

SISTEM KOMUNIKASI NIRKABEL MODUL 1

SMART HOME INTERNET OF THINGS BERBASIS PACKET TRACER

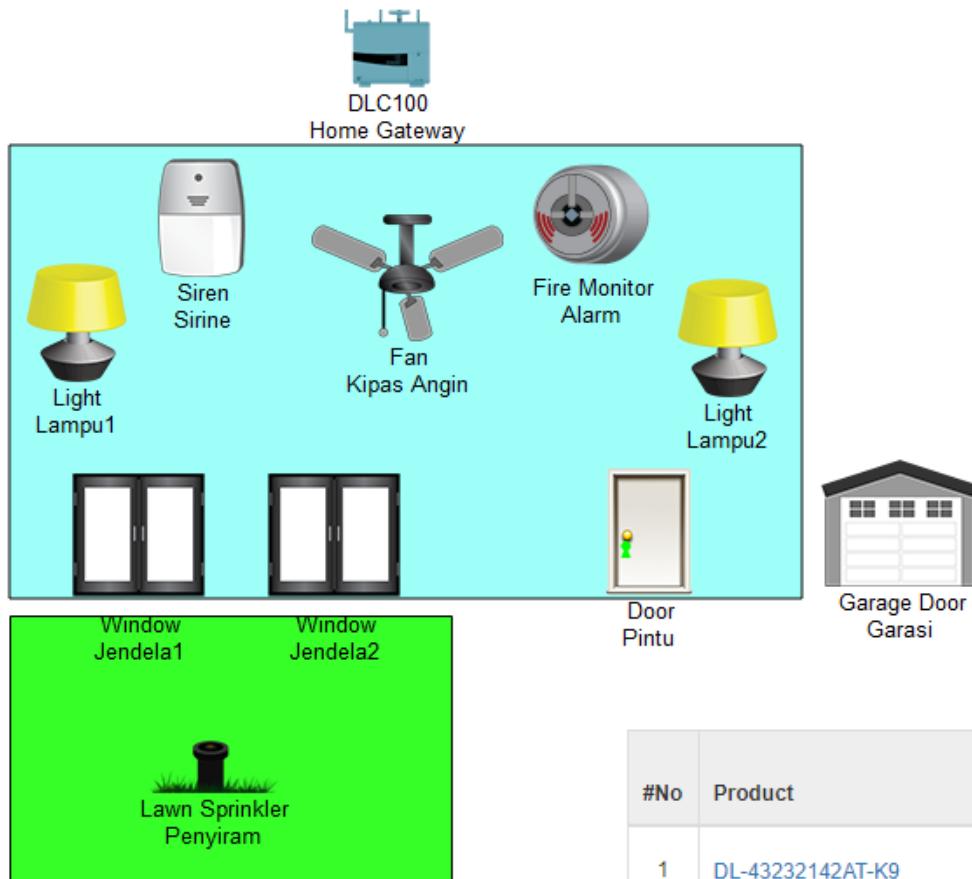
Mochammad Zen Samsono Hadi, ST. MSc. Ph.D

TOPIK BAHASAN

- Pengenalan sensor
- Design dengan Home Gateway
- Design dengan IoT Server

Topologi Jaringan

- Designlah jaringan seperti berikut:



