root\Objects\2:M...

Gripper

default

Root\Objects\2:M...

oven

default

Root\Objects\2:M...

process

default

Root\Objects\2:M...

robot

default

Root\Objects\2:M...

ProximitySensor

default

Save

Data mapping

?

×

Data mapping provides the capability to parse and convert the data received from a OPCUA server into specific data keys.

Device node *

Path

Root\Objects\2:MyObject

?

Device *

Entity field

Source

Value / Expression

Name *

Constant

Arm

Profile name *

Constant

default

Report strategy

▼

Attributes

Cancel

Apply

ay List

Data mapping

?

×

Time series (3)

×

X: \${2:ArmX}

▼

■

Y: \${2:ArmY}

▼

🗑

Z: \${2:ArmZ}

^

🗑

Platform side

Key * ⓘ

Z

?

Connector side

Type *

Path

▼

Value * ⓘ

\${2:ArmZ}

?

Add time series

Cancel

Apply

Apply

...

Devices

ThingsBoard

Devices

Device Filter

Created time	Name	Device profile
2025-08-20 20:20:21	ProximitySensor	default
2025-08-20 20:14:44	robot	default
2025-08-20 20:13:38	process	default
2025-08-20 20:13:38	oven	default
2025-08-20 20:13:38	Gripper	default
2025-08-20 20:03:31	Joint6	default
2025-08-20 20:03:31	Joint5	default
2025-08-20 20:03:31	Joint4	default
2025-08-20 20:03:31	Joint3	default
2025-08-20 20:03:31	Joint2	default

Joint6

Device details

Details Attributes Latest telemetry Calculated fields Alarms Events

Telemetry

Last update time	Key	Value
2025-08-21 03:22:14	Angle	115

Items per page: 10 1 - 1 of 1

Asset

ThingsBoard

Assets

Asset profile

Created time	Name	Asset profile
2025-08-20 19:58:04	Bakery Production Line	default

Bakery Production Line

Asset details

Details Attributes Latest telemetry Calculated fields Alarms Events

Inbound relations

Type	From entity type	From entity name
Contains	Device	Joint3
Contains	Device	Joint2
Contains	Device	Joint4
Contains	Device	Joint1
Contains	Device	Gripper
Contains	Device	Arm
Contains	Device	oven
Contains	Device	Joint5

Items per page: 10 1 - 10 of 12

Dashboard

