

Computer Communication

Mini Project

Design Proposal of Hotspot Set up for coffee shop

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Abstract

A coffee shop needs to setup with a hotspot, where users can access ADSL internet through wireless network.

Here we will setup a network for the hotspot access for the users in a small coffee shop. We will be using Cisco Packet Tracer for the simulation of the network and for creating the topology required for the network.

This is a simple design for hotspot setup in a coffee shop using ADSL modem and dial up connection. The design is a basic one and real implementation will experience some alterations in the basic design.

In this hotspot setup we will be able to connect multiple devices like smartphones, laptops and TV's to the network wirelessly.

Objective

The main objective of this mini project is to design a working a network model for a hotspot setup in a coffee shop. We will be implementing the network diagram and topology in Cisco Packet Tracer.

Hardware Requirements

- 1.** Servers – 2
- 2.** Switches – 2
- 3.** Router – 1
- 4.** Cloud Setup – 2
- 5.** Modems – DSL and Cable (Optional)
- 6.** Coaxial Splitters
- 7.** Endpoint Devices – Smartphones, Laptops, TV's and PC

SOFTWARE USED: CISCO PACKET TRACER

Network requirements

1. Users should be able to access internet through prepaid card, which can be purchased from the coffee shop.
2. The employees should be able to access the internet without passwords.
3. A hotspot management system, internet sharing mechanism, access point integration, IP address management and seamless access to internet for employees needs to be identified.
4. A network topology listing all the components should be included.
5. Networking Components and features with explanation on integration plan.
6. Hardware inventory list.

Network & Policy Requirements

- . Provide only FTP access to all users to the FTP server and all other services only to network admin.
- . FTP is accessible from the LAN while the web is accessible from the WAN
- . Remote access to router should be secured with password for admin.
- . The users and the servers should be on separate networks.
- . Cisco based infrastructure to be used.
- . Identify the configurations wherever appropriate.
- . Identify the quantity of switches, routers etc.

Features and Services

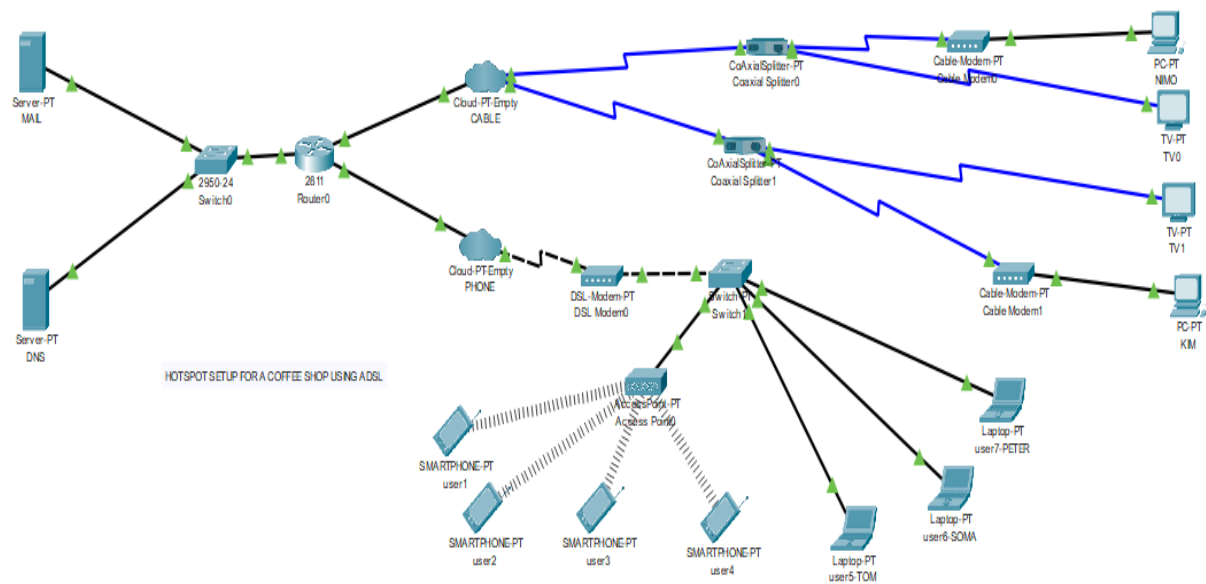
- **Remote management and monitoring:** Tanaza allows you to manage and monitor your deployments on the cloud dashboard remotely. The Tanaza cloud dashboard is a real perk, as it is accessible from anywhere, anytime and from any device – smartphones, tablets, laptops, or computers. Here network admins can easily configure their SSIDs and multi-vendor access points as if they were from the same vendor: in this way, your network can include TP-Link as well as Ubiquiti devices, among many.