Home Gateway
DLC-100

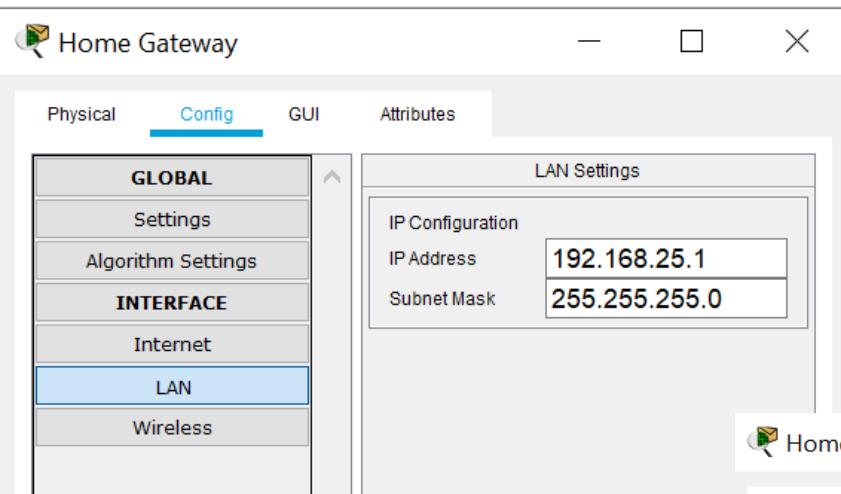
DLC-200



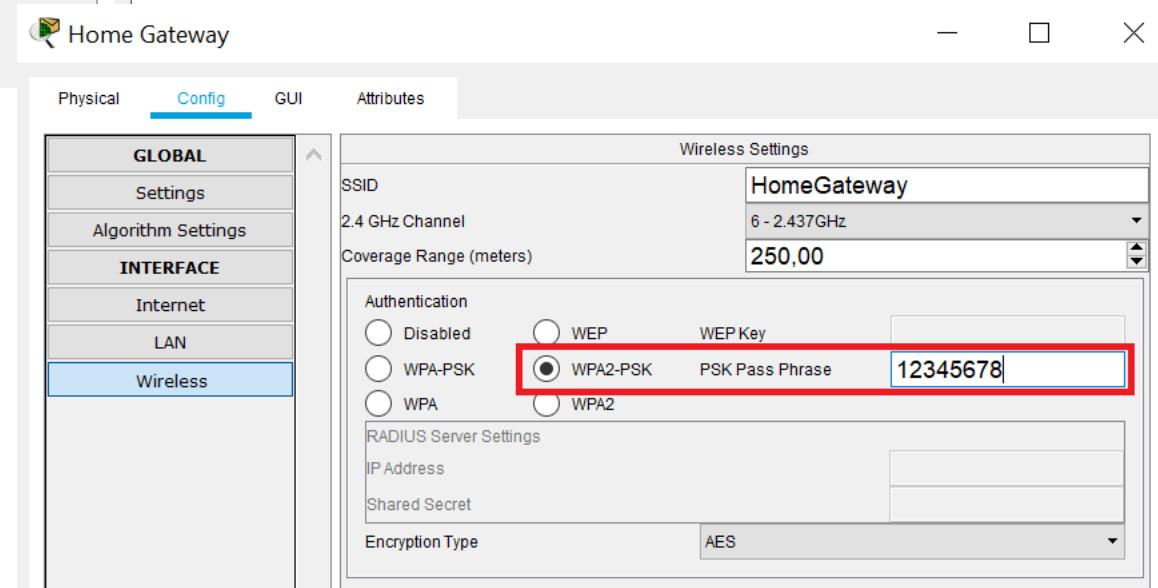
| #No | Product | Description | List Price (USD) |
|-----|------------------|--|------------------|
| 1 | DL-43232142AT-K9 | AT&T DLC-200, EU Version (ZigBee, Z-Wave, AFM, Wi-Fi & 3G) | \$474.00 |

Setting pada HomeGateway

Setting IP Address (DHCP Server)



Setting WiFi & Security



Setting pada Perangkat Sensor IoT

Pintu

Specifications I/O Config Physical Config Thing Editor Programming Attributes

Door
Open / Close / Unlock / Lock

Features:

- Registration Server Compatible
- Ability to vent Carbon Dioxide and Carbon Monoxide

Usage:

- Connect to the Door from SBC/MCU/Thing with IoT Custom Cable
- Use customWrite function to control the door and lock

Direct Control:

- ALT-click on keyhole to lock/unlock
- ALT-click on door to open/close

Local Control:

- Connect device to SBC/MCU/Thing. Use the "customWrite" API per Data Specifications

Remote Control:

- Connect device to Registration Server using Config Tab

NOTE: opening and closing the door is not remote controllable

Data Specifications:

Message Format: [door],[lock]

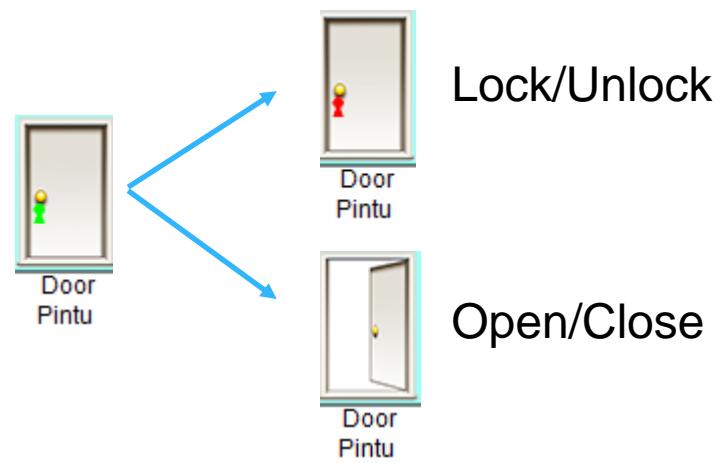
door: 0 = closed, 1 = open, -1 = don't care

lock: 0 = unlock, 1 = lock, -1 = don't care

Example:

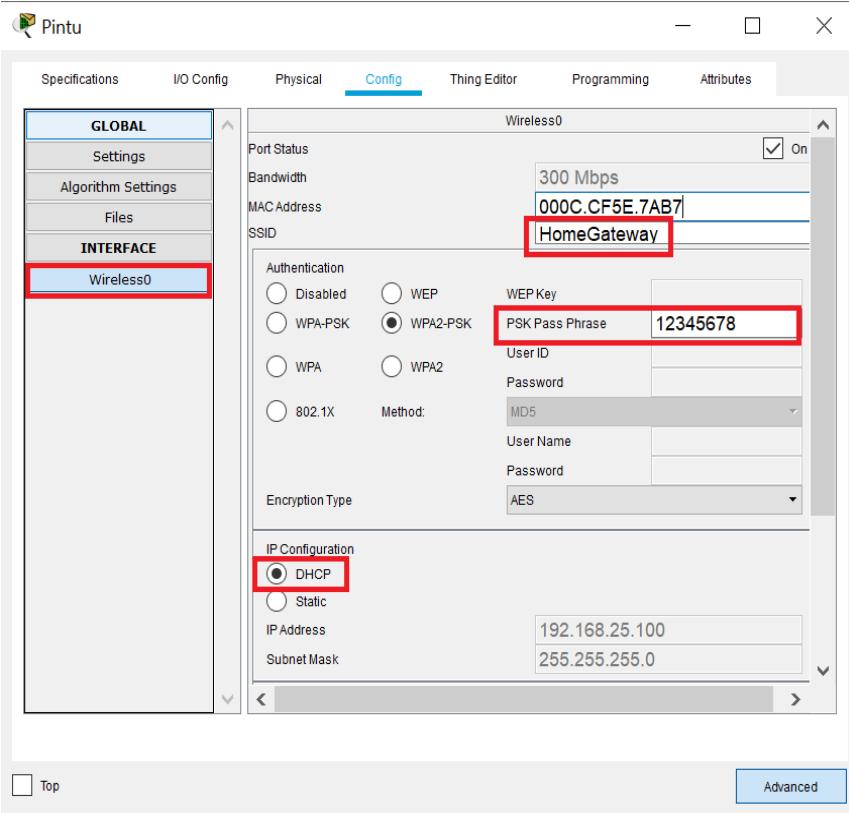
Connect a SBC to the door, send a customWrite and open the door to vent the Carbon Dioxide and Carbon Monoxide level

