UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE *of* ENGINEERING

Senior Design Project Description

Company Name	CommScope	**Date Submitted**	March 26, 2018
Project Title	IOT Data and Power over Ethernet (PoE) Demonstration Design (COMMS_IOT)	**Planned Starting Semester**	Fall 2018

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project. 250 hours are expected per person. Complete the following table if this information is known, otherwise the Senior Design Committee will develop based on the project scope:

Discipline	Number	Discipline	Number
Mechanical	2	Electrical	2
Computer	1	Systems	
Other ( )			

Company and Project Overview:

CommScope (NASDAQ: COMM) helps companies around the world design, build and manage their wired and wireless networks. Our network infrastructure solutions help customers increase bandwidth; maximize existing capacity; improve network performance and availability; increase energy efficiency; and simplify technology migration.

You will find our solutions in the largest buildings, venues and outdoor spaces; in data centers and buildings of all shapes, sizes and complexity; at wireless cell sites; in cable headends and telco central offices; and in airports, trains, and tunnels. Vital networks around the world run on CommScope solutions.

Our size, reach, supply chain, operational precision, and responsive personnel power our advances into new forms of communication. This forward-thinking approach is supported by a long tradition of excellence—CommScope was instrumental in the creation of:

- Cable TV infrastructure
- The first wireless networks
- The first data centers
- The first intelligent buildings

Some sample products designed and built at this CommScope location:

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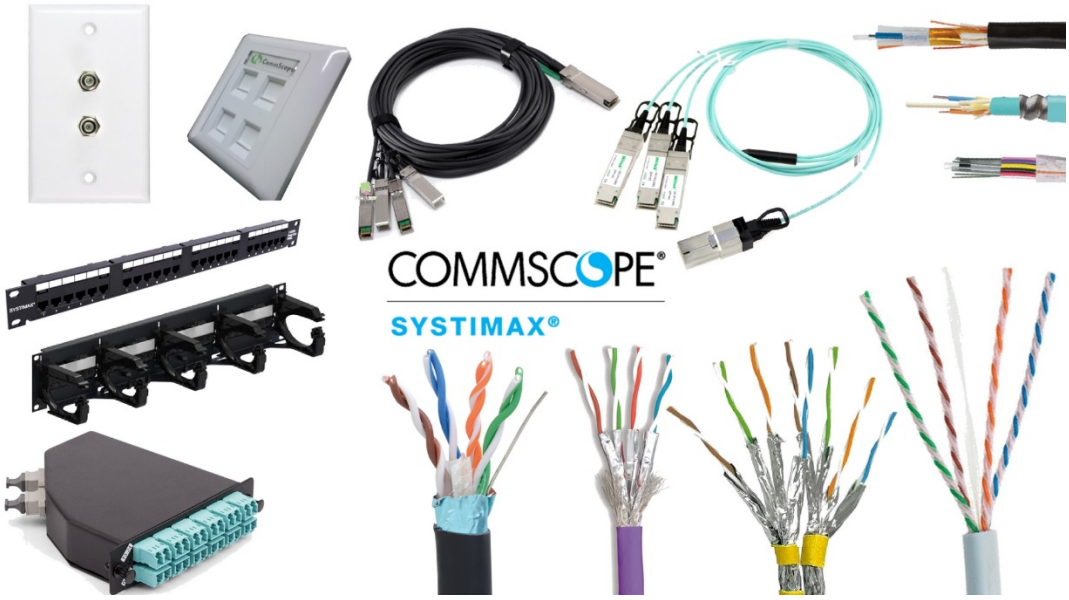

This project will be in the copper Connectivity Solutions area of CommScope. Connectivity Solutions includes copper and fiber cable and connectors. The proposed project would be a demonstration of CommScope's solutions by utilizing CommScope Copper LAN twisted pair cable and connectors to implement a Local Area Network. The network will include servers, switches, end user computers, and a variety of IoT devices such as cameras and sensors. Some of the devices will be remotely powered via Power over Ethernet (PoE). The demonstration would include a webpage accessible via the internet to view the performance and health of the network. Graphs of parameters such as data and error rates, temperature rise in cable bundles, and view and control of cameras would be included. The demo will utilize computer tools such as Arduino and/or Raspberry Pi.

Project Requirements:

Internet of Things (IoT) sensors are increasingly being used in many application as the cost of the devices decrease and the computing power and connectivity increases. The objective of this project will be to design and deploy as many IoT sensors into a demonstration network at Commscope which utilizes Commscope network products. These sensors will have computer control and the sensor data will be returned to a demonstration website that will display the results and allow control and reconfiguration of the devices on the network. Students are encouraged to implement IoT sensors for the broadest possible array of sensors. Some examples would be temperature, gas, proximity, chemical, smoke, motion, moisture, etc.

The sensors, control and web interface will be installed in a demonstration network at the

Commscope Claremont facility to demonstrate the concept and Power over Ethernet (PoE) is also to be part of the demonstration design. Initial testing and validation of equipment in the network can be done at UNC Charlotte, but the final validation implementation of the equipment must be into the lab at Commscope's Claremont NC facility.

Expected Deliverables/Results:

- The following installed and tested at Commscope's network equipment laboratory:
  - Various IoT devices
  - Arduino/Rasberry Pi control
  - Web page display and control of network

Disposition of Deliverables at the End of the Project:

Hardware will be installed into the Commscope lab.

List here any specific skills, requirements, knowledge needed or suggested (If none please state none):

- Web page design and development
- Application development with Arduino and Raspberry Pi
- Use of Category 6A twisted pair network cabling
- IoT sensors