KITE® | LOCAL CACHING SERVER (LCS)

LCS Guide
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KU AGILE TECHNOLOGY SOLUTIONS
The University of Kansas

Contents

Chapter 1: Welcome to LCS

The Kansas Interactive Testing Engine (KITE®) is used to deliver standardized tests via testing machines like desktop, laptop, and tablet computers. A Local Caching Server (LCS) can be installed to facilitate transmission of test questions and student responses between your local network and the main KITE servers (at AAI).

> Note: **The LCS is not compatible with DLM® alternate assessment. If your site is participating in DLM assessments, please do not use an LCS.**

This manual is designed for the technical contact within a school system who either manages or maintains the local network and who will be installing and monitoring the LCS. For more information about the KITE system, refer to the other manuals.

- KITE Client Software Installation Guides – each guide provides instructions on installing KITE Client software on a particular type of machine or operating system.
- Educator's Guide to KITE Client Software – an overview of the KITE Client software, including how to navigate through a test and descriptions of tools available during testing.
- Educator Portal User Manual – an explanation of the features available in Educator Portal for setting up tests, administering tests, and reporting on test results.

Introduction to Local Caching Servers

A Local Caching Server (LCS) is a specially configured machine that resides on your local network and communicates between the testing machines at your location and the main testing servers at AAI. During testing, each test machine submits and requests data as the student proceeds through the test. Depending upon the number of students testing at one time, the traffic on your local network, and the speed and quality of your Internet connection, the amount of data being sent or requested at any one time can be large.

An LCS helps reduce these potential network issues during live testing. The LCS does this by caching content during the request phase and collecting responses for streaming to the central testing system as bandwidth allows. The LCS can be deployed in a classroom or in a lab, and the LCS can be installed on a regular desktop-class device or on server-class equipment at a district level to be used by multiple buildings.

> **Note:** **While in use, the LCS will contain tests and student responses. Physical and remote access to the LCS should be managed in the same fashion as any other repositories of personally identifiable information (PII) in compliance with FERPA and all relevant state and federal laws.**

While operating, the LCS stores testing data in an internal database; therefore, if the upstream network connection becomes unreliable (or variable) during testing, then students can still continue testing and their responses will be transmitted to the KITE servers as bandwidth allows.

> **Note:** **Once a student starts a test using an LCS they must complete the test on the same LCS. Changing servers during the test may cause errors during testing.**

Depending on the needs of your location, an LCS can be used in either semi-offline or fully offline mode.

Semi-Offline Mode

Semi-offline mode is the default setting for LCS. In semi-offline mode, the LCS submits and receives data to and from the AAI servers while the students are taking tests. If the Internet connection becomes unreliable (or too slow to transmit all of the data), the LCS will cache (temporarily store) test questions and student responses and send them when bandwidth becomes available. Semi-offline mode works best if your location has a fairly robust Internet connection with only occasional fluctuation in bandwidth.
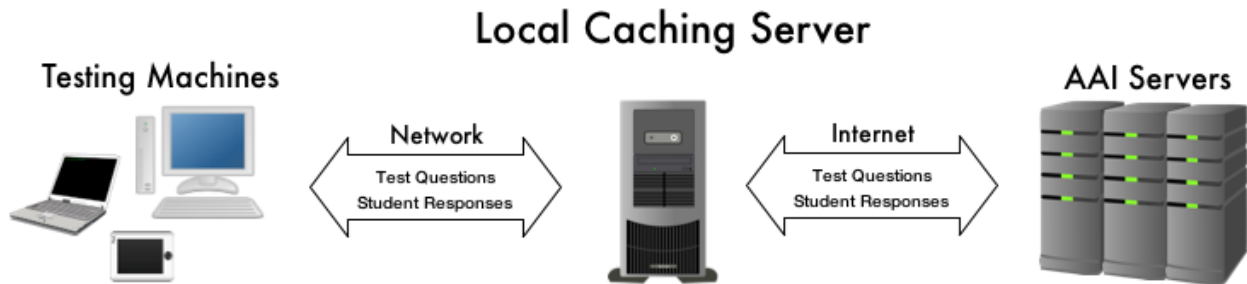
Note: Fully Offline mode for the LCS is no longer supported.

Structure of LCS Manual

A version of the LCS manual exists for Macintosh, Windows, and Linux. In each manual, you will find the following information:

- Chapter 1: Welcome to LCS
- Chapter 2: Installing and Configuring the LCS
- Chapter 3: Administering the LCS

A Note about Graphics

Every effort was made to assure the graphics in this manual match what the users will see when using the LCS. Expect some slight differences depending on the operating systems used to access the LCS and KITE Client software.

Version Information

This manual provides documentation for the KITE system release of August 2017.

Disclaimer

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Using the LCS

Getting Help

Common tasks are described in this manual, but if you need additional help, call or email the Service Desk.

> Hint: Check your organization's website for a toll-free number for the Service Desk.

Phone: **785-864-3537**

Email: **kite-support@ku.edu**

Changes to the Manual

The following table lists the changes made to this chapter since the last major release of the documentation.

Note: **The Page column indicates the page number of the current manual where the change appears.**

Change Logged	Page	Description of Change
9/1/2017	All	Updated trademark registration.
9/1/2017	2.5	Updated download process.