- Perhatikan Spesifikasi dari perangkat tsb.

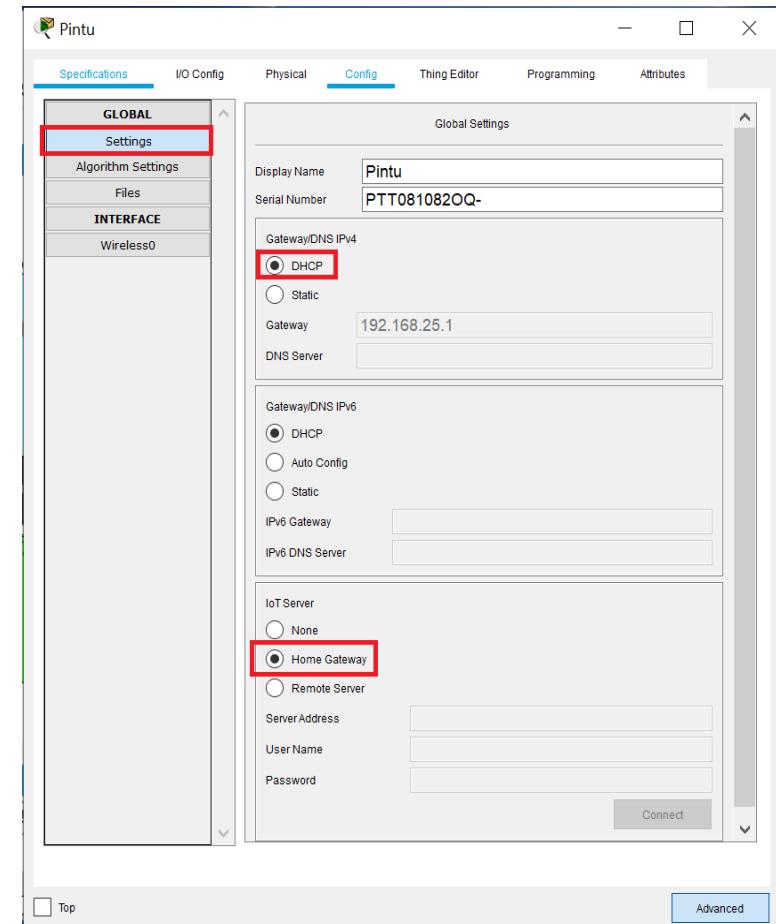


Setting pada Perangkat Sensor IoT

Setting SSID dan passcode



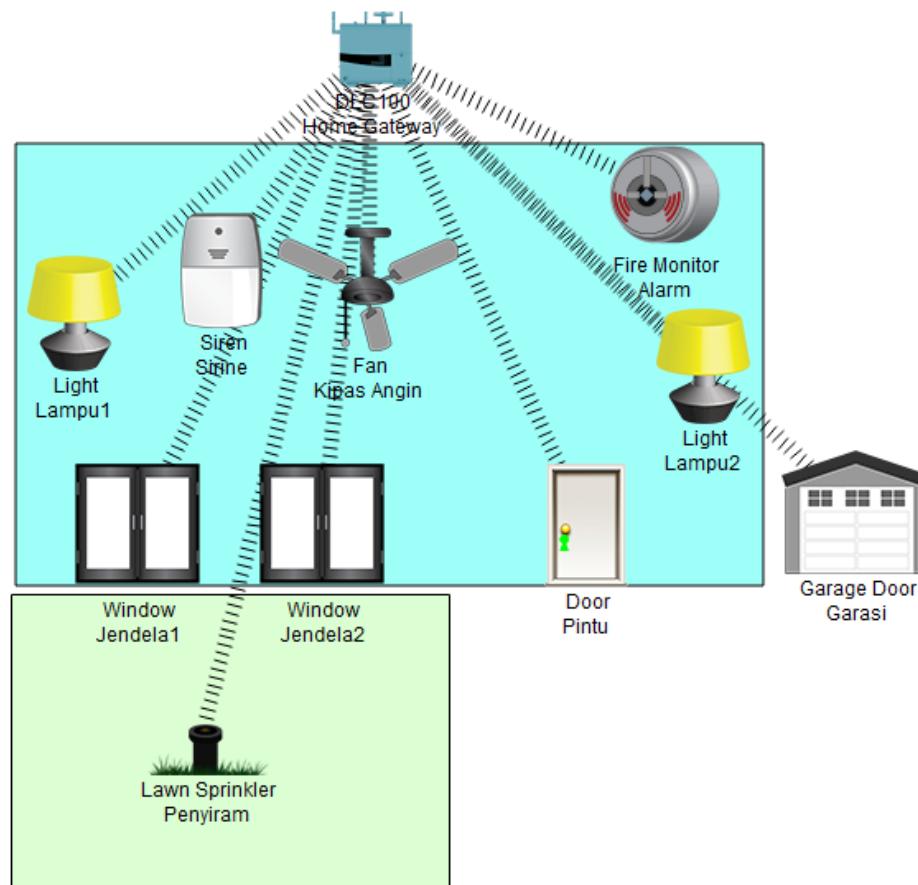
Setting DHCP dan koneksi ke IoT Server



- Lakukan hal yang sama pada semua perangkat IoT

Interkoneksi Perangkat IoT

Semua perangkat IoT sudah terhubung ke HomeGateway



Monitoring Perangkat IoT

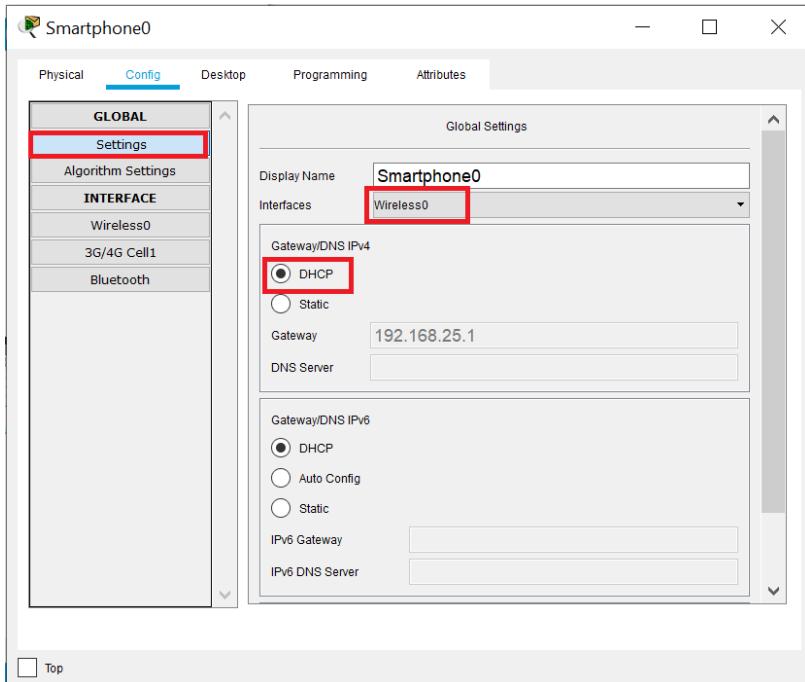
The screenshot displays a software interface for monitoring IoT devices. On the left, there is a network diagram titled "DTE100 Home Gateway". The diagram shows various nodes connected to a central gateway: a "Smartphone-PT Smartphone0" (represented by a smartphone icon), a "Fire Monitor Alarm" (represented by a circular alarm icon), a "Lampu1" (represented by a lamp icon), a "Kipas Angin" (represented by a ceiling fan icon), a "Door Pintu" (represented by a door icon), a "Garage Door Garasi" (represented by a garage door icon), a "Window Jendela1" (represented by a