CITY UNIVERSITY

Faculty of Science and Engineering
Department of Computer Science and Engineering
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CSE 318 Computer Network Laboratory

Project Report on
Smart Home Automation, ISP & 3G/4G

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Abstract: Nowadays Technology plays a very important role in our all daily activities. One of these is smart home automation, by which we can control our electronic devices via a Smartphone/PC. This implementation can be implemented effectively using package tracking software that includes IoT functions to control and simulate a smart home. IoT technology can be applied to many real life issues, such as: homework, treatment, campus, office, etc. In this project, I will design a Smart Home Networking with ISP & 3G tower. My focus is on a safe home system that includes devices such as: air condition, Smart Fan, Smart lighting, Smart Window, Web cam for security and smart doors. The aim of this project is to come up with a simulation of smart devices that can be controlled by the end-user smart device remotely and then show the concept called smart home. Use of Cisco Packet Tracking Features Simulated smart home and IoT devices are monitored. Simulation results show that smart objects can be connected to the home portal and objects can be successfully monitored which leads to the idea of real life implementation.

Introduction: IoT stands for Internet of Thing. An IoT system consists of sensors/devices which "talk" to the cloud through some kind of connectivity. Once the data gets to the cloud, software processes it and then might decide to perform an action, such as sending an alert or automatically adjusting the sensors/devices without the need for the user.
The objective of IoT analytics is to gain value from large volumes of data generated by devices connected via the Internet of Things (IoT)**.** IoT analytics is typically connected to the Industrial IoT (IIoT).

Cisco packet tracer is a cisco multi-platform simulation tool to allow learners to simulate networks. It also helps generating IoT reformations. In our project work we used the latest version of cisco packet tracer. Fig 1 shows its interface.
Some of the objectives of cisco packet tracer are:

- Allows students to design complex networks
- Can be used a learning aid among students
- Allows students to explore IoT concepts
- Allows users to build, design and configure smart city and smart home.
- Provides realistic visualization and simulation of IoT devices

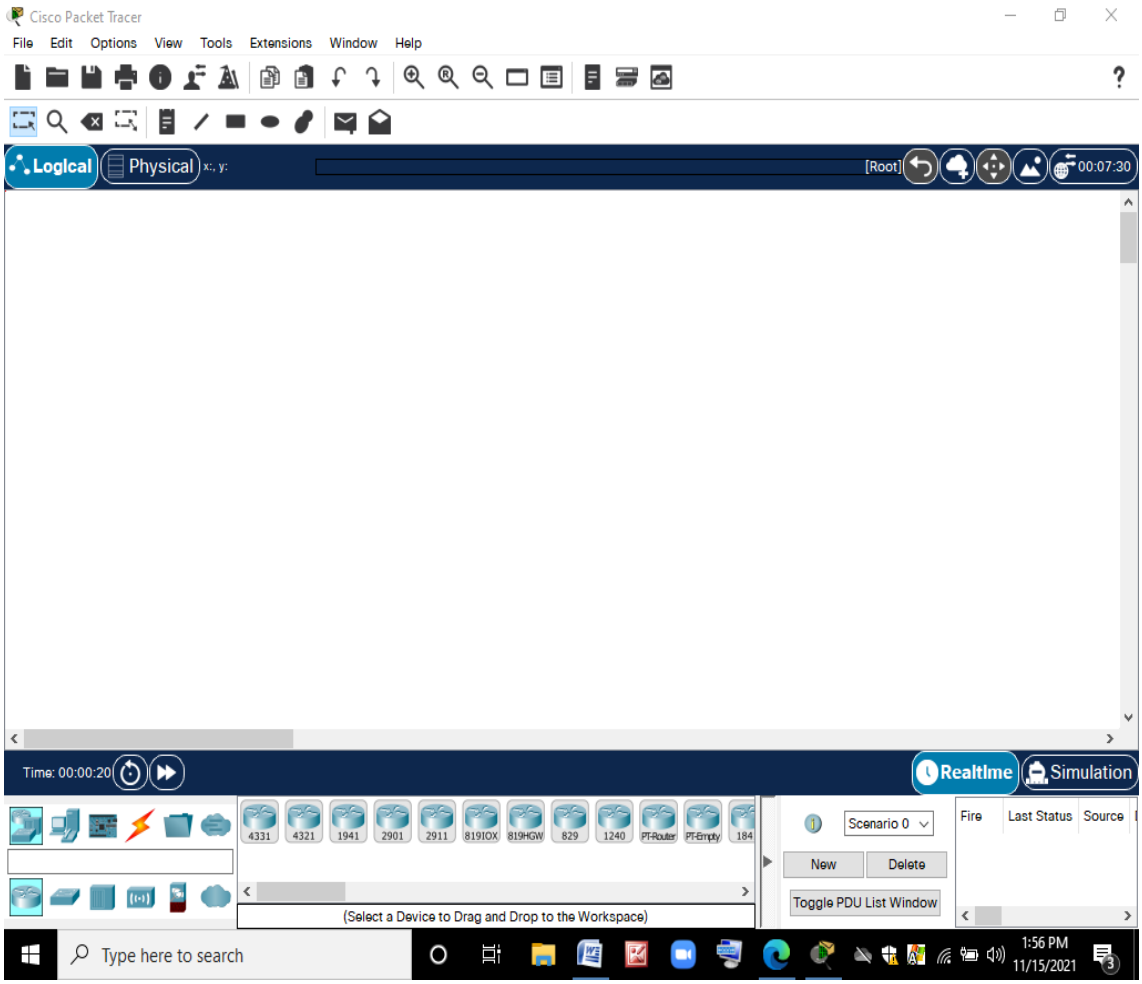


Fig. 1: Cisco Packet Tracer Interface

Implementation:

Step 1:
At first I take a 2911 model router as an ISP, a 24 ports switch, two servers for DNS and IoT, a cable modem, a WAN , A central Office server, a 3G tower.

