



LOCAL CACHING
SERVER (LCS)

LCS Guide

September 2016



Contents

Chapter 1: Welcome to LCS.....	1.1
Introduction to Local Caching Servers	1.2
Semi-Offline Mode	1.3
Structure of LCS Manual	1.4
A Note about Graphics.....	1.4
Version Information.....	1.4
Disclaimer	1.4
Using the LCS.....	1.4
Getting Help.....	1.4
Changes to the Manual.....	1.5
Chapter 2: Installing the LCS on a Macintosh® Computer	2.1
System Requirements.....	2.2
Checking System Properties	2.2
Finding the IP address.....	2.3
LCS Software.....	2.4
Downloading the LCS Software	2.5
Installing the Software	2.6
Configuring the Properties File.....	2.7
Firewall Access.....	2.9
Allowing Access through Your OS X Firewall	2.9
Other Firewalls.....	2.11
Starting the LCS.....	2.12
Verify the LCS is Running – on the LCS Machine	2.13
Testing the LCS Settings Using a Browser.....	2.14
Configuring KITE™ Client Software.....	2.15
Sending Log Files to the Service Desk.....	2.17
Chapter 3: Administering the LCS	3.1
Logging in to the LCS.....	3.2
Semi-Offline Dashboard	3.3
Retrying an Upload	3.4
Shutting Down the LCS	3.5
Sending Student Responses	3.3

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.

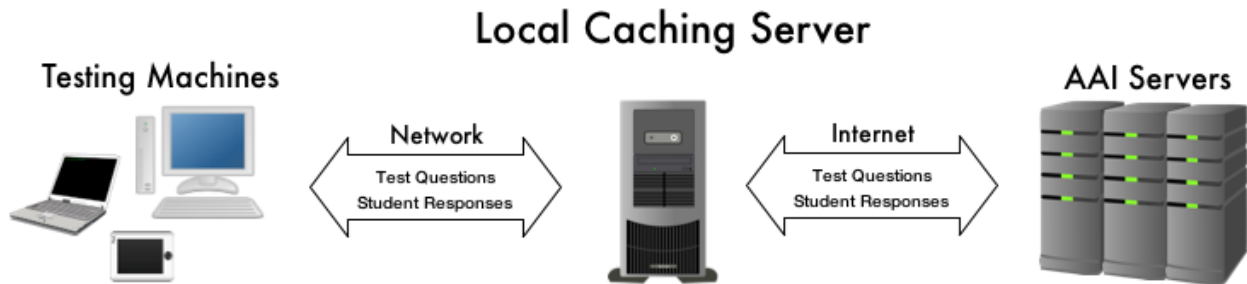
While operating, the LCS stores testing data in an internal database; therefore, if the upstream network connection becomes unreliable (or variable) during testing, then students can still continue testing and their responses will be transmitted to the KITE servers as bandwidth allows.

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 2016.

Disclaimer

The Kansas Interactive Testing Engine[®], KITE[™], the KITE logo, Dynamic Learning Maps[®], DLM[®], the DLM logo, cPass[®], and the cPass logo are trademarks of The University of Kansas. All other trademarks referenced in this guide belong to their respective owners.

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
8/23/16	2.15	Added info about KITE Client with an old version of LCS.
8/23/16	3.3	Added note about LCS dashboard for Semi Offline.

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.

