Implementation of WAN using VOIP

Final Evaluation

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CONTENTS

Internship Topics

- **Network**
  - LAN
  - MAN
  - WAN
  - PAN
- **Transmission Modes**
  - Simplex
  - Duplex
    - Half Duplex
    - Full Duplex

- **MAC Address**
- **OSI models/layers**
  - Physical Layer
  - Data Link Layer
  - Network Layer
  - Transport Layer
  - Session Layer
  - Presentation Layer
  - Application Layer
- **IP Address** (Internet protocol address)
- **IP classes** (IPV4)
  - Class A (1-126)
  - Class B (128-191)
  - Class C (192-223)
  - Class D (224-239)
  - Class E (240-255)

- **Protocols**
- **Networking Devices**
  - LAN Card
  - Repeater
  - HUB
  - Switch
  - Bridge
  - Gateway
  - Firewall
  - Router
- **Cables**
  - Coaxial Cable
  - Twisted Pair Cable
    - Straight through cable
    - Cross over cable
    - Roll over cable
  - Optic Fibre Cable

- **Topology**
  - Bus topology
  - Ring topology
  - Star topology
  - Mesh topology
  - Tree topology
  - Hybrid topology
- **Routing Protocols**
  - RIP (Routing information protocol)
  - OSPF (Open Shortest Path Protocol)
  - EIGRP (Enhance Interior Gateway Routing Protocol)
- **Redistribution**
- **Email Server**
- **WIFI (Wireless Fidelity)**
- **VoIP (Voice Over Internet Protocol)**
- **NAT (Network Address Translation)**
- **VPN (Virtual Private Network)**

What is WAN?

- A wide area network is a telecommunications network that extends over a large geographic area.
- In its simplest form, a wide-area network (WAN) is a collection of local-area networks (LANs) or other networks that communicate with one another. A WAN is essentially a network of networks, with the Internet the world's largest WAN.

What is VoIP?

- Voice over Internet Protocol (VoIP), is a technology that allows you to make voice calls using a broadband Internet connection instead of a regular phone line.
- Voice over Internet Protocol is also called IP telephony.

Example

Making voice calls using a broadband Internet connection instead of a regular phone line.

Figure 1: Voice over Internet protocol example

Problem Statement

To make a Wide Area Network and configure Voice Over IP phones into the Network.

People always want efficient and cost-effective solutions for telecommunications. Everyone prefers choosing a cheap and efficient network over costly and non-efficient ones.

Due to this, there arises a need for Voice Over IP phones.

Solution

- VoIP telephone system is a type of phone system that transmits calls over an internet connection.
- A VoIP phone system takes voice data and converts it into digital files that can be transmitted, then decoded by the receiver’s phone on the other end of the call.
- VoIP Systems Reduce Costs, Improve Time Management, and Increase Productivity.

Technologies Used

CISCO Packet Tracer :

A Network simulation tool where you practice networking, IoT, and cybersecurity skills in a virtual lab with no need of hardware.

This network is created completely in CISCO Packet Tracer. Through its use we implemented VoIP in Wide Area Network(WAN).

Internship topics used in Project

- WAN
- IP Address
- IP Classes
- Networking Devices
- Protocols
- Cables
- Topology
- Routing Protocol
- Redistribution
- VoIP

Features

- VoIP Systems Reduce Costs.
- Improve Time Management.
- Increase Productivity.
- Transmits calls over an internet connection.

