

Server Software

Server software configuration and installation procedures such as Apache, and Postfix

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Apache Option FollowSymLinks not allowed here Error

Apache htaccess Option FollowSymLinks not allowed here error:

```
find /home -name ".htaccess" -type f -exec sed -i 's/Options FollowSymLinks/Options -FollowSymLinks/g' {}  
;"
```

Migrating Self-Signed SSL Certificate to LetsEncrypt Certificate

Download Let's Encrypt Client

1. `sudo -s`
2. `git clone https://github.com/letsencrypt/letsencrypt /opt/letsencrypt`

Update Apache Configuration

Let's Encrypt does not detect multiple virtual host in a single file, so if you have multiple virtual hosts in a single file, you need to separate it and update the configuration for SSL only. Then redirect all plain-text traffic to SSL using a single virtual host.

Create a new virtual host in `/etc/httpd/conf.d/redirect_ssl.conf` to redirect plain-text traffic to SSL, replace all `<domain>` to your TLD, such as `example.com`:

1. `<VirtualHost *:80>`
2. `ServerName <domain>`
3. `ServerAlias *.<domain>`
4. `RewriteEngine on`
5. `RewriteRule ^/(.*) https://%{HTTP_HOST}/$1 [NC,R=301,L]`
6. `</VirtualHost>`

Setup SSL Certificates

1. `cd /opt/letsencrypt`
2. `./letsencrypt-auto --apache -d <domain> -d www.<domain> -d <subdomain>.<domain>`

Replacing `<domain>` with your domain, subsequent subdomains can be specified with `-d` option.

Restart Apache and Test

1. `systemctl restart httpd`

(Optional) Renewing SSL Certificates

Let's Encrypt issue **90 days** validity certificates, but you can however, renew it earlier in case errors occurred.

To renew the certificates, simply use the following command:

1. `/opt/letsencrypt/letsencrypt-auto renew`

If you have just created a new certificate, Let's Encrypt will never issue you a new one, it will only issue a new certificate for your domains if the validity period is **less than 30 days**, so, you can create a cronjob to try and renew the certificate every day, week or month, in case anything goes wrong with your certificate.

To setup cronjob to automatically renew certificate, enter command `crontab -e` to create a new cronjob and add the following line:

1. `0 3 * * 1 /opt/letsencrypt/letsencrypt-auto renew >> /var/log/le-renew.log`

The cronjob above will run on **every monday** at **3 A.M.**, it will append any output from `/opt/letsencrypt/letsencrypt-auto` to `/var/log/le-renew.log`. Please refer to the reference for more info on Linux cronjobs.

References

1. [Digital Ocean Article](#)
2. [Let's Encrypt Article](#)
3. [Cronjob Format](#)

LAMP Stack Upgrade Issues

"Table Doesn't Exist" After MySQL/MariaDB Upgrade

Paste MySQL data directory to upgraded data directory, containing `ibdata1`, `ib_logfile0` and `ib_logfile1`, in `lampp`, it's `/opt/lampp/var/mysql`:

1. `sudo cp /opt/lampp_backup/var/mysql /opt/lampp/var/mysql`
2. `sudo chown -R mysql:mysql /opt/lampp/mysql`

Standard Installation Procedures for LAMP Stack on CentOS 7

1. System Upgrade

1. `yum -y update`

2. Install Required Software

1. `yum -y install git policycoreutils-python httpd mariadb mariadb-server php-mysql php-gd php-ldap php-odbc php-pear php-xml php-xmlrpc php-mbstring php-snmp php-soap curl curl-devel`

3. Setup MySQL Server

1. `mysql_secure_installation`

4. Start and Enable All Services

1. `systemctl enable httpd`
2. `systemctl enable mariadb`
3. `systemctl start httpd`
4. `systemctl start mariadb`

5. Open Firewall Ports

1. `firewall-cmd --permanent --zone=public --add-service=http`
2. `firewall-cmd --permanent --zone=public --add-service=https`
3. `firewall-cmd --permanent --zone=public --add-port=<ssh_port>/tcp`
4. `firewall-cmd --reload`

6. Change SSH Port

1. `vim /etc/ssh/sshd_config` #and append 'Port <ssh_port>'
2. `semanage port -a -t ssh_port_t -p tcp <ssh_port>`
3. `systemctl restart sshd`

7. Enable Shutdown Button

Edit `/etc/systemd/logind.conf` and uncomment the following 2 lines:

1. `PowerKeyIgnoreInhibited=no`
2. `HandlePowerKey=poweroff`

8. Reboot System

1. `reboot`

(HP MicroServer Only)

Edit `/etc/default/grub` and append `clocksource=hpjet nolapic` to the end of `GRUB_CMDLINE_LINUX` variable.

