

FAMP:

FreeBSD Apache MySQL PHP

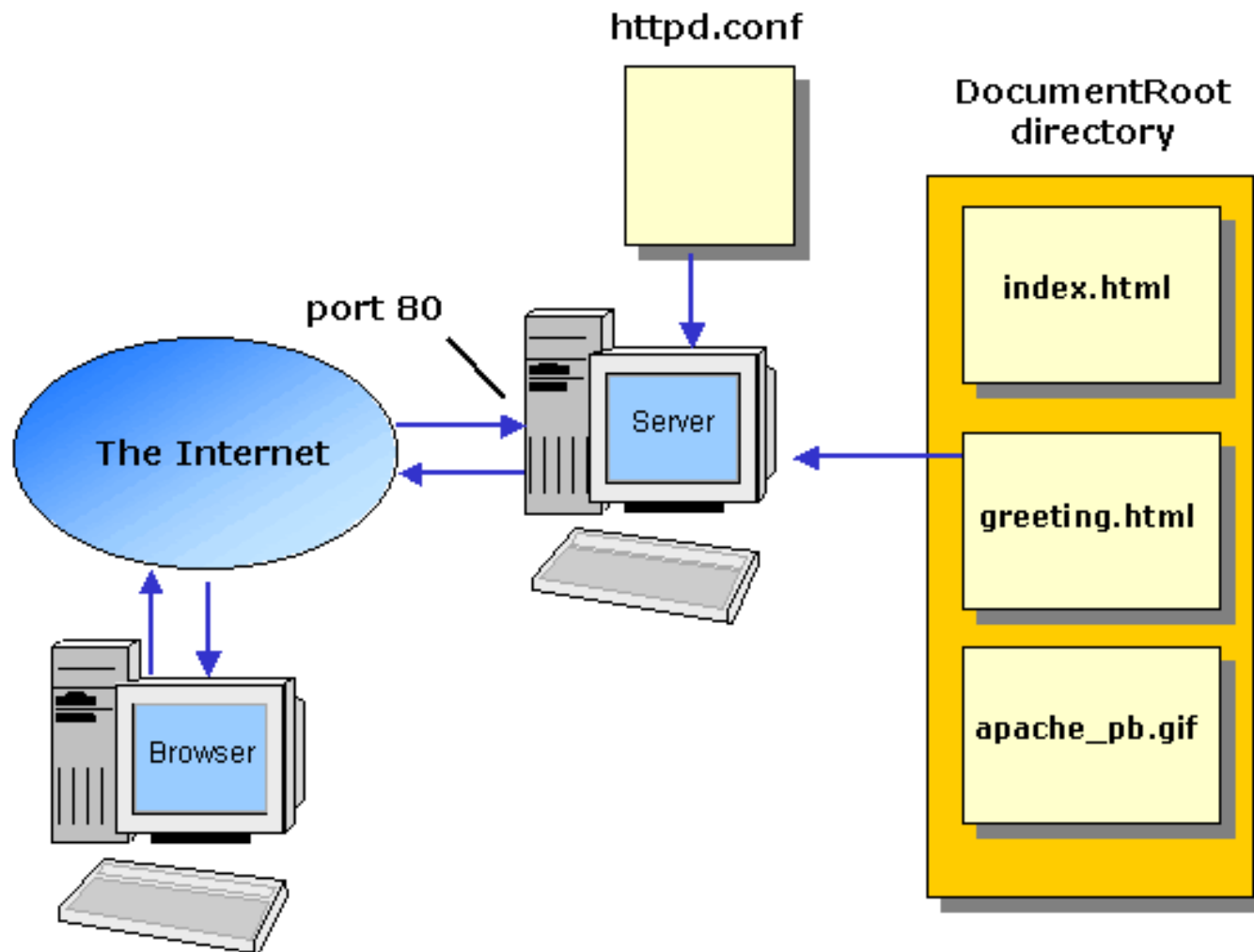
# Outline

- ◉ Introductions
  - > Apache
  - > MySQL
  - > PHP
- ◉ Installation
  - > Apache + MySQL + PHP
- ◉ Administration
  - > Apache
  - > MySQL
- ◉ Appendix
  - > lighttpd

