

PC Server Ubuntu vs alternatives:

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Introduction

A server is a simple PC running software which centrally manages different computing tasks and provides the outcomes to the participating computers or devices in the network. This model is also called a client-server network. A server must consist of the following minimum capabilities:

1. Computing hardware
2. Operating System
3. Server Software
4. Means of connection between devices

1. Computing Hardware

A PC server needs at least the same type of hardware we use in our personal computers. In other words, any personal computer desktop or laptop has sufficient hardware capabilities to become a PC server.

2. Operating System

The operating system being used must have networking support. There is a large array of operating systems being used today such as Windows Server family, Linux based server families with most notable being RedHat, Slackware and Debian. Every family of operating systems has subversions tailored to the needs and applications of the end user. For our project realization it would be easy to use one of the existing laptop devices as a PC server.

Note: the operating system needs to be installed on a blank PC. However our group members possess laptop computers with a Windows client version already installed. In this case, it would seem appropriate to install a hypervisor and load a server operating system onto the hypervisor software. Below is a short description of this software.

2.1 Hypervisor

Hypervisor is a program which creates a software layer on top of the existing operating system. This layer shares the same hardware resources of the host machine. The hypervisor program makes broad possibilities to install additional operating systems on top of the host operating system. Two of the most used freeware hypervisor programs are VMware Workstation Player and Virtual Box.

2.2 Ubuntu server

For our project we might want to install an Ubuntu server 16.04 LTS on one of the host machines. This freeware versatile server has an active desktop interface with all the Linux tools and capabilities. Taking into account our knowledge of Linux, it would be best to choose a Linux-based operating system with an interface for the added convenience.

3. Server Software

A PC server might be running various server software simultaneously or each PC server is dedicated to a different task. It is the type of work needed that determines which software is necessary. Server software is usually used for the following purposes:

- Web server: this server insures that a client PC is provided with the right information (text, images, videos ...) while browsing a web page.
- Mail server: a mail server organizes all incoming emails and forwards them to the required destination.

4. Means of connection between devices

A PC server needs wired or wireless means to establish a connection with other servers or client devices in the network. For our project it would be convenient to use wireless connection with the client devices, preferably via IEEE 802.11ac standards which uses 5 GHz frequencies. These frequencies are the most stable at the moment which is due to lack of interference with the mostly used 2.4 GHz frequencies. The 5 GHz has 24 non-overlapping channels compared to only 3 in 2.4 GHz frequency band.

Methods

In order to assess the available server operating systems in the market, we need to make a criteria list and choose the best server for our project based on the criteria. For our project we might have to look upon the following requirements:

- Ease of installation
- Access to the operating system
- Level of support
- Required knowledge of the server

For my research I came across a huge pool of server operating systems such as Windows and Linux among which Debian, Slackware and Redhat line of server families. There are at least 20 different underlying operating systems which stem from these families (Lundqvist & Rodic, sd). This has been mainly due to the open-source code of Linux which has been modified to satisfy the specific computing needs of large groups of users. Comparing every distribution of Linux would take a significant amount of time and research, therefore we have to choose among the most reviewed operating systems of each family currently available in the market. Below are a few of them:

Windows Server 2016

Windows Server combined with its previous versions are standard server operating systems used across millions of computers. Windows servers have generally a huge support on security definitions and updates. Besides there is free support for subscribed users in cases of troubleshooting.

Why to use it?

- Windows Server is a complete operating system which is already integrated into the huge pool of Windows applications when compared to open-source operating systems.
- It provides regular support updates along with professional help in case of software issues. For example Remote Desktop access is a tremendous tool to access software support remotely.
- For students and developers there is a 180 day evaluation software to use from. (Microsoft Corporation, sd)
- It has a complete Graphical User Interface which is easy to use for common Windows users.
- It has a well featured cloud service.

Why not to use it?

- Windows Server is mostly customized for enterprise use. The high cost of purchase makes it difficult for many users to benefit from it. A minimal software for 5 devices costs € 1553, 00. (Microsoft Corporation, sd)
- Windows Server is a complete operating system which means it comes with all the tools and programs which might be sometimes unnecessary for the specific computing needs. Thus it takes a significant amount of storage in a PC which is minimum 32 GB. (Microsoft Corporation, sd)
- Windows server consumes more computer resources for the tasks it needs to fulfill which makes it less reliable.
- Windows Server is a closed-source operating system. Therefore it is not recommended for developing purposes.

RedHat

RedHat is one of the greatest and oldest Linux server operating systems used as open-source software. It provides enterprise support for subscribed users. These two point make a significant importance for enterprises developing their own software.

Why to use it?

- RedHat is an open-source system which is great for learners and developers. This makes it a volatile operating system for emerging tech, finance, healthcare and other industries.
- RedHat uses less computing resources. For example the minimal storage space needed is only 4 GB. (Red Hat Inc, sd)
- Despite its freeware program it provides professional support for subscribed users remotely.
- Reliability is also an extra boost for the end user. It has been relied upon by time and security critical institutions like airlines, telecommunication industries, commercial banks and U.S executive bodies. (Red Hat Inc, sd)
- It has cloud support.

Why not to use it?

- Support comes with a price tag. Therefore any software solutions are only excluded to subscribed users. The annual support price ranges from 349 to 1299 USD. (Red Hat Inc, sd)
- RedHat users have to deal with command line only. This makes it difficult for non-Linux users to perform necessary tasks.

Ubuntu

Ubuntu is a Linux freeware operating system which lies at the roots of Debian family of operating systems. It has great community base support for its users. It is perfect for small business solutions.

Why to use it?

- Ubuntu is also an open-source operating system. It creates great developing and learning space for the users.
- Ubuntu server edition is free.
- Ubuntu stems from Debian family which is known for its highly stable releases.
- There is a huge community support in case of any troubleshooting.
- It is an operating systems which claims its vision for future computing solutions such as Internet of Things. This makes it compatible to use for compact and minimal resourced hardware. (Canonical Ltd, sd)
- It requires less hardware resources. For instance, it needs at least 1.5 GB of storage for its server version. (Canonical Ltd, sd)
- It has a Graphical User Interface. It makes it easy to navigate for beginners.

Why not to use it?

- Ubuntu lacks professional support options. This makes it inconvenient in case of specific software issues.
- Ubuntu is Linux based operating system. Therefore a minimal knowledge of Linux is needed to perform simple tasks.

Results

Based on our specific uses for the implementation of this project. We chose the Ubuntu Server edition over other distributions for its free price, huge community support, command line interface and efficient when it comes to hardware resources.

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