Now I connected cell tower and Central Office Server with a Coaxial Cable.
Then I connected Central Office Server and Router with copper cross over cable.
Like these all these devices are connected.

I configured all these devices with unique IP addreses.

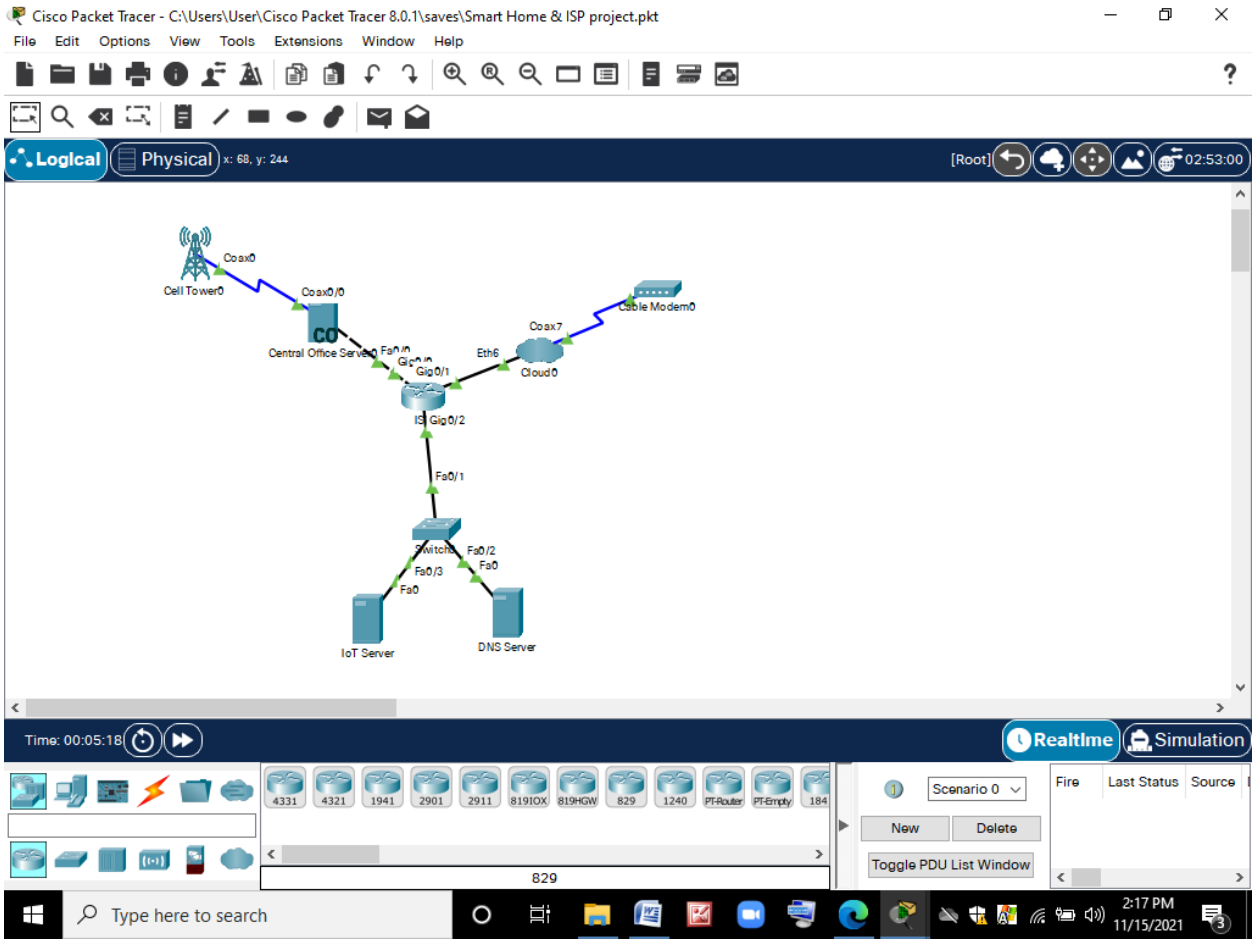


Fig. 2: ISP part

Step 2

In this step I have design Home with smart home devices, like smart door, smart window, smart light ,smart fan, smart air condition, and so on. I also take a PC and a smart phone to monitor and control all devices

