K·I·T·E™

LOCAL CACHING SERVER (LCS)

LCS Guide

October 2015

KU AGILE TECHNOLOGY SOLUTIONS
The University of Kansas

ATS Help Line: 785.864.3537
Or kite-support@ku.edu

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).

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 KITE, refer to the other manuals.

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

Chapter Contents

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.

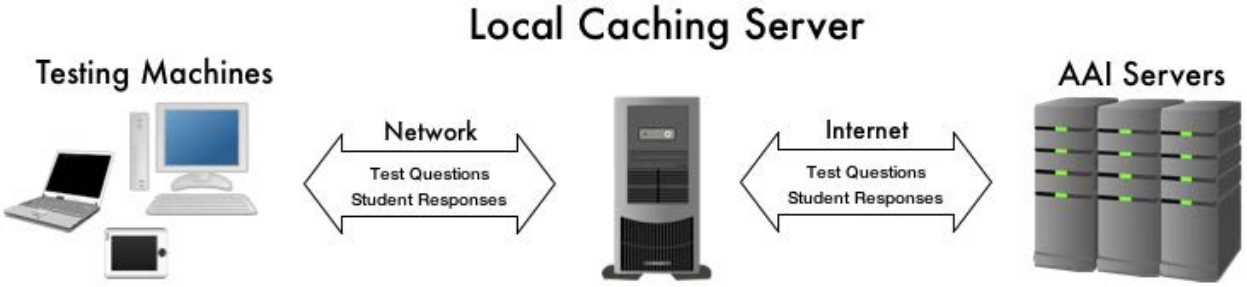
While operating, the LCS stores testing data in an internal database; therefore, if the upstream network connection becomes unreliable (or variable) during testing, then students can still continue testing and their responses will be transmitted to the KITE servers as bandwidth allows.

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.

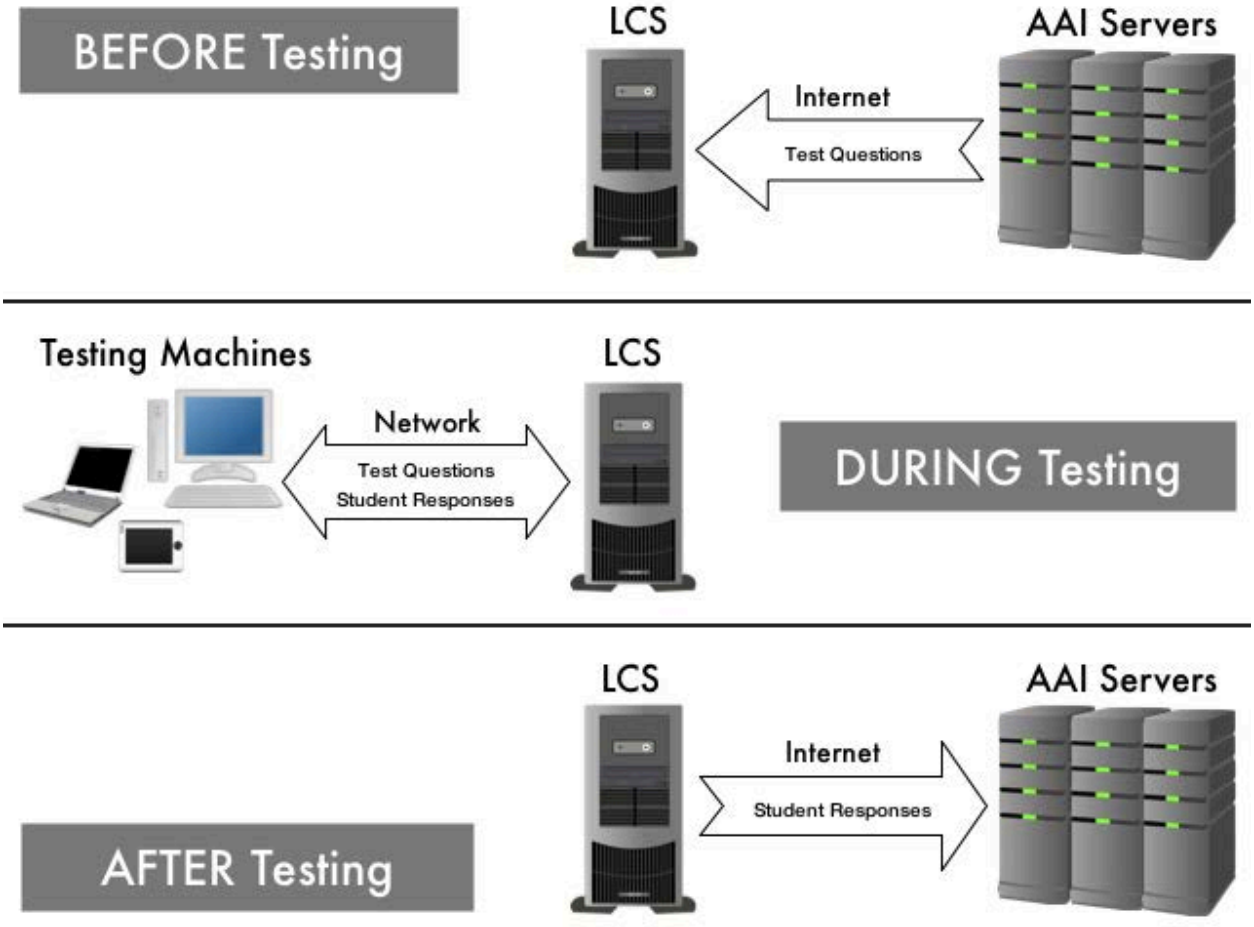


Fully Offline Mode

Note: We recommend only using fully offline mode if your location will not have Internet access during testing. If you need assistance determining if fully offline mode is appropriate for your location, please contact the Help Desk.

Fully offline mode allows a location to conduct testing without an Internet connection. Approximately one week before testing begins, the technical contact will log into the AAI servers and download the tests for a school. Please note that tests should be downloaded after 3:00 pm CT, and it can take up to twenty minutes to download all of the test forms and student information for a grade level.

During testing, the LCS runs while the students are taking tests; however, the test machines communicate with the LCS instead of the AAI servers. After the students finish testing, the technical contact reconnects the LCS to the internet and transmits the student responses to the AAI servers.



Organization of the 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
- Chapter 4: Fully Offline Mode

Disclaimer

Version Information

This manual documents the KITE release of October 2015.

Changes to the Chapter

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
10/29/2015	1.3	Updated the note.
10/29/2015	1.5	Added a change log to the chapter.

Chapter 2: Installing an LCS on a Windows® Computer

The LCS is designed to run on a 64-bit version of Windows. This chapter explains how to install and configure an LCS on a Windows computer.

