

## **SISTEM KOMUNIKASI NIRKABEL MODUL 2**

# **SENSOR AKTUATOR INTERNET OF THINGS BERBASIS PACKET TRACER**

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# TOPIK BAHASAN

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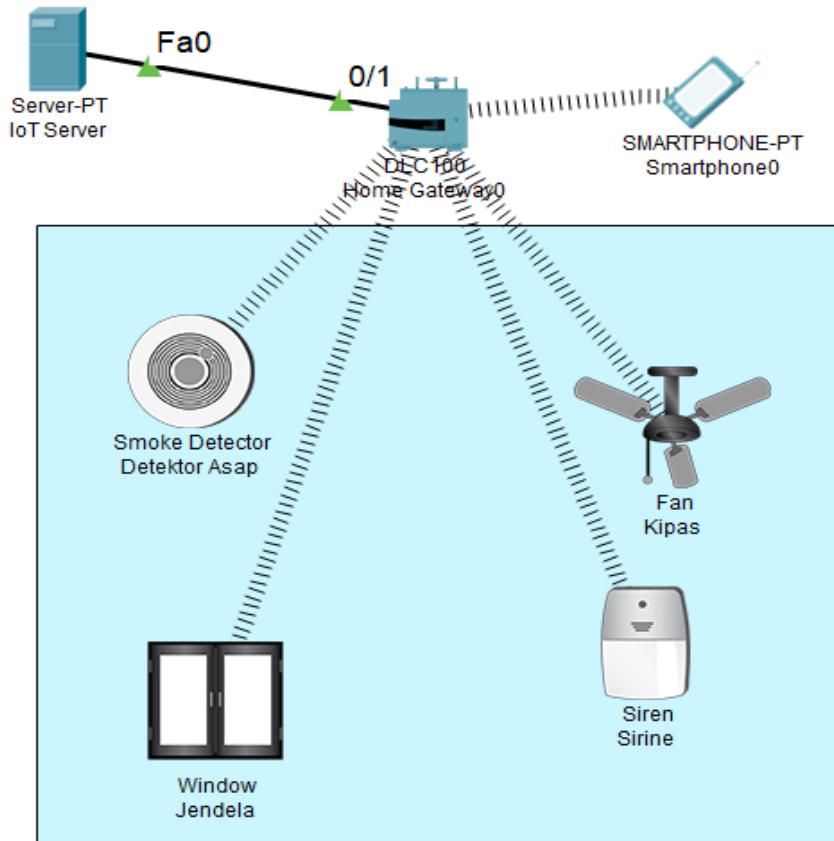
- Smoke Detector
- Motion Detector
- Trip Sensor
- Fire Monitor

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# SMOKE DETECTOR

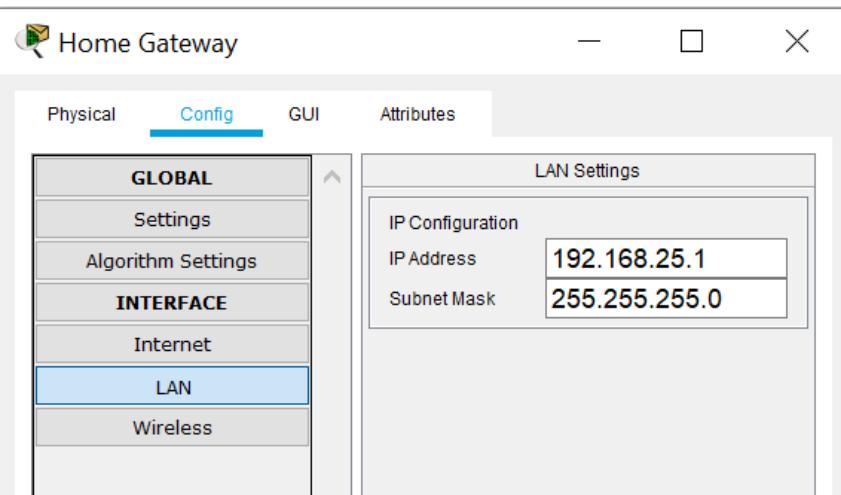
# Topologi Jaringan

- Designlah jaringan seperti berikut:

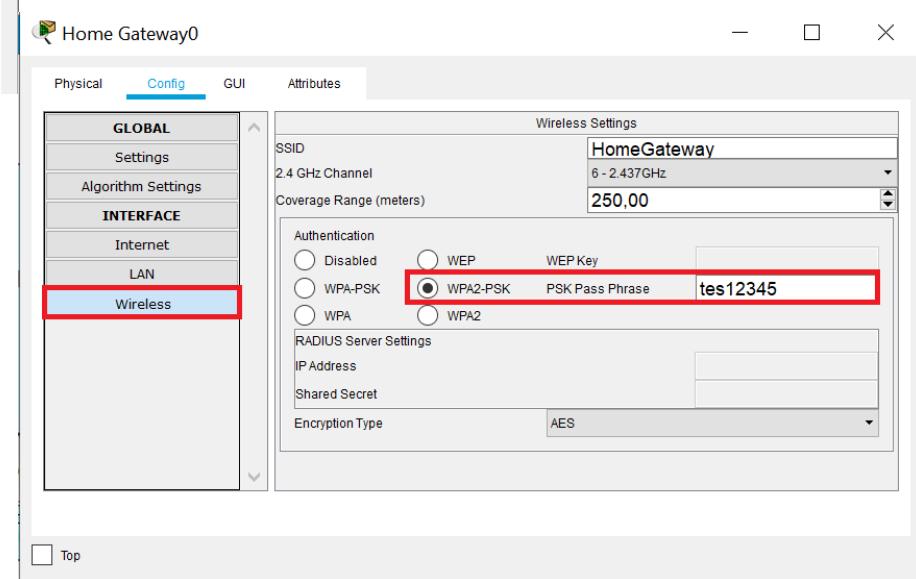


# Setting pada HomeGateway

## Setting IP Address (DHCP Server)

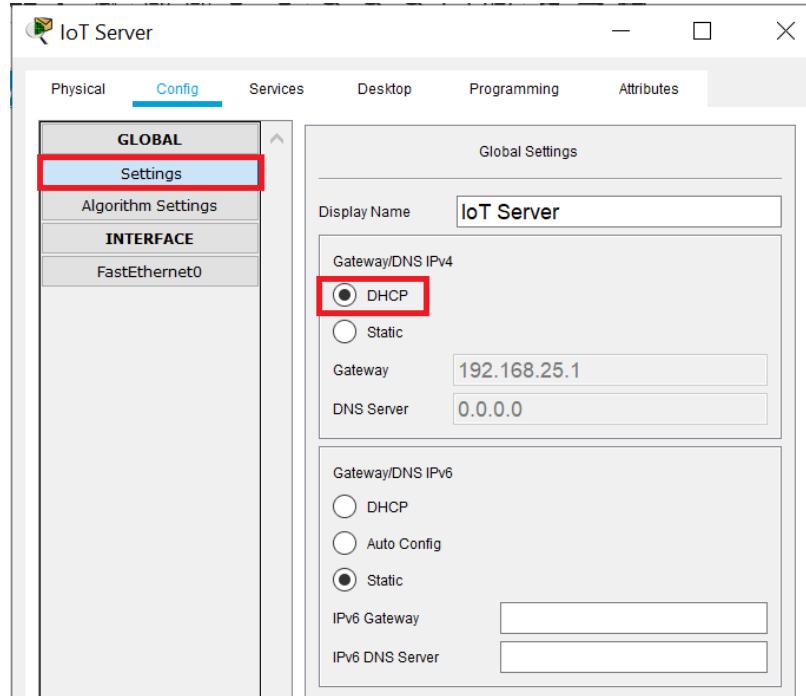


## Setting WiFi & Security

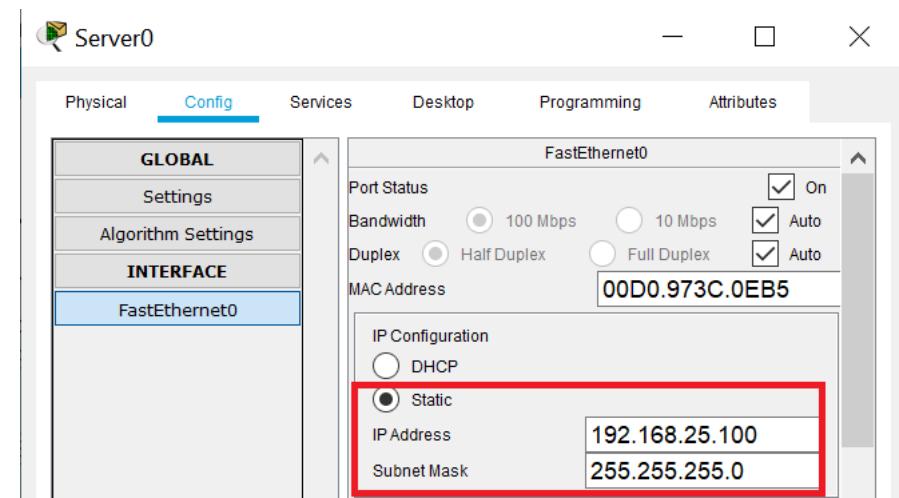


# Setting pada IoT Server

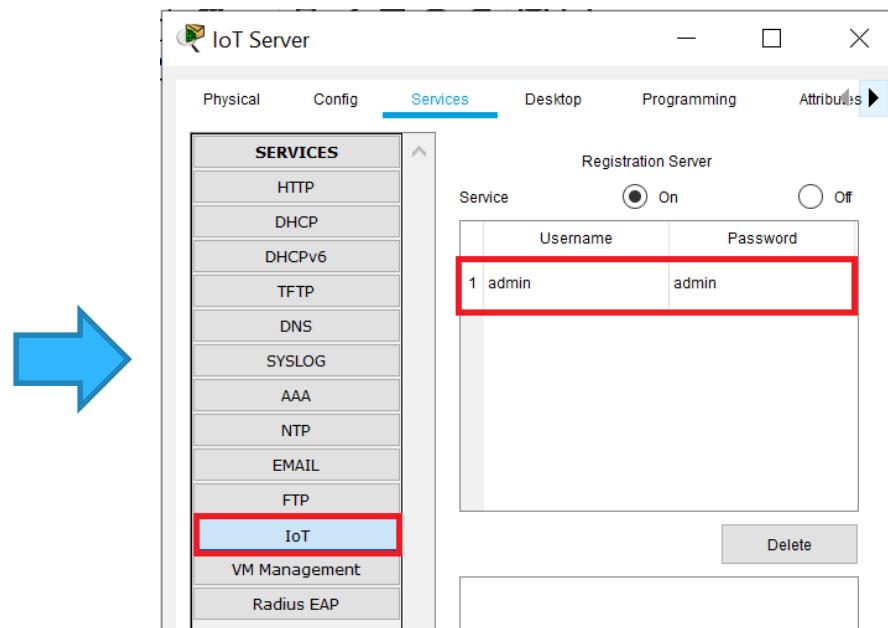
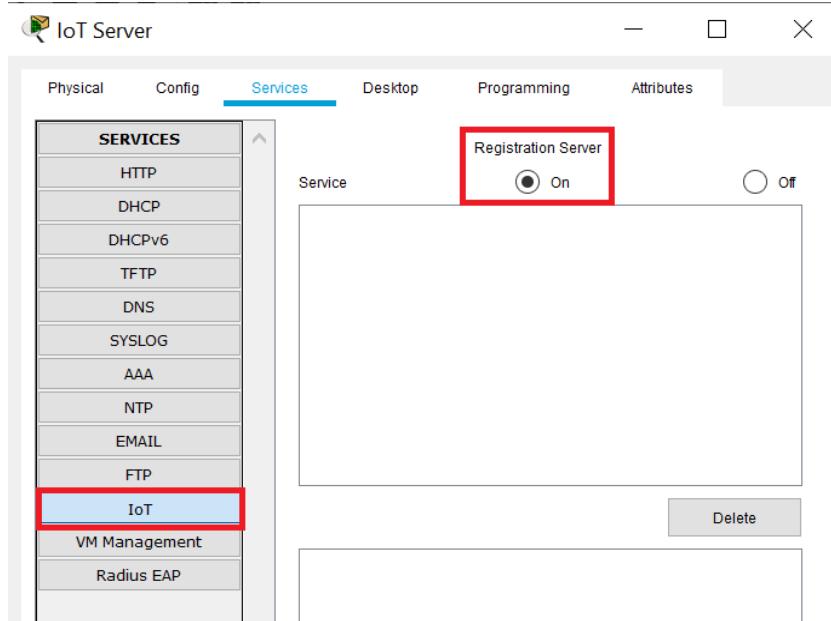
## Setting IP Gateway



