



CCITFTUI
FAKULTAS TEKNIK



IoT Implementation in ETLE

2ISA2 | GROUP 2

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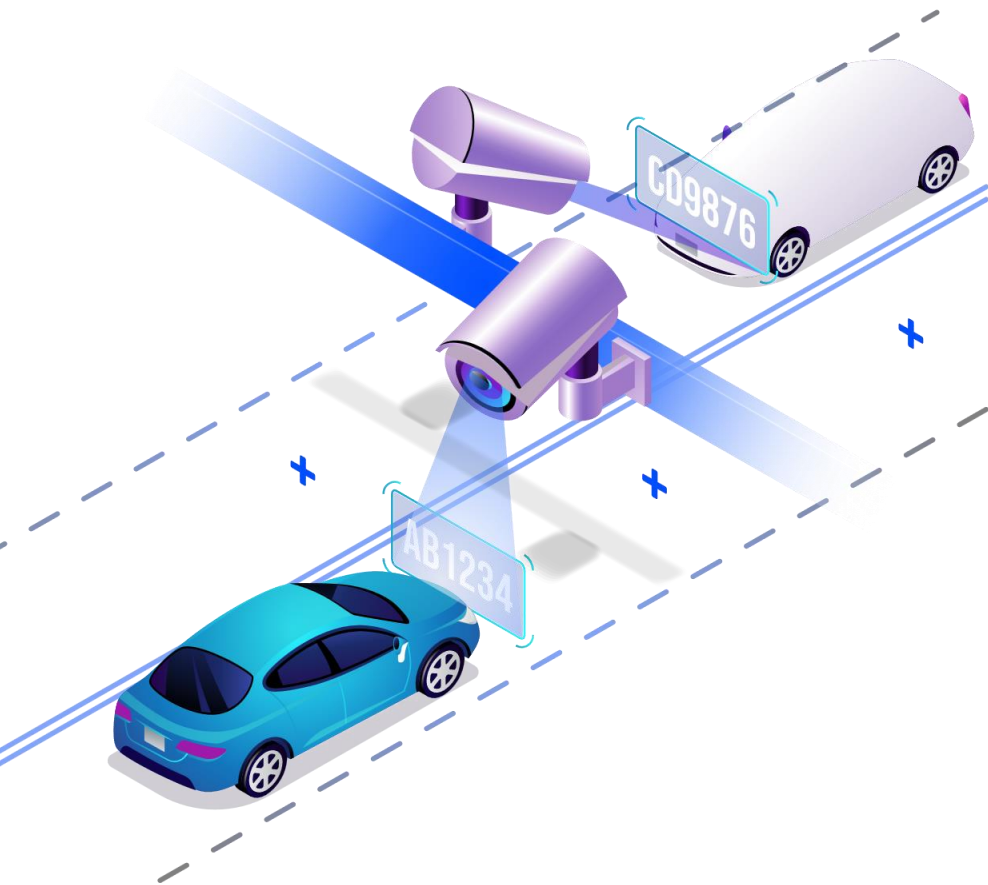
04