window icon), a "Window Jendela2" (represented by a window icon), a "Lawn Sprinkler Penyiram" (represented by a sprinkler icon), and two "Siren Sirine" (represented by a siren icon). Below the network diagram is a toolbar with icons for various device types: Top, Server, Web Server, Printer, IP Phone, VoIP Device, Phone, TV, Wireless Tablet, Smart Device, Generic Wireless, Generic Wired, and Sniffer.

On the right, there is a detailed list of devices under the heading "IoT Monitor" and "IoT Server - Devices". The list includes:

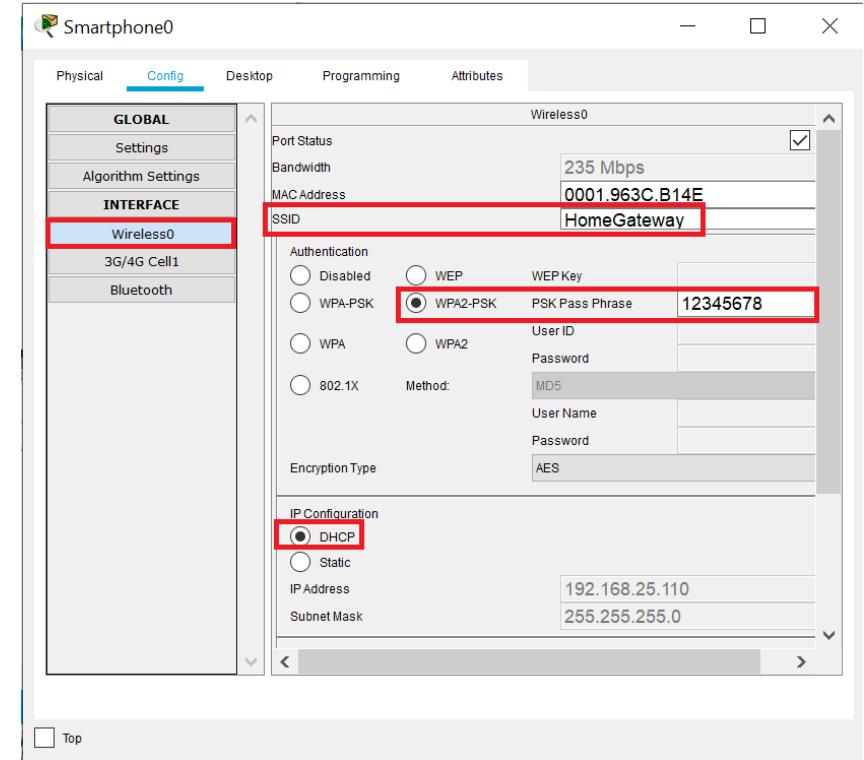
- Pintu (PTT081082OQ-) Door
- Sirine (PTT0810SL3U-) Siren
- Lampu1 (PTT0810ZHH7-) Light
Status: On (green bar)
- Kipas Angin (PTT08101ZPP-) Ceiling Fan
Status: High (blue bar)
- Alarm (PTT0810UH6H-) Fire Sensor
- Lampu2 (PTT0810P96C-) Light
- Garasi (PTT0810824S-) Garage Door
Status: On (green bar)
- Jendela2 (PTT0810I3SN-) Window
- Jendela1 (PTT0810I36M-) Window
- Penyiram (PTT08109921-) Lawn Sprinkler
Status: On (green bar)

