**The Kitchen Closet: Network Design Plan**

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by

**Michael Dunne**

**Drew Roberts**

**Jonah McKitty**

**Anjali Pandiri**

College of Communication & Information, Florida State University

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Instructor: Joseph Hemingway

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**The Kitchen Closet** is a nonprofit food pantry dedicated to assisting local meal programs by coordinating and distributing food to those in need. It acts as a middleman to help local food banks deliver resources to soup kitchens, homeless shelters, and similar programs. Since our position is primarily as a middleman between the food bank and local meal programs, our network requirements are minimal. Funding will primarily come from grants, donations, and fundraising activities.

**Network Overview**

Given that the operation is straightforward, and most positions are non-technical, the existing hardware will serve well as workstations for the staff. The office space will not span more than a single floor. One workstation (consisting of one desktop and monitor) will be assigned to the director in their office. Four workstations will serve the full-time employees, while eight of the remaining 13 desktops will be placed in a hoteling cube farm. These cubes will be available for part-time staff and volunteers, with additional empty cubes for volunteers who bring their own laptops. Each workstation will be equipped with Microsoft 365 (Business) and antivirus protection via Windows Defender.

The workspace layout is shown in Figure 1. This floor plan illustrates the placement of key areas, including the Director’s Office, Full-Time Employees’ workstations, and the Hoteling Cube for part-time staff and volunteers. The server room, housing critical network infrastructure, is strategically positioned to ensure optimal connectivity and secure device management. The placement of shared resources, such as printers, ensures efficient access for all staff members. A floor plan of a building

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**Figure 1: First Floor Layout Showing Workspace and Server Room Locations**  
  
The layout maximizes accessibility while maintaining a clean, organized workspace conducive to productivity. The server room's proximity to the building’s demarcation point further streamlines network cabling and device connectivity, ensuring efficient operations.

**Hardware and Software Setup**

The old workstations will have their current hard drives removed and properly disposed of by a certified local business. Each workstation will be upgraded with PNY CS900 500GB solid-state drives (SSDs), purchased at $29 each for a total cost of $377. Staff and volunteers will use self-provided mobile phones. To support this, the director, full-time staff, and part-time staff will receive a stipend for phone usage. Volunteers will be required to have access to a smartphone.

Four of the remaining desktop computers will be converted into Active Directory Domain Controllers (KC\_AD01 and KC\_AD02) and DNS Servers (KC\_DNS01 and KC\_DNS02) for redundancy and organizational management. This setup will ensure that permissions and access are handled through Active Directory, enabling secure, role-based access for the director, full-time employees (FTEs), and part-time employees/volunteers (PTEs). The last desktop will be repurposed as a file server, configured with RAID 5 using Western Digital Red Plus hard drives ($75 each, totaling $225). This file server will manage database-sharing services and sensitive information, including local meal program details, donor data, and budget records. Due to the nature of this data, robust security measures will be implemented to maintain data integrity and confidentiality.

**Network Security and Maintenance**

To protect the network, a Cisco Meraki MX67 Security Appliance will be procured through TechSoup for $543. Additionally, five Windows Server 2019 licenses, available at discounted rates for nonprofits, will be purchased for $106 each, totaling $530. These servers will secure data access and centralize workflow management, improving efficiency across the organization.

To support network maintenance, one full-time employee will act as the on-site IT support after initial setup. This staff member will undergo training in Active Directory (AD) administration and basic system/network management. Two internship slots will also be allocated to local university IT students to provide additional technical assistance. This arrangement ensures the NPO has affordable, continuous technical support.

**Peripheral Devices**

An HP LaserJet printer, costing $389, will serve as the primary printing device for schedules, manifests, and other essential documents. If necessary, a second printer can be purchased exclusively for the director and FTEs to reduce print job delays. All printers will be configured for network use through Active Directory.

**Network Infrastructure**

The network infrastructure will be housed in a server rack within the office's server closet. This rack will contain the two domain controllers, two DNS servers, and the file server. A Cisco Meraki Z4 Teleworker Gateway ($379) and a NETGEAR 24-Port Gigabit Ethernet Unmanaged Switch ($90) will provide network connectivity. The ISP will be Verizon, offering a 5G Small Business Plan with 200 Mbps speeds for $99 per month. For wireless access, a three-pack of Eero Pro 6E pods, covering up to 6,000 sq. ft., will be purchased for $349.

To ensure consistent connectivity, a 1,000-ft roll of Cat6 Ethernet cable and 100 connectors will be procured for $284 and $10, respectively, to link all devices. Repurposing desktops ensures cost-effectiveness, with new SSDs replacing the old hard drives for better performance. Five desktops will serve as personal workstations for full-time employees, while eight will form the hoteling cube farm for part-time staff and volunteers. Active Directory will control permissions, ensuring data security and role-specific access. File sharing and database services will be managed through a RAID 5-configured file server.

**Active Directory's dynamic permissions system allows flexible and secure access management, which is vital for handling sensitive data in real-time. Adjusting access levels for staff and volunteers can be achieved quickly, enhancing operational efficiency and security.**

**Budget Summary**

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| **Item** | **Cost** |
| PNY CS900 500GB SSDs (13) | $377 |
| Cisco Meraki MX67 Security Appliance | $543 |
| Western Digital Red Plus Drives (3) | $225 |
| Windows Pro OS Licenses (13) | $208 |
| Windows Server 2019 Licenses (5) | $530 |
| HP LaserJet Printer | $389 (x2 optional) |
| Cisco Meraki Z4 Teleworker Gateway | $379 |
| NETGEAR 24-Port Gigabit Ethernet Switch | $90 |
| Eero Pro 6E Pods | $349 |
| Cat6 Ethernet Cable Roll | $284 |
| Ethernet Connectors (100) | $10 |