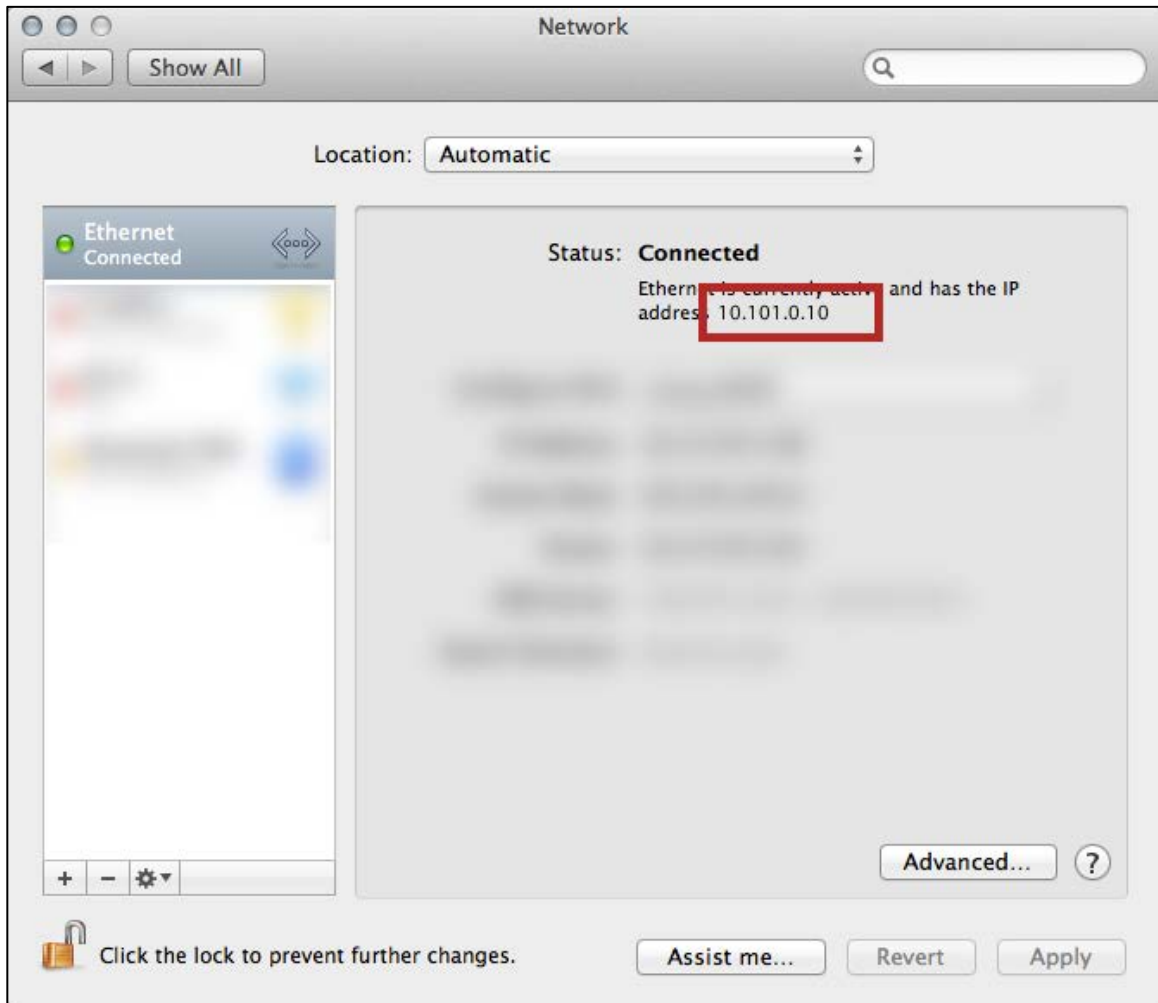
Finding the IP address

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 chapter.

Downloading the LCS Software

To download the LCS software, perform the following steps.

1. On the LCS web page for your program, click Request the Local Caching Server (LCS) Software.
2. On the Local Caching Server Download Request screen, complete the required fields.

Name *

Email *

District *

School

Platform *

Windows

Macintosh

Linux

Hint: Fields marked with a red asterisks are required.

3. Click Submit.

Note: Allow several minutes for an email response.

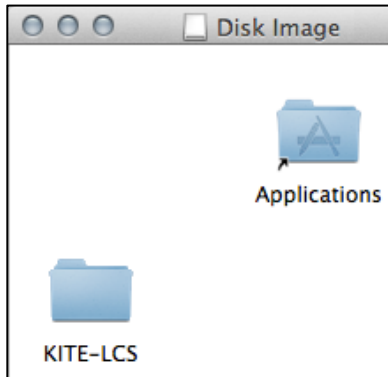
Hint: When the service desk assigns a ticket number to your request, you will receive an email.

Note: Soon after the first email, you will receive a second email with links to download the LCS software.

Installing the Software

To install the software, perform the following steps.

1. Follow the link in the second email to download the LCS.
2. Save the DMG file to the machine.
3. Open the DMG.
4. Drag the KITE-LCS folder to Applications.

