Packet Tracer – Connect and Monitor IoT Devices

The Smart Home Network



Objectives

Part 1: Add Home Gateway to the Network

Part 2: Connect IoT Devices to the Wireless Network

Part 3: Add End User Device to the Network

Background / Scenario

In this activity you will add a Home Gateway and several IoTdevices to an existing home network and monitor those devices through the Home Gateway.

Part 1: Connect a Home Gateway to the Network

Step 1: Open the Smart_Home.pkt file and save the file to your computer

Step 2: Adding a home gateway

a. Select the Home Gateway device.

Click the **Wireless Devices** icon in the **Device-Type Selection** box. Click the **Home Gateway** device icon and then click in the Logical workspace to add the device.

	Generic Generic WRI300V Gateway
es	<

b. Connect the Home Gateway to the Cable Modem.

Click the **Copper Straight-Through** connector icon in the Device-Type Selection box, then click the Home Gateway to add one end of the cable to the gateway. Next, click the Cable Modem icon to connect the other end of the cable to the **Internet** port.



After a few seconds both ends of the cable should have green lights indicating that the link is up.



Part 2: Connect IoT Devices to the Wireless Network

Step 1: Select wireless devices

a. Click the **Home Devices** icon in the **Device-Type Selection** box and add the **Fan**, the **Door**, and the **Lamp** to the workspace.



Step 2: Add devices to the home wireless network

a. Add a wireless adapter to the Fan device.

Click the **Fan** icon in the workspace to open the **Config** tab and then click the **Advanced** button in the bottom right corner of the window. Notice that the tabs at the top of the configuration window change. There are now more tabs.

Click the I/O Config tab and change the Network Adapter type to the PT-IOT-NM-1W wireless adapter.

≷ юто					_		×
Specifications	I/O Config	Physical	Config	Thing Editor	Programming	Attributes	
Network Adapter				PT-IOT-NM-1W			-
Network Adapter	2			None			•
Digital Slots				1			
Analog Slots				0			-
USB Ports				0			-
Bluetooth				Built-in			
Desktop				Show			
Usage				Smart Device	Comp	onent	
🗌 Тор						Adva	anced

b. Change the display name of the **Fan** device.

Click the **Config** tab. In the Display Name box, type **Ceiling Fan**.

🤻 Ceiling Fan						_		\times
Specifications I/O C	Config	Physical	Config	Thing Editor	Programming	Att	ributes	
GLOBAL Settings Algorithm Settings Files INTERFACE Wireless0 Bluetooth	~	Display Name Serial Number Gateway/DN Static Gateway DNS Server Gateway/DN OHCP Auto Co Static	Ceiling Fa PTT08101 5 IPv4 192.168.2 5 IPv6 nfig	Global Settin	gs			~
🗌 Тор							Adva	nced

c. Verify that the Fan device is connected to the wireless network.

While still in the **Config** tab, click the **Wireless0** interface in the left pane.

In the configuration settings, the **HomeGateway** network should be listed in the SSID box. Verify that the DHCP is selected in the **IP Configuration** settings, the IP address is 192.168.25.100 and the default gateway is 192.168.25.1. This indicates that the fan is connected to the network and is receiving IP configuration information from the home gateway.

GLOBAL		g Physical	Coning	Ihing	Edit	or	Program	nming	Attribu	ites	
	\wedge				Wirel	less0					^
Settings		Port Status								🖌 On	
Algorithm Settings		Bandwidth				300 N	1bps				
Files		MAC Address				0002	.4A4B.80	25			
INTERFACE		SSID				Home	eGateway				
Wireless0		Authentication									
Bluetooth		Disabled	O WEP		WE	P Key					
		⊖ WPA-PSK	O WPA2	2-PSK	PSK	Pass	Phrase				
		O WPA		2	Use	r ID					
		0	0		Pas	sword					
		Encryption Type			Dis	abled				•	
		IP Configuratio	n								
		OHCP									
		◯ Static									
		IP Address				192.1	.68.25.10	00			
	$ $ \vee	Subnet Mask				255.2	255.255.0)			~
Top										Advan	cod

Close the Ceiling Fan configuration window.

d. Connect the **Door** and the **Lamp** to the wireless network following the same steps used for the fan.