Contents

System Requirements

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

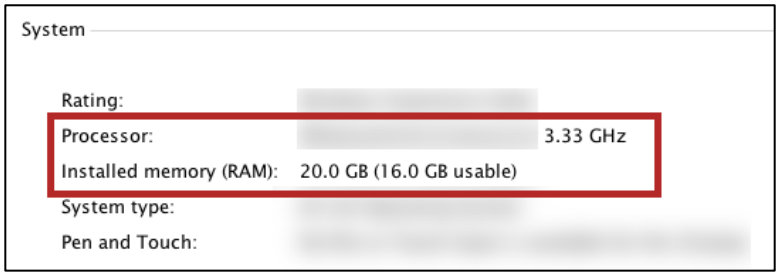
Note: The specifications listed are the minimums that must be available for the LCS to use. These are NOT overall machine specifications.

Minimum Processor	Minimum RAM	Minimum Disk Space Available for LCS
2 GHz	4 GB	3 GB

Checking System Properties

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

1. From the Start Menu, click Computer.
2. Click System properties.
3. Verify that your hard drive has at least 3 GB free.
4. Verify that your computer has at least a 2 GHz processor.
5. Verify that your computer has at least 4 GB of memory (RAM).



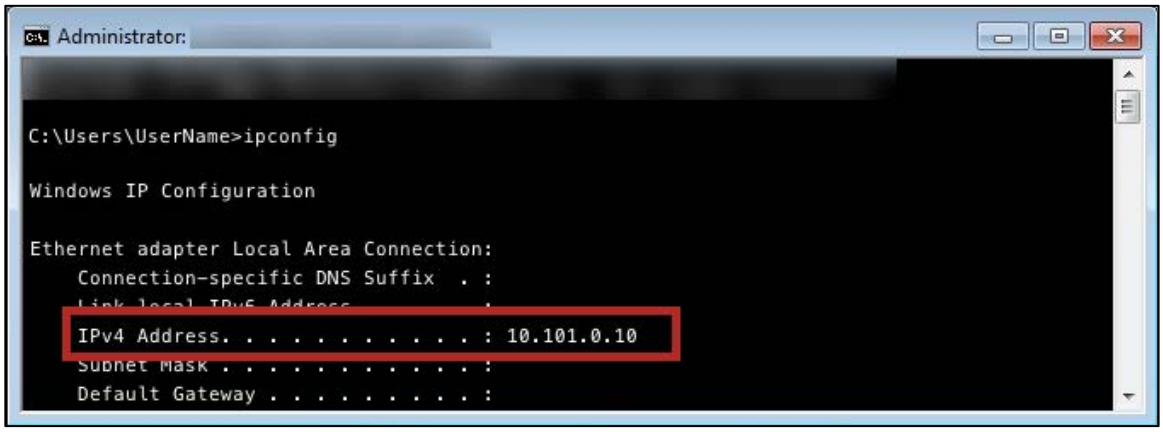
Finding the IP Address

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. Click the Start button.
2. In the Search field, type cmd.
3. Press Enter.
4. On the command line, type ipconfig.

5. Press Enter.
   Information about your Local Area Connection will fill the box, including your computer's IP address.

Note: Look for the IPv4 address. It will be a sequence of numbers like the example given below.



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.**

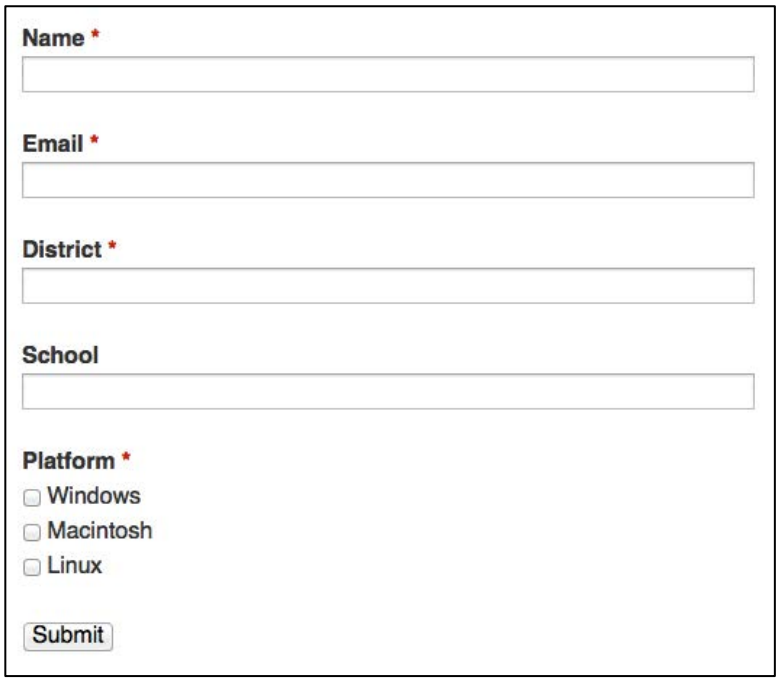
LCS software is available from your program's website. On the website, check the page with links to the KITE Client to locate a link for Local Caching Server.

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.

Note: The required fields are marked with a red asterisk (*).



3. Click Submit.

Note: Allow several minutes for a response.

Hint: When the Help 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.

   Note: The LCS software is in a ZIP file.

2. On the C: drive, create a directory called KITE-LCS.
3. Extract the zip file into the new directory.

Configuring the Properties File

After you have downloaded and extracted 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 Notepad, open the kitelcs.properties file.
5. Change the lcsHostServer to the IP address for your LCS.

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

Hint: Replace the # symbols above with the IP address. Directions for finding your machine's IP address are in the next section, Finding Your 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 Notepad.

Firewall Access

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

Allowing Access through a Windows Firewall

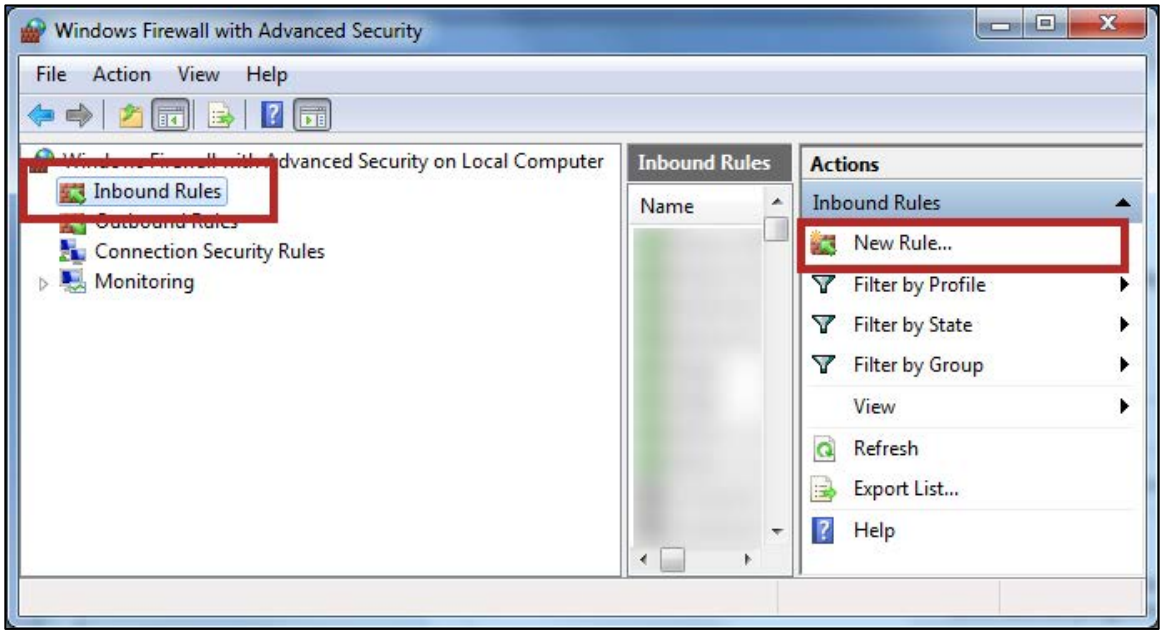
To allow access through a Windows firewall, perform the following steps.