Slow Loading on Owncloud 8

Change `/var/www/html/owncloud/config/config.php` database host to `127.0.0.1` instead of `localhost`

Postfix and Dovecot Configuration

Installation

1. `hostnamectl set-hostname mail.<domain>.<tld>`
2. `yum -y install postfix dovecot`

Postfix Configuration

1. Append the following to `/etc/postfix/main.cf`:
 1. `myhostname = mail.<domain>.<tld>`
 2. `mydomain = <domain>.<tld>`
 3. `myorigin = $mydomain`
 4. `home_mailbox = mail/`
 5. `mynetworks = 127.0.0.0/8 <domain IP>`
 6. `inet_interfaces = all`
 7. `mydestination = $myhostname, localhost.$mydomain, localhost, $mydomain`
 8. `smtpd_sasl_type = dovecot`
 9. `smtpd_sasl_path = private/auth`
 10. `smtpd_sasl_local_domain =`
 11. `smtpd_sasl_security_options = noanonymous`
 12. `broken_sasl_auth_clients = yes`
 13. `smtpd_sasl_auth_enable = yes`
 14. `smtpd_recipient_restrictions = permit_sasl_authenticated, permit_mynetworks, reject_unauth_destination`
 15. `smtp_tls_security_level = may`
 16. `smtpd_tls_security_level = may`
 17. `smtp_tls_note_starttls_offer = yes`
 18. `smtpd_tls_loglevel = 1`
 19. `smtpd_tls_key_file = /etc/letsencrypt/live/<domain>.<tld>/privkey.pem`
 20. `smtpd_tls_cert_file = /etc/letsencrypt/live/<domain>.<tld>/fullchain.pem`
 21. `smtpd_tls_received_header = yes`
 22. `smtpd_tls_session_cache_timeout = 3600s`
 23. `smtpd_use_tls=yes`

24. `tls_random_source = dev:/dev/urandom`
25. `virtual_alias_domains = <domain>.<tld>`
26. `virtual_alias_maps = hash:/etc/postfix/virtual`
2. Find and uncomment the following lines in `/etc/postfix/main.cf`:
 1. `#inet_interfaces = localhost`
 2. `#mydestination = $myhostname, localhost.$mydomain, localhost`
3. Append the following lines to `/etc/postfix/master.cf`:
 1. `submission inet n - n - - smtpd`
 2. `-o syslog_name=postfix/submission`
 3. `-o smtpd_sasl_auth_enable=yes`
 4. `-o smtpd_recipient_restrictions=permit_sasl_authenticated,reject_unauth_destination`
 5. `-o milter_macro_daemon_name=ORIGINATING`
 6. `smtps inet n - n - - smtpd`
 7. `-o syslog_name=postfix/smtps`
 8. `-o smtpd_sasl_auth_enable=yes`
 9. `-o smtpd_recipient_restrictions=permit_sasl_authenticated,reject_unauth_destination`
 10. `-o milter_macro_daemon_name=ORIGINATING`
4. Make sure that the following is present in `/etc/postfix/main.cf`:
 1. `alias_maps = hash:/etc/aliases`
5. Edit and add the desired email address to `/etc/postfix/virtual` such as the following:
 1. `info@<domain>.<tld> admin`
 2. `webmaster@<domain>.<tld> admin`
6. Create a map database: `postmap /etc/postfix/virtual`

Dovecot Configuration

1. Find and modify the following lines in `/etc/dovecot/conf.d/10-master.conf`:
 1. `# Postfix smtp-auth`
 2. `unix_listener /var/spool/postfix/private/auth {`
 3. `mode = 0660`
 4. `user = postfix`
 5. `group = postfix`
 6. `}`
2. Find and modify the following lines in `/etc/dovecot/conf.d/10-auth.conf`:
 1. `auth_mechanisms = plain login`
3. Find and modify the following lines in `/etc/dovecot/conf.d/10-mail.conf`:
 1. `mail_location = maildir:~/mail`
4. Find and modify the following lines in `/etc/dovecot/conf.d/20-pop3.conf`:
 1. `pop3_uidl_format = %08Xu%08Xv`
5. Find and modify the following lines in `/etc/dovecot/conf.d/10-ssl.conf`:
 1. `ssl_cert = </etc/letsencrypt/live/<domain>.<tld>/fullchain.pem`
 2. `ssl_key = </etc/letsencrypt/live/<domain>.<tld>/privkey.pem`

Restart and Enable Services

1. `systemctl restart postfix`
2. `systemctl enable postfix`
3. `systemctl restart dovecot`
4. `systemctl enable dovecot`

Open Firewall Ports

1. `firewall-cmd --permanent --add-service=smtp`
2. `firewall-cmd --permanent --add-port=587/tcp`
3. `firewall-cmd --permanent --add-port=465/tcp`
4. `firewall-cmd --permanent --add-port=110/tcp`
5. `firewall-cmd --permanent --add-service=pop3s`
6. `firewall-cmd --permanent --add-port=143/tcp`
7. `firewall-cmd --permanent --add-service=imaps`
8. `firewall-cmd --reload`

Configure DNS

1. Add an `A` record for the mail server:
 1. `name = mail.<domain>.<tld>`
 2. `IP = <mail server IP>`
2. Add an `MX` record:
 1. `Hostname = mail.<domain>.<tld>`
 2. `Priority = 5`
3. Add the following `TXT` records:
 1. `Name = @`
 2. `Text = "v=spf1 ip4: <domain IP> ~all"`
 3. `Name = _dmarc.<domain>.<tld>`
 5. `Text = v=DMARC1; p=none`
4. Add `PTR` record for `<domain>.<tld>`
5. Finally, test your email at <https://www.mail-tester.com/>

