Network Design Project

Network Administration for the Information Professional
LIS 4488
Design Team 2
April 16th, 2018

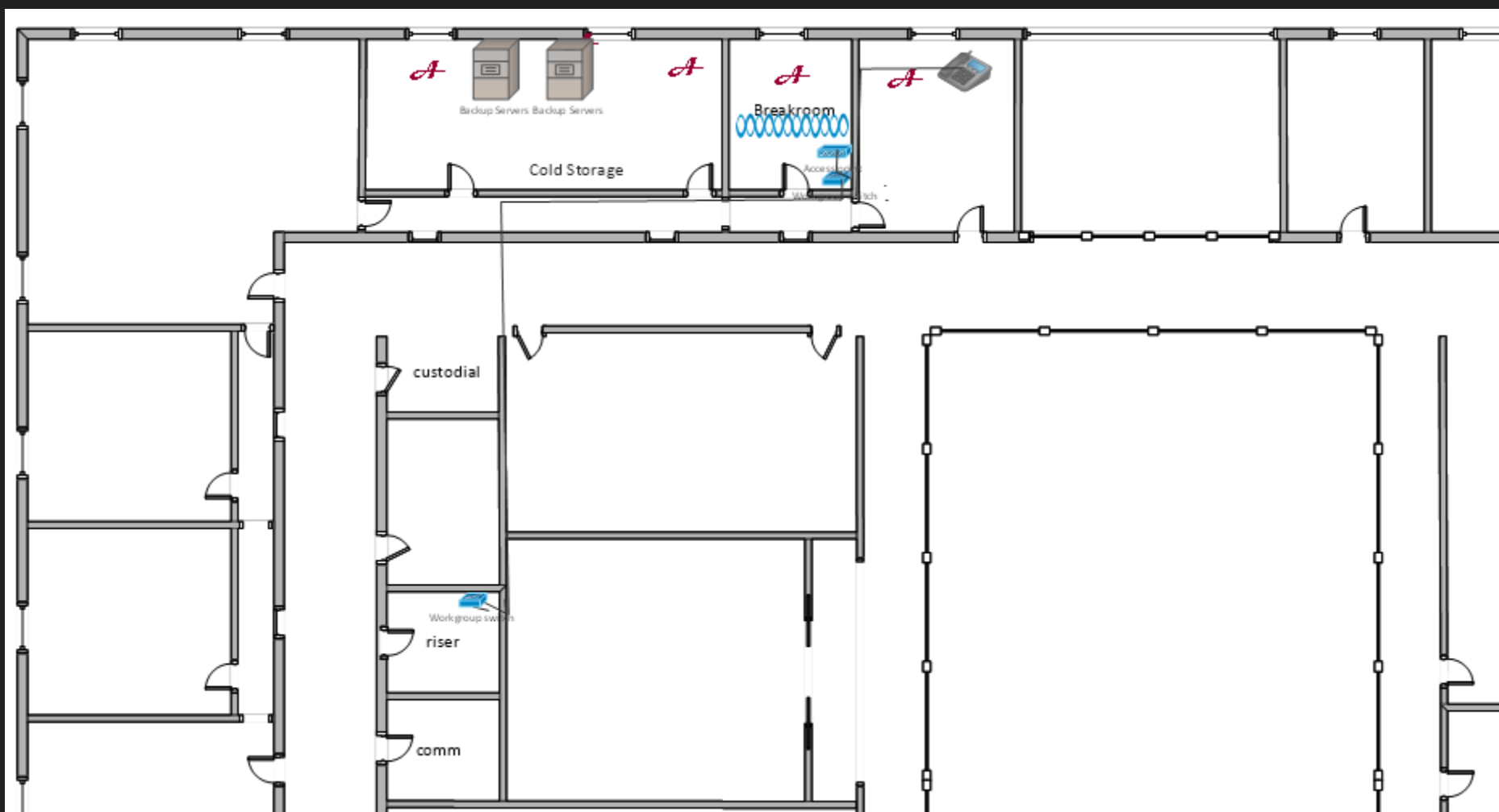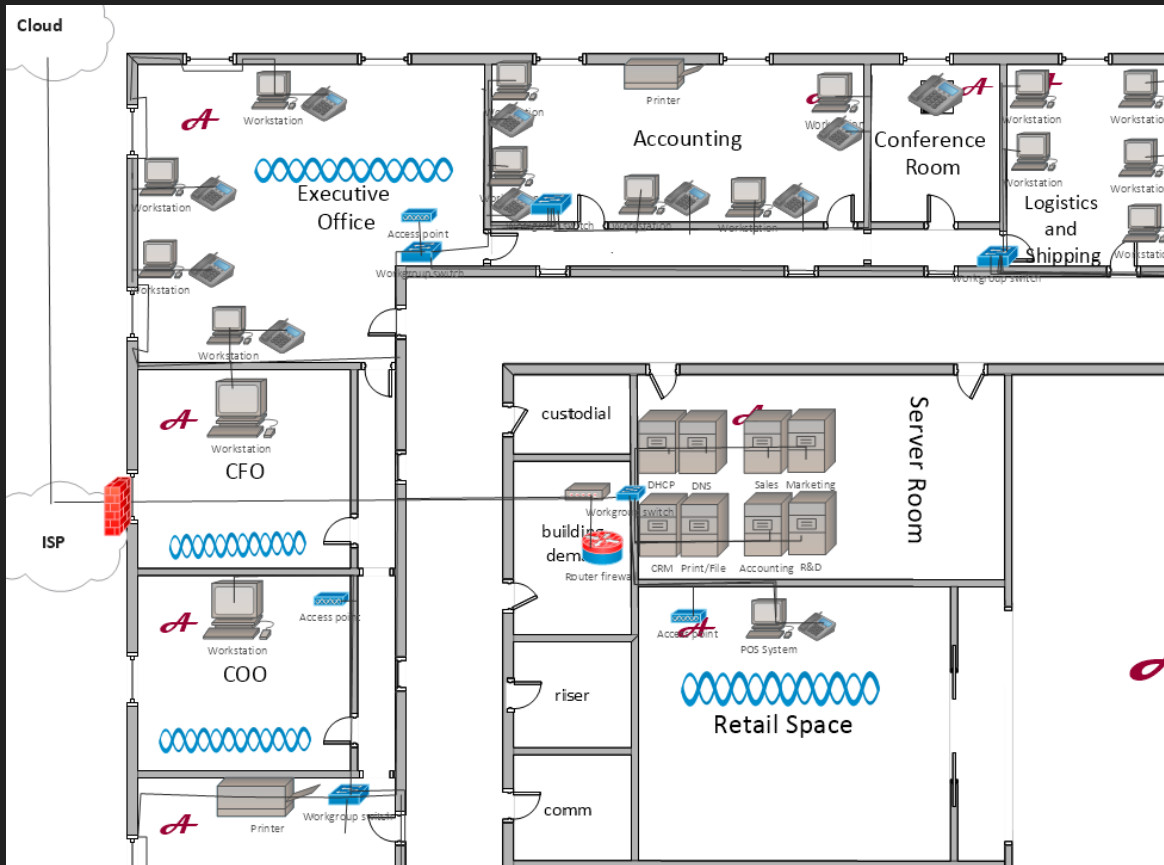|		
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Business Problems

