



Course Information Technology
Section: Cybersecurity/Cisco



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Design a Smart Home

What You Will Do

Design your dream automated smart home.

Materials You Will Need

- Paper
- Pencil
- Colored pencils/markers
- Ruler

What is a Smart Home?

A smart home uses internet-connected devices that can be controlled automatically or through apps. These can improve convenience and security for your family. With so many devices connected to your home network, you will need a stable, high-speed internet connection with download speed of at least 300Mbps. For stability, use ethernet to connect hubs and routers. Mesh router systems allow you to create even coverage around your house and avoid interference from walls.

Your router should support dual band frequencies. This reduces congestion and interference.

- **2.4 GHz:** Essential for most smart home accessories, offering better range and wall penetration.
- **5 GHz / 6 GHz:** Best for high-bandwidth devices like security cameras, video doorbells, and entertainment systems.

Examples of smart devices:

- Smart lights
- Doorbell cameras
- Smart thermostat
- Smart TV
- Smart speaker
- Security sensors
- Robot vacuum

What else would you want automated? Do they make a smart version of that device yet?

Step 1: Draw a Floor Plan

Create a simple map of a house with rooms:

- Living room
- Kitchen
- Bedroom
- Bathroom
- Garage
- Front door

Step 2: Place the Router

Choose the best location for the Wi-Fi router. If it's a mesh system, one should connect to the modem and place at least one more somewhere else in the house.

Think about:

- Central location
- Fewer walls blocking signal
- Coverage to all rooms

Step 3: Add Smart Devices

Place devices in rooms.

Example:

- Living Room = Smart TV
- Kitchen = Smart speaker
- Bedroom = Smart lamp
- Hallway = Thermostat
- Front Door = Camera
- Garage = Door sensor

Step 4: Draw Connections

Draw lines from devices to:

Router (Wi-Fi) or Smart hub (if used)

Show how commands travel.

Example:

Phone App > Router > Smart Light

Step 5: Automation Rules

Create 3 smart house rules.

Examples:

- Motion at front door = Turn on porch light
- 10:00 PM = Lock doors
- Temperature above 75°F = Start AC

Step 6: Security Challenge

Circle devices that need strong passwords.

Write 3 ways to protect the network:

- Strong Wi-Fi password
- Update devices
- Secure router settings

Reflection Questions

- Where was the best router location?
- Which devices are most useful?
- Why is cybersecurity important in smart homes?
- Could someone hack into a smart device and use that to access the rest of your network?
- What could happen if Wi-Fi goes down?