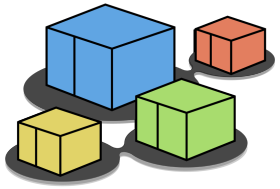

Kathará

Lab webserver

web server and browser

Version	1.3
Author(s)	Lorenzo Ariemma, Giuseppe Di Battista, Maurizio Patrignani, Massimo Rimondini
E-mail	contact@kathara.org
Web	http://www.kathara.org/
Description	A lab showing the operation of a web server accessed by a browser client – kathara simplified version of the corresponding netkit lab vers. 1.2

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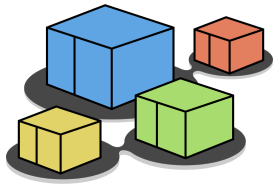
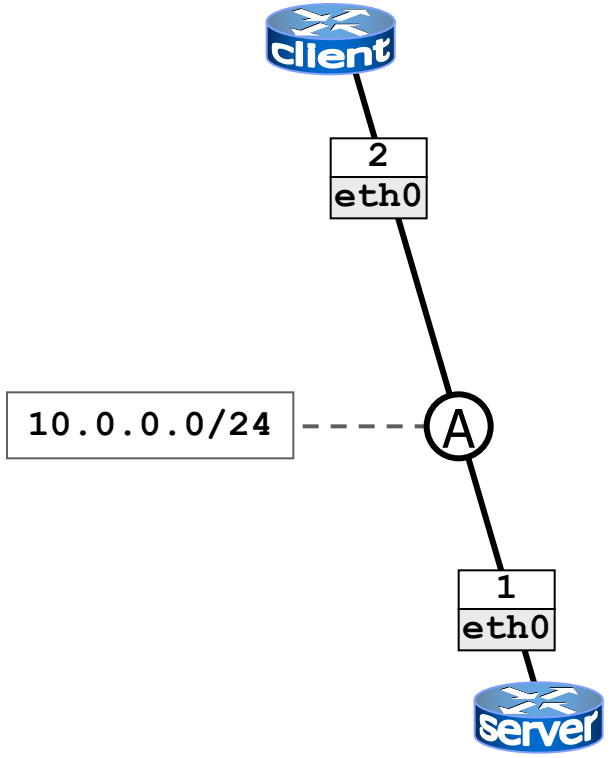
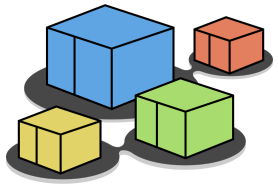


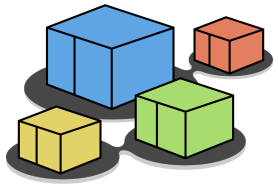
Lab topology





Lab description

- server
  - runs apache2 (with a default configuration)
- client
  - the user can launch a text-based web browser (**`links`**) to check the server operation



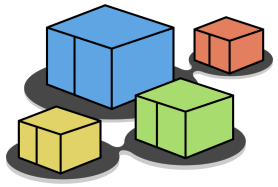
The server

- the user can check that apache2 is up and running by using the following command:

```
root@server:~$ systemctl start apache2
root@server:~$
```

- we have put a test html page
  - located in **`/var/www/html/index.html`**

```
<html>
  <body>
      <h1>Hello!</h1>
  </body>
</html>
```

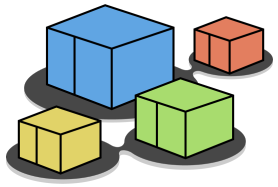


The client

- the user is supposed to start the web browser **`links`** on the client

```
root@client:~$ links http://10.0.0.1
```

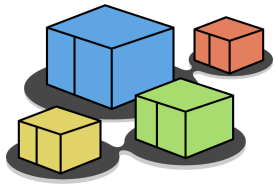
- you should get a screen saying “Hello!”



