




LAMP

Dancs Sándor
Nyíregyházi Egyetem
Matematika és Informatika Intézet





LAMP

Linux, Apache, MariaDB, PHP



Debian GNU/Linux



Update & Upgrade

```
# apt-get update && apt-get upgrade
```

Midnight Commander

```
# apt-get install mc
```



SSH (Secure Shell)

```
# apt-get install ssh  
# mcedit /etc/ssh/sshd_config
```

sshd_config

```
...  
PermitRootLogin yes  
...
```

mc [root@www]:/etc/ssh

```
/etc/ssh/sshd_config [B---] 19 L:[ 1+34 35/125] *(863 /3309b) 0010 0x00A [*] [X] ^
#<----->$OpenBSD: sshd_config,v 1.103 2018/04/09 20:41:22 tj Exp $

# This is the sshd server system-wide configuration file.  See
# sshd_config(5) for more information.

# This sshd was compiled with PATH=/usr/bin:/bin:/usr/sbin:/sbin

# The strategy used for options in the default sshd_config shipped with
# OpenSSH is to specify options with their default value where
# possible, but leave them commented.  Uncommented options override the
# default value.

Include /etc/ssh/sshd_config.d/*.conf

#Port 22
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key

# Ciphers and keying
#RekeyLimit default none

# Logging
#SyslogFacility AUTH
#LogLevel INFO

# Authentication:

#LoginGraceTime 2m
#PermitRootLogin prohibit-password
PermitRootLogin yes
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

#PubkeyAuthentication yes

# Expect .ssh/authorized_keys2 to be disregarded by default in future.
1Sűgő 2Ment 3Jelöl 4Csere 5Másol 6Athelyez 7Keres 8Töröl 9Főmenü 10Kilép
```



Restart SSH

```
# systemctl reload ssh
```

Disable IPv6

```
# mcedit /etc/sysctl.conf
```

sysctl.conf

```
...
```

```
net.ipv6.conf.all.disable_ipv6 = 1
```



```
mc [root@www]:/etc
/etc/sysctl.conf [B---] 34 L:[ 29+40 69/ 70] *(2389/2390b) 0010 0x00A [*] [X] ^

# Uncomment the next line to enable packet forwarding for IPv6
# Enabling this option disables Stateless Address Autoconfiguration
# based on Router Advertisements for this host
#net.ipv6.conf.all.forwarding=1

#####
# Additional settings - these settings can improve the network
# security of the host and prevent against some network attacks
# including spoofing attacks and man in the middle attacks through
# redirection. Some network environments, however, require that these
# settings are disabled so review and enable them as needed.
#
# Do not accept ICMP redirects (prevent MITM attacks)
#net.ipv4.conf.all.accept_redirects = 0
#net.ipv6.conf.all.accept_redirects = 0
# _or_
# Accept ICMP redirects only for gateways listed in our default
# gateway list (enabled by default)
# net.ipv4.conf.all.secure_redirects = 1
#
# Do not send ICMP redirects (we are not a router)
#net.ipv4.conf.all.send_redirects = 0
#
# Do not accept IP source route packets (we are not a router)
#net.ipv4.conf.all.accept_source_route = 0
#net.ipv6.conf.all.accept_source_route = 0
#
# Log Martian Packets
#net.ipv4.conf.all.log_martians = 1
#

#####
# Magic system request Key
# 0=disable, 1=enable all, >1 bitmask of sysrq functions
# See https://www.kernel.org/doc/html/latest/admin-guide/sysrq.html
# for what other values do
#kernel.sysrq=438

net.ipv6.conf.all.disable_ipv6 = 1

1Súgó 2Ment 3Jelöl 4Csere 5Másol 6Áthelyez 7Keres 8Töröl 9Főmenü 10Kilép
```




