**Linux as an Operating System**

The purpose of this assignment is to provide the disadvantages and advantages of selecting Linux as an Operating System.

Linux is an Operating System designed by Linus Torvalds, based loosely upon the UNIX kernel; while most commonly think of Linux as the Operating System, it is just the kernel of a wide selection of operating systems all sharing commonalities. Popular versions most are familiar with include Debian, Ubuntu, and Red Hat. Whereas Microsoft Windows, and Apple’s iOS, and any other fully integrated, non-Linux Operating System are all segregated with very different designs, users of one type of Linux Operating System may easily adapt to another Linux Operating System with little difficult.

This is the key advantage of the family of Linux Operating Systems, their interoperability allowing users to interact with each with as much familiarity between them. A user accustomed to Debian Linux may find some different commands and options when attempting to interact with Arch Linux, but with very little research will transition rapidly.

However, for some this similarity is disparate enough to cause confusion. While a one Linux Operating System user may have very little trouble transitioning to a different distribution of a Linux OS, users of multiple Linux Operating Systems may feel overwhelmed if they must remember multiple versions of the same command.

As an example, a typical contrast between Linux Operating Systems is the comparison of commands required to update the system between Debian Linux and Fedora Linux. Typical commands of Debian Linux for updates and upgrades follow the syntax shown below:

**apt-get upgrade**

The preceding command, when implemented from the Terminal will prompt the OS to check online resources for updates and install them.

Updating Fedora requires the use of different commands, following the syntax below (Fedora Project):

**dnf upgrade**

Both methods described above will accomplish the same goal. While it is simple to look at both and discern, at least for an experienced Linux user, the purpose for each, transitioning between these two methods within the same operating environment may lead to confusion and frustration from entering the Debian command multiple times in a Fedora terminal, only to meet with zero success before realizing the mistake.

When considering a distribution of Linux as an Operating System, users may choose from any of multiple versions, 882 according to the website DistroWatch. This number guarantees that users may find the exact distribution that best fits their requirements. Versions designed for enterprise and business use, exist side by side with version designed for security auditing, video gaming and entertainment, and complex datacenters. Many of these versions build upon or derive from other versions of Linux Operating Systems, such as Kali Linux, which is based upon Debian Linux. Debian Linux is also the bases for Ubuntu Linux and Valve’s SteamOS.

Just as this variety is a strength, so too it is a disadvantage. For the novice user, or those with poorly defined requirements, facing a list of nearly one thousand Linux distributions, and only requiring one may present an unsurmountable colossus of information and features. One may favor one distribution over another; yet desire the features only available in a third. A user, system designer, or decision maker must be well-informed and willing to accept compromise, or, accept the responsibility of compiling a custom version of a Linux Operating System to suit their needs.

The ability to compile a custom version of a Linux Operating System, one that suits the requirements defined by the system designer, is a strong advantage that in the most extreme cases, completely negates the disadvantage of information overload concerning the selection of a Linux OS. Though adding yet another choice to the pile may complicate the picture of future decision makers, it does guarantee a full catalogue of features.

Stepping away from the various versions of Linux, it is important to note that the Linux kernel is free of charge. Providing the kernel free is the foundational concept which promotes the wealth of choices, fostering continuous development of the various distributions and kernel. The Linux Foundation highlights this innovation on its About page, stating how Linux impacts the world:

* Eighty percent of new smartphones use Android, based on the Linux kernel
* All top five hundred supercomputers in the world run on the Linux kernel
* Infrastructure support for Amazon, Paypal, eBay, and Walmart, among others
* Infrastructure support for the global markets, such as the New York Stock Exchange, the London Exchange, NASDAQ, and the Tokyo Exchange

(Linux Foundation)

The Linux Foundation maintains the Linux kernel, where Linus Torvalds is still actively engaged in its continued development, joined by a roster of thousands, all working together to examine, debug, and deploy continuous improvements. The greatest advantage of the Linux kernel is its status as a “living” kernel, meaning that it constantly grows, evolves, and improves. No software project is without faults, and the scope of Linux guarantees it will face its share; but the continued efforts of those contributing to its development minimize these events and resolve them rapidly when discovered.

When considering an Operating System, there are many choices, and the “best” is what fits the requirements. However, many thousands of individuals and enterprises have determined that a Linux Operating System is that best choice.

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