Chapter 2: Installing the LCS on a Macintosh Computer

This chapter explains how to install and configure an LCS on a Macintosh® computer.

System Requirements

Your machine must meet or exceed the requirements in the table below.

> **Note:** **The specifications are the minimums that must be available for the LCS to use. These are NOT overall machine specifications.**

Minimum Processor	Minimum RAM	Disk Space Available for LCS
1 GHz	2 GB	3 GB

Checking System Properties

To ensure that your machine can run an LCS, check the system properties. To view your system properties, perform the following steps.

1. On the upper left side of your screen, click the Apple symbol.
2. Click About This Mac.
3. Verify that your computer is running OS X Version 10.10 or higher.
4. Verify that your Processor is 1.0 GHz or higher.
5. Verify that your Memory is 2 GB or more.
6. Click Storage.

> Hint: For some operating systems, Storage is under the More Info button.

7. Verify that your hard drive (SATA Disk or SSD) has at least 3 GB free.

Finding the IP address

When you install and configure the LCS, you will need to know the IP address of the machine that will run the LCS. If you do not know the computer's IP address, perform the following steps.

1. Open Network Preferences.

> Hint: In the upper right corner of your screen, click the Wireless logo, and select Open Network Preferences.

2. Under the Status field, find the IP address.
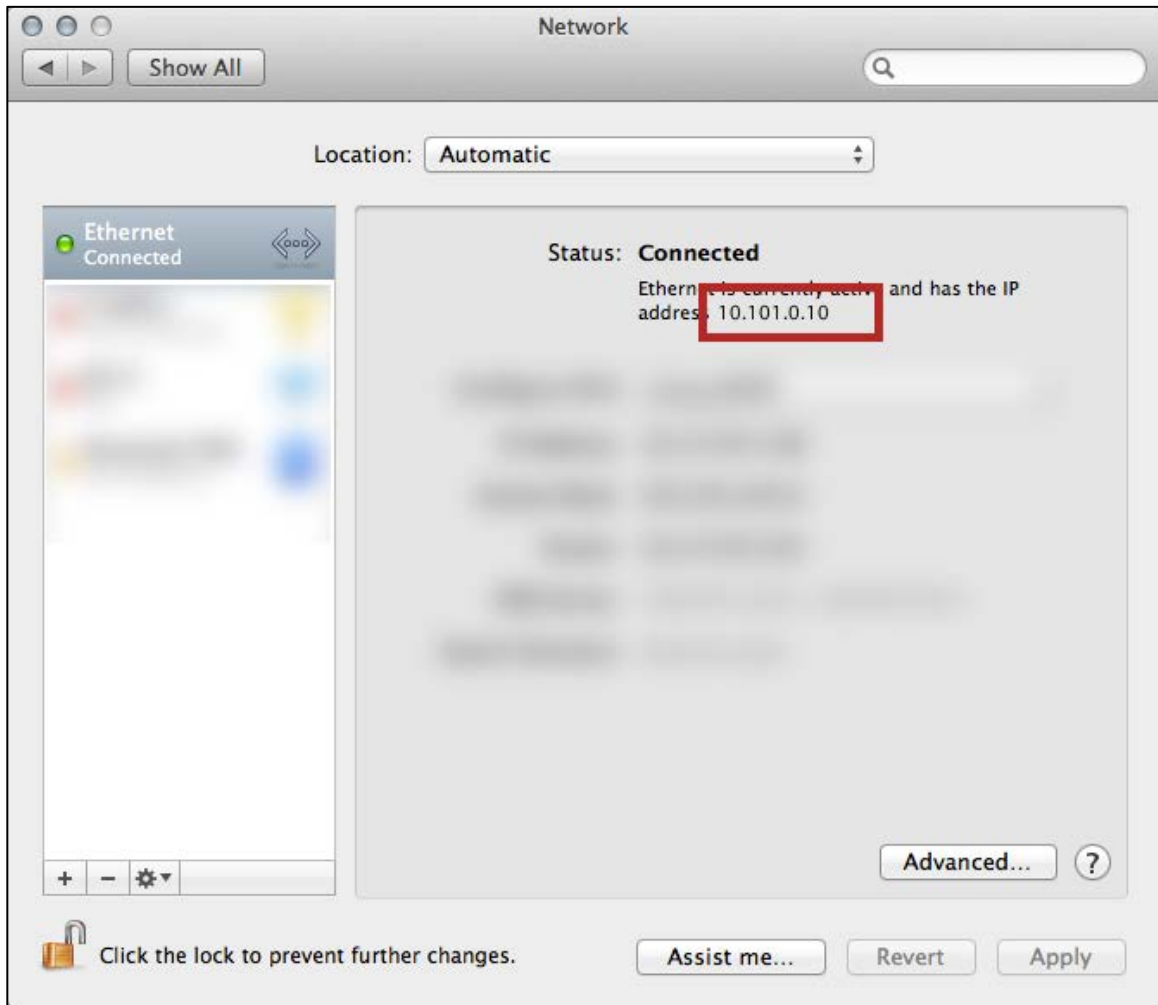
3. Make a note of the LCS machine's IP address.

LCS Software

After verifying that your computer can run the LCS software, you need to download the file before installing the server. Make a note of where you save the LCS software so that you can find it when you perform the other steps in this manual.