## Setting IP Address



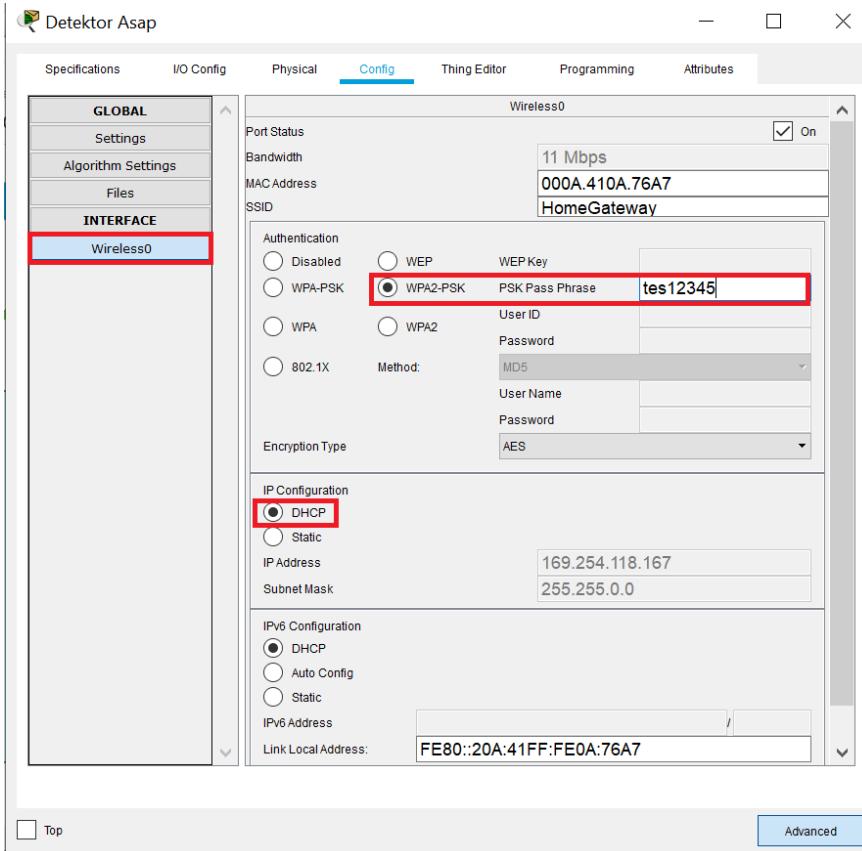
# Setting Aplikasi IoT pada Server



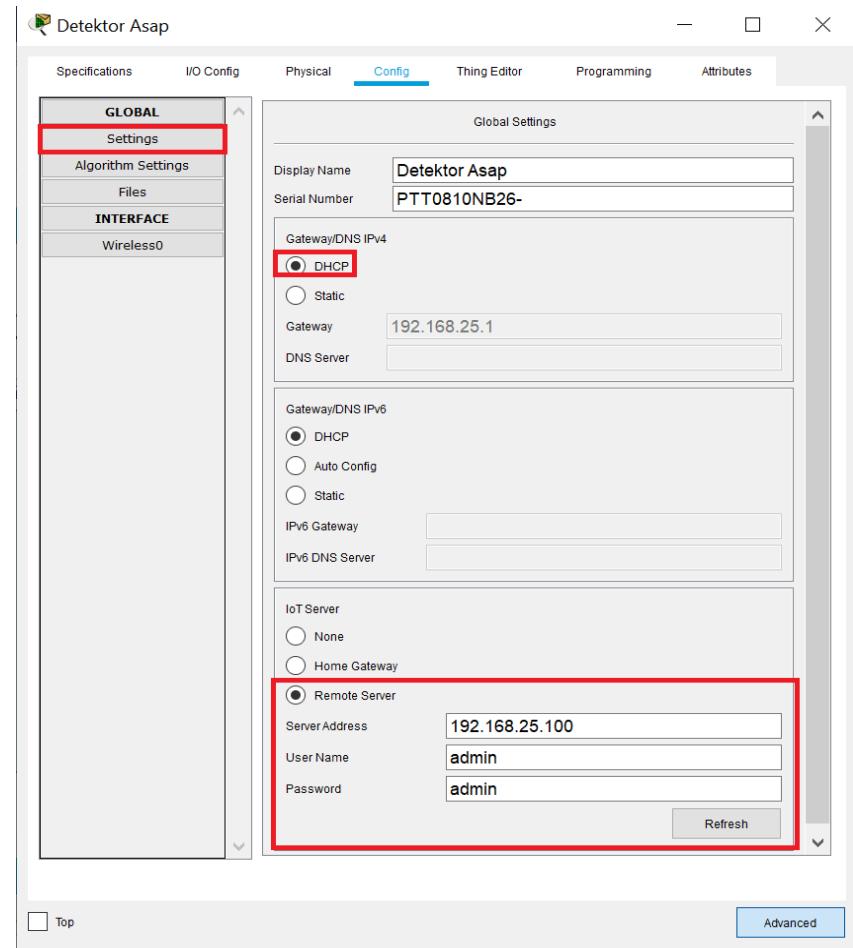
The bottom section contains two screenshots of the 'Smartphone0' application. Both screenshots show a 'Registration Server Login' dialog. The left screenshot shows the 'Username:' field filled with 'admin' and the 'Password:' field filled with '\*\*\*\*\*'. An error message 'Wrong username or password' is displayed above the fields. The right screenshot shows the same dialog, but the 'Password:' field is empty. Below the fields are 'Sign In' and 'Create' buttons. At the bottom of each dialog, there is a link 'Don't have an IoE account? [Sign up now](#)'.

