



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
Fully Offline Mode	Error! Bookmark not defined.
Structure of LCS Manual	1.3
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 an LCS on a Windows® 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	2.8
Allowing Access through a Windows Firewall	2.8
Other Firewalls.....	2.11
Starting the LCS.....	2.12
Verify the LCS is Running – on the LCS Machine	2.12
Testing the LCS Settings Using a Browser.....	2.13
Configuring KITE Client Software.....	2.14
Sending Log Files to the Service Desk.....	2.16
Chapter 3: Administering the LCS	3.1
Logging in to the LCS.....	3.2
Semi-Offline Dashboard	3.3
Fully Offline Dashboard	Error! Bookmark not defined.
Retrying an Upload	3.4
Shutting Down the LCS	3.5
Chapter 4: Fully Offline Mode	Error! Bookmark not defined.
Configuring the LCS for Fully Offline Mode.....	Error! Bookmark not defined.
Configuring the Settings.js File	Error! Bookmark not defined.
Downloading Tests	Error! Bookmark not defined.
Sending Student Responses	Error! Bookmark not defined.

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.

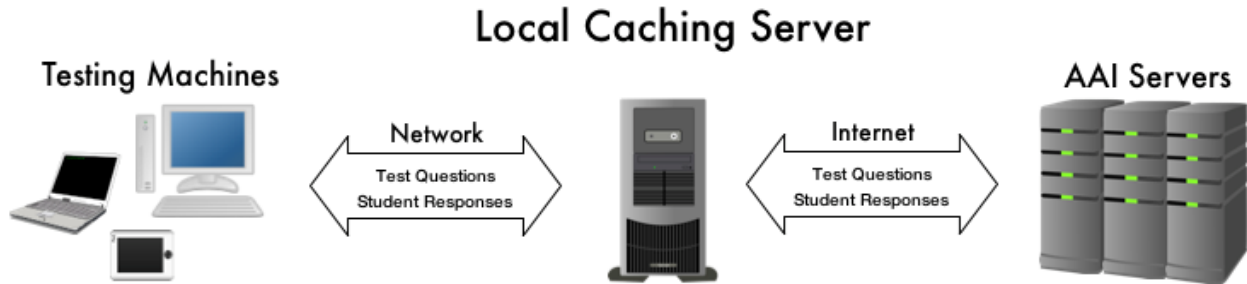
While operating, the LCS stores testing data in an internal database; therefore, if the upstream network connection becomes unreliable (or variable) during testing, then students can still continue testing and their responses will be transmitted to the KITE servers as bandwidth allows.

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	2.14	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 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.

System Requirements

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

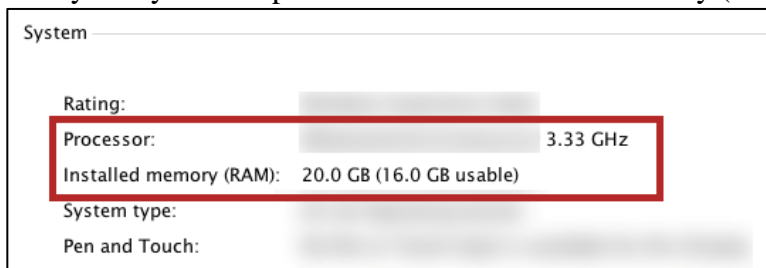
Note: The specifications listed are the minimums that must be available for the LCS to use. These are NOT overall machine specifications.

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.

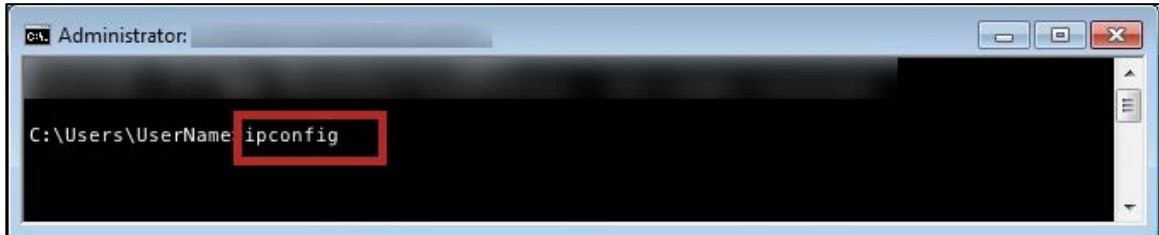
1. From the Start Menu, click Computer.
2. Click System properties.
3. Verify that your hard drive has at least 3 GB free.
4. Verify that your computer has at least a 2 GHz processor.
5. Verify that your computer has at least 4 GB of memory (RAM).



