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Ubuntu server connection with nodeMCU

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Introduction

Assuming we have installed a fresh copy of Ubuntu Server 16.04 edition on the hypervisor VMware Workstation Player. We would like to find a simple method to establish a direction server-to-client connection with our available nodeMCU microchips.

Materials

Hardware

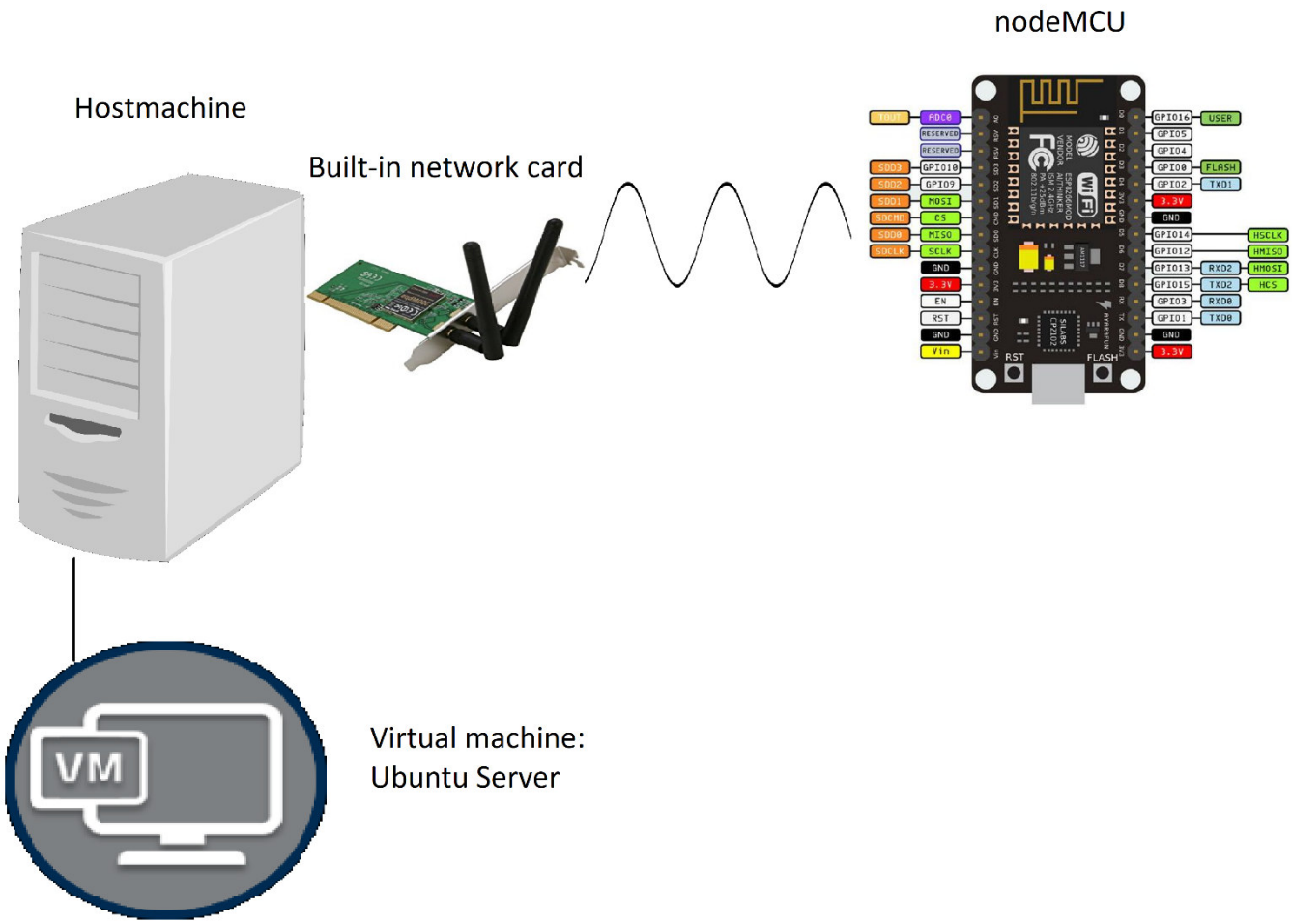
- PC
- Extra network adapter (TL-WDN4200) with these specifications:

Software

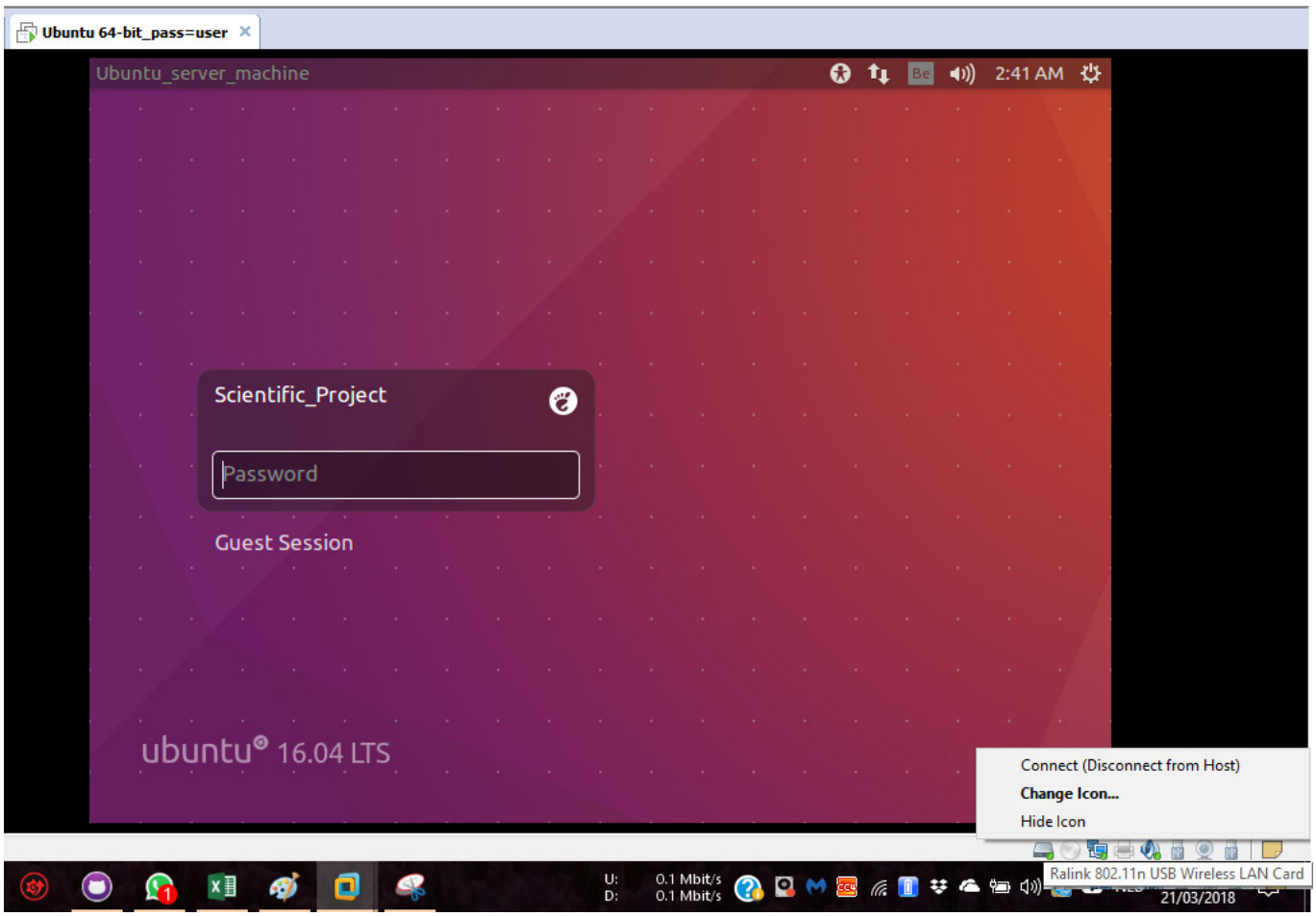
- VMware Workstation Player
- Ubuntu Server 16.04
- Network adapter drivers