How are we able to fulfill Acme's needs of

- Data Protection and Security
- Remote Connection Capability
- Network Connectivity
- Server Room Design/Creation
- Administrative Permissions
- Email, Voice Conference, etc. Services
- Wireless Capabilities

Cloud

ISP

Executive Office

Accounting

Printer

Conference Room

Logistics and Shipping

Product Training Manager

I/T

WARM STORAGE

CFO

custodial

building demo

Server Room

FREIGHT

DHCP / DNS
Sales Marketing

CRM / Portville / Accounting BSD

riser

Retail Space

POS System

comm

𝒜 = available to your organization

Product Training Computer Classroom

Sales

MECHANICAL

Research & Development

Sales

riser

comm

Marketing

Guard and Reception

Research & Development

Call Center

Product Support

Backup Servers Backup Servers

Cold Storage

Breakroom

Access point

Workgroup switch

custodial

Workgroup switch

riser

comm

Physical Diagram (First Floor Q1)

Executive Office

- File sharing with Accounting and Sales with permissions enforced by WRMS

- Wireless capabilities for convenience

Chief Finance Officer (CFO) Office / Chief Operating Officer (COO) Office

- Access to Accounting Data
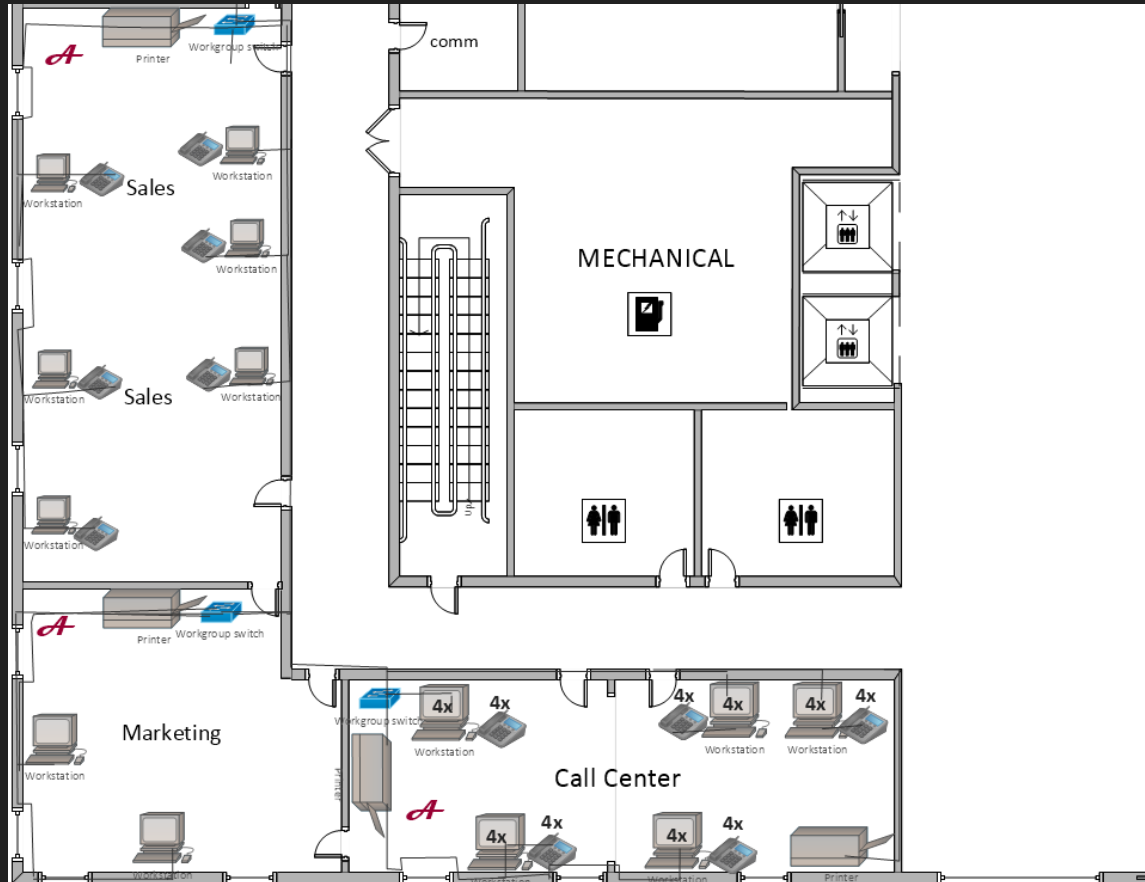
Conference Room

