

SISTEM KOMUNIKASI NIRKABEL MODUL 4

RFID BLUETOOTH INTERNET OF THINGS BERBASIS PACKET TRACER

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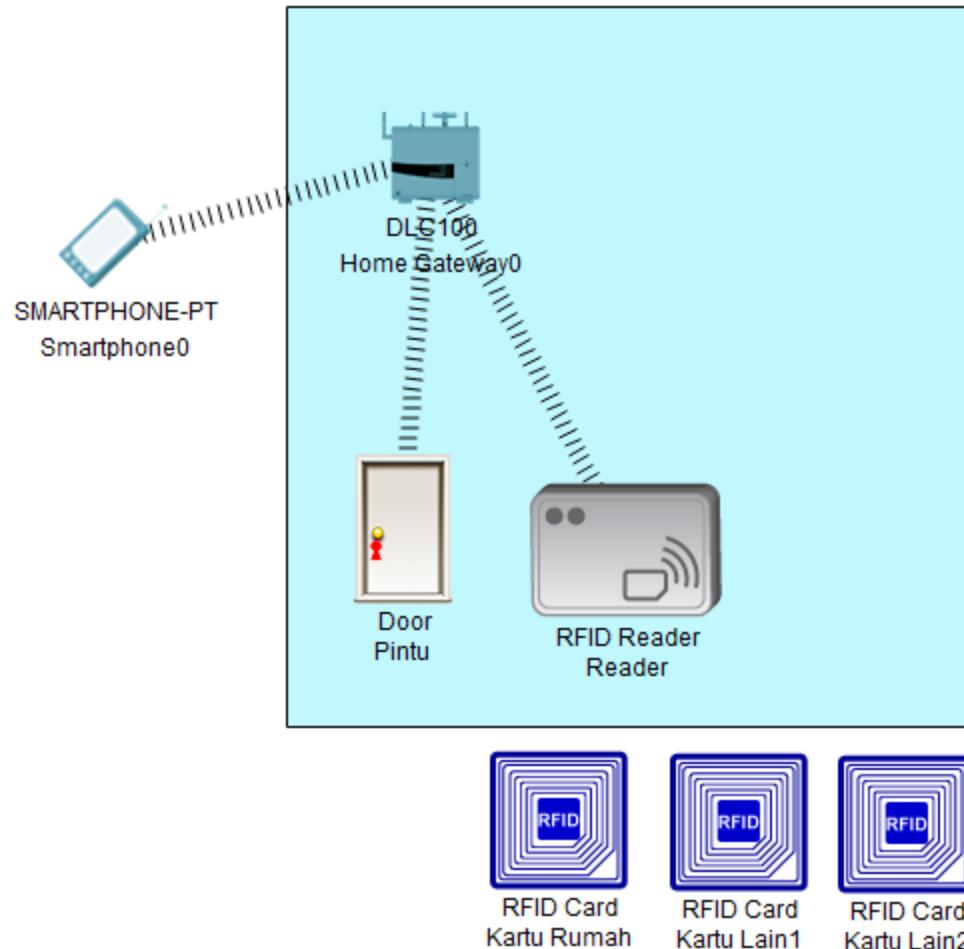
TOPIK BAHASAN

- RFID Sensor
- Bluetooth Pairing
- Bluetooth Beacon

RFID SENSOR

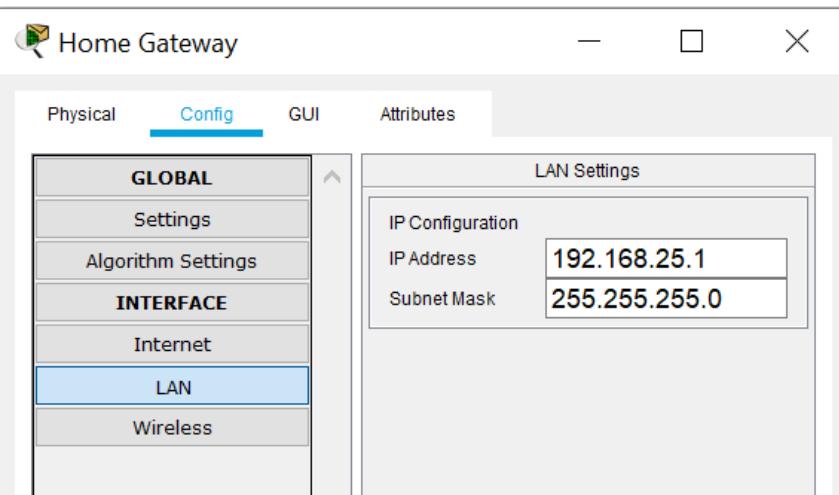
Topologi Jaringan

- Designlah jaringan seperti berikut:

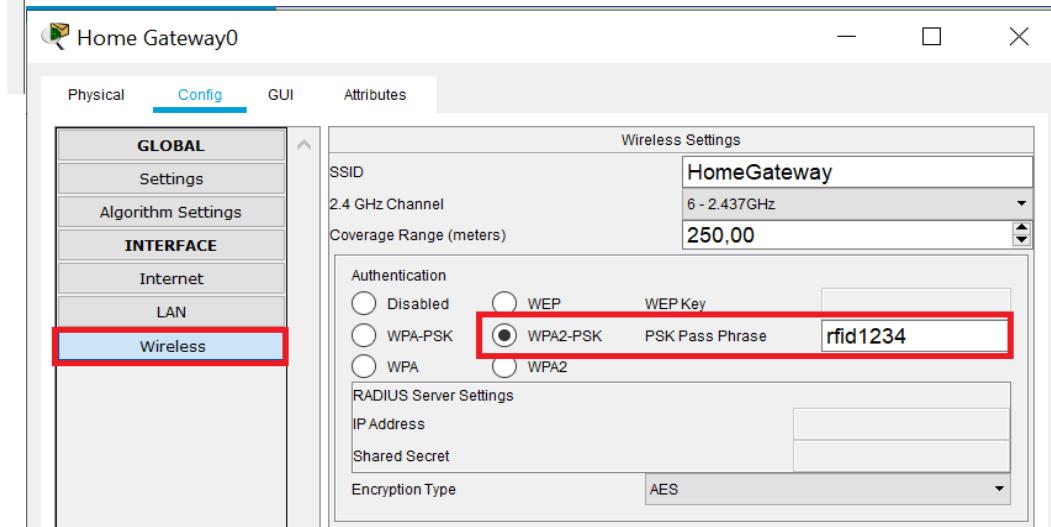


Setting pada HomeGateway

Setting IP Address (DHCP Server)