# Apache Software Foundation & Apache HTTP Server Project

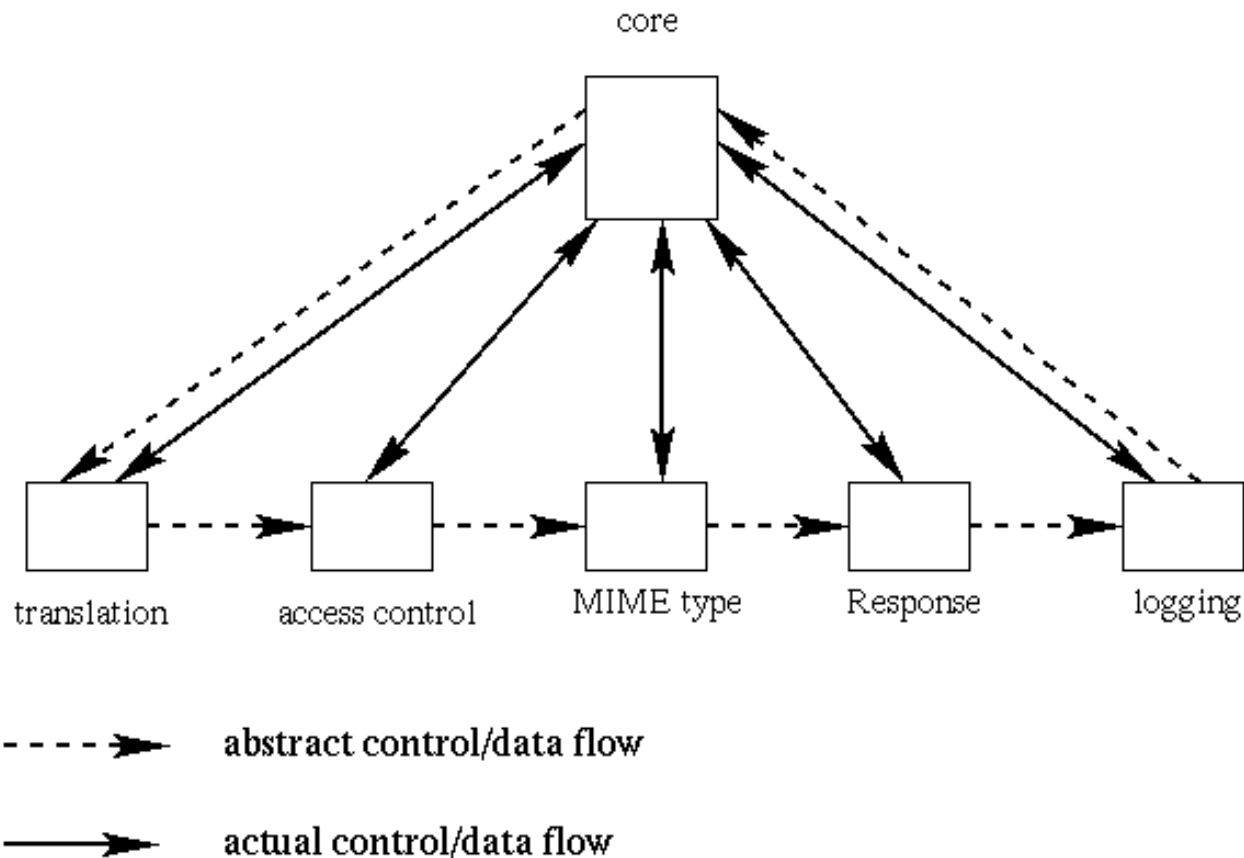
- Apache Software Foundation: <http://www.apache.org/>
- Apache HTTP Server Project: <http://httpd.apache.org/>
- Web httpd server that
  - > HTTP/1.1 compliant web server
  - > Modular design
  - > Can be customized by writing modules using Apache module API
  - > Freely available cross many platforms
- Two main parts
  - > core
    - Implement basic functions
  - > Modules
    - Extend or override the functionality of the server
    - Example:
      - Access control, logging, CGI, proxy, cache control, PHP...