# Setting pada Perangkat Sensor IoT

## Setting SSID dan passcode

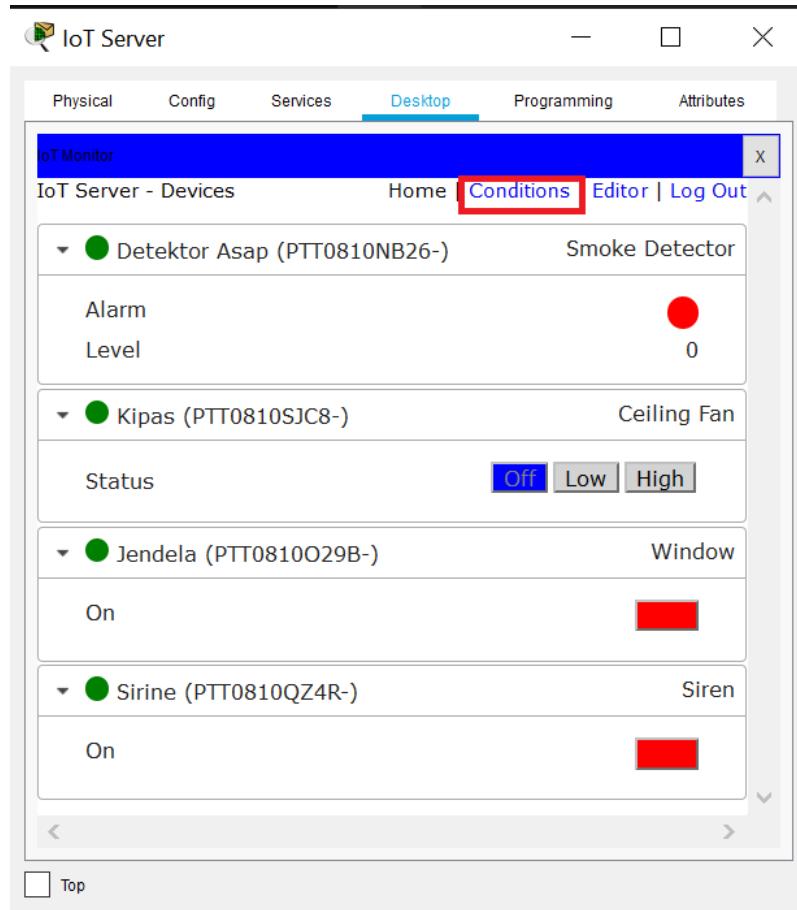


## Setting DHCP dan koneksi ke IoT Server



- Lakukan hal yang sama pada semua perangkat IoT

# Setting Aktuator (Kontrol) Perangkat IoT



Two 'Add Rule' dialog boxes are overlaid on each other. Both boxes have fields for 'Name', 'Enabled', and 'If' conditions, followed by 'Then set' actions.

**Top Rule (Visible):**

- Name:** Asap-On
- Enabled:**
- If:** Match All  
Detektor Asap Level >= 0.18
- Then set:** Kipas Status to High  
Jendela On to true  
Sirine On to true