Reload sysctl settings

```
# sysctl -p
```

Show IP address

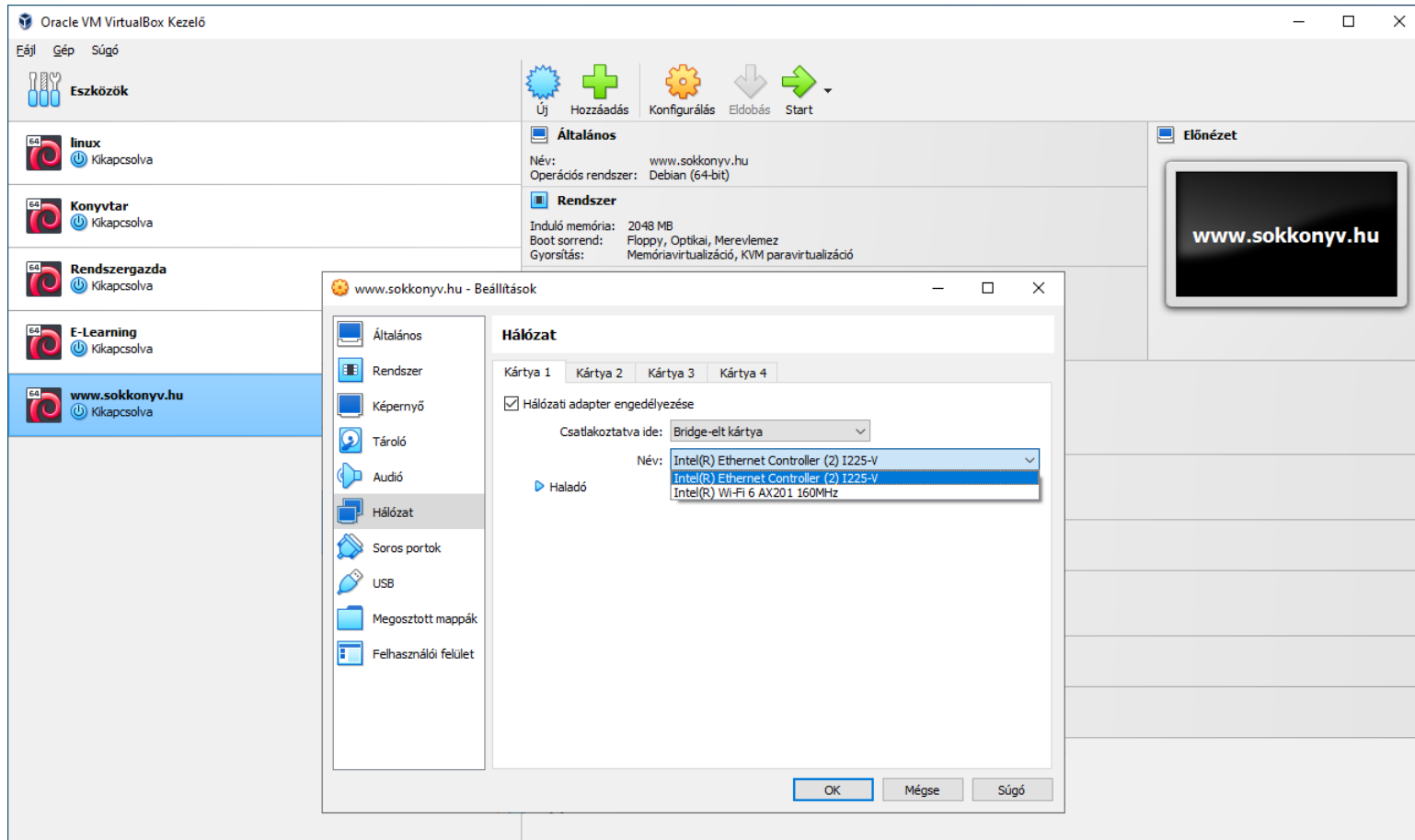
```
# ip address show
```

```
# apt-get install net-tools
```

```
# ifconfig -a
```



Oracle VM VirtualBox használata esetén azt a hálózati kártyát kell kiválasztani amivel csatlakozik a számítógép a hálózatra.



Linux client (Ha Linux rendszerrel csatlakozunk.)

```
# mcedit /etc/hosts
```

hosts (Az x.x.x.x helyére az ifconfig -a paranccsal megjelenített IP címet kell írni!)

```
...
```

```
x.x.x.x www.sokkonyv.hu # Sokkonyv Website
```

```
...
```

```
# ssh root@www.sokkonyv.hu
```

```
mc [root@www]:/etc
/etc/hosts [BM--] 50 L:[ 1+ 2 3/ 9] *(92 / 242b) 0010 0x00A [*] [X] ^
127.0.0.1<----->localhost
127.0.1.1<----->www.linux.hu<-->linux
x.x.x.x<----->www.sokonyv.hu # Sokonyv Website

# The following lines are desirable for IPv6 capable hosts
::1 localhost ip6-localhost ip6-loopback
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
```

1Súgó 2Ment 3Jelöl 4Csere 5Másol 6Áthelyez 7Keres 8Töröl 9Főmenü 10Kilép

MS Windows client (Ha MS Windows rendszerrel csatlakozunk.)