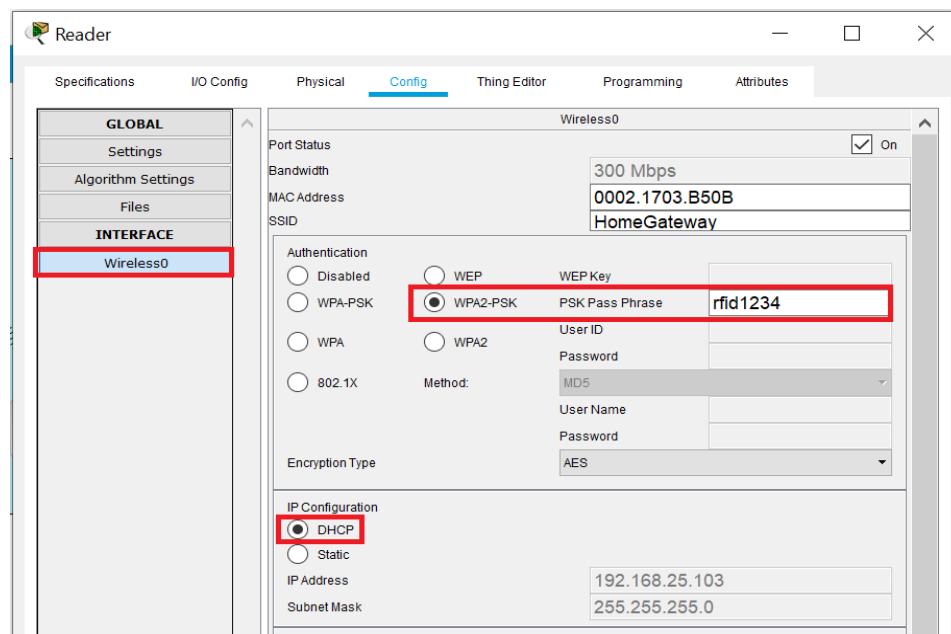


Setting WiFi & Security

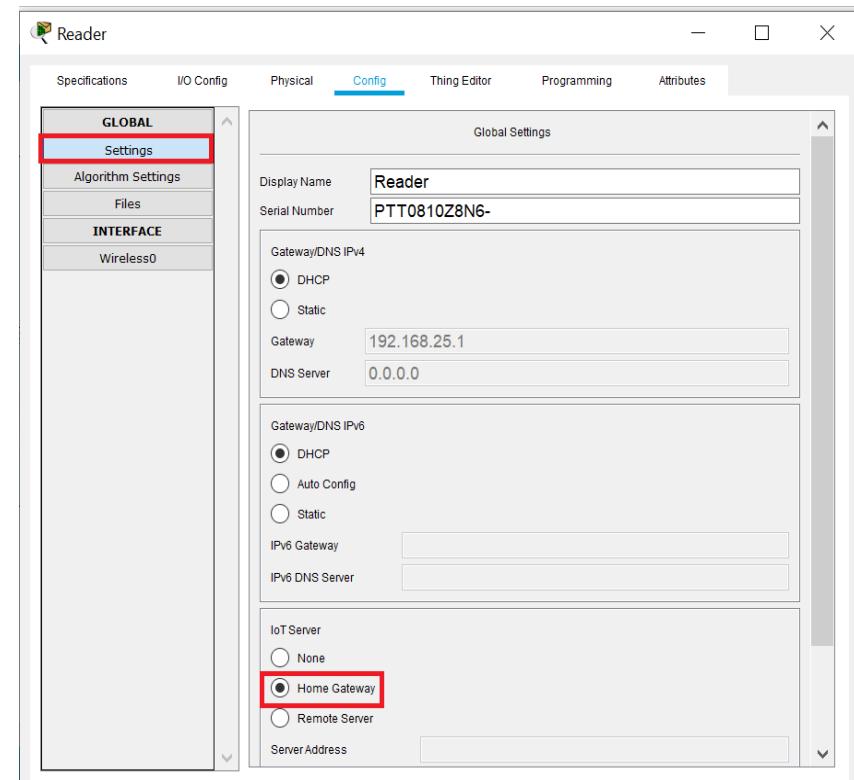


Setting pada Perangkat Sensor IoT

Setting SSID dan passcode



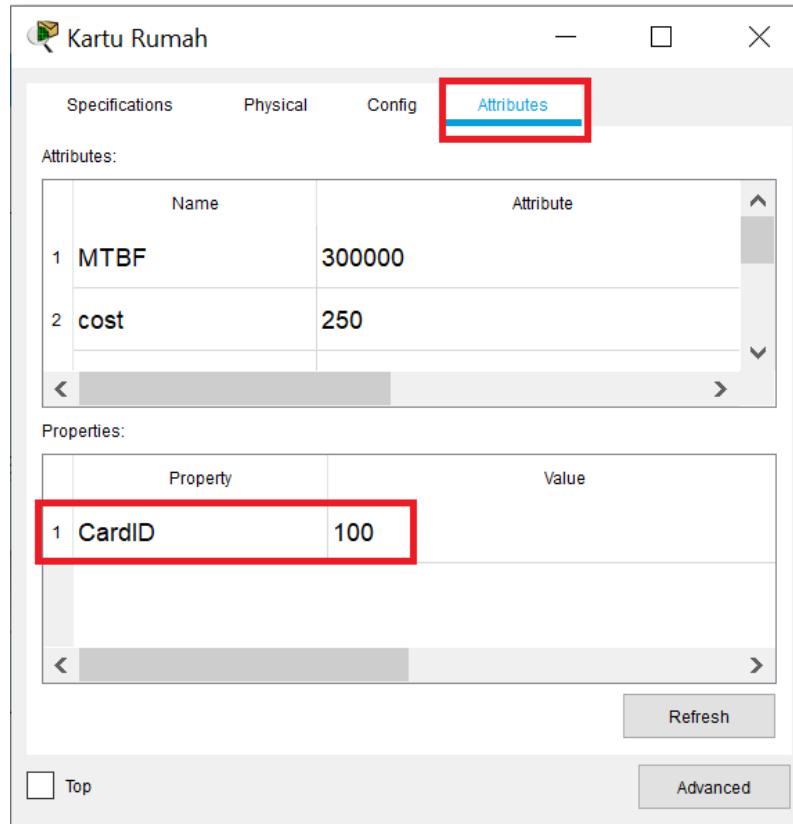
Setting DHCP dan koneksi ke IoT Server



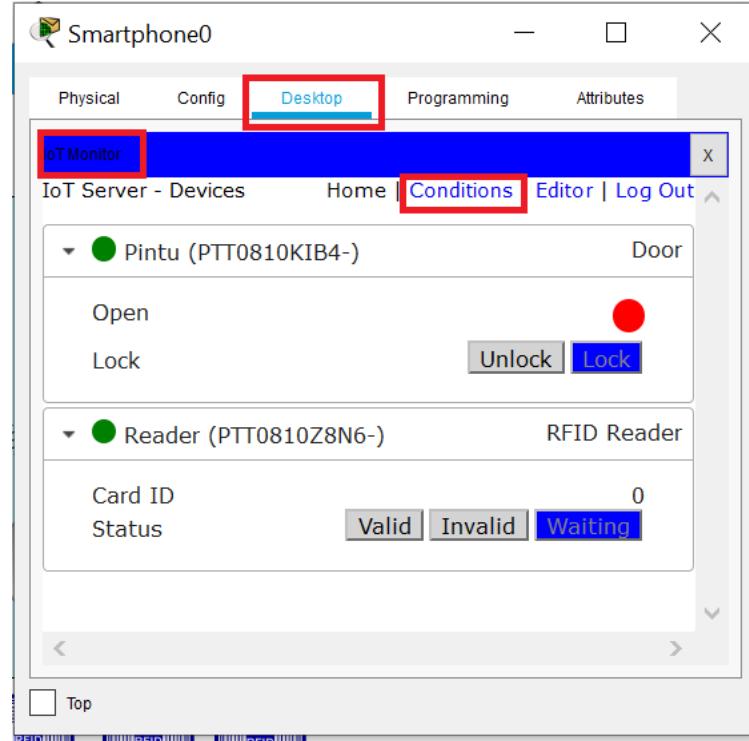
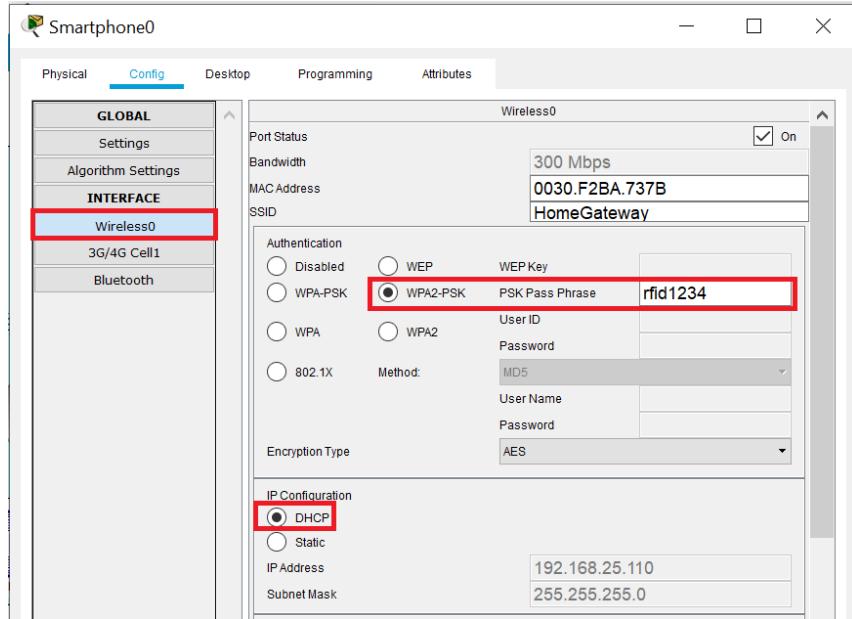
- Lakukan hal yang sama pada semua perangkat IoT

Setting RFID Card