Finding the IP Address

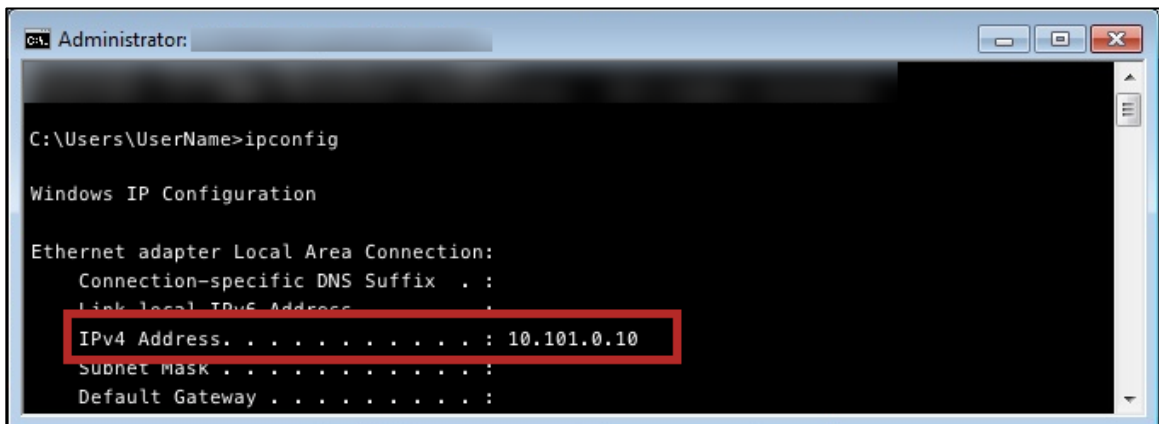
When you install and configure the LCS, you will need to know the IP address of the machine that will run the LCS. If you do not know the computer's IP address, perform the following steps.

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 software 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.

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 a 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.

Note: The LCS software is in a ZIP file.

2. Extract the zip file into the C: drive.

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" : "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 Notepad.

Firewall Access

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

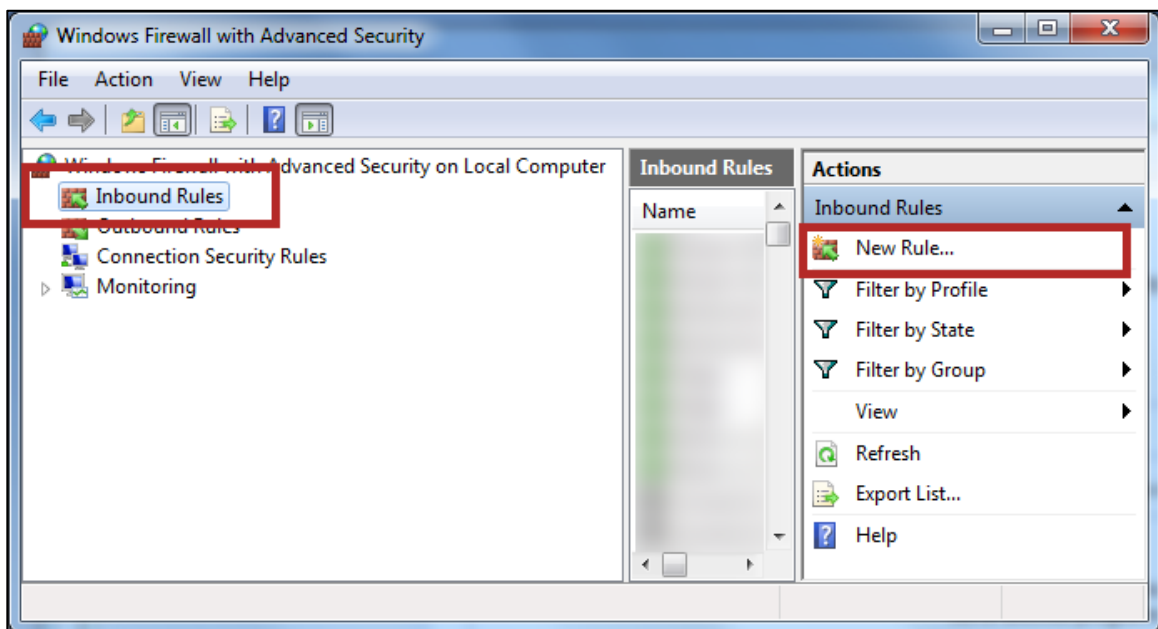
Allowing Access through a Windows Firewall

