Why Linux? Metatron Technology Consulting's Guide to Linux Deployments

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Abstract

This paper discusses what Linux is and why businesses might want to consider using it for various tasks. The intended audience includes small business owners who may have heard of the product but have never seen it or used it. Various scenarios will be discussed including ones where

Linux is not yet a viable solution for a business. Strategies for migrating existing systems to Linux will also be discussed.

This paper will also attempt to make the case that open source software in general is of strategic importance to most organizations.

1 What is Linux?

Linux as an operating system is open source, which means that the software, and its source code are freely redistributable with or without fee. Various vendors then (including SuSE, Red Hat, and Mandrakesoft) bundle the core software with other programs creating a "distribution." Different distributions, naturally, can contain different software. Some distributions include proprietary software as a means of controlling redistribution, but this is the exception rather than the norm. In particular Red Hat and Debian Linux have been well known for ensuring that all programs are freely redistributable, though in Red Hat's case, this is only applicable to the main distribution CD's. Metatron Technology Consulting only will provide customers with distributions free from such restrictions, though we will support any distribution.

When we discuss Linux as an option, we are discussing the linux distribution as an alternative to comparable Microsoft software. It is generally believed that sufficiently advanced software exists in this sphere to allow Linux to be employed successfully in most, but not all, environments.

A base Linux install, for purposes of this paper, contains Linux with base utilities, GNOME and/or KDE (desktop environments), OpenSSH, and OpenOffice.org (a free office suite). If a web server is needed Apache would be installed, and PostgreSQL would be used for any database-related work. Other open source tools will be mentioned where necessary.

2 Business advantages of Open Source

Traditional proprietary software is usually sold per system that will run the software, and it is illegal to install the software on more than one computer system without a license to do so. This is because although installing the software on one computer is a form of copying explicitly allowed under US copyright law, doing so on several systems is unauthorized reproduction of a copyrighted work. Additionally, many if not most traditional, proprietary software vendors also use click-through agreements in order to enforce additional contractual obligations, such as a limited number of client connections to server software without additional "client access licenses." In many cases, additional client access licenses may not be available, forcing a customer to buy a more expensive "server" version of the software (Windows XP, for example, will only allow 10 concurrent connections for any software included).

In contrast, open source software is licensed in such a way as to allow installation on many computer systems without licensing costs. Additionally there are no contractual oblications inherent in the actual use of the software. For example, there are no legal limits on the maximum number of concurrent connections for any software. In this way, open source software can often be installed in far more flexible ways than proprietary software, and a businesness not involved in creating proprietary software, can save additional administrative expenses which might otherwise be spent tracking software licenses, and thus managing growth management becomes more flexible. Open source software is also immune from audits by the BSA and other software licensing entities.

To be fair, some distributions, such as Red Hat Enterprise Linux are sold with packages of services under the contractual agreement that all installations of the distribution within a given organization must be covered by the same set of services. These services are usually charged per seat on an annual basis, and often include support, priority access to bugfix downloads, and even service level agreements. Service level agreements are of primary importance for mission-critical systems and even in traditional software markets are only affordable to large corporations. These distribitions are not the subject of this paper. Also, it should be noted that once the contract is cancelled or expires, that the customer of these distributions does NOT lose the right to use the software, as the often do when purchasing proprietary software under a subscription.

A point which is often over-used is that, because open source software comes with access to the source code, any organization which uses the software can pay a programmer to extend it or fix bugs. However, this is important when vertical applications are considered because existing applications can be customized to the needs of a business, often for less than the cost of existing proprietary applications. A business can then extend the software again when needs change. If the application is designed to be extended, this can often be done without a high cost, though not all open source applications are designed to be extended in this manner.

Linux as an operating environment is generally far more stable than any version of Microsoft Windows on comparable hardware. Security updates can usually be applied without restarting the system, and can be more transparent from the user's perspective. Less downtime and support equates to better productivity and lower costs of ownership. This is partly evidenced by the larger number of Linux systems a typical administrator can manage compared to Windows.

3 Comparing Linux with OpenOffice and Microsoft Windows with Office

Linux with OpenOffice comes with most of the same functionality that Microsoft Windows and Office do. There are a few issues addressed below, and where these issues make Linux deployments prohibitive, we recommend using Crossover Office to run Microsoft Office on Linux.

OpenOffice.org comes equivalents to Word, Excel, Powerpoint, MS Query, and FrontPage, with an editional editor for mathematics formulas. It currently does not come with an equivalent to Microsoft Access, though if one is needed pgaccess can be installed along with PostgreSQL to provide a more robust rapid application development environment than MS Access. OpenOffice.org is able to read and write documents in MS Office formats. Pgaccess is also open source.

Although the formatting of MS Office documents have been vastly improved in OpenOffice.org, there are still reports of documents with formatting which appears slightly off from the equivalent in MS Office. These issues are still being worked on. Also, I am unsure at present how compatible StarBasic is with VBA macros in office documents, and how well supported these are. If a business relies heavily on VBA macros in Excel spreadsheets, the Gnumeric spreadsheet may be a better alternative to OpenOffice's Starcalc. Gnumeric is also released as open source software. It should be noted, however, that VBA and VBS macros in office documents have been significant vectors for viruses in the past including notable viruses such as Concept, Melissa, and Loveletter.