WORKFLOW

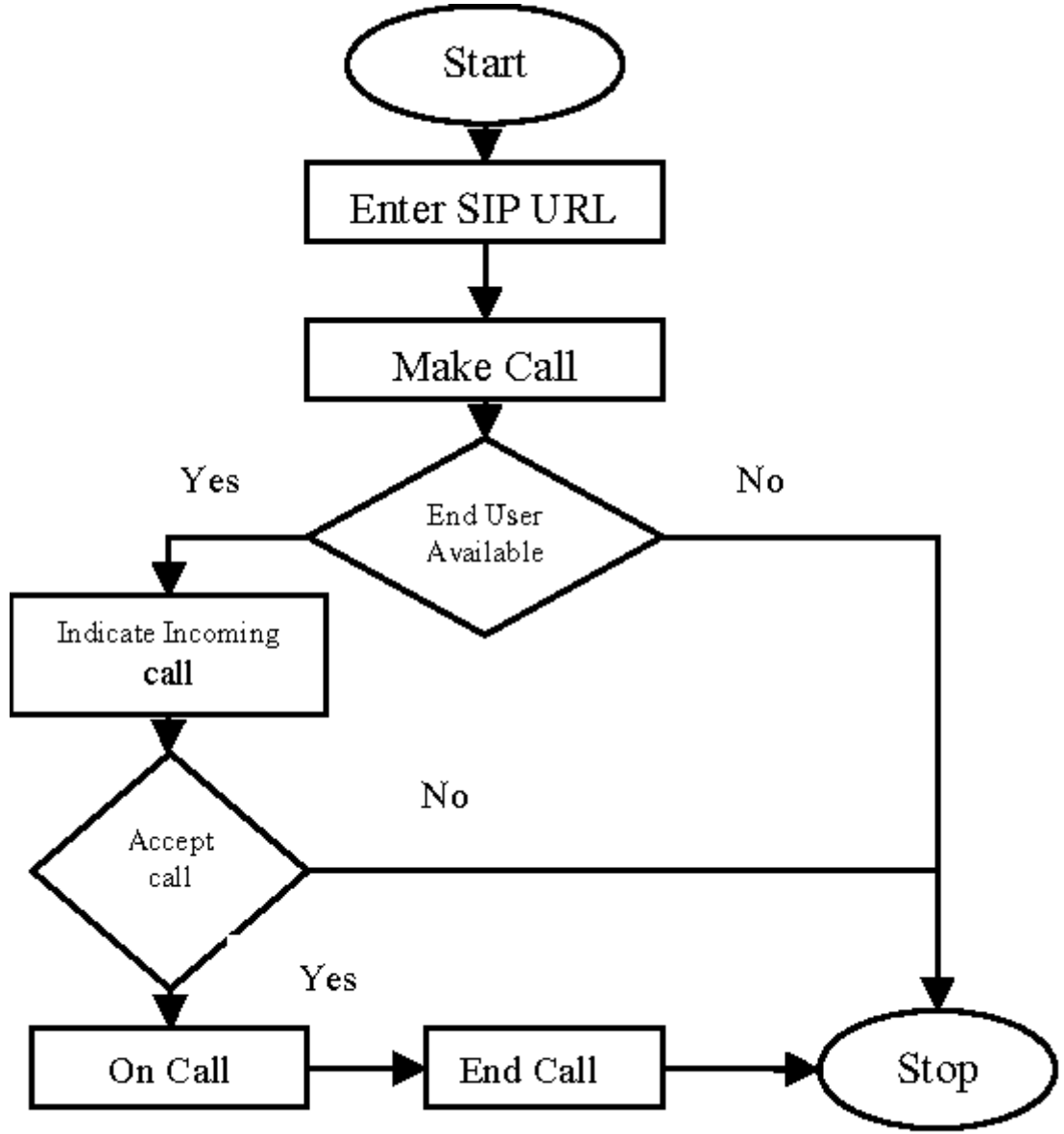