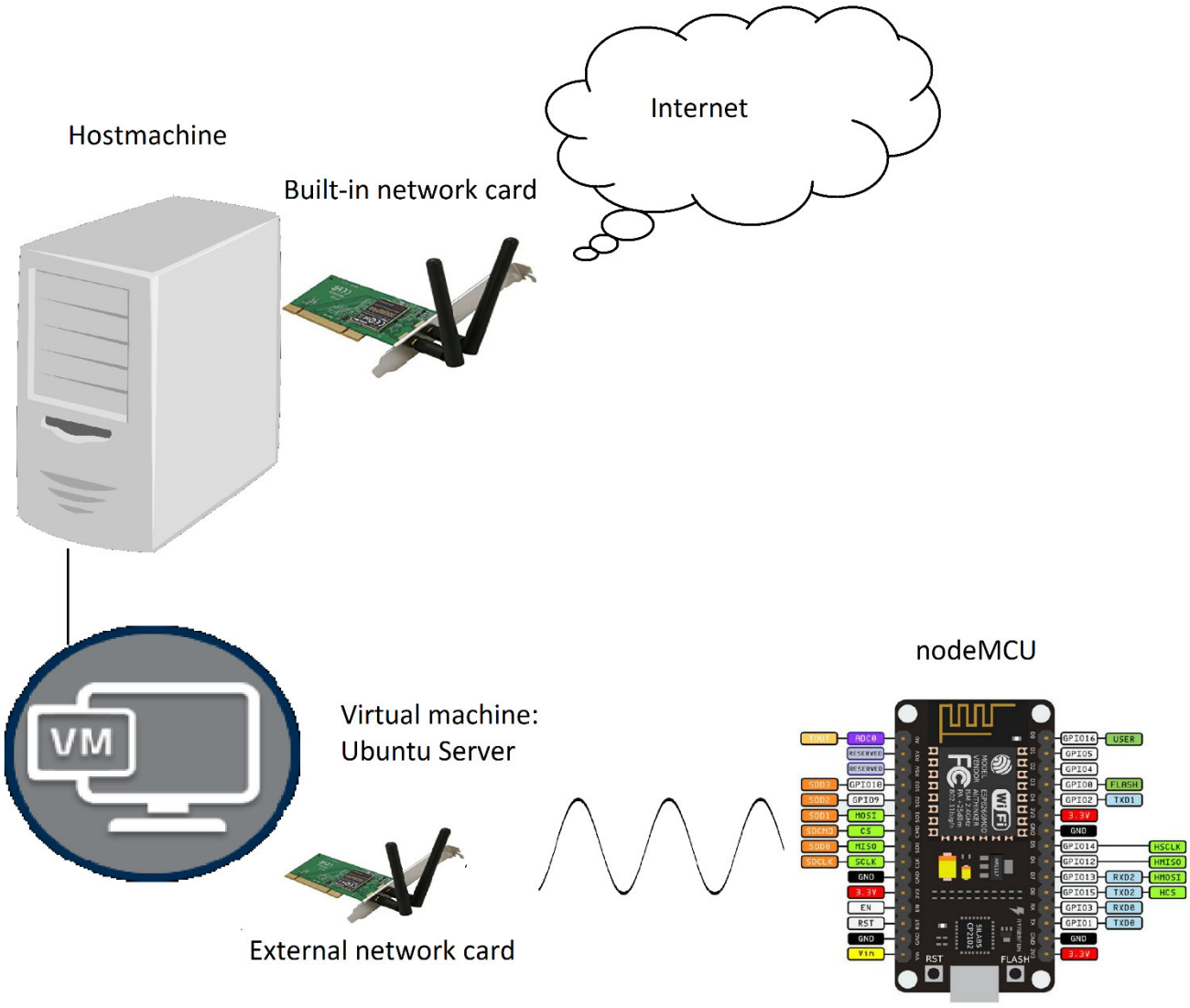
METHODS

For this part of the project we will try to establish a direct client-to-server connection. Thus without any contribution of a router. However there is an issue which arises with the built-in network card of my PC i.e. the network card will be shared among the host and virtual machine. This means that the built-in network card cannot be used exclusively on the server virtual machine.



