

FAMP

FreeBSD/Apache/MySQL/PHP

ZSWU

Introduction

- ❑ Web service
 - Apache
 - GWS, Nginx, IIS
- ❑ SQL service
 - MySQL, MariaDB
 - MS SQL, Oracle DB, PostgreSQL
- ❑ NoSQL service
 - MongoDB
- ❑ Web backend language
 - Go, Python, Node.js, PHP

Outline

❑ Introduction

- Apache
- MySQL
- PHP

❑ Installation and Administration

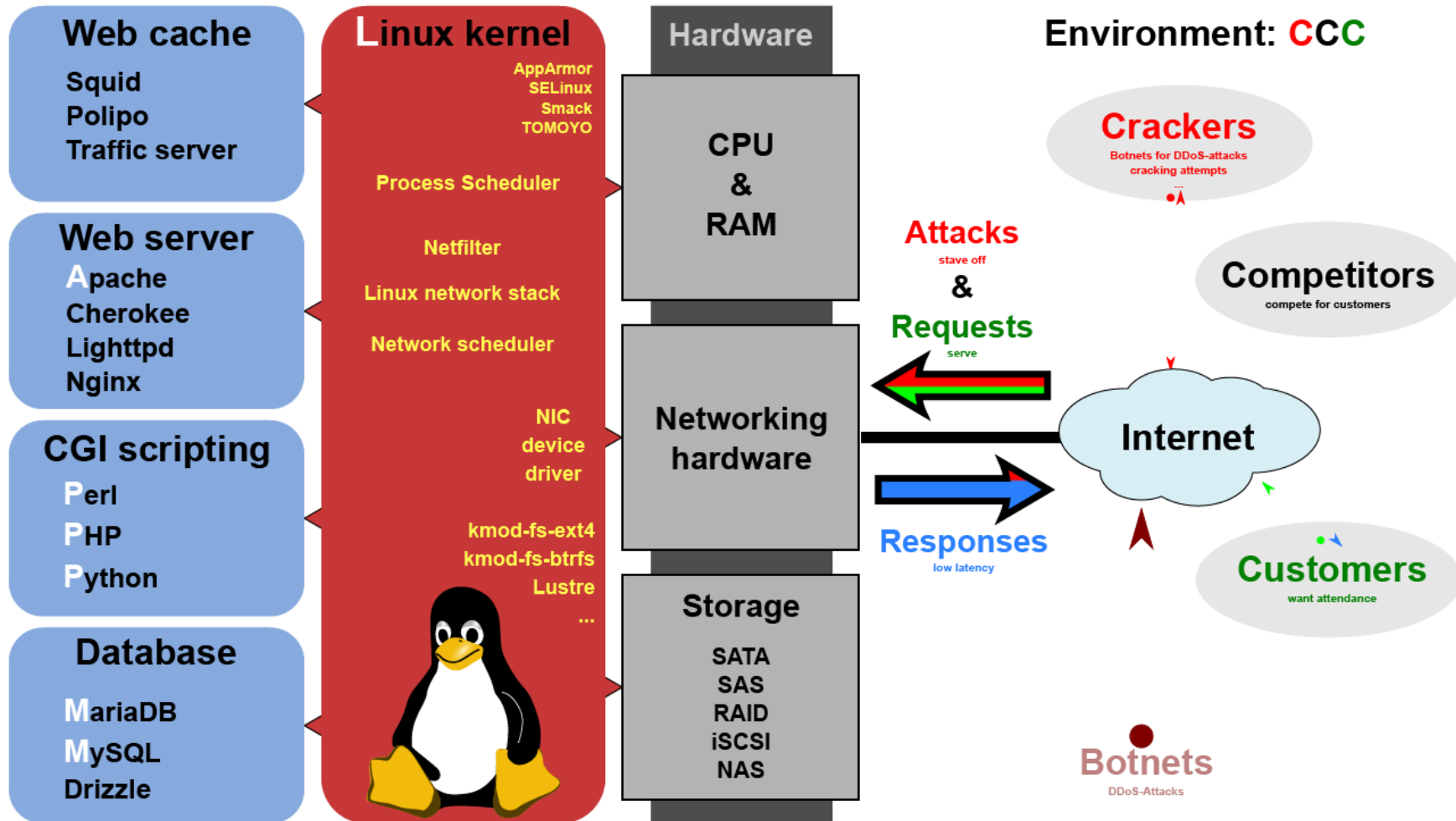
- MySQL
- Apache
- PHP

❑ Appendix

- phpMyAdmin
- lighttpd
- FastCGI

Overview

by Shmuel Csaba Otto Traian; CC BY-SA 4.0; created 2013-09-10, last updated 2014-03-28