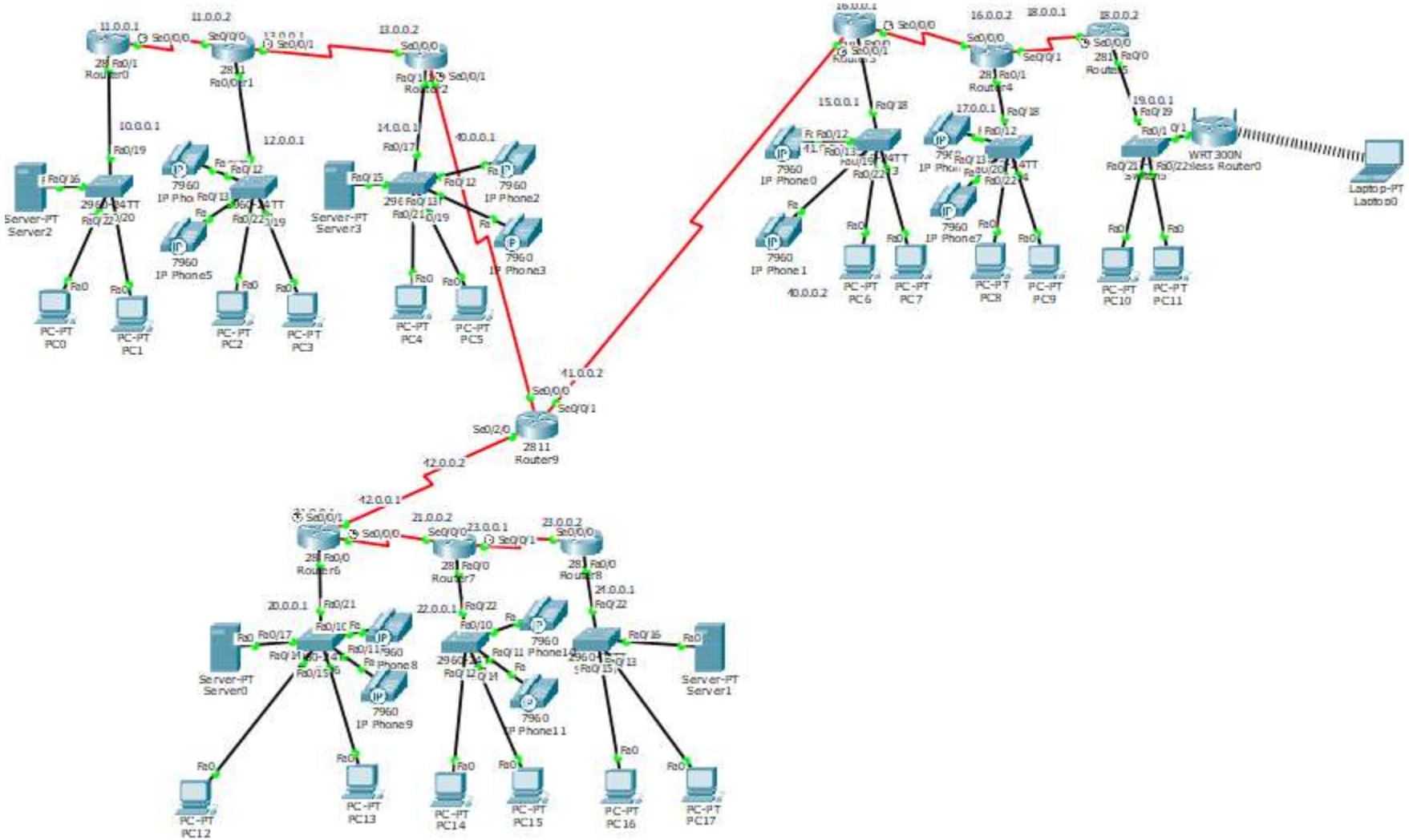