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

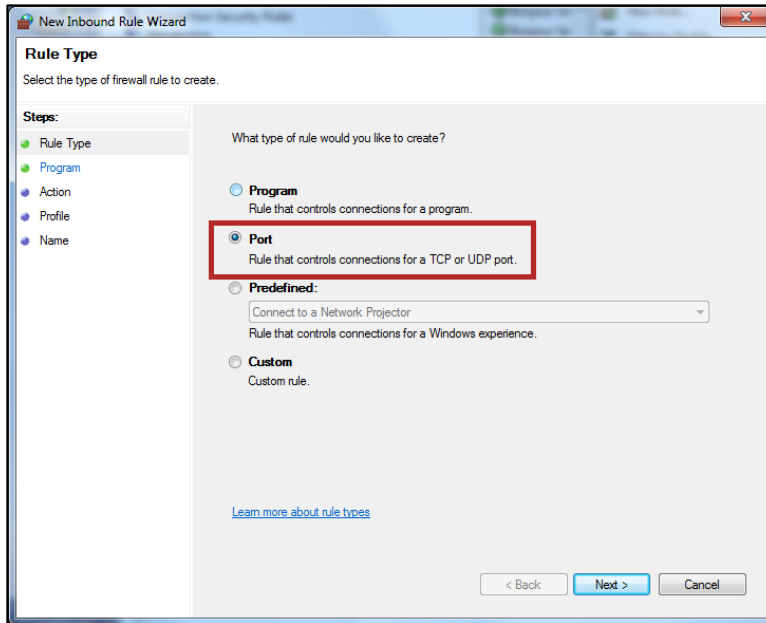
1. Open the Windows Firewall Control Panel.

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.

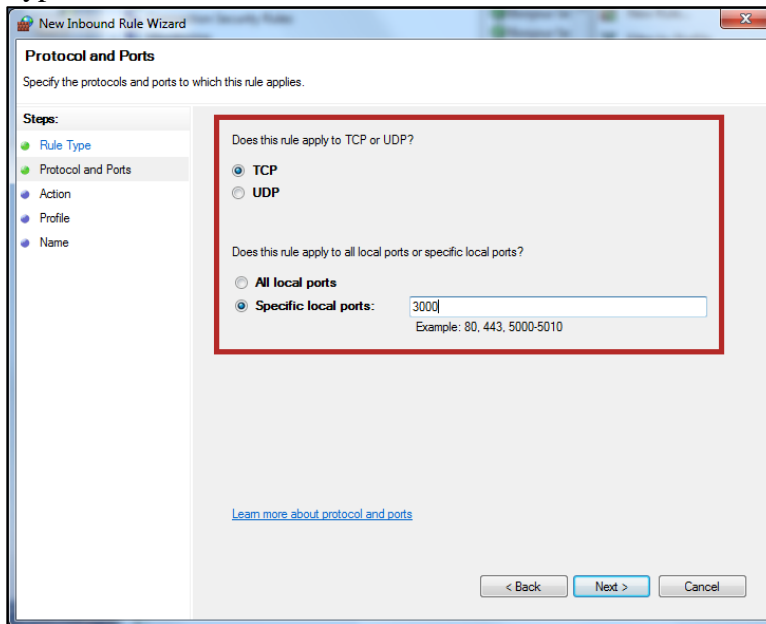
2. Click Advanced settings.
3. Click Inbound Rules.
4. Click New Rule.



