Group 1 (Ayers team lead)

IT 360-41

09/04/2018

Assignment 1

Team1\_assign1.pdf

**MDF Data Room #1**

Link: <https://www.youtube.com/watch?v=TR1PHps6R8I&feature=youtu.be>

**Initial Impressions and “three things about the room”:**

Overall, the IT department seems to have set up is MDF with structure and efficiency in mind. The access to the room is controlled by lock and key, and while there isn’t a way to account for individual access (other than issuing keys), it’s better than having no access control at all. I did notice that the KVM rack console was left unsecured and had the keys left in the tray. I feel that this is a possible issue that can be rectified by securing the tray and issuing keys to the tray as needed. The central setup of the racks allows for easy access to the components, front and back, giving the IT staff ample room to perform maintenance as required. Additionally, the cable management in the room, in general, was very good. Use of cable trays, color coding, and best practices provide an organized environment.

Equipment used:

Room:

Individual climate controlled at 64.4 degrees

Locked door for access control

3 Racks

1 Closet

Cable trays

CCTV with video storage

Rack 1:

VOIP Telephone adapters

Rack 2:

Switches (services 200 Individual computers)

Wireless controller routing (54 access points)

Rack 3:

KVM rack console

Wireless controller

Cisco router

Fiber connector (100mb)

Windows server 2012 DC

Storage server (24tb student storage, staff backups)

Backup router with additional fiber plug

Smoothwall firewall for internal network

Server for Hyper-V virtualization and print services

SIM server with storage (VOIP)

DC01 Domain controller for student account data

DC02 Master domain controller for FIMSA roles

DP02 Deployment server for new software, remote access to all computers

Macintosh servers for media access and storage for Macs

Uninterruptible Power Supply

Closet 1:

Server 2012 for staff data

Server 2012 for some student data (new enrollees)

Non-Racked:

Anti-virus server with drop-box service

Old staff server

Application server

Application server for staff

Exam and test server

Backup server for IT department use

MAC OS X deployment server

**How is the equipment installed? & Final thoughts:**

As mentioned above, ease of maintenance and access was certainly considered when this was in the developmental and planning stage. The centrally located racks give ample room for IT technicians to make changes and the relevant equipment is concentrated to certain areas (i.e. VOIP adapters, switches, servers are placed together). The cable management is quite good and promotes organization and ease of maintenance. The standalone servers on the tables and floors seem out of place compared to the well-structured racks, but it can be assumed that they are older configurations that still perform their functions well and money might be a factor in buying new, rack compatible equipment.

**Room #2**

Link: <https://www.youtube.com/watch?v=A-1e_uEkg3M>

**Initial Impressions:**

With this being a home setup, our expectations were lowered a bit. Big companies can afford a lot more equipment due to their much bigger budgets and needs that go along with running the company. In this video, the presenter gives a tour of his home setup that includes two server racks and miscellaneous equipment. Considering that this is a home setup, there were things that we learned from the chapter that he could make improvements on.

**What network components are shown?**

Switch (Cisco catalyst 3560-X series)

Linksys SRW-2048 Gigabit Switch

**3 things about the layout of the room?**

1. Server racks were too close to the rear wall which made access very difficult.

2. While the rack space was utilized efficiently with good labeling and organization techniques, the cabling in the back of the racks was a rat’s nest of unlabeled and disorganized wires.

3. While there were no AC units used to cool the room, there were considerations made for airflow and cooling. Cool air was made available in the front of the racks where air is taken in and the hot air in the back was routed outside of the room and into another part of the house to be used for warmth.

Room:

Cooling fan

Automatic Lights

Rack 1:

iSCSI SAN

IBM System x3650 m2

IBM System x3650 m4

IBM System x3650 m3

IBM System x3850 m2

IBM BladeCenter mE

HP UPS R3000XR

Rack 2:

Switch (Cisco catalyst 3560-X series)

Linksys SRW-2048 Gigabit Switch

IBM X3650 m1

Pull out Console w/keyboard

IBM BladeCenter H

HP DL380 server

IBM System x3550 m4

2x 24ct Disk shelves

Shown in racks but not used:

Tape Backup

Blade servers

IBM eServer xSeries 336

**How is the equipment installed? & Final thoughts:**

All equipment that is used is mounted into two server racks. No gaps were found in the rack to allow for optimal airflow. Network switches were positioned where the cabling is accessible behind the racks. Patch cables were installed as needed in a manner where tidiness and organization wasn’t a consideration.

UPSs were available to provide clean power source free from spikes and surges. Multiple racks of old equipment were seen which seemed a bit cluttered. Considerations were made for segregation of air flow (foam used). Layout isn’t good for easy access to the rear of the servers (Even the commenter makes mention of how little space there is behind the racks). Cable management is definitely an issue-when the tour goes to the back of the servers, little organization is shown with regard to how the cables are setup/identified. When he shows where the internet connection comes in (19:10) it is shown as a cable that is hanging and is susceptible to being pulled/strained. A crudely laid out power strip is used to power up some on the devices, it is laid down on top of the servers. For a home setup the ventilation is fairly well done. Good labeling on the servers themselves but not the cable management in the rear. Little consideration is given to physical security as the presenter doesn’t make any mention of how access is granted to the room. The room looks like it is located below level next to a window which raises concerns for flooding and other environmental issues.

**MDF Data room #3**

Link: <https://www.youtube.com/watch?v=A-1e_uEkg3M>

**Inside the “Network Closet”:**

* Main rack:  Cisco 6500 switch, Cisco router, Fiber optics (fiber is a 1U rack:  1 unit)
  + Blade design switch, CPU module, gigabit fiber uplinks going to IDF
  + Cat 5 10/100 IDF uplinks
  + Substantial cooling power needed, lots of airflow
  + Multiple power supplies for switch
* Fiber optics transceiver: converts fiber 100 megabit signal to ethernet
* 66 block punch down used to connect sets of wires in telephony system
* UPS to handle power surges
* Backup batteries for the PBX switch
* Fiber optics patch bay
  + Rows of IDFs
  + Dust covers to protect the fiber optic connector
* Vertical cabling to allow all IDFs to connect (backbone)

* Old UNIX boxes used for spare parts
* Old PBX system stuff (private branch exchange – telephone system) not used anymore
* Terminal/console to interact with the UNIX system
* Conduit bringing fiber around campus from backbone to other network closets
  + Needs to be protected from water/pests

**Comments:**

It seemed as if the layout of the room was centered around the main rack in the video with many different conduits of fiber cables and cat5 connections leading to the main rack.

It was very helpful to see a detailed explanation of the network components in a network closet, as I’ve been inside some before, but all of the cables, equipment, and ambient noise don’t necessarily lend themselves to easy understanding of what is actually going on. Seeing the link from the ISP at the fiber optics transceiver being fed to the switch, and then the various IDF uplinks with the detailed narration was more easily understood.

It seemed that there was a good amount of unused and antiquated equipment in the closet (old UNIX boxes, the phone system equipment, etc.) which should be better organized. They are just sort of sitting in the middle of the room, and it isn’t so obvious what their function is to a newly hired network engineer, for instance. This equipment should either be labeled, or potentially moved to a different storage area.

In addition, the mess of wires at the patch bay is going to cause problems for a network engineer at some point when maintenance or a troubleshooting situation occurs. Thus, it wouldn’t be a bad idea for some project time to be set aside for cleaning up the wires, because that could save valuable time in a situation where the network is down in a certain area of campus and the patch bay is being checked.