

A White Paper On

CURRENT TRENDS IN WEB HOSTING ARENA



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Introduction:

Currently billion of websites are live and everyone needs a web server to be alive. Web Server technology had been changed a lot in this decade. Apache the best open source web server on planer is also the most widely used. Be it university, business, government or any other organizations everyone needs some sort of web server to host there website. There is lot of business in this field and new solutions and technology keep on evolving.

In this white paper I am going to cover all the current web server technologies. What are the secrets behinds any successful web servers. The best of Apache and IIS. I will show you the advantages and disadvantages of Apache and IIS.

In the ending I will show how you can setup your web server and get into the hosting business. Get ready to explorer the wonderful and amazing arena of web servers.

Welcome to the World Wide Web:

1991 was an important year in the development of the internet. Already an entity in its own right, it was about to get a lot bigger. It started with the National Science Foundation (NSF) when they decided it was time to lift commercial restrictions on the web. This in turn opened the internet up to limitless commercial possibilities. Electronic commerce was born, and with it came companies who were

starting to think there might be a future in website hosting services.

Later that year, the folks at CERN unleashed the World Wide Web (www) onto the world, which incorporated Tim Berner-Lee's new HTML computer Language. HTML stands for Hypertext Markup Language, and uses specifications for Uniform Resource Locator (URLs).

Aside from giving the world a mouthful of new abbreviations to memorize, it also became the universal standard for locating website addresses.

The internet was no longer simply a playground for universities and computer enthusiasts. With each new addition to its format, it became easier to use and easier to explain. At the same time, it grew in complexity. The business world saw the potential of the medium and seized on their chance.

Website hosting, once expensive and complicated, is now cheap and only somewhat complicated. It began with large companies renting out extra space on their servers and has now become big business in itself. There are at least as many companies that offer web hosting as there are companies that provide internet service.

As computers continue to evolve, the internet itself evolves. And with each new change come new changes to the way the business of website hosting is packaged to potential customers.

Some Web Hosting Fundamentals:

Disk Storage:

Disk storage is the space on the web hosting company's servers (or computers)

that your web site's content is allowed to utilize. For example, on the computer you are using now, it has a certain amount of disk space on its hard drive. It may be anywhere from 150 GB to 500 GB. One of your programs on that computer may take up 15 MB of storage space on your C drive. Web hosting companies' servers work the same way. They allow each of their customers a certain amount of disk space to store their web site material on, such as images, HTML files, emails, etc. 125 MB is a very large amount of space for a web site. Most web sites only take up 3 - 10 MB. But you will want to have sufficient storage space in the event that you need it, so it never hurts to have more than enough.

Data Transfer or Bandwidth:

This is the amount of data that your web hosting company's server has to load each time someone visits your site, and/or each time you upload images or files via FTP (File Transfer Protocol). For example, every time someone visits affable.co.in, the servers that host affable.co.in have to load those pages for each of those persons visiting the page. It is actually the 'transfer' of the data that you see in front of you. Most web hosting companies offer unlimited data transfer because 97% of their clients do not abuse their servers with outrageous data transfers anyway. But most of the sites that offer unlimited data transfer also have rules in place that prevent customers from abusing their system. You must read the fine print in every *unlimited* plan that you encounter to make sure you do not break their rules.

Monthly Fee:

This means that your monthly payments will amount to some rupees if you pay annually. It is more if you pay on a monthly basis. You can save a chunk of money by paying annually. Many hosting companies are now

using these types of payment plans.

Setup Fee:

This is the fee web hosting companies charge for setting up your account and domain. Basically, it is a labor fee for the transfer or setup of your new account with them. Some companies do not have setup fees, but they make up for this in other areas, such as raising their monthly rates or by offering fewer features in a given plan.

FTP Accounts (with 24hr FTP access):

An FTP Account allows you to upload your web site and content onto your web hosting company's servers so that visitors can see your site. FTP stands for File Transfer Protocol which basically means that files are being transferred over the Internet. There are many free programs out there that allow you to do this with ease, such as WS_FTP, FileZilla, Cute ftp and the Microsoft Web Wizard which comes with just about every Windows computer. The 24 hour FTP access means that you can upload files and/or images to your web site at anytime of the day or night.