- VOIP Phone

Logistics and Shipping

- *5* workstations

Retail Space

- Brick and Mortar Store
- Wireless Capabilities
- VOIP Phone

Accounting

- 6 Workstations
- Printer
- VOIP Phones

Physical Diagram (First Floor Q2)


- Sales
  - 6 Win 10 Workstations
  - 6 VoIP Phones
  - 2 Network Printers
- Marketing
  - 2 Win 10 Workstations
  - 2 VoIP Phones
  - Network Printer
- Call Center
  - 20 Win 10 Workstations
  - 20 VoIP Phones
  - Call-Center VLAN
  - Interactive Voice Response Technology (IVR)
  - Headset|Mic
  - 2 Network Printers

Physical Diagram (First Floor Q3)
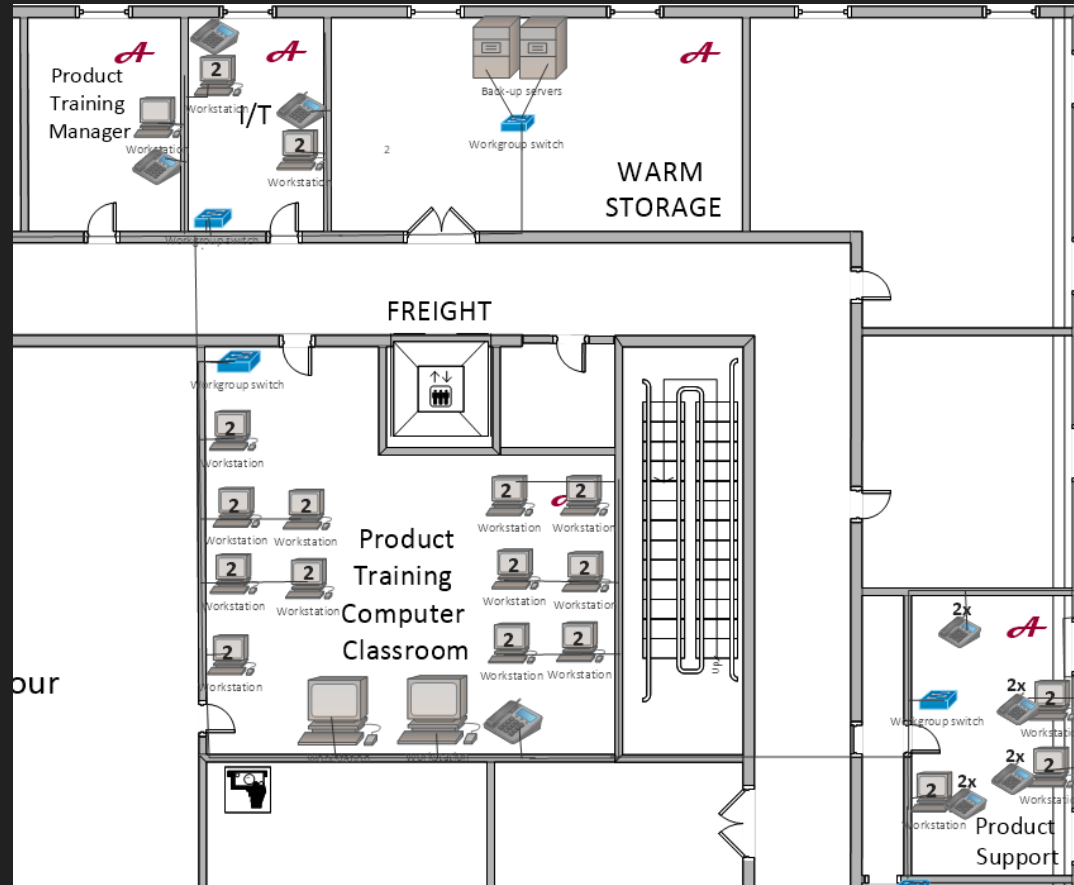
- Product Training Manager
  - Windows 10 Workstation [1]
  - VoIP Phone [1]