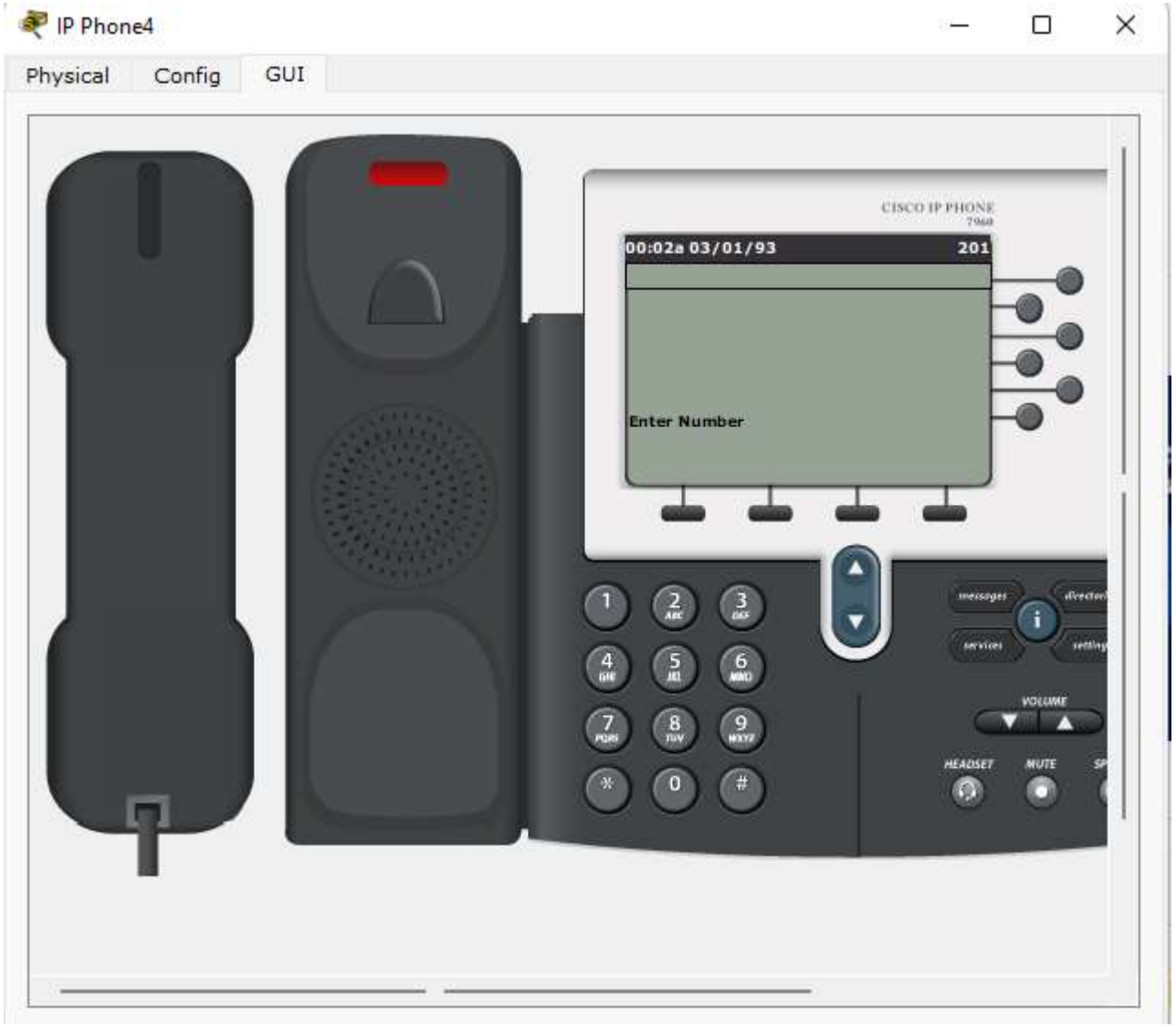
Figure 2 Secure VoIP Solution workflow