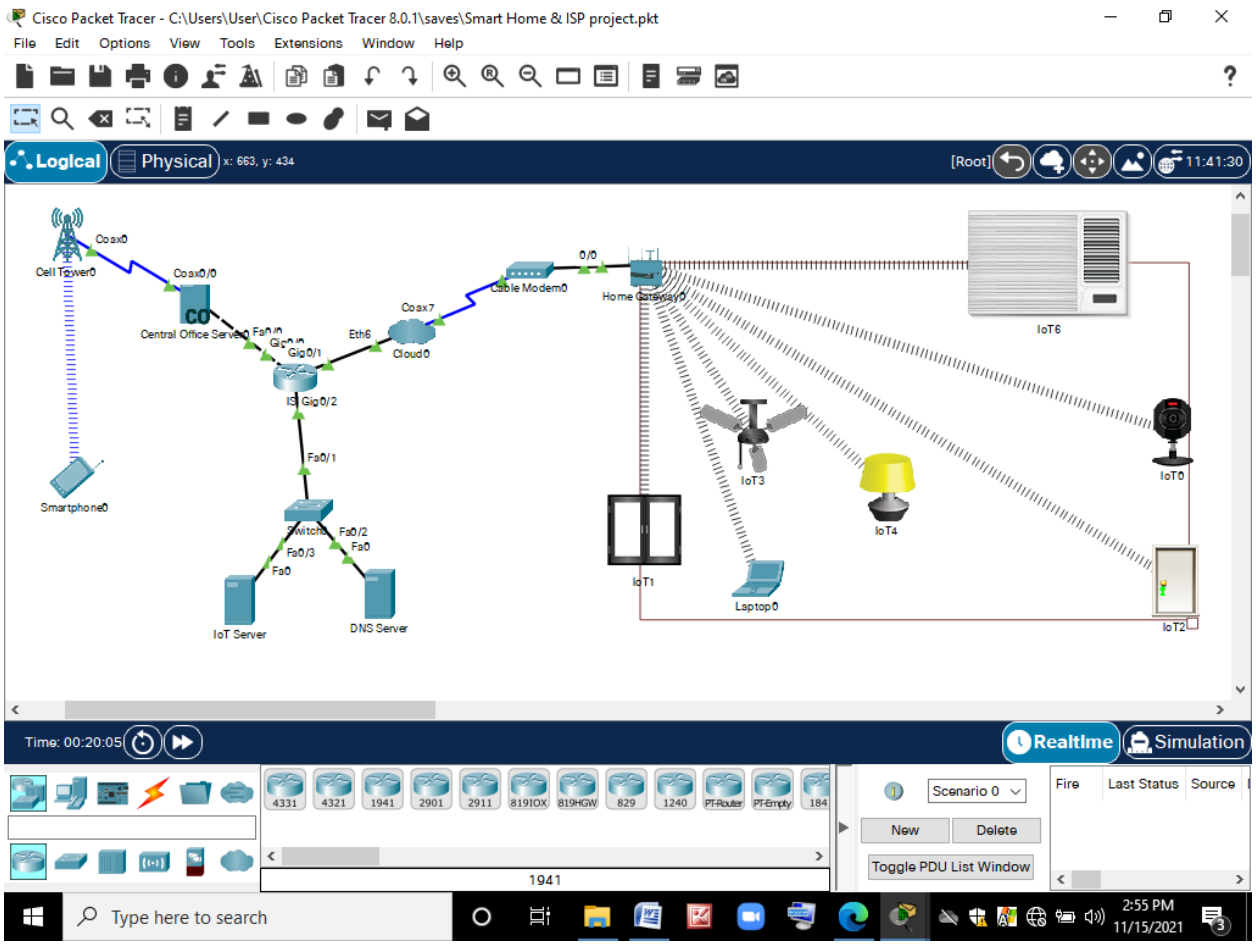


Fig. 3: diagram of my full project