Setting Smartphone

Setting Wireless Interface dan GW

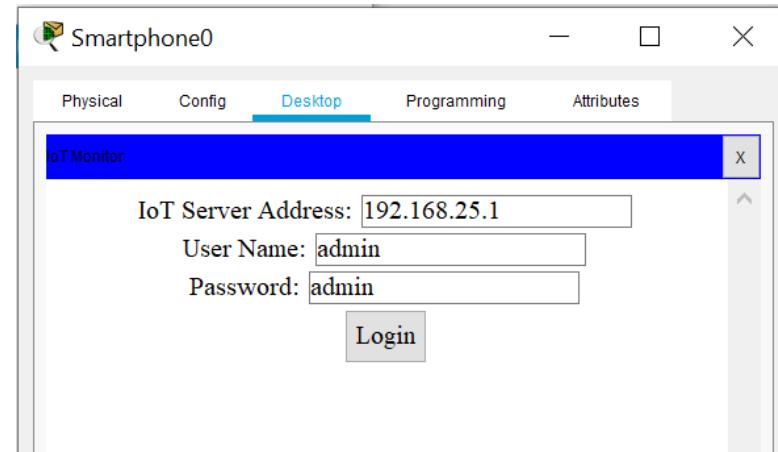
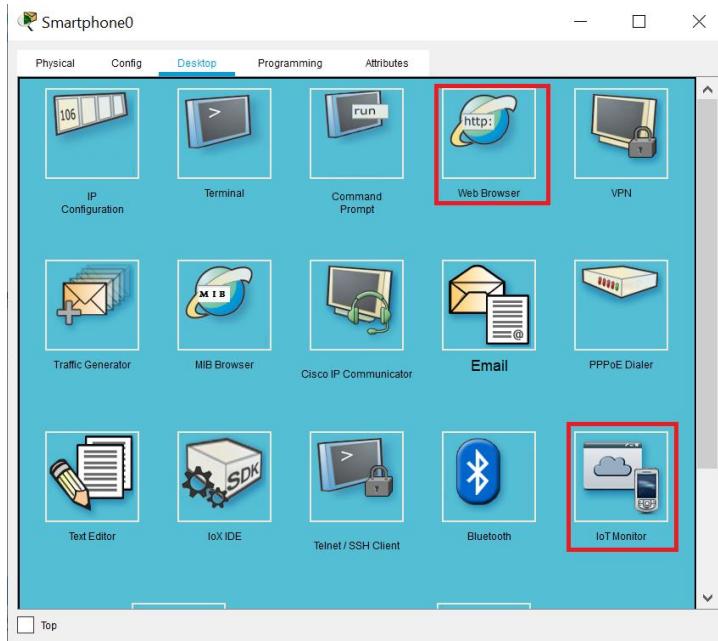


