

The Learning Online Network
with the
Computer-Assisted Personalized Approach

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In a software project that experiences continual improvement and where security and stability are important, we give great attention to the ease and maintenance of LON-CAPA on a Linux operating system.

On these pages you will learn how the LON-CAPA software system is

- definable
 - configurable
 - & testable
- which improves
the
- installation
 - upgrading
 - & code development

To learn general information about the LON-CAPA project, please visit <http://www.lon-capa.org/>.

There are about a dozen files on the LON-CAPA server systems which the system administrator may need to adjust.

The two most important configuration files are:

- **loncapa.conf** - typically located in the directory `/etc/httpd/conf/`;
*contains machine-specific and institution-specific variables and modifications necessary for the effective running of the Apache web server; note that there is also a **loncapa_apache.conf** which should be installed, but not modified*
- **hosts.tab** - typically located in the directory `/home/httpd/lonTabs/`;
is a listing of all other internet machines that a server system considers to be valid server systems on the LON-CAPA network

Current Reconfiguration Procedure

After making any configuration change, you will need to restart system services. The two most important system services on a LON-CAPA system are **loncapa** and **httpd**. Here are the commands for restarting the system services:

```
/etc/rc.d/init.d/loncapa restart  
/etc/rc.d/init.d/httpd restart
```

We recommend that a knowledgeable system administrator should perform any adjustments on a LON-CAPA server machine. Locations of these files are by default. Depending on your Linux distribution--RedHat, Mandrake, Debian, etc, the file paths may be elsewhere.

Configuration files that will have to be altered

LON-CAPA currently depends on the following list of configuration files. Note that `loncapa.conf` is automatically altered by the installation/upgrade scripts associated with the tarball-distribution (see the **INSTALL** and **UPGRADE** sections of this web-site). (Thus, the system administrator should not have to further adjust `loncapa.conf` from the terminal.)

- [EXAMPLE (at end of document)] `/etc/httpd/conf/loncapa.conf`
- [EXAMPLE (at end of document)] `/home/httpd/lonTabs/hosts.tab`
- [EXAMPLE (at end of document)] `/home/httpd/lonTabs/spare.tab`
- [EXAMPLE (at end of document)] `/etc/krb.conf`
- [EXAMPLE (at end of document)] `/home/httpd/lonTabs/htpasswd`
- [EXAMPLE (at end of document)] `/etc/ntp.conf`
- [EXAMPLE (at end of document)] `/etc/ntp/step-tickers`
- [EXAMPLE (at end of document)] `/etc/pam.d/pwauth`

Configuration files that do not have to be altered

The following configuration files are critical for the correct performance of a LON-CAPA server machine. Typically, these configuration files do not need to be adjusted by the system administrator.

- [EXAMPLE (at end of document)] /etc/httpd/conf/loncapa_apache.conf
- [EXAMPLE (at end of document)] /home/httpd/html/res/adm/includes/un_keyword.tab

Configuring Secondary Services

LON-CAPA does not provide integrated support for secondary services. The expectation is that knowledgeable system administrators will customize these secondary services for their institution.

We do, however, provide example configurations of services that you may want to deliver with LON-CAPA (i.e. Samba and AppleChooser).

- [EXAMPLE (at end of document)] /etc/smb.conf
- [EXAMPLE (at end of document)] /etc/atalk/config

You will need to check all the following things to ensure proper installation of your LON-CAPA system.

- Creating a user 'www'
- Make a LON-CAPA system work with shadow passwords
- Installing LON-CAPA files
- Checking your Linux RPMs
- Fixing /etc/hosts
- Configuring the MySQL database
- Testing to see if the LON-CAPA server is operational

NOTE: If you want to simultaneously install both RedHat 7.3 and LON-CAPA (to ensure 100% reliability), follow these alternative directions.