# How Apache Works – request and response

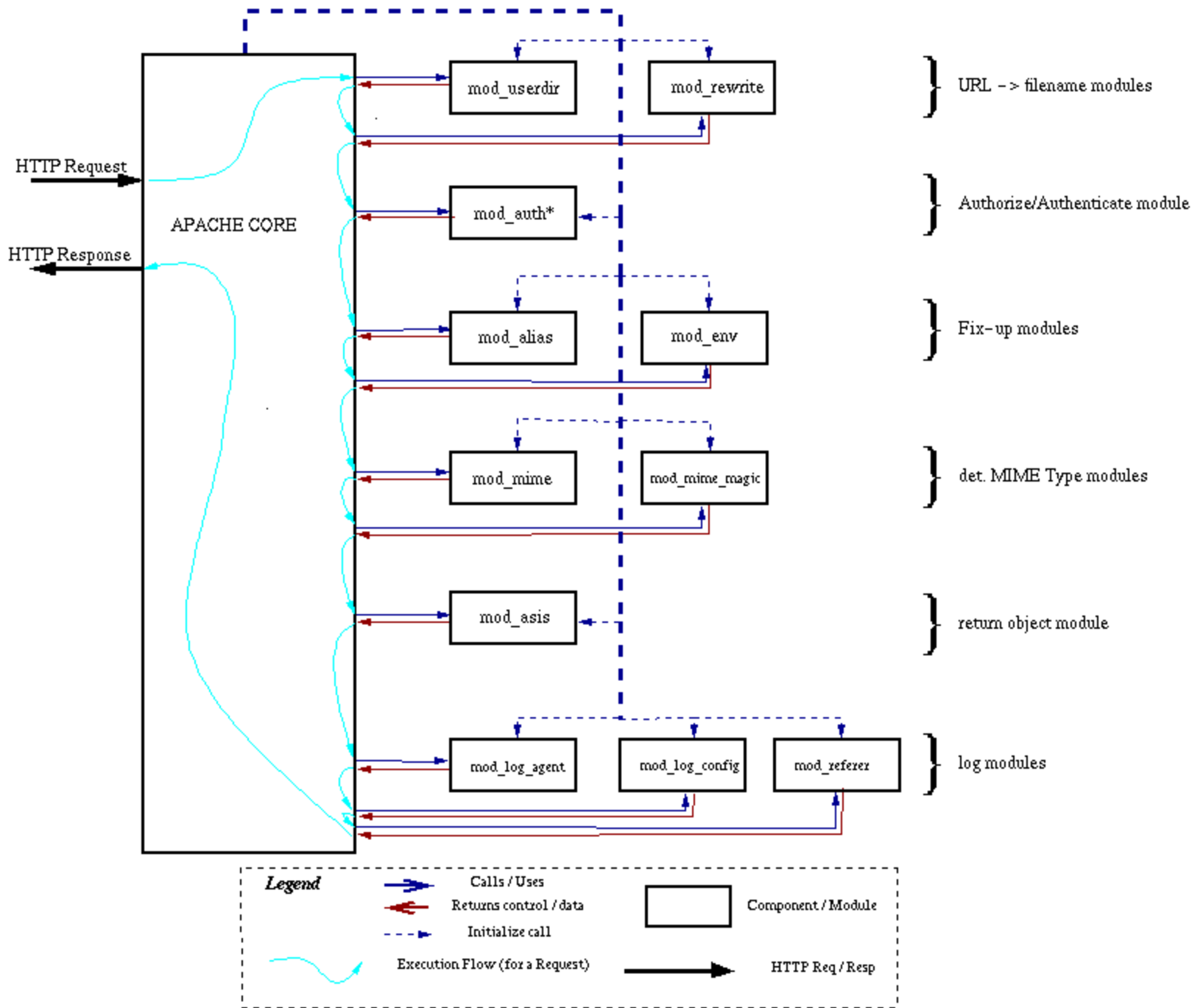


# How Apache Works – Each request-response

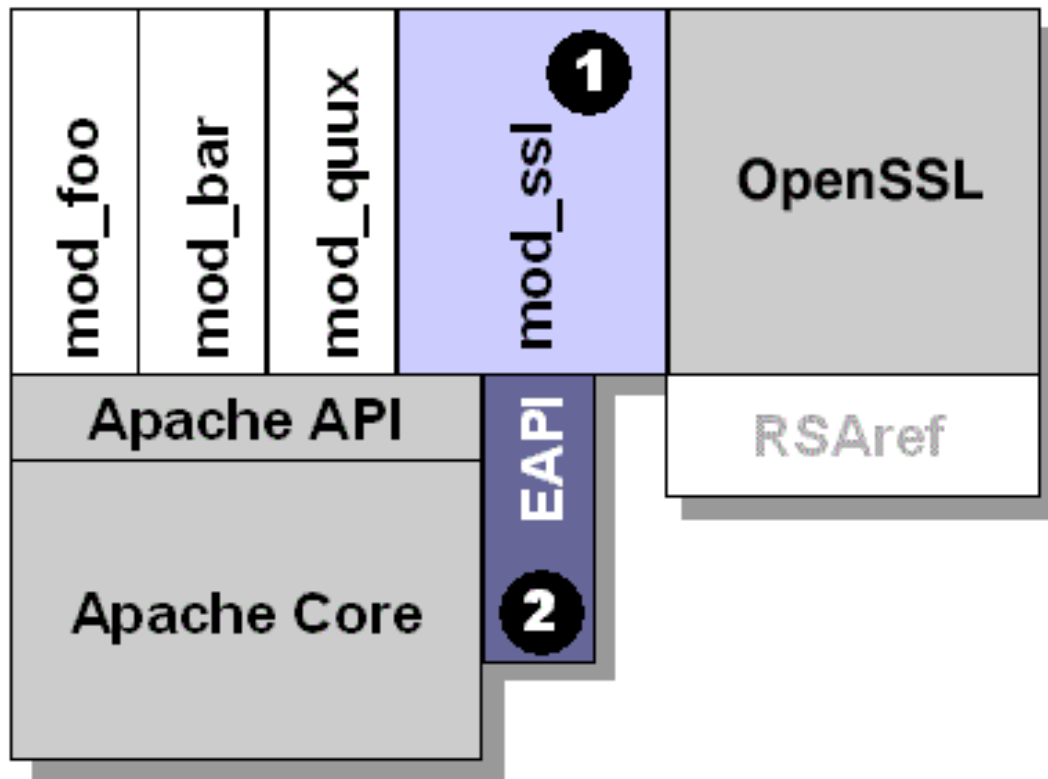
- Apache breaks client request into several steps which are implemented as modules



# A p a c h e D e t a i l



# Apache with mod\_ssl



# MySQL (1)

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



# MySQL (2)

## ◎ Characteristics:

- > 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)

# PHP

- ◎ PHP: Hypertext Preprocessor (<http://php.net/>)
  - > 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.
    - PHP is commonly used as the P in this bundle alongside Linux, Apache and MySQL.
    - FAMP replaces Linux with FreeBSD, WAMP replaces Linux with Windows.

# Installation

# Install Sequence – MySQL

## ◎ Steps

- > # cd/usr/ports/databases/mysql51-server/
- > # make WITH\_XCHARSET=all install clean

## ◎ Add into rc.conf

- > mysql\_enable="YES"

## ◎ Start up

- > # /usr/local/etc/rc.d/mysql-server start

# Install Sequence – Openssl and Apache

## ◎ Steps

- > `cd /usr/ports/www/apache22/`
- > `make config`
  - `WITH_CHARSET=utf8`