Setting SSID dan Passcode

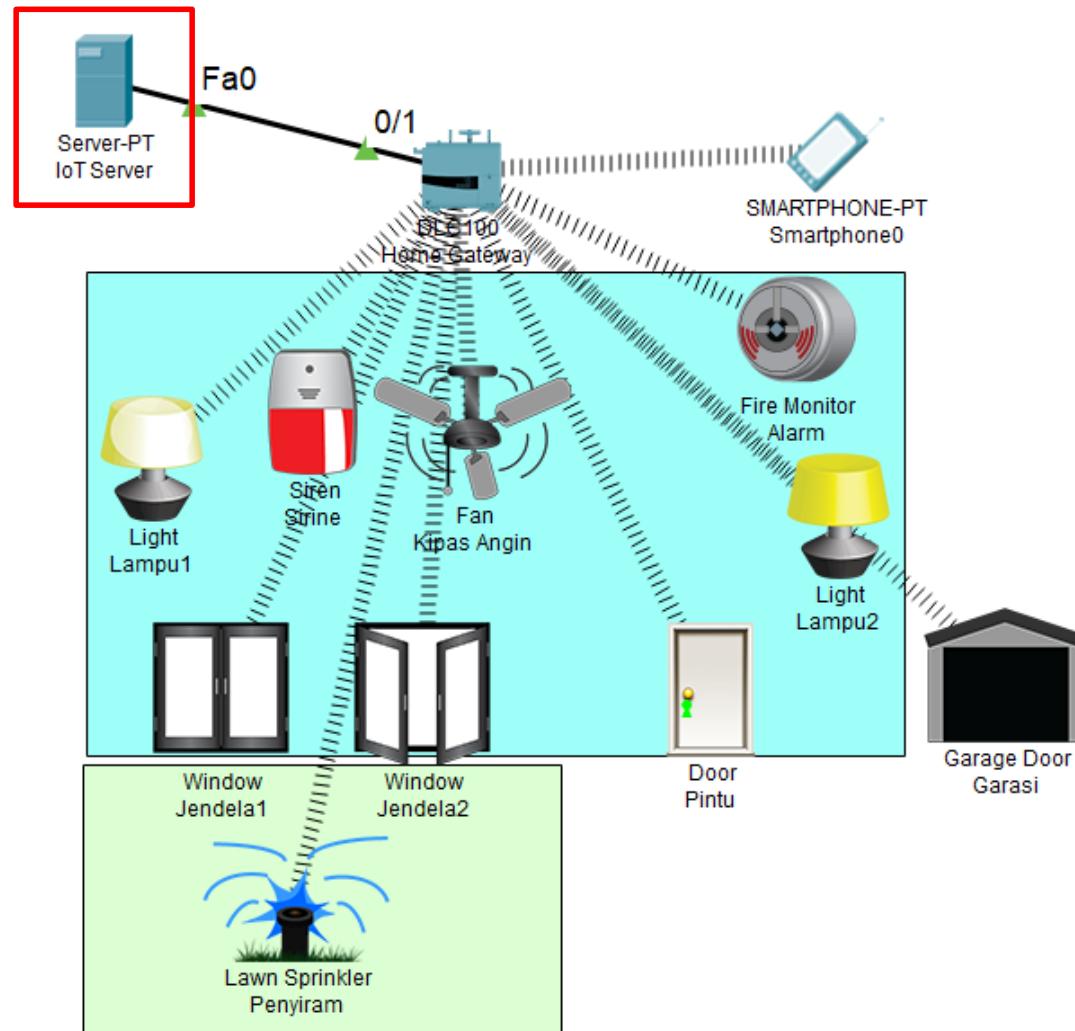


Setting Aplikasi Monitoring

Untuk monitoring, bisa melalui
Web Browser atau **IoT Monitor**

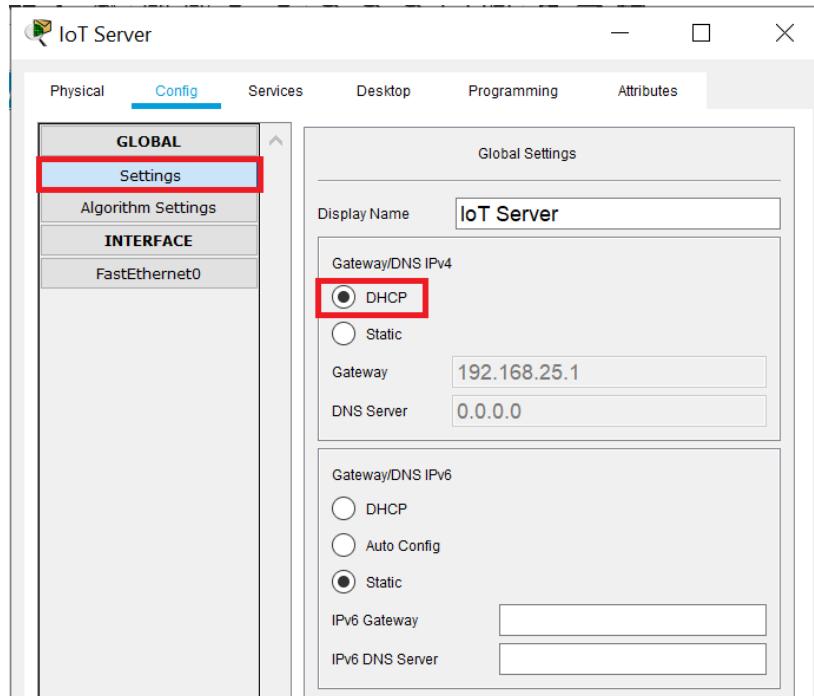


IoT SERVER pada Smart Home

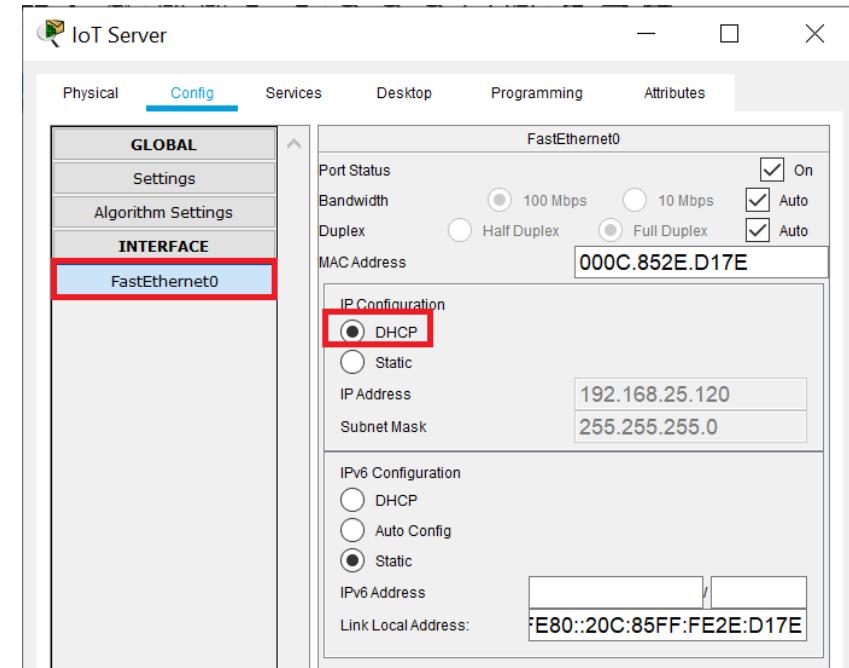


Setting Interface pada IoT Server

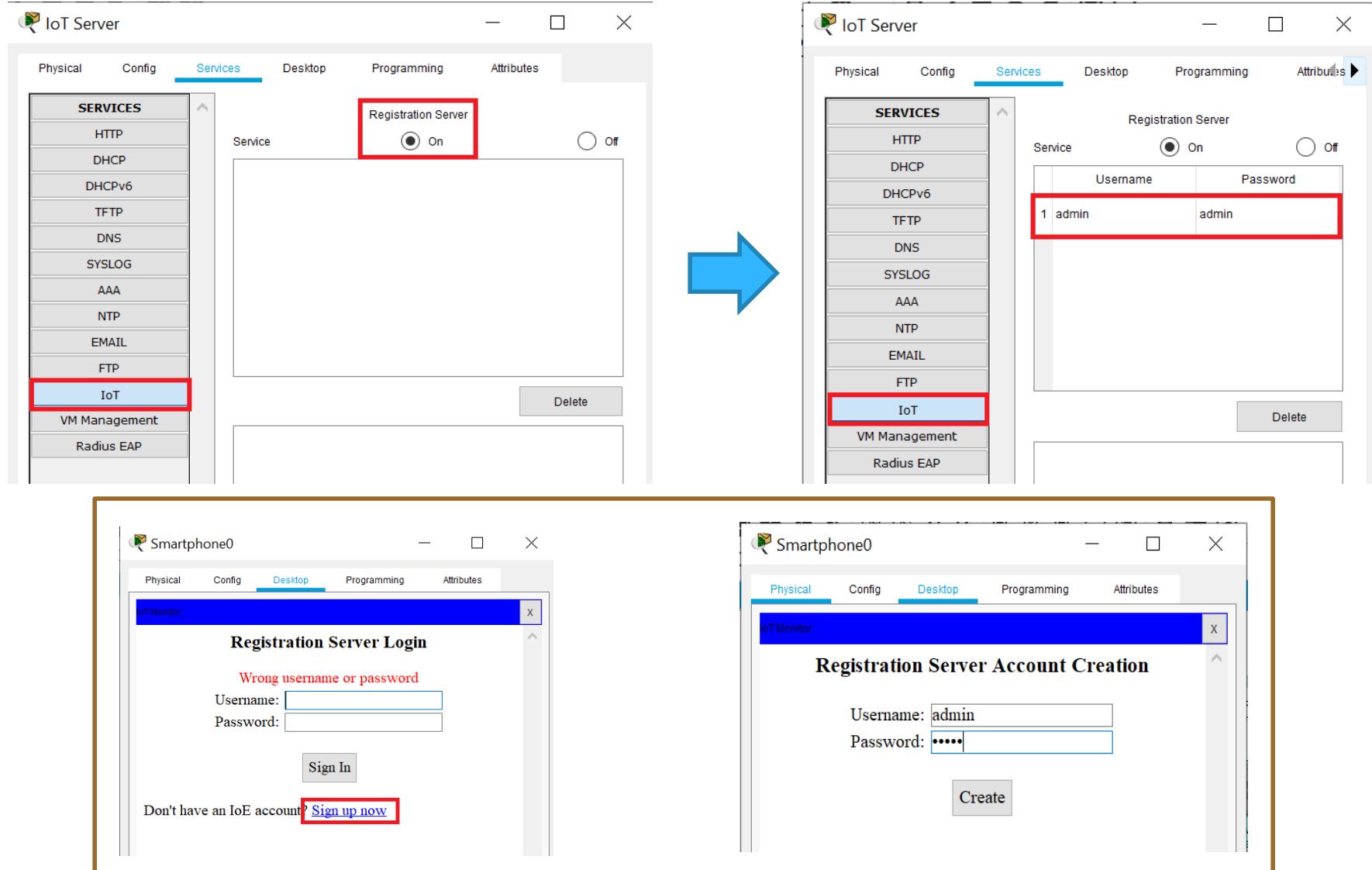
Setting IP GW dengan DHCP