Up-time: 99.9%

Up-time is the amount of time that a web site remains live or active and without problems loading pages, etc. A 99.9% up-time means that there is a .1% chance that your site will go "down" in the event that something happens to the server your site is sitting on or something happens to the connection along the way. A 99.9% up-time is just about as good as it gets in web hosting, which isn't bad at all. You should never settle for anything less than a 99.9% up-time, even if it's 99.7% or 99.8%. All

companies should be equipped with the tools needed to keep your site up and running at least 99.9% of the time.

POP3 E-mail Boxes:

POP3 Email Boxes are the 'actual' email accounts that you receive with your plan. 25 different people within your organization or company can have their own email accounts with their own logins.

E-Mail Aliases:

E-mail aliases are just the words that you place in front of @yourcompany.com to create unique email addresses. These aliases are then set up by you to forward to whatever address you want them to forward to. For example, you can set up an alias at your site called sales@yourcompany.com (if you do not have an actual email account under this name). Then you could set up this alias to forward to 2 or 3 people in your sales department with real POP3 email accounts. You can put any word you want in front of your company to be an alias. The servers are set up to send all email that ends in @yourcompany.com to your main default Pop3 email account regardless of what that word is. Even if you do not set up an alias to be forwarded to specific addresses in your organization, the email will by default go to the 'main' email account of your web site's plan. Note: Aliases are NOT actual email accounts; they are only addresses that point an email to an actual email account or accounts.

Detailed Web Statistics (Web Trends):

Every web site should have access to their site's traffic and visitor statistics. This is very important in monitoring the success

of your web site. With web site statistics, you can see how many people visit your site per day, month, or by the hour. You can see where these visitors are coming from and what web sites or search engines are referring them. You can see what pages are the most popular pages within your site, and so much more. No web site should be without statistics. This is also valuable information to those that inquire about advertising on your site.

Web Control Panel:

The web control panel allows you to control your web site functions, such as setting up email aliases and auto responders, creating new email accounts, viewing your disk storage, or reviewing your billing statements, and much, much more. You sign into these Web Control Panels with your user ID and password.

The New Revolution in Web Hosting:

It's a safe bet that the Web hosting industry of the future will look very different from the one today's hosting providers are used to, and that's certainly cause enough for concern to those in the business. An even greater concern, though, is the serious possibility that the future isn't as far away as some hosts might believe.

Over the past year, plenty of signs have emerged that indicate the face of Web hosting is already starting to stretch and shift in new directions. And it's not just all the usual suspects of change - i.e., shutdowns, mergers, buyouts, etc. - although there have been plenty of those. No, the new winds of change include acquisitions of companies

that deliver more than just additional hosting customers, a fresh generation of startups that look nothing like your father's Web hosting company, and experiments with innovative ways to sell hosting to the next wave of customers.

Which operating system should be used for Web Servers?

Before we decide which operating system would be more suited to Web Servers, let me list the important features in a web server operating system.

1. **Stability:**
The operating system should not *crash* under heavy load and, thus, bring all web sites down.
2. **Security:**
The operating system should not be vulnerable to viruses and should not have security holes that can be exploited by hackers.
3. **Ease of administration:**
Operating system administration should be trouble-free with easy-to-use administration tools.
4. **Features and Software:**
A good operating system should have all required features and software to run a web hosting server. If these are not in-built, are they available from other sources? (Read the next point).
5. **Third party application availability and integration:**
Software for the operating system that enhances the features of the web server should be available from other vendors. Further, integration of these should be smooth and trouble-free.

6. **Scalable to up-gradations:**
An operating system should be scalable to hardware and software up-gradations.

The popular web server operating systems:

Web server operating systems can be categorized as follows:

- Windows web hosting servers
- Unix, Linux and FreeBSD web hosting servers
- Macintosh web hosting servers
- Novell web hosting servers

The choice of the operating system for a web server should not depend on the operating system on your desktop. That is, if you use Windows on your home/office computer, it is not necessary to have the **same operating system on your web server**. Rather, your choice should depend on how you *create your web site* and the *kind of applications* you want to run on your web server.

Windows web hosting servers:

The Windows operating systems for web servers can smoothly integrate Microsoft applications including Access, MS SQL, and FrontPage etc. However, they are known to be less stable under heavy web traffic. They are also more vulnerable to attacks from viruses and hackers (though the latter has more to do with how the server is administered).