  - `WITH_XCHARSET=all`
  - `WITH_MPM=worker`
  - `WITH_THREADS=yes`
  - `WITH_SUEXEC=yes WITH_BERKELEYDB=db4`
  - `WITH_STATIC_SUPPORT=yes`
  - `WITH_ALL_STATIC_MODULES=yes`
- > `Make install clean`

## ◎ Add into `/etc/rc.conf`

- > `apache22_enable="YES"`

## ◎ Start up

- > `/usr/local/etc/rc.d/apache22 start`

# Install Sequence – PHP

## ◎ Steps

- > # cd /usr/ports/lang/php5
- > # make install clean
  - Remember to choose Apache module

## ◎ Install php5-extensions

- > # cd /usr/ports/lang/php5-extensions
- > # make install clean
  - Choose what you need
- > Or installing from /usr/ports/\*/php5-\*

# Install Sequence – test PHP with Apache (1)

- Edit httpd.conf to support php
  - > /usr/local/etc/apache22/httpd.conf

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

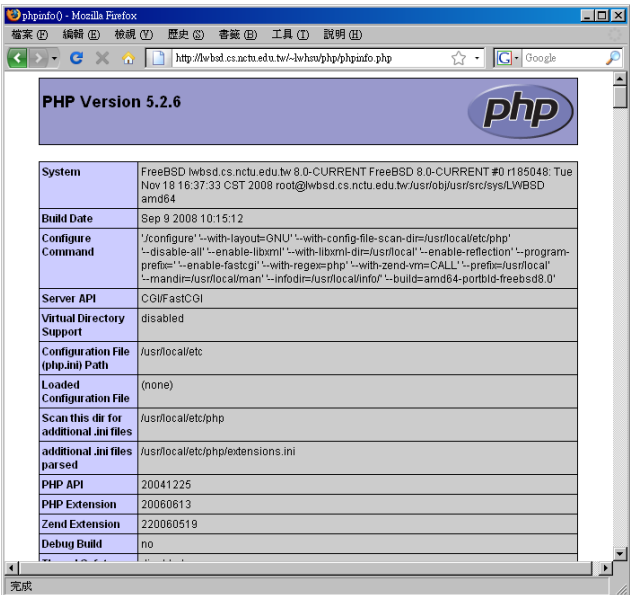
```
ServerName lwbsd.cs.nctu.edu.tw
# DocumentRoot "/usr/local/www/apache22/data"
DocumentRoot "/home/wwwadm/data"
...
# <Directory "/usr/local/www/apache22/data ">
<Directory "/home/wwwadm/data">
```

```
<IfModule mod_dir.c>
    DirectoryIndex index.php index.html index.htm
</IfModule>
```