1. Open the Windows Firewall Control Panel.

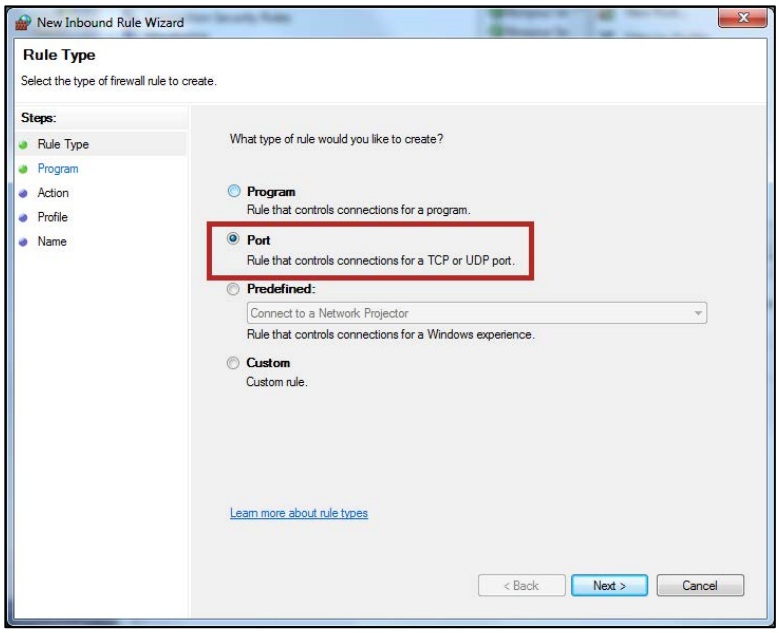
Note: Depending upon the version of Windows on your machine, you will find the firewall settings in different locations. Open the Control Panel and look for Windows Firewall or System and Security, and then Windows Firewall.

---

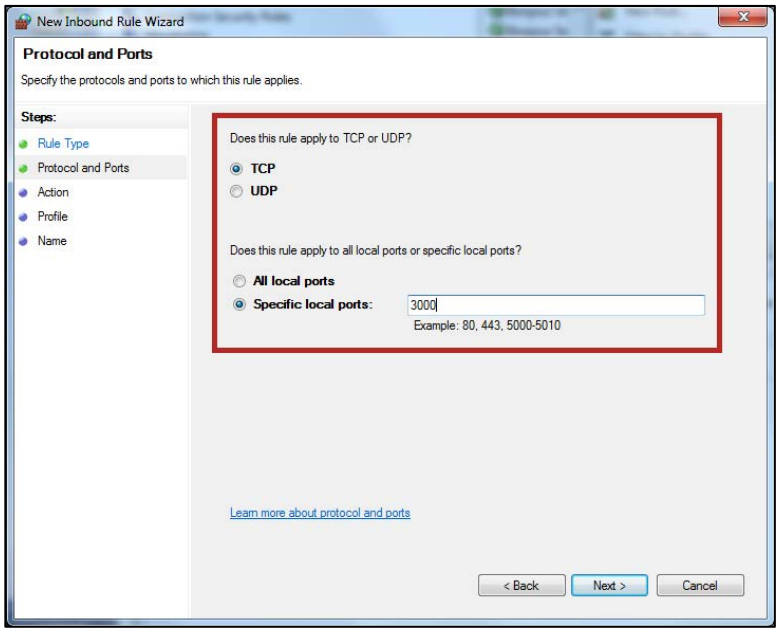
2. Click Advanced settings.
3. Click Inbound Rules.
4. Click New Rule.



5. In the New Inbound Rule Wizard window, select Port.

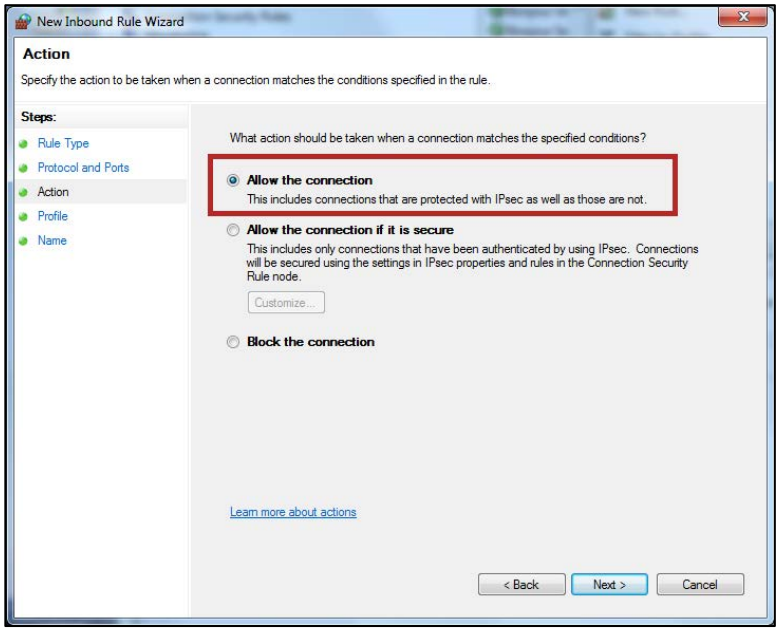


6. Click Next.
7. Select TCP.
8. Select Specific local ports.
9. Type 3000.

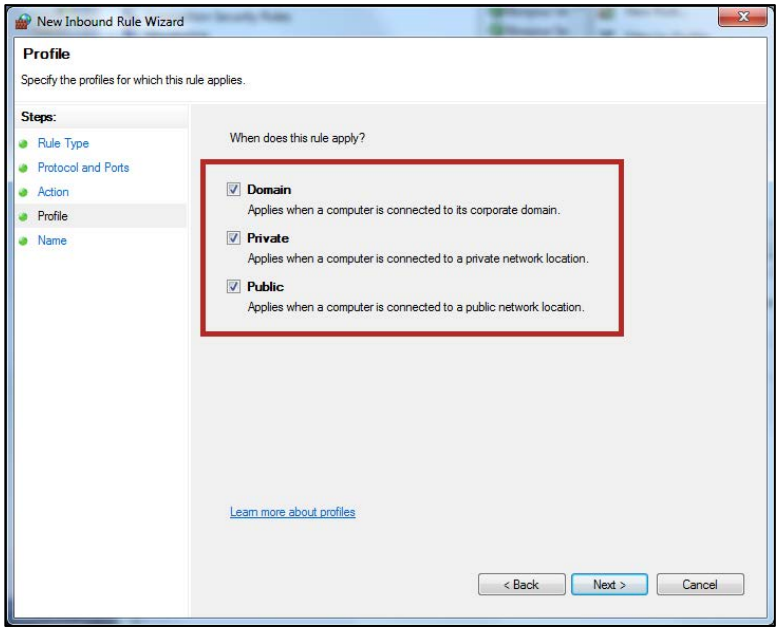


Hint: The default value is 3000, but you may change this if needed.