The output of our system
in the simulation field



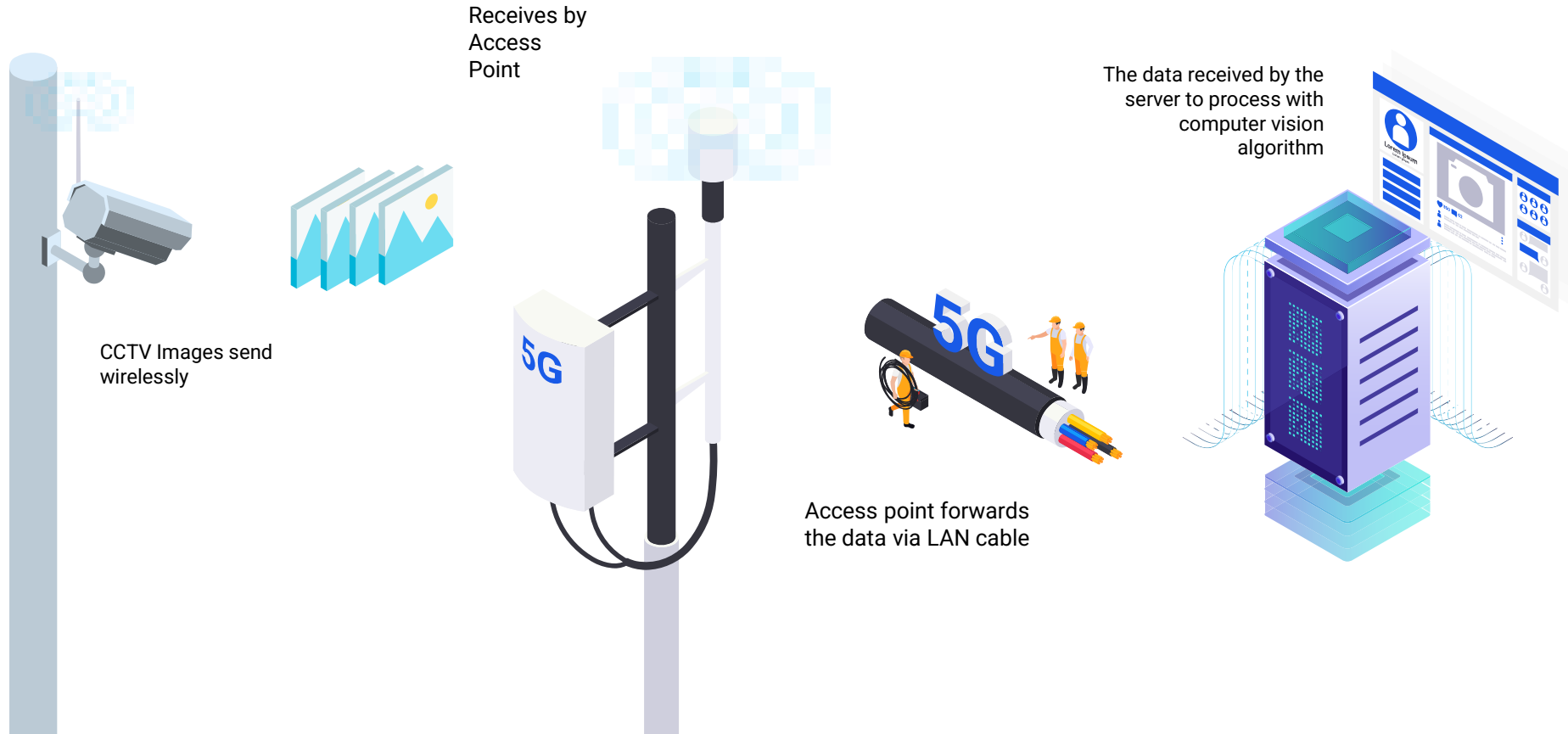
INTRODUCTION

Basic introduction of our system

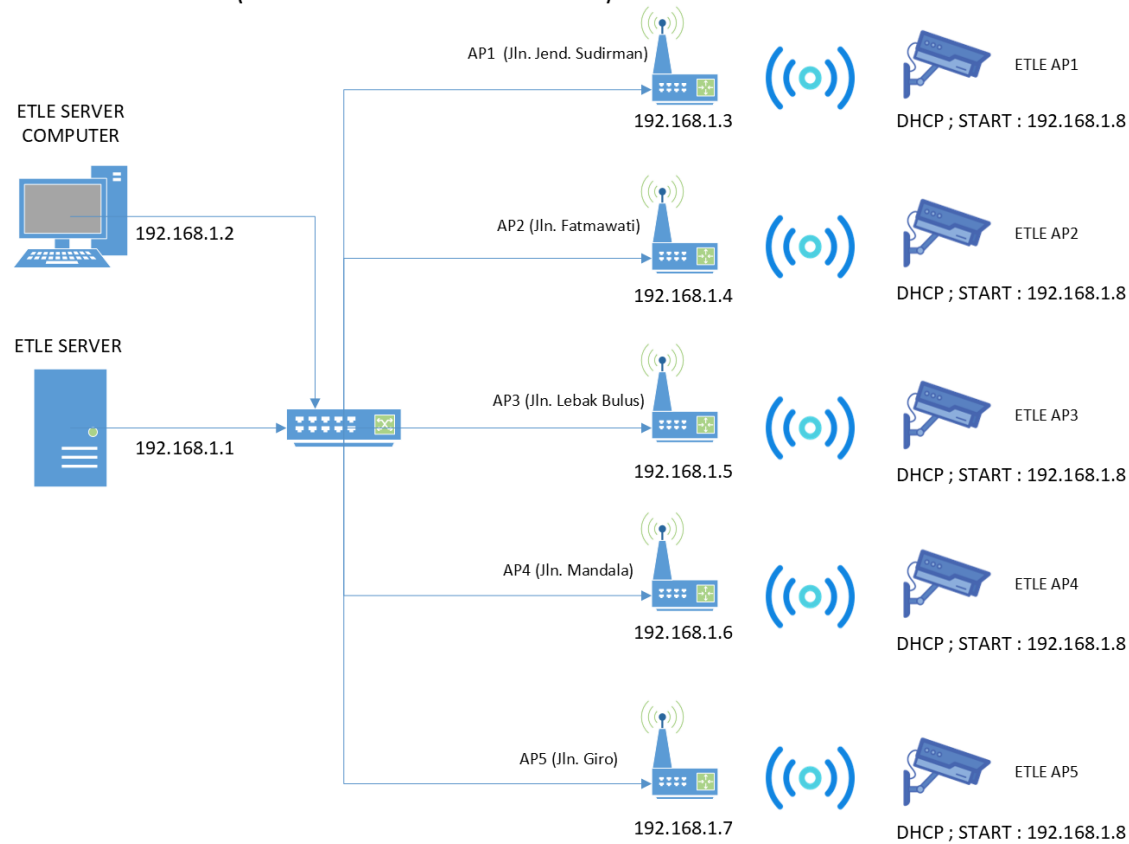


“IoT Implementation in ETLE” is the network architecture system using Internet of Things Technology to implement the ETLE technology. ETLE (Electronic Traffic Law