- Pada Kartu Rumah untuk masuk, atur 100.
- Sedang lainnya gunakan default: 1001



Setting Aktuator (Kontrol) Perangkat IoT



Setting Aktuator (Kontrol) Perangkat IoT

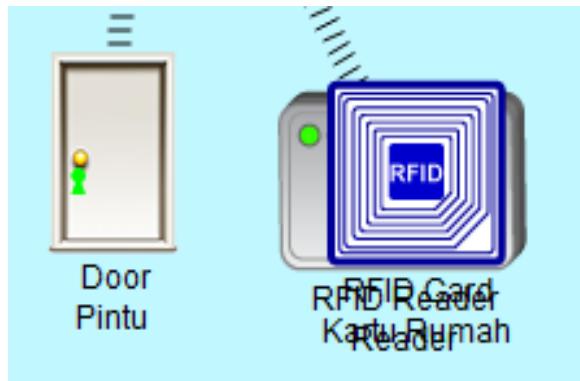
The image displays three overlapping windows titled "Edit Rule" used for configuring IoT device rules:

- Top Window (Left):** Name: RFID Open Door. Enabled: If: Match All Reader Status is Valid. Then set: Pintu Lock to Unlock.
- Middle Window:** Name: RFID Lock Door. Enabled: If: Match Any Reader Status is Invalid or Reader Status is Waiting. Then set: Pintu Lock to Lock.
- Bottom Window (Right):** Name: RFID Key. Enabled: If: Match All Reader Card ID = 100. Then set: Reader Status to Valid.

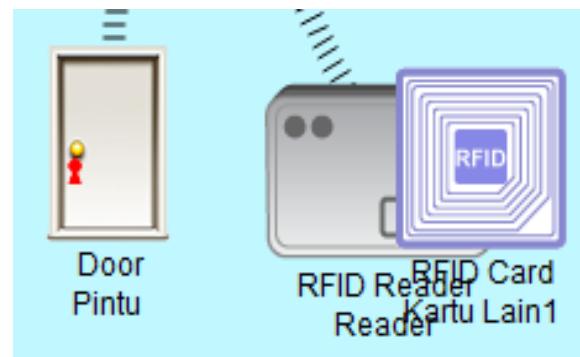
Pengujian Kontrol Perangkat IoT

Gunakan Kartu Rumah untuk membuka pintu, dan uji dengan kartu lainnya.