Note: **In this manual, the screen shots show the KITE-LCS folder installed in the recommended area for the particular operating system.**

LCS software is available from your program's website. On the website, check the page with links to the KITE Client software to locate a link for Local Caching Server.

Downloading the LCS Software

The LCS software is available on your program's LCS page. Select the appropriate link for your platform.

Installing the Software

To install the software, perform the following steps.

1. Follow the link to download the LCS.
2. Save the DMG file to the machine.
3. Open the DMG.
4. Drag the KITE-LCS folder to Applications.
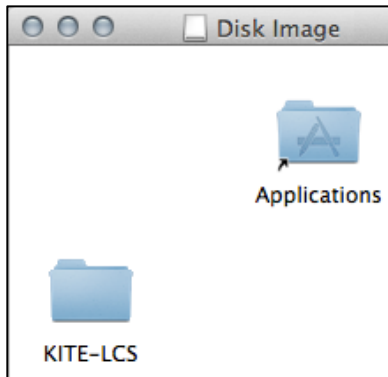
## *Configuring the Properties File*

> **Note:** **Configuring the properties file requires the use of a text editor that does not default to "smart quotes". Consider software like TextWrangler (Bare Bones software), TextMate (MacroMates Ltd.), or Brackets (Adobe).**

After you have copied the files for the LCS, you need to configure a properties file to include the IP address for the LCS machine. To configure the properties file, perform the following steps.

1. Open the KITE-LCS folder.
2. Open the TDELocalCache folder.
3. Open the config folder.
4. Using a text editor, open the kitelcs.properties file.
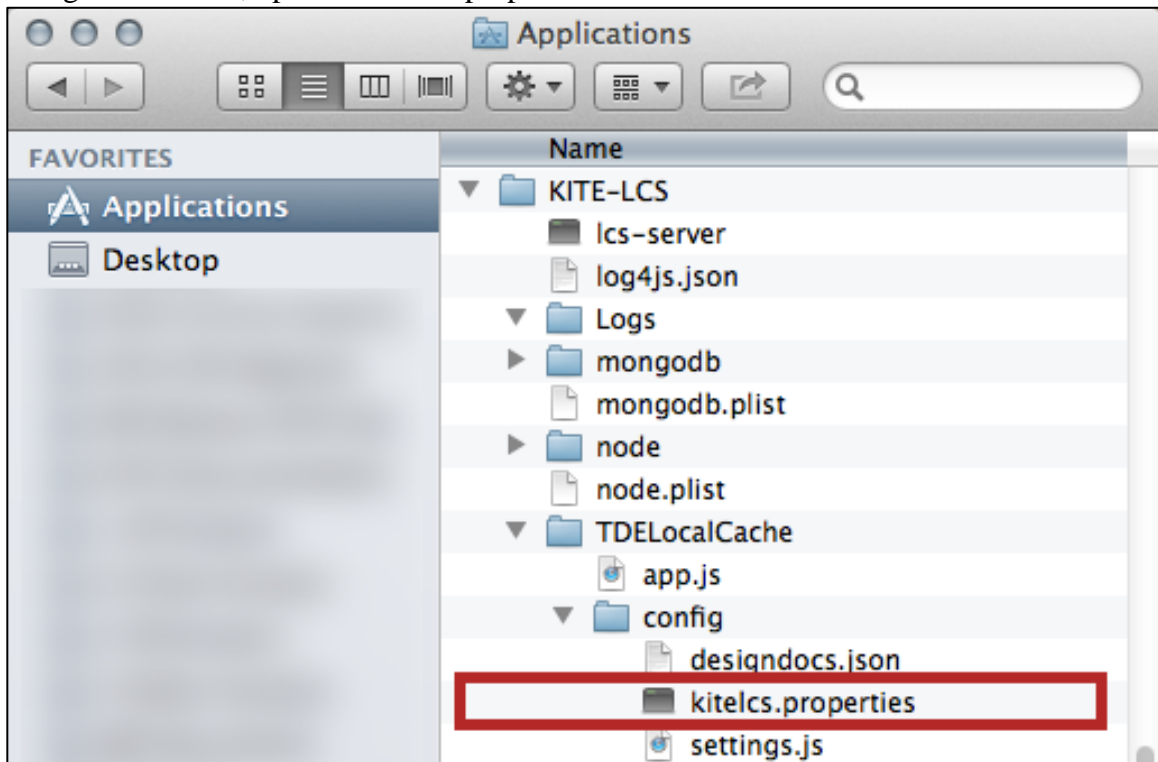
> **Note:** **If you are using TextEdit, open the Preferences and verify that the Smart Quotes checkbox has been cleared.**
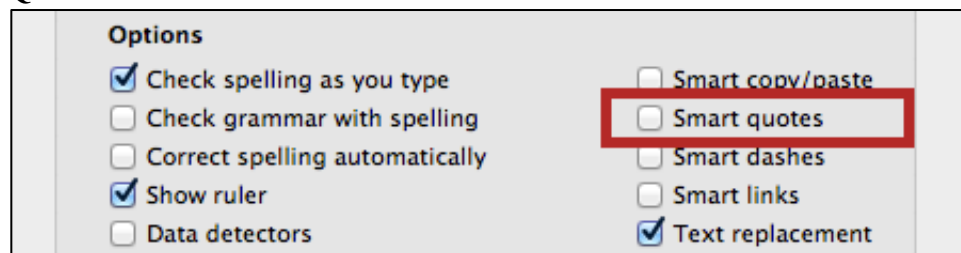
5. Change the lcsHostServer to the IP address for your LCS.

```
{
        "nodejsport" : 3000,
        "lcsHostServer" : "x.x.x.x"
}
```

> Hint: Replace the x symbols above with the IP address. Directions for finding your machine's IP address are in the previous section, Finding the IP Address.