Enforcement) is a surveillance camera that will record traffic violations committed by motorists. ETLE mobile and ETLE actually have the same function, namely to record various violations that may be committed by motorists

The Process



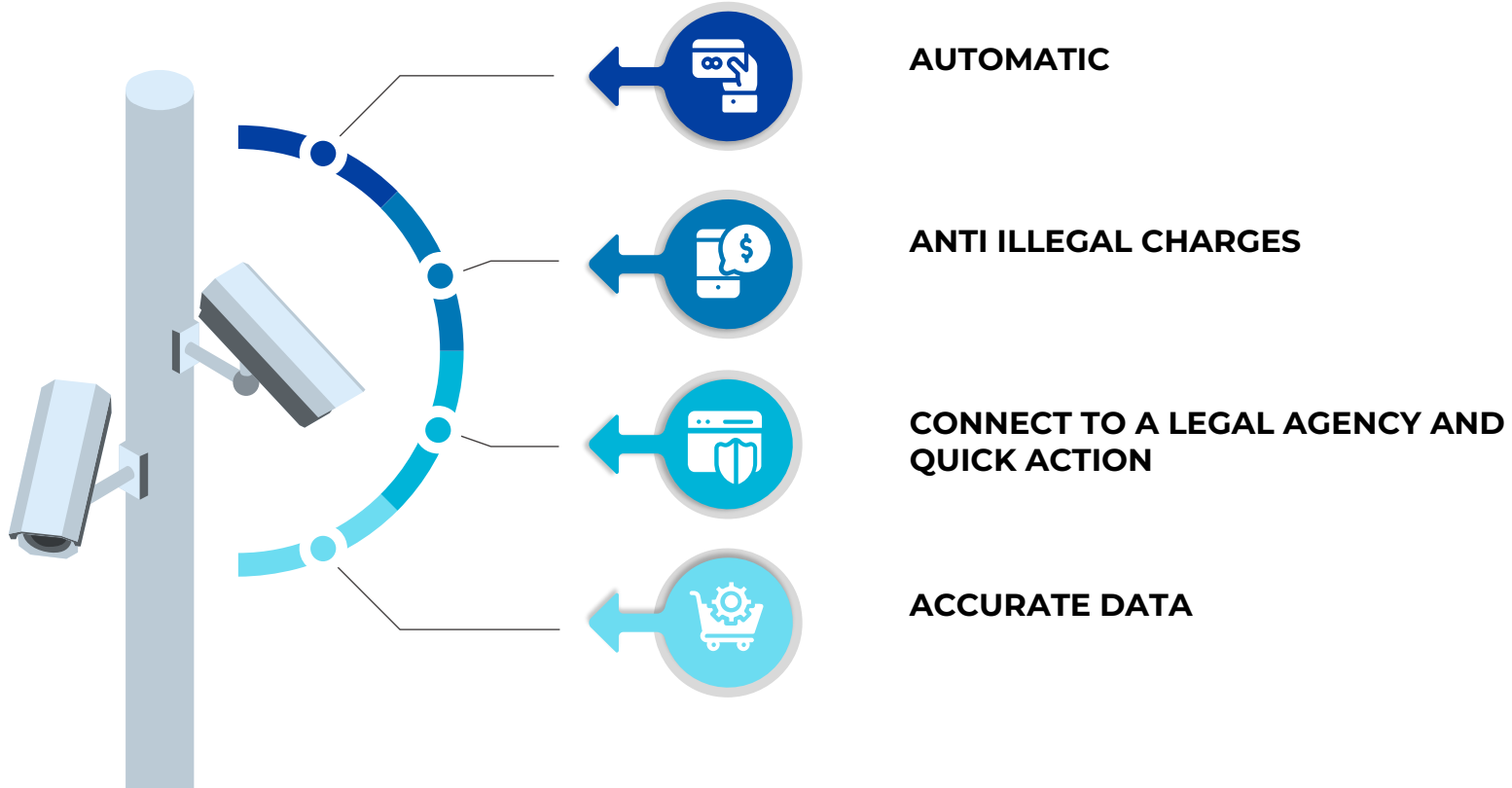
IOT IMPLEMENTATION IN ETLE (ELECTRONIC TRAFFIC LAW ENFORCEMENT)