Kartu Rumah

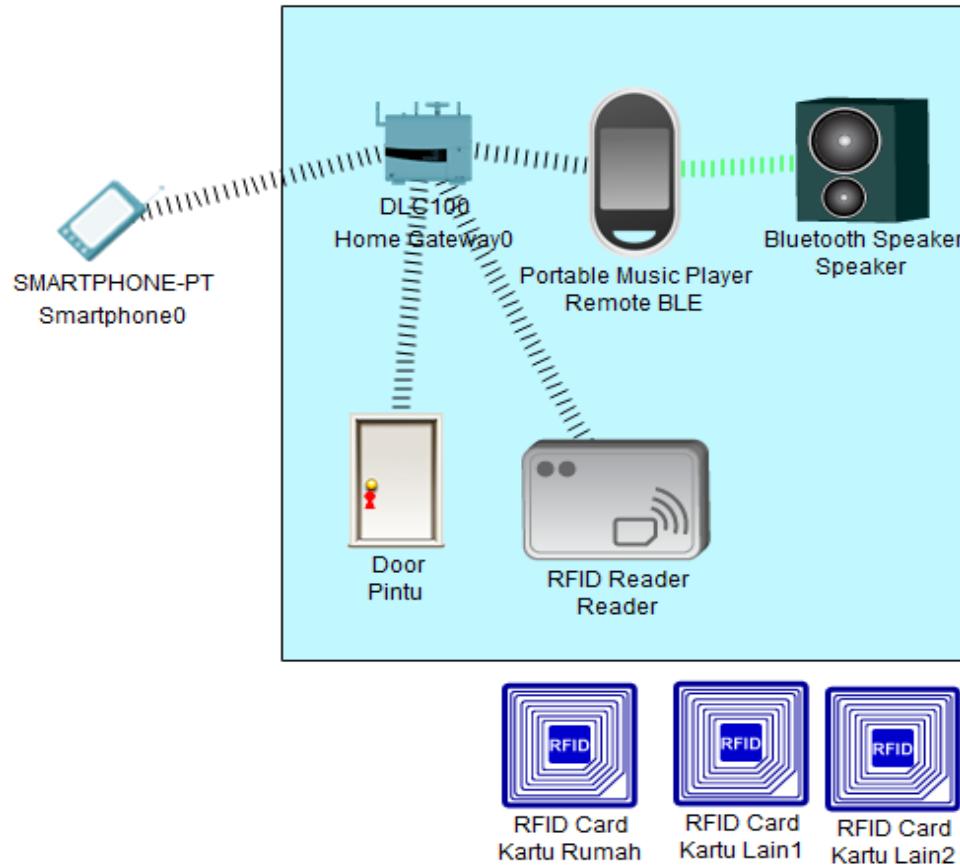


Kartu Lainnya

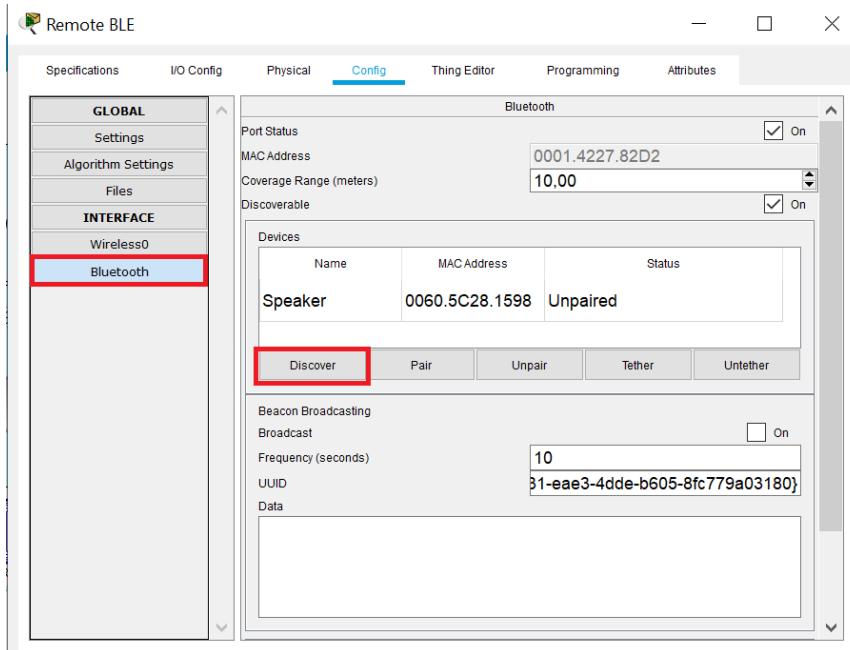


BLUETOOTH PAIRING

Topologi Jaringan



Pairing

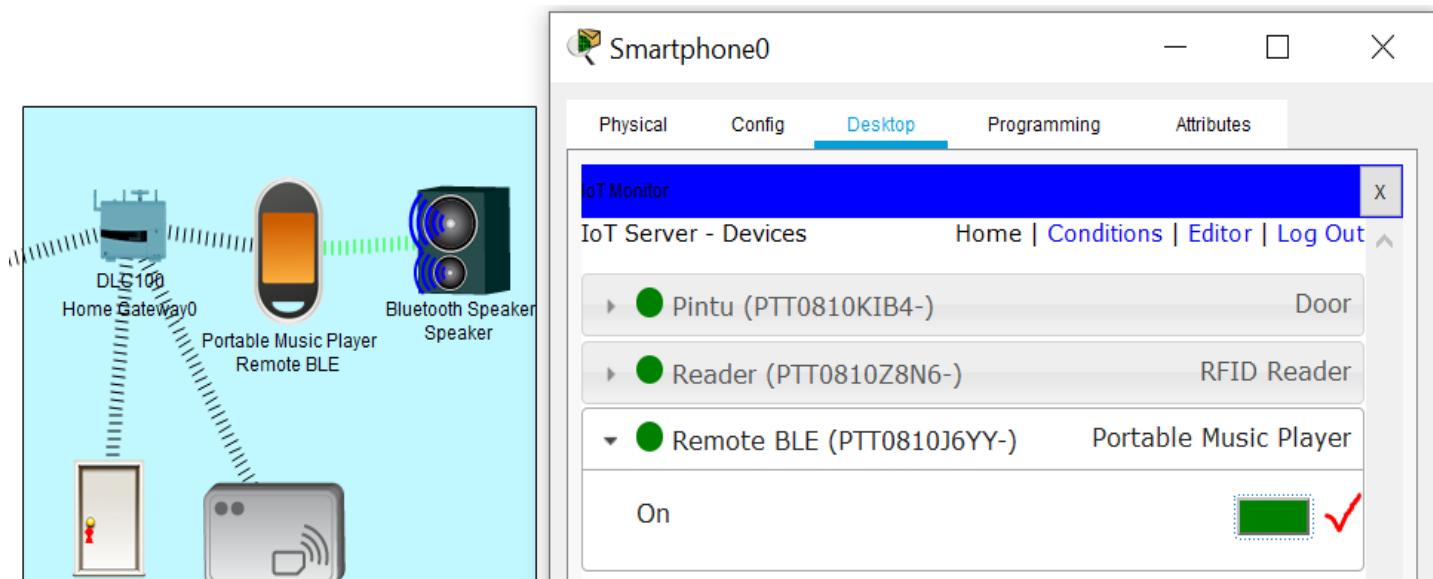


Name	MAC Address	Status
Speaker	0060.5C28.1598	Paired, Connected

Buttons: Discover, Pair (highlighted with a red box), Unpair, Tether, Untether.