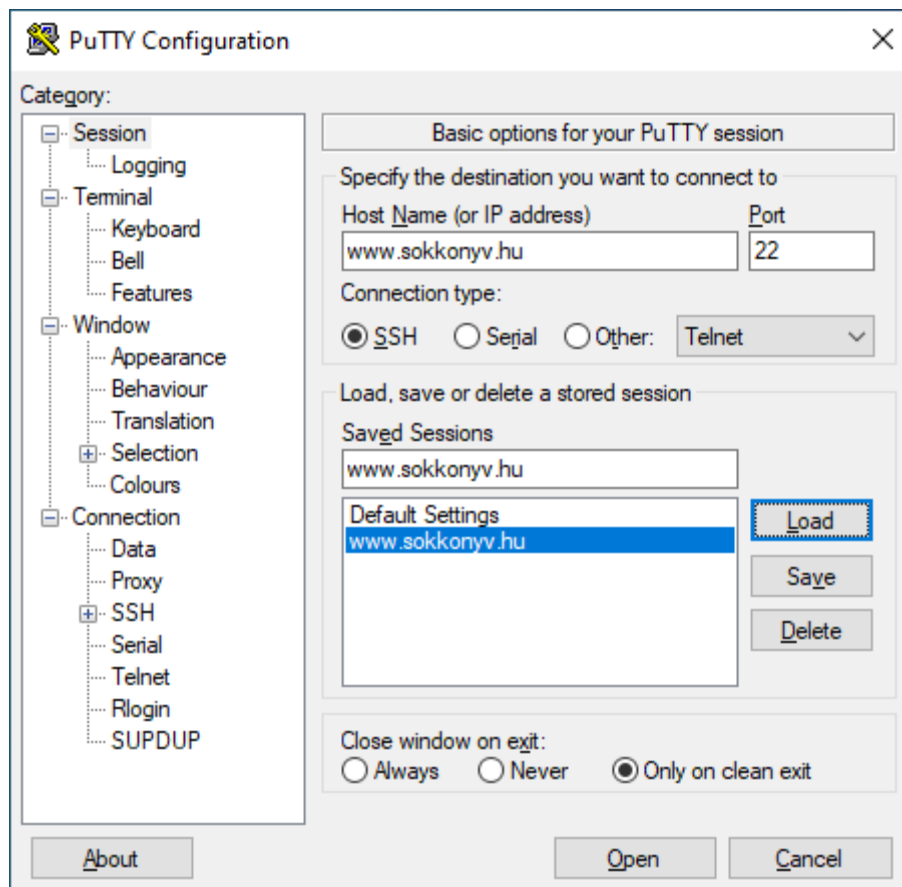
```
>explorer.exe C:\Windows\System32\drivers\etc\  
hosts -> Jobb kattintás -> Tulajdonságok /  
Biztonság / Szerkesztés /Hozzáadás.../ User /  
OK / Teljes hozzáférés (Engedélyezés) / OK / OK  
>notepad C:\Windows\System32\drivers\etc\hosts
```

hosts (Az x.x.x.x helyére az ifconfig -a paranccsal megjelenített IP címet kell írni!)

```
...  
x.x.x.x www.sokonyv.hu # Sokonyv Website  
...
```

The image shows a Windows File Explorer window and a Notepad window. The File Explorer window displays the path `C:\Windows\System32\drivers\etc` and the file `hosts`. The Notepad window shows the contents of the `hosts` file, which includes comments and IP mappings.

```
# Copyright (c) 1993-2009 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host
# name.
# The IP address and the host name should be separated by at least
# one
# space.
#
# Additionally, comments (such as these) may be inserted on
# individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#       102.54.94.97       rhino.acme.com       # source server
#       38.25.63.10      x.acme.com         # x client host
#       x.x.x.x          www.sokonyv.hu      # Sokonyv Website
#
# localhost name resolution is handled within DNS itself.
#
#       127.0.0.1        localhost
#
#       ::1             localhost
```