Creating a user 'www'

Execute the following command to create a user named 'www' on your LON-CAPA server:

```
/usr/sbin/useradd www
```

Make a LON-CAPA system work with shadow passwords

Step #	Description
1	<p>Is your system using shadow passwords? (Note: LON-CAPA will work with either MD5/non-MD5 configured systems). It is strongly recommended to use shadow passwords. If your system is currently not using shadow passwords, run the "pwconv" command (as root) in order to convert to shadow passwords. If you choose not to use shadow passwords, then do not perform any of the additional steps. If your system is using shadow passwords, then you will need to perform the additional steps below.</p> <p>How to detect: command: <code>cat /etc/passwd grep ':x:'</code></p> <p>If there is output such as "root:x:0:0:root:/root:/bin/bash", then your system is using shadow passwords and you will need to continue with the steps below.</p>
2	<p>Retrieve the mod_auth_external source by running the following command</p> <pre>wget http://www.unixpapa.com/software/mod_auth_external-2.1.15.tar.gz</pre>

3	<p>Unpack the mod_auth_external source by running the following command</p> <pre>tar xzvf mod_auth_external-2.1.15.tar.gz</pre>
4	<p>Go to the pwauth directory by running the following command</p> <pre>cd mod_auth_external-2.1.15/pwauth/</pre>
5	<p>Edit config.h and change SERVER_UIDS definition</p> <p>Determine the user id of 'www':</p> <pre>id -u www</pre> <p>Change the line</p> <pre>#define SERVER_UIDS 99 /* user "nobody" */</pre> <p>to be</p> <pre>#define SERVER_UIDS 513 /* user "www" */</pre> <p>where in this example 513 corresponds to the user id of 'www'.</p>
6	<p>Compile the pwauth executable by running the following command</p> <pre>make</pre>
7	<p>Install pwauth by doing the following</p> <pre>cp pwauth /usr/local/sbin/ chmod 6755 /usr/local/sbin/pwauth</pre> <p>Edit (creating the file) /etc/pam.d/pwauth to have the contents:</p> <pre>auth required /lib/security/pam_pwdb.so shadow nullok auth required /lib/security/pam_nologin.so account required /lib/security/pam_pwdb.so</pre>

Installing LON-CAPA files

Download the most current loncapa-current.tar.gz.

```
wget http://install.lon-capa.org/versions/loncapa-current.tar.gz
tar xzvf loncapa-current.tar.gz
cd loncapa-N.N (N.N is the version number)
```

The **UPDATE** command will refresh your filesystem with all the latest LON-CAPA software.

```
./UPDATE
```

Checking your Linux RPMs

The **CHECKRPMS** command will check the RPMs on your machine against an FTP repository.

```
./CHECKRPMS
```

Also, please be sure to install the LON-CAPA-systemperl RPM as described on the Downloads page.

Fixing /etc/hosts

A common RedHat glitch of new installations (RedHat's fault, not LON-CAPA) is the generation of /etc/hosts.

It should look something like this (except the `myschool` line should be replaced with settings specific to your machine):

```
127.0.0.1 localhost.localdomain localhost
12.34.56.78 www.myschool.edu myschool
```

Configuring the MySQL database

The following commands describe how to configure the MySQL database on your LON-CAPA server.
Note:

- you should substitute 'ROOTPASSWORD' with something very hard to guess (it does not have to be the Linux OS root password)
- The MySQL `www@localhost` user must always have a password of 'localhostkey' in order for there to be correct operation of a standard LON-CAPA system.

The following instructions assume you are logged in as 'root'.

Entering the mysql shell

```
mysql -u root -p mysql
OR
mysql -u root mysql (depending on whether you have set a root password)
```

Creating the mysql 'www' user (after entering mysql shell)

```
mysql> CREATE DATABASE loncapa;

mysql> INSERT INTO user (Host, User, Password)
mysql> VALUES ('localhost','www',password('localhostkey'));

mysql> INSERT INTO db VALUES ('localhost','loncapa','www',
mysql> 'Y','Y','Y','Y','Y','Y','N','Y','Y','Y');

mysql> FLUSH PRIVILEGES;
```

SECURITY: set a password for the mysql 'root' user

```
shell> mysql -u root mysql
mysql> SET PASSWORD FOR root@localhost=PASSWORD('ROOTPASSWORD');
```

SECURITY: only allow access from localhost

```
shell> mysql -u root -p mysql
mysql> DELETE FROM user WHERE host<>'localhost';
```

Testing to see if the LON-CAPA server is operational

The **TEST** command will check the installation software, the perl libraries on your system, the MySQL database, and will also automatically test the real-time operation of the LON-CAPA Apache web server.

```
./TEST
```

Using the **TEST** command will likely be an iterative process. It is normal to expect that the **TEST** command will recommend you perform various steps to ensure optimal performance of your LON-CAPA server.