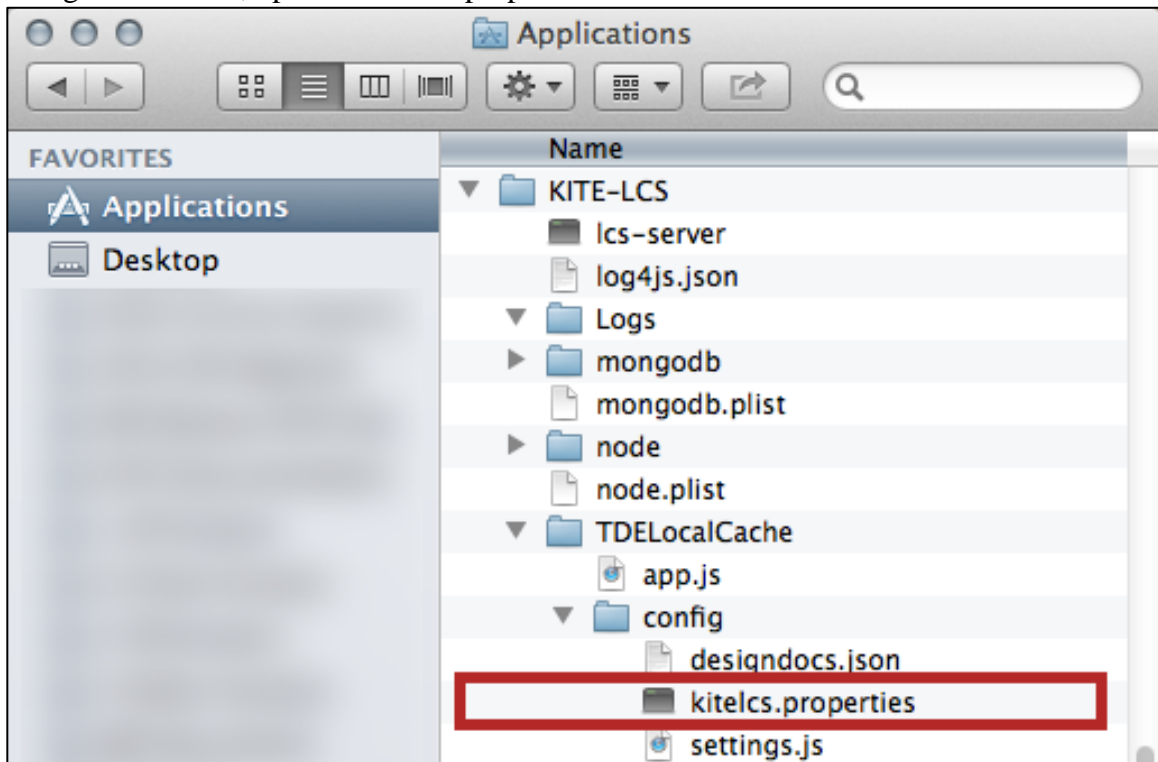


Configuring the Properties File

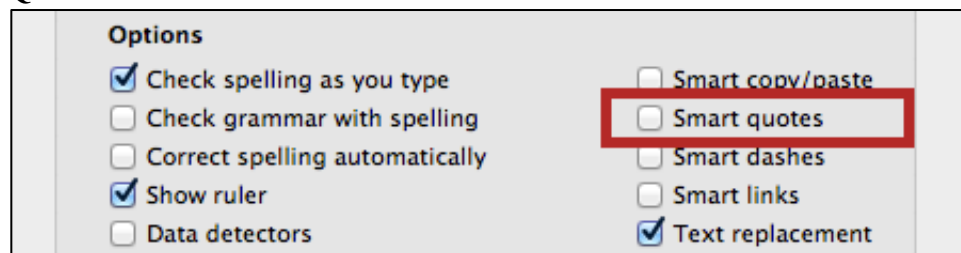
Note: Configuring the properties file requires the use of a text editor that does not default to “smart quotes”. Consider software like TextWrangler (Bare Bones software), TextMate (MacroMates Ltd.), or Brackets (Adobe).

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.

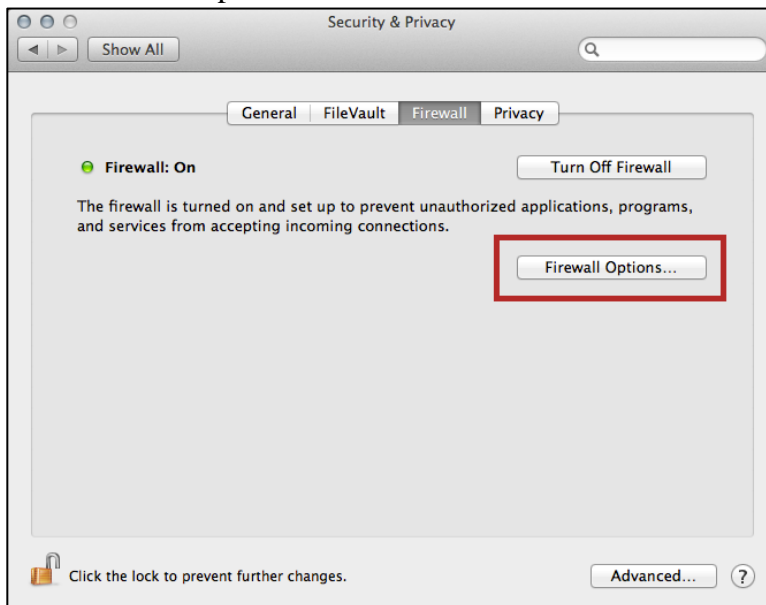
Firewall Access

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

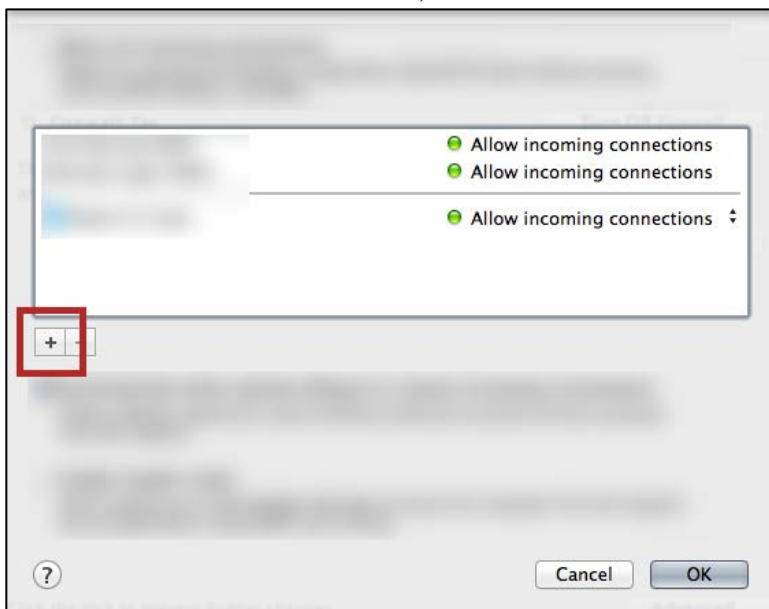
Allowing Access through Your OS X Firewall

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.

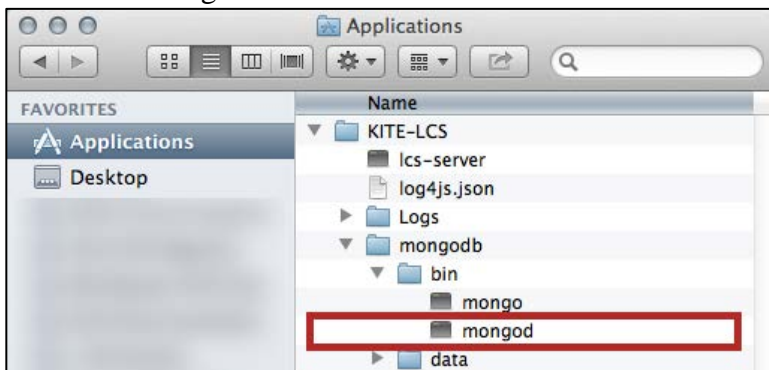
1. Open System Preferences.
2. Click Security & Privacy.
3. Click the Firewall tab.
4. On the bottom left of the window, click the padlock.
5. Enter your administrator password.
6. Click Unlock.
7. Click Firewall Options.



- In the bottom left of the window, click + to add the first connection.

