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First, I would like to take this opportunity to once again thank you for choosing Go2Linux for assistance in migrating to a faster, more secure Linux infrastructure.

Go2Linux recommends two Linux distributions for your company, Mint for individual workstations and Debian for your servers. Mint and Debian are fast, secure, and compatible with a wide range of hardware. Mint is widely regarded as one of the easiest Linux distributions for those most familiar with Windows operating systems. Also, Debian is widely regarded as being one of (if not most) stable and secure operating systems for servers. I want to take a moment and respond to some questions and concerns regarding making a move to Linux.

How will you implement security in the Linux systems?

- Migration to Linux systems will begin with a hardware and software inventory. This step is necessary to know which version of the distributions needs to be installed for the most compatibility and what applications we need to install for full business operation as soon as possible. Next will be the testing and training phase. Using virtualization software, the Linux systems will run on top of the current Windows operating system to verify compatibility and train system administrators and users on the new Linux environment's basics. Training in this manner will allow users to be more comfortable once the change is implemented. After the testing and training, backups will be created, and system downtime will be reserved to make the switch. The system downtime can be accomplished over a weekend, at night, or staggered so that only a few machines are undergoing maintenance at a time, which will limit how much operations are affected.

- User authentication can be handled with a Samba Domain Member Server [1] and with Pluggable Authentication Modules (PAM) [2]. PAM is a suite of libraries that allow for a system administrator to choose how applications authenticate users. Pam is compatible with user names and passwords, smartcards, and other forms of authentication.

- I recommend using smart cards and passwords for user authentication, but smart card readers will need to be installed on every workstation for this to work. Using smart cards with a password increases security because someone will not access your systems without both. I also recommend that the password must be required to be complex so that it is not easily cracked and that users are forced to log out when they take out their smartcard.

- Data-at-rest can be stored on the workstations or the servers, and data-in-transit will be handled the same as before. However, if there are no firewalls or encryption methods set up, your system administrator should look into firewalls and encryption, and once they have a plan, we will help with setting it up in Linux.

- Software on Linux can only be installed by the root or sudo users, which are the equivalent to administrators on Windows machines. Users will not be able to install any software without root or sudo access. Changing the sudoers file will allow the root user to give other users sudo access, this is the Windows equivalent of making an administrators group [3].

- **End users have expressed some concern about completing their day-to-day tasks on Linux. How would activities such as email/web browsing work? How would they work with their previous Microsoft Office files?**

    - The easiest method to use Windows applications would be finding Linux-compatible alternatives, such as LibreOffice for the Microsoft Word Suite. However, there are other options like Wine [4]. Wine is a compatibility layer that can help run Windows Applications on a Linux machine. There is also virtualization. Virtualization software like VirtualBox [5] will allow you to run a Windows operating system inside a Linux machine, giving you full access to any Windows-based applications.

    - I would recommend using Google Chrome [6] or Mozilla Firefox [7] for web browsing. Both are top-rated web browsing services with high compatibility with most websites and operating systems. Importing bookmarks, extensions, and plugins can be very easy, depending on the browser you are currently using. If you are already using Chrome, all that is needed is to sign in to their Google account, all bookmarks, extensions, and plugins are automatically reinstalled. For Firefox, a bookmark file will have to be created from the old browser, and then the bookmarks will have to be imported from the file. One downside to Chrome is that it only offers the x64 bit version for Linux operating systems, so some older machines may not be compatible with it.

    - There are many Microsoft Office alternatives available for use on Linux Operating Systems. My primary recommendation is LibreOffice [8]. LibreOffice is fully compatible with Microsoft Office and is completely free, although some of the designs and templates will be different. The main con about LibreOffice is the outdated design. LibreOffice's design is more similar to the Microsoft Office 2003 design and not the newer Office Suite.
      Another alternative is WPS Office [9]. Unlike LibreOffice, WPS Office has a newer design similar to the more contemporary Microsoft Office Suite, but the business version of WPS Office requires the purchase of a commercial license.

- **The current Windows administrators are unsure about administering Linux systems. How are common tasks, such as process monitoring and management, handled in Linux? How does logging work? Do we have event logs like we do in Windows?**

    - There are many tools that you can use for logging. You can use a program like GrayLog, or you can do it manually by using the terminal. Most logs are located in the /var/log directory, these logs include /var/log/boot.log, /var/log/auth.log, and /var/log/daemon.log. There are also non-human-readable logs that include failed login, last login, and login records. These can usually be accessed by tools designed specifically for reading and managing logs.

    - The most common tool to manage processes in Linux is the "top" command. The top command is very similar to task manager in that you can see memory usage, the number of running tasks, and the CPU usage. You can use the arrow keys to navigate the process list, highlight running tasks by pressing "y," and "k" to kill a running process [10].

- **Some folks in IT raised questions about the Linux flavor that was recommended. They would like to see comparisons between your recommendation and a couple of other popular options. What makes your recommendation the best option?**

    - Ubuntu and Mint are arguably the two most popular Linux distributions for people who want to stay away from command lines [11]. Both distributions are based on

Debian, with Mint taking even more inspiration from Ubuntu. However, Ubuntu requires more power and resources than Mint, which means Mint will run more smoothly on older equipment, like your Windows 7 machines. By default, Mint is very similar to the Windows environment allowing for an easier readjustment to the layout. On the other hand, Ubuntu is more likely to be favored by Mac users due to certain similarities like the dock system. Overall, to make a smooth transition to a Linux environment, using Mint is the best option for Faster Computing.

- **How does software installation work on Linux? Can we use existing Windows software?**

    - Updating and installing software is easy in Linux Mint [12]. First, go to the terminal or command line interface and type "sudo apt-get update." This command will make sure to get all available updates. After that, go to the menu, open the "Software Manager," and search for the update or program you want to install. The Software Manager is very similar to how Google Play or the Apple App Store works. With Linux Mint, you can enable automatic updates in the update manager. It is a bit more complicated for automatic updates with Debian, but a tutorial walks you through it on Vitux [13].

    - Specific Windows applications can be used with Wine [4] or virtualization software like Virtual Box [5].

- **How can Linux work together with the systems that will continue to run Windows? How will we share files between the different system types?**

    - File-sharing can be achieved by using Samba [14]. Samba uses the same networking protocol used in the Windows environment for file and print sharing and Active Directories. Using Samba, employees will have their private file share, a common file share, and administrators can access all private file shares and ownership of the common file share. One benefit of Samba is that it is compatible with Linux, Windows, and Mac operating systems making file sharing across platforms easy. Mint also allows for a very similar share process to Windows, so users shouldn't have to do anything too different to share files [15].
    - Printing servers can also be set up and managed through Samba using Common UNIX Printing System (CUPS) [16].

I hope to have alleviated your concerns regarding the transition. If there any more questions, please feel to reach out to me or my associates at any time. Once again, thank you for choosing Go2Linux, and I am looking forward to working with you.

Warm regards,
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Linux Deployment Manager

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