DEMONSTRATION

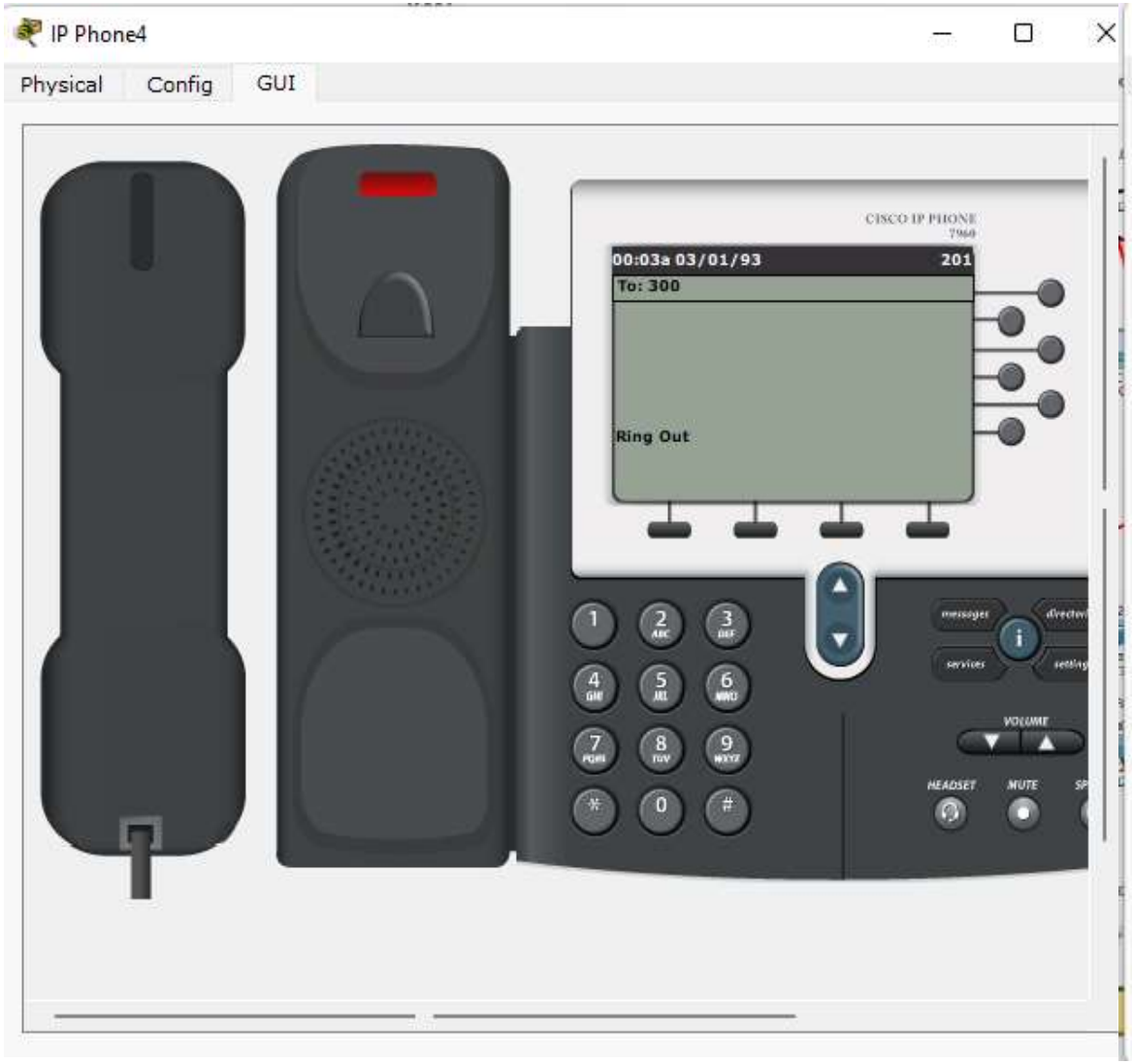
Basic interface

