

Motion Detector, CCTV, and Siren IoT Smart Devices Simulation Using Cisco Packet Tracer

Aim

To design and implement an IoT-based motion detection security system that uses a motion detector, CCTV, and siren to detect intrusions and notify users in real-time through a simulated network in Cisco Packet Tracer.

Problem Statement

Modern surveillance systems require automated responses to intrusions. Manual monitoring is time-consuming and prone to human error. This project demonstrates an IoT-based automated security solution using Cisco Packet Tracer, where motion detection triggers a CCTV camera and siren, and notifies the user immediately, improving security and response time.

Scope of the Solution

- Automation: Automatically detects motion and triggers alert systems.
- Notification: Sends real-time alerts to users via network/email simulation.
- Scalability: Can support multiple sensors, cameras, and alarms for larger setups.
- Simulation-based: No physical hardware is needed; implemented completely in Cisco Packet Tracer.

Required Components

Software: Cisco Packet Tracer (v8.x or higher)

Hardware (Virtual in Simulation):

- Motion Detector (PIR Sensor in IoT Devices)
- CCTV Camera (IoT Camera Device)
- Siren/Buzzer (IoT Output Device)
- IoT Home Gateway / Wireless Router
- End Device: PC or Smartphone for monitoring

Simulated Circuit and Working

The simulation consists of connecting the Motion Detector, CCTV camera, and Siren to the IoT Home Gateway. An IoT rule is configured such that when the motion detector senses movement, it activates the siren and triggers the CCTV camera to start streaming/recording. Optionally, the system can be configured to send an email notification to the user device. The entire process can be tested in Simulation Mode in Packet Tracer.

Demonstration

- Switch to Simulation Mode in Packet Tracer.
- Trigger motion using the Motion Detector (click 'Detect Motion').
- Observe the siren turning ON and CCTV camera streaming/recording.
- Capture screenshot or video of the simulation for demonstration purposes.