10. Click Next.
11. Select Allow the connection.

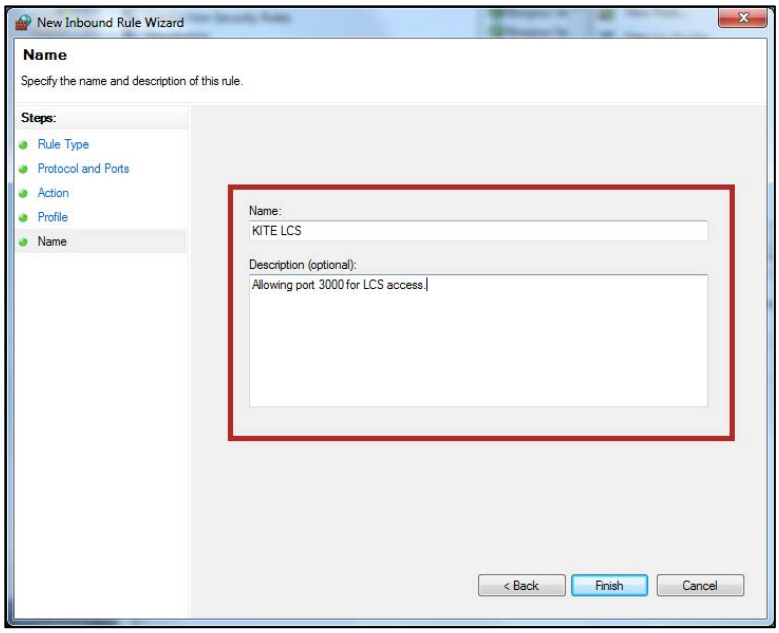


12. Click Next.
13. Verify that Domain, Private, and Public are all selected.



14. Click Next.
15. In the Name field, type KITE LCS.

16. In the Description field, type Allowing port 3000 for LCS access.



Note: If you are using a port other than 3000 on your LCS, use that port number in the description field instead.

17. Click Finish.

Other Firewalls

If your location uses a firewall other than Windows, contact your local system administrator to update the firewall.

Starting the LCS

To start the LCS, perform the following steps.

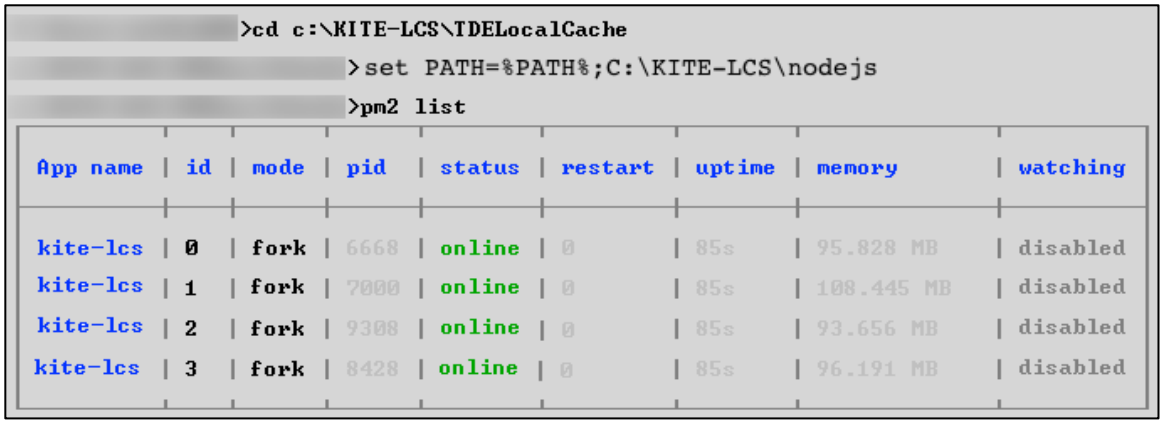
1. Open the KITE-LCS directory.
2. Right click on the StartServices file.
3. Click Run as administrator.

Note: Administrative access is required to run the LCS.

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 Command prompt (cmd).
2. Type:
   ```
   cd c:\\KITE-LCS\TDELocalCache
   ```
3. Type:
   ```
   set PATH=%PATH%;C:\KITE-LCS\nodejs
   ```
4. Type:
   ```
   pm2 list
   ```
5. In the table, check the App name column to see that at least one instance of "kite-lcs" is online.



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.

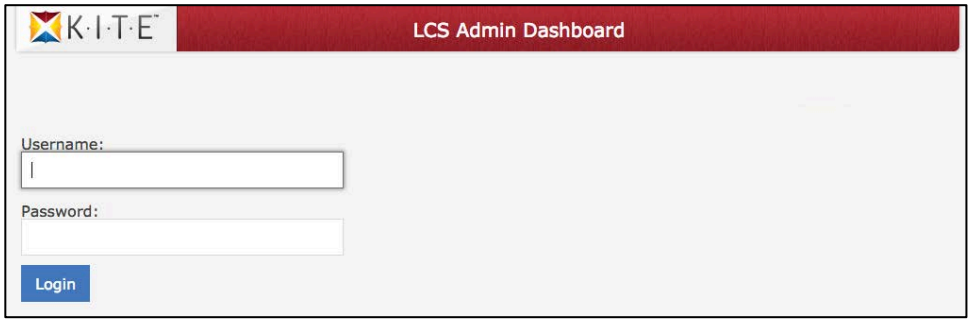
1. Open Firefox.
2. In the address bar, type:

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

Hint: Using the IP Address of 10.101.0.10 and port 3000, 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 KITE Client.