Apache (HTTP Server)

```
# apt-get install apache2  
  
# mkdir -p /srv/www/www.sokkonyv.hu  
  
# cp /var/www/html/index.html  
/srv/www/www.sokkonyv.hu  
  
# mcedit /etc/apache2/apache2.conf
```

apache2.conf

```
...  
<Directory /srv/www/>  
    Options Indexes FollowSymLinks  
    AllowOverride None  
    Require all granted  
</Directory>  
...
```



```
mc [root@www]:/etc/apache2
/etc/apache2/apache2.conf [B---] 12 L:[148+32 180/228] *(5837/7223b) 0010 0x00A [*] [X] ^

# Include list of ports to listen on
Include ports.conf

# Sets the default security model of the Apache2 HTTPD server. It does
# not allow access to the root filesystem outside of /usr/share and /var/www.
# The former is used by web applications packaged in Debian,
# the latter may be used for local directories served by the web server. If
# your system is serving content from a sub-directory in /srv you must allow
# access here, or in any related virtual host.
<Directory />
<----->Options FollowSymLinks
<----->AllowOverride None
<----->Require all denied
</Directory>

<Directory /usr/share>
<----->AllowOverride None
<----->Require all granted
</Directory>

<Directory /var/www/>
<----->Options Indexes FollowSymLinks
<----->AllowOverride None
<----->Require all granted
</Directory>

<Directory /srv/www/>
<----->Options Indexes FollowSymLinks
<----->AllowOverride None
<----->Require all granted
</Directory>

# AccessFileName: The name of the file to look for in each directory
# for additional configuration directives. See also the AllowOverride
# directive.
#
AccessFileName .htaccess

1Súgó      2Ment      3Jelöl    4Csere    5Másol    6Áthelyez 7Keres    8Töröl    9Főmenü   10Kilép
```

Apache virtualhost

```
# cp /etc/apache2/sites-available/000-  
default.conf /etc/apache2/sites-  
available/www.sokkonyv.hu.conf  
  
# mcedit /etc/apache2/sites-  
available/www.sokkonyv.hu.conf
```