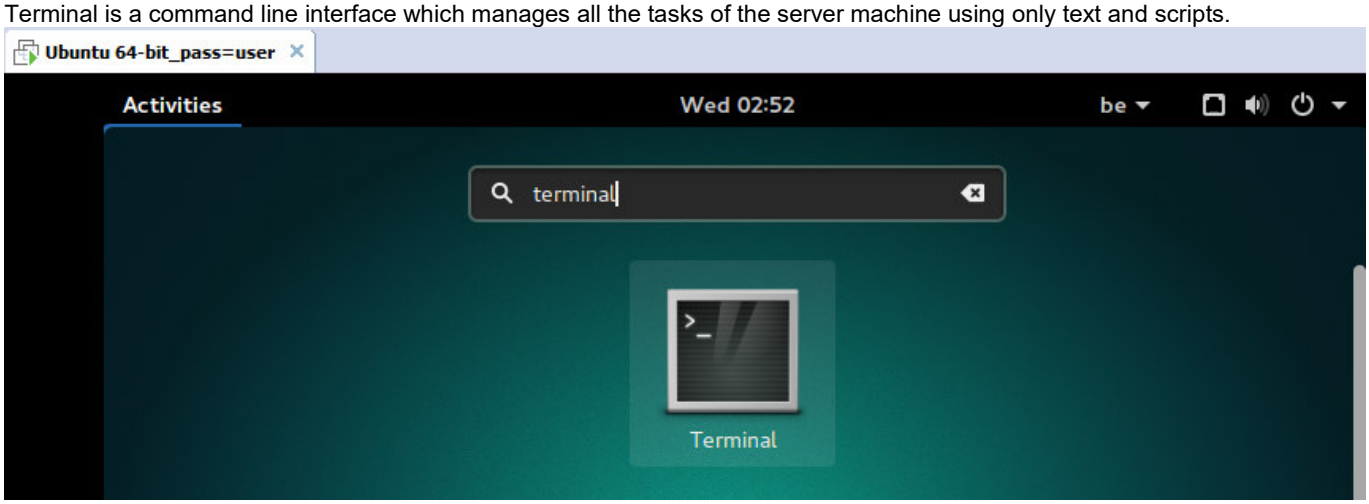
Therefore it is necessary to use an extra external network card which would be dedicated to the virtual machine only. VMware Workstation Player has an option which makes this possible:


Ubuntu 64-bit_pass=user
Ubuntu_server_machine
2:41 AM
Scientific_Project
Password
Guest Session
ubuntu® 16.04 LTS
Connect (Disconnect from Host)
Change Icon...
Hide Icon
Ralink 802.11n USB Wireless LAN Card
U: 0.1 Mbit/s
D: 0.1 Mbit/s
21/03/2018



Terminal:

Terminal is a command line interface which manages all the tasks of the server machine using only text and scripts.



Graphical User Interface (GUI):