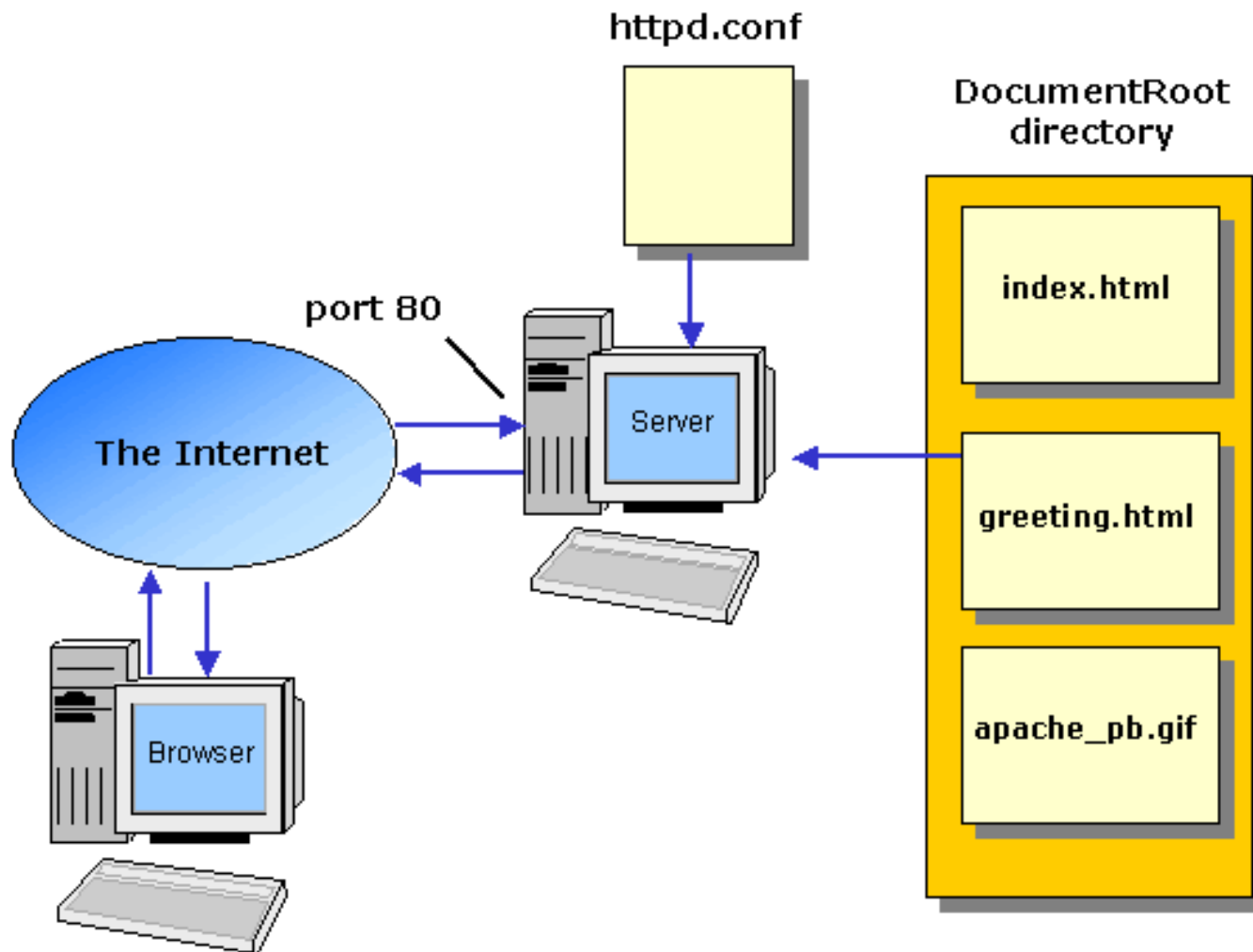


<https://commons.wikimedia.org/w/index.php?curid=28224098>

Apache

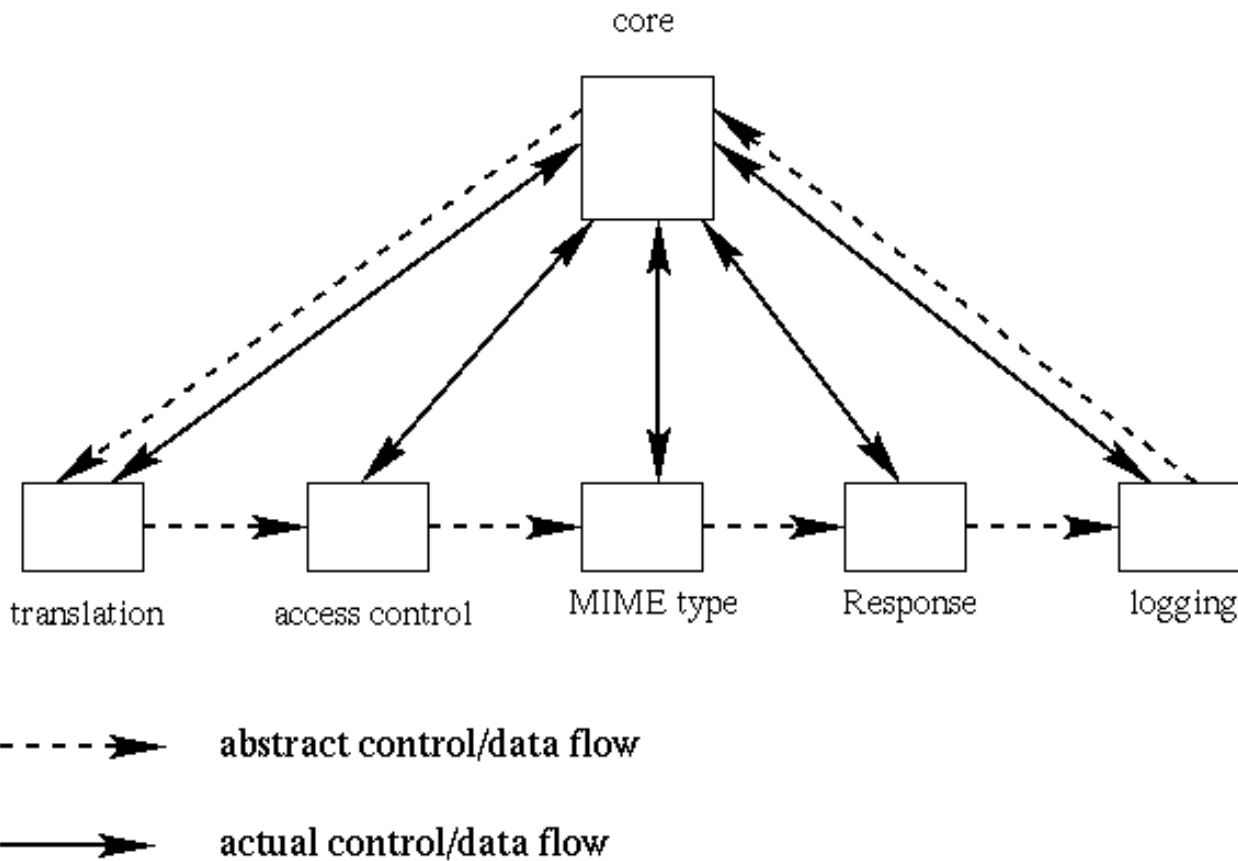
- ❑ Apache Software Foundation: <http://www.apache.org/>
- ❑ Apache HTTP Server Project: <http://httpd.apache.org/>
- ❑ Web httpd server that
 - HTTP/2
 - Modular design
 - Can be customized by writing modules using Apache module API
 - Freely available cross many platforms
- ❑ Two main parts
 - Core: implement basic functions and provide the interface for Apache modules
 - Modules: extend or override the function of Core
 - Example: Access control, logging, CGI, proxy, cache control, PHP...