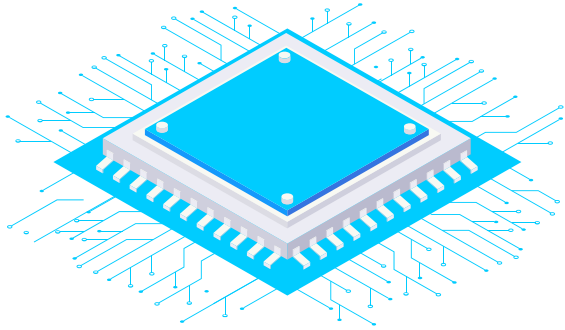


GENERAL NETWORK
TOPOLOGY ARCHITECTURE
(Mind Map)

Coverage : South Jakarta
Access Point Limit : up to 5 CCTV
Access Point Coverage : up to 91m
Interface : LAN, DHCP, and Internet

Benefit of ETLE Implementation



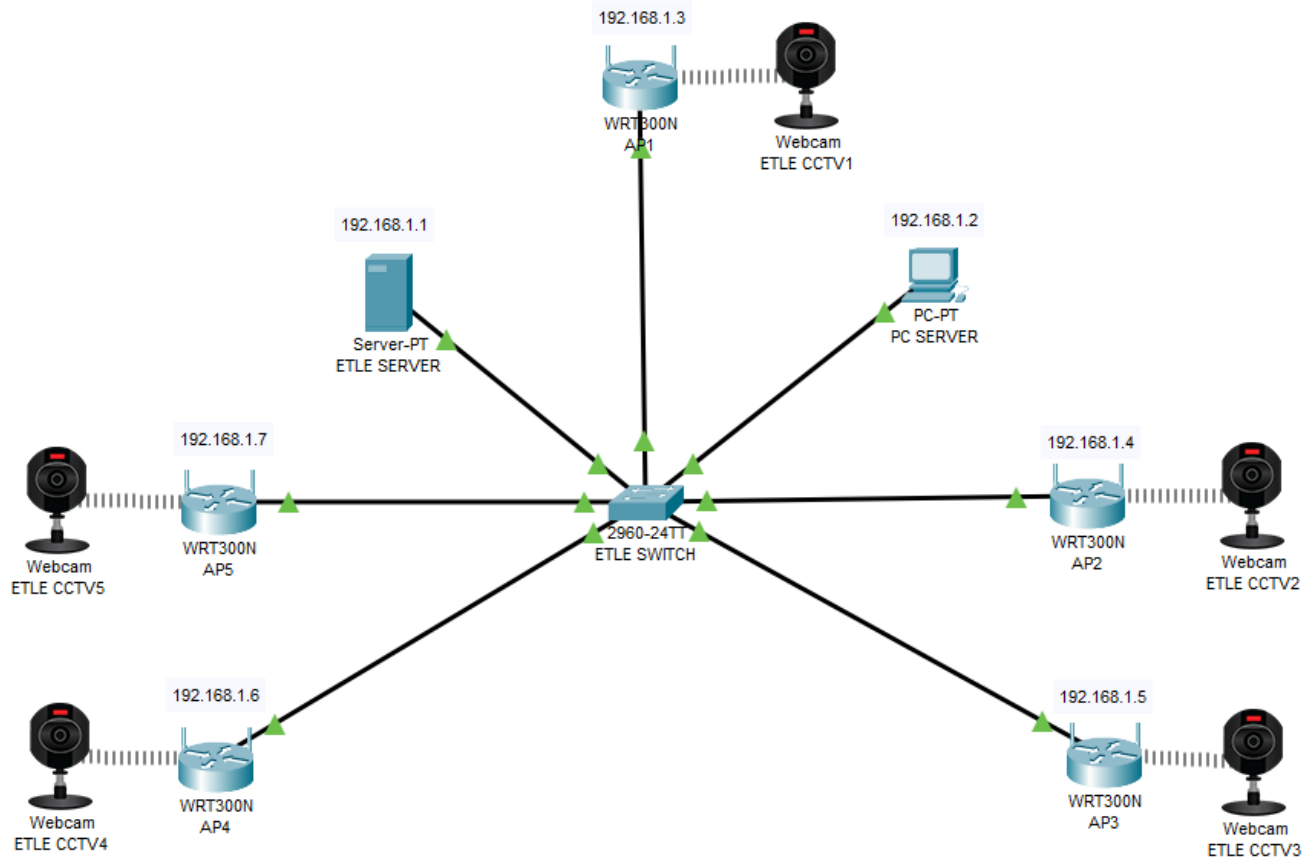


TOPOLOGY & IP

Topology implementation and IP
addressing in the simulation
field

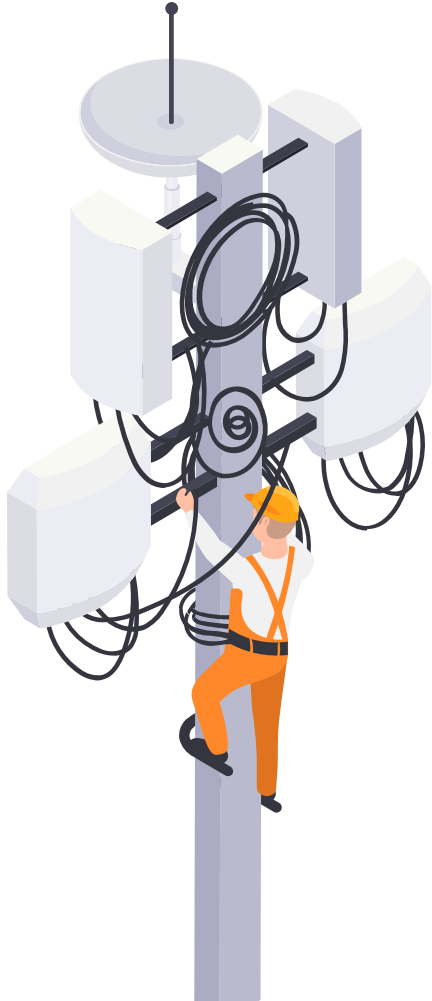
Topology

(Packet Tracer simulation)



Topology IP Addressing

TOPOLOGY ADDRESSING						
NO	DEVICES	CONNECTION	IPv4 ADDRESS	SUBNET MASK	REMOTE SERVER	DEFAULT GATEWAY
1	ETLE SERVER	LAN	192.168.1.1/24	255.255.255.0	N/A	192.168.1.254
2	ETLE COMPUTER	LAN	192.168.1.2/24	255.255.255.0	N/A	192.168.1.254
3	ACCESS POINT 1	LAN	192.168.1.3/24	255.255.255.0	N/A	N/A
		INTERNET	DHCP ASSIGNED	DHCP ASSIGNED	N/A	N/A
4	ACCESS POINT 2	LAN	192.168.1.4/24	255.255.255.0	N/A	N/A
		INTERNET	DHCP ASSIGNED	DHCP ASSIGNED	N/A	N/A
5	ACCESS POINT 3	LAN	192.168.1.5/24	255.255.255.0	N/A	N/A
		INTERNET	DHCP ASSIGNED	DHCP ASSIGNED	N/A	N/A
6	ACCESS POINT 4	LAN	192.168.1.6/24	255.255.255.0	N/A	N/A
		INTERNET	DHCP ASSIGNED	DHCP ASSIGNED	N/A	N/A
7	ACCESS POINT 5	LAN	192.168.1.7/24	255.255.255.0	N/A	N/A
		INTERNET	DHCP ASSIGNED	DHCP ASSIGNED	N/A	N/A
8	CCTV 1	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
9	CCTV 2	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
10	CCTV 3	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
11	CCTV 4	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
12	CCTV 5	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
13	CCTV 6	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
14	CCTV 7	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
15	CCTV 8	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
16	CCTV 9	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
17	CCTV 10	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
18	ADDITIONAL CCTV	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
19	ADDITIONAL CCTV	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
20	ADDITIONAL CCTV	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
21	ADDITIONAL CCTV	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
22	ADDITIONAL CCTV	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
23	ADDITIONAL CCTV	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
24	ADDITIONAL CCTV	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED
25	ADDITIONAL CCTV	WIRELESS	DHCP ASSIGNED	255.255.255.0	192.168.1.1	DHCP ASSIGNED



IoT CONFIGURATION

IoT Configuration setting

ETLE Server & PC IP Configuration

ETLE Server

Server0

Physical Config Services Desktop Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.1