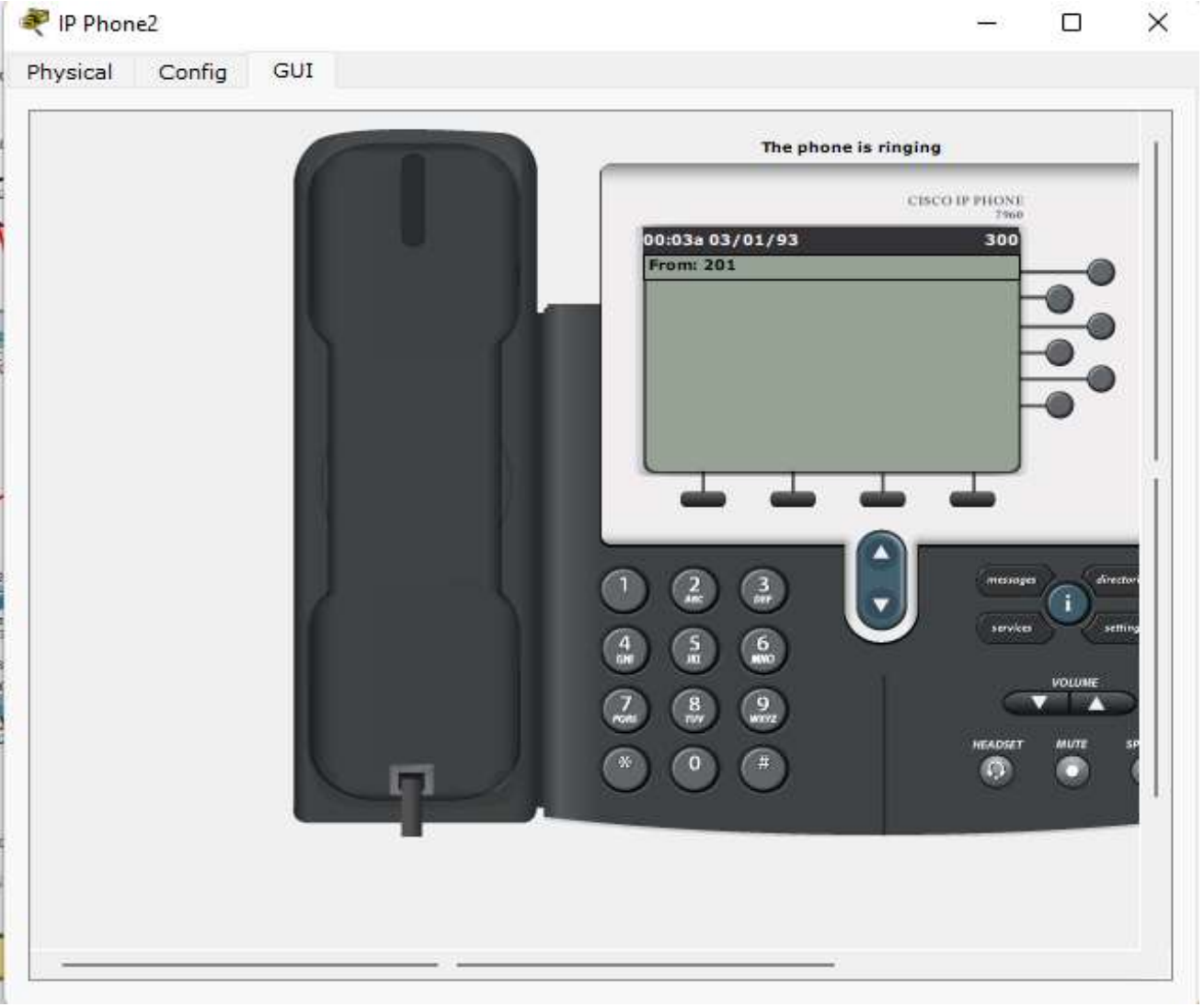


Here is the GUI of IP phone.