UNIX, Linux and FreeBSD web hosting servers:

UNIX and Linux servers are famous for their stability. They can provide more

than 99% uptime even under heavy web traffic. By the way, if you are developing your web site in Microsoft FrontPage you are not restricted to the Windows Operating system - Unix/Linux servers provide FrontPage Extensions that help you seamlessly integrate your application.

If you are in doubt, clarify with your web developer and come back to this page. For example, if your developer is creating the web site using ASP technology, I would definitely suggest a Microsoft Windows operating server. While on the other hand, if they are developing using PHP and MySQL, I would recommend using Linux or FreeBSD.

[FYI, One can run ASP scripts on Linux system using software such as Sun Java System Active Server Pages 4.0 or PHP on Windows... it's just that PHP scripts run better on Unix/Linux and ASP on Windows]

Which Web Servers should be used (Apache Vs IIS)?

Apache vs. IIS is the most painful decision that lots of people struggle to make. And very often they regret about the decision made. This question is not simple comparison of pros and cons of Apache and IIS. It is lasso involves debates on methodology of testing and overall system approach. For example, if you go for IIS then you have to use Windows, while if you decided to go for Apache Web Server you have a right to choose between UNIX, Linux and even different versions Windows.

That means that it does not make sense to try to make independent comparison of Apache and IIS. You should think about the end result you want to achieve by using any web server, otherwise you will lose yourself in enormous amount of questions. For example, if you go with IIS on Windows machine, then you will be vulnerable against both IIS and Windows bugs and vulnerabilities. If you go with Apache on Windows then it would be other combination of issues and vulnerabilities. And obviously if you go with Apache on Linux then it is completely different set. As an example, Linux never suffered from nasty worms viruses at all. That give assurance ageist such issues, but it had vulnerabilities in older versions of Opens'.

Same thing applies to performance. Running IIS6 you would need a descent box to make Windows 2003 happy. If you run small to medium web site that is overkill. Same performance result (e.g. requests served per second) could be achieved on Celeron/P-III 1GHz box running Bunt server and Apache.

Also you do not need to pay for OS and other silences if you go for Apache and Linux that saves you quite a lot of money, but what the downside of it?

All these prove the point that it is not quite simple to get the answer for Apache vs. IIS question. Let do it either way around. Let answer the question "What I what to achieve in the result?" and this will lead as to the tools we need to choose to meet the target. Actually, it is similar to making a decision on what tool you are going to you to plant a tree: I need to plant a tree. So, I need to dig a hole. The tree is very small, so the hole

should be relatively small. I can use scoop, shovel, excavator, TNT or nuke. What should I use?" The answer is quite obvious, because you know benefits and disadvantages of these tools applied to the current task. Same thing applies to choose a web server platform and application to do the job.

Web server meant to serve HTTP and HTTPS requests. Main issues associated with such a task are: performance, stability setup and maintenance costs. Let's take a closer look on them.

- Performance:

Performance depends on:

- web server application performance

IIS 6 has approximately same performance as Apache 2. Differences are very minor. This item might be excluded from consideration. On the same piece of hardware standard installation of Windows and Linux with GUI (X-server) are overall default system performance is also relatively same, unless you start tweaking the system. This is when the difference comes.

- overall system performance
 - The web server does not need GUI (Graphical User Interface) to serve

HTTP / HTTPS requests efficiently. GUI consuming most of system resources. GUI in this case is a kind of overkill like TNT for doffing small hole: it will do the job, but it is excessive. Windows cannot run without GUI, while Linux not only can. That is we having same piece of hardware Linux (no GUI) + Apache combination is much faster than Windows (GUI) + IIS6 or Windows (GUI) + Apache.

- Windows and most of Windows applications are compiled to be compatible with any x86 32 bit Pentium processors. Linux (including kernel) and all applications (including Apache) could compiled to utilize all features of particular processor installed in the box. This also significantly increases the performance.
- Apache Software Foundation is not supporting 64 bit technology on Windows. So you cannot use Windows64 + Apache combination. On 64-bits systems the

chaise is between Windows + IIS6 or Linux + Apache. Please, note that there is no 64 bit version of PHP4 and PHP5. In order to run PHP under IIS6 on 64 bit platform you have to play a lot with 32-bit emulation of IIS6 and making sure that all pup exertions are loaded and executed in 32-bit mode.