Configuring KITE Client

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

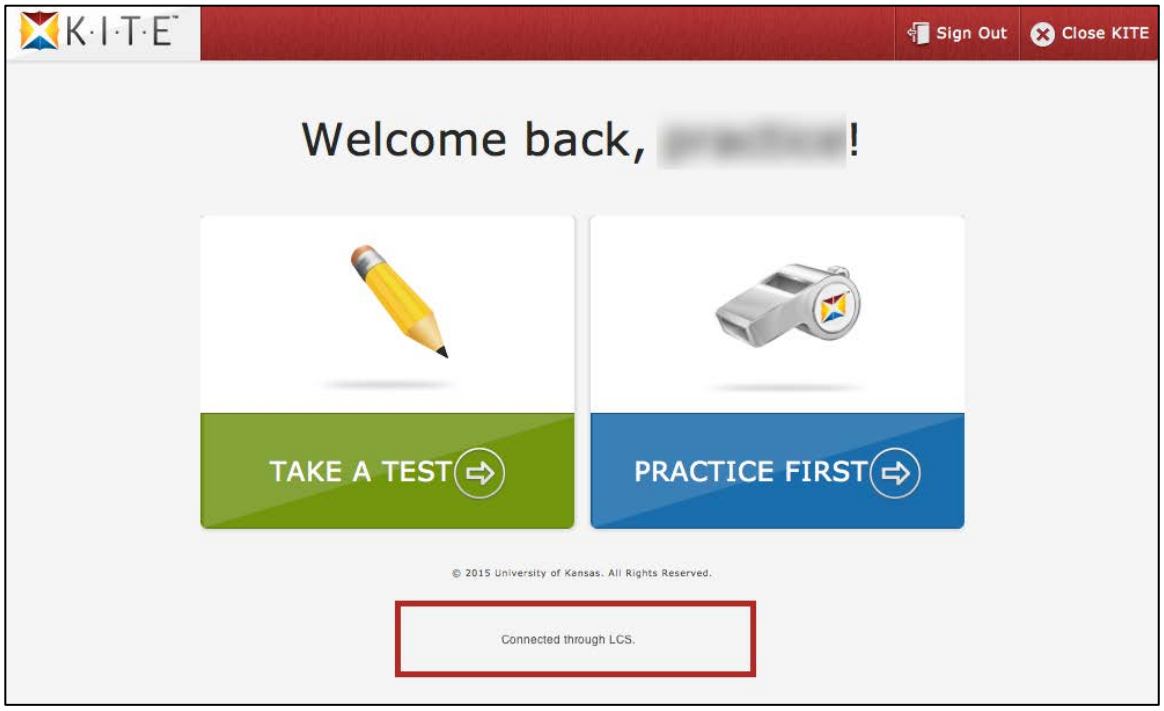
Note: Each device that will be used for testing must be configured to use the LCS.

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

Note: The KITE Client 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 KITE Client 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 will display the message "Connected through LCS" after login.



Getting Additional Help

If you need additional help, call or email the help desk.

Phone:	**785-864-3537**
Email:	**kite-support@ku.edu**

Sending Log Files to the Help Desk

If you are unable to set up the LCS, you can send program log files via email to the KITE Help Desk. Help 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 Help Desk.

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

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

Changes to the Chapter

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
10/29/2015	2.1	Updated the introduction.
10/29/2015	2.11	Added Verify the LCS is Running – on the LCS Machine.
10/29/2015	2.12	Updated the procedure.
10/29/2015	2.15	Added a change log to the chapter.

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.

Contents

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.

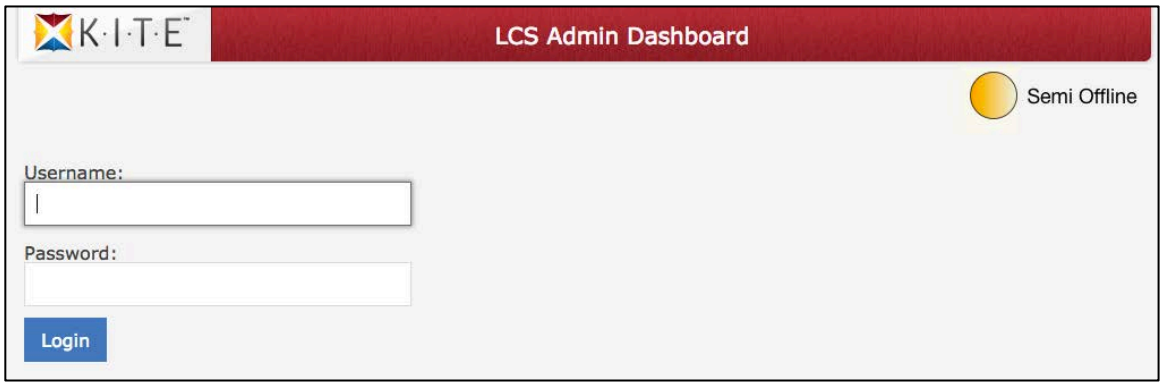
1. Open Firefox.
2. In the address bar, type:

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

   Note: Replace [IP Address]:[port number] with the IP address and port for your LCS. For example, the IP address of 10.101.0.10 and port 3000 would be:

   `10.101.0.10:3000/TDE/admin/index.htm`

3. Press Enter.
4. Type your username.



Hint: Check the email you received from the Help Desk for the username and password.

5. Type your 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

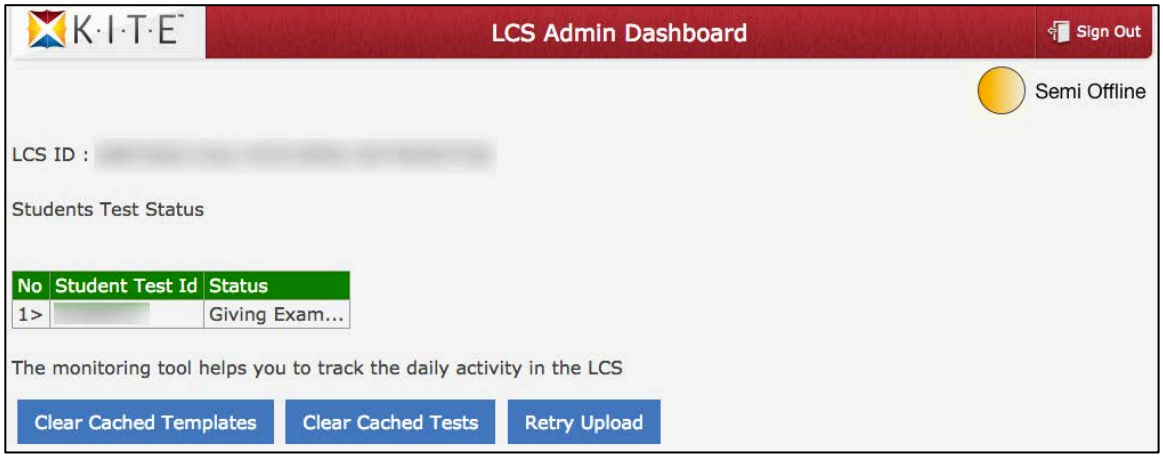
At the top of the LCS Admin Dashboard is the LCS ID, a string of numbers you will need when calling Help Desk for support.

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.