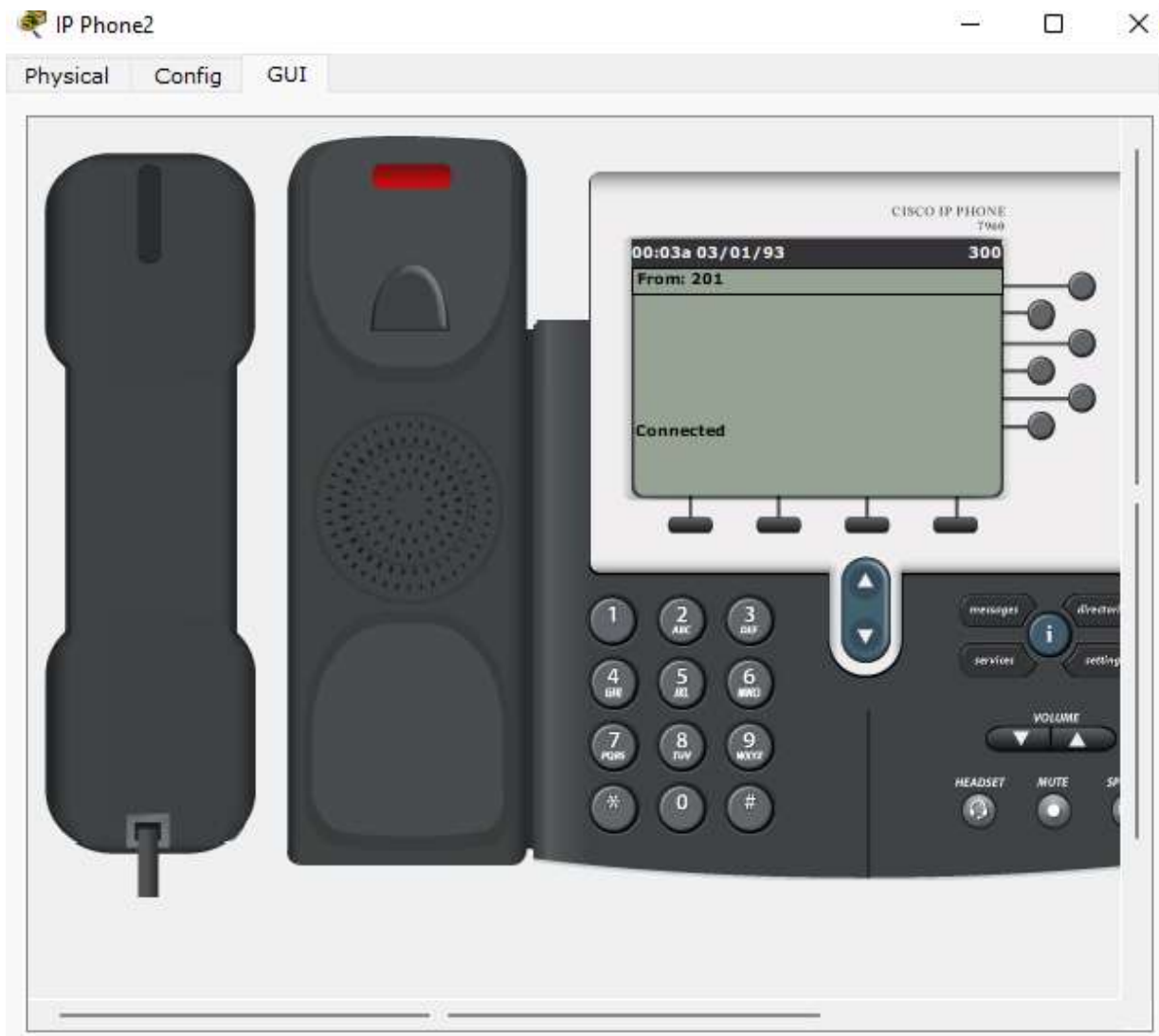


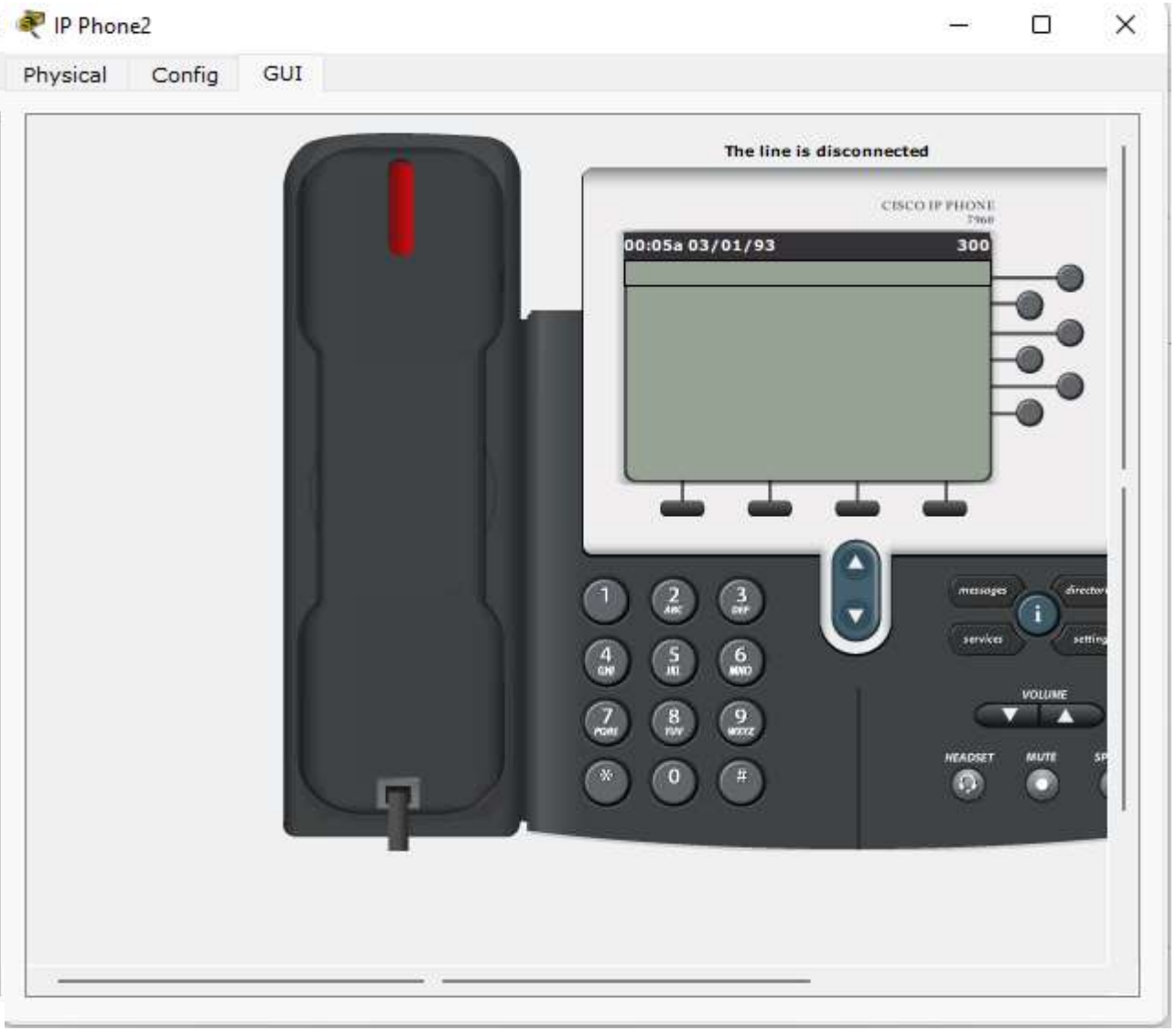
By entering the number of another IP phone, the call will be sent to the IP phone.





We can answer and end the incoming call by using the handset.





Reference

Figure 1: Voice over Internet protocol example

Link : https://www.liveaction.com/resources/tips-and-tricks/voip-troubleshooting/

Figure 2: Secure VoIP solution Workflow

Link : https://www.semanticscholar.org/paper/Practical-Implementations-for-Securing-VoIP-Enabled-Yeun-Al-Marzouqi/a101e2cd1bdee3264d3d0cf201c8ad8e2529e883

Thank You!