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



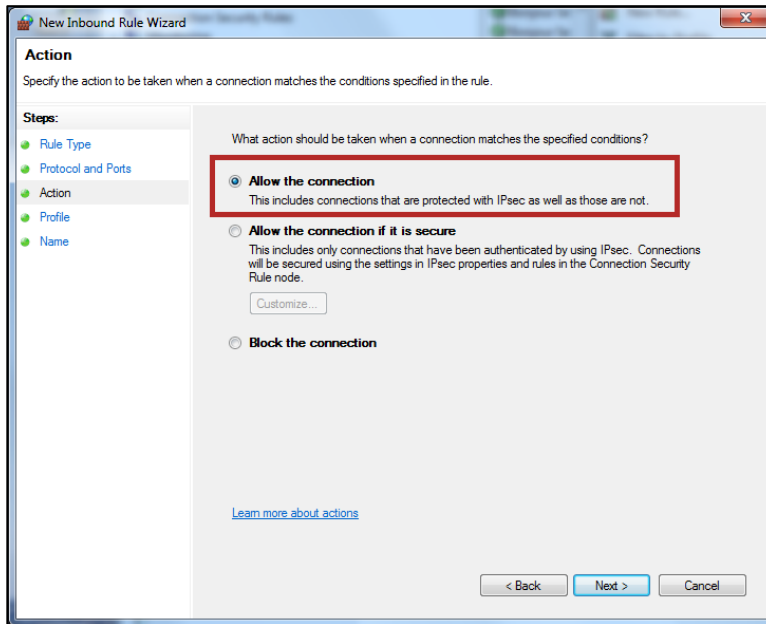
6. Click Next.
7. Select TCP.
8. Select Specific local ports.
9. Type 3000.



Hint: Note: If you are using a port other than 3000 on your LCS, use that port number in the Specific local ports field.

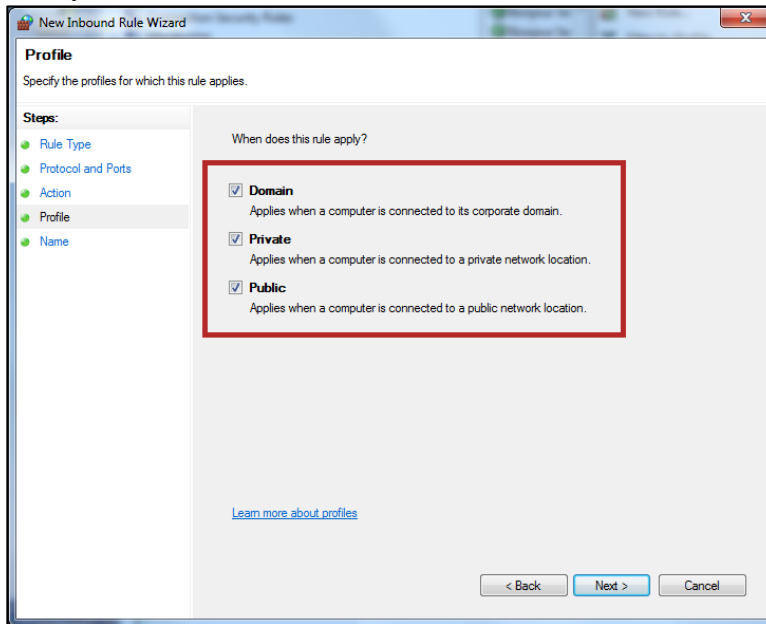
10. Click Next.

11. Select Allow the connection.



12. Click Next.

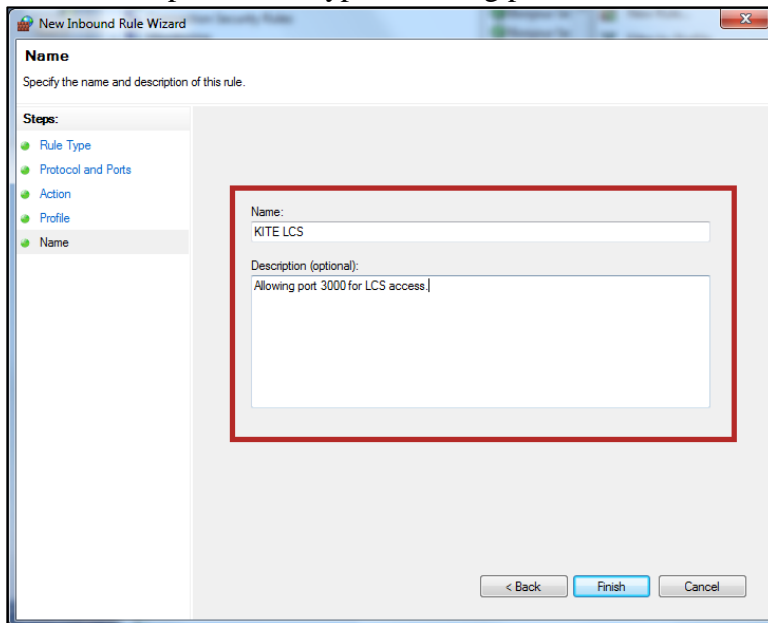
13. Verify that Domain, Private, and Public are all selected.