Fully Offline Dashboard

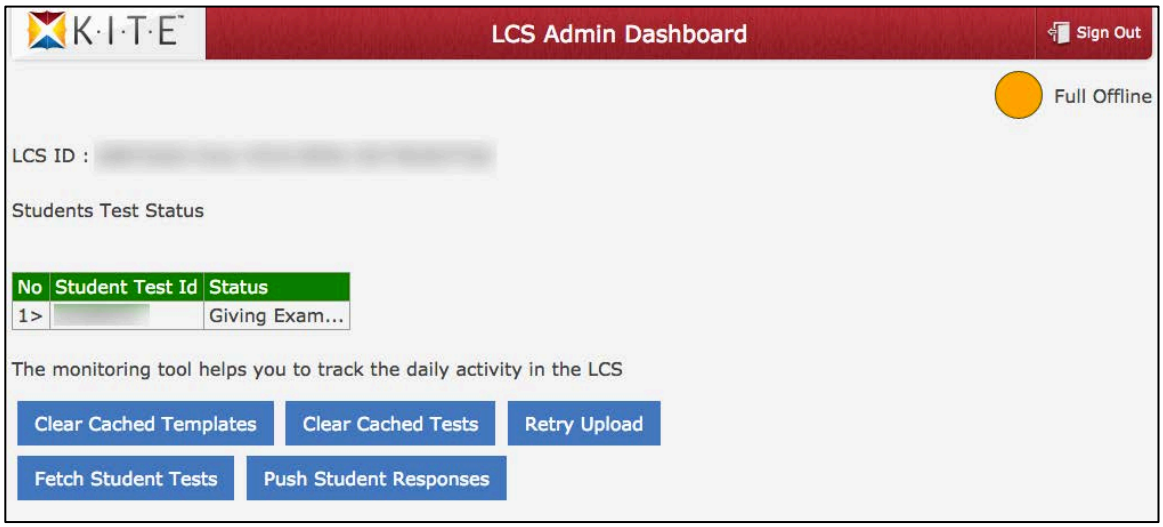
At the top of the LCS Admin Dashboard is the LCS ID, a string of numbers you will need when calling Help Desk for support.

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 five buttons.

> **Note: Avoid using the Clear Cached Templates and Clear Cached Tests buttons. These buttons delete content that must be downloaded again before the LCS can be used for testing. If you click one of these buttons, the information will be deleted immediately. If students are using the LCS, they will be unable to complete testing, and their responses may be lost.**

- Retry Upload – use to resend information to AAI servers. See the procedure later in this chapter.
- Fetch Student Tests – use to download information from AAI servers before testing can begin in fully offline mode. See the procedure in Chapter 4.
- Push Student Responses – use to send student responses to AAI servers after testing in fully offline mode. See the procedure in Chapter 4.

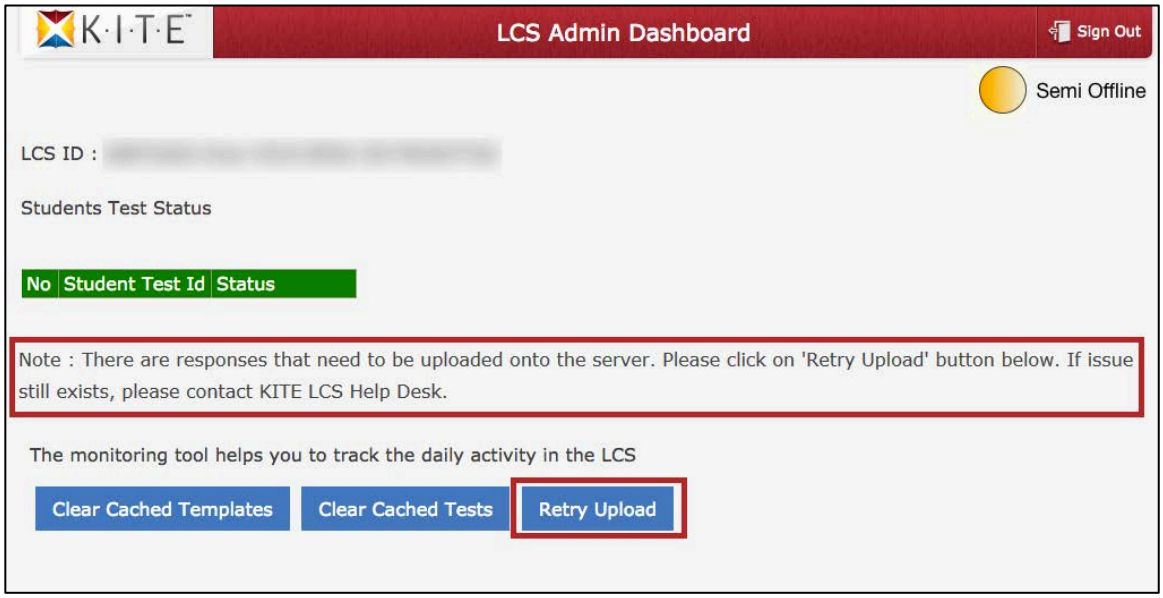


Retrying an Upload

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.
2. Click Retry Upload.



Shutting Down the LCS

When testing has finished, you should shut down the LCS. Depending upon which operating system the LCS uses, the steps are slightly different. Refer to the procedure designed for your LCS.

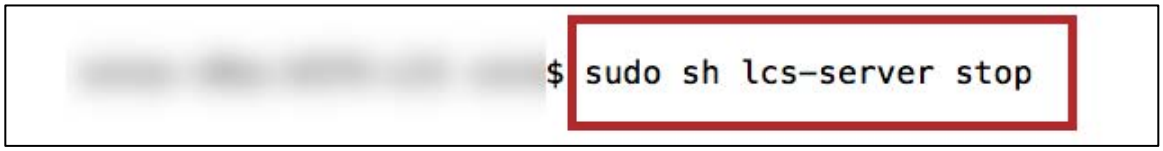
Shutting Down the LCS on a Macintosh Computer

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.

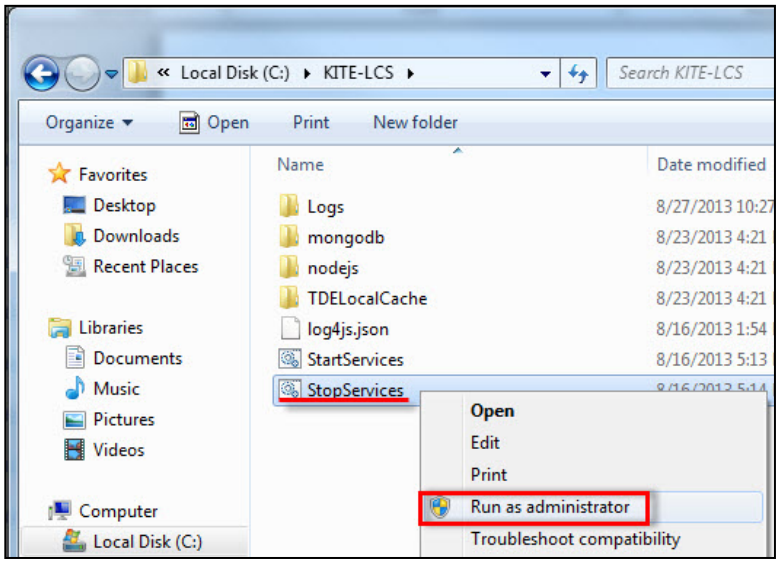
Note: If you see a prompt for Password, type the administrator password (for the Mac) and press Enter.

Shutting Down the LCS on a Windows Computer

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, close the black command box.
2. Open the KITE-LCS folder you downloaded when setting up the server.
3. Right-click StopServices.
4. Click Run as administrator.



