**Clilstore/Multidict virtual machine cloning - Some of the steps**

Set up Apache webserver

Edit /etc/apache2/conf-available/charset.conf to enable AddDefaultCharset UTF-8

SSH keys

ssh-keygen

Copy public key (.pub) to authorized\_keys on upstream server

Edit .ssh/config

Set up ssh-agent ?

Disable password logins

https://www.cyberciti.biz/faq/how-to-disable-ssh-password-login-on-linux/

Enable ufw (firewall)

https://www.digitalocean.com/community/tutorials/how-to-set-up-a-firewall-with-ufw-on-ubuntu-18-04

apt install php

Edit /etc/php/../apache2/php.ini

> memory\_limit = 192M

> include\_path = ".:/usr/share/php:/usr/share/php/PEAR"

> upload\_max\_filesize = 10M

Enable Apache modules

a2enmod ssl

a2enmod rewrite

a2enmod headers

service apache2 reload

Apache2 configuration

Disable directory indexes

Create the multidict server directory using git clone

Similarly to set up the Smotr service

Set up certbot and get certificates for servers

https://www.digitalocean.com/community/tutorials/how-to-secure-apache-with-let-s-encrypt-on-ubuntu-20-04

https://certbot.eff.org/lets-encrypt/ubuntuxenial-apache.html

apt install python3-certbot-apache

Install and set up mysql and phpmyadmin

https://www.digitalocean.com/community/tutorials/how-to-install-mariadb-on-ubuntu-20-04

https://www.digitalocean.com/community/tutorials/how-to-install-and-secure-phpmyadmin-on-ubuntu-20-04

Create all the required MySQL databases from SQL dumps taken on the main multidict.net server

multidict

smotr

smotrLog

Install PEAR and PEAR packages

apt install php-pear

pear install HTTP2

pear install HTTP\_Request2

Install SM classes

Set up autoload.inc.php and SM in /usr/share/php (with correct ownership and permissions)

Set up symbolic link for T.class.php

Create required mySQL userids (...%localhost)

Get passwords from looking at the code for database connect classes

Sort out any problems which emerge regarding creator userid for views

Add rewrite rules (and bot exclusion) to Apache2 configuration file for virtual server

Same for https server

Same for any test servers

Set up MySQL replication so that the smotr database is replicated from the main server

https://www.digitalocean.com/community/tutorials/how-to-set-up-master-slave-replication-in-mysql

https://www.digitalocean.com/community/tutorials/how-to-secure-mysql-replication-using-ssh-on-a-vps

but with mariadb (and mariadb ‘gtid’s) instead of mysql.

On primary

ssh -4 -L 33061:localhost:3306 tunneluser@167.99.82.65 -f -N

(To test: mysql -u slave\_user -p -h 127.0.0.1 --protocol=TCP -P 3306)

On primary databases

SELECT @@GLOBAL.gtid\_current\_pos

On slave databases

STOP SLAVE;

SET GLOBAL gtid\_slave\_pos = 'x-x-x'; (with gtid from primary in place of x-x-x)

CHANGE MASTER TO MASTER\_HOST='127.0.0.1', MASTER\_USER='slave\_user', MASTER\_PASSWORD='NC\_traill1', MASTER\_PORT=33061, MASTER\_USE\_GTID=slave\_pos; START SLAVE;

Set up Mecab  
 apt install mecab  
Set up Hunspell  
 apt install hunspell  
 Put hunspell dictionaries in /usr/share/hunspell - https://github.com/wooorm/dictionaries