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, run Command prompt (cmd) as administrator.
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.

```
>cd c:\KITE-LCS\TDELocalCache
>set PATH=%PATH%;C:\KITE-LCS\nodejs
>pm2 list
```

App name	id	mode	pid	status	restart	uptime	memory	watching
kite-lcs	0	fork	6668	online	0	85s	95.828 MB	disabled
kite-lcs	1	fork	7000	online	0	85s	108.445 MB	disabled
kite-lcs	2	fork	9308	online	0	85s	93.656 MB	disabled
kite-lcs	3	fork	8428	online	0	85s	96.191 MB	disabled

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.

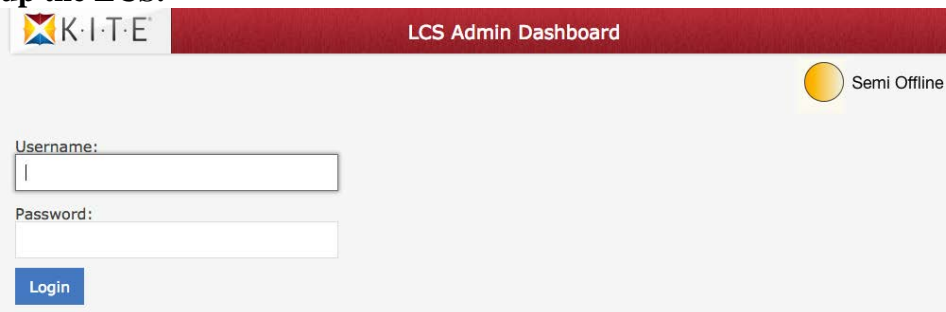
1. Open Firefox.
2. In the address bar, type:

[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.



The screenshot shows the LCS Admin Dashboard interface. At the top left is the KITE logo. The main header is a dark red bar with the text 'LCS Admin Dashboard'. To the right of the header is a yellow circle with the text 'Semi Offline'. Below the header, there are two input fields: 'Username:' and 'Password:'. Below the 'Password:' field is a blue button labeled 'Login'.

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 each testing machine to use the LCS. The KITE Client software is available for testing on Macintosh and Windows computers, Chromebooks, and iPad tablets.

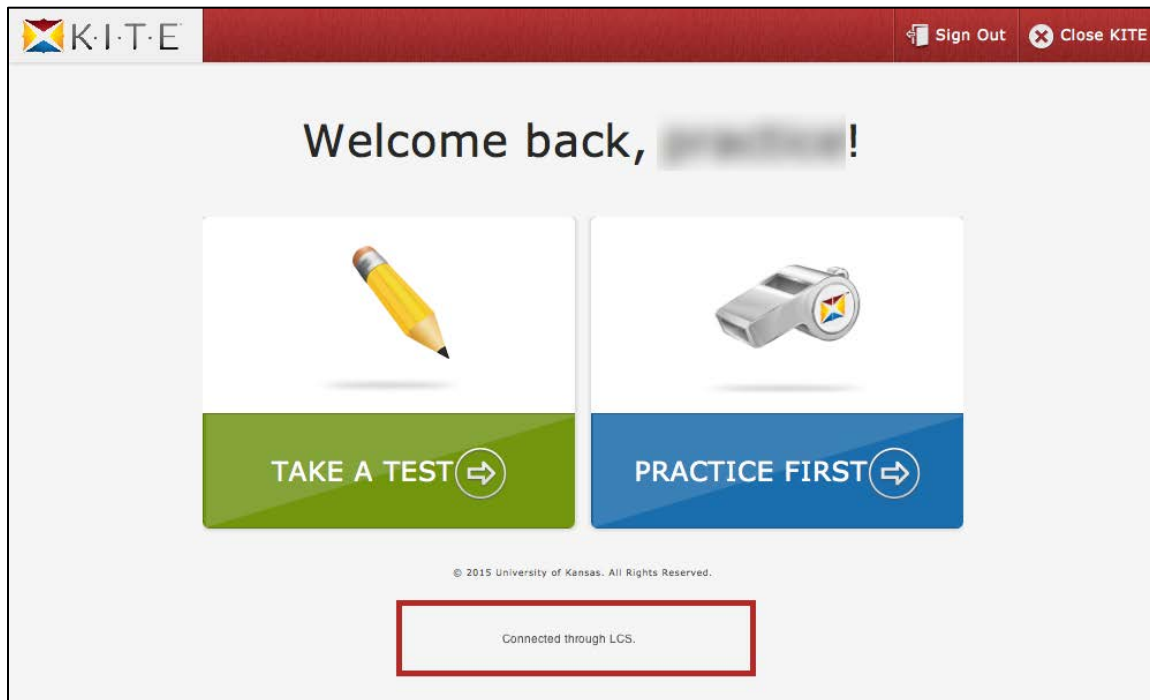
Note: Each device that will be used for testing must be configured to use the LCS.