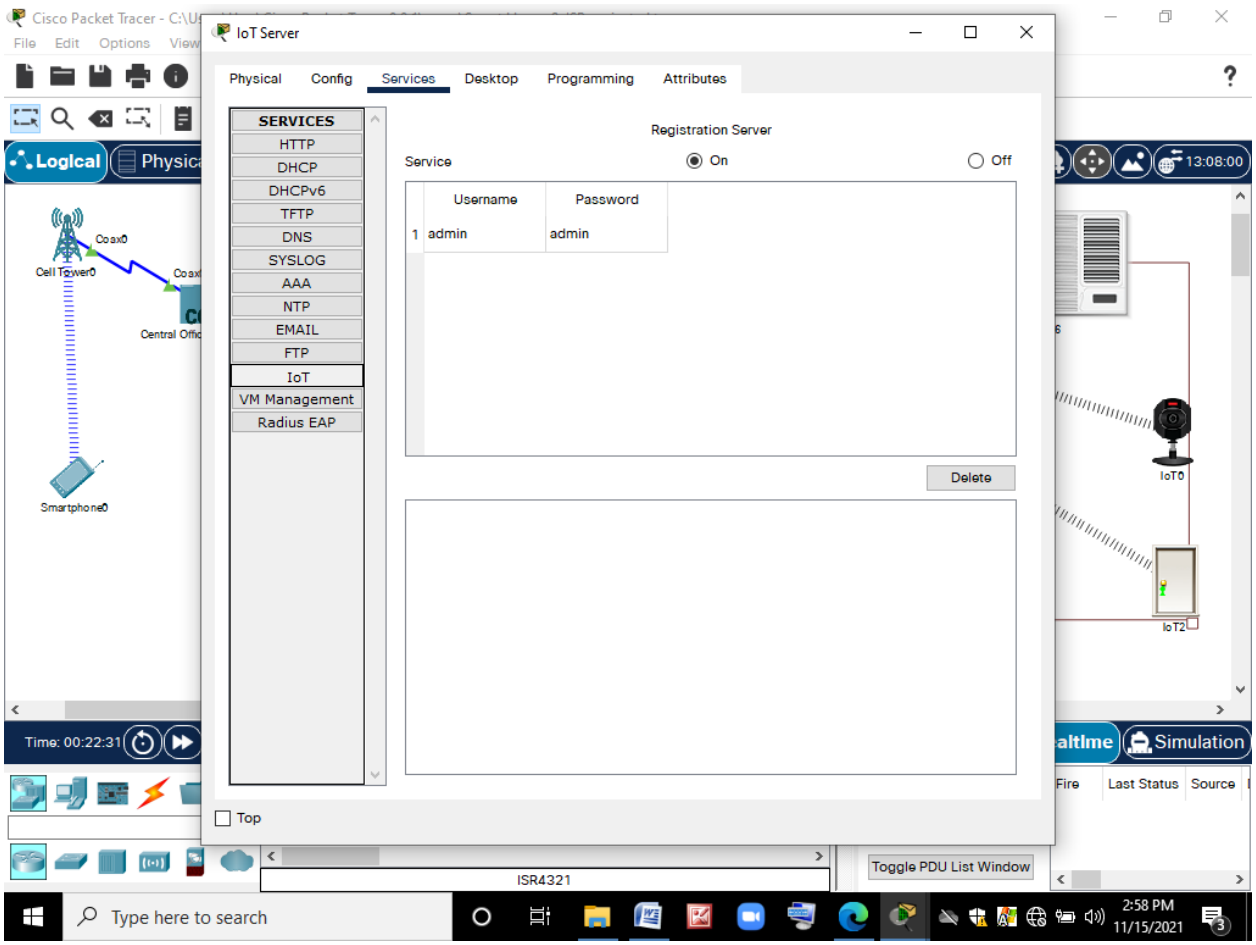


Fig. 4: IoT server account

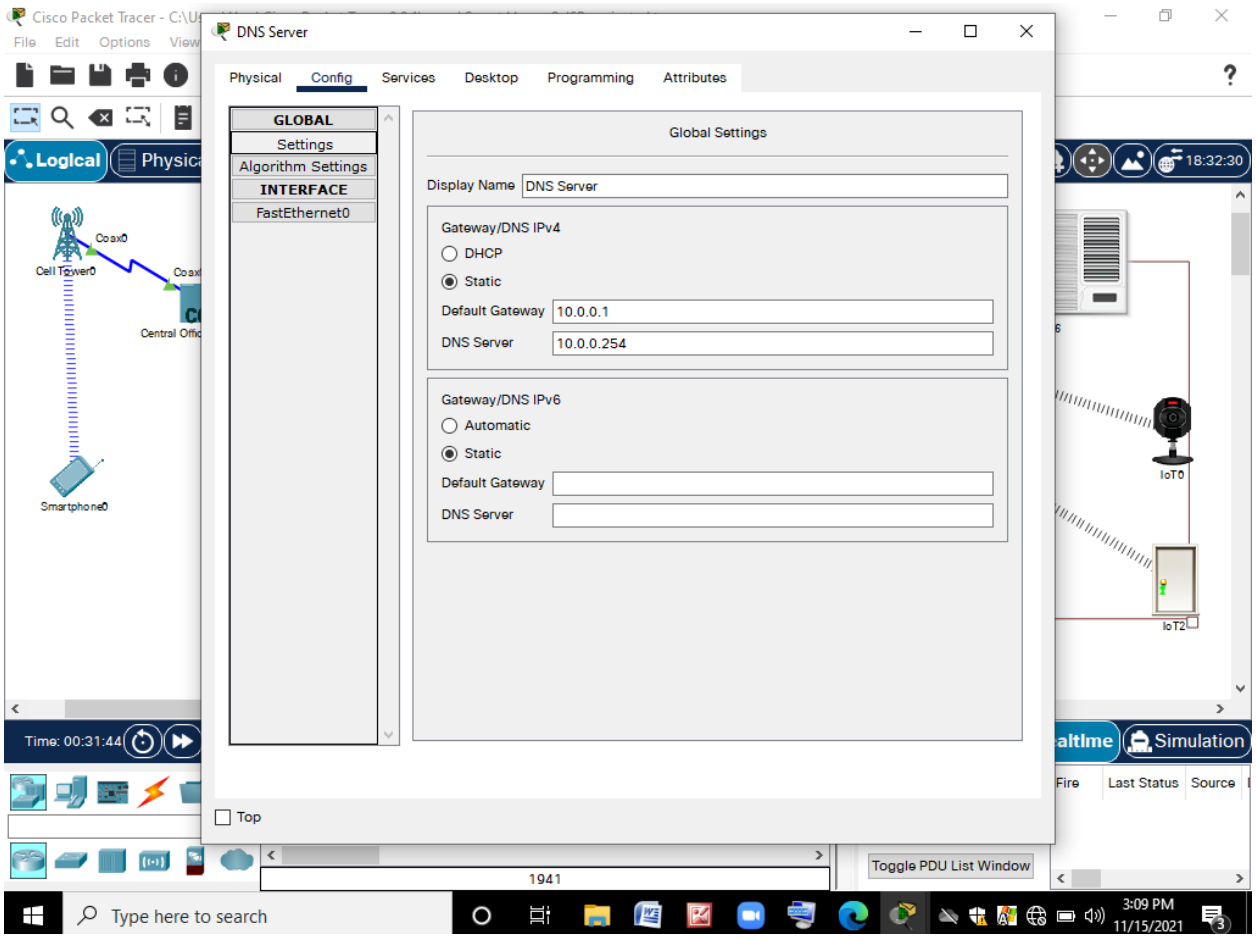