The server (again)

- to monitor accesses to the web server you can use the following command (on the server):

```
root@server:~$ tail -f /var/log/apache2/access.log
10.0.0.2 - - [19/Oct/2011:08:04:08 +0000] "GET / HTTP/1.1" 200 56
"-" "Links (2.2; Linux; 80x39)"
```

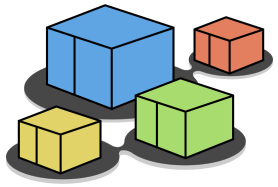


The server (again)

- to monitor errors on the web server you can use the following command (on the server):

```
root@server:~$ tail -f /var/log/apache2/error.log
[Wed Nov 14 15:57:58 2019] [notice] Apache/2.2.9 (Debian)
configured -- resuming normal operations
[Wed Nov 14 16:14:07 2019] [notice] caught SIGTERM, shutting down
```

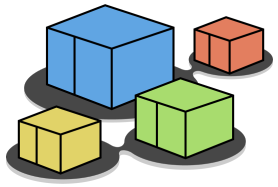
- very useful when debugging configurations



Apache modules

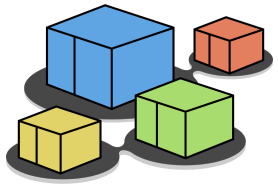
- most of apache's functionalities are built-in
  - retrieve the list using **`apache2 -l`**
- others can be added by enabling modules
  - to enable a module:

```
root@server:~$ a2enmod rewrite
Enabling module rewrite.
To activate the new configuration, you need to run:
  service apache2 restart
root@server:~$
```



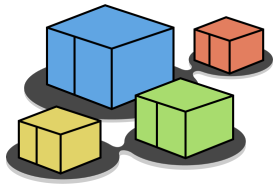
apache modules

- available modules are located in:
  - **`/etc/apache2/mods-available`**
- enabled modules are located in:
  - **`/etc/apache2/mods-enabled`**
- **`a2enmod`** puts a symbolic link from the relevant file(s) in:
  - **`/etc/apache2/mods-available`** to **`/etc/apache2/mods-enabled`**
- **`a2dismod`** removes these symbolic links



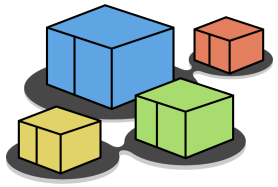
some useful apache modules

`userdir`	enables per-user web sites (this feature does not work with Kathará)
`rewrite`	implements URL rewriting
`proxy`	implements a proxy/gateway
`cgi/cgid`	supports execution of CGI scripts



per-directory configuration

- apache allows configuration changes on a per-directory basis
- creating a special file **`/some/path/.htaccess`** with apache configuration statements applies those statements to all files and subdirectories inside **`/some/path`**
  - **`.htaccess`** files can be nested in a directory tree
    - nested files override their parents



per-directory configuration

- sample configuration statements:
  - restrict access from specific hosts

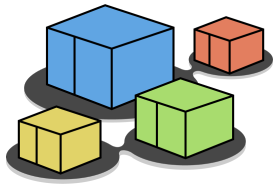
```
Deny from example.org test.com 10.0.0 192.168.0.0/24
```

  - perform URL rewriting
    - (transparently) redirect to other sites
  - restrict access to a specific subdirectory
  - change name of file containing the default page

```
DirectoryIndex pippo.html
```

  - enable/disable directory indexing

```
Options -Indexes
```



Exercise: per-directory configuration

- when a resource name is not specified in the URL, apache serves **`index.html`** from the requested path
- hands-on:
  - edit file **`/var/www/html/.htaccess`** and add the following directive:

    `DirectoryIndex custom_file.html`
  - rename previously created file **`/var/www/html/index.html`** to **`custom_file.html`**
  - try accessing **`http://10.0.0.1/`** from **`client`**
  - rename **`custom_file.html`** back to **`index.html`** and try accessing the page again