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

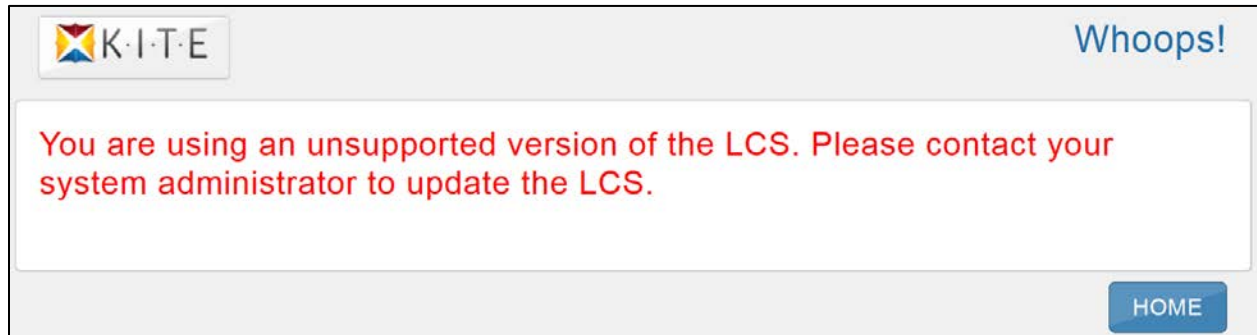
Note: The KITE Client Software Installation Guide for Macintosh Computers includes instructions for creating a customized KITE Client.app with the LCS settings for your location. This customized application could be used to install the client on multiple testing machines.

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:

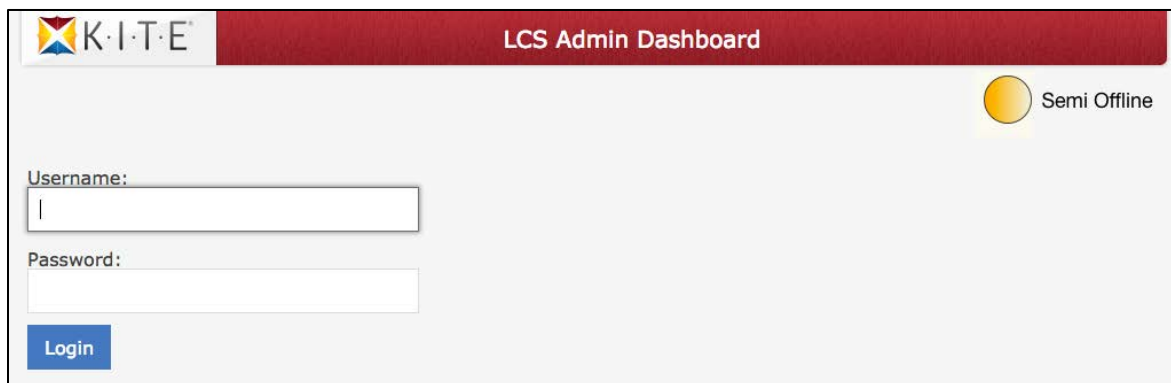
[IP Address]:[port number]/TDE/admin/index.htm

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 following information:

LCS ID : [blurred]

LCS Version : 3 (LCS version is up-to-date.)