- I/T
  - RDP Access to employee workstations
  - Remote Access to Server Room
  - VoIP phones [4]
  - Windows 10 Workstations [4]

- Warm Storage
  - Backup server for each department (except R&D)
  - Cooling system

- Product Computer Training Classroom
  - 2 Instructor Workstations, 24 Student Workstations (Win 10)
  - VoIP Phone [1]
  - Smartboards w/ Synchronous/Asynchronous Collaboration *[wireless]* [2]

- Product Support
  - VoIP Phones [8]
  - Windows 10 Workstations [6]

Physical Diagram (First Floor Q4)
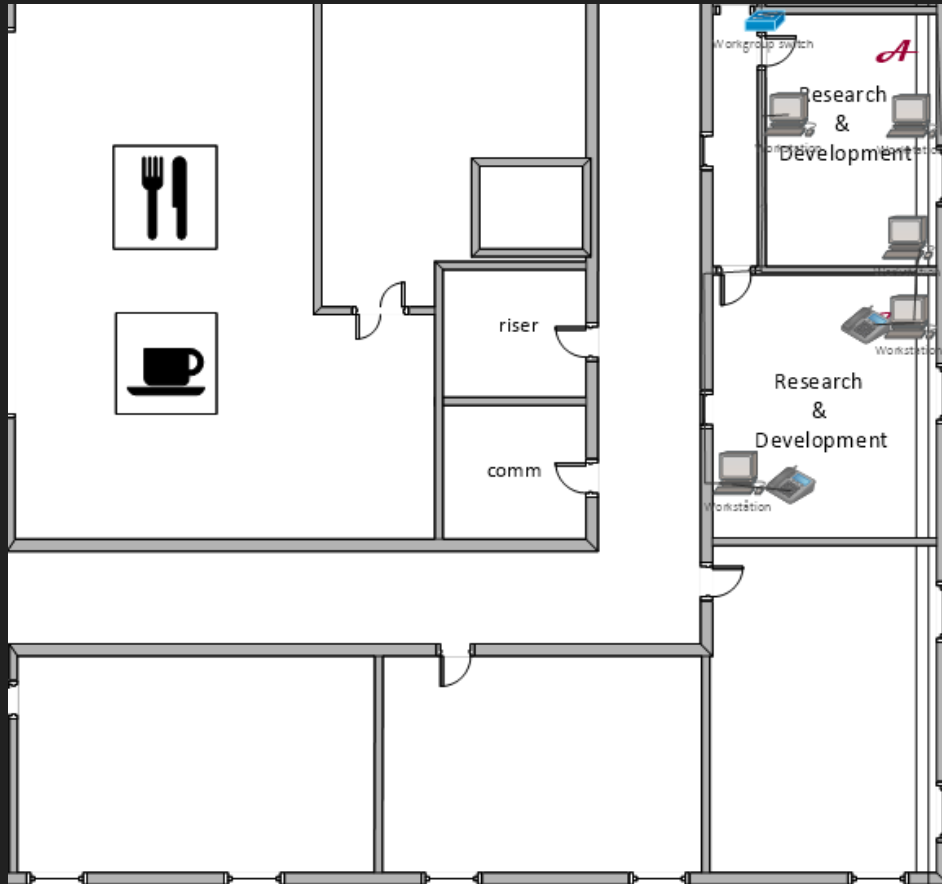
Research & Development

Hardware to be used

- - 5 Windows 10 Workstations
- - 2 Voip phones for the two product researchers who prefer telecommunications

VLAN

A VLAN will be necessary to provide extra security in this department by isolating this network segment with the assistance of virus and encryption software.

Software to be used

-Active Directory will be used to create directory rights and permissions to protect classified information.

-Full disk encryption tools and software will be used to protect company information.

-Windows Right Management Services (RMS) will be used to enforce specific rights to the data of the department regardless of where it goes. RMS can be used to control the ability of a user to even print or forward sensitive data within or outside of the network.