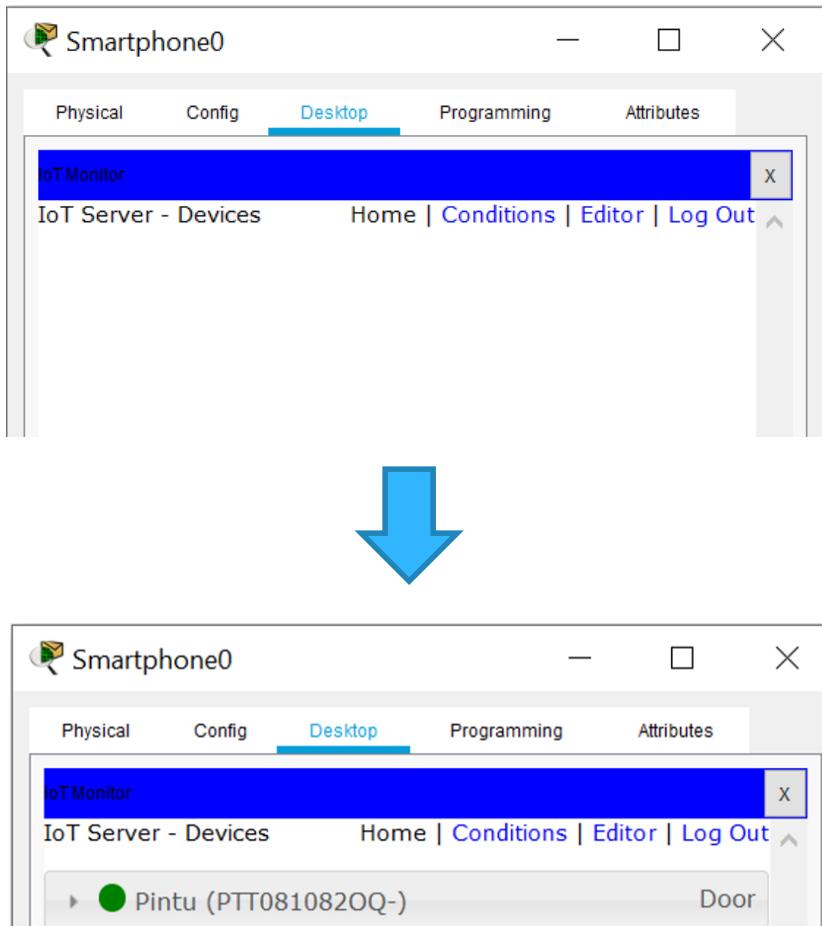
Setting Interface dengan DHCP



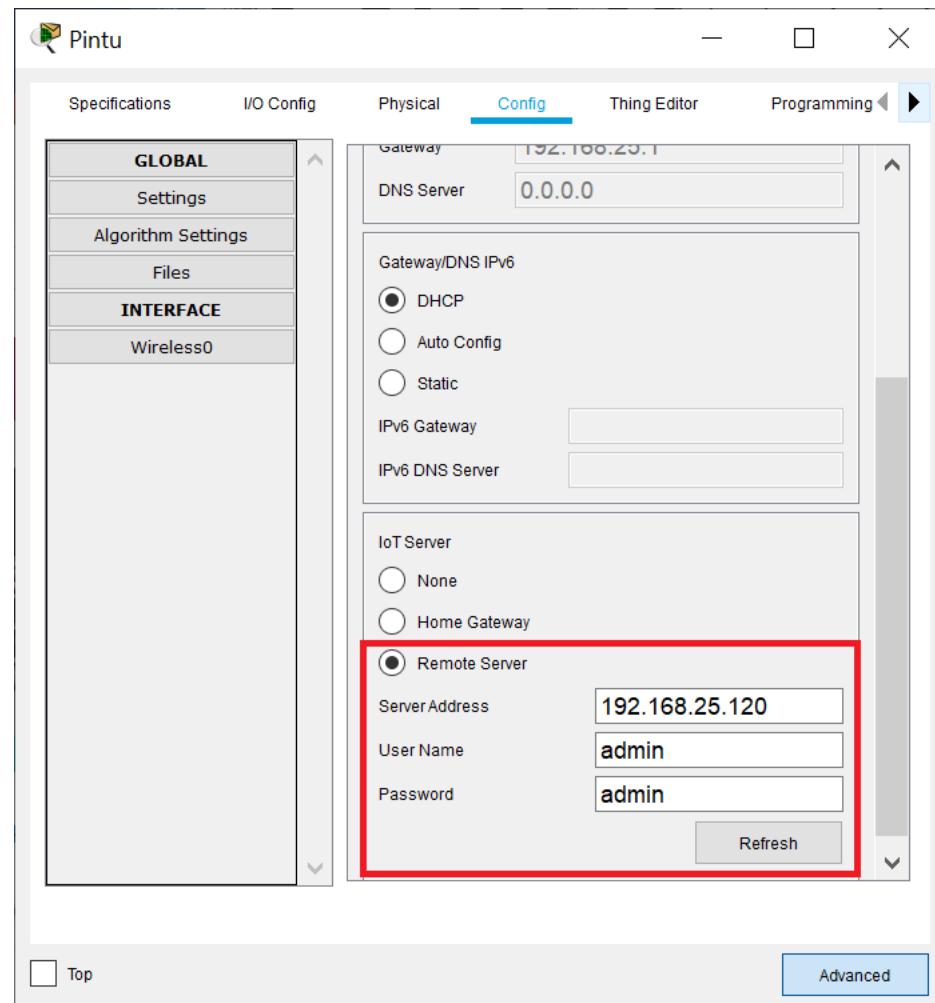
Setting Aplikasi IoT pada Server



Setting Perangkat IoT



Setting perangkat IoT: "Pintu"



Lakukan hal yang sama pada semua perangkat IoT

TUGAS

- Desainlah sebuah smart environment:
 - Smart Home
 - Smart Office
 - Smart Agriculture
 - Smart Factory
- Setting seperti contoh sebelumnya menggunakan “HomeGateway”
- Gantilah HomeGateway tersebut dengan perangkat:
 - IoT Server
 - Access Point

TUGAS

- Buatlah laporan resmi dengan melampirkan:
 - Desain dan penjelasannya di file word
 - Desain di packet tracer
 - Terakhir pengumpulan: hari Sabtu jam 23.59
- Upload di:
https://drive.google.com/drive/folders/1X0_PyMb2b4Hkpr7wdHQb6yGpUy9pkIIG?usp=sharing