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.254

DNS Server 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address /

Link Local Address FE80::202:4AFF:FE35:8D53

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MDS

Username

Password

Top

PC Server

PC0

Physical Config Desktop Programming Attributes

IP Configuration

interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address 192.168.1.2

Subnet Mask 255.255.255.0

Default Gateway 192.168.1.254

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address /

Link Local Address FE80::2E0:8FFF:FE4E:BD12

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MDS

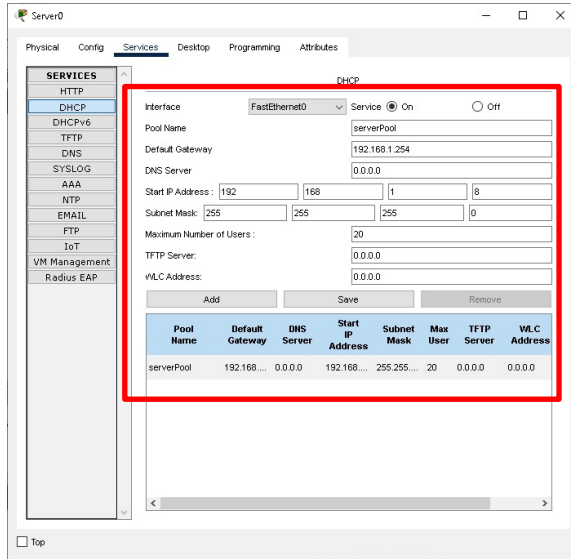
Username

Password

Top

IoT Configuration

DHCP Setup



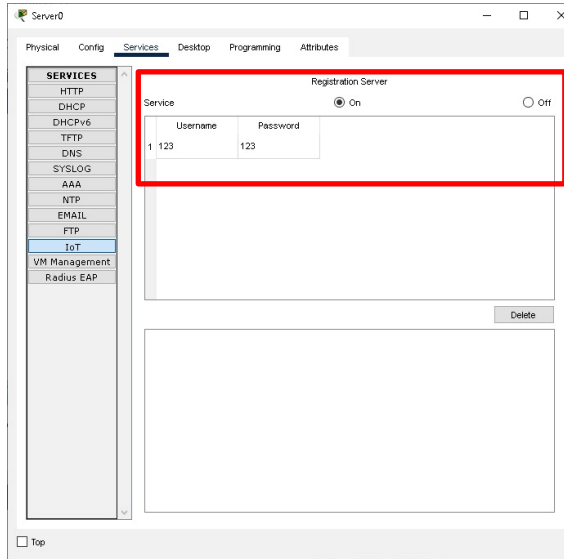
The DHCP Setup window is shown with the 'Services' tab selected. The 'DHCP' service is highlighted in the left sidebar. The main configuration area is outlined in red and contains the following fields:

- Interface: FastEthernet0
- Service: ☒ On ☐ Off
- Pool Name: serverPool
- Default Gateway: 192.168.1.254
- DNS Server: 0.0.0.0
- Start IP Address: 192.168.1.1
- Subnet Mask: 255.255.255.0
- Maximum Number of Users: 20
- TFTP Server: 0.0.0.0
- WLC Address: 0.0.0.0

Below the fields are 'Add', 'Save', and 'Remove' buttons. A table at the bottom lists the configured DHCP pool:

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.168.1.254	0.0.0.0	192.168.1.1	255.255.255.0	20	0.0.0.0	0.0.0.0

Registration Server Setup

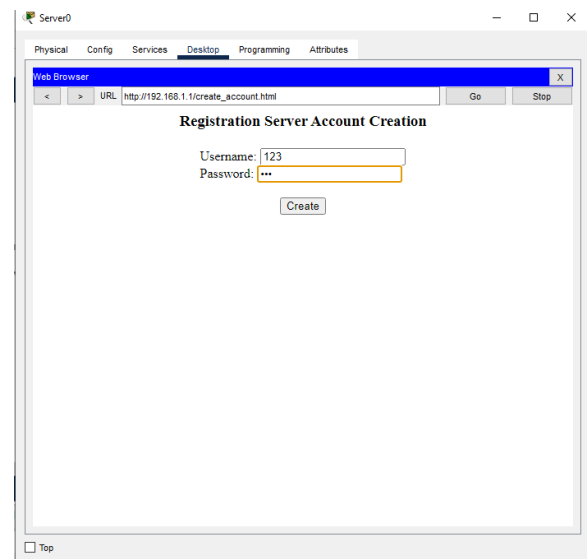


The Registration Server Setup window is shown with the 'Services' tab selected. The 'Registration Server' service is highlighted in the left sidebar. The main configuration area is outlined in red and contains the following fields:

- Service: ☒ On ☐ Off
- Username: 123
- Password: 123

Below the fields is a 'Delete' button.

Data pool server Setup



The Data pool server Setup window is shown as a web browser interface. The address bar shows the URL: http://192.168.1.1/create_account.html. The page title is 'Registration Server Account Creation'. The form contains the following fields:

- Username: 123
- Password: ***

Below the fields is a 'Create' button.