-**Analytics dashboard:** automatically capture and store user data, such as name, surname, age, e-mail address, phone number, and type of device, every time a customer connects to your Wi-Fi network. For instance, you can decide to offer a special discount to those customers who stayed at your location several times, or you can give a free voucher to new visitors to use on their next visit, as a way to incentivize them to come back. Furthermore, you can export data and your client list to any marketing software like MailChimp, to promote your coffee shop using personalized newsletters or SMS.

-Authentication page: highly customizable, as it allows you to add your coffee shop logo, create new backgrounds, add links to your website and TripAdvisor page, and add advertising, such as your daily menu or special offers. You can also add videos and banners, even with random or time-based rotation. With Tanaza, you can choose among many authentication methods, such as access through email/phone, voucher, or password, and you can increase your social media engagement through social login. Thanks to social login, users access your Wi-Fi network simply using their social network accounts, i.e. Facebook, Instagram, Twitter, etc. In this way, you can improve your social visibility by asking them to like your Facebook page before they connect, or to “check-in” at your location.

- Content filtering tool: Wi-Fi hotspot providers are legally liable for the online content users access while using their connection. Therefore, it is important to protect yourself and secure your Wi-Fi network with a web content filtering tool. The cloud-based content filtering system offered by Tanaza allows you to limit the range of domains Wi-Fi users can browse, by blocking access to illegal websites and inappropriate content, i.e. pornography. Furthermore, securing your Wi-Fi hotspot is very crucial to avoid the most common cyber threats, such as malware and botnets.

Network Topology Diagram



Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	MAIL	user5-TOM	ICMP		0.000	N	0	(edit)

Network Configuration Tips

-Network Speed: Whilst lower speeds can be tempting as they're cheaper, they're really not worthwhile. Have you ever been to an airport or hotel, and tried to connect to the WiFi but it was so slow, you just gave up? Remember how frustrating that was? You don't want to be known as the coffee shop with the really bad WiFi – you may as well not offer it at all.

When it comes to effective coffee shop WiFi management, it's key to browse the packages offered by various providers – you'll find a wealth of different upload and download speeds, at price points to suit every budget.

-Security: It goes without saying you'll want to have your WiFi password protected, but to make it secure, you'll need to have separate passwords for customer and business use.

In fact, your individual back-of-house devices will need their own separate connection and password – that includes your payroll system, cash registers and music streaming system.

For effective coffee shop WiFi management, you'll need to encrypt your network with WiFi Protected Access II (WPA2), which is a security protocol that was created specifically to protect networks such as those in coffee shops

-Equipment: Network speed and reliability is ultimately dependent on the equipment you choose. In the most basic form, you'll need to purchase a modem and wireless router. However, in order to create a separate WiFi signal that allows for public access, you'll need to invest in a premium model router. There are some models available that enable you to set up a captive portal, meaning users need to agree to your terms and conditions before they can access your WiFi. This can be ideal when it comes to coffee shop WiFi management, because not only will it provide your business with legal protection; it also allows you to filter adult content (e.g. gambling),

Network Solution Explanation

Here we provide a full solution including the network topology, product features and parameters.

- **High Availability**

EAP is designed with professional antennas whose power is variable. To deal with different environment, we can adjust the transmit power to a proper value.

- **Flexible roaming**

In the EAP wireless framework, different APs can broadcast the same SSID. Clients will switch to different AP automatically while moving around.

- **High reliability**

Load balance is supported among EAPs, when one AP is overload, the clients will be assigned to other AP nearby to balance the load.

- **High security**

By using VLAN and multi-SSID, the management network can be isolated from client's network, so this would greatly help to protect the inner network. Each client is safe as AP isolation feature could help to isolate each other.

- **High expansibility**

Voucher and portal authentication are supported. The administrator can customize any information such as ads and special offers on the portal page, and redirect the URL as wish. Combined with external portal/radius server, counting and timing functions can be used.

- **Easy to deploy**

The EAP is ceiling mount designed, PoE supported, good looking and easy to install.

- **Easy Management**

No need to buy the expensive hardware AC. All the EAPs could be centralized managed by EAP controller software. All the EAP status can be monitored on the web GUI of the controller.

When deploying a wireless network, various products can be chosen according to the different environment, for example:

- Small Cafe: 802.11n single band ceiling mount designed AP can also meet the demands. It can cover most of the areas as required, enough for normal use.
- Large restaurant: 802.11AC dual band ceiling mount designed AP is recommended. It has stronger anti-interference capacity and can handle more clients, provides better network experience.

Inference

From this project we could easily set-up and design a wireless hotspot network for a small coffee shop.

We were able to successfully design this network using the Cisco Packet Tracer software. Here we have designed this network in a simple design for hotspot setup in a coffee shop using ADSL modem and dial up connection. The design is a basic one and can be implemented very easily in a coffee shop.

All of our team members were able to understand the logic behind the connection made and all of us got to study and understand the designing process of a wireless hotspot network

References

<https://www.tp-link.com/us/support/faq/1223/>

<https://www.pearsonhighered.com/assets/samplechapter/1/5/8/7/1587132125.pdf>