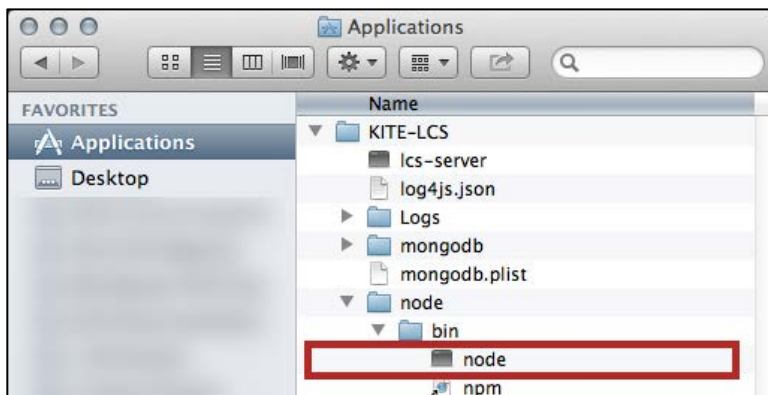


- Locate the mongod file as shown.



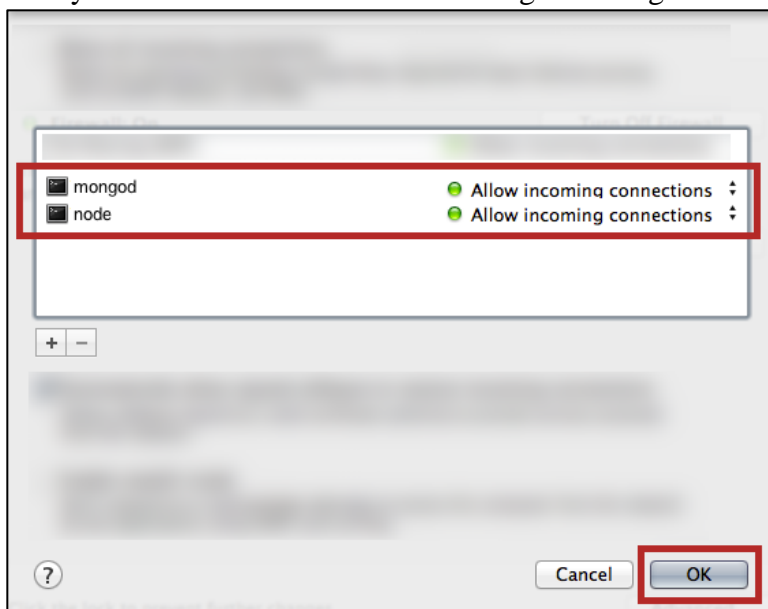
- Click Add.
- In the bottom left of the window, click + to add the second connection.

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

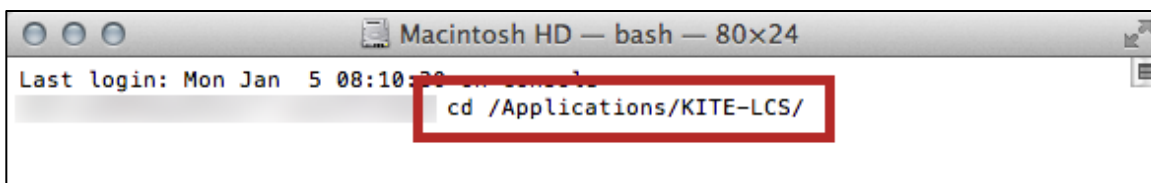
To start the LCS, perform the following steps.

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:

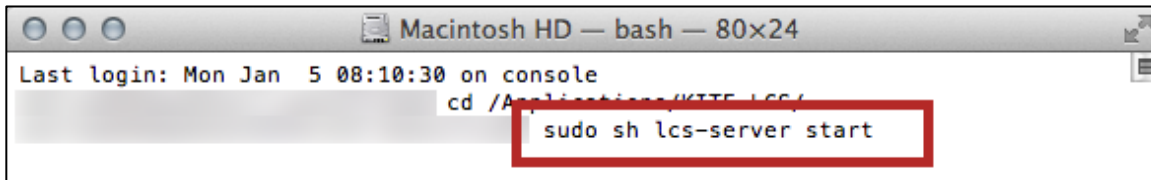
```
cd /Applications/KITE-LCS/
```



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
```



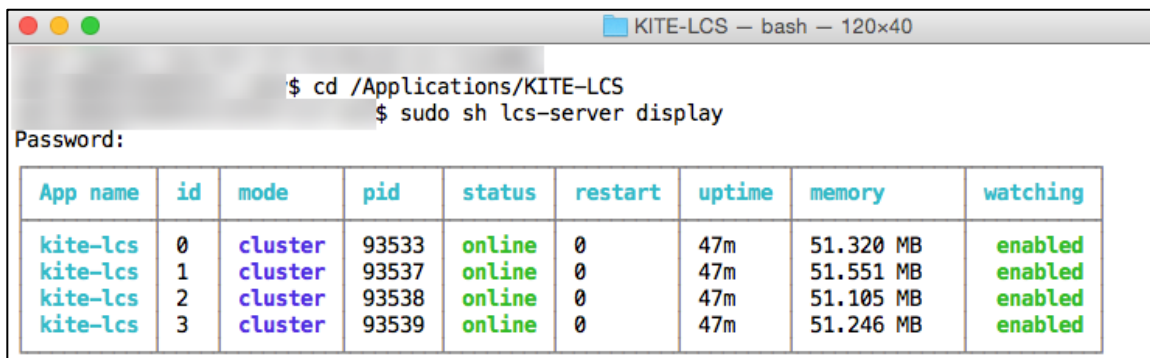
5. Press Enter.

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 - 120x40
$ 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.

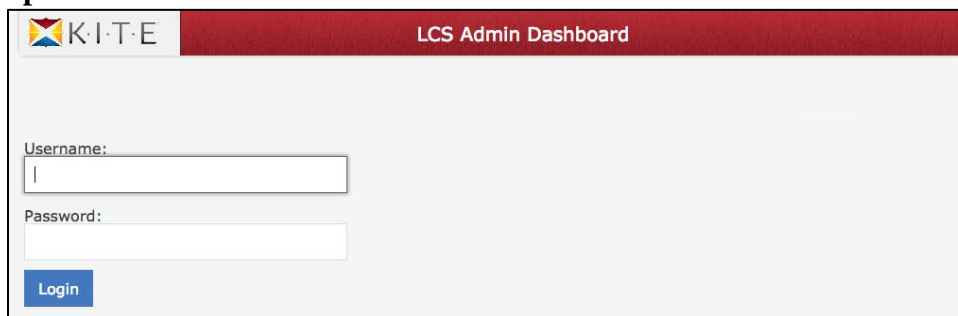
1. Open Firefox.
2. In the address bar, type:

[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.



The screenshot shows the KITE LCS Admin Dashboard login interface. At the top left is the KITE logo, and at the top right is the text "LCS Admin Dashboard". Below this is a login form with two input fields: "Username:" and "Password:". The "Username:" field contains a single character, possibly "l". Below the "Password:" field is a blue "Login" button.

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.

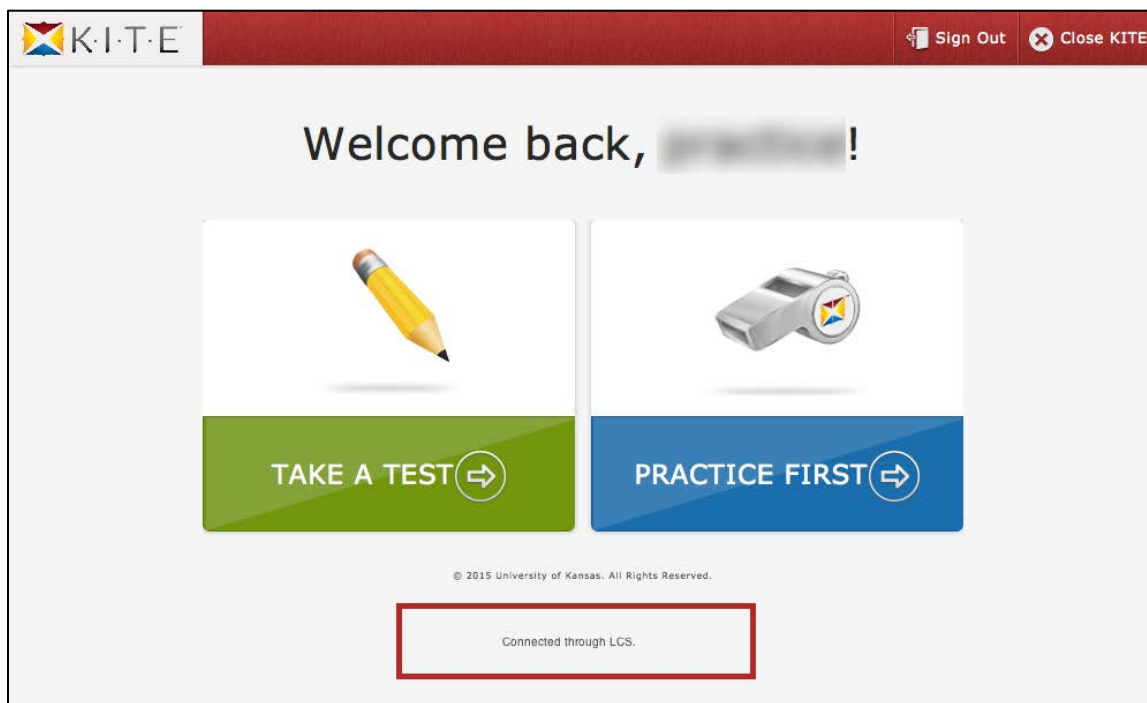
Note: Each device that will be used for testing must be configured to use the LCS.

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.

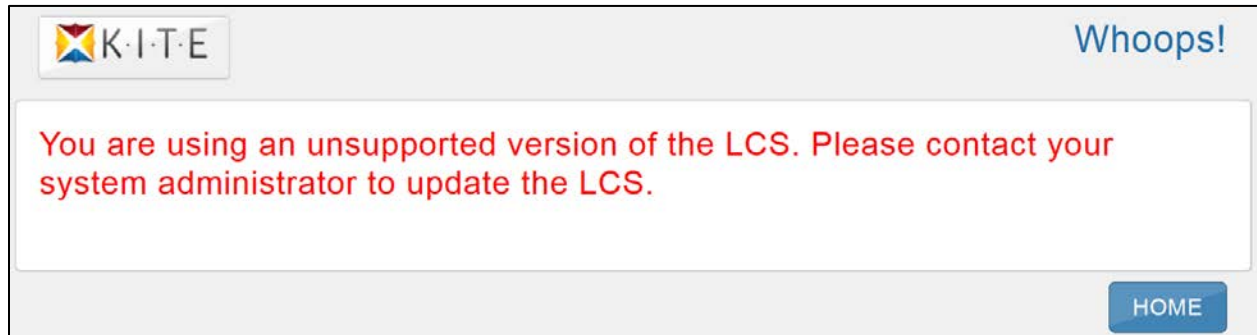
Note: The KITE Client Software Installation Guide for Macintosh Computers includes instructions for creating a customized KITE Client.app with the LCS settings for your location. This customized application could be used to install the client on multiple testing machines.

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. The procedures in this chapter apply to an LCS running in either semi-offline or fully offline mode.

Note: Procedures that apply only to fully offline mode are in Chapter 4.

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:

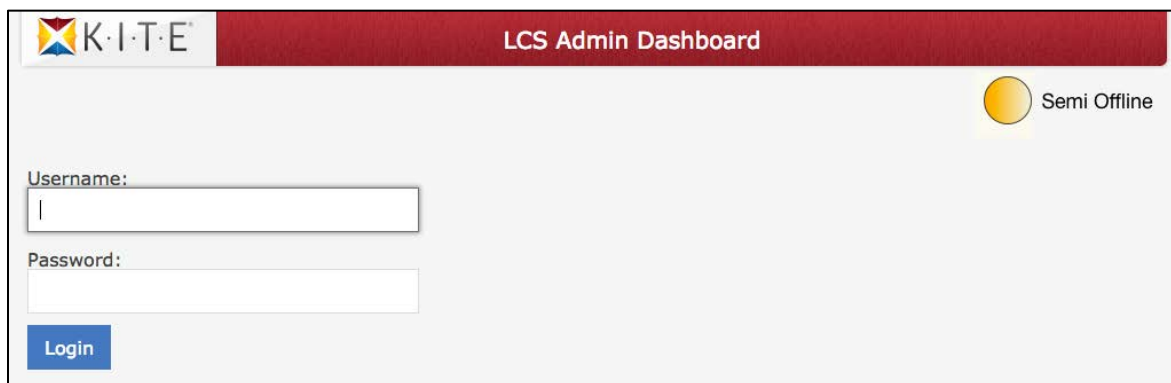
[IP Address]:[port number]/TDE/admin/index.htm

Hint: Using the IP Address 10.101.0.10 and Port 0000, you would type:

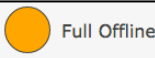
10.101.0.10:3000/TDE/admin/index.htm

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.



Note: If you are using the LCS in fully offline mode, the screen will display the

fully offline icon. 

6. Click Login.

Semi-Offline Dashboard