Router Access Point Configuration

Router Setup

Wireless Router1

Physical Config GUI Attributes

Setup Setup Wireless Security Access Restrictions Applications & Gaming Administration Status

Basic Setup DNS DHCP Address Table Advanced Routing

Internet Setup

Internet Connection type: Automatic Configuration - DHCP

Optional Settings (required by some internet service providers):

Host Name:

Domain Name:

MTU: Size: 1500

Network Setup

Router IP

IP Address: 192 168 1 3

Subnet Mask: 255.255.255.0

DHCP Server Settings

DHCP Server: ☒ Enabled ☐ Disabled

Start IP Address: 192.168.1.100

Maximum number of Users: 50

IP Address Range: 192.168.1.100 - 149

Client Lease Time: 0 minutes (0 means one day)

Static DNS 1: 0 0 0

☐ Top

Wireless Setup

Wireless Router1

Physical Config GUI Attributes

Wireless Setup Wireless Security Access Restrictions Applications & Gaming Administration Status

Basic Wireless Settings Wireless Security DNS Network Wireless MAC Filter Advanced Wireless Settings

Basic Wireless Settings

Network Mode: Mixed

Network Name (SSID): AP1

Radio Band: Auto

Wide Channel: Auto

Standard Channel: 1 - 2.412GHz

SSID Broadcast: ☒ Enabled ☐ Disabled

☐ Top

ETLE CCTV Configuration

Remote Server setup

The screenshot displays the MikroTik WinBox configuration interface for the 'Global' settings. The 'Config' tab is active, and the sidebar on the left lists 'GLOBAL', 'Settings', 'Algorithm Settings', and 'Files'. The main configuration area is divided into three sections:

- Gateway/DNS IPv4:** This section is highlighted with a red box. It contains:
 - ☒ DHCP
 - ☐ Static
 - Default Gateway: 192.168.1.6
 - DNS Server: 0.0.0.0
- Gateway/DNS IPv6:** This section has ☒ Automatic selected.
- IoT Server:** This section is also highlighted with a red box. It contains:
 - ☐ None
 - ☐ Home Gateway
 - ☒ Remote Server
 - Server Address: 192.168.1.1
 - User Name: 123
 - Password: 123
 - A 'Refresh' button is located at the bottom right of this section.

The top of the window shows 'CCTV1' and the bottom bar includes 'Top' and 'Advanced' buttons.

DHCP setup

The screenshot shows the MikroTik WinBox configuration window for the Wireless0 interface. The 'SSID' field is highlighted with a red rectangle and contains the value 'AP1'. Other visible settings include Port Status (On), Bandwidth (300 Mbps), MAC Address (0090.2196.42AD), Authentication (Disabled), WEP Key, PSK Pass Phrase, User ID, Password, Encryption Type (Disabled), IP Configuration (DHCP), IPv4 Address (192.168.1.8), Subnet Mask (255.255.255.0), IPv6 Configuration (Static), IPv6 Address, and Link Local Address (FE80::290:21FF:FE96:42AD).

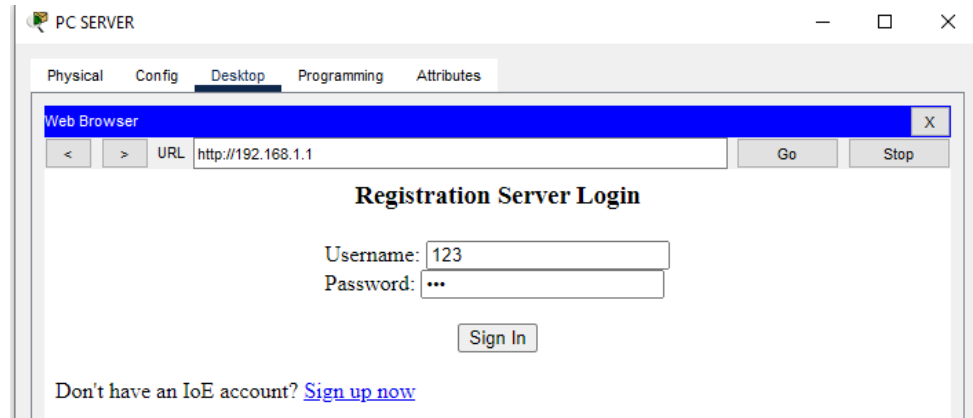
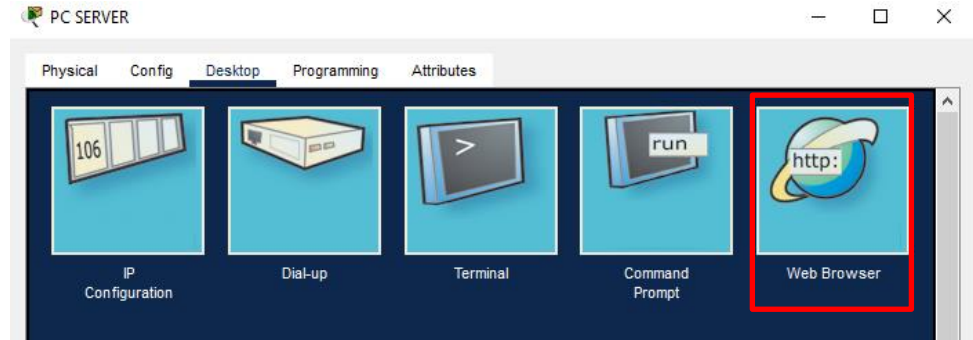