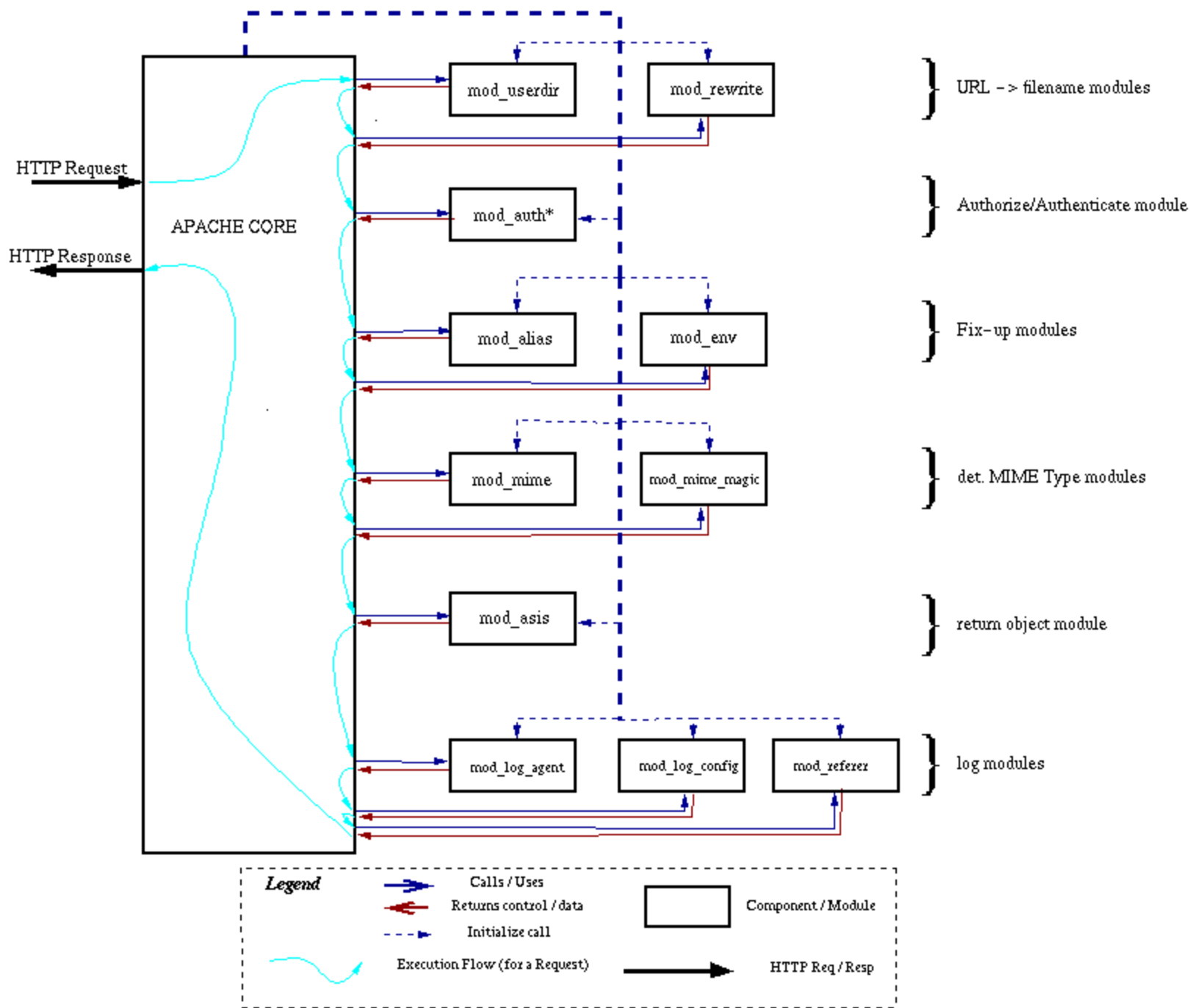
How Apache Works – request and response



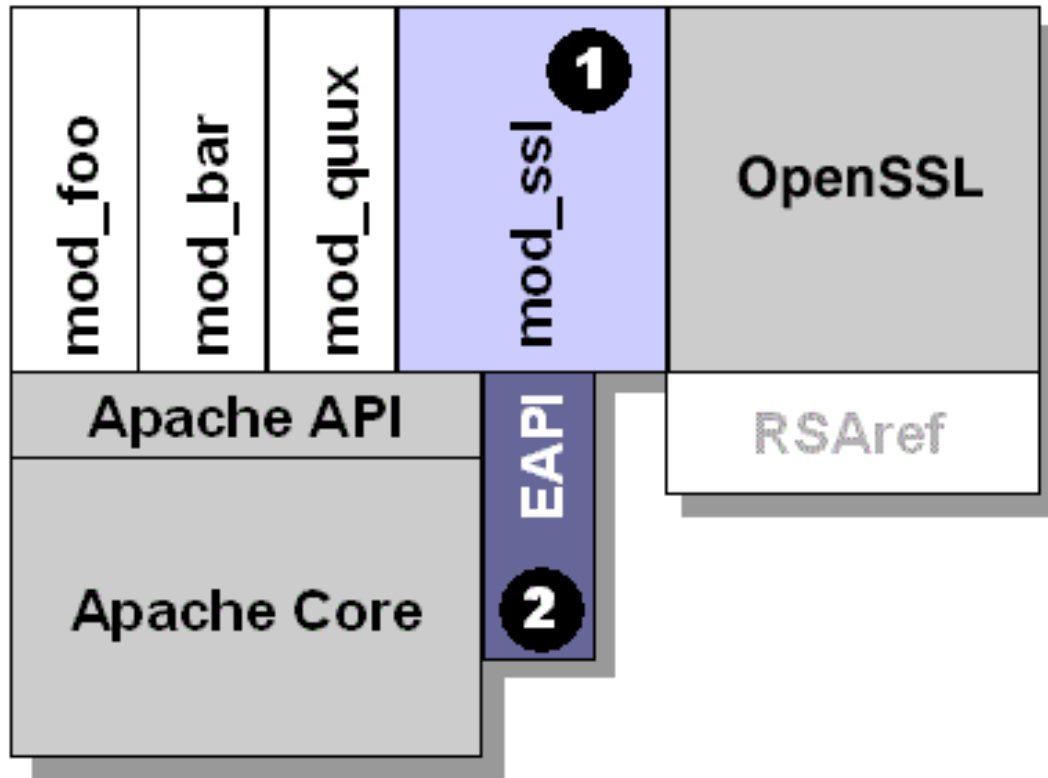
How Apache Works – Each request-response

- Apache breaks client request into several steps which are implemented as modules





Apache with mod_ssl



MySQL (1)

- ❑ SQL (Structured Query Language)
 - The most popular computer language used to create, modify, retrieve and manipulate data from **relational database** management systems.
 - Introduction to SQL: <http://www.1keydata.com/tw/sql/sql.html>
- ❑ A **multithreaded, multi-user, SQL** Database Management System.
- ❑ Owned and sponsored by a Swedish company MySQL AB, acquired by Sun Microsystems 2008.
- ❑ Official Site: <http://www.mysql.com>
- ❑ Documentation: <http://dev.mysql.com/doc>

MySQL (2)

❑ Features:

- Writing in C/C++, tested by many compilers, **portable to many platforms**.
 - AIX, FreeBSD, HP-UX, Linux, Mac OS, Solaris, Windows, ...etc.
- Providing APIs for C/C++, Java, Perl, PHP, Python, Ruby, Tcl, ...etc.
- **Multi-threaded** kernel, supporting systems with multiple CPUs.
- Optimized algorithm for **SQL** Query.
- Multi-Language (coding) Supports.
- Lots of connecting method: TCP/IP, ODBC, JDBC, Unix domain socket.
- **Free Software** (GNU General Public License version 2)
- Popular for web applications

PHP

❑ PHP: Hypertext Preprocessor

- A widely-used Open Source general-purpose scripting language.
- Originally designed to create dynamic web pages, PHP's principal focus is server-side scripting.
- PHP scripts can be embedded into HTML.
- The LAMP architecture has become popular in the Web industry as a way of deploying inexpensive, reliable, scalable, secure web applications.

❑ Official Site: <http://php.net/>

Installation and Administration

MySQL

Apache

PHP

phpMyAdmin

Installing MySQL (1)

□ Steps

- # cd /usr/ports/databases/mysql57-server/
- # make OPTIONS install clean

You may use the following build options:

<code>WITH_CHARSET=charset</code>	Define the primary built-in charset (latin1).
<code>WITH_XCHARSET=list</code>	Define other built-in charsets (may be 'all').
<code>WITH_COLLATION=collate</code>	Define default collation (latin1_swedish_ci).
<code>WITH_OPENSSL=yes</code>	Enable secure connections (define <code>WITHOUT_YASSL</code> for backward compatibility).
<code>WITH_LINUXTHREADS=yes</code>	Use the linuxthreads pthread library.
<code>WITH_PROC_SCOPE_PTH=yes</code>	Use process scope threads (try it if you use libpthread).
<code>WITH_FAST_MUTEXES=yes</code>	Replace mutexes with spinlocks.
<code>BUILD_OPTIMIZED=yes</code>	Enable compiler optimizations (use it if you need speed).
<code>BUILD_STATIC=yes</code>	Build a static version of mysqld. (use it if you need even more speed).
<code>WITH_NDB=yes</code>	Enable support for NDB Cluster.

Installing MySQL (2)

❑ OPTIONS:

- WITH_CHARSET=utf8
- WITH_XCHARSET=ascii,big5,... (all)

❑ Installed...