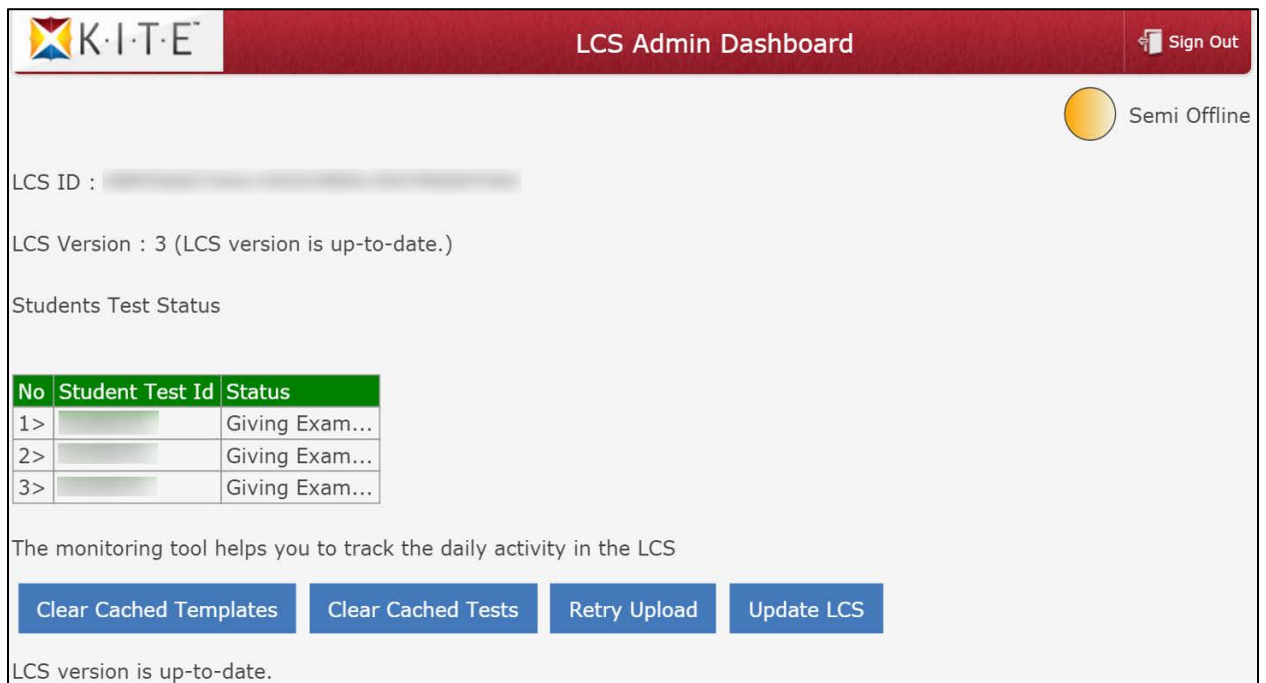
At the top of the LCS Admin Dashboard is the LCS ID, a string of numbers important if technical support is required.

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.



The screenshot shows the LCS Admin Dashboard interface. At the top left is the KITE logo. The title bar reads "LCS Admin Dashboard" and includes a "Sign Out" button. A yellow circle icon indicates "Semi Offline" status. The main content area displays the LCS ID (blurred), the LCS Version (3, up-to-date), and the "Students Test Status" section. This section contains a table with three columns: "No", "Student Test Id", and "Status". The table lists three entries, all with a status of "Giving Exam...". Below the table, there is a note: "The monitoring tool helps you to track the daily activity in the LCS". At the bottom, there are four buttons: "Clear Cached Templates", "Clear Cached Tests", "Retry Upload", and "Update LCS". The footer of the dashboard area states "LCS version is up-to-date."

No	Student Test Id	Status
1>		Giving Exam...
2>		Giving Exam...
3>		Giving Exam...

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.

The screenshot shows the KITE LCS Admin Dashboard. At the top left is the KITE logo. The top right has a 'Sign Out' button and a 'Semi Offline' indicator. Below the header, there is a section for 'LCS ID' and 'Students Test Status'. A table with columns 'No', 'Student Test Id', and 'Status' is shown, but it is empty. A red-bordered box highlights a note: 'Note : There are responses that need to be uploaded onto the server. Please click on 'Retry Upload' button below. If issue still exists, please contact KITE LCS Help Desk.' At the bottom, there are three buttons: 'Clear Cached Templates', 'Clear Cached Tests', and 'Retry Upload', with the 'Retry Upload' button highlighted by a red box.

Shutting Down the LCS

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

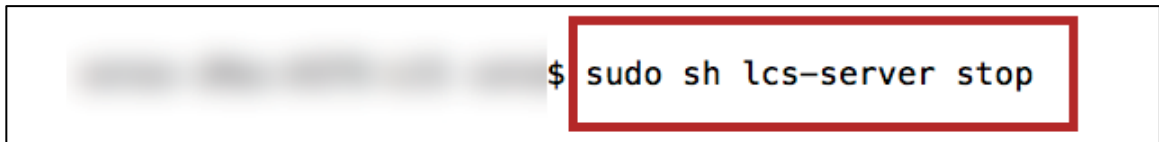
Note: Depending upon which operating system the LCS uses, the steps are slightly different. Refer to the procedure designed for your LCS.