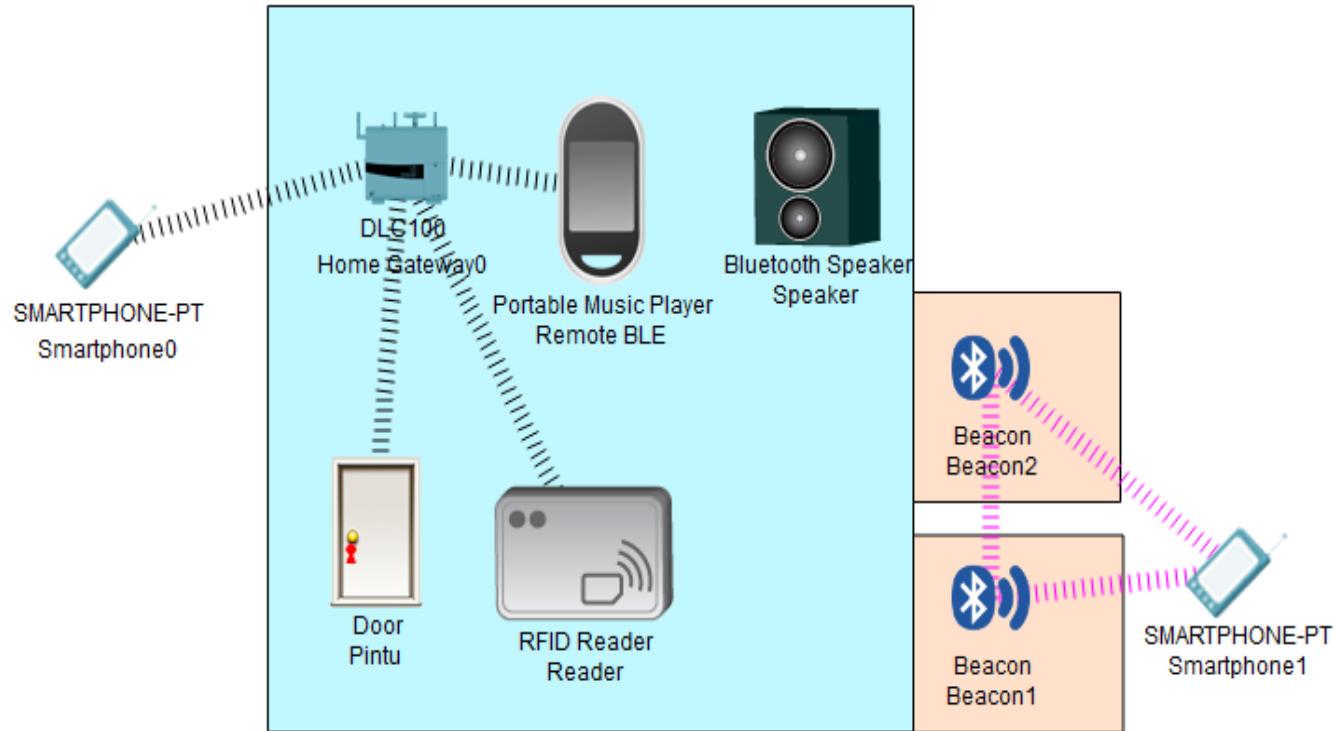
Pengujian

Tekan tombol On untuk membunyikan Bluetooth Speaker



BLUETOOTH BEACON

Topologi Jaringan



Pengaturan Beacon

Beacon1

Attributes:

Name	Attribute
1 MTBF	300000
2 cost	250
3 power source	1
4 rack units	2

Properties:

Property	Value
1 beaconData	Location 1
2 beaconUuid	{00000000-0000-0000-0000-000000000001}

Top Refresh Advanced

Beacon1

Attributes:

Name	Attribute
1 MTBF	300000
2 cost	250
3 power source	1
4 rack units	2

Properties:

Property	Value
1 beaconData	Kedai Coffee Aisha Diskon 30%
2 beaconUuid	{00000000-0000-0000-0000-000000000001}

Beacon2

Attributes:

Name	Attribute
1 MTBF	300000
2 cost	250
3 power source	1

Properties:

Property	Value
1 beaconData	Kedai Roti Nafisa (Diskon 40%)
2 beaconUuid	{00000000-0000-0000-0000-000000000002}

Refresh Advanced

Pengaturan Smartphone

The image shows a software interface for configuring a smartphone. On the left, there is a sidebar with tabs for Physical, Config, Desktop, Programming, and Attributes. Under the Config tab, the GLOBAL section is selected. In the Bluetooth section, the 'On' checkbox is checked. The Programming tab is highlighted with a red box. A 'Create Project' dialog box is open, prompting the user to enter a project name and select a project type. The 'Name' field contains 'MonitorBeacon' and the 'Template' dropdown is set to 'Empty - Python'. Below the dialog, a code editor window titled 'MonitorBeacon (Python) - main.py' displays the following Python code:

```
from bluetooth import *
from time import *

dstService = "{00000000-0000-0000-0000-000000000001}"
dstMac = "FFFF.FFFF.FFFF"

def onBluetoothReceive(srcMac, srcService, dstMac, dstService, data):
    print("received from " + srcMac + ":" + srcService + ":" + data)

def main():
    Bluetooth.init()

    service = BluetoothService()
    service.onReceive(onBluetoothReceive)
    print(service.start(dstService))

    while True:
        delay(5000)

if __name__ == "__main__":
    main()
```

Pengujian

Beacon1

Specifications I/O Config Config Thing Editor Programming Attributes

Beacon (Python) - main.py

Open New Delete Rename Import Stop Clear Outputs Help

main.py

```
from physical import *
from bluetooth import *
from time import *

DEFAULT_BEACON_UUID = "00000000-0000-0000-0000-000000000001"
DEFAULT_BEACON_DATA = "Location 1"

def setup():
    Bluetooth.init()
    Bluetooth.enableBroadcast(True)
    global DEFAULT_BEACON_UUID
    global DEFAULT_BEACON_DATA
    uuid = getDeviceProperty(getName(), "beaconUuid")
    if uuid == None:
        setDeviceProperty(getName(), "beaconUuid", DEFAULT_BEACON_UUID)
    data = getDeviceProperty(getName(), "beaconData")
    if data == None:
        setDeviceProperty(getName(), "beaconData", DEFAULT_BEACON_DATA)

def main():
    setup()
    while True:
        uuid = getDeviceProperty(getName(), "beaconUuid")
        data = getDeviceProperty(getName(), "beaconData")
        print "Broadcasting to " + str(uuid)
        Bluetooth.broadcastBeacon(uuid, data)
        delay(5000)

if __name__ == "__main__":
    main()

Broadcasting to {00000000-0000-0000-0000-000000000001}
Beacon (JavaScript) stopped.
Starting Beacon (Python)...
Broadcasting to {00000000-0000-0000-0000-000000000001}
Broadcasting to {00000000-0000-0000-0000-000000000001}
```

Smartphone1

Physical Config Desktop Programming Attributes

MonitorBeacon (Python) - main.py

Open New Delete Rename Import Stop Clear Outputs Help

main.py

```
from bluetooth import *
from time import *

dstService = "(00000000-0000-0000-0000-000000000001)"
dstMac = "FFFF.FFFF.FFFF"

def onBluetoothReceive(srcMac, srcService, dstMac, dstService, data):
    print("received from " + srcMac + ":" + srcService + ":" + data)

def main():
    Bluetooth.init()
```

Starting MonitorBeacon (Python)...