Part 3: Add a Wireless Tablet to the Network

Step 1: Add the wireless tablet to the workspace

a. Click the End Devices icon in the Device-Type Selection box and add the Wireless Tablet to the workspace.

	\sim
Ĵ u uj en ≯ ni ⇔	Generic Generic Generic Generic DP Phone VolP Phone V Wireless Shart Generic Wireless Shiffer
]##	<

Step 2: Connect the wireless tablet to the HomeGateway network

a. Change the wireless tablet network settings.

Click the **Tablet icon** to open the Tablet configuration window.

Click the **Config** tab and then click the **Wireless0** Interface. Change the SSID from **Default** to **Home Gateway**. After the network SSID is changed the Tablet should learn an IP address through DHCP within a few seconds.

R	Tablet PC	co — 🗆 🗙
Physical Config	Desktop Attributes Software,	/Services
Physical Config GLOBAL Settings Algorithm Settings INTERFACE Wireless0 3G/4G Cell1	Desktop Attributes Software, Port Status Bandwidth MAC Address SSID Authentication Disabled WEP WPA-PSK WPA2-PSK WPA WPA2 Encryption Type IP Configuration DHCP Static IP Address Subnet Mask IPv6 Configuration DHCP Auto Config Static	/Services Wireless0
v	IPv6 Address Link Local Address: FE80;;20A:F3	3FF:FE38:330E

b. Access the home gateway IoT server from the tablet.

Click the **Desktop** tab and then click the **Web Browser** icon to open a Web browser. Type192.168.25.1 (the address of the home gateway) in the URL box and click **Go**.

At the **Home Gateway Login** page, enter **admin** as the username and **admin** as the password and click the **Submit** button to connect to the Home Gateway server.

Note that no devices appear in the Home Gateway IoT Server - Devices list.

≷ Tablet PC0			_		\times
Physical Config	Desktop	Programming	Attributes		
Web Browser					Х
< > URL http:// IoT Server - Devices	/192.168.25.	1/home.html	Go Home Conditions	Stop	ıt _
					\sim
<				>	
Тор					

Close the **Tablet** window.

Step 3: Configure IoT devices to register with the Home Gateway server

a. Register the ceiling fan to the home gateway server.

Click the Fan icon in the workspace, click the **Config** tab, and then click **Settings** in the left pane. At the **IoT Server** options list, click the **Home Gateway** button.

Specifications I/O Con GLOBAL Settings Algorithm Settings Files INTERFACE Wireless0 Bluetooth	ig Physical Connig Thing Editor Programming Attributes O Static IPv6 Gateway IIPv6 DNS Server IIPv6 DNS Server IoT Server O None IIPv6 Gateway IIPv6 DNS Server IoT Server O Remote Server IIPv6 DNS Server IIPv6 DNS Server IoT Server O None O IIPv6 DNS Server O Remote Server Server Address O Connect Connect	~
--	--	---

Close the Ceiling Fan window.

Repeat the steps in 3a to register the **Door** and the **Lamp** devices to the home gateway.

b. Verify that the devices are now registered with the Home Gateway server.

Click the **Tablet** icon in the workspace and open the **Web Browser**. Connect to the Home Gateway by typing **192.168.25.1** in the URL box and then click **Go**. Enter **admin** as the username and password and click **Submit**.

After a few seconds all three devices should be listed in the Home Gateway **IoT Server - Devices** list.

🕐 Tablet PC0	_		\times
Physical Config Desktop Programming Attribu	utes		
Web Browser			Х
IoT Server - Devices Home Condit	GO tions Editor	Sto	p
▼ ● IoT0 (PTT0810RAMJ)	Ce	eiling Fan	
Status	f Low H	ligh	
▼ ● IoT2 (PTT08109MLO)		Light	
Status	Off Dim	On	
▼ ● IoT1 (PTT0810VU81)		Door	
Open		•	
Lock	Unlock	ock	v v
<			>
Тор			

Close the Tablet window.