===> SECURITY REPORT:

This port has installed the following files which may act as **network servers** and may therefore pose a **remote security risk** to the system.
/usr/local/libexec/mysqld

This port has installed the following **startup scripts** which may cause these network services to be started at boot time.
/usr/local/etc/rc.d/mysql-server

Installing MySQL (3)

❑ Startup script...

```
#
# Add the following line to /etc/rc.conf to enable mysql:
# mysql_enable (bool): Set to "NO" by default.
#                               Set it to "YES" to enable MySQL.
# mysql_limits (bool): Set to "NO" by default.
#                               Set it to yes to run `limits -e -U mysql`
#                               just before mysql starts.
# mysql_dbdir (str):  Default to "/var/db/mysql"
#                               Base database directory.
# mysql_args (str):  Custom additional arguments to be passed
#                               to mysqld_safe (default empty).
#
```


Adminstrating MySQL (1)

❑ Configuration file

- Copy config file
 - # cd /usr/local/share/mysql
 - # cp my-huge.cnf /usr/local/etc/my.cnf
- Edit /usr/local/etc/my.cnf

❑ Start mysql daemon

- Using startup script
 - # /usr/local/etc/rc.d/mysql-server start

Administrating MySQL (2)

❑ Test

- % `mysql -u root -p`
 - The initial password for root is empty

```
nasa [/usr/local/etc] -randy- mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 1
Server version: 5.1.41-log FreeBSD port: mysql-server-5.1.41

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+-----+
| Database                |
+-----+
| information_schema      |
| mysql                   |
| test                    |
+-----+
3 rows in set (0.06 sec)
```

Administrating MySQL (3)

❑ Securing initial accounts

- Two initial accounts
 - root
 - anonymous

```
mysql> SELECT Host, User From mysql.user;
+-----+-----+
| Host          | User |
+-----+-----+
| 127.0.0.1     | root |
| nasa.cs.nctu.edu.tw |      |
| nasa.cs.nctu.edu.tw | root |
| localhost    |      |
| localhost    | root |
+-----+-----+
```

```
mysql> UPDATE mysql.user SET Password = PASSWORD('test123') WHERE User = 'root';
Query OK, 3 rows affected (0.08 sec)
Rows matched: 3  Changed: 3  Warnings: 0
```

```
mysql> FLUSH PRIVILEGES;           # Reload the grant tables
Query OK, 0 rows affected (0.00 sec)
```

```
mysql> SET PASSWORD FOR 'root'@'localhost' = PASSWORD('ttt123');
Query OK, 0 rows affected (0.02 sec)
```

Installing Apache (1)

❑ Steps

- # cd /usr/ports/www/apache24/
- # make install clean

❑ Options

- A lot of options for modules
- WITH_SSL (default)
- WITH_MPM=worker
- WITH_THREADS=yes
- WITH_SUEXEC=yes

Installing Apache (2)

❑ Installed...

```
To run apache www server from startup, add apache22_enable="YES"
in your /etc/rc.conf. Extra options can be found in startup script.
```

```
Your hostname must be resolvable using at least 1 mechanism in
/etc/nsswitch typically DNS or /etc/hosts or apache might
have issues starting depending on the modules you are using.
```

```
==> SECURITY REPORT:
    This port has installed the following binaries which execute
with
    increased privileges.
/usr/local/sbin/suexec
```

❑ Startup script

- `/usr/local/etc/rc.d/apache24`
- `apache24_http_accept_enable`

Apache configuration – Configuration files

❑ Location

- The default location of apache (in ports) is /usr/local/etc/apache24
- Major configuration file: httpd.conf
 - Other configuration files could be included. (setting in httpd.conf)
 - extra/httpd-*.conf, Includes/*.conf

❑ Two types

- Global settings
 - Server configurations
 - Options of modules
- Directory Configuration
 - Local setting for certain directory

Apache configuration – Global Settings (httpd.conf)

❑ Server configuration

- Listen 80
- ServerAdmin liuyh@cs.nctu.edu.tw
- ServerName nasa.cs.nctu.edu.tw
- DocumentRoot "/home/wwwadm/data"
 - Remember create DocumentRoot directory if you modify it

❑ Options of modules

❑ Include supplemental configuration files

- Include etc/apache22/extra/httpd-*.conf
- Include etc/apache22/Includes/*.conf

Apache configuration – Directory Configuration (1)

□ Configuration parameters

- Options
 - All
 - ExecCGI
 - FollowSymLinks
 - Indexs
 - MultiViews
 - SymLinksIfOwnerMatch
- <http://httpd.apache.org/docs/2.4/mod/core.html#options>

```
<Directory "/home/wwwadm/data">  
  Options Indexes FollowSymLinks MultiViews  
  AllowOverride None  
  Order allow,deny  
  Allow from all  
</Directory>
```


Apache configuration – Directory Configuration (2)

❑ Configuration parameters

- AllowOverride
 - All (Read .htaccess)
 - None (ignoring .htaccess)
- Order
 - Solve collision of deny and allow rules
- Deny/Allow
 - IP/DN (control access to this directory)

```
<Directory "/home/wwwadm/data">  
  Options Indexes FollowSymLinks MultiViews  
  AllowOverride None  
  Order allow,deny  
  Allow from all  
</Directory>
```

Apache configuration – Options of Modules

❑ dir_module

```
<IfModule dir_module>  
  DirectoryIndex index.html  
</IfModule>
```

❑ alias_module (http://httpd.apache.org/docs/2.2/mod/mod_alias.html)

```
<IfModule alias_module>  
  Redirect /foo http://www.example.com/bar  
  Alias /webpath /full/filesystem/path  
  ScriptAlias /cgi-bin/ "/usr/local/www/apache22/cgi-bin/"  
</IfModule>
```

❑ mime_module

```
DefaultType text/plain  
<IfModule mime_module>  
  TypesConfig etc/apache22/mime.types  
  AddType application/x-compress .Z  
  AddHandler cgi-script .cgi  
</IfModule>
```

Supplemental configuration – httpd-mpm.conf (Multi-Processing Module)

- ❑ Server-pool management (MPM specific)
 - Include etc/apache22/extra/httpd-mpm.conf
- ❑ WITH_MPM
 - prefork: non-threaded, pre-forking
 - worker: hybrid multi-process multi-threaded

```
<IfModule mpm_worker_module>  
  StartServers      2  
  MaxClients        150  
  MinSpareThreads   25  
  MaxSpareThreads   75  
  ThreadsPerChild   25  
  MaxRequestsPerChild 0  
</IfModule>
```

Supplemental configuration – httpd-userdir.conf

❑ User home directories

- Include etc/apache22/extra/httpd-userdir.conf

```
UserDir public_html
UserDir disabled root toor daemon operator bin tty kmem games news man
sshd bind proxy _pflogd _dhcp uucp pop www nobody mailnull smmsp

<Directory "/home/*/public_html">
  AllowOverride FileInfo AuthConfig Limit Indexes
  Options MultiViews Indexes SymLinksIfOwnerMatch IncludesNoExec
  <Limit GET POST OPTIONS>
    Order allow,deny
    Allow from all
  </Limit>
  <LimitExcept GET POST OPTIONS>
    Order deny,allow
    Deny from all
  </LimitExcept>
</Directory>
```

- Methods: <http://www.w3.org/Protocols/rfc2616/rfc2616-sec9.html>

Supplemental configuration – httpd-vhosts.conf

❑ Virtual hosts

- Include
etc/apache24/extra/httpd-vhosts.conf
- Name-based
 - NameVirtualHost
 - <VirtualHost>
- IP-based
 - <VirtualHost>
- ServerName
- DocumentRoot

```
Listen 80
Listen 8080

NameVirtualHost 172.20.30.40:80
NameVirtualHost 172.20.30.40:8080
<VirtualHost 172.20.30.40:80>
    ServerName www.example.com
    DocumentRoot /www/domain-80
</VirtualHost>
<VirtualHost 172.20.30.40:8080>
    ServerName www.example.com
    DocumentRoot /www/domain-8080
</VirtualHost>
<VirtualHost 172.20.30.40:80>
    ServerName www.example.org
    DocumentRoot /www/otherdomain-80
</VirtualHost>
<VirtualHost 172.20.30.40:8080>
    ServerName www.example.org
    DocumentRoot /www/otherdomain-8080
</VirtualHost>
```

- <http://httpd.apache.org/docs/2.2/vhosts/>

Supplemental configuration – More...