There are three steps for upgrading the software on your LON-CAPA server.

- Upgrading LON-CAPA files
- Checking your Linux RPMs
- Testing to see if the LON-CAPA server is operational

Upgrading LON-CAPA files

Download the most current loncapa.tar.gz.

```
wget http://install.lon-capa.org/versions/current/loncapa.tar.gz
tar xzvf loncapa.tar.gz
cd loncapa
```

The **UPDATE** command will refresh your filesystem with all the latest LON-CAPA software.

```
./UPDATE
```

Checking your Linux RPMs

The **CHECKRPMS** command will check the RPMs on your machine against an FTP repository.

```
./CHECKRPMS
```

Testing to see if the LON-CAPA server is operational

The **TEST** command will check the installation software, the perl libraries on your system, the MySQL database, and will also automatically test the real-time operation of the LON-CAPA Apache web server.

```
./TEST
```

Using the **TEST** command will likely be an iterative process. It is normal to expect that the **TEST** command will recommend you perform various steps to ensure optimal performance of your LON-CAPA server.

Questions about anything and everything

Shown below are frequently asked questions others have about LON-CAPA installation and system management. For a more complete FAQ, you are strongly encouraged to visit

<http://help.lon-capa.org/>

The LON-CAPA files are released in a single *.tar.gz file.

- **Source code of LON-CAPA**, it provides you with
 - + network connectivity with other LON-CAPA computers around the world
 - + processing and delivery of course material and problem sets to your students
 - + classroom and course management
 - + extensive new functionality for your web server
 - + tools for monitoring the state of your system

After the download, please read the pages describing the configuration, installation, and upgrading of LON-CAPA.

NOTE: Additional downloads are also available.

- **Helpful resources for LON-CAPA**,
 - + an integrated approach for quickly installing both RedHat 7.3 and LON-CAPA (to ensure 100% reliability)
 - + software packages for the quick installation of CPAN perl modules

Source code of LON-CAPA

Current Release is Version LATESTVERSION. This version was released on LATESTDATE.

Current Beta is Version 0.99.3. This version was released on June 27, 2003.

You can download the most current version of LON-CAPA at
<http://install.lon-capa.org/versions/loncapa-current.tar.gz> (version LATESTVERSION).

You can download the current beta version of LON-CAPA at
<http://install.lon-capa.org/versions/loncapa-0.99.3.tar.gz> (version 0.99.3).

The development release of LON-CAPA is at: <http://install.lon-capa.org/versions/loncapa-unstable.tar.gz>.

To view the code development history of LON-CAPA, you will need to use the CVS tool, the open standard for version control. Please contact Helen (helen@lon-capa.org) to request a CVS USERNAME.

The initial CVS commands would be:

```
export CVSROOT=:pserver:USERNAME@zaphod.lite.msu.edu:/home/cvs
cvs login
cvs co loncapa
```

For more information on using CVS, please visit <http://www.cvshome.org/> or read loncom/build/readme.html after downloading the current version of LON-CAPA as described above.

Helpful resources for LON-CAPA

The entire collection of helpful resources is located at <http://install.lon-capa.org/resources/>.

Most users of LON-CAPA should install LON-CAPA by **simultaneously installing both RedHat 7.3 and LON-CAPA**. Step-by-step directions are available here.

The "LON-CAPA and RedHat 7.3" tarball is located here.

LON-CAPA makes extensive use of perl modules from CPAN. To help you install all the necessary perl modules, there is a custom-compiled RPM for RedHat 7.* systems:
LON-CAPA-systemperl-3.5-rh7.i386.rpm.

For RedHat 6.2 systems, you should instead use LON-CAPA-systemperl-3.5-1.i386.rpm.

To install the systemperl RPM, you should enter the following command:

```
rpm -Uvh --force LON-CAPA-systemperl-3.5-rh7.i386.rpm
```

The systemperl RPM will overwrite some of the files present in the regular RedHat perl RPM. This is okay; this will not likely cause problems.