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:

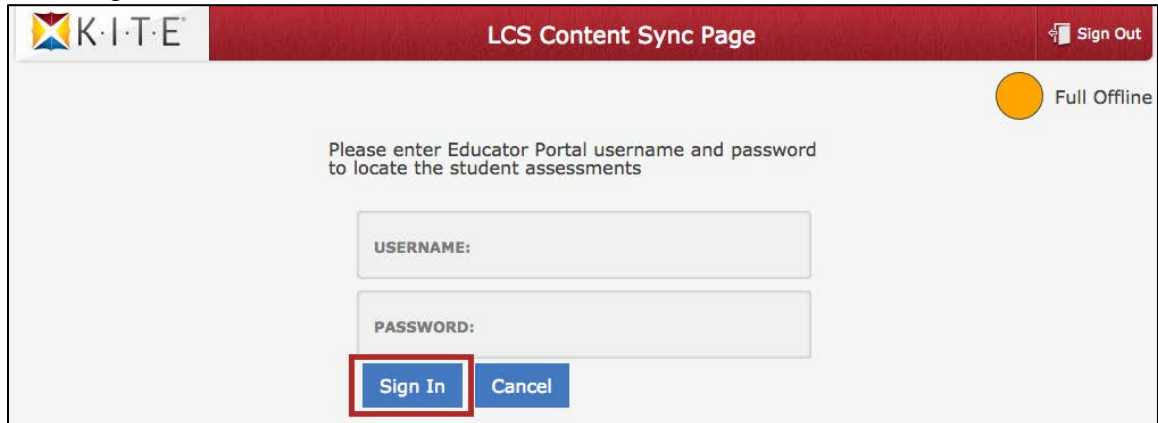
```
sudo sh lcs-server stop
```



3. Press Enter.

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

1. On the LCS Content Sync Page, type your Educator Portal username in the USERNAME field.
2. Type your Educator Portal password in the PASSWORD field.
3. Click Sign In.



The screenshot shows the top of the KITE website with the header "LCS Content Sync Page" and a "Sign Out" button. A yellow circle indicates the system is "Full Offline". The main content area contains the text: "Please enter Educator Portal username and password to locate the student assessments". Below this text are two input fields: "USERNAME:" and "PASSWORD:". At the bottom of the form are two buttons: "Sign In" (highlighted with a red box) and "Cancel".

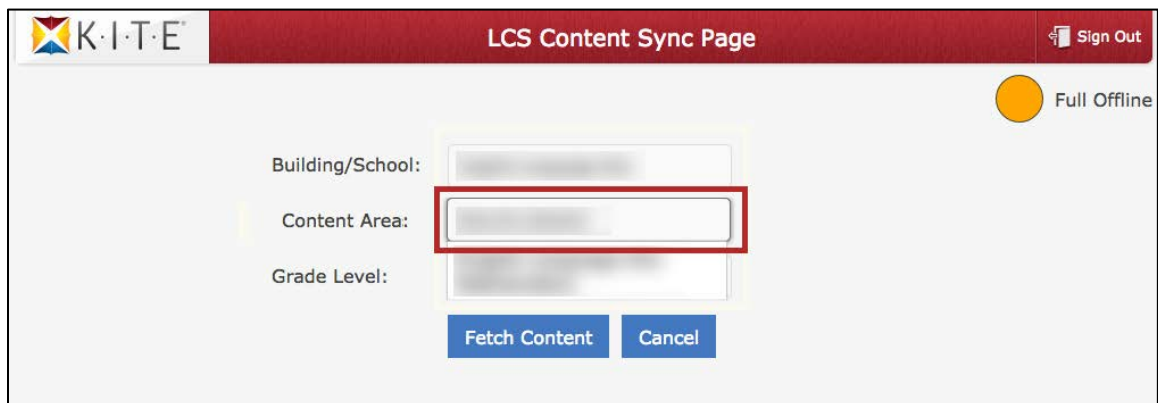
4. Select the Building/School.



The screenshot shows the same KITE header and "Full Offline" status. The main content area contains the text: "Building/School:", "Content Area:", and "Grade Level:". Below these labels are three input fields. The "Building/School:" field is highlighted with a red box. At the bottom of the form are two buttons: "Fetch Content" and "Cancel".

Hint: Click to see list of choices.

5. Select the Content Area.



The screenshot shows the same KITE header and "Full Offline" status. The main content area contains the text: "Building/School:", "Content Area:", and "Grade Level:". Below these labels are three input fields. The "Content Area:" field is highlighted with a red box. At the bottom of the form are two buttons: "Fetch Content" and "Cancel".

6. Select the Grade Level.



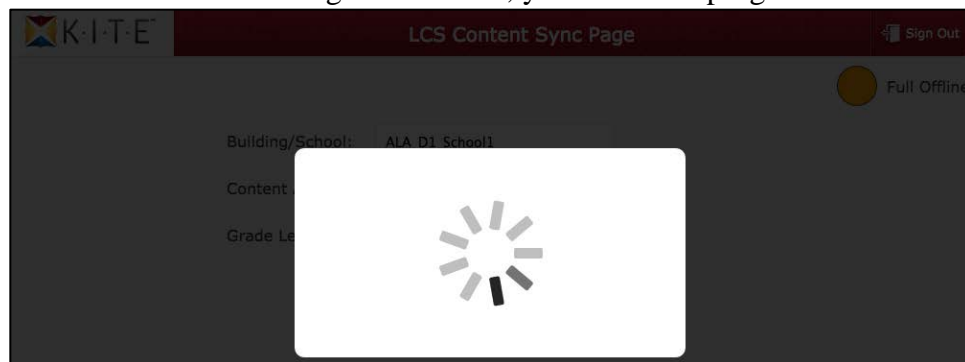
The screenshot shows the 'LCS Content Sync Page' with the KITE logo in the top left and a 'Sign Out' button in the top right. A yellow status indicator and 'Full Offline' text are in the top right corner. The form contains three input fields: 'Building/School:', 'Content Area:', and 'Grade Level:'. The 'Grade Level:' field is highlighted with a red rectangular border.