- ❑ Multi-language error messages
 - `httpd-multilang-errordoc.conf`
- ❑ Fancy directory listings
 - `httpd-autoindex.conf`
- ❑ Language settings
 - `httpd-languages.conf`
- ❑ Real-time info on requests and configuration
 - `httpd-info.conf`
- ❑ Local access to the Apache HTTP Server Manual
 - `httpd-manual.conf`
- ❑ Various default settings
 - `httpd-default.conf`

Other configuration for Apache – log

- ❑ Rotate your log using newsyslog
- ❑ In httpd config
 - ErrorLog "/var/log/httpd-error.log"
 - TransferLog "/var/log/httpd-access.log"

```
/var/log/httpd-access.log 640 5 * @T00 z /var/run/httpd.pid  
/var/log/httpd-error.log 640 5 * @T00 z /var/run/httpd.pid
```

- ❑ In startup script
 - _pidprefix="/var/run/httpd"
 - pidfile="\$ {_pidprefix}.pid"

.htaccess (1)

❑ .htaccess

- Allow admin or users to control access to certain directory

❑ Usage

- Modify httpd.conf
- Create .htaccess file
- Generate password database
- Test

.htaccess (2)

❑ Example

- Modify httpd.conf
- Create .htaccess file
- Generate password file

```
<Directory "/home/wwwadm/data/test1">
  Options None
  AllowOverride All
  Order allow,deny
  Allow from all
</Directory>
```

```
$ cat .htaccess
AuthName "SA-test1"
AuthType "Basic"
AuthUserFile "/home/wwwadm/data/test1/.htpasswd"
Require valid-user
Options Indexes
```

```
$ htpasswd -c ./htpasswd SA-user1
New password:
Re-type new password:
Adding password for user SA-user1
```

.htaccess (3)

❑ You can use these tools to generate .htaccess

- <http://www.linuxkungfu.org/tools/htaccesser/index.php>
- <http://www.htaccesseditor.com/>



Installing PHP (1)

□ Steps

- # cd /usr/ports/lang/php5
- # make config
 - Remember to choose Apache module
- # make install clean (in 2009 SA course)

```
# make install clean
==>  php5-5.2.11_1 has known vulnerabilities:
=>  php -- multiple vulnerabilities.
     Reference: <http://portaudit.FreeBSD.org/39a25a63-eb5c-11de-b650-
00215c6a37bb.html>
=>  Please update your ports tree and try again.
*** Error code 1

Stop in /usr/ports/lang/php5.
*** Error code 1

Stop in /usr/ports/lang/php5.
```

- <http://www.freshports.org/lang/php5>

Installing PHP (2)

❑ Installed...

```
Make sure index.php is part of your DirectoryIndex.
```

```
You should add the following to your Apache  
configuration file:
```

```
AddType application/x-httpd-php .php  
AddType application/x-httpd-php-source .phps
```

- For use of Apache, you should restart apache to load php5_module

❑ Install php5-extensions

- # cd /usr/ports/lang/php5-extensions
- # make install clean
 - Choose what you need
 - Remember to choose mysql module
- Or installing from /usr/ports/*/php5-
 - databases/php5-mysql

Installing PHP7 (1)

□ Steps

- # pkg install php71 php71-mysqli mod_php71 \ php71-mbstring php71-gd php71-json php71-mcrypt \ php71-zlib php71-curl
- # vim /usr/local/etc/apache24/Includes/php.conf

```
<IfModule dir_module>
  DirectoryIndex index.php index.html
  <FilesMatch "\.php$" >
    SetHandler application/x-httpd-php
  </FilesMatch>
  <FilesMatch "\.phps$" >
    SetHandler application/x-httpd-php-source
  </FilesMatch>
</IfModule>
```

Test PHP5 in apache

❑ Edit httpd.conf

- % mkdir -p /home/wwwadm/data
- % cd /usr/local/etc/apache24/
- Edit httpd.conf

```
<IfModule mime_module>
...
AddType application/x-httpd-php .php .phtml .php5
AddType application/x-httpd-php-source .phps
...
</IfModule>
```

```
<IfModule dir_module>
    DirectoryIndex index.php index.html
</IfModule>
```

Test PHP7 in apache (2)

❑ Start apache

- `/usr/local/etc/rc.d/apache24 start`
- `service apache24 restart`

❑ Test PHP

- `# vim /usr/local/www/apache24/data/index.php`

```
<?  
    phpinfo ();  
?>
```

phpinfo()

PHP Version 7.1.10



System	FreeBSD tbsdweicc 11.1-RELEASE FreeBSD 11.1-RELEASE #0 r321309: Fri Jul 21 02:08:28 UTC 2017 root@releng2.nyi.freebsd.org:/usr/obj/usr/src/sys/GENERIC amd64
Build Date	Nov 17 2017 07:06:25
Configure Command	'./configure' '--with-layout=GNU' '--localstatedir=var' '--with-config-file-scan-dir=/usr/local/etc/php' '--disable-all' '--enable-libxml' '--enable-mysqlnd' '--with-libxml-dir=/usr/local' '--with-pcre-regex=/usr/local' '--program-prefix=' '--disable-cli' '--disable-cgi' '--with-apxs2=/usr/local/sbin/apxs' '--enable-dtrace' '--prefix=/usr/local' '--mandir=/usr/local/man' '--infodir=/usr/local/info' '--build=amd64-portbsd-freebsd11.0' 'build_alias=amd64-portbsd-freebsd11.0' 'CFLAGS=-O2 -pipe -fstack-protector -fno-strict-aliasing' 'CPPFLAGS=' 'CPP=cpp'
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/usr/local/etc
Loaded Configuration File	(none)
Scan this dir for additional .ini files	/usr/local/etc/php
Additional .ini files parsed	/usr/local/etc/php/ext-20-curl.ini, /usr/local/etc/php/ext-20-gd.ini, /usr/local/etc/php/ext-20-json.ini, /usr/local/etc/php/ext-20-mbstring.ini, /usr/local/etc/php/ext-20-mcrypt.ini, /usr/local/etc/php/ext-20-mysqli.ini, /usr/local/etc/php/ext-20-zlib.ini
PHP API	20160303
PHP Extension	20160303
Zend Extension	320160303
Zend Extension Build	API320160303,NTS
PHP Extension Build	API20160303,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	provided by mbstring
IPv6 Support	enabled
DTrace Support	available, disabled
Registered PHP Streams	php, file, glob, data, http, ftp, compress.zlib
Registered Stream Socket Transports	tcp, udp, unix, udg
Registered Stream Filters	string.rot13, string.toupper, string.tolower, string.strip_tags, convert.*, consumed, dechunk, mcrypt.*, mdecrypt.*, zlib.*