<http://www.lon-capa.org/>
Organizational questions

or

korte@lite.msu.edu
*Installation related questions and
feedback*

<http://bugs.lon-capa.org/>
Software feature requests and bug reports

Open Source = Open Spirit

Thank you for your interest in LON-CAPA. Please take a moment to review the content within our site, including Frequently Asked Questions. If you are unable to find information you are searching for, please contact us.

We welcome your interest in this educational endeavor. It is a very simple process to join our mailing lists and there is a simple web page for you to do so: [Announcement Mailing List](#).

For a fuller description of the people, goals, and contacts for the LON-CAPA project, you are encouraged to visit <http://www.lon-capa.org/>.

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```
<one line to give the program's name and a brief idea of what it does.>  
Copyright (C) <year> <name of author>
```

```
This program is free software; you can redistribute it and/or modify  
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the Free Software Foundation; either version 2 of the License, or  
(at your option) any later version.
```

```
This program is distributed in the hope that it will be useful,  
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GNU General Public License for more details.
```

```
You should have received a copy of the GNU General Public License  
along with this program; if not, write to the Free Software  
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
```

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

```
Gnomovision version 69, Copyright (C) year name of author  
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type 'show w'.  
This is free software, and you are welcome to redistribute it  
under certain conditions; type 'show c' for details.
```

The hypothetical commands 'show w' and 'show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than 'show w' and 'show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program
'Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

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```
#####
#####
#
# Appletalk configuration
#
#
# This is an example configuration file for Appletalk; it is distributed
# with LON-CAPA. A typical location for this configuration file is:
#   /etc/atalk/config
#
# This is meant to configure netatalk software:
#   http://sourceforge.net/projects/netatalk
#
# This is supposed to allow old Mac/Apple systems to access a LON-CAPA
# filesystem over the network via the AppleChooser tool.
#
#####
#####

# Change this to increase the maximum number of clients that can connect:
AFPD_MAX_CLIENTS=5

# Change this to set the machine's atalk name:
# ATALK_NAME='echo ${HOSTNAME}|cut -d. -f1'

ATALK_NAME='grep '^PerlSetVar.*lonHostID' /etc/httpd/conf/loncapa.conf | perl -e

# Set which daemons to run:
PAPD_RUN=no
AFPD_RUN=yes

# Control whether the daemons are started in the background
ATALK_BGROUND=no
```

```
morphyl1:morphy:library:grover.morphy.edu:12.34.56.99  
abc11:abc:library:lochness.alphabetagency.com:98.11.23.86  
abc1:abc:access:godzilla.alphabetagency.com:98.11.11.41  
abca2:abc:access:yeti.alphabetagency.com:98.11.11.42
```