Fig. 5: DNS server

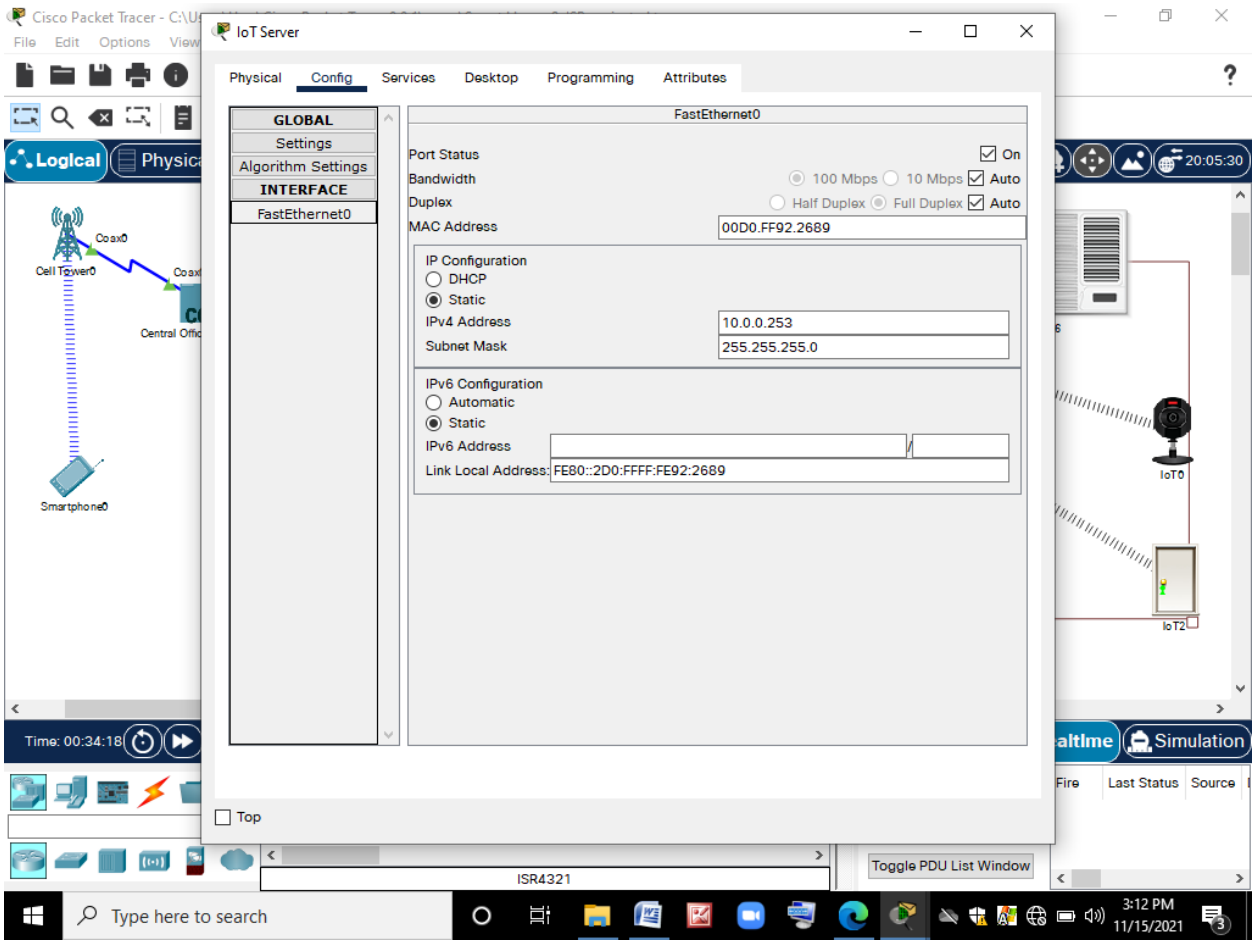
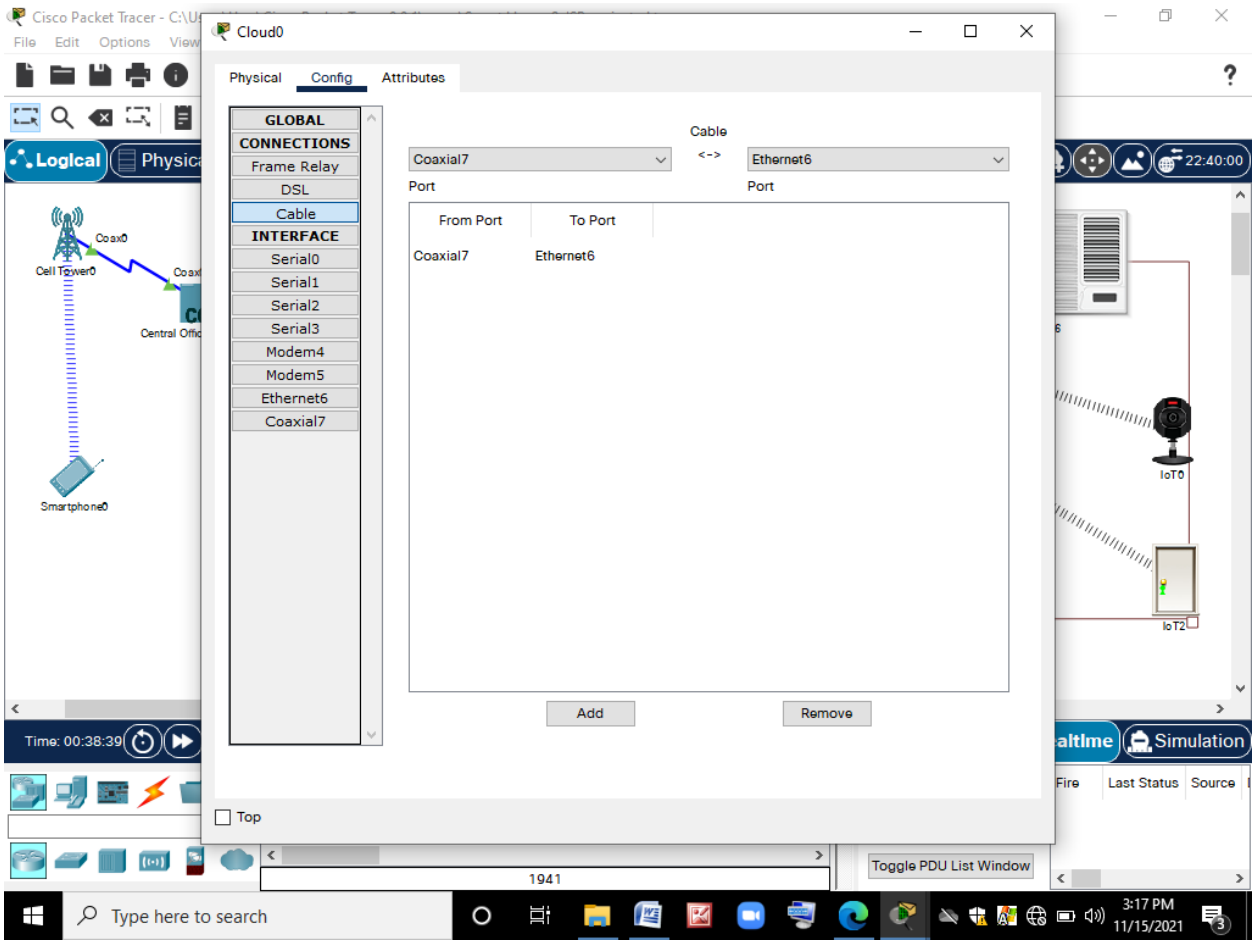