This program makes use of the Zend Scripting Language Engine:
Zend Engine v3.1.0, Copyright (c) 1998-2017 Zend Technologies

zend®engine



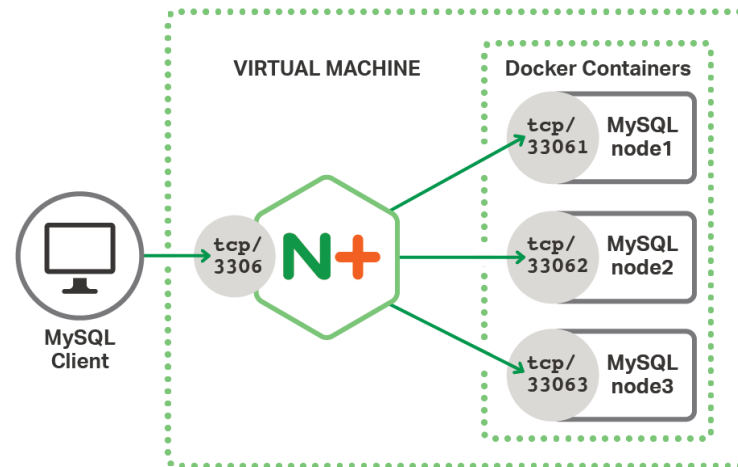
Architecture

cluster

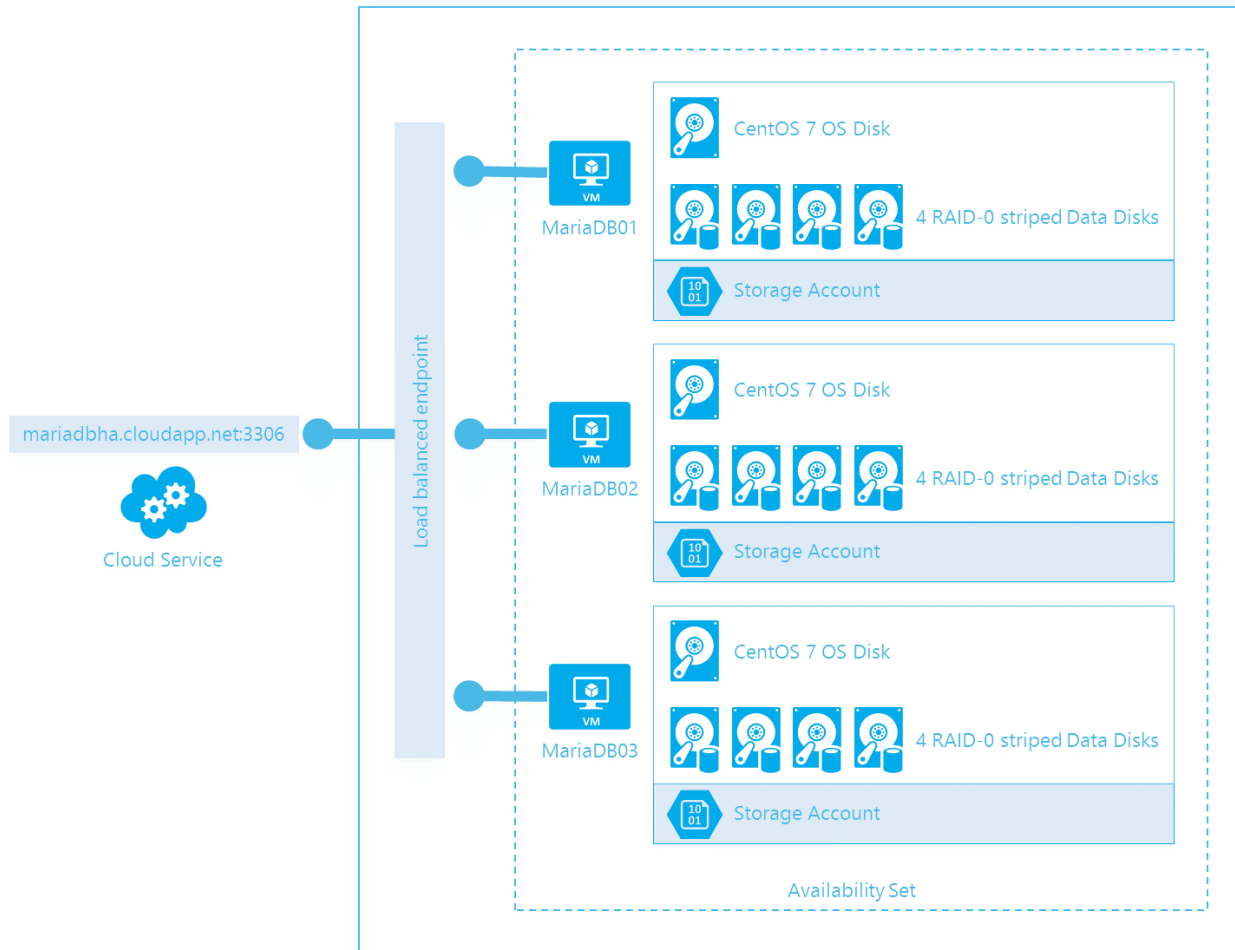
Load balance

❑ Nginx proxy

```
upstream backend {
    server 172.16.1.1:3000;
    server 172.16.1.2:3000;
}
server {
    listen 80;
    server_name www.example.com;
    location / {
        proxy_pass http://backend;
    }
}
```



MySQL cluster



Up to 150 users

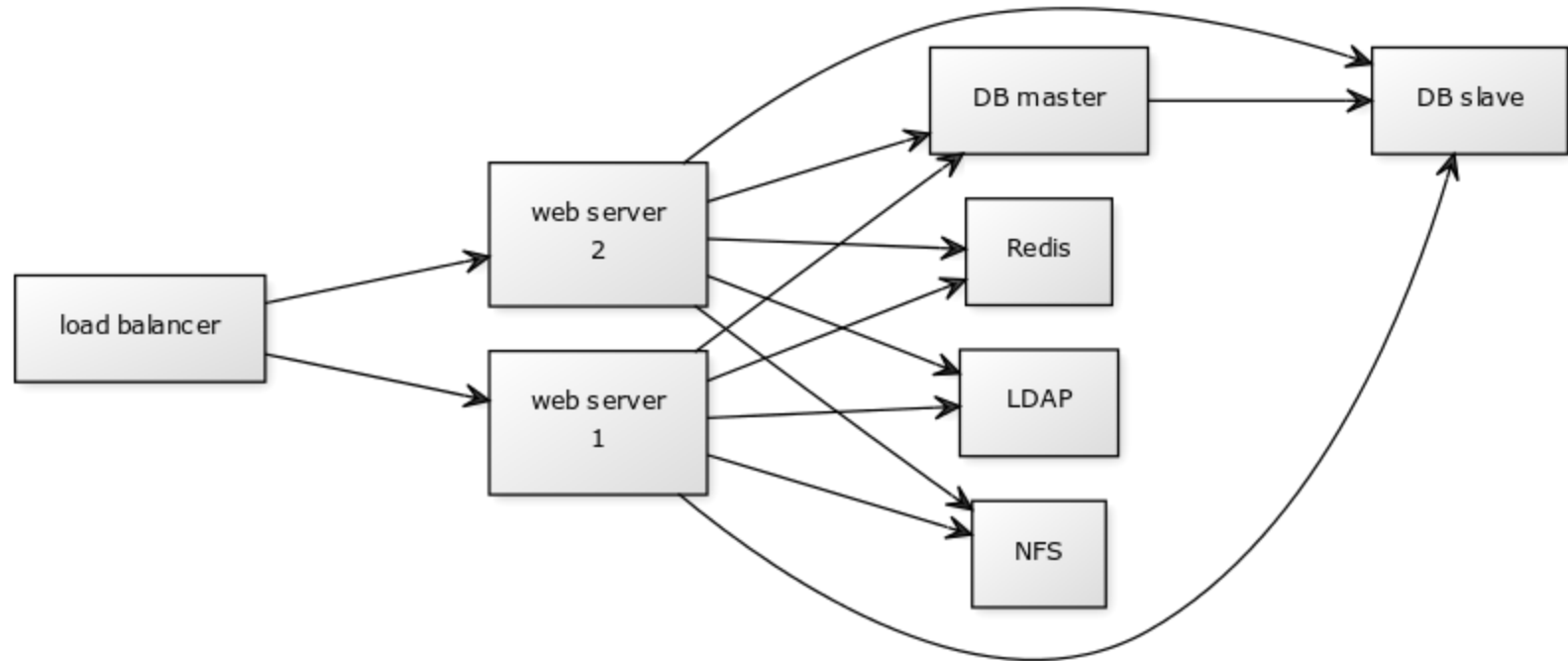


One machine running the application server.