lonadm:hjm111MCGLkg2

MORPHY.EDU afsdb.lib.morphy.edu


```
PerlSetVar lonAdmEMail harris41@spock.lite.msu.edu
PerlSetVar lonHostID morphyll
PerlSetVar lonRole library
PerlSetVar lonLoadLim 2.00
PerlSetVar lonExpire 86400
PerlSetVar lonReceipt lkj32kjlppqkkm
PerlSetVar lonDefDomain msu
```

```
##
## loncapa_apache.conf -- Apache HTTP LON-CAPA configuration file
##
## $Id: loncapa_apache.conf,v 1.3 2003/02/03 18:03:51 harris41 Exp $
##

#
# LON-CAPA Section (extensions to httpd.conf daemon configuration)
#
# ===== DocumentRoot

DocumentRoot "/home/httpd/html"

# ===== User

User www
Group www

# ===== Shared Object Modules

LoadModule perl_module          modules/libperl.so
AddModule mod_perl.c

# ===== Miscellaneous

ServerAdmin korte@lite.msu.edu
ExtendedStatus On

#
# LON-CAPA Section (extensions to srm.conf name space servicing)
#
# ===== Aliases

Alias /prtspool/ /home/httpd/prtspool/
ScriptAlias /cgi-bin/ "/home/httpd/cgi-bin/"

# ===== Directories

# ----- Access Handlers

PerlTransHandler          Apache::lontrans

<LocationMatch "^/res.*">
PerlAccessHandler          Apache::lonacc
PerlHeaderParserHandler    Apache::lonrep
ErrorDocument              403 /adm/login
ErrorDocument              404 /adm/notfound.html
ErrorDocument              406 /adm/roles
ErrorDocument              500 /adm/errorhandler
</LocationMatch>

<LocationMatch "^/userfiles.*">
PerlAccessHandler          Apache::lontokacc
</LocationMatch>

<LocationMatch "^/uploaded.*">
PerlAccessHandler          Apache::lonuploadedacc
ErrorDocument              404 /adm/notfound.html
ErrorDocument              500 /adm/errorhandler
</LocationMatch>

<LocationMatch "^/public/.*/syllabus">
PerlAccessHandler          Apache::lonacc
SetHandler                 perl-script
PerlHandler                Apache::lonsyllabus
ErrorDocument              404 /adm/notfound.html
```

```
ErrorDocument      500 /adm/errorhandler
</LocationMatch>

<LocationMatch "^/adm/.*/aboutme">
PerlAccessHandler  Apache::lonacc
SetHandler         perl-script
PerlHandler        Apache::lonaboutme
ErrorDocument      404 /adm/notfound.html
ErrorDocument      500 /adm/errorhandler
</LocationMatch>

<LocationMatch "^/priv.*">
PerlAccessHandler Apache::loncacc
SetHandler         perl-script
PerlHandler        Apache::lonconstruct
ErrorDocument      403 /adm/login
ErrorDocument      404 /adm/notfound.html
ErrorDocument      406 /adm/unauthorized.html
ErrorDocument      500 /adm/errorhandler
</LocationMatch>

<LocationMatch "^/raw.*">
PerlAccessHandler Apache::lonracc
</LocationMatch>

<LocationMatch "^/\~.*">
PerlAccessHandler Apache::loncacc
ErrorDocument      403 /adm/login
ErrorDocument      404 /adm/notfound.html
ErrorDocument      406 /adm/unauthorized.html
ErrorDocument      500 /adm/errorhandler
AllowOverride None
</LocationMatch>

# ----- RAT

<LocationMatch "^/\~.*\.sequence$" >
SetHandler perl-script
PerlHandler Apache::lonratedt
</LocationMatch>

<LocationMatch "^/\~.*\.page$" >
SetHandler perl-script
PerlHandler Apache::lonratedt
</LocationMatch>

<LocationMatch "^/\~.*\./ratserver$" >
SetHandler perl-script
PerlHandler Apache::lonratsrv
</LocationMatch>

<Location /adm/ratparms>
PerlAccessHandler  Apache::lonacc
SetHandler         perl-script
PerlHandler        Apache::lonratparms
ErrorDocument      403 /adm/login
ErrorDocument      500 /adm/errorhandler
</Location>

# ----- Resource Space Content Handlers

<LocationMatch "^/res.*/$" >
SetHandler perl-script
PerlHandler Apache::lonindexer
</LocationMatch>
```

```
<LocationMatch "^(res|\~).*\.tex$" >
SetHandler perl-script
PerlHandler Apache::lontex
</LocationMatch>

<LocationMatch "^(res/).*\.page$" >
SetHandler perl-script
PerlHandler Apache::lonpage
</LocationMatch>

<LocationMatch "^(res/).*\.sequence$" >
SetHandler perl-script
PerlHandler Apache::lonsequence
</LocationMatch>

<LocationMatch "^(res|\~).*\.meta$" >
SetHandler perl-script
PerlHandler Apache::lonmeta
</LocationMatch>

<LocationMatch "^(res|\~).*\. (xml|html|htm|xhtml|xhtm)$" >
SetHandler perl-script
PerlHandler Apache::lonxml
</LocationMatch>

<LocationMatch "^(res|\~).*\. (problem|exam|quiz|assess|survey|form|library)$" >
SetHandler perl-script
PerlHandler Apache::lonhomework
</LocationMatch>

<LocationMatch "^(adm/wrapper/" >
PerlAccessHandler Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonwrapper
ErrorDocument 403 /adm/login
ErrorDocument 500 /adm/errorhandler
</LocationMatch>

# ----- Admin Programs

<Location /adm/statistics>
PerlAccessHandler Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonstatistics
ErrorDocument 403 /adm/login
ErrorDocument 500 /adm/errorhandler
</Location>

<Location /adm/roles>
PerlAccessHandler Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonroles
ErrorDocument 403 /adm/login
ErrorDocument 500 /adm/errorhandler
</Location>

<Location /adm/login>
SetHandler perl-script
PerlHandler Apache::lonlogin
</Location>

<Location /adm/logout>
PerlAccessHandler Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonlogout
ErrorDocument 403 /adm/login
```

```
</Location>

<Location /adm/authenticate>
SetHandler perl-script
PerlHandler Apache::lonauth
</Location>

<Location /adm/annotations>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::admannotations
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/bookmarks>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::admbookmarks
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/flip>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonpageflip
ErrorDocument          406 /adm/roles
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/ambiguous>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonambiguous
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/email>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonmsg
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/parmset>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonparmset
ErrorDocument          403 /adm/login
ErrorDocument          406 /adm/roles
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/grades>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::grades
ErrorDocument          403 /adm/login
ErrorDocument          406 /adm/roles
ErrorDocument          500 /adm/errorhandler
</Location>
```

```
<Location /adm/createcourse>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::loncreatecourse
ErrorDocument         403 /adm/login
ErrorDocument         406 /adm/roles
ErrorDocument         500 /adm/errorhandler
</Location>

<Location /adm/createuser>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::loncreateuser
ErrorDocument         403 /adm/login
ErrorDocument         406 /adm/roles
ErrorDocument         500 /adm/errorhandler
</Location>

<Location /adm/publish>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonpublisher
ErrorDocument         403 /adm/login
ErrorDocument         404 /adm/notfound.html
ErrorDocument         406 /adm/unauthorized.html
ErrorDocument         500 /adm/errorhandler
</Location>

<LocationMatch "^/\~.*/$">
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonpubdir
ErrorDocument         403 /adm/login
ErrorDocument         404 /adm/notfound.html
ErrorDocument         406 /adm/unauthorized.html
ErrorDocument         500 /adm/errorhandler
</LocationMatch>

<Location /adm/pubdir>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonpubdir
ErrorDocument         403 /adm/login
ErrorDocument         404 /adm/notfound.html
ErrorDocument         406 /adm/unauthorized.html
ErrorDocument         500 /adm/errorhandler
</Location>

<Location /adm/retrieve>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonretrieve
ErrorDocument         403 /adm/login
ErrorDocument         404 /adm/notfound.html
ErrorDocument         406 /adm/unauthorized.html
ErrorDocument         500 /adm/errorhandler
</Location>

<Location /adm/cfile>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::loncfile
ErrorDocument         403 /adm/login
ErrorDocument         404 /adm/notfound.html
ErrorDocument         406 /adm/unauthorized.html
ErrorDocument         500 /adm/errorhandler
```

```
</Location>

<Location /adm/diff>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::londiff
ErrorDocument          403 /adm/login
ErrorDocument          404 /adm/notfound.html
ErrorDocument          406 /adm/unauthorized.html
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/upload>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonupload
ErrorDocument          403 /adm/login
ErrorDocument          404 /adm/notfound.html
ErrorDocument          406 /adm/unauthorized.html
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/assesscalc>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonspreadsheet
ErrorDocument          403 /adm/login
ErrorDocument          406 /adm/roles
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/studentcalc>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonspreadsheet
ErrorDocument          403 /adm/login
ErrorDocument          406 /adm/roles
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/classcalc>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonspreadsheet
ErrorDocument          403 /adm/login
ErrorDocument          406 /adm/roles
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/dropadd>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::londropadd
ErrorDocument          403 /adm/login
ErrorDocument          406 /adm/roles
ErrorDocument          500 /adm/errorhandler
</Location>

<Location /adm/printout>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonprintout
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>
```

```
<Location /adm/feedback>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonfeedback
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>
```

```
<Location /adm/coursedocs>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::londocs
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>
```

```
<Location /adm/announcements>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonannounce
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>
```

```
<Location /adm/chat>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonchat
ErrorDocument          500 /adm/errorhandler
</Location>
```

```
<Location /adm/chatfetch>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonchatfetch
ErrorDocument          500 /adm/errorhandler
</Location>
```

```
<Location /adm/evaluate>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonevaluate
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>
```

```
<Location /adm/preferences>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonpreferences
ErrorDocument          403 /adm/login
ErrorDocument          500 /adm/errorhandler
</Location>
```

```
<Location /adm/assignments>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonassignments
ErrorDocument          403 /adm/login
ErrorDocument          406 /adm/roles
ErrorDocument          500 /adm/errorhandler
</Location>
```

```
<Location /adm/communicate>
PerlAccessHandler      Apache::lonacc
SetHandler perl-script
```



```
PerlHandler Apache::loncommunicate
ErrorDocument 403 /adm/login
ErrorDocument 500 /adm/errorhandler
</Location>

<Location /adm/searchcat>
PerlAccessHandler Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonsearchcat
ErrorDocument 403 /adm/login
ErrorDocument 500 /adm/errorhandler
</Location>

<Location /adm/navmaps>
PerlAccessHandler Apache::lonacc
SetHandler perl-script
PerlHandler Apache::lonnavmaps
ErrorDocument 403 /adm/login
ErrorDocument 406 /adm/roles
ErrorDocument 500 /adm/errorhandler
</Location>

<Location /adm/groupsort>
PerlAccessHandler Apache::lonacc
SetHandler perl-script
PerlHandler Apache::groupsort
ErrorDocument 403 /adm/login
ErrorDocument 500 /adm/errorhandler
</Location>

<Location /adm/errorhandler>
SetHandler perl-script
PerlHandler Apache::lonerrorhandler
</Location>

<LocationMatch "^/adm/help/.*\.hlp$" >
SetHandler perl-script
PerlHandler Apache::lonhelp
</LocationMatch>

# ----- Backdoor Adm Tests/Programs

<Location /cgi-bin/loncron.pl>
AuthName "LON-CAPA Network Administration"
AuthType Basic
AuthUserFile /home/httpd/lonTabs/htpasswd
require user lonadm
</Location>

<Location /cgi-bin/lonversions.pl>
AuthName "LON-CAPA Network Administration"
AuthType Basic
AuthUserFile /home/httpd/lonTabs/htpasswd
require user lonadm
</Location>

<Location /cgi-bin/clusterstatus.pl>
AuthName "LON-CAPA Network Administration"
AuthType Basic
AuthUserFile /home/httpd/lonTabs/htpasswd
require user lonadm
</Location>

<Location /cgi-bin/metadata_keywords.pl>
AuthName "LON-CAPA Network Administration"
AuthType Basic
```

```
AuthUserFile /home/httpd/lonTabs/htpasswd
require user lonadm
</Location>

<Location /adm/test>
AuthName "LON-CAPA Network Administration"
AuthType Basic
AuthUserFile /home/httpd/lonTabs/htpasswd
require user lonadm
SetHandler perl-script
PerlAccessHandler Apache::lonacc
PerlHandler Apache::lonetest
</Location>

# ----- Shutting down a child
PerlChildExitHandler Apache::lonnet::goodbye

#
# LON-CAPA Section (extensions to access.conf permission configuration)
#
# ===== Directory Options
# Start out with "no"

<Directory />
Options None
AllowOverride None
</Directory>

# Yes to symbolic links and server-side includes

<Directory /home/httpd/html>
Options Includes FollowSymLinks
AllowOverride None
order allow,deny
allow from all
</Directory>

# If it is in cgi-bin, then it can be executed as a CGI script.

<Directory /home/httpd/cgi-bin>
AllowOverride None
Options ExecCGI
</Directory>

# ===== Access Handlers
# ----- Allow server-status reports
<Location /server-status>
SetHandler server-status
AuthName "LON-CAPA Network Administration"