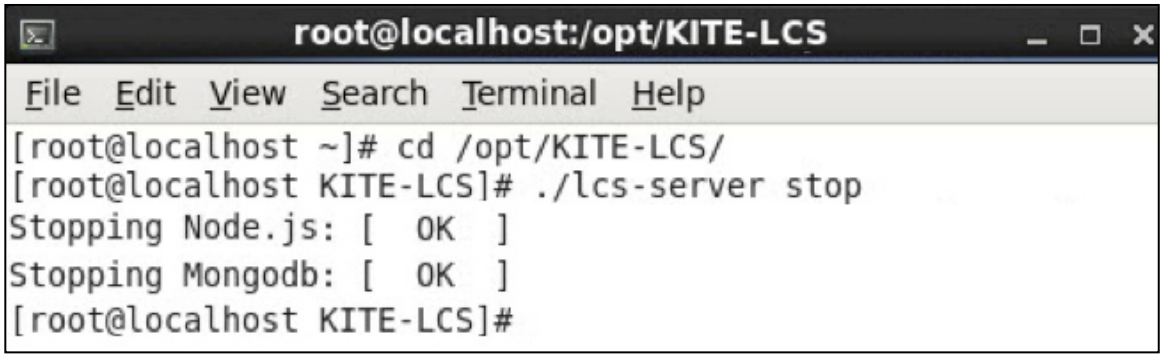
Note: The LCS server will shut down (deactivate), and no one will have access until it is restarted.

Shutting Down the LCS on a Linux Computer

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, open the Terminal as a root or sudo user.
2. Type:
   ```
   cd /opt/KITE-LCS
   ```
3. Type:
   ```
   ./lcs-server stop
   ```



Note: The LCS will shut down (deactivate), and no one will have access until it is restarted.

Changes to the Chapter

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
10/29/2015	3.2	Updated the procedure.
10/29/2015	3.5	Added a note and updated graphics.
10/29/2015	3.9	Added a change log to the chapter.

Chapter 4: Fully Offline Mode

> **Note: At this time, fully offline mode is not compatible with DLM tests. If your location is using DLM tests with an LCS, you must use semi-offline mode.**

At this time, we recommend only using fully offline mode if your location will not have Internet access during testing.

> **Note: If you have questions about whether or not fully offline mode is appropriate for your location, please contact the Help Desk.**

When determining whether or not your location will use fully offline mode, consider how tests will time-out in each mode and whether or not you can reactivate a test session for a student. In semi-offline mode, a test will time-out (become inactive) after ninety (90) minutes of inactivity (or network interruption). When a test times out, you can log in to Educator Portal and reactivate a test session for a student. In contrast, in fully offline mode, the ninety-minute period does not apply because the LCS is not communicating with the AAI servers. Because this time-out does not take effect, you cannot (and should not need to) reactivate a test session for a student.

When you use the LCS in fully offline mode, you must allow extra time to set up the machine before testing. Plan to download the content (tests and student information) that your location will need for a several weeks of testing each time you download content.

> **Note: If students are added or changed after you download content, you will need to download each affected grade level before testing.**

It may take up to twenty minutes (depending upon your Internet connection) to download all of the test content (test forms, audio, video, etc.) and student information for a grade level. Allow sufficient time to download the information before testing begins.

Contents

Configuring the LCS for Fully Offline Mode

Note: The default setting for LCS is semi-offline mode. To use the LCS in fully offline mode, you must edit the settings.js file before starting the LCS.

Before you can use the LCS in fully offline mode, you must make one additional change to the setup of the LCS. The next pages describe how to edit the settings.js file depending upon the operating system used by your LCS.

Note: The LCS must be shut down (i.e., not running) before you edit the settings.js file.

Macintosh – Configuring the Settings.js File

To change the LCS mode to fully offline, perform the following steps:

1. Shut down the LCS.
2. On the LCS machine, open the KITE-LCS folder.
3. Open the TDELocalCache folder.
4. Open the config folder.
5. Using a text editor, open the settings.js file.
6. Change exports.offline to true.

Note: To change the LCS back to semi-offline mode, set exports.offline to false.

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

Windows – Configuring the Settings.js File

To change the LCS mode to fully offline, perform the following steps:

1. Shut down the LCS.
2. On the LCS machine, open the KITE-LCS folder.
3. Open the TDELocalCache folder.
4. Open the config folder.
5. Using Notepad, open the settings.js file.
6. Change exports.offline to true.

Note: To change the LCS back to semi-offline mode, set exports.offline to false.

7. Save the file.
8. Close Notepad.

Linux – Configuring the Settings.js File

To change the LCS mode to fully offline, perform the following steps:

1. Shut down the LCS.
2. On the LCS machine, open the Terminal as a root or sudo user.
3. Change to the following directory:

   `/opt/KITE-LCS/TDELocalCache/config`

4. Using an editor, open the settings.js file.
5. Change exports.offline to true.

```
exports.offline = true
```

Note: To change the LCS back to semi-offline mode, set exports.offline to false.

```
exports.offline = false
```

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

Downloading Tests

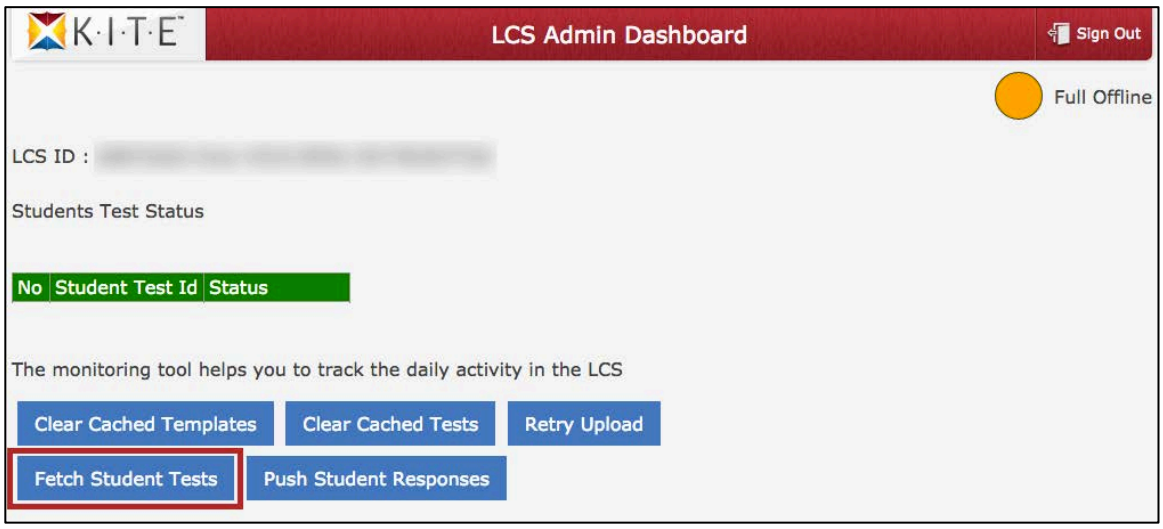
> **Note:** **Tests should be downloaded after 3:00 pm CT. It may take up to twenty minutes per grade level to download the test forms and student information.**

Before you can download tests, those tests must be available in Educator Portal. Check your program's publications to be sure the testing window is open and tests are available.