- Web server
- database server
- local storage

Authentication via an existing LDAP or Active Directory server.

150 to 1,000 users

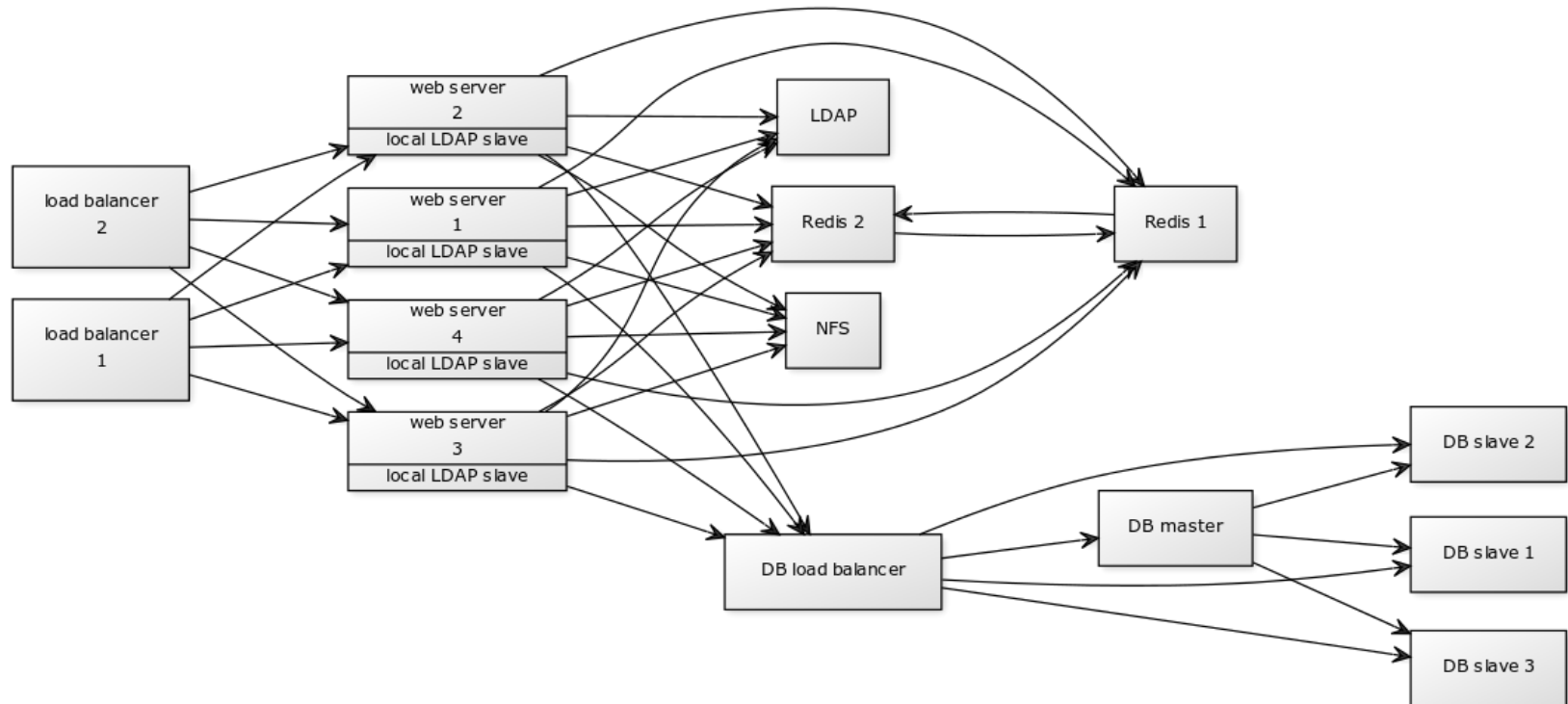


High availability level

Every component is fully redundant and can fail without service interruption.

Backups without service interruption

5,000 to >100,000 users



4 to 20 application/Web servers.

A cluster of two or more database servers

- behind a load balancer to send all writes to the master and reads to the slaves.
- Storage is an NFS server, or an object store that is S3 compatible.

Appendix

phpMyAdmin

lighttpd

FastCGI

phpMyAdmin

- ❑ phpMyAdmin can manage a whole MySQL server as well as a single database over the World Wide Web.
- ❑ Official Site: <http://www.phpmyadmin.net/>
- ❑ Documentation: <http://www.phpmyadmin.net/documentation/>
- ❑ Features
 - Browser-based, Supporting PHP5.3+, MySQL 5.0+, Open Source
- ❑ There are four authentication modes offered:
 - http
 - cookie
 - signon
 - config (the less secure one, not recommended).

Installing phpMyAdmin (1)

❑ databases/phpmyadmin

- # make install clean

❑ Installed...

```
phpMyAdmin-4.7.4 has been installed into:  
/usr/local/www/phpMyAdmin
```

Please edit `config.inc.php` to suit your needs.

To make phpMyAdmin available through your web site, I suggest that you add something like the following to `httpd.conf`:

```
Alias /phpmyadmin/ "/usr/local/www/phpMyAdmin/"
```

```
<Directory "/usr/local/www/phpMyAdmin/">
```

```
Options none
```

```
AllowOverride Limit
```

```
Order Deny,Allow
```

```
Deny from all
```

```
Allow from 127.0.0.1 .example.com
```

```
</Directory>
```

Installing phpMyAdmin (2)

❑ config.inc.php

- Override libraries/config.default.php

❑ config.sample.inc.php

- `$cfg['blowfish_secret']`

Adminstrating MySQL – Using phpMyAdmin (2)



歡迎使用 phpMyAdmin

語彙 - *Language*

中文 - Chinese traditional

登入 

使用者名稱:

密碼:

執行

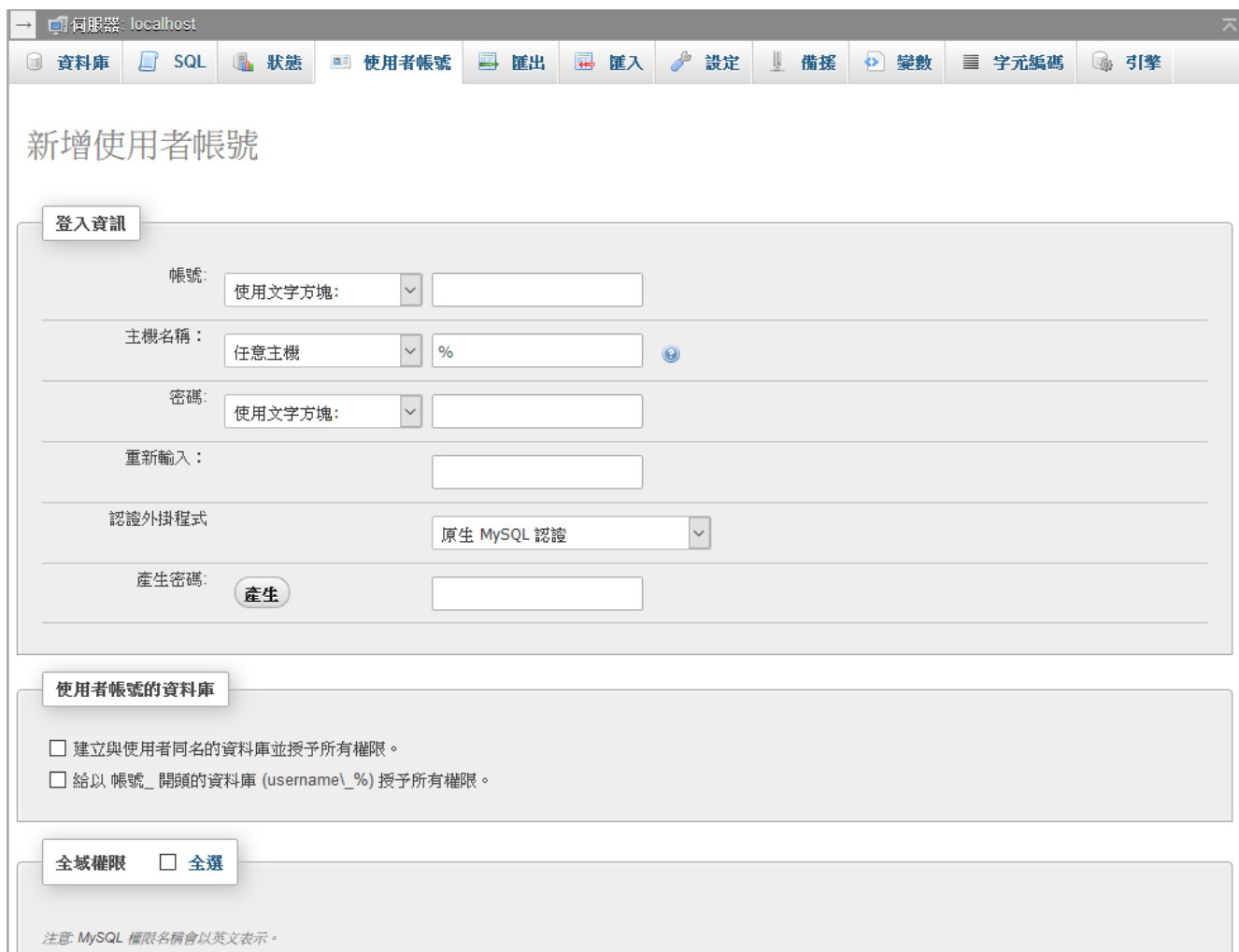
Administrating MySQL – Using phpMyAdmin (3)

The screenshot displays the phpMyAdmin web interface for a MySQL server on localhost. The interface is organized into several panels:

- Navigation Panel (Left):** Lists various databases including 'absolaser', 'comblaser', 'comblasert', 'demo', 'demoams', 'information_schema', 'moviesystem', 'mysql', 'performance_schema', 'phpmyadmin', 'technology', 'testkevin', and 'video'.
- Server Information (Top Right):**
 - 伺服器: Localhost via UNIX socket
 - 伺服器類別: MariaDB
 - 伺服器版本: 10.0.31-MariaDB-0ubuntu0.16.04.2 - Ubuntu 16.04
 - 協定版本: 10
 - 使用者: root@localhost
 - 伺服器字元集: UTF-8 Unicode (utf8)
- Appearance Settings (Middle Right):**
 - 語系 - Language: 中文 - Chinese traditional
 - 主題: pmahomme
 - 字體大小: 82%
- System Information (Bottom Right):**
 - nginx/1.10.3
 - 資料庫用戶端版本: libmysql - mysqlnd 5.0.12-dev - 20150407 - \$Id: b5c5906d452ec590732a93b051f3827e0274\$
 - PHP 擴充套件: mysql
 - PHP 版本: 7.0.22-0ubuntu0.16.04.1

Adminstrating MySQL – Using phpMyAdmin (4)

❑ Create another user with limited privilege



The screenshot shows the 'Add User' (新增使用者帳號) form in phpMyAdmin. The form is divided into three sections: 'Login Information' (登入資訊), 'User Account Database' (使用者帳號的資料庫), and 'Global Privileges' (全域權限).

登入資訊

- 帳號: 使用文字方塊: [text input]
- 主機名稱: 任意主機 [dropdown] % [text input]
- 密碼: 使用文字方塊: [text input]
- 重新輸入: [text input]
- 認證外掛程式: 原生 MySQL 認證 [dropdown]
- 產生密碼: [button] [text input]

使用者帳號的資料庫

- 建立與使用者同名的資料庫並授予所有權限。
- 給以 帳號_ 開頭的資料庫 (username_%) 授予所有權限。

全域權限 全選

注意: MySQL 權限名稱會以英文表示。

PopSQL & SQLpro (1)

The screenshot displays the PopSQL web interface. On the left, a SQL query is entered in a text area:

```
1 select
2   date_trunc('week', orderdate) as week,
3   count(1)
4 from orders
5 where orderdate between '2004-01-01' and '2004-02-28'
6 group by 1
7 order by 1
8 limit 5
```

On the right, the results are shown in two panels. The top panel is a line chart titled "Success" with "5 rows" and a execution time of "0,146 seconds". The chart shows the count of orders per week from late December 2003 to late January 2004. The bottom panel is a table titled "Success" with "5 rows" and a execution time of "0,145 seconds".

week	count
2003-12-29 00:00:00-08	125
2004-01-05 00:00:00-08	238
2004-01-12 00:00:00-08	225
2004-01-19 00:00:00-08	210
2004-01-26 00:00:00-08	241

<https://popsql.io/>

PopSQL & SQLpro (2)

The screenshot shows the SQLPro for Postgres interface. The left sidebar displays a database schema for 'dvdrental'. The main window shows a query execution window with the following SQL code:

```
1 SELECT * FROM nicer_but_slower_film_list LIMIT 100;
2 select * from city
```

The query results are displayed in a table with the following columns: fid, title, description, category, price, length, rating, and RockD. The table contains 20 rows of data, including titles like 'Academy Dinosaur', 'Ace Goldfinger', 'Adaptation Holes', 'Affair Prejudice', 'African Egg', 'Agent Truman', 'Airplane Sierra', 'Airport Pollock', 'An Alabama Devil', 'Aladdin Calendar', 'Alamo Videotape', 'Alaska Phantom', 'Ali Forever', 'Alice Fantasia', 'Alien Center', 'Alley Evolution', 'Alone Trip', 'Alter Victory', 'Amadeus Holy', and 'Amelie Hellfighters'.

At the bottom of the window, it says: "Finished with 100 records. 0.217 seconds."



Installing lighttpd

- ❑ `www/lighttpd`
 - Official: <http://www.lighttpd.net/>
- ❑ Configuration files
 - `/usr/local/etc/lighttpd/{lighttpd,modules}.conf`
 - `/usr/local/etc/lighttpd/{vhosts,conf}.d/`
- ❑ Startup script
 - `/usr/local/etc/rc.d/lighttpd`
- ❑ Documentation:
 - `/usr/ports/www/lighttpd/work/lighttpd-1.4.28/doc/*.txt`
 - `alias, cgi, dirlisting, fastcgi, ssl, userdir`
 - Virtual hosts: `evhost, mysqlvhost, simple-vhost`

FastCGI

- ❑ FastCGI is actually CGI with only a few extensions.
 - FastCGI is language-independent.
 - FastCGI run applications in processes isolated from the core Web server, which provides greater security than APIs.
 - FastCGI developers are committed to propagating FastCGI as an open standard. (C/C++, Java, Perl, Tcl)
 - FastCGI is not tied to the internal architecture of any Web server and is therefore stable even when server technology changes.

- ❑ Benefits:
 - Distributed computing
 - Multiple and extensible roles

- ❑ Official site: <http://www.fastcgi.com/drupal/>