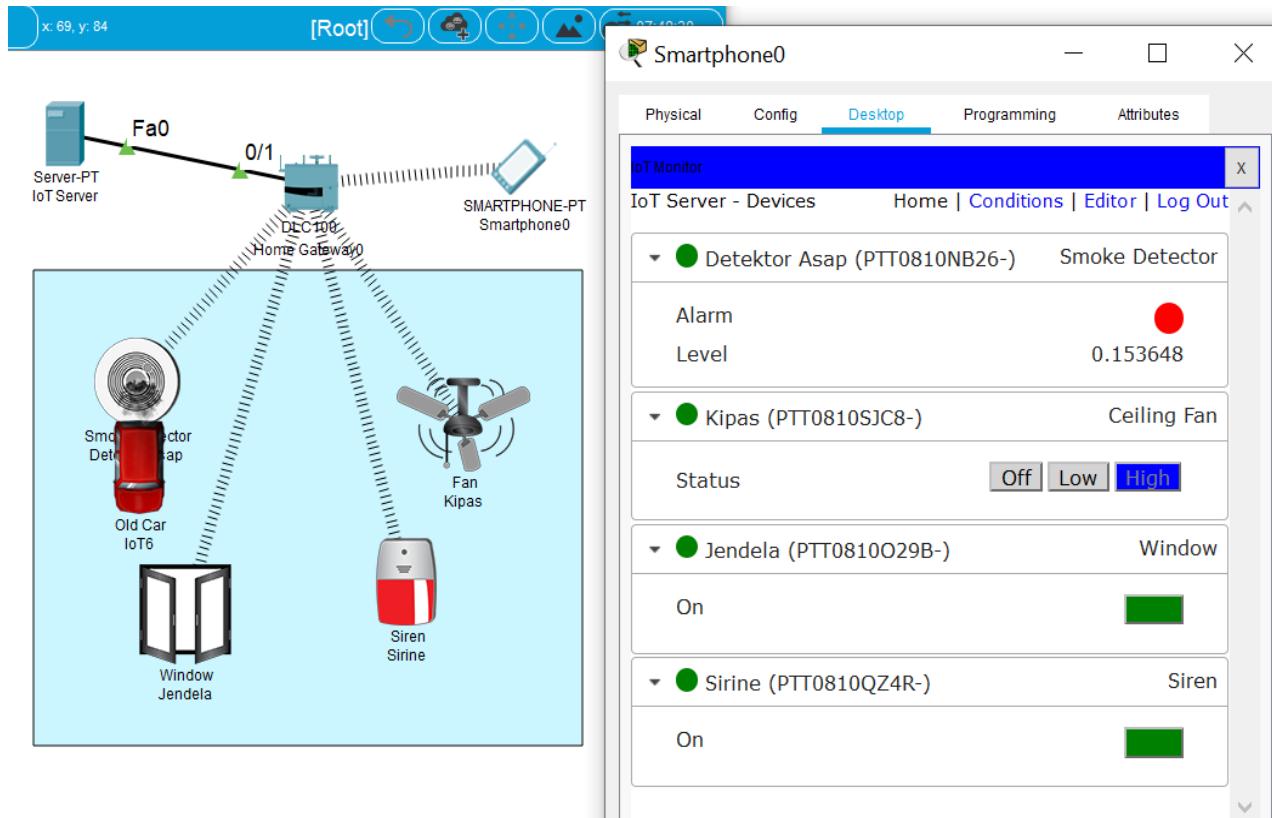
**Bottom Rule (Visible):**

- Name:** Asap-Off
- Enabled:**
- If:** Match All  
Detektor Asap Level < 0.1
- Then set:** Kipas Status to Off  
Jendela On to false  
Sirine On to false

At the bottom right of the bottom dialog are 'OK' and 'Cancel' buttons.

# Pengujian Kontrol Perangkat IoT

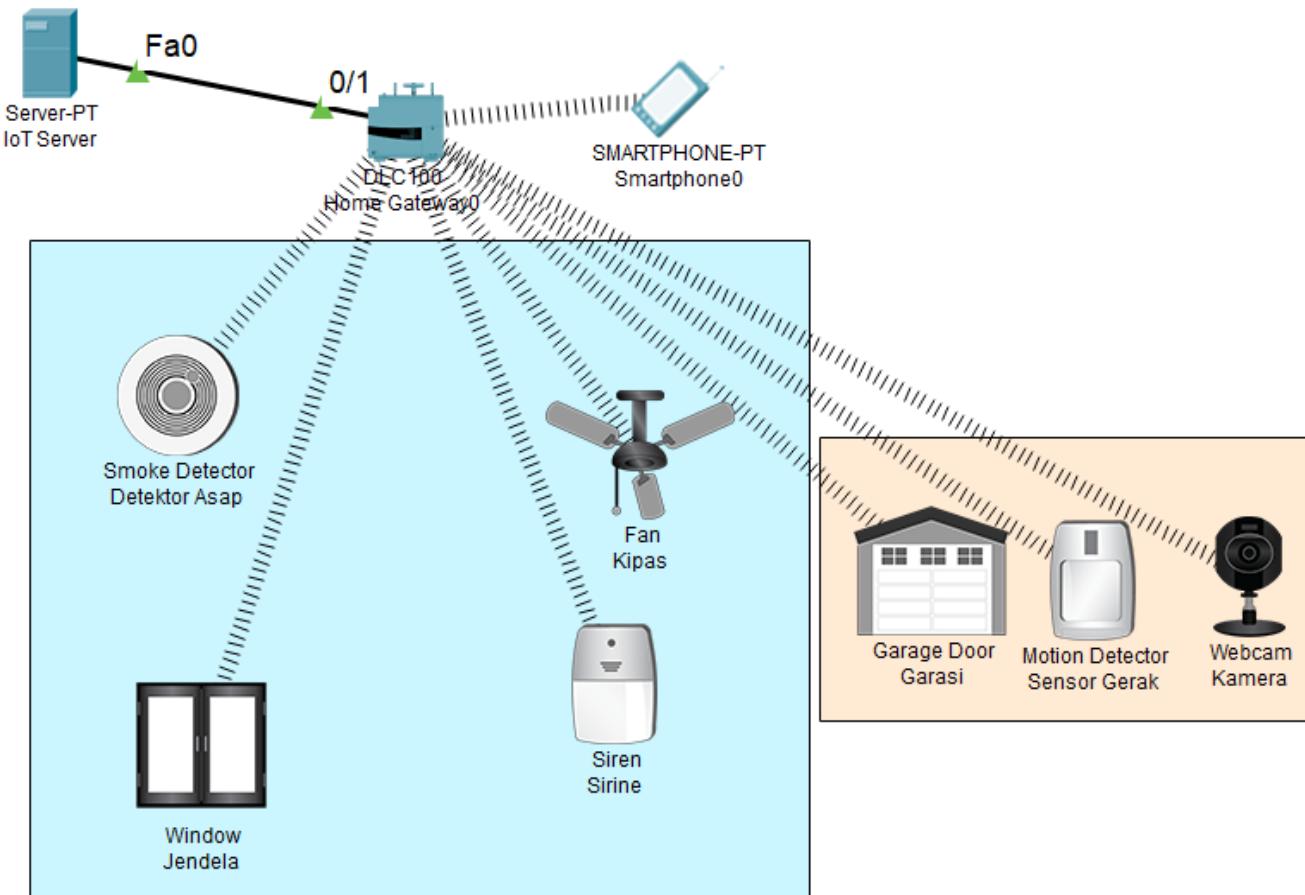
Mobil memberikan asap => kipas nyala, jendela terbuka, sirine berbunyi



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# MOTION DETECTOR

# Topologi Jaringan



# Tambahkan Rule

**Add Rule**

Name Motion-On  
Enabled

If:

Match All  
Sensor Gerak On is true

+ Condition + Group

Then set:

Garasi On to true  
Kamera On to true

+ Action

**Add Rule**

Name Motion-Off  
Enabled

If:

Match All  
Sensor Gerak On is false

+ Condition + Group

Then set:

Garasi On to false  
Kamera On to false

+ Action

OK Cancel

# Pengujian

[x 1003, y 128] [Root] 05:23:30

The diagram illustrates a home IoT network architecture. At the top left is a blue server icon labeled "Server-PT IoT Server". A connection labeled "Fa0" leads to a black switch icon labeled "0/1". From this switch, a connection labeled "DCC108 Home Gateway" leads to a central light blue area representing a room. Inside this room, there are several icons: a smoke detector labeled "Smoke Detector Detektor Asap", a window labeled "Window Jendela", a siren labeled "Siren Sirine", a fan labeled "Fan Kipas", and a motion detector labeled "Motion Detector Sensor Gerak". To the right of the room is a smartphone icon labeled "SMARTPHONE-PT Smartphone0". Below the room is a small orange inset showing a garage with a door labeled "Garage Door Garasi", a motion detector labeled "Motion Detector Sensor Gerak", and a camera labeled "Webcam Kamera".

Smartphone0

Physical Config Desktop Programming Attributes

Jendela (PTT0810029B-) Window

Sirine (PTT0810QZ4R-) Siren

Garasi (PTT08102GDD-) Garage Door

On

Kamera (PTT08102Y53-) Webcam

On

Image

Sensor Gerak (PTT0810HQEM-) Motion Detector

On

Garasi (PTT08102GDD-) Garage Door

On

Kamera (PTT08102Y53-) Webcam

On

Image

Sensor Gerak (PTT0810HQEM-) Motion Detector

On

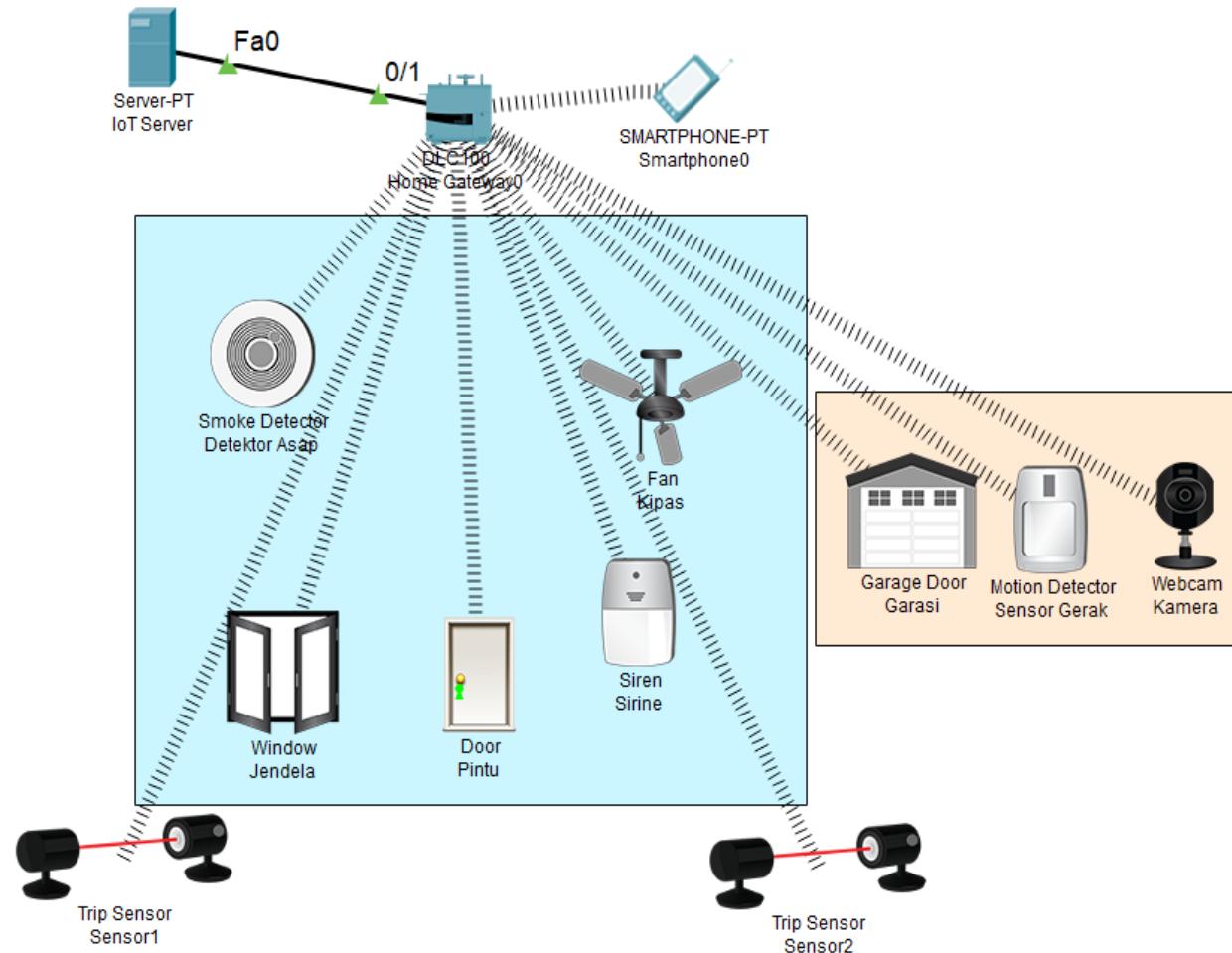
Sistem

This screenshot shows the "Desktop" tab of the "Smartphone0" application. It lists several IoT devices connected to the smartphone. The "Garasi" device is currently active ("On"). The "Kamera" device displays a live video feed of a person walking in a garage. The "Sensor Gerak" device is also active. The bottom part of the screenshot shows a smaller inset window displaying the same garage scene, indicating that the smartphone is successfully receiving and displaying video from the connected camera.