# Install Sequence – test PHP with Apache (2)

- Restart httpd
  - > # /usr/local/etc/rc.d/apache22 restart
- Test PHP with Apache
  - > \$ Edit /home/wwwadm,/data/index.php

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





# Administration

# Apache configuration

## ◎ Location

- > The default location of apache (in ports) is `/usr/local/etc/apache22`
- > Major configuration file: `httpd.conf`
  - Other configuration files could be included. (setting in `httpd.conf`)

## ◎ Two types

- > Global configurations
  - Global setting
  - Server specific setting
  - Virtual host setting
- > Directory Configuration
  - Local setting for certain directory

# Apache configuration – Global Configuration

- ◎ Global setting
  - > ServerType standalone
  - > Timeout 300
  - > KeepAlive On
  - > KeepAliveRequests 100
  - > StartServers 5
- ◎ Server configuration
  - > Port 80
  - > ServerAdmin lwhsu@cs.nctu.edu.tw
  - > ServerName lwbsd.cs.nctu.edu.tw
  - > DocumentRoot "/home/wwwadm/data"

# Apache configuration – Directory Configuration (1)

- Configuration parameters
  - > Options
    - All (turn on all options except multiview)  
(To allow executions of)
    - ExecCGI  
AddHandler
    - FollowSymLinks (access files outside this directory)  
(generate file-list for browsing)  
(when there is no DirectoryIndex files)
    - Indexs (multi-language support)
    - MultiViews
  - > AllowOverride
    - All (Read .htaccess)
    - None (ignoring .htaccess)
  - > Deny/Allow
    - IP/DN (control access to this directory)
  - > Order
    - Solve collision of deny and allow rules

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

# Apache configuration – Directory Configuration (2)

```
# 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
#
# Control access to UserDir directories. The following is an example
# for a site where these directories are restricted to read-only.
#
<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>
```

# Apache configuration – Directory Configuration (3)

```
<IfModule alias_module>
  Alias /icons/ "/usr/local/www/apache22/icons/"

  <Directory "/usr/local/www/apache22/icons">
    Options Indexes MultiViews
    AllowOverride None
    Order allow,deny
    Allow from all
  </Directory>

  Alias /manual/ "/usr/local/apache/htdocs/manual/"

  <Directory "/usr/local/apache/htdocs/manual">
    Options Indexes FollowSymlinks MultiViews
    AllowOverride None
    Order allow,deny
    Allow from all
  </Directory>
</IfModule>
```

# Apache configuration – Virtual Host

## ◎Name-Base

- > Single IP, several hostnames

```
NameVirtualHost 140.113.51.24

<VirtualHost 140.113.51.24>
ServerName www.snmg.com.tw
DocumentRoot "/www"
</VirtualHost>

<VirtualHost 140.113.51.24>
ServerName mail.snmg.com.tw
DocumentRoot "/home/sywang"
</VirtualHost>

<VirtualHost 140.113.51.24>
ServerName csie.snmg.com.tw
Redirect / http://www.csie.nctu.edu.tw/
</VirtualHost>
```

## ◎IP-Base

- > several IPs

```
<VirtualHost 140.113.50.33:80>
Port 80
ServerAdmin webmaster@sun3.csie.nctu.edu.tw
DocumentRoot /www/csie
ServerName sun3.csie.nctu.edu.tw
ErrorLog logs/csie-error_log
TransferLog logs/csie-access_log
</VirtualHost>

<VirtualHost 140.113.70.25:80>
Port 80
ServerAdmin webmaster@sun3.ee.nctu.edu.tw
DocumentRoot /www/ee
ServerName sun3.ee.nctu.edu.tw
ErrorLog logs/ee-error_log
TransferLog logs/ee-access_log
</VirtualHost>
```