Note: If you are using a port other than 3000, change the nodejsport to the correct port.

6. Save the file.
7. Close the text editor.

Firewall Access

To allow test takers to access the LCS, your firewall will need to be configured to allow this access.

Allowing Access through Your OS X Firewall

To allow test takers to access the LCS, you need to set up two new firewall allowances. To allow access through a Mac OS X firewall, perform the following steps.

1. Open System Preferences.
2. Click Security & Privacy.
3. Click the Firewall tab.
4. On the bottom left of the window, click the padlock.
5. Enter your administrator password.
6. Click Unlock.
7. Click Firewall Options.
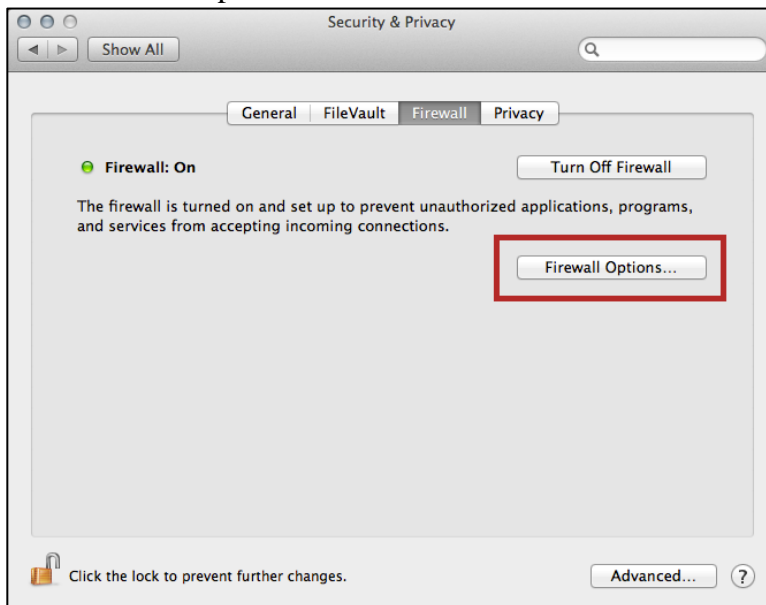
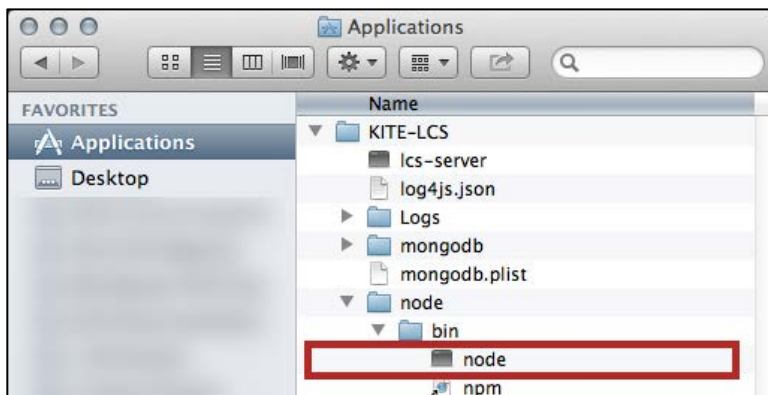8. In the bottom left of the window, click + to add the first connection.
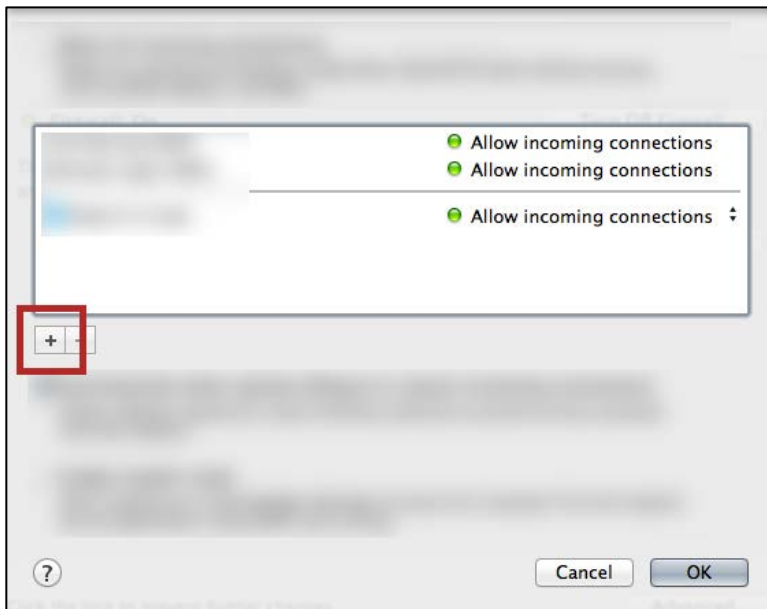
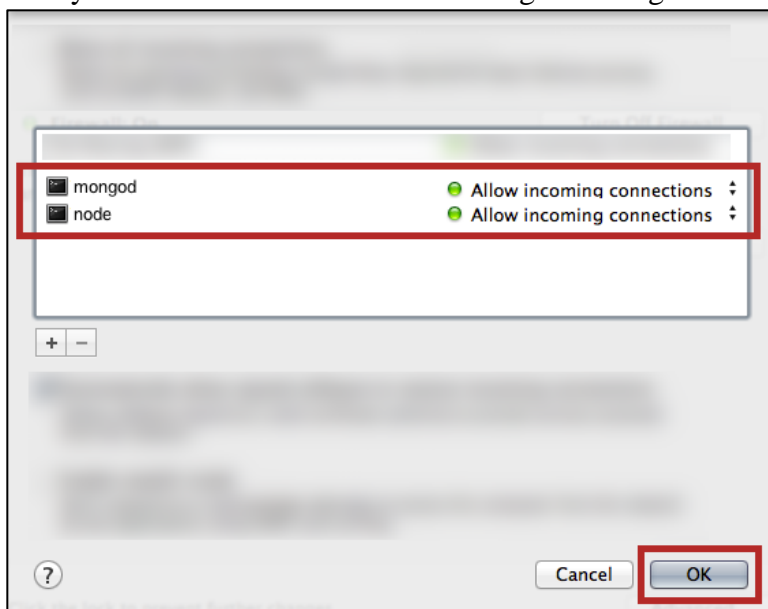9. Locate the mongod file as shown.
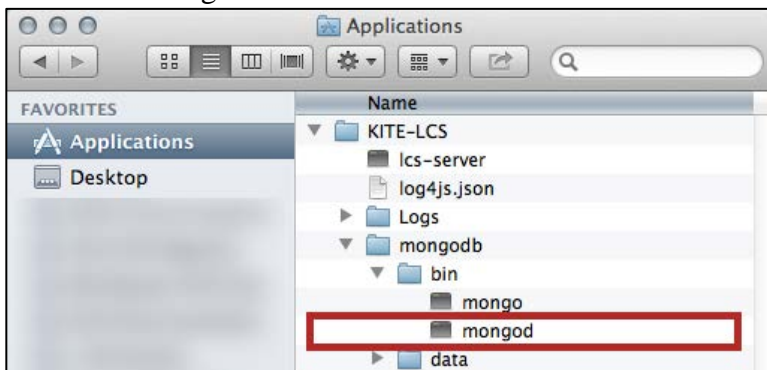
10. Click Add.
11. In the bottom left of the window, click + to add the second connection.