OpenOffice does include an equivalent to MS Outlook. In order to obtain Outlook's capabilities, Ximian Evolution should be installed (also open source). If one must connect to a MS Exchange server for calender and task management, an additional connector must be installed (not open source, and requires that outlook web access is installed for Exchange). If an organization is considering Ex-

change (or any other proprietary groupware server, for that matter) in a heterogenous environment, however, one should also consider Kolab, an open source groupware server developed for the German government in order to allow them to replace products such as Exchange. Open source Kolab clients for Windows and Linux are also available.

4 Solving the Quickbooks Problem

Many small to midsize businesses depend on Intuit Quickbooks. To date, there are no open source solutions which have all the features of this proprietary, and Windows-only application. However, there are several proprietary applications which can be installed in its place, and the possibility exists of using multiple integrated open source packages to the same effect. If the data is stored entirely within a relational database, such as PostgreSQL, multiple tools can be integrated and used to manage everything from expenditures to check book balances.

If you need such a solution, contact us and we will discuss further options with you based on your specific needs.

5 Remote access and internal support

Microsoft Windows allows for remote access via "Shared Desktop" or Netmeeting. This feature allows a technician to observe remotely how a user is using an application and make suggestions and/or take control and demonstrate how to resolve such a problem. Netmeeting (but not shared desktop) also allows single applications to be shared for teleconferencing applications.

On Linux, in a graphical environment, the open source projects based on VNC can achieve the same support benefits, though they lack the ability to share single applications. Additionally, such a shared desktop framework is not the only option available for remote support: OpenSSH provides for secure remote logins in which an administrator or technician can then administer the system. SSH does not provide the sharing capabilities that VNC or Shared Desktop allow.

6 Linux and X11 vs Microsoft Terminal Services

Finally, the typical graphical environment for Linux, X11, allows for applications to be run remotely. Performance leaves much to be desired, (particularly over slow connections, or using OpenSSH to secure the connection) but given sufficient bandwidth and computing resources, it can be an attractive alternative to Microsoft's Terminal Services, and free from the same licensing constraints and costs. Furthermore, unlike Microsoft't Terminal Services, different applications running on different servers can appear to integrate with the same desktop, which is currently not possible with Microsoft's Terminal Services.

Additionally, where MS Terminal Services are in place, a Linux client, rdesktop, exists which can talk to and use software on Windows via Terminal Services. Presumably it will also allow one to use shared desktop to talk to a Windows system.

7 Software for Vertical Markets

Software for vertical markets often poses the greatest obstacle for migration to Linux. These include hotel reservation applications, point of sale systems, and many other sorts of applications geared towards certain types of businesses. The difficulties posed by these solutions include:

- Availability of similar applications for Linux operating systems. Often such applications are simply not available as there has historically been a limited market for them. This is not as much of a problem today, but it can be a serious obstacle. Also, depending on the complexity involved, Linux provides a great environment for developing these types of applications at an affordable costs.
- Compatibility of data models between different applications. When migrating to a new application it is often important to retain data from the past (often referred to as legacy data), and this can in many cases pose problems. If the data is available, however, it may be able to automate the migration of the data to the new system.
- Interoperability with other applications and the ability to export important information. If a vertical application does not allow the data to be exported into a compatible format, then it can be difficult to to migrate the information to the new system.

Where a business is dependent on software tailored to their vertical market or industry, it is important that this issue be thoroughly considered, as it is often the single largest obstacle towards migration.

8 Strageties for Mitigating the Migration Cost and Risk

Several strategies can be employed in order to mitigate the costs and risks of migrating an organization to Linux. It is generally believed that these strategies should generally form the basic foundation of any migration plan. They include:

1. Run a few workstations on Linux as a pilot project. This allows you to work out the issues while avoiding business-critical outages.
2. Some corporations prefer to retain some systems running Windows, or more frequently, run VMWare on Linux, and then use that to run a version of Windows. Unfortunately, neither VMWare nor Windows is open source, so much of the flexibility from open source is lost. However, it can provide a lifeline for critical applications which only run on Windows.
3. Migrate peripheral systems first, or add new systems which perform specialized functions. Once staff become more familiar with them, the costs of migration and training will decrease.
4. Use open source as much as possible but be sure that you are working with a company which can provide responsive support, even outside normal business hours. This support can be important if more major migrations need to be made because these migrations generally must occur outside business hours.

9 Where Linux is Not Yet Viable

Linux is not yet viable in companies which are dependent on Windows-only software and for which there are no available alternatives. A notable exception is Adobe Photoshop for Windows which currently will run on Linux via the WINE compatibility libraries. Additionally, companies with large quantities of legacy data stored on Windows may want to invest additional time in investigating how best to migrate the information.

Additionally, desktop publishing software is very different in the Linux and UNIX world than in the Windows and Mac world. The differences between TEX and Docbook on one hand and Adobe Pagemaker on the other are extremely large, and businesses may not choose to migrate if they are dependent on such applications. However, LATEX and its graphical tool, Lyx, are relatively easy to use, and allows less skillful workers to do most of the desktop publishing tasks.

10 Conclusion

Linux and other open source software present many opportunities to businesses which are willing to use it. These include greater deployment flexibility and lower support costs, though there are certainly up-front costs in any migration. Businesses should be cautious about migration, however, if they are dependent on Windows-only software which has no ready equivalent available for Linux.