Virtual Host
(Web Server)

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EEPIS-ITS
Virtual Networking implementation
Power consumption comparison

VS

5 Physical servers

Virtual Server
Power consumption comparison

230W
×
5
×
24h
=
27.6kWh + a

230W
×
24h
=
5.5kWh + a
Virtual Server Advantages

- **Power saving** over multiple physical servers
- **Simplify** system administration by integrating all servers into one physical machine
- Server hardware resource **optimization**
Virtual Server disadvantages

- When host server machine crash, all virtual servers embedded in the server crash too.
Virtual Hosting

- General term used when you run more than one website on a single system.
- Allows ISPs and hosting providers to make money by sharing resources among clients. Allows companies and individuals to save time and money - a single machine can host many websites.
Virtual Host
Options for Hosting More than One Website on a Single System

- Run separate instances of httpd servers: `httpd -f /usr/local/apache/conf/httpd-virtual.conf`
- Run a server that will listen on multiple ports and serve different content depending on the port.
- True *Virtual Hosting* - Allows multiple IP address and/or host names to be served through a single Apache server.
  - IP-Based
  - Name-Based
Virtual Hosting: IP Based

- You must configure your machine to “listen” for multiple IP addresses. One NIC binds to multiple IP addresses.
- One hostname is associated with each IP address.

www.yahoo.com  216.32.74.52

sports.yahoo.com  216.115.105.243

SERVER

NIC
Virtual Hosting: Name Based

- A machine can host multiple websites using only 1 IP address
- All hostnames have the same IP address
- Becoming more and more popular.

![Diagram showing a server with two hostnames and their associated IP address](image-url)
Once you have secured the domain names/hostnames you want to use for your website, you need to assign each of them a unique IP address.

Some ISPs can assign you additional IP addresses.

Blocks of IP addresses are usually assigned with business T1s or DSL lines.
You need to have DNS properly configured for your domains, e.g. The world needs to know that `www.yourdomain.com` is at the IP address 123.23.34.56.

Remember, your ISP can usually provide DNS service for your domains.
Your web server needs to be configured to listen for the IP addresses related to your websites:

UNIX-based OSs allow you to configure multiple IP addresses using the `ifconfig` command (must be run as root)

Usage: `ifconfig interface:<sub-number> IP`
- e.g.: `ifconfig eth0:0 165.230.30.71`
- `ifconfig eth0:1 165.230.30.72`

**WinNT IP setup through Network control panel.**
Configuring Apache for IP-Based Virtual Hosting

- Configuring Apache for Virtual Hosting is quite simple: Simply add a `<VirtualHost>` block within the httpd.conf file.

- Format:
  
  ```
<VirtualHost IP-or-HOSTNAME:Port>
  #Any Valid httpd.conf directives
</VirtualHost>
  
- Required for each Virtual Host website you are using...therefore your httpd.conf can have multiple `<VirtualHost>` blocks.
Typical `<VirtualHost>` block in `httpd.conf`:

```
<VirtualHost www.bearsnest.org>
  DocumentRoot /home/www/bearsnest/htdocs
  ServerAdmin chrisjur@cju.com
  ServerName www.bearsnest.org
  ErrorLog logs/bears-error_log
  TransferLog logs/bears-access_log
  Redirect /adprotech /http://www.adprotech.com
  Alias /staff /home/chrisjur/htdocs/bn/staff
</VirtualHost>
```

The key: Virtual hosts will have their own unique `DocumentRoot` – different content for different sites.
Steps for Setting-Up Name-Based Virtual Hosting

- When setting up Name-based virtual hosts, you need to add the special NameVirtualHost Directive to your httpd.conf:
  - NameVirtualHost <Your IP Address>
- Which tells Apache the single IP address you will use for all your websites.
- Now simply add <VirtualHost> blocks for each of your website domains.
Name-Based VH Examples

NameVirtualHost 165.230.30.68
<VirtualHost www.yoursite.org>
  DocumentRoot /home/www/yoursite/htdocs
  ServerAdmin you@yoursite.com
  ServerName www.yoursite.com
  ErrorLog logs/yoursite-error_log
</VirtualHost>
<VirtualHost www.mysite.com>
  DocumentRoot /home/www/mysite/htdocs
  ServerAdmin me@mysite.com
  ServerName www.mysite.org
  ErrorLog logs/mysite-error_log
</VirtualHost>
Virtual Hosting Recap

- Get your DNS configured for each domain
- IP-based Virtual Hosting vs. Name-based Virtual Hosting
- Configure your server for multiple IP addresses if using IP-based Virtual Hosting
- Create new directories for new Document Roots
- Add <VirtualHost> blocks to your httpd.conf
Two ways of delivering dynamic content for the Web: client-side or server-side technologies

**Client-Side**

- Elements are downloaded to the browser and execute on the client’s system.
- Examples: JavaScript, Java Applets, client-side image maps.
- Web server administrator needs to see that MIME types are set correctly.
Dynamic Content, con’t.

- **Server-Side**
  - Server processes “on-the-fly” content that is passed to client browser.
  - Examples: server-side includes, CGI (Common Gateway Interface), server-side image maps, ASP (Active Server Pages), Java Servlets. PHP
  - Server-side technologies generally require additional configuration of the Web server in order to function properly. Usually require specific Apache modules.
  - Enabling server-side technologies generally has security implications.