12. Locate the node file as shown.

13. Click Add.
14. Verify that both connections are allowing incoming connections.

15. Click OK.
16. In the bottom left of the window, click the padlock to save changes.

Other Firewalls

If your location uses a firewall other than Mac OS X, contact your local system administrator to update the firewall.
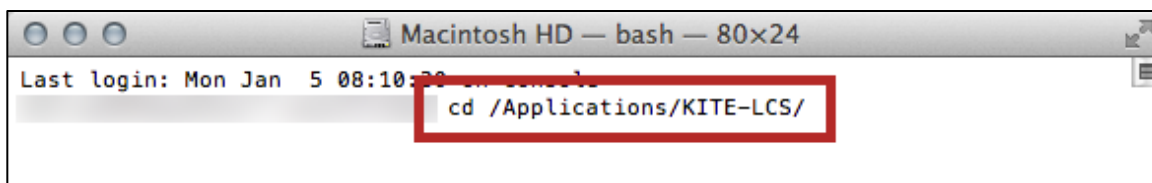
Starting the LCS

To start the LCS, perform the following steps.

1. On the LCS machine, open a Terminal window.

   > Hint: You can search for the Terminal app using Spotlight.

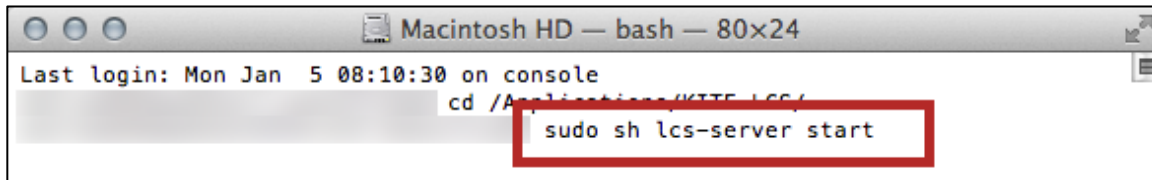2. In the Terminal window, type:

   cd /Applications/KITE-LCS/

   Note: If you did not save the KITE LCS software into the Applications folder, type the path for the location where you saved it.

3. Press Enter.
4. Type:

   sudo sh lcs-server start

5. Press Enter.

   Note: If you see a prompt for Password, type the administrator password (for the Mac) and press Enter.