www.sokkonyv.hu.conf

```
...  
ServerName www.sokkonyv.hu  
  
ServerAdmin webmaster@sokkonyv.hu  
DocumentRoot /srv/www/www.sokkonyv.hu  
  
...  
ErrorLog ${APACHE_LOG_DIR}/www.sokkonyv.hu/error.log  
CustomLog  
${APACHE_LOG_DIR}/www.sokkonyv.hu/access.log combined  
...
```

```
mc [root@www]:/etc/apache2/sites-available
/etc/apache2/sites-available/www.sokkonyv.hu.conf [B---] 71 L:[ 1+20 21/ 32] *(949 /1376b) 0010 0x00A [*][X] ^
<VirtualHost *:80>
<-----># The ServerName directive sets the request scheme, hostname and port that
<-----># the server uses to identify itself. This is used when creating
<-----># redirection URLs. In the context of virtual hosts, the ServerName
<-----># specifies what hostname must appear in the request's Host: header to
<-----># match this virtual host. For the default virtual host (this file) this
<-----># value is not decisive as it is used as a last resort host regardless.
<-----># However, you must set it for any further virtual host explicitly.
<----->ServerName www.sokkonyv.hu

<----->ServerAdmin webmaster@sokkonyv.hu
<----->DocumentRoot /srv/www/www.sokkonyv.hu

<-----># Available loglevels: trace8, ..., tracel, debug, info, notice, warn,
<-----># error, crit, alert, emerg.
<-----># It is also possible to configure the loglevel for particular
<-----># modules, e.g.
<----->#LogLevel info ssl:warn

<----->ErrorLog ${APACHE_LOG_DIR}/www.sokkonyv.hu/error.log
<----->CustomLog ${APACHE_LOG_DIR}/www.sokkonyv.hu/access.log combined

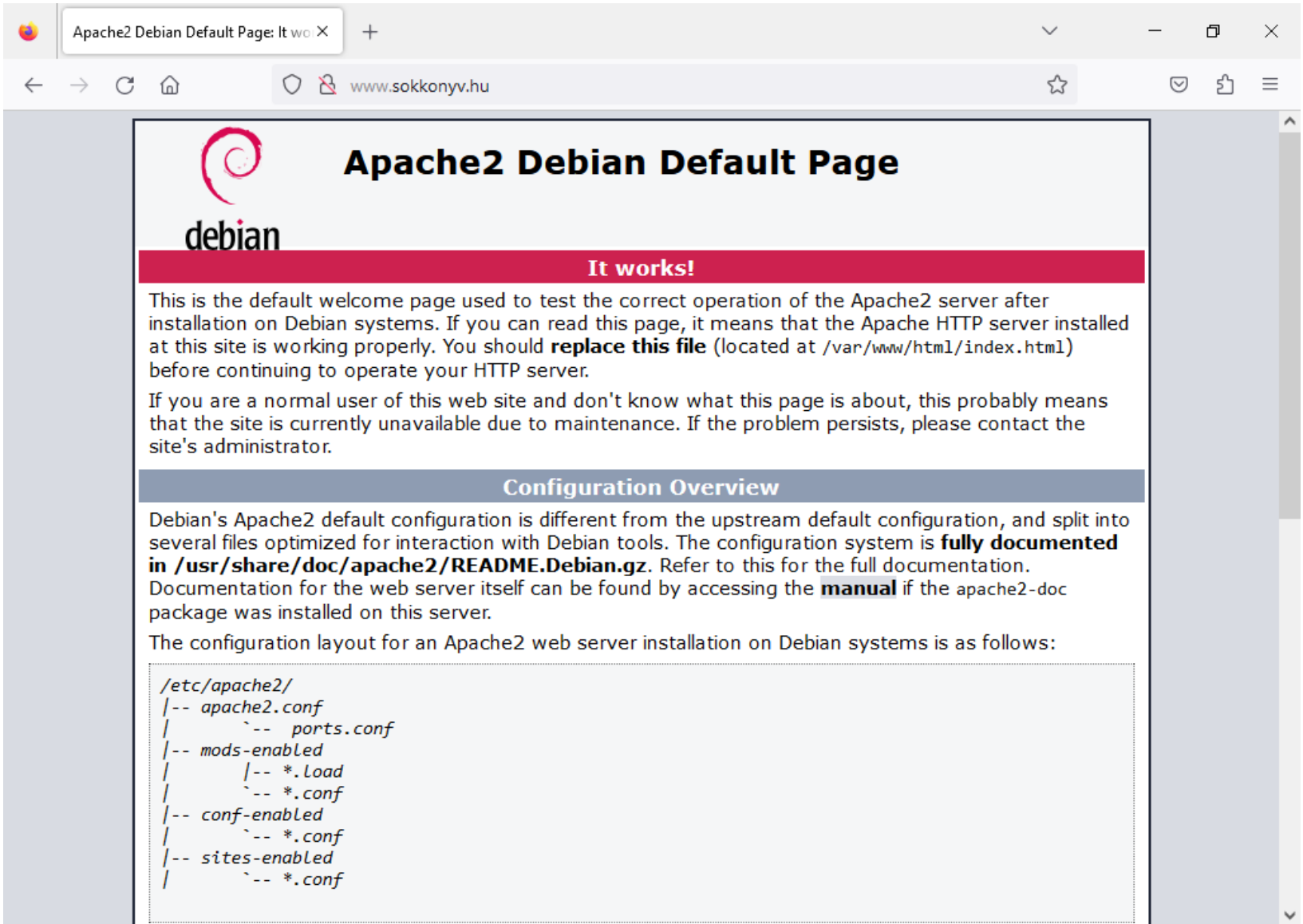
<-----># For most configuration files from conf-available/, which are
<-----># enabled or disabled at a global level, it is possible to
<-----># include a line for only one particular virtual host. For example the
<-----># following line enables the CGI configuration for this host only
<-----># after it has been globally disabled with "a2disconf".
<----->#Include conf-available/serve-cgi-bin.conf
</VirtualHost>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet

1Súgó      2Ment      3Jelöl    4Csere    5Másol    6Áthelyez 7Keres    8Töröl    9Főmenü   10Kilép
```

Apache virtualhost


```
# mkdir  
/var/log/apache2/www.sokkonyv.hu  
  
# a2dissite 000-default  
  
# a2ensite www.sokkonyv.hu  
  
# systemctl reload apache2
```



Apache2 Debian Default Page: It wo X

www.sokkonyv.hu

Apache2 Debian Default Page



It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Debian systems. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Debian's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Debian tools. The configuration system is **fully documented in `/usr/share/doc/apache2/README.Debian.gz`**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Debian systems is as follows:

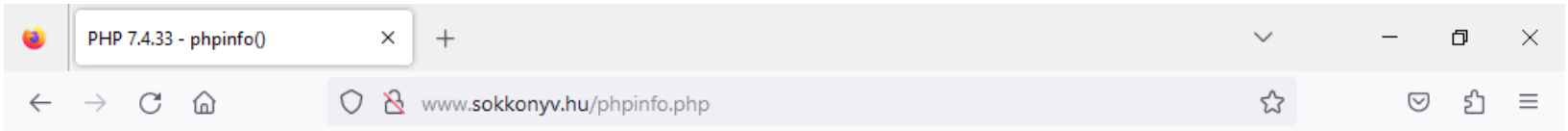
```
/etc/apache2/
|-- apache2.conf
|   |-- ports.conf
|-- mods-enabled
|   |-- *.Load
|   |-- *.conf
|-- conf-enabled
|   |-- *.conf
|-- sites-enabled
|   |-- *.conf
```

PHP: Hypertext Preprocessor

```
# apt-get install php php-common
# php -v
# a2enmod php8.*
# systemctl restart apache2
# mcedit
/srv/www/www.sokkonyv.hu/phpinfo.php
```

phpinfo.php

```
<H1>Sokkonyv Website</H1>
<?php
phpinfo();
?>
```



Sokkonyv Website

PHP Version 7.4.33



System	Linux www 5.10.0-22-amd64 #1 SMP Debian 5.10.178-3 (2023-04-22) x86_64
Build Date	Jun 9 2023 16:51:37
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/7.4/apache2
Loaded Configuration File	/etc/php/7.4/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/7.4/apache2/conf.d
Additional .ini files parsed	/etc/php/7.4/apache2/conf.d/10-mysqld.ini, /etc/php/7.4/apache2/conf.d/10-opcache.ini, /etc/php/7.4/apache2/conf.d/10-pdo.ini, /etc/php/7.4/apache2/conf.d/20-calendar.ini, /etc/php/7.4/apache2/conf.d/20-ctype.ini, /etc/php/7.4/apache2/conf.d/20-exif.ini, /etc/php/7.4/apache2/conf.d/20-ffi.ini, /etc/php/7.4/apache2/conf.d/20-fileinfo.ini, /etc/php/7.4/apache2/conf.d/20-ftp.ini, /etc/php/7.4/apache2/conf.d/20-gettext.ini, /etc/php/7.4/apache2/conf.d/20-iconv.ini, /etc/php/7.4/apache2/conf.d/20-json.ini, /etc/php/7.4/apache2/conf.d/20-mysqli.ini, /etc/php/7.4/apache2/conf.d/20-pdo_mysql.ini, /etc/php/7.4/apache2/conf.d/20-phar.ini, /etc/php/7.4/apache2/conf.d/20-posix.ini, /etc/php/7.4/apache2/conf.d/20-readline.ini, /etc/php/7.4/apache2/conf.d/20-shmop.ini, /etc/php/7.4/apache2/conf.d/20-sockets.ini, /etc/php/7.4/apache2/conf.d/20-sysvmsg.ini, /etc/php/7.4/apache2/conf.d/20-sysvsem.ini, /etc/php/7.4/apache2/conf.d/20-sysvshm.ini, /etc/php/7.4/apache2/conf.d/20-tokenizer.ini
PHP API	20190902
PHP Extension	20190902
Zend Extension	320190902
Zend Extension Build	API320190902,NTS
PHP Extension Build	API20190902,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled

MariaDB (Database Server)

```
# apt-get install mariadb-server  
# apt-get install php-mysql  
# systemctl restart apache2  
# mysql_secure_installation
```


(Az első kérdésnél csak "Enter"-t kell ütni!)

...


Enter current password for root (enter for none):

OK, successfully used password, moving on...