AuthType Basic
AuthUserFile /home/httpd/lonTabs/htpasswd
require user lonadm
</Location>

# ----- Allow LON-CAPA "low-level" connection status reports
<Location /lon-status>
AuthName "LON-CAPA Network Administration"
AuthType Basic
AuthUserFile /home/httpd/lonTabs/htpasswd
require user lonadm
</Location>

# ----- Allow access to local system documentation from localhost
```

```
Alias /doc /usr/doc
<Directory /usr/doc>
order deny,allow
deny from all
allow from localhost
Options Indexes FollowSymLinks
</Directory>

# ***** THESE "SHOULD" NEVER BE ALTERED BY THE USER *****
# ===== Internal Settings / Perl Configuration

PerlSetVar      lonIDsDir      /home/httpd/lonIDs
PerlSetVar      lonTabDir      /home/httpd/lonTabs
PerlSetVar      lonUsersDir    /home/httpd/lonUsers
PerlSetVar      lonIconsURL    /adm/lonIcons
PerlSetVar      londPort      5663
PerlSetVar      lonSysEMail    korte@lite.msu.edu
PerlSetVar      lonDaemons     /home/httpd/perl
PerlSetVar      lonSockDir     /home/httpd/sockets
PerlSetVar      lonDocRoot     /home/httpd/html
PerlSetVar      lonIncludes    /home/httpd/html/res/adm/includes
PerlSetVar      lonBrowsDet    netscape:mozilla:msie:mozilla\\((\d+\. \d+)\s:9999&ex

# -----
# NOTE: lonSqlAccess key is the password for the MySQL user
# www@localhost. This value must always be "localhostkey".
# The only security risk occurs when somebody logs in as 'www' on your system
# (in which case you have much bigger problems than whether or not they
# can access the non-authoritative loncapa database on your machine).

PerlSetVar      lonSqlAccess   localhostkey

# -----

# ===== Include machine-specific configuration

Include conf/loncapa.conf

# ===== Initiate mod_perl starting

PerlRequire     conf/startup.pl
PerlFreshRestart On
```

```
#
# Undisciplined Local Clock. This is a fake driver intended for backup
# and when no outside source of synchronized time is available. The
# default stratum is usually 3, but in this case we elect to use stratum
# 0. Since the server line does not have the prefer keyword, this driver
# is never used for synchronization, unless no other other
# synchronization source is available. In case the local host is
# controlled by some external source, such as an external oscillator or
# another protocol, the prefer keyword would cause the local host to
# disregard all other synchronization sources, unless the kernel
# modifications are in use and declare an unsynchronized condition.
#
server ntp.morphy.edu
#fudge 127.127.1.0 stratum 10

#
# Drift file. Put this in a directory which the daemon can write to.
# No symbolic links allowed, either, since the daemon updates the file
# by creating a temporary in the same directory and then rename()'ing
# it to the file.
#
driftfile /etc/ntp/drift
multicastclient # listen on default 224.0.1.1
broadcastdelay 0.008

#
# Authentication delay. If you use, or plan to use someday, the
# authentication facility you should make the programs in the auth_stuff
# directory and figure out what this number should be on your machine.
#
authenticate no

#
# Keys file. If you want to diddle your server at run time, make a
# keys file (mode 600 for sure) and define the key number to be
# used for making requests.
# PLEASE DO NOT USE THE DEFAULT VALUES HERE. Pick your own, or remote
# systems might be able to reset your clock at will.
#
#keys /etc/ntp/keys
#trustedkey 65535
#requestkey 65535
#controlkey 65535
```

```
auth      required /lib/security/pam_pwdb.so shadow nullok
auth      required /lib/security/pam_nologin.so
account   required /lib/security/pam_pwdb.so
```

```
#####
#####
#
# Samba configuration
#
#
# This is an example configuration file for Samba; it is distributed
# with LON-CAPA.  A typical location for this configuration file is:
#   /etc/smb.conf on older systems OR
#   /etc/samba/smb.conf on newer systems.
#
# This is meant to configure Samba software:
#   http://www.samba.org/
#
# This is supposed to allow Microsoft machines the ability to access
# a LON-CAPA filesystem over the network via the Network Neighborhood tool.
#
#####
#####

# Global parameters
[global]
    workgroup = LONCAPA_msu
    netbios name = msua3
    server string = Samba Server
    encrypt passwords = Yes
    log file = /var/log/samba/log.%m
    max log size = 0
    socket options = TCP_NODELAY SO_RCVBUF=8192 SO_SNDBUF=8192
    dns proxy = No

[homes]
    comment = Home Directories
    writeable = Yes
    browseable = Yes
    create mode = 0664
    directory mode = 0775
```

abca1
abca2

ntp.morphy.edu