Students Test Status

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

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".

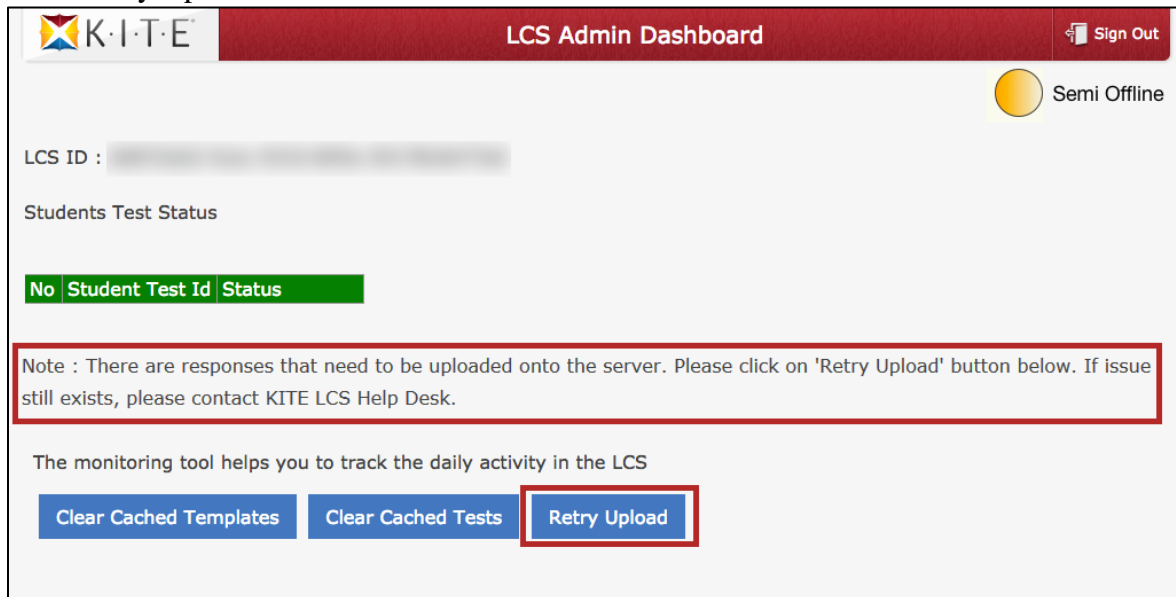
LCS version is up-to-date.

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 contains 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

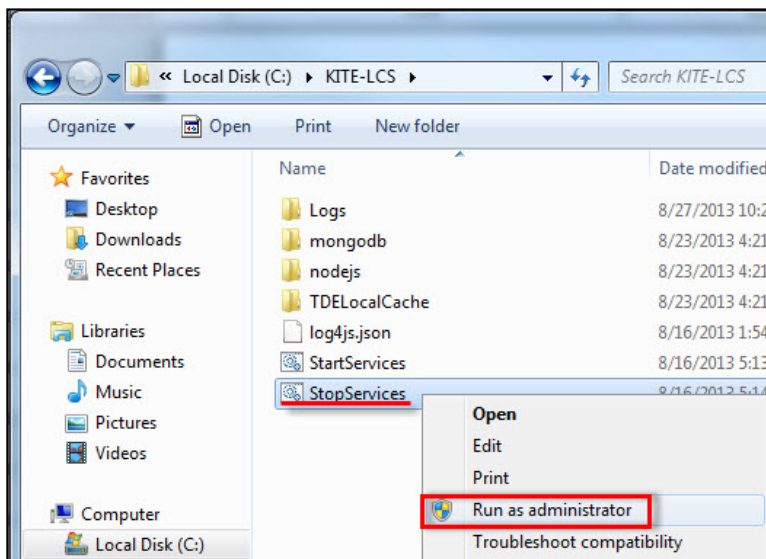
When testing has finished, you should shut down the LCS.

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, open the KITE-LCS folder you downloaded when setting up the server.
2. Right-click StopServices.
3. Click Run as administrator.



Hint: If prompted, hit any key to continue the shutdown.

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