- Stability:

System considered being stable if it does not have any outages or unexpected slowdowns. Both platforms (Windows and Linux) and products (IIS6 and Apache) are mature enough and do not have any slowdowns if properly configured. That leaves us only with outages. Outages might accrue by:

- system failure

Both system and products are stable unless systems are shared and in use by other applications that might result in instability. In this case Linux has an advantage, because all Windows application is effectively kernel extensions. This means, that doggy application might kill the whole system. In Linux applications are separate from kernel and it is very unlikely that the doggy application will have any effect on the kernel as such.

- security brakeage

This is a long and arguable story. Here are some facts:

- Windows and IIS6 have proprietary code. That means that in case of any vulnerability found a user has to wait and live with vulnerable system until Microsoft will fix the issue and realest a fix. There is no one else in the world that might help. And as practice shows it is long lasting thing. For example IIS6 still has a vulnerability that has no patch issued. Linux and Apache are open source products. This means that everyone has access to the source code and as soon as vulnerability has been found everyone who has appropriate level of knowledge can fix it. It results in very short fixing time. It is also true that the fix would be reviewed by thousands and thousands of Linux users in the world instead of small group of people in Microsoft Q.A. team.
- In the worth case scenario of hacking web server application it is still possible to get full system access with the highest privileges by hacking IIS6. At the end of the days IIS6 has to run as process under Local User account. And no one can do anything about it. However, in the case of right system setup hacking Apache on Linux would result in access to the system very limited account that cannot do

anything accept running Apache.

- Apache 2 had more vulnerabilities than IIS6. However, IIS6 has more critical vulnerabilities that might result of service failure or giving admin access to the hacker.
 - Failure do Apache service on Linux won't affect system. All that is required to fix it is a small monitoring script that should restart Apache if it is not there. At the same IIS6 faultier might crash the kernel and kill the system. So monitoring script will not cover all the crashes, because it would die with the system and there is nothing to put it back.
 - Is the case of sharing server resources with other applications you should think that there are enormous amounts of viruses written for Windows. That means you have to run antivirus software. This is an extra application that does not work to achieve the target to serve HTTP / HTTPS requests, but sit in the system for unnecessary stability reinforcement significantly consuming CPU and disk resources. Linux does not have any kind of system viruses and does not require any antivirus software. In fact there is no any system antivirus software at all, because there are no viruses to search for.
- Costs:

Costs could be divided into 3 major categories:

- setup costs:

Windows setup costs include:

- more powerful hardware to run GUI and antivirus software
- Windows and IIS6 license for the server

Linux setup costs include:

- Hardware only. It also should not be as powerful as one for Windows to server same amount of requests.
- **Optional** Linux installation if you are looking for Red Hat or Sues. But it is cheaper anyway and it is required only if you have some very specific requirements to go for commercial Linux release.

- maintenance costs

Windows maintenance costs include:

- Windows and IIS6 license for every developer and Q.A. engineer box

Linux maintenance costs include:

- **Optional** commercial Linux support if you

do not have in-home specialist. In this case you might significantly cut down or eliminate human resources costs

- human resources costs

This applies to your system administrator salary or payments. Both systems able to download and install system and web server paths (except Windows + Apache combination). So, once it is up and running it is unlikely requires any human intervention unless circumstances change (load increase, attacks or hardware failure). It is easier and cheaper to find some Windows administrator with little experience, but it is not recommended. Lack of experience in server administration usually results in extra costs and charges (e.g. support calls, long downtimes, slowdown) or in the worst case you might lose the system (successful attack or inability to recover service after failure).

Experienced system administrator costs approximately the same for both platforms. That means that both systems have same human resources costs. However, if you already have an administrator with experience for some system it might be much cheaper to choose the system that fits his

knowledge than hire another one.

As you see there are a lot of pros and cons. And it really depends on your situation and budget.

Source:

- <http://www.askwebhosting.com/article/23/The-History-of-Web-Hosting.html>
- <http://webhosting.resourceindex.com>
- <http://www.webdevelopersnotes.com>
- <http://www.google.com>
- <http://www.wikipedia.com>