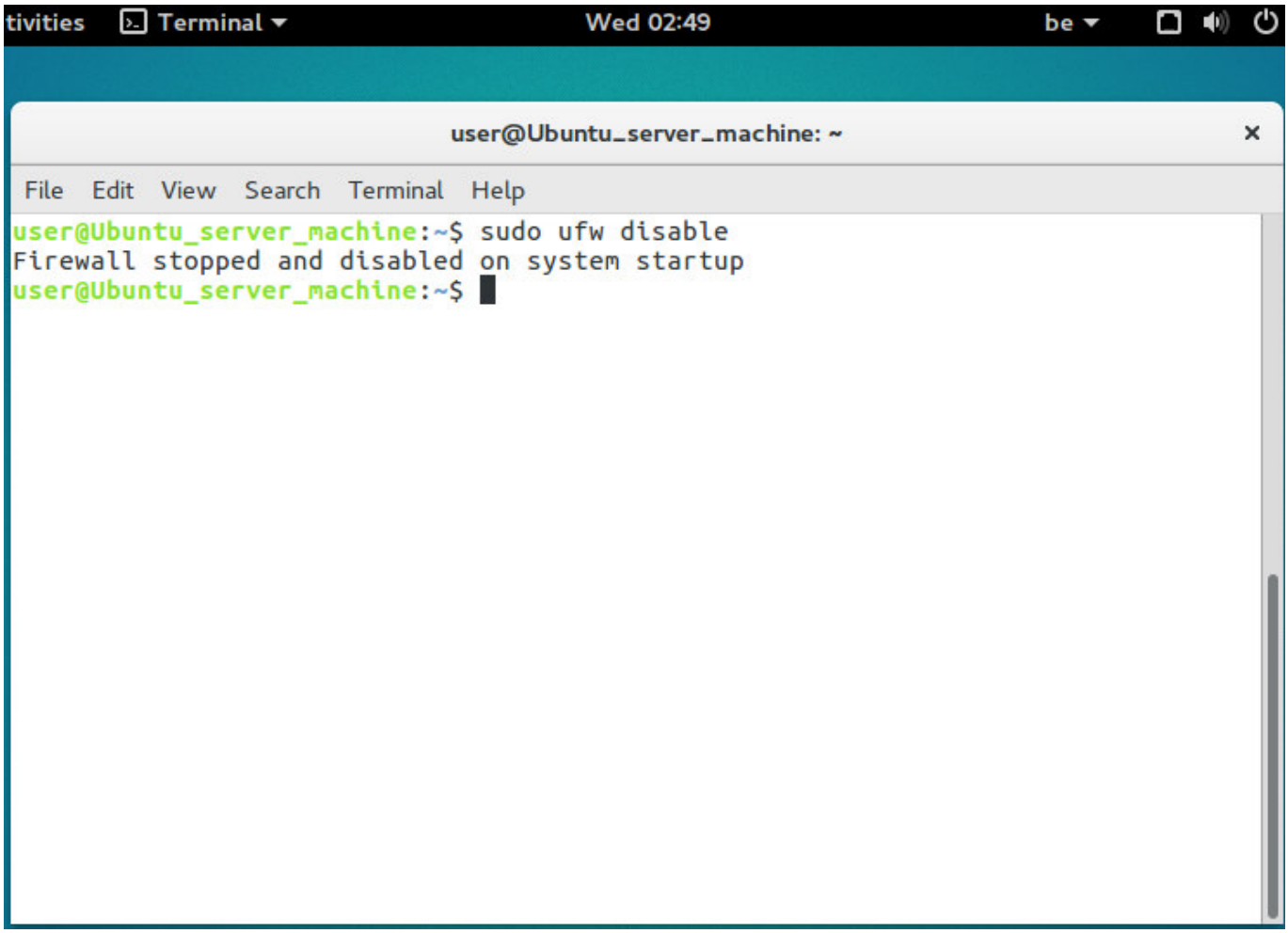
In order to make use of the convenient graphical user interface of the Ubuntu Server we type the following command in the Terminal:

sudo apt-get update

sudo apt-get install ubuntu-desktop

Firewall:

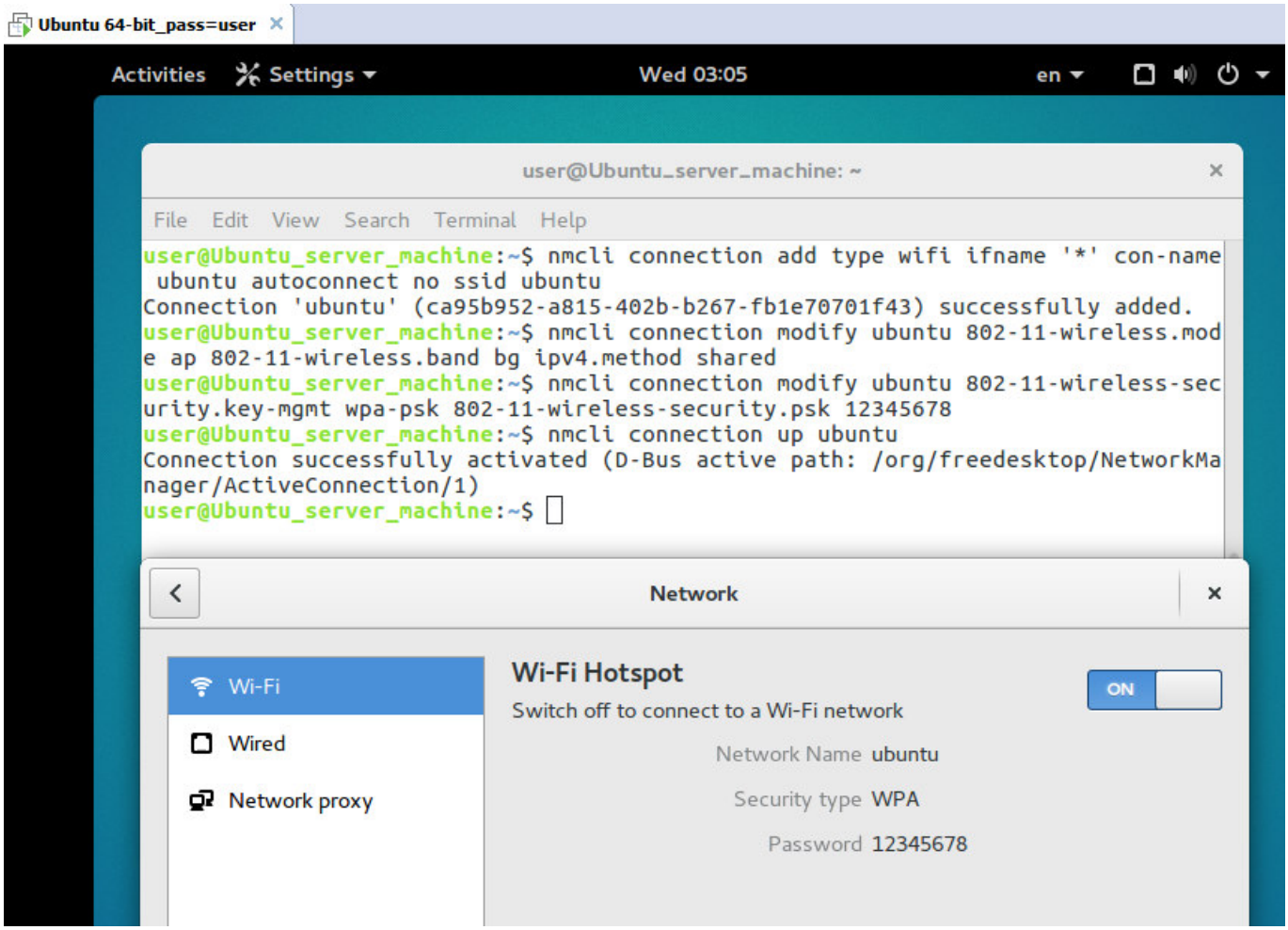
Before we proceed any further we have to make sure the firewall is turned off in the server machine by typing the following in the Terminal:



Wireless hotspot:

There are a few ways to make a Wireless Hotspot for the nodeMCUs to connect to. Note that we will be making a Wireless access point on the 2.4 GHz frequency only because the nodeMCUs do not have any 5GHz capability. The following are a few lines of code which will do all the necessary tasks:

#To Create a connection named “Ubuntu”
nmcli connection add type wifi ifname '*' con-name ubuntu autoconnect no ssid ubuntu
#To put it in Access Point using 2.4 GHz band
nmcli connection modify ubuntu 802-11-wireless.mode ap 802-11-wireless.band bg ipv4.method shared
 # Set a WPA password
nmcli connection modify ubuntu 802-11-wireless-security.key-mgmt wpa-psk 802-11-wireless-security.psk 12345678
 # Enable it (run this command each time you want to enable the access point)
nmcli connection up ubuntu



#To stop the access point
nmcli connection down ubuntu

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