7. Click Fetch Content.



The screenshot shows the 'LCS Content Sync Page' with the KITE logo in the top left and a 'Sign Out' button in the top right. A yellow status indicator and 'Full Offline' text are in the top right corner. The form contains three input fields: 'Building/School:', 'Content Area:', and 'Grade Level:'. Below the 'Grade Level:' field, there are two buttons: 'Fetch Content' and 'Cancel'. The 'Fetch Content' button is highlighted with a red rectangular border.

Hint: While the content is being downloaded, you will see a progress indicator.



Note: When the test is finished downloading, repeat the steps above to select another grade or content area and download another test.

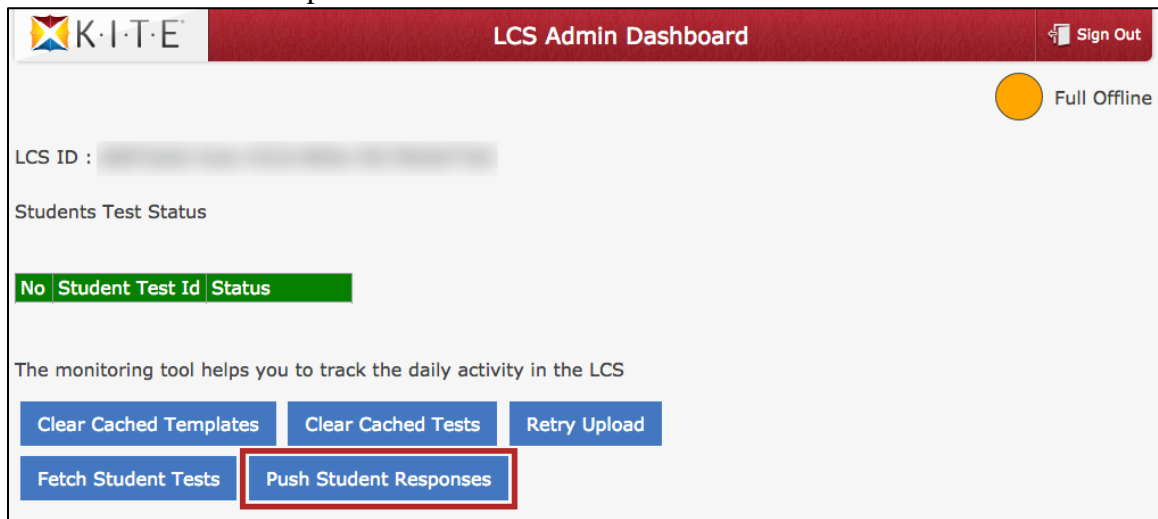
Sending Student Responses

Note: To send student responses, you must have an Internet connection available for the LCS machine.

Before you can send student responses, one or more tests must have been completed at your location. The LCS will only send tests that have been completed, not tests that are in progress or not yet started.

To send student responses to AAI, perform the following steps.

1. Log in to the LCS Admin Dashboard..
2. Click Push Student Responses.



The screenshot shows the LCS Admin Dashboard interface. At the top left is the KITE logo. The top navigation bar is red and contains the text 'LCS Admin Dashboard' and a 'Sign Out' button. On the right side, there is a yellow circle icon with the text 'Full Offline'. Below the navigation bar, there is a section for 'Students Test Status' with a table header: 'No | Student Test Id | Status'. Below the table, there is a text box containing 'LCS ID :'. At the bottom of the dashboard, there are several buttons: 'Clear Cached Templates', 'Clear Cached Tests', 'Retry Upload', 'Fetch Student Tests', and 'Push Student Responses'. The 'Push Student Responses' button is highlighted with a red border.

Note: When the student responses have been sent to AAI, you will receive the status message: “Student responses have completed processing.”
