# Site Survey and Wireless Installation Proposal

## Graduate Project 3: The Site Survey

Eliora Horst


## Equipment

Router and Firewall

The Cisco Router Cisco ISR 1001-X is no longer supported by Cisco and should be replaced. An acceptable (if over generous) replacement for the current router could be the Cisco ASR 1002-HX Router, which has all the benefits of the ISR 1001-X while allowing for a maximum of 100 Gbps. The firewall is no longer being sold by Cisco but is still being supported, so can be maintained in its current state. If MyCo would like to upgrade their firewall, there are several options offered by Cisco and UniFi – choosing a Uni model would allow a higher level of integrity/integration with other UniFi equipment suggestions.

Switches

MyCo currently uses four D-link DES-3100-28F 24-port switches in the network closets on the three floors of their facility. As the suggested APs require PoE to operate, these switches should be replaced with the UniFi 48 PoE. The UniFi switches have 48 ports which will allow two devices to replace four and allow for integration with other UniFi equipment.

Access Points

The Access Point U6 Pro has a lot of falls in the middle range of access points, providing for a medium amount of distance and power that is suitable for MyCo's needs. They use PoE, which can be leveraged through cabling through the existing cable trays in the plenum. They have a max TX power of 26 dBm, throughput rate of 4.8 Gbps, and omnidirectional antennae with 6dbi gain. With the accompanying mount, the weight of this AP is 1.32 lbs (600g), which the ceiling tiles of MyCo are well strong enough to hold. Each AP can handle 350+ concurrent clients, which should be sufficient for the calculated 550 devices MyCo anticipates potentially being within the building at any one time.

# Access Point Placement and Heatmaps

Heat maps were generated using 5GHz APs with omnidirectional 6dbi gain antennae, channel width of 20, and a minimum RSSI of -60. Channel width and RSSI can/should be adjusted onsite.
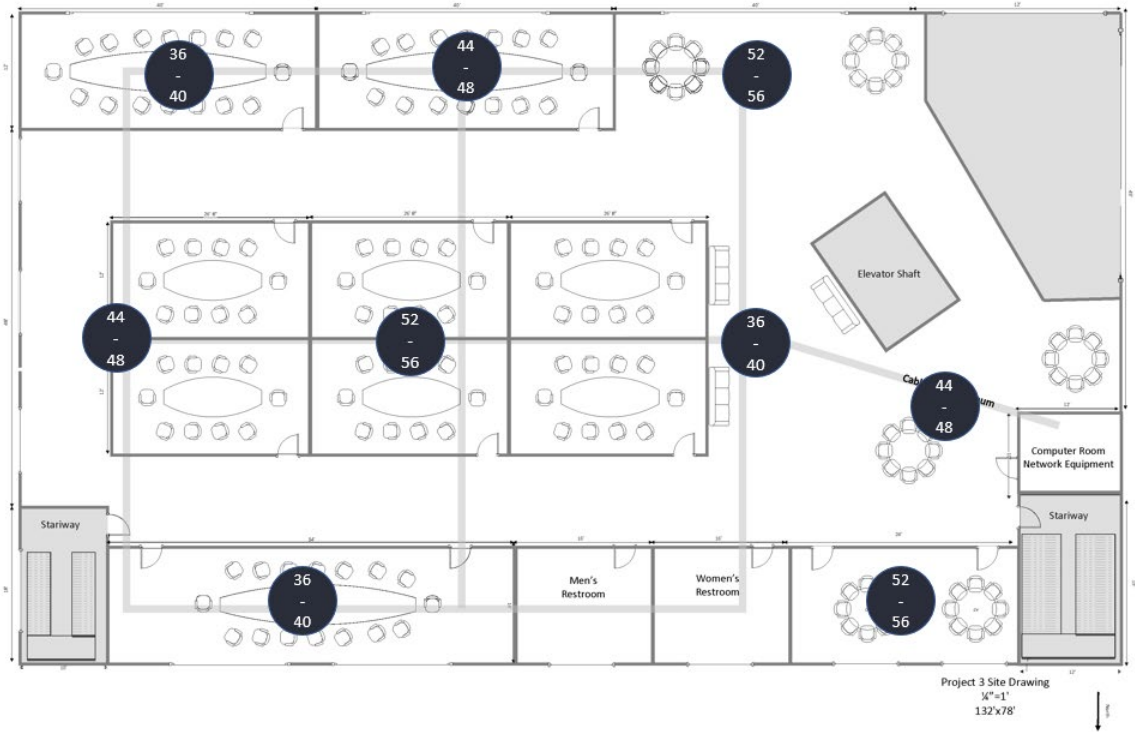
## First Floor AP Map

# Second Floor AP Map

# Third Floor AP Map

## Security

MyCo should utilize a dynamic VLAN to segment and isolate their various department and guest needs, so network traffic can be organized, isolated, and well monitored. WPA2-Personal can be utilized for guest authentication to provide one-time keys. Guests traffic is allocated to 172.18.128.0/17, though if MyCo expects there to be various kinds of guest traffic (for example, a potential employee visited for an interview, a known sales associate who makes weekly visits etc.), each of those kinds of traffic should be segmented into different lanes. For employees, as MyCo has nine separate internal departments, each one should have it's own IP, (e.g. 172.18.2018.0/17 – HR, 172.18.2027.0/17 – Sales, etc). Employee traffic should be authenticated with WPA2-Enterprise, as it offers more security than personal; it does require a RADIUS server to function, but the current Active Directory can be easily integrated with such a server. The UniFi controller has mechanisms in place to identify but not block rogue APs, so should be part of regular inspection.