Fig. 6: IoT server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Coax0
Central Offic
Smartphone0
Time: 00:38:39
Cloud0
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Ethernet6
Coaxial7
Cable
Coaxial7
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Ethernet6
Port
Port
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To Port
Coaxial7
Ethernet6
Add
Remove
Top
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IoT2
altIme
Simulation
Fire
Last Status
Source
Toggle PDU List Window
Type here to search
3:17 PM
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Fig. 7: Cloud

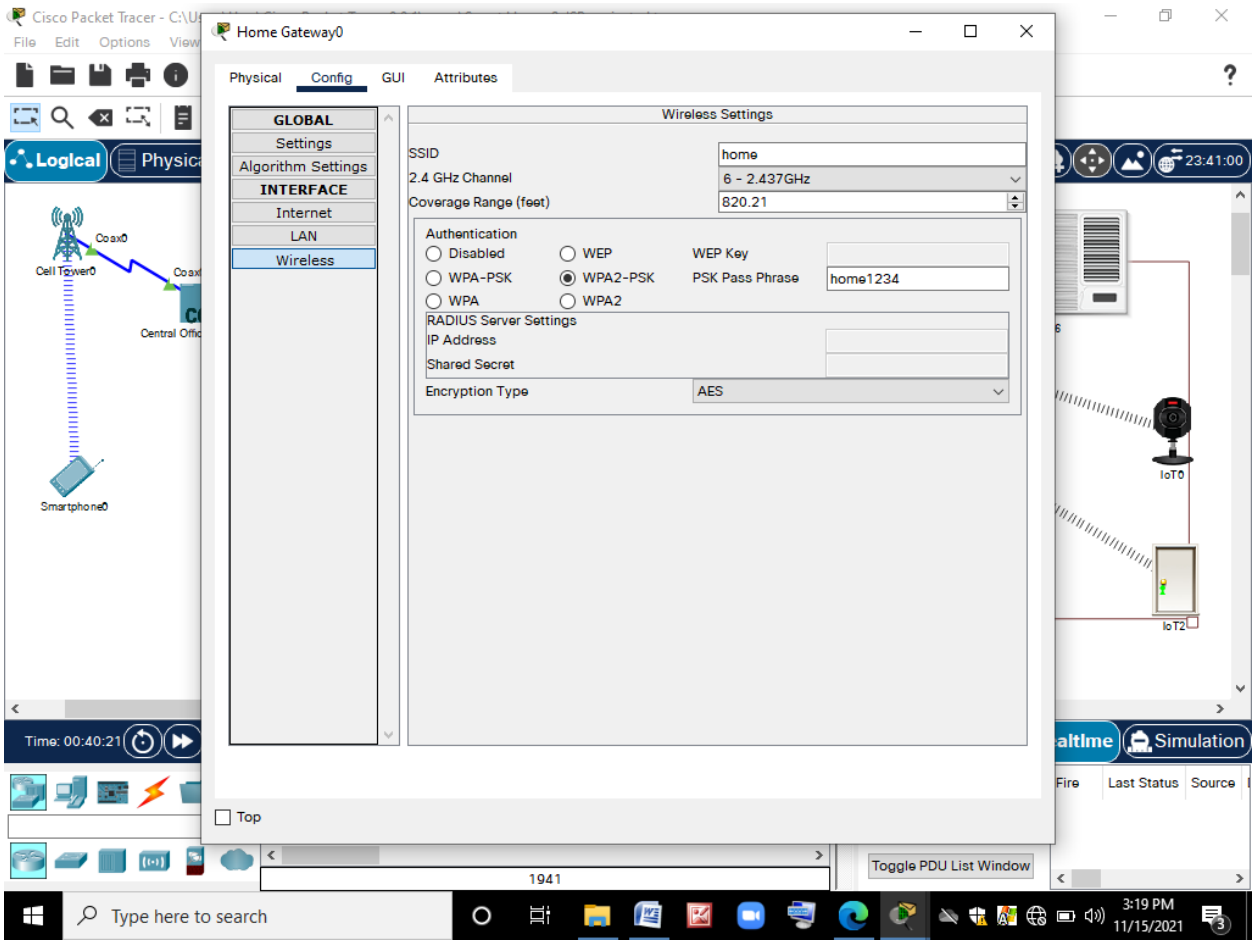

