Pre-installation Guide
LanSchool On-Premises

Stoneware, Inc.

**Product:** LanSchool version 8.0.2 or newer

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INTRODUCTION
In this document, we will cover all aspects of LanSchool deployment.

This document is intended to provide information that will assist in LanSchool deployment and provide best practices. Every customer environment is different and may require additional network configuration or setup not included in this document. This guide will focus on deployment using the LanSchool Connection Service. If you have any questions, please contact your Professional Services representative or Support representative (support@lenovosoftware.com).

DEPLOYMENT OPTIONS
In this section, we will cover deployment options based on network topology.

Static Computer Labs and Media Rooms
- Use for Windows/Mac devices
- Device-centric model
- Recommended Deployment:
  - Define a unique channel for each computer lab.
  - Install the student client on each student device in the lab and assign them to that lab's unique channel.
  - Install the teacher client on a dedicated teacher device in the lab and assign it to that lab's unique channel.
- When the teacher in the lab opens the teacher console, they will automatically see the devices in that lab's channel.

Mobile Computer Carts
- Use for Windows/Mac devices
- Device-centric model
- Recommended Deployment:
  - Define a unique channel for each cart
  - Install the student client on each device in the cart and assign it to that cart's channel
  - Define a unique channel for each teacher
  - Install the teacher client on teacher devices and assign them to their unique teacher channel
- When the teacher opens the teacher console, they should NOT see any student devices
- Teacher loads a class list containing the machine names of the devices in that cart
- Teachers can create a class list by browsing for students, sorting by channel number, and selecting the devices in that channel (cart).
- Alternatively, IT could create a class list for each cart and teachers can access them via a network file share
- When class is over, the teacher dismisses the class list, setting devices back to the cart's channel
One-to-One (Student takes computer with them to different teachers)

- Use for Windows/Mac/Chromebook devices
- User-centric model
- Recommended Deployment:
  - Define a common "home" channel for all student devices
  - Install the student client on each student device (or user accounts in the case of Chromebooks)
  - Define a unique channel for each teacher
  - Install the teacher client on teacher devices and assign them to their unique teacher channel
- When the teacher opens the teacher console, they should NOT see any student devices
- Teacher loads a class list containing the user login names of the users in their class
- Class Lists can be manually created by each teacher
- Class Lists can be centrally managed by the district (dynamic class lists)
- When class is over, the teacher dismisses the class list, setting students back to their "home" channel

LANSCHOOL CONNECTION SERVICE (LCS)

In this section, we will cover the LanSchool Connection Service (LCS).

In most instances, it’s highly recommended to deploy LanSchool using the LanSchool Connection Service (LCS). This will use a client-server architecture instead of a peer-2-peer architecture used with the older traditional installation. With proper hardware, the LCS can handle 10,000 concurrent connections. See below link for recommended hardware specifications. It’s common to deploy multiple LCS servers in a larger environment.

LanSchool Connection Service server requirements:

- [LCS server hardware and OS requirements](#)
SYSTEM REQUIREMENTS

In this section, we will cover hardware requirements and features per OS.

LanSchool offers several classroom management capabilities, however not all features are available for all operating systems. Refer to this chart for more detail.

LanSchool Client requirements:

- [https://www.lenovosoftware.com/support/lanschool/specifications](https://www.lenovosoftware.com/support/lanschool/specifications)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Windows</th>
<th>Mac OS</th>
<th>Chrome OS</th>
<th>Android</th>
<th>iOS</th>
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<tbody>
<tr>
<td>Voting</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>Testing</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Chat</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Limit Web</td>
<td>✓¹</td>
<td>✓²</td>
<td>✓³</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Internet History</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>Blank Screen</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Collect/send files</td>
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<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
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<tr>
<td>SSID White-listing</td>
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<td>✓</td>
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<td></td>
<td>✓</td>
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<tr>
<td>Keystroke Alert</td>
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<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
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<tr>
<td>Battery Monitor</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
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<td>Password Secure mode</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>AD Secure mode</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Show Teacher ability (receive)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Show Teacher ability (broadcast)</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Show Student ability (receive)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Show Student ability (broadcast)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Limit Applications on OS</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Thumbnails</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Student must grant permission for full screen viewing</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Student can stop/reconfigure LanSchool app</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Requires LanSchool Connection Service</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Report Server compatible</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

¹ Chrome, IE, Firefox
² Safari, Firefox, Chrome
³ Chrome
⁴ Only recommended if chrome://policy is blocked for students
⁵ Only Keystroke Alerts
ARCHITECTURE

In this section, we will show a sample architecture.

