HTTP Lab 1: Virtual Hosts

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In this lab we will install several name-based virtual hosts on the same web server machine running Apache.

> ❗ If you are using Vagrant, this lab includes a configuration file and files for provisioning the virtual machines. Please review them.

Initial configuration

We will start from the following network configuration:

a. The hosts are on the network `192.168.57.0/24`

b. The gateway will be `192.168.57.1`

c. The first Linux VM will be named `ns1.olimpo.test` and will be a DNS server. It will be authoritative for the domain `olimpo.test`. Its IP address will be `192.168.57.10`. It will act as master server and will be authoritative for the reverse resolution zone of the network `192.168.57.0/24`.

d. We will set the option `dnssec-validation yes` on the DNS server.

e. We will configure a forwarder at IP `1.1.1.1` (Cloudflare).

f. The second Linux VM will belong to the same network with IP `192.168.57.11`, with an appropriate gateway and the hostname `mercurio`. The role of `mercurio` will be that of web server.

In summary, the hosts and their IPs will be:

`ns1.olimpo.test`	`192.168.57.10`	Linux DNS server
`mercurio.olimpo.test`	`192.168.57.11`	Linux Web server

1. Both VMs will use the DNS server installed on `ns1` and will add the suffix `olimpo.test` to non-FQDN domain names (use `domain olimpo.test` or better `search olimpo.test`).

2. Test using `nslookup` or `dig` from both VMs that domain names resolve correctly.

> ⚠️ *DNS is essential*

> If the DNS service does not work, you cannot continue with the web lab.

Virtual hosts

Create and configure name-based virtual hosting for multiple websites in Apache on Linux.

We want to create and enable web servers for the domains `apolo.olimpo.test` and `atenea.olimpo.test` hosted on the machine `mercurio.olimpo.test`.

`apolo.olimpo.test`

1. Configure the DNS server so that the name `apolo.olimpo.test` resolves as an alias of `mercurio.olimpo.test`.

2. Then test with `nslookup` or `dig` that the domain name resolves properly.

Provisioning

> ❗ If you are using Vagrant this lab includes the precreated web server files.

1. Create the document root directory for the site: `/var/www/apolo.olimpo.test`.

2. Add to that directory a file named `apolo.html` with the HTML content `<h1>Apolo</h1>`.

3. In the directory `/var/www/apolo.olimpo.test` add two text files: `apolo1.txt` and `apolo2.txt`.

4. Create the Apache virtual host configuration for the domain. The configuration file will be named `apolo.olimpo.test.conf` and will be located in `/etc/apache2/sites-available`. This step is ours to do.

5. Once created, enable the virtual host.

Ejemplo 1. Root of `apolo.olimpo.test`

```
apolo.olimpo.test
├─── apolo1.txt
├─── apolo2.txt
├─── apolo.html
└─── messages
     └─── 404.html
```

Custom error pages

We will customize the server's error messages.

`403` Error

When a `403` error occurs, the message *You do not have permission to access apolo.olimpo.test* will be returned.

404 Error

When a `404` error occurs the page `404.html` will be returned; it must be stored in a directory named `messages` located in the site's document root.

The page content should display the custom message *Resource not found on apolo.olimpo.test*

Log files

The server will have its own error and access log files:

- `apolo.olimpo.test.error.log`,

- `apolo.olimpo.test.access.log`

Requesting no specific resource

If no specific resource is requested (a directory), the server will show a listing of the site's document root (also called the directory index).

Site verification

Enable the virtual host and restart the Apache service, checking that there are no errors.

Open a browser and visit the following domain names:

http://apolo.olimpo.test

> A listing of the site's files should appear. This happens because directory index listings are allowed and there is no default index file like `index.html`.

http://apolo.olimpo.test/apolo.html

> The content of `apolo.html` should be shown. This happens because a specific resource was requested and we have permission.

http://apolo.olimpo.test/index.html

> The message *"Resource not found on apolo.olimpo.test"* should appear. This happens because `index.html` does not exist.

http://apolo.olimpo.test/messages/404.html

> The message *"Resource not found on apolo.olimpo.test"* should appear. This happens because we are viewing the custom error page `404.html`.

atenea.olimpo.test

1. Configure the DNS server so that the name `atenea.olimpo.test` resolves as an alias of `mercurio.olimpo.test`.

2. Then test with `nslookup` or `dig` that the domain name resolves properly.

Provisioning

1. Create the document root directory for the site: `/var/www/atenea.olimpo.test`.

2. Add to that directory a file named `atenea.html` with any desired HTML content.

3. In `/var/www/atenea.olimpo.test` add two text files (`atenea1.txt` and `atenea2.txt`). Their contents are arbitrary.

4. Create the Apache virtual host configuration for the domain. The configuration file will be `atenea.olimpo.test.conf` and will be located in `/etc/apache2/sites-available`.

5. Once created, enable the virtual host.

Ejemplo 2. Root of `atenea.olimpo.test`

```
atenea.olimpo.test
├──── messages
│      └──── 404.html
├──── atenea1.txt
├──── atenea2.txt
└──── atenea.html
```

Custom error pages

We will customize the error messages for `atenea.olimpo.test`.

403 Error

When a `403` error occurs, the message *You do not have permission to access atenea.olimpo.test* will be returned.

404 Error

When a `404` error occurs the page `404.html` will be returned. It must be stored in a folder named `messages` located in the document root of each site.

The page content should display the custom message *Resource not found on atenea.olimpo.test* depending on which site the requested resource is missing from.

Log files

The server will have its own error and access log files:

- `atenea.olimpo.test.error.log` and

- `atenea.olimpo.test.access.log`.

Requesting no specific resource

If no specific resource is requested:

1. The server for `atenea.olimpo.test` will show the `403` error message customized earlier.

Site verification

http://atenea.olimpo.test/atenea.html

The content of `atenea.html` should appear. This happens because a specific resource was requested.

http://atenea.olimpo.test

The message *"you do not have permission to access"* should appear. This happens because directory index listing is not allowed and there is no default index file like `index.html`.

http://atenea.olimpo.test/index.html

The message *Resource not found on atenea.olimpo.test* should appear. This happens because the file `index.html` does not exist.

http://atenea.olimpo.test/messages

The message *"you do not have permission to access"* should appear. This happens because directory index listing is not allowed and there is no default index file like `index.html`.

Submission

1. Show the instructor that everything works as specified.

2. Submit the following files in the lab activity:

3. File `named.conf.local`

4. File `db.olimpo.test`

5. File `db.192.168.57`

6. File `apolo.olimpo.test.conf`

7. File `atenea.olimpo.test.conf`

If you are using *Vagrant* also submit:

1. File `Vagrantfile`.