Notes on Using Let's Encrypt for SSL

Make sure that `Encryption` is set to `STARTTLS` when configuring mail clients

References

1. [Krizna Article](#)
2. [Ubuntu Postfix Alias Configuration](#)

Install RethinkDB on CentOS 7

Installing RethinkDB

```
sudo wget http://download.rethinkdb.com/centos/7/`uname -m`/rethinkdb.repo -O
/etc/yum.repos.d/rethinkdb.repo
sudo yum install rethinkdb
```

Create Service File

Create the service file, `/usr/lib/systemd/system/rethinkdb@.service` with the following content:

```
[Unit]
Description=RethinkDB database server for instance '%i'

[Service]
User=rethinkdb
Group=rethinkdb
ExecStart=/usr/bin/rethinkdb serve --config-file /etc/rethinkdb/instances.d/%i.conf
KillMode=process
PrivateTmp=true

[Install]
WantedBy=multi-user.target
```

Make sure that it has a permission of `644`: `chmod 644 /usr/lib/systemd/system/rethinkdb@.service`

Creating a Rethink DB Instance

1. Create the RethinkDB data directory: `rethinkdb create -d /path/to/your/rethinkdb/directory`
2. Set the ownership to RethinkDB user: `sudo chown -R rethinkdb.rethinkdb /path/to/your/rethinkdb/directory`
3. Copy RethinkDB sample config file: `sudo cp /etc/rethinkdb/default.conf.sample /etc/rethinkdb/instances.d/instance1.conf`
4. Edit `/etc/rethinkdb/instances.d/instance1.conf`, the line with `directory=` must be changed to point to your Rethink DB data directory.

Start RethinkDB Instance

in this case would be `instance1`:

```
sudo systemctl enable rethinkdb@<name_instance>
sudo systemctl start rethinkdb@<name_instance>
```

References

[RethinkDB Startup Doc](#)

Turtl API Server and Client Installation CentOS 7

Turtl API

Clone and Configure Turtl API

1. Create a user for turtl API: `sudo useradd turtl`
2. Switch user to `turtl`: `sudo su turtl`
3. Change directory to `turtl`'s home: `cd ~`
4. Install [Clozure CL](#)
5. Install [RethinkDB](#) and create an instance for Turtl API
6. Install `libuv`: `sudo yum install libuv`
7. Clone Turtl repo: `git clone https://github.com/turtl/api.git`
8. Copy Turtl API config: `cp config/config.default.lisp config/lisp`
9. Edit and configure `config/config.lisp`, make sure to update the following parameters:

```
(defvar *local-upload* "<local upload directory>"  
(defvar *local-upload-url* "<upload url>"
```

Setup Up Service

Create a service file at `/usr/lib/systemd/system/turtl.service` with the following entry:

```
[Unit]  
Description=Turtl API Server  
  
[Service]  
User=turtl  
Group=turtl  
ExecStart=/usr/local/bin/ccl64 --load /home/turtl/api/start.lisp  
KillMode=process
```

```
[Install]
```

```
WantedBy=multi-user.target
```

Start and enable the service:

```
sudo systemctl start turtl
sudo systemctl enable turtl
```

(OPTIONAL) Configure Reverse Proxy in Apache

Create `httpd` virtual host configuration `/etc/httpd/conf.d/turtl.conf` with the following content, make sure to change `<turtl domain>` to your own domain name:

```
<VirtualHost *:80>
    #Server name configuration
    ServerName <turtl domain>
    ServerAdmin webmaster@<turtl domain>

    #Proxy configuration
    ProxyPreserveHost on
    ProxyRequests off
    ProxyPass / https://wiki.twcloud.tech:8181/
    ProxyPassReverse / https://wiki.twcloud.tech:8181/

    #Logging configuration
    ErrorLog /var/log/httpd/turtl.err
    LogLevel warn
</VirtualHost>
```

(OPTIONAL) Restrict User Registration

Add the following lines in your Turtl API Virtual Hosts configuration:

```
#Restrict Registration
<LocationMatch "/users[/]?$">
    AuthType Basic
```



```
AuthName "Restricted"

AuthUserFile /home/turtl/.htpasswd

Require valid-user

</LocationMatch>
```

Then generate a `.htpasswd` password file in `/home/turtl`: `sudo htpasswd -c /etc/apache2/.htpasswd <whatever username>`. Make sure that it's in the right permission and owner: `chmod 640 /home/turtl/.htpasswd && chown turtl:apache /home/turtl/.htpasswd`

Installing JS Client

1. Clone `turtl/js` repo to webserver webroot: `sudo mkdir /var/www/turtl && cd /var/www/turtl && sudo git clone https://github.com/turtl/js.git .`
2. Install NodeJS dependencies: `npm install`
3. Copy default config: `cp config/config.js.default config.js`
4. Edit `config/config.js`
5. Update owner and group: `chown -R apache:apache .`
6. Generate assets: `make`