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# HOME SECURITY

# Topologi Jaringan



# Tambahkan Rule

Edit Rule

Name HomeSecurity

Enabled

If:

Match Any

Sensor1 On is true  
Sensor2 On is true

+ Condition    + Group

Then set:

Jendela On to false  
Pintu Lock to Lock  
Sirine On to true

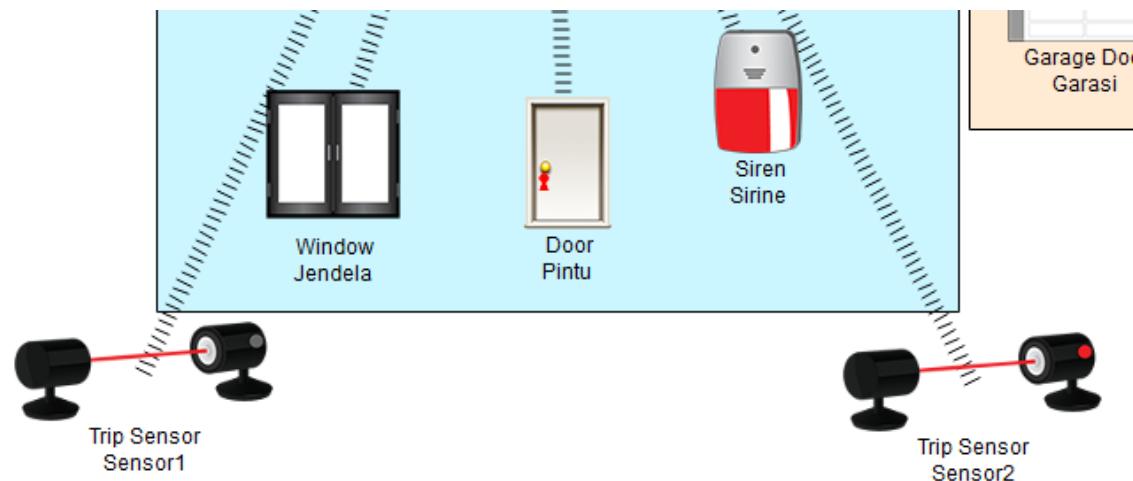
+ Action

OK    Cancel



# Pengujian

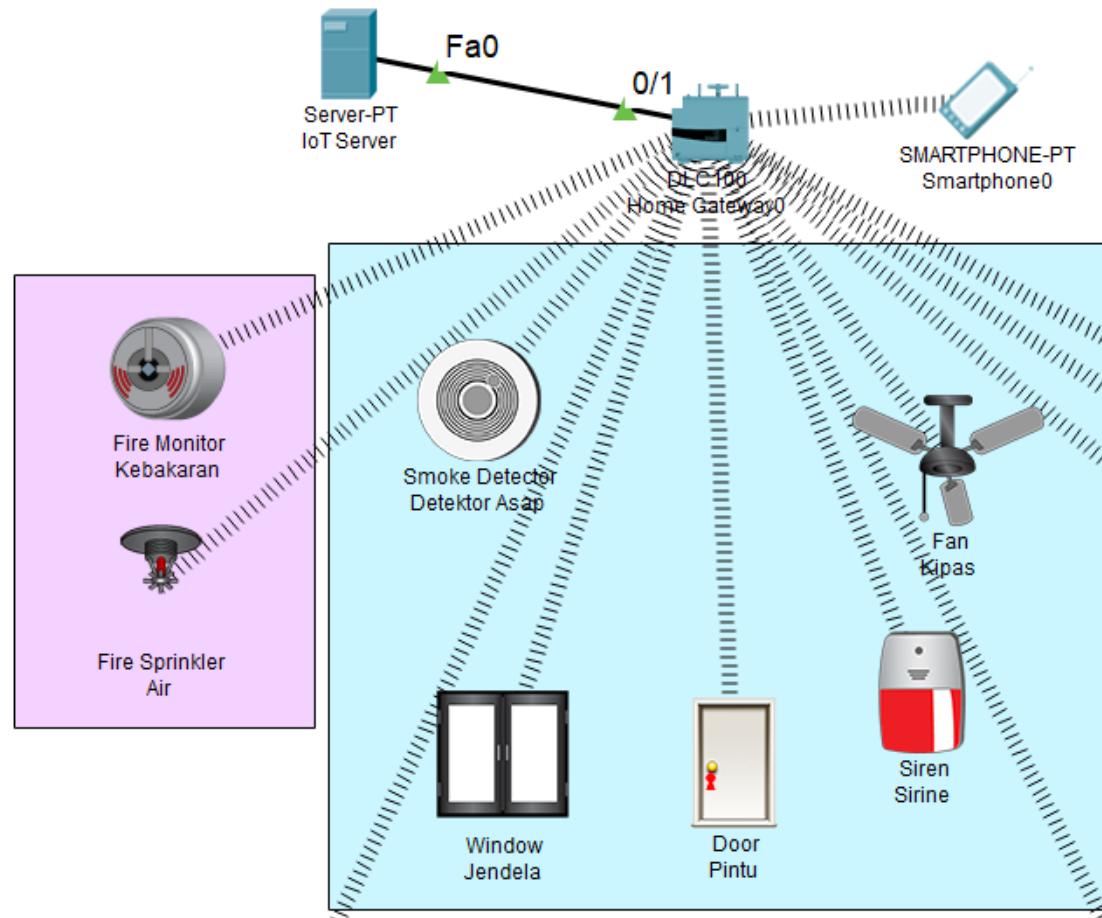
- Kondisi awal:
  - Jendela terbuka
  - Pintu tidak terkunci (unlocked)
- Nyalakan Sensor1 atau Sensor2 maka:
  - Jendela tertutup
  - Pintu terkunci (locked)
- Lakukan pengujian dengan **Match ALL**