# Apache configuration – .htaccess (1)

- ◎ .htaccess

- > Allow admin to use one file to control access to certain directory

- ◎ Usage

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



# Apache configuration – .htaccess (2)

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

```
<Directory "/www/data/test1">  
  Options Indexes FollowSymLinks MultiViews ExecCGI  
  AllowOverride All  
  Order allow,deny  
  Allow from all  
</Directory>
```

```
lwhsu@sabsd [3:02pm] /www/data/test1> cat .htaccess  
AuthName "SA-test1"  
AuthType "Basic"  
AuthUserFile "/www/data/test1/.htpasswd"  
require valid-user
```

```
lwhsu@sabsd [2:58pm] /> /usr/local/apache/bin/htpasswd -c ./htpasswd SA-user1  
New password:  
Re-type new password:  
Adding password for user SA-user1
```

# Apache configuration - .htaccess (3)



# Administrating MySQL (1)

- ⦿ Config file
  - > Copy config file
    - `% cd /usr/local/share/mysql`
    - `% sudo cp my-huge.cnf /etc/my.cnf`
  - > Edit `/etc/my.cnf`
- ⦿ Start up
  - > Add into `rc.conf`
    - `mysql_enable="YES"`
  - > `# /usr/local/etc/rc.d/mysql-server start`

# Administering MySQL (2)

## ◎ Test

> % `mysql -u root -p`

- The initial password for root is empty

```
lwhsu@sabsd:/var/log> mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2 to server version: 4.1.7-log

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql> show databases;
+-----+
| Database|
+-----+
| mysql   |
| test    |
+-----+
2 rows in set (0.27 sec)

mysql> exit
Bye
```

# Administrating MySQL (3)

- Securing initial accounts
  - > Two initial accounts
    - root
    - anonymous

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

```
lwhsu@sabsd:~> mysql -u root -p
```

```
Enter password:
```

```
Welcome to the MySQL monitor. Commands end with ; or \g.
```

```
Your MySQL connection id is 4 to server version: 4.1.7-log
```

```
Type 'help;' or '\h' for help. Type '\c' to clear the buffer.
```

```
mysql> UPDATE mysql.user SET Password = PASSWORD('user123') WHERE User = '';
```

```
Query OK, 2 rows affected (0.26 sec)
```

```
Rows matched: 2  Changed: 2  Warnings: 0
```

```
mysql> UPDATE mysql.user SET Password = PASSWORD('root123') WHERE User = 'root';
```

```
Query OK, 2 rows affected (0.00 sec)
```

```
Rows matched: 2  Changed: 2  Warnings: 0
```

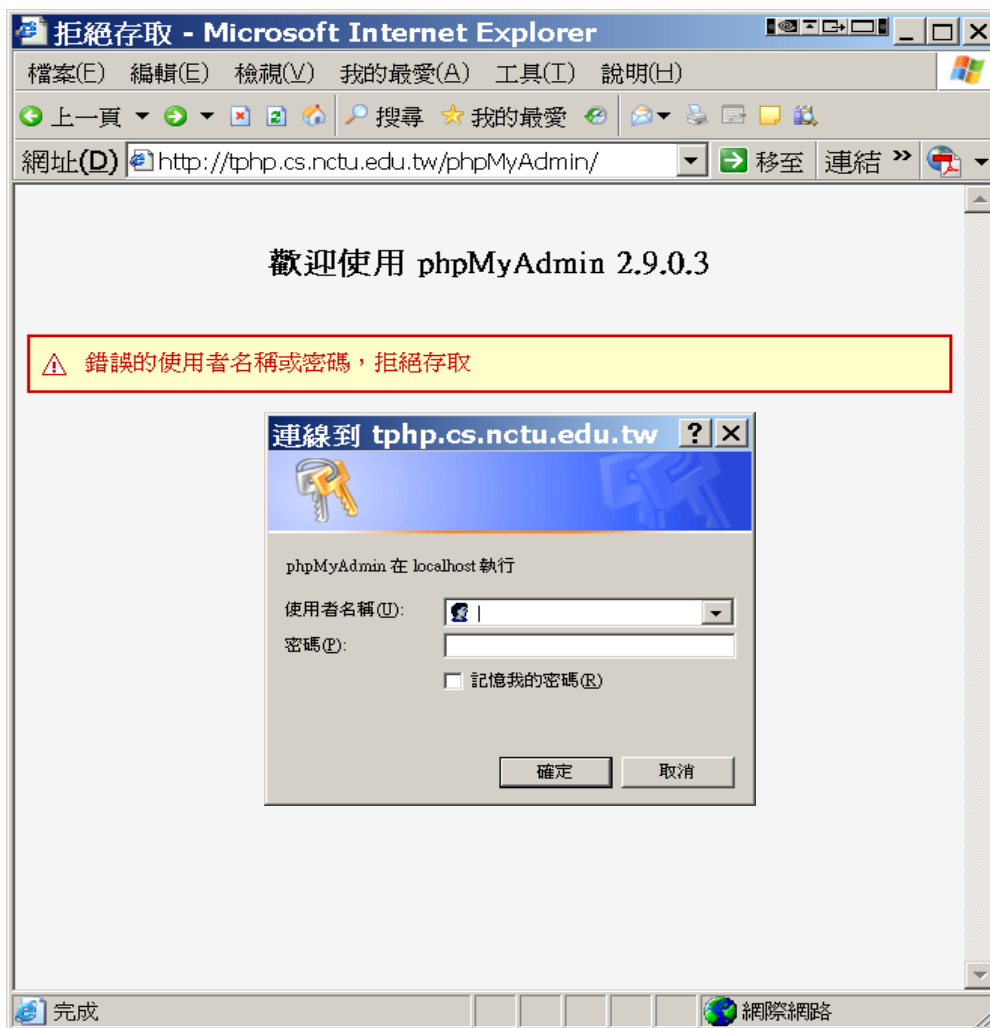
```
mysql> FLUSH PRIVILEGES;
```

```
Query OK, 0 rows affected (0.00 sec)
```