Verify the LCS is Running – on the LCS Machine

The LCS runs as a process in the background. To verify that the LCS is running, perform the following steps:

1. On the LCS machine, open a Terminal window.
2. To switch to the LCS directory, type:

   cd /Applications/KITE-LCS/

3. Type:

   sudo sh lcs-server display

4. In the table, check the App name column to see that at least one instance of "kite-lcs" is online.

```
●  ●  ●                            📁 KITE-LCS — bash — 120×40

                        $ cd /Applications/KITE-LCS
                            $ sudo sh lcs-server display
Password:

 App name    id   mode      pid     status    restart   uptime   memory       watching

 kite-lcs    0    cluster   93533   online    0         47m      51.320 MB    enabled
 kite-lcs    1    cluster   93537   online    0         47m      51.551 MB    enabled
 kite-lcs    2    cluster   93538   online    0         47m      51.105 MB    enabled
 kite-lcs    3    cluster   93539   online    0         47m      51.246 MB    enabled
```

> Hint: Depending upon the machine that is running the LCS, you may see between one and eight instances of kite-lcs in the table.

Testing the LCS Settings Using a Browser

After you have installed and started the LCS, you should test to see that the LCS is configured correctly. To do so, you will point a browser at the LCS Admin Dashboard.

To test the LCS settings, perform the following steps.

> **Note:** **The example below uses the IP Address 10.101.0.10 and the Port Number 3000. Your server may have a different IP address and port number.**
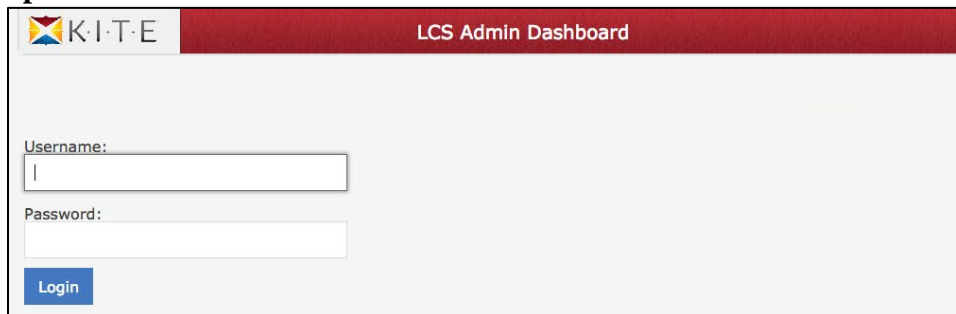
1. Open Firefox.
2. In the address bar, type:

   `[IP Address]:[port number]/TDE/admin/index.htm`

> Hint: Using the IP Address 10.101.0.10 and Port 0000, you would type:
>
> `10.101.0.10:3000/TDE/admin/index.htm`

> **Note:** **When the LCS Admin Dashboard screen appears, you have successfully set up the LCS.**

> **Note:** **At this time, you can access the LCS, but you must still configure each machine that will run the KITE Client software.**

Configuring KITE Client Software

After you have installed and configured the LCS, you must configure every testing machine to use the LCS. The KITE Client software is available for testing on Macintosh and Windows computers, Chromebooks, and iPad tablets.

> **Note:** **Each device that will be used for testing must be configured to use the LCS.**

Refer to the installation guides for the platforms you are using for testing machines (i.e., Windows, Macintosh, Chromebooks, iPad) for help configuring the KITE Client software.

> **Note:** **The KITE Client Software Installation Guide for Macintosh Computers includes instructions for creating a customized KITE Client.app with the LCS settings for your location. This customized application could be used to install the client on multiple testing machines.**

After the KITE Client software is installed on each testing machine and configured to use the LCS, you are ready to begin testing at your site.