Fig. 8: home gateway

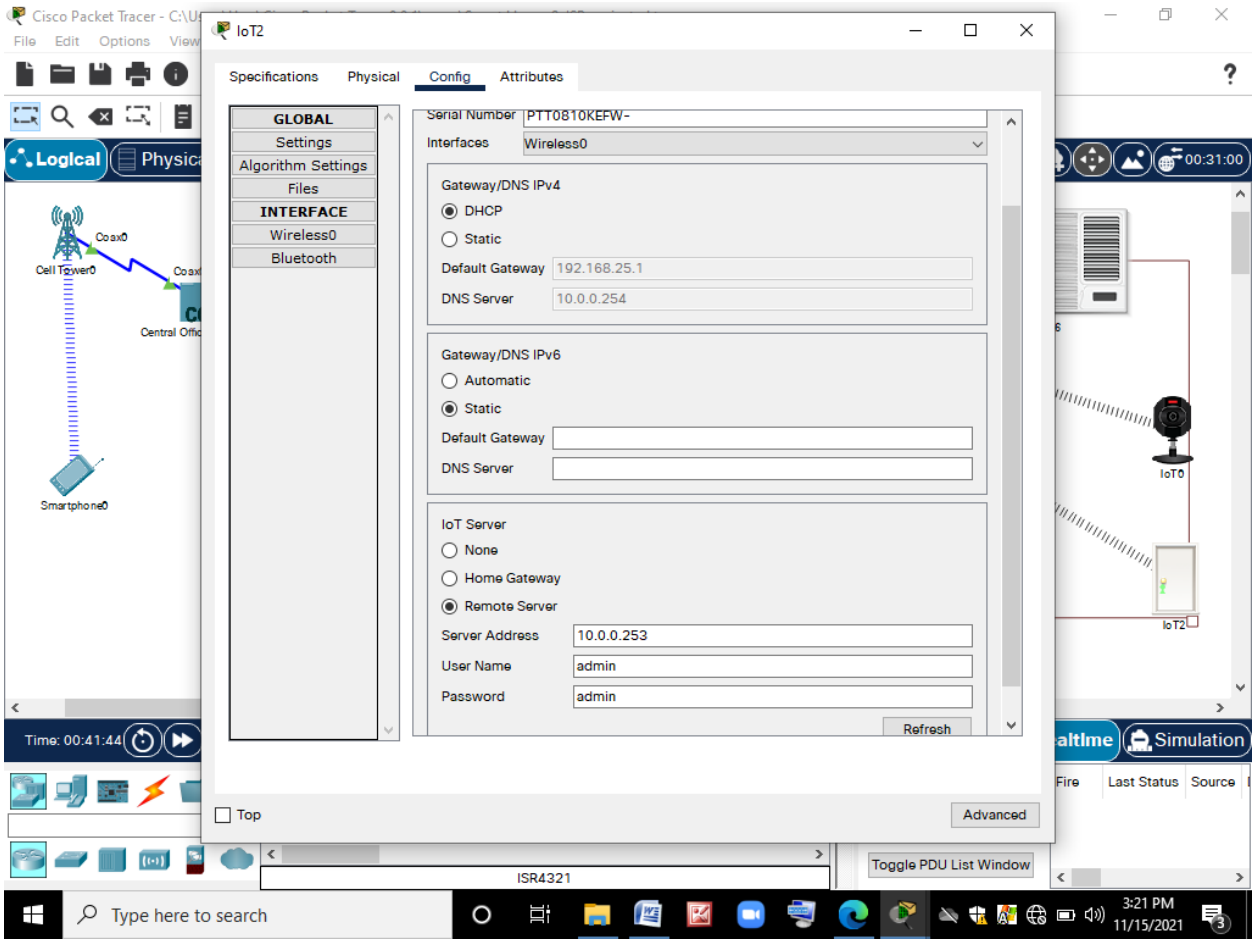

Fig. 9: IoT Device

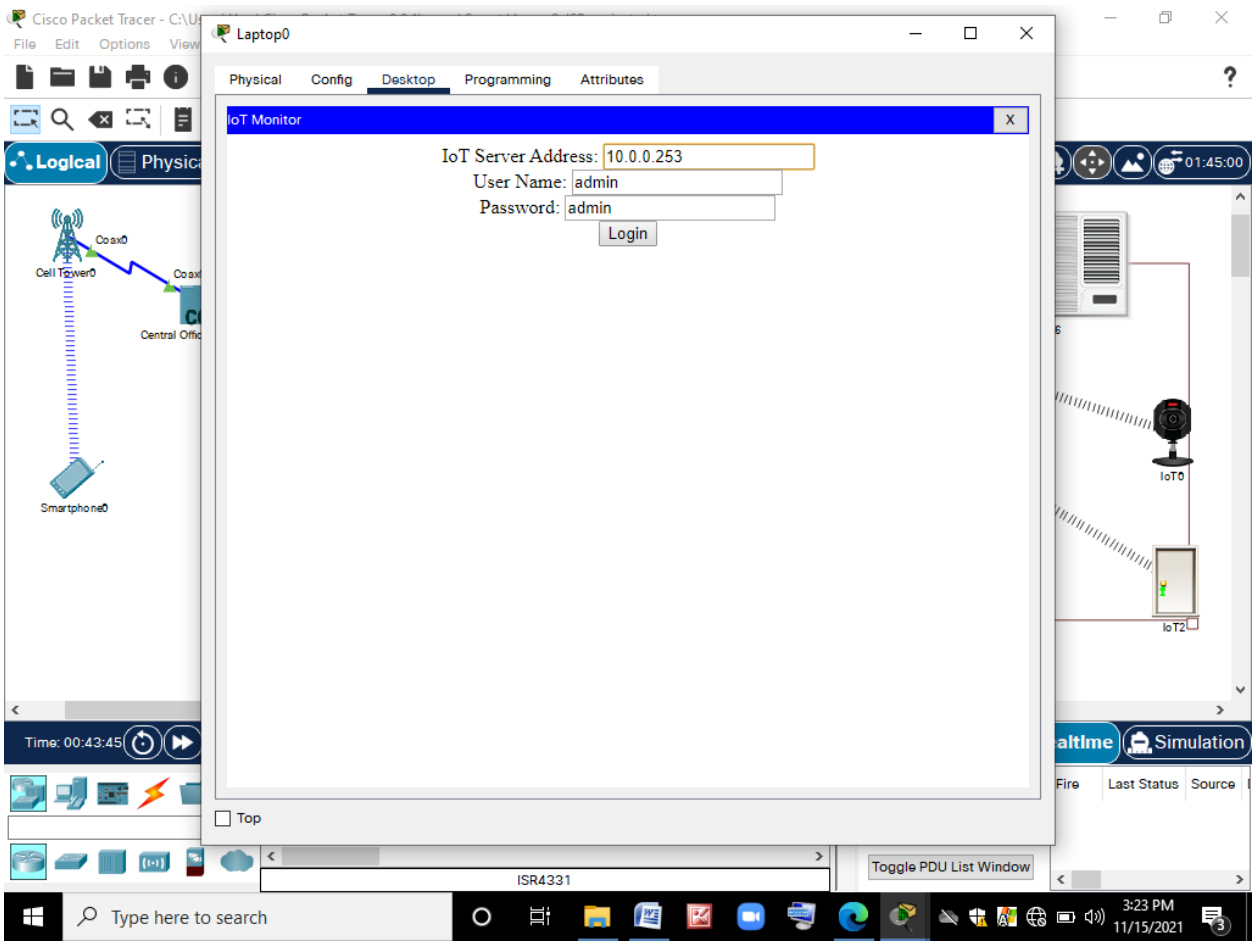

Fig. 10: IoT server login page

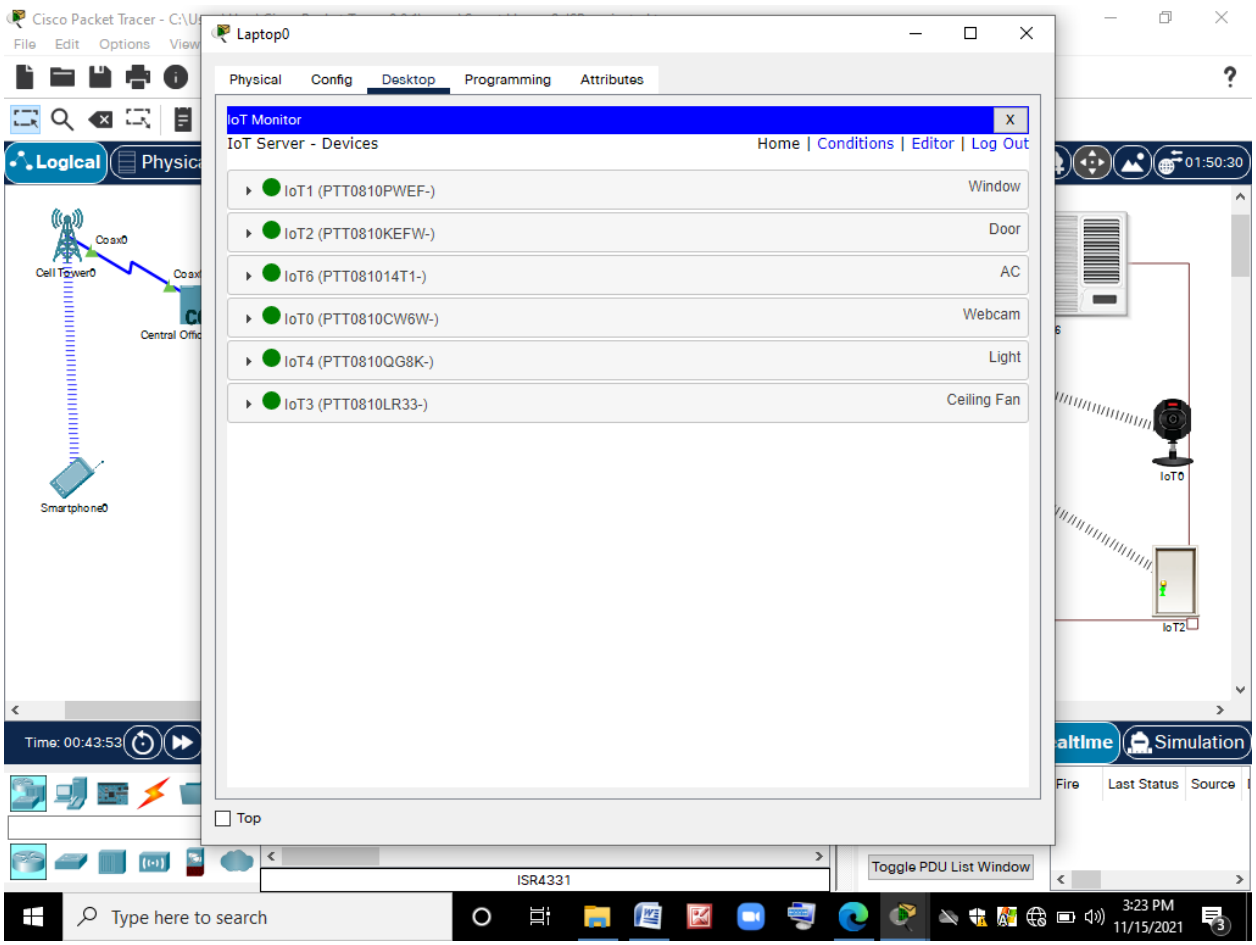

Fig. 11: successfully login & monitoring

Iot server 10.0.0.253
Username: admin
Password : admin