> **Note:** **To download tests, you must have at least building-level access to Educator Portal. If you do not have building-level access to Educator Portal, contact your local technical support or the Help Desk.**

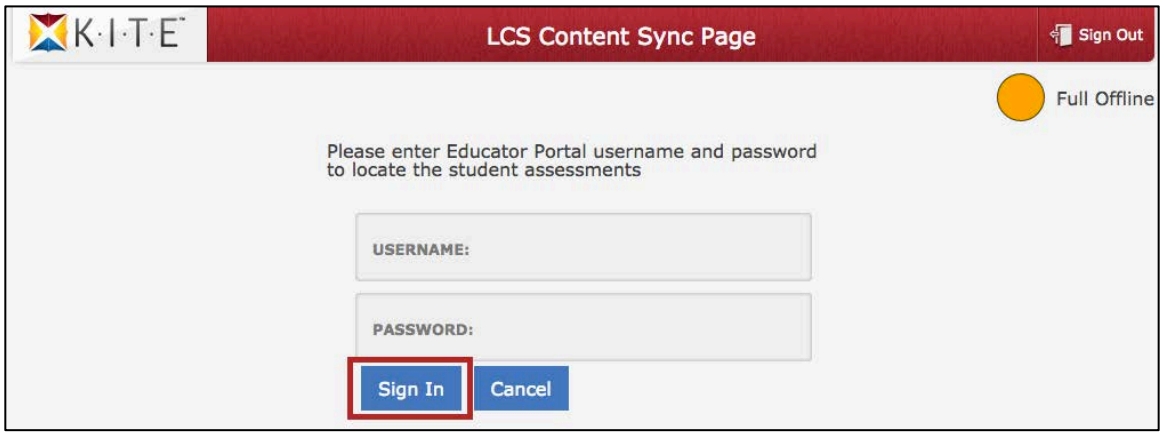
To download tests to the LCS, perform the following steps.

1. Log in to the LCS.
2. Click Fetch Student Tests.



3. On the LCS Content Sync Page, type your Educator Portal username.
4. Type your Educator Portal password.

5. Click Sign In.



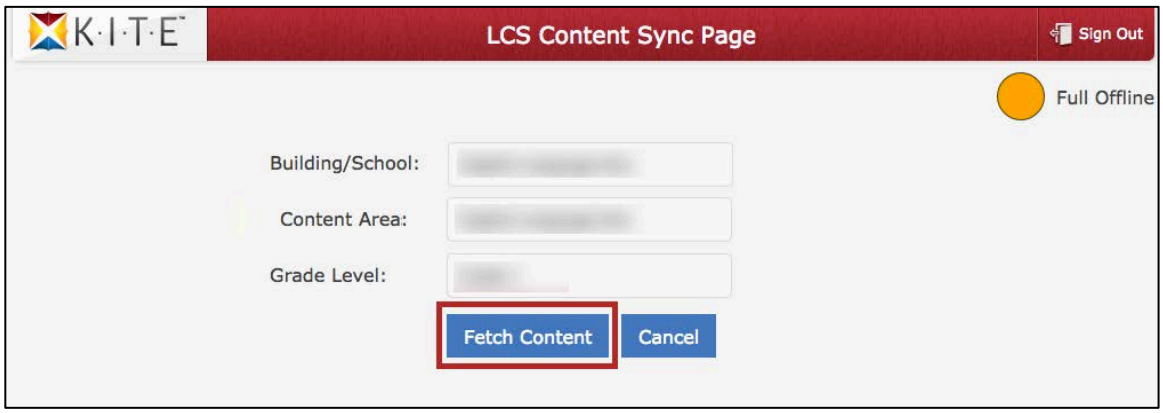
6. Select the Building/School.

Hint: Click to see list of choices.

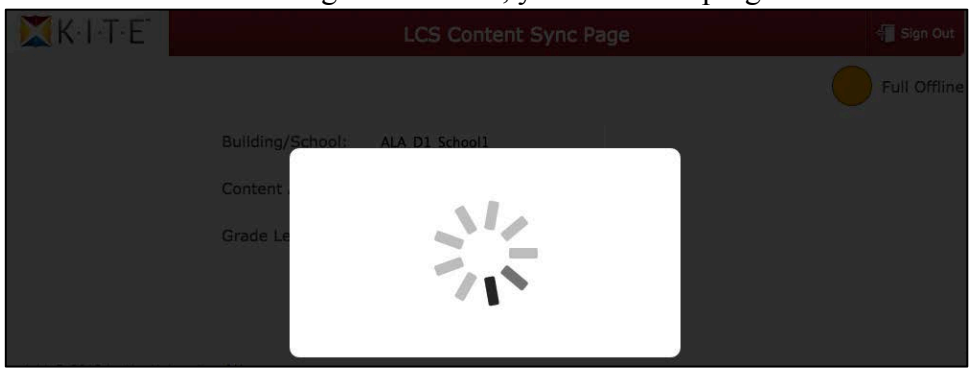
7. Select the Content Area.

8. Select the Grade Level.

9. Click Fetch Content.



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.

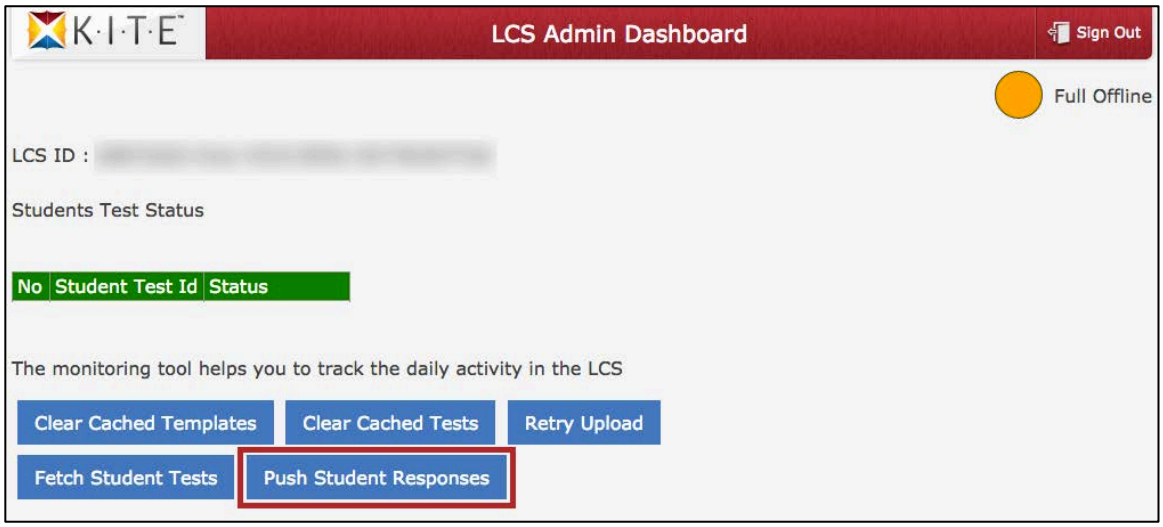
Sending Student Responses

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.
2. Click Push Student Responses.



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

Changes to the Chapter

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
10/29/2015	4.1	Updated the introduction.
10/29/2015	4.3	Updated the procedure.
10/29/2015	4.6	Updated the note.
10/29/2015	4.10	Added a change log to the chapter.