Sample Deployment Architecture

Characteristics of this deployment:

- 2 separate LCS servers to serve 10,000 concurrent connections at each site
  - Add additional LCS servers for additional sites or per 10,000 concurrent users
- Tech Console can be utilized by IT to assist teachers and other features
  - See Tech Console section for more details
- Report Server can be utilized for reporting data such as top websites and applications
  - Uses a broadcast discovery packet
  - See Report Server section for more details
DATA FLOW
In this section, we will show the data flow.

PORTS AND USAGE
In this section, we will discuss ports and their usage.

This section provides the basic port configuration information needed to install LanSchool in a production environment. If Teachers are on a different network/VLAN from the LCS, UDP packets must be able to transverse. If you choose not to utilize features, like iPad Teacher’s assistant, it can be safely ignored.

LanSchool Connection Service information:

<table>
<thead>
<tr>
<th>Sender</th>
<th>Receiver</th>
<th>Port#</th>
<th>Protocol</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>LCS</td>
<td>8080</td>
<td>TCP</td>
<td>Student connect to LCS</td>
</tr>
<tr>
<td>Teacher</td>
<td>LCS</td>
<td>796</td>
<td>TCP</td>
<td>Teacher issues command to LCS</td>
</tr>
<tr>
<td>Role</td>
<td>Component</td>
<td>Port Number</td>
<td>Protocol</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------</td>
<td>-------------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Teacher</td>
<td>LCS</td>
<td>796</td>
<td>UDP</td>
<td>Teacher issues command to LCS</td>
</tr>
<tr>
<td>Teacher</td>
<td>LCS</td>
<td>11796</td>
<td>TCP</td>
<td>Teacher issues command to LCS</td>
</tr>
<tr>
<td>Teacher</td>
<td>LCS</td>
<td>11796</td>
<td>UDP</td>
<td>Teacher sends status update to LCS</td>
</tr>
<tr>
<td>LCS</td>
<td>Student</td>
<td>9</td>
<td>UDP</td>
<td>Wake-On LAN</td>
</tr>
<tr>
<td>LCS</td>
<td>Student</td>
<td>8080</td>
<td>TCP</td>
<td>LCS relays Teacher command</td>
</tr>
<tr>
<td>LCS</td>
<td>Teacher</td>
<td>1053</td>
<td>UDP</td>
<td>LCS relays Student command</td>
</tr>
<tr>
<td>iPad</td>
<td>Teacher</td>
<td>2426</td>
<td>UDP</td>
<td>Discovery packet of assistant app</td>
</tr>
<tr>
<td>Report Server</td>
<td>LCS</td>
<td>796</td>
<td>UDP</td>
<td>Student Discovery packet of Report Server</td>
</tr>
<tr>
<td>Report Server</td>
<td>Teacher</td>
<td>2426</td>
<td>UDP</td>
<td>Teacher Discovery packet of Report Server</td>
</tr>
<tr>
<td>Teacher</td>
<td>Report Server</td>
<td>80</td>
<td>TCP</td>
<td>Teacher sends info to Report Server</td>
</tr>
<tr>
<td>LCS</td>
<td>Student</td>
<td>Dynamic</td>
<td>UDP</td>
<td>Relay Report Server info</td>
</tr>
<tr>
<td>Student</td>
<td>Report Server</td>
<td>80</td>
<td>TCP</td>
<td>Students sends info to Report Server</td>
</tr>
</tbody>
</table>

**UDP:**
- Discovery, Blank Screen, Show Teacher, Show Student, Limit Web, Limit Apps, Mute, Limit Drives, Limit Print, Co-Browse

**TCP:**
- Thumbnails, Remote Control, File Transfer, Chat, Message, Power, Run, Clear Desktop, Testing, Vote, Snapshot, Student Details (current app, URL, etc.)

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**TECH CONSOLE + REPORT SERVER**

In this section, we will discuss Tech Console and Report Server.

LanSchool Tech Console allows techs to monitor security risks, keep everything up-to-date, provide support, save power and keep track of technology utilization. It gives the ability to view students, install software (including upgrading LanSchool), send out messages and other features.

**Tech Console details:**
- Tech Console will only show students in an LCS architecture
- Recommended for 40 or fewer connected devices
- Recommended to specify your channel (e.g. not use channel 0)

The Report Server retains the software and hardware inventory information scanned from student machines and well as e-safety alerts. The data captured allows you to record and analyze your technology utilization with reports provided such as web site visits or application usage by student or computer.