Cloud Storage will not be utilized for this department due to the nature of the data being stored. Instead a warm site will serve as a backup.

RDP clients for remote access

Physical Diagram (Fifth Floor)

- Break Room
  - No tech needed
- Conference Room
  - 1 VOIP Phone
- Cold Storage
  - Locked Room
    - Offline Backup Storage

Rack 1

Rack 2

Servers
1. Print & File Sharing Server- allocates print and file services over the network to the appropriate destination
2. DHCP & DNS Server- DHCP assigns IP addresses to computers within the network and DNS will translate common names to IP addresses as requested
3. CRM Database & Application Server – CRM database server houses a database application that provides database services to other computer programs or to computers within the network and the CRM application server provides all the runtime and software framework needed to create and run web-based apps and utilizes CRM for customer data, customer interaction, access to business information, along with automating sales.
4. Authentication Server- provides a network service that applications use to authenticate credentials of their users, allowing users to access different services on the network along with the implementation of Active Directory
5. Research and Development Server- Stores private, secure information and is only accessible by this department and executives, unless authorized
6. Sales Server- Provides all the necessary tools, software and resources for the Sales Department
7. Marketing Server-Provides all necessary tools, software and resources for the Marketing Department
8. Accounting Server- Provides all necessary security, tools, software and resources for the Accounting Department
9. Web Server- Provide email, FTP support with Apache installed to provide web services
10. Cold Storage Server- Houses inactive data that is not frequently accessed but is still important to the company, allowing and helping to prevent primary storage from becoming overloaded with inactive data.
11. Warm Storage Server- Houses backup information and is turned on periodically to receive updates from any of the main servers that need to be backed up. Mainly used for replication and mirroring.

Firewalls- Multiple firewalls will prevent unauthorized access incoming and outgoing on the network to provide network-wide security.

Switches- Multiple managed network switches will be used throughout the building to allow all workstations to be wired on a LAN based network, providing a more reliable ethernet connection. These switches will also provide connectivity for routers, printers and any other device that might need to be connected.

Indoor Ductless AC Unit- With the high amount of heat that is being produced by multiple servers, switches, power supplies and other equipment, a ductless air conditioning unit that is powered off of a separate circuit breaker will allow the room to remain cool after business hours. This will help to provide longevity of the equipment and reduce the possibilities of crashes or outages.