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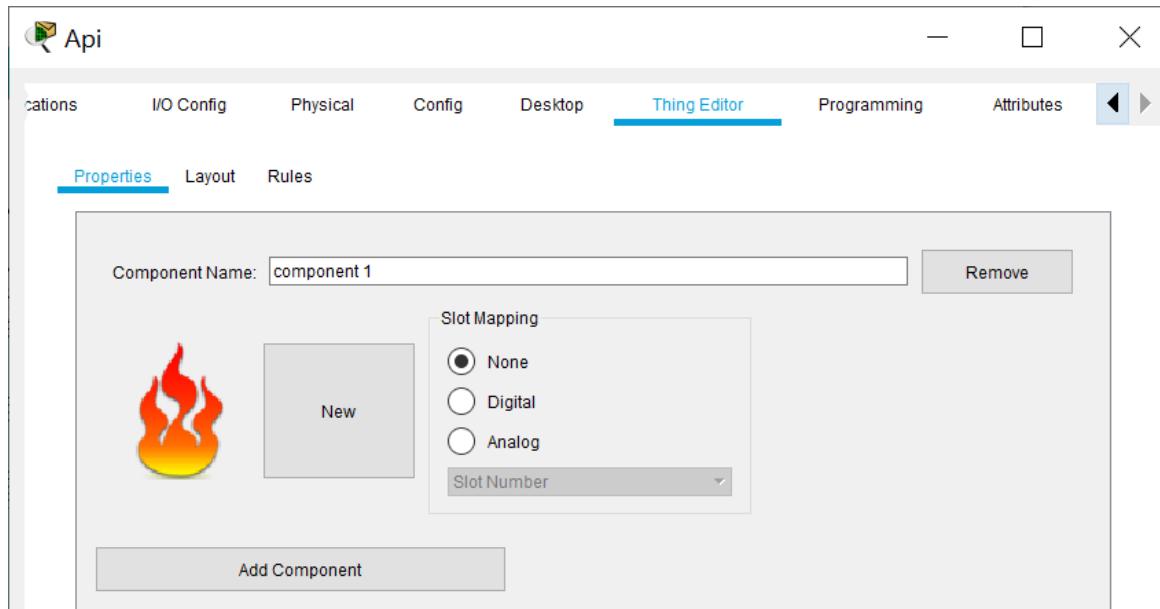
# HOME SECURITY

# Topologi Jaringan



# Pembuatan Thing (API)

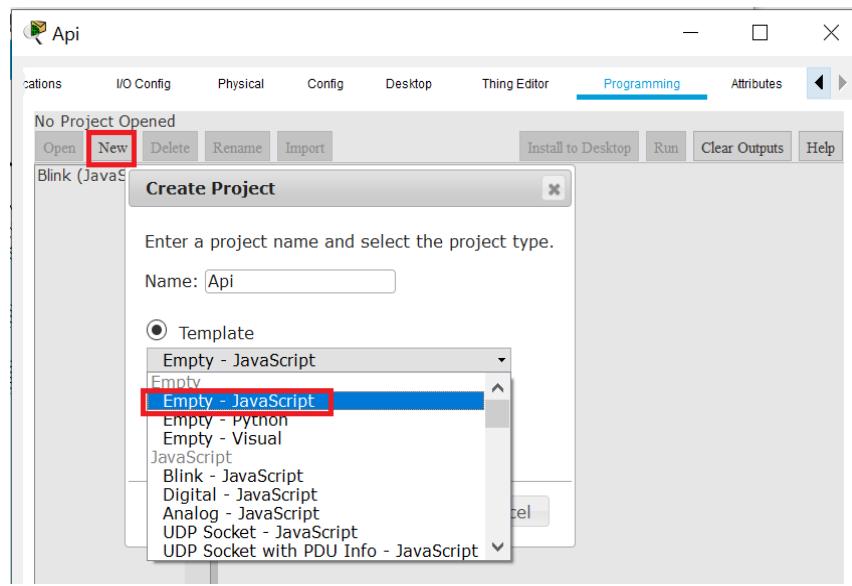
- Untuk membuat api yang akan menyalakan Fire Monitor.



C:\Program Files\Cisco Packet Tracer 7.2.1\art\IoE\Components

# Pembuatan Thing (API)

- Pembuatan script API berdasarkan dari specification FIRE MONITOR.



```
function setup()
{
    setDeviceProperty(getName(), 'IR', 900)
}
```

The screenshot shows the Thing Editor application window with the 'Programming' tab selected. The code editor window displays a single line of JavaScript code: 'function setup() { setDeviceProperty(getName(), 'IR', 900) }'. This code is highlighted with a red box. The status bar at the bottom of the editor window shows the text 'Starting Api (JavaScript)...'.

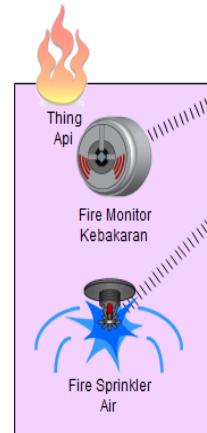
# Tambahkan Rule & Pengujian

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- Terdapat 2 rule untuk mengaktifkan dan mematikan sprinkler air.

Edit	Remove	Yes	Air-On	Kebakaran Fire Detected is true	Set Air Status to true
Edit	Remove	Yes	Air-Off	Kebakaran Fire Detected is false	Set Air Status to false

- Pengujian dengan cara mendekatkan API ke Fire Monitor



# TUGAS

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- Desainlah sebuah smart environment:
  - Smart Home
  - Smart Office
  - Smart Agriculture
  - Smart Factory
- Pilihlah perangkat sensor yg lainnya
- Buatlah laporan resmi dengan melampirkan:
  - Desain dan penjelasannya di file word
  - Desain di packet tracer
  - Terakhir pengumpulan: hari Sabtu jam 23.59
- Upload di google drive