OUTPUT

The output of our system in the
simulation field

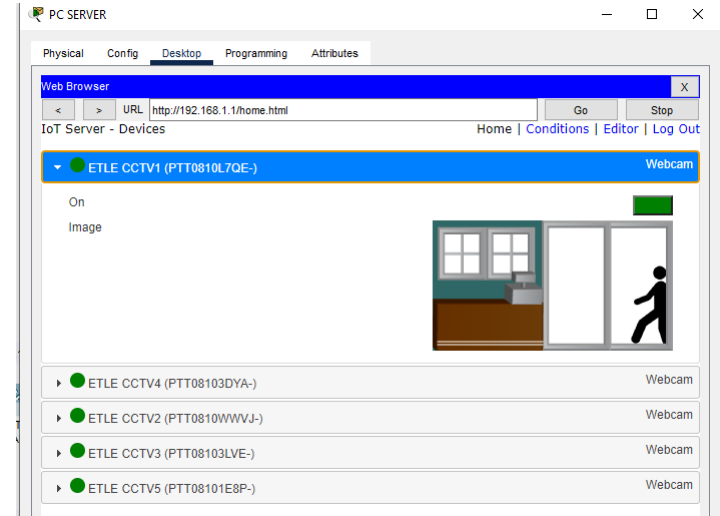
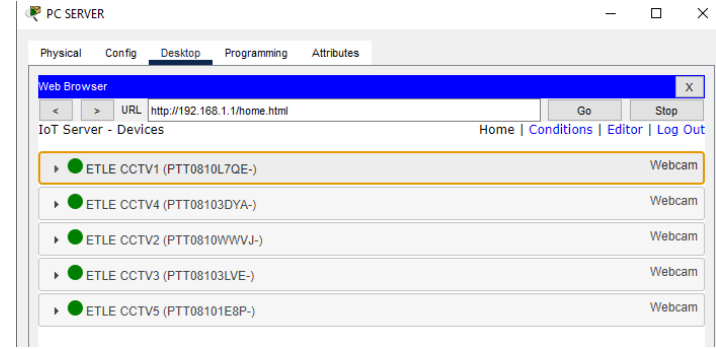
Login

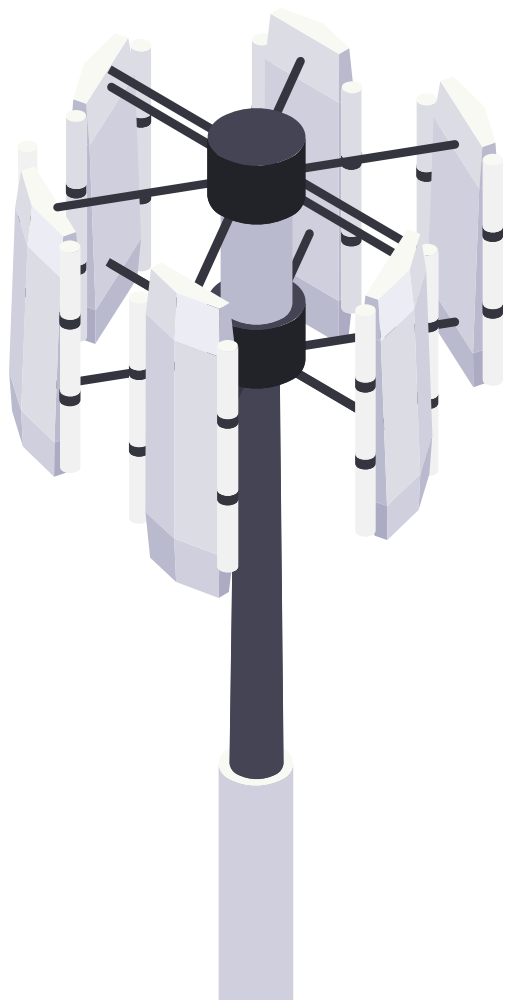
(using the website via PC Server)



ETLE CCTV Data Interface

(using the website via PC Server)





THANKS

Feel free to ask!