True
received from 00E0.B082.4E84:(00000000-0000-0000-0000-000000000000):Kedai Coffee Aisha Diskon 30%
received from 00E0.B082.4E84:(00000000-0000-0000-0000-000000000000):Kedai Coffee Aisha Diskon 30%

Smartphone1

Physical Config Desktop Programming Attributes

MonitorBeacon (Python) - main.py

Open New Delete Rename Import Stop Clear Outputs Help

main.py

```
from bluetooth import *
from time import *

dstService = "(00000000-0000-0000-0000-000000000002)"
dstMac = "FFFF.FFFF.FFFF"

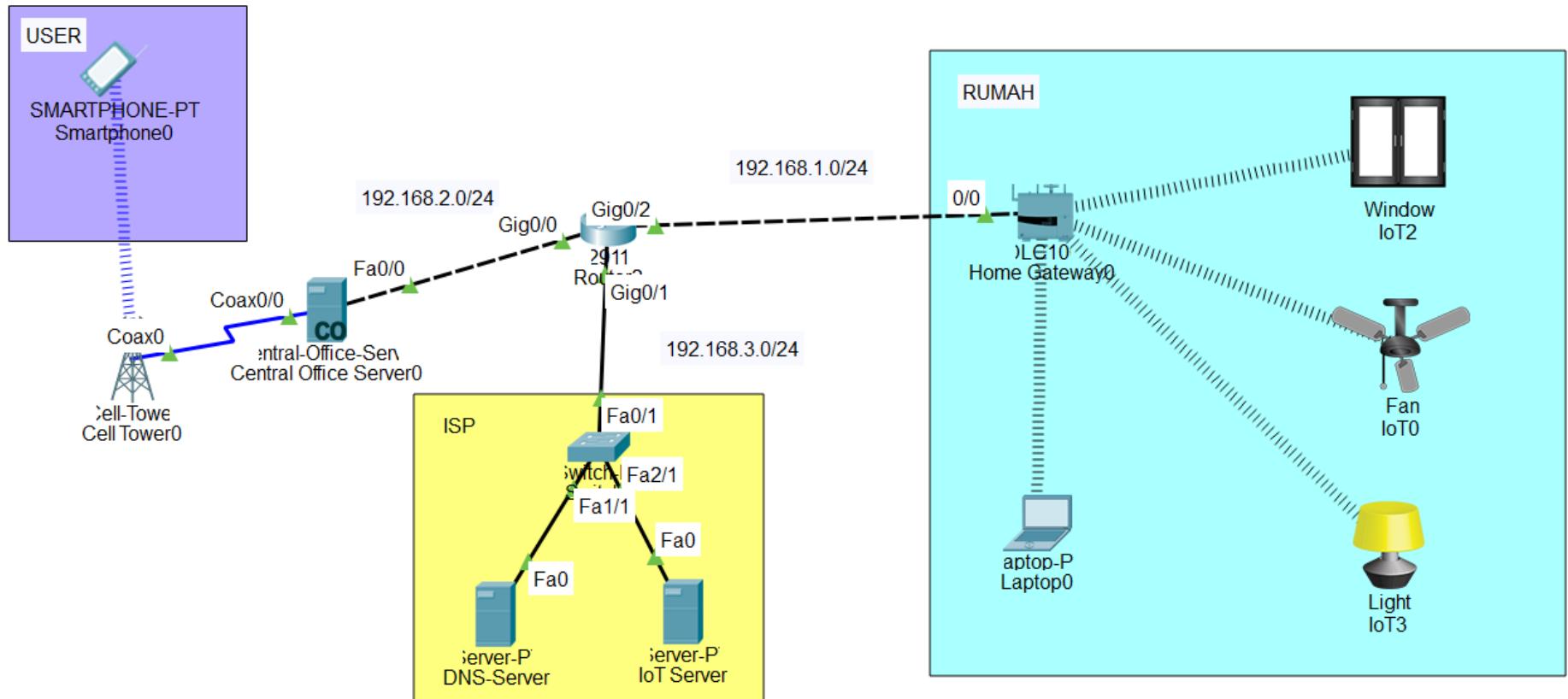
def onBluetoothReceive(srcMac, srcService, dstMac, dstService, data):
    print("received from " + srcMac + ":" + srcService + ":" + data)

def main():
    Bluetooth.init()
```

Starting MonitorBeacon (Python)...

True
received from 00D0.587B.20D5:(00000000-0000-0000-0000-000000000000):Kedai Roti Nafisa (Diskon 40%)
received from 00D0.587B.20D5:(00000000-0000-0000-0000-000000000000):Kedai Roti Nafisa (Diskon 40%)
received from 00D0.587B.20D5:(00000000-0000-0000-0000-000000000000):Kedai Roti Nafisa (Diskon 40%)

Integrasi Network



TUGAS

- Buatlah aplikasi berbasis RFID atau BLE Card
- 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