# Administrating MySQL – Using phpMyAdmin (1)

- phpMyAdmin can manage a whole MySQL server as well as a single database.
- Official Site: <http://www.phpmyadmin.net/>
- Characteristics
  - > Browser-based, Supporting PHP5, MySQL 4.1 and 5.0, Open Source
- Installation Steps
  1. Download latest version from official site
  2. Unzip the archived file.
  3. Read documents: Documentation.html
  4. copy config.sample.inc.php → config.inc.php
    - Change auth type to http
    - Remove configuration about Advanced Feature (something start with 'pma')
  - > Browse the phpMyAdmin, and login.

# Adminstrating MySQL – Using phpMyAdmin (2)



# Administrating MySQL – Using phpMyAdmin (3)

tphp.cs.nctu.edu.tw / localhost | phpMyAdmin 2.9.0.3 - Microsoft Internet Explorer

檔案(E) 編輯(E) 檢視(V) 我的最愛(A) 工具(I) 說明(H)

← 上一頁 → 搜尋 ☆ 我的最愛

網址(D) http://tphp.cs.nctu.edu.tw/phpMyAdmin/ 移至 連結 >>

**localhost**

伺服器版本: 5.0.27

- ▶ 通訊協定版本: 10

伺服器: Localhost via UNIX socket

- ▶ 使用者: chonsi@localhost

MySQL 文字編碼: UTF-8 Unicode (utf8)

MySQL 連線校對:

utf8\_unicode\_ci

**建立新資料庫**

校對 建立

- ▶ 顯示 MySQL 執行狀態
- ▶ 顯示 MySQL 系統變數
- ▶ 處理
- ▶ 文字編碼及校對
- ▶ 儲存引擎
- ▶ 重新讀取權限
- ▶ 權限
- ▶ 資料庫
- ▶ 輸出

**phpMyAdmin - 2.9.0.3**

- ▶ MySQL 客戶端版本: 5.0.27
- ▶ 已使用 PHP 擴充附件: mysql
- ▶ Language: 中文 - Chinese traditional
- ▶ 款式: Original
- ▶ Font size: 100%
- ▶ [phpMyAdmin 說明文件](#)
- ▶ [phpMyAdmin 官方網站](#)
- ▶ [\[ChangeLog\]](#) [\[CVS\]](#) [\[Lists\]](#)

資料庫

(資料庫) ...