During testing using an LCS, the KITE Client software will display the message "Connected through LCS" after login.
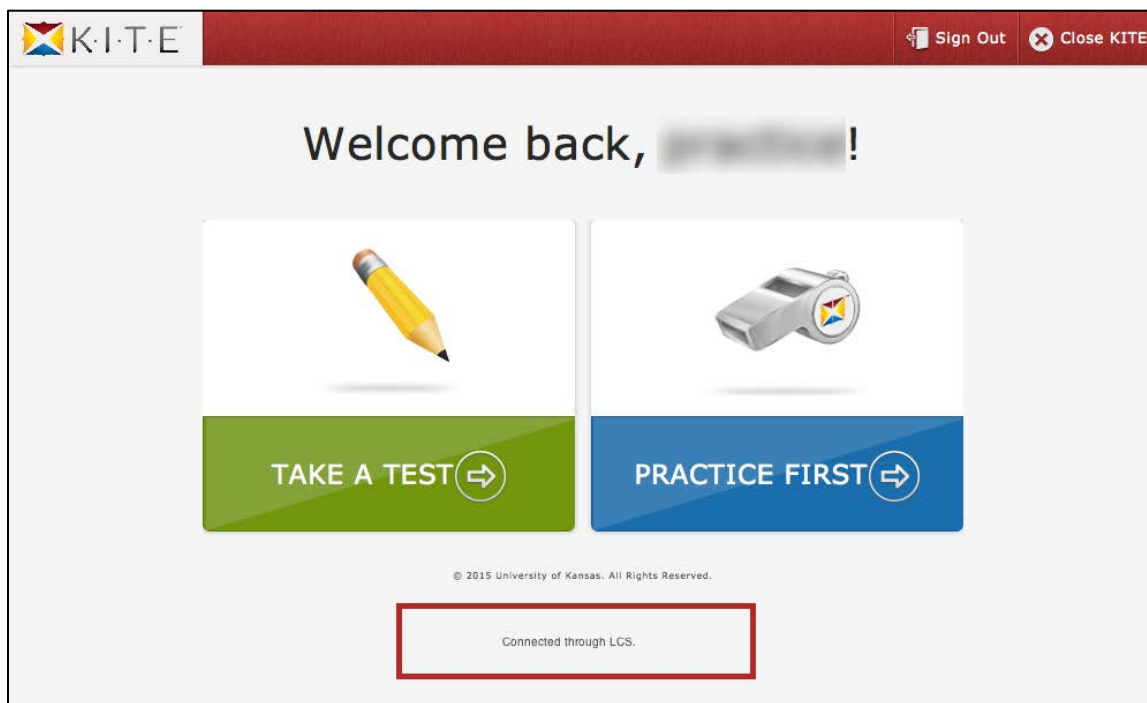
If an older version of the LCS is being used, students will encounter a message indicating that the LCS is an unsupported version.
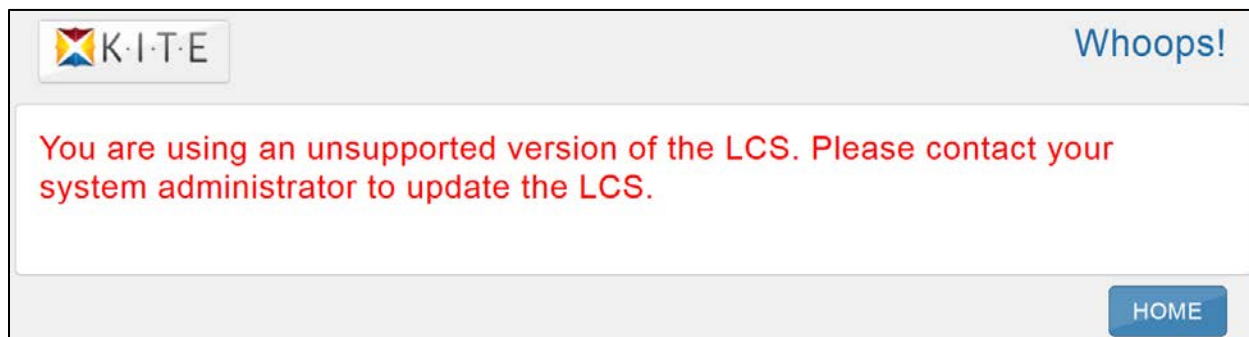
Sending Log Files to the Service Desk

If you are unable to set up the LCS, you can send program log files via email to the KITE Service Desk. Service Desk uses the log files to troubleshoot your installation. To locate and send the LCS log files, perform the following steps.

1. Open the KITE-LCS folder.
2. Open the Logs folder.
3. Locate the log file.

> Hint: Look for tdelcs.log or tdelcs.txt.

> **Note: This file can be large, so compress (or zip) the file before sending it to the service desk.**

4. Attach the log file to an email to kite-support@ku.edu.

> **Note: Use the subject "TDE-LCS Log File".**

Chapter 3: Administering the LCS

After you have installed and configured a Local Caching Server (LCS) on your network, you can use the information in this chapter to administer the LCS.

Logging in to the LCS

The LCS Admin Dashboard allows you to perform various functions related to tests and student responses.

> **Note:** **To access the LCS administration features, the LCS must be running.**

To log into the LCS, perform the following steps.

> **Note:** **The example below uses the IP Address 10.101.0.10 and the Port Number 3000. Your server may have a different IP address and port number.**

1. Open Firefox.
2. In the address bar, type:
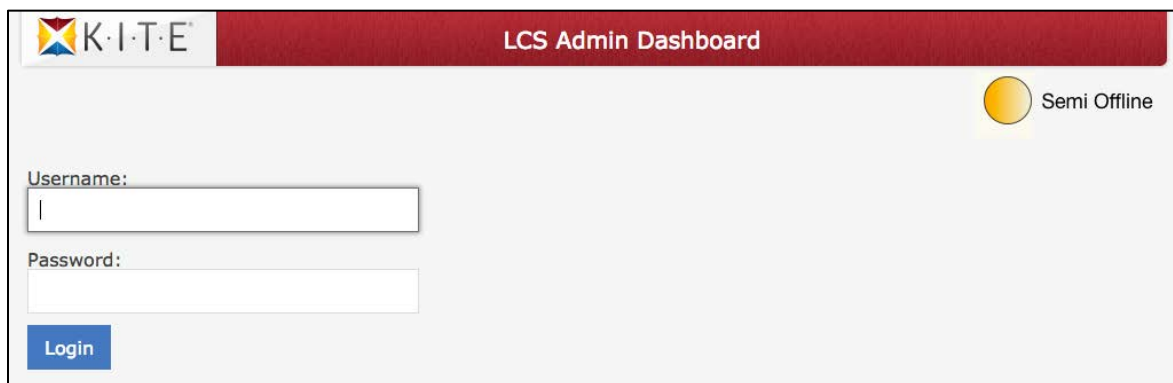
   [IP Address]:[port number]/TDE/admin/index.htm

> Hint: Using the IP Address 10.101.0.10 and Port 0000, you would type:
>
> ```
> 10.101.0.10:3000/TDE/admin/index.htm
> ```

3. Press Enter.
4. Type your username in the Username field.
5. Type your password in the Password field.

> Hint: Check the email you received from the service desk for the username and password.