...




```
(A következő két kérdésnél "n"-t, majd
"Enter"-t kell ütni!)
Switch to unix_socket authentication
[Y/n] n
... skipping.
...
Change the root password? [Y/n] n
... skipping.
...
```



```
(Az utolsó négy kérdésnél csak
"Enter"-t kell ütni!)
Remove anonymous users? [Y/n]
... Success!
...
Disallow root login remotely? [Y/n]
... Success!
...
```





```
Remove test database and access to it?
[Y/n]
- Dropping test database...
... Success!
- Removing privileges on test
database...
... Success!
...
Reload privilege tables now? [Y/n]
... Success!
...
Thanks for using MariaDB!
```

MariaDB

```
# mariadb
```

```
MariaDB [(none)]> CREATE DATABASE konyvtar;
```

```
MariaDB [(none)]> CREATE USER 'felhasznalo'@'%'  
IDENTIFIED BY 'jelszo';
```

```
MariaDB [(none)]> GRANT ALL ON konyvtar.* TO  
'felhasznalo'@'%';
```

```
MariaDB [(none)]> FLUSH PRIVILEGES;
```

```
MariaDB [(none)]> exit
```

MariaDB


```
# mariadb -u felhasznalo -p
```

(Be kell írni a "jelszo"-t, majd "Enter"-t kell ütni!)

```
Enter password:
```

```
MariaDB [(none)]> SHOW DATABASES;
```

```
+-----+
| Database |
+-----+
| information_schema |
| konyvtar |
+-----+
2 rows in set (0,000 sec)
```




```
MariaDB [(none)]> CREATE TABLE konyvtar.konyvek  
(azonosito INT AUTO_INCREMENT, szerzo  
VARCHAR(255), cim VARCHAR(255), PRIMARY  
KEY(azonosito));
```

```
MariaDB [(none)]> INSERT INTO konyvtar.konyvek  
(szerzo, cim) VALUES ("Fekete István",  
"Tüskevár");
```

```
MariaDB [(none)]> INSERT INTO konyvtar.konyvek  
(szerzo, cim) VALUES ("Molnár Ferenc", "A Pál  
utcai fiúk");
```

```
MariaDB [(none)]> INSERT INTO konyvtar.konyvek  
(szerzo, cim) VALUES ("Rejtő Jenő", "A három  
testőr Afrikában");
```

```
MariaDB [(none)]> INSERT INTO konyvtar.konyvek  
(szerzo, cim) VALUES ("Rideg Sándor", "Indul a  
bakterház");
```



```
MariaDB [(none)]> SELECT * FROM
konyvtar.konyvek;
```

```
+-----+-----+-----+
| azonosito | szerzo          | cim          |
+-----+-----+-----+
|          1 | Fekete István  | Tüskevár    |
|          2 | Molnár Ferenc  | A Pál utcai fiúk |
|          3 | Rejtő Jenő    | A három testőr Afrikában |
|          4 | Rideg Sándor  | Indul a bakterház |
+-----+-----+-----+
4 rows in set (0,000 sec)
```

```
MariaDB [(none)]> exit
```



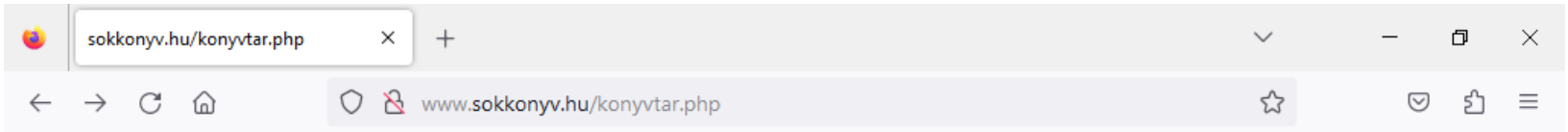
PHP Database Connection and Query

```
# mcedit  
/srv/www/www.sokkonyv.hu/konyvtar.php
```


konyvtar.php

```
<H1>Sokkonyv Website</H1>
<?php
$user = "felhasznalo";
$password = "jelszo";
$database = "konyvtar";
$table = "konyvek";

try {
    $db = new PDO("mysql:host=localhost;dbname=$database",
    $user, $password);
    echo "<h2>Könyvek</h2><ol>";
    foreach($db->query("SELECT szerzo, cim FROM $table")
as $row) {
        echo "<li>" . $row['szerzo'] . ": " . $row['cim'] .
"</li>";
    }
    echo "</ol>";
} catch (PDOException $e) {
    print "Error!: " . $e->getMessage() . "<br/>";
    die();
}
?>
```



Sokkönyv Website

Könyvek

1. Fekete István: Tüskevár
2. Molnár Ferenc: A Pál utcai fiúk
3. Rejtő Jenő: A három testőr Afrikában
4. Rideg Sándor: Indul a bakterház



Köszönöm a figyelmet!

