Mullen Office Server Project

Existing Infrastructure

- Dell PowerEdge T440
  - ST: XXXXXXX
  - CPU(s): 2x Xeon Silver 4208
  - RAM: 128GB
  - Operating System: VMWare ESXi 8.0.1
  - iDRAC configured: Yes
- Host IP 192.168.168.10, only root account
- VM mdds-dc1: 192.168.168.11, log in w/ E acct
- VM mdds-app1: 192.168.168.12, log in w/ E acct
- SonicWall TZ370
  - Notes:
    - IP: XXX.XXX.XXX.XXX/29
    - HAND-OFF ETH 0/3
- Ubiquiti CloudKey Gen2
  - Notes: Manages access points, uses a UPOE injector
- Dell PowerConnect 2848
  - 48-port Gigabit Ethernet switch
- 3x Leviton Patch Panels
  - 2x Cat5e
  - 1x Cat6
  - Notes: Numbered D01-D29, mappings discovered and listed down below.
- Dell EMC 1500
- APC Back-UPS XS 1300

Cable drop mapping

Total drops to support: 24

Patch #	Location
D-01	Secondary Desk Port 1 (Unused)
D-02	Secondary Desk Port 2 (Secondary desk switch)
D-03	Primary Desk

Patch #	Location
D-04	
D-05	
D-06	
D-07	
D-08	R5/Break Room Phone
D-09	Meeting Room
D-10	Downstairs Office
D-11	Downstairs Back Room
D-12	(NOT PATCHED)
D-13	Meeting Room
D-14	Scanner Room
D-15	Scanner Room
D-16	R1/R2
D-17	R1/R2
D-18	R1/R2
D-19	R1/R2
D-20	R3
D-21	R3
D-22	R4
D-23	R4
D-24	Back Entrance
D-25	Back Entrance
D-26	Back Entrance
D-27	Back Entrance
D-28	Sterilization Room
D-29	Tertiary Desk

Not patched but still need to support:

- Lunch room hanging cable

Other mappings

Firewall mappings:

- SonicWall X0 -> Switch 15 (Switch to switch 48)
- SonicWall X2 -> ISP IN
- SonicWall X3 -> Server GB1
- SonicWall X4 -> POE Injector -> Ubiquiti CloudKey

The Plan

Ethernet cabling to server rack

We need to extend existing cable drops to get to the server rack. To cover 26 drops we will need two wiring blocks. The wiring blocks are 11" wide, 4" tall, and 4" deep; we will need two of them so the enclosure should be at least 12" wide, 8" tall, and 4" deep. The enclosure we will use is this one.

The existing cable drops are assumed to be a mix of CAT 5e and CAT 6; from our junction box, everything to the server rack will be CAT 6. The mounting point for the junction box is 6ft off the ground, adding additional slack to go to the server rack we should have 9ft of cable coming out of the junction box. For 26 drops we will need at least 250ft of CAT 6 cable.

Server rack

We ended up going with this 18u server rack that's perfect for this application. The T440 already has its rack conversion kit installed, so we just need the sliding rails that go along with it.

Layout for the server rack:

```
----------
 1U | Patch Panel 1
----------
 1U | 48 Port Switch
----------
 1U | Patch Panel 2
----------
 1U | SonicWall Firewall
----------
 1U | Ubiquiti CloudKey
----------
 5U | Dell T440 (Rack mount)
----------
~4U | UPSs
```

14 total rack units of space.

Upgrades

It would be best to upgrade the T440-to-Switch connection from 1GbE to 10GbE. That way we're widening the highway from all switched devices to the server. For the NIC, we'll go with this 10Gtek one as it has the Intel X710-DA2 chip in it, which should be compatible with the ESXi host.

We should also upgrade the existing Dell PowerConnect switch as it is old and doesn't support PoE. Since the office can utilize PoE connections for phones and access points, it would be best to upgrade to a PoE switch. After talking with the existing IT provider, they recommended this Aruba switch.

Plan execution

Cabling to rack

- Build junction box adding ports and installing ICC wiring blocks
- Schedule cut-out days for project
- Take out all existing patch panels, apply labels to each cable drop
- Cut cables and attach to junction inbound
- Attach outbound cables to junction

Server rack

- Attach keystone jacks to extensions
- Attach outbound cables from junction through server rack to patch panel
- Move devices over to server rack following plan above

Switch/NIC upgrades

- Schedule cut-out day for installing upgrades, requires shutting down server for NIC install
- Swap switch to new Aruba switch
- Install NIC in server, correspond with IT provider to have it supported

Shopping list

Item	Count	Price per unit	Store	Purchased
ICC Wiring blocks	2	$50	Amazon	Y
18u server rack	1	$877	Amazon	Y

Item	Count	Price per unit	Store	Purchased
C2 sliding rail kit	1	$106	E-Bay	Y
ICC Slim profile patch panel	2	$22	Amazon	Y
ICC Keystone Jacks 25ct	1	$75	Amazon	Y
ICC Keystone Jacks 10ct	1	$35	Amazon	Y
CAT 6 Patch cables 6" 10ct	3	$8	Amazon	Y
CAT 6 cable	1	$94	Lowes	Y
RJ45 Connectors 100ct	1	$60	Lowes	Y
RJ45 Keystone Jacks 15ct	1	$75	Lowes	Y
Velcro cable ties	3	$8	Lowes	Y
Plastic enclosure	1	$60	Lowes	
Enclosure fittings	2	$10	Lowes	

Post install

New cable drop mappings

Switched to patch panel and panel # paradigm. Re-ordered the drops to make more sense as the original drops were done in two phases.

Patch panel #	Old mapping	Location
PP1-01	D-03	Primary Desk
PP1-02	D-01	Secondary Desk Port 1
PP1-03	D-02	Secondary Desk Port 2
PP1-04	D-29	Tertiary Desk
PP1-05	D-14	Scanner Room
PP1-06	D-15	Scanner Room
PP1-07	D-09	Meeting Room
PP1-08	D-13	Meeting Room
PP1-09	D-28	Sterilization Room
PP1-10	D-08	Break Room
PP1-11	D-17	R1
PP1-12	D-19	R1
PP1-13	D-16	R2

Patch panel #	Old mapping	Location
PP1-14	D-18	R2
PP1-15	D-20	R3
PP1-16	D-21	R3
PP1-17	D-23	R4
PP1-18	D-22	R4
PP1-19	D-24	Back Entrance
PP1-20	D-25	Back Entrance
PP1-21	D-26	Back Entrance
PP1-22	D-27	Back Entrance
PP1-23	D-10	Downstairs Office
PP1-24	D-11	Downstairs Back Room
PP**2**-01	N/A	Downstairs Break Room