**Report Server details:**
- Only 1 Report Server recommended per environment or network segment
- Report Server will send a broadcast discovery packet (255.255.255.255) of its address
- To gather student data, broadcast traffic must be allowed between Report Server and LCS servers
o LCS servers will relay Report Server info to Students
o Students will report back to Report Server over TCP 80

- To gather teacher data, broadcast traffic must be allowed between Report Server and Teacher Consoles
  - By design, Teacher console does not report data outside of machine information (e.g. no website usage or application data)

### TEACHER INSTALLATION

In this section, we will discuss installing LanSchool Teacher.

**Windows Installation Links:**

- Mass deployment via MSI
- Information about Group Policy features
- GPO Deployment Guide

**Class Lists:**

- Dynamic Class lists recommended
- Dynamic Class List Implementation Guide
- Dynamic Class List type can be pre-populated using ADM/ADMX templates
  - Clever Class Lists requires an additional registry setting for pre-population
  - Registry - HKLM\SOFTWARE\WOW6432Node\LanSchool\DynamicClassListInterface
  - Update DWORD value = 3

**Teacher Channel Assignment:**

- Teacher Channel MUST be unique per LCS server
  - Teacher channel can be between 1-16000
- Determine method for assigning channels to teachers (room#, SIS ID, phone extension)
- Set default channel during installation (e.g. 10)
- Run login script to update registry for teacher channel
  - Registry - HKLM\SOFTWARE\WOW6432Node\LanSchool\Channel
- Alternately, you can Enable Channel Select for Teachers to let them choose their own channel
  - Add parameter during installation using ENABLECHANNELSELECT
  - Feature can also be enabled after installation by using the EnableChannelSelect utility
LCS Server:

- Ensure the LanSchool Teacher console is configured to connect to the same LCS server as the students the teacher will be managing (important in environment with multiple LCS servers)
- Recommended to script LCS server during Teacher installation
  - Add parameter during installation **LCS=IP Address**
  - Use LanSchool Group Policy ADM/ADMX templates (located with installation media)
  - Registry - HKLM\SOFTWARE\WOW6432Node\LanSchool\ConnectionServerAddress
- Alternately, the teacher can set the IP address of the LCS server manually
  - Administer -> Preferences -> Network tab -> IP – Directed Broadcast / Connection Server

### STUDENT INSTALLATION

In this section, we will discuss installing LanSchool Student.

#### Windows Installation Links:

- Mass deployment via MSI
- Information about Group Policy features
- GPO Deployment Guide

#### Student Channel Assignment:

- Recommended to set a "home" channel for students, which will be used when students are not in a class
- Channel should not be used by any existing teachers
- Example channel# 15999; not recommended to use channel 0 or 1

#### Chromebook Installation Links:

- Deploying LanSchool for Chromebooks with Google Admin
- Chromebook configuration tool
- LanSchool + Chromebook specific deployment guide
OPTIONAL SECURITY

In this section, we will discuss optional security features with LanSchool.

LanSchool has two different optional security modes that can be enabled on installation called Password Secure Mode and Active Directory Secure Mode. Each feature has different purposes and requirements, so be sure to read carefully to choose which feature(s) may be beneficial for your environment.

Active Directory Secure Mode:
- **Goal** – stop unauthorized access of Teacher console from monitoring Students
- **Risk** – student gets a copy of Teacher installer and tries to monitor/control other Students
- **Solution** – student cannot use Teacher console without being a member of Active Directory group
- **Requirements** – Teacher AND Student must use Windows and be joined to Active Directory domain
- **Feature Limitation** – only works on Windows devices
- **Documentation** – [Active Directory Secure Mode setup](#)

Password Secure Mode:
- **Goal** – stop unauthorized access of Teacher console from monitoring Students
- **Risk #1** – student gets a copy of Teacher installer and tries to monitor/control other Students
- **Risk #2** – student gets access to Teacher machine with Teacher Console
- **Solution** – launching the Teacher Console will result in password prompt before connecting
- **Requirements** – same password needs to be set on installation of students machines and LCS, plus password needs to be shared with Teachers to connect after launching Teacher Console
- **Feature Limitation #1** – because the same password must be shared to multiple teachers, the password may become compromised, which would result in changing the password for all Students and the LCS that use that specific password
- **Feature Limitation #2** – after entering the correct password, the Teacher Console will not prompt again until it is closed and reopened so be mindful of unattended machines with Teacher Console running
- **Recommendation** – automatically lock machines after inactivity and train teachers to lock machines when unattended to further minimize limitation #2
- **Optional** – different sites or areas of students (e.g. different LCS servers) can use different passwords
- **Documentation** – [Password Secure Mode setup](#)