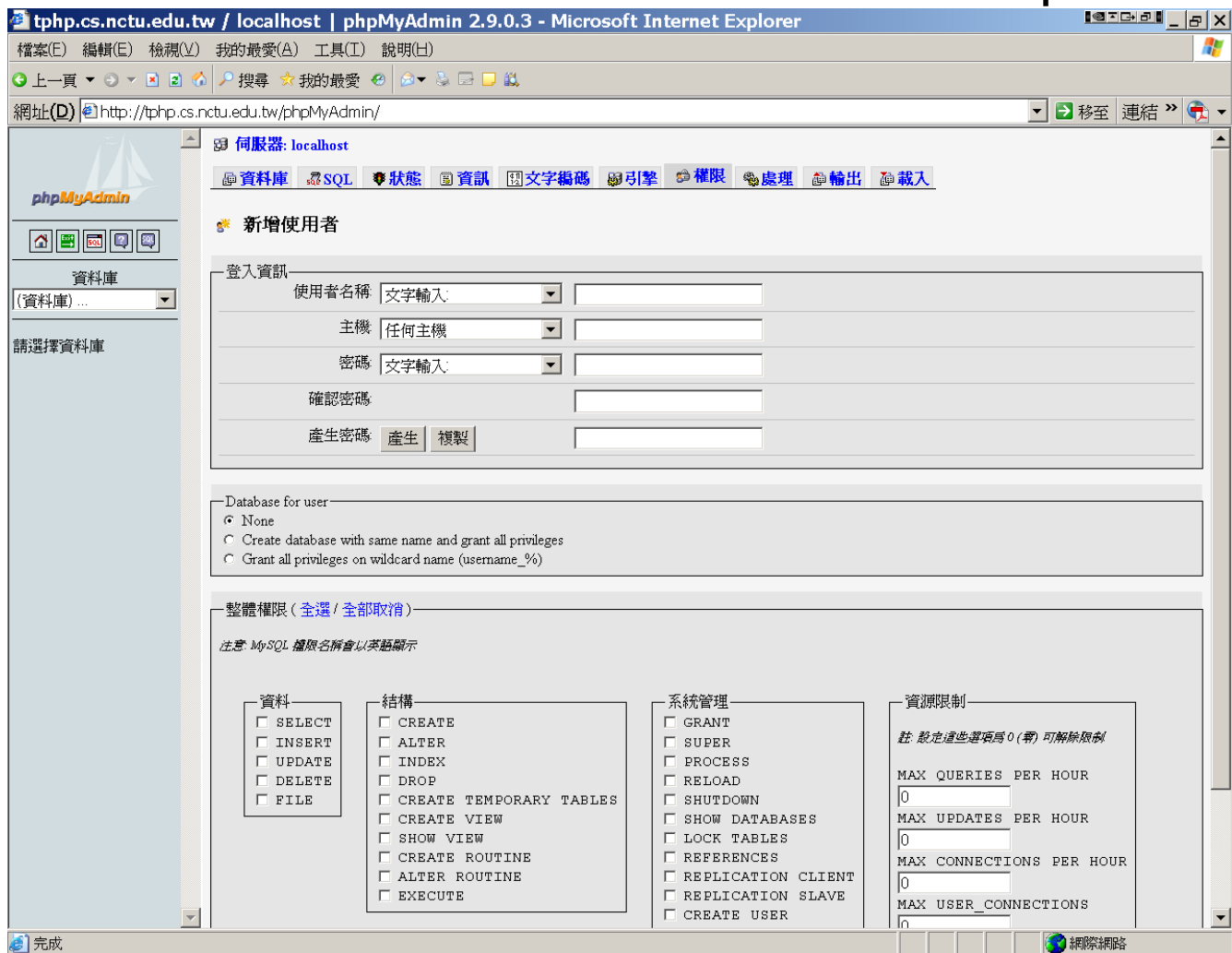
請選擇資料庫

網際網路



# Administrating MySQL – Using phpMyAdmin (4)

- Create another user with limited privilege



# Appendix: Installing lighttpd

# Installing lighttpd (1)

- ◉ Official: <http://www.lighttpd.net/>
- ◉ Installation:
  - > # cd /usr/ports/www/lighttpd
  - > # make install clean
- ◉ Supporting PHP
  - Remove the '#' before "mod\_fastcgi"
  - Remove the '#' before these lines:

```
fastcgi.server= ( ".php"=>
    ( "localhost" =>
        (
            "socket" => "/tmp/php-fastcgi.socket",
            "bin-path" => "/usr/local/bin/php-cgi"
        )
    )
)
```

# Installing lighttpd (2)

- SSL support

- > ##### SSL engine
- > ssl.engine = "enable"
- > ssl.pemfile = "/path/server.pem"

- Virtual Hosting

- > Simple Virtual-Hosting

- #simple-vhost.server-root =

- "/home/weigon/wwwroot/servers/"

- #simple-vhost.default-host = "grisu.home.kneschke.de"

- #simple-vhost.document-root = "/pages/"

- > Enhanced Virtual-Hosting

- <http://trac.lighttpd.net/trac/wiki/Docs%3AModEVhost>

# Installing lighttpd (3)

- ◎ /etc/rc.conf
  - > lighttpd\_enable="YES"
- ◎ Start up
  - > /usr/local/etc/rc.d/lighttpd start