UPS- Will provide emergency power to the network in the case that the main power source fails. The UPS will protect all hardware systems from loss of data in the event of a disaster, providing ample time to back up and store company wide information.
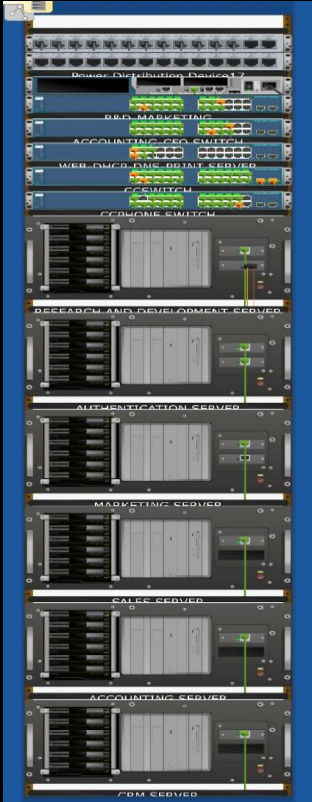
Logical Diagram
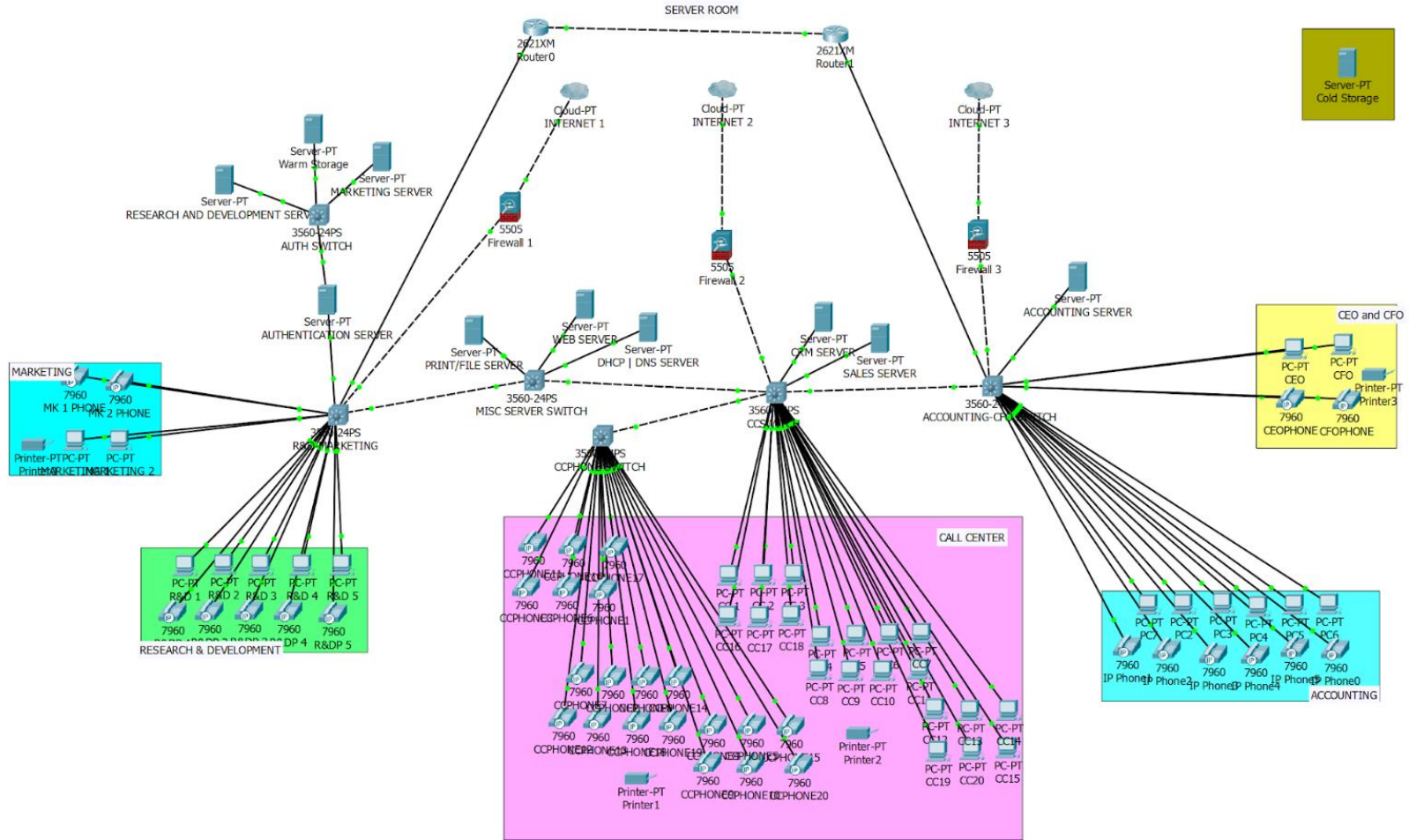
Network Components

- VoIP Phones [45] $175

- Win10 Workstations [80] $483

- Interactive Whiteboards [2] $850

- Servers [22] $549

- Hard Drives [22] $216

- Switches [6] $290

- Uninterrupted Power supply [2] $1350

- Firewall [3] $258

- Wireless Router [17] $60

- Printer [5] $180

- Ductless AC Unit [2] $565

- Cat5 Cable (1,000ft) [3] $90

SubTotal Estimate: $66,574

Tax Estimate: $4,660.18

Total Estimate: $71,234.18