6. Click Login.

Semi-Offline Dashboard
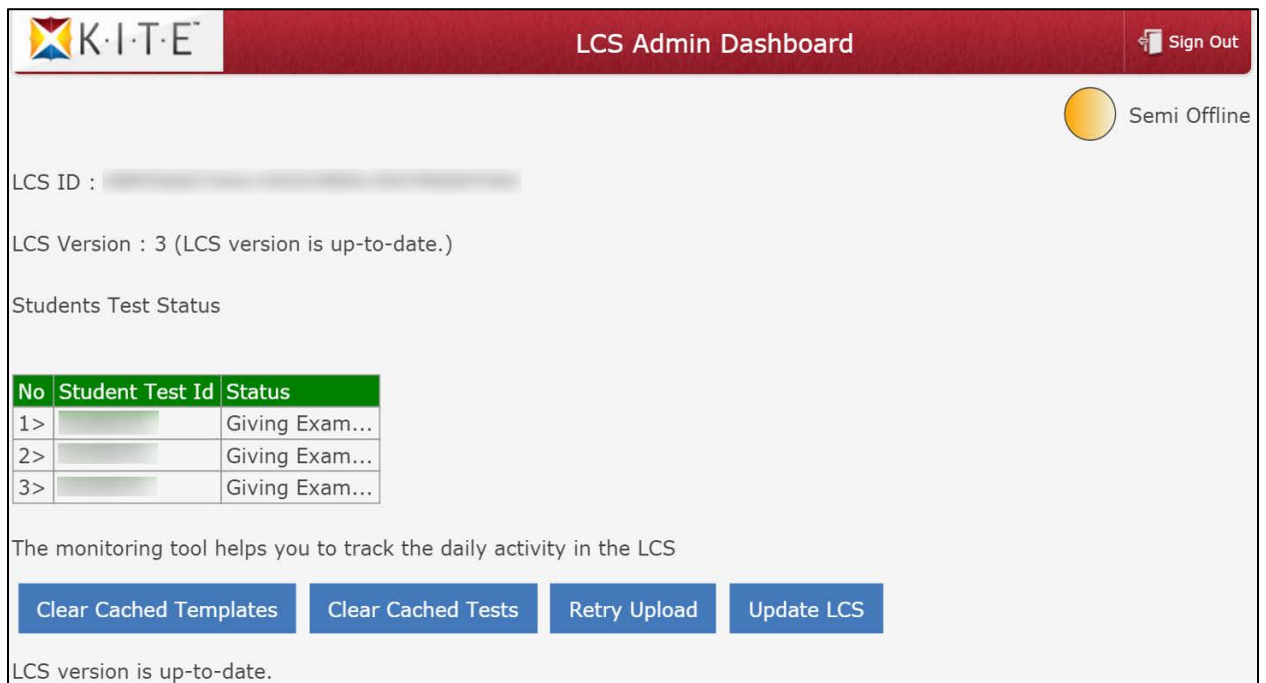
At the top of the LCS Admin Dashboard is the LCS ID, a string of numbers important if technical support is required.

In the center of the screen, you will see a green table heading. If the table contains numbered lines (as shown below), then you have student data that needs to be uploaded to the AAI servers.

At the bottom of the screen, you will see three buttons.

Note: **Avoid using the Clear Cached Templates and Clear Cached Tests buttons. These buttons delete stored content including test data. If you click one of these buttons, the information will be deleted immediately.**

- Retry Upload – use to resend information to AAI servers. See the procedure later in this chapter.
- Update LCS – this option will be available for the latest version of the LCS. If an older version is being used, that option will not be available nor will the LCS version be displayed.

Retrying an Upload

Note: **If the LCS contains student responses that need to be resent to AAI, a message will be displayed on the LCS Admin Dashboard.**

To resend information from the LCS, perform the following steps.

1. Log in to the LCS Admin Dashboard.
2. Click Retry Upload.

Shutting Down the LCS

When testing has finished, you should shut down the LCS.

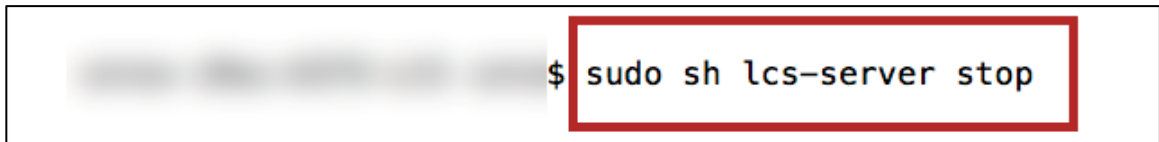| Note:	**Depending upon which operating system the LCS uses, the steps are slightly different. Refer to the procedure designed for your LCS.**

Note:	**When the LCS server shuts down, no one will be able to use it for testing until the LCS is restarted.**

To shut down the LCS, perform the following steps.

1. On the LCS machine, click on the Terminal window that is open.
2. Type:

   sudo sh lcs-server stop

3. Press Enter.

Note:	**If you see a prompt for Password, type the administrator password (for the Mac) and press Enter.**