



# Tech System Overview



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The Edgenuity programs have been designed for ease of use with deployment, maintenance, and functionality in a typical educational technology environment. The system predominantly runs on a hosted platform housed within secured data centers. Our customers can feel assured student data is safe and secure with absolutely no work required by school district personnel.

We have taken great care in engineering and designing a robust system with redundancy built in at every level. Multiple levels of backup are incorporated into the onsite and offsite real-time systems. As students and teachers log into our program they access servers located within the secured data centers. Student computers will access the Student Portal via the Internet with information transfer requirements equivalent to standard website interactions. School lab environments will require little Internet bandwidth to function.

The core of the Edgenuity system consists of short video lectures. To maximize program performance and minimize network impact, the Edgenuity system incorporates the use of media appliances. These appliances are self-contained, read-only devices that provide access to the Edgenuity video content library locally. Edgenuity appliances utilize custom programming requiring no backups or user maintenance.

Edgenuity Media Appliances are built on a custom service platform, adding faster performance and greater reliability to our product. Edgenuity appliances come with up to three-year warranty and service contract. Media appliances are configured for your district with an internal static IP address, subnet mask, DNS server IP address, and hostname. An internal static IP address can be used unless you will service students from outside your network (i.e., home).

Edgenuity incorporates redundancy into the media delivery system. If a local media appliance is unavailable to the user, the program automatically rolls the request to another media server, either within your network or within the Edgenuity Media Cloud. If no other appliances are available on your network the user request is sent to the media server cluster and the media is delivered via the Internet. This redundancy helps with the availability of the program to your students. The program requires a minimal set of software and plug-ins, all of which are readily available and free to download. Pre-installment of all required software on your workstations ensures students receive the best experience with this software.

Connection to power and network switch is required for use with a local media appliance. Your Edgenuity Sales Account Executives and Partnership Advisors will work to ensure you have the proper media appliances for your specific needs. Please contact Edgenuity if changes occur within your network for the appliance(s) static IP or if additional assistance is needed.

# Edgenuity Minimum System Requirements: User Workstations

Edgenuity Minimum System Requirements			
Operating Systems <sup>1</sup>		Browsers	
<ul style="list-style-type: none"> <li>• Android™ 5.0+</li> <li>• Apple iOS 10.3+</li> <li>• Mac® OS X® 10.9+</li> </ul>	<ul style="list-style-type: none"> <li>• Chrome™ OS™ 57+</li> <li>• Windows® 7, 8, 10</li> <li>• Windows RT</li> </ul>	<ul style="list-style-type: none"> <li>• Chrome 58+</li> <li>• Firefox® 53+</li> <li>• Safari® 9.0+</li> </ul>	<ul style="list-style-type: none"> <li>• Internet Explorer® 11</li> <li>• Microsoft® Edge</li> </ul>
Processor		Network / Speed Connection <sup>2</sup>	
<ul style="list-style-type: none"> <li>• <b>Processor:</b> 2.33 GHz AMD® -or- Intel® 1.33 GHz</li> <li>• <b>Memory:</b> 1+ GB RAM</li> </ul>		<ul style="list-style-type: none"> <li>• LAN 100/1000 switched to desktop</li> <li>• Internet access of 384 kbps per concurrent user</li> <li>• Wi-Fi with 54 mbps access points or better</li> </ul>	
Sound <sup>3</sup>		Plug-Ins <sup>4</sup>	
<ul style="list-style-type: none"> <li>• OS supported sound card</li> <li>• Microphone, Speakers or Headsets</li> </ul>		<ul style="list-style-type: none"> <li>• Adobe® Flash® Player 18+</li> </ul>	
Example Mobile Devices <sup>5</sup>			
<b><u>Android:</u></b>	<b><u>Chromebook:</u></b>	<b><u>iPad:</u></b>	
Google™ Pixel C	Acer® Chromebook 15 C910	iPad® 4	
Samsung™ Galaxy Tab® 3	Dell™ Chromebook 11	iPad mini™	
Dell Venue 10 7000	Chromebook Pixel™	iPad Pro™	
Mobile Data Requirements			
<p>Access to an Edgenuity Media Appliance is unavailable over a mobile data connection. Mobile data usage will average 110 MB per lesson. Semester courses consist of approximately 40-50 lessons.</p>			
<u>Activity Type</u>	<u>Bandwidth Average</u>	<u>Bandwidth Peak</u>	<u>Average Download per Activity</u>
Vocabulary	40 kbps	480 kbps	2.1 MB
Warm-up	728 kbps	22.4 mbps	11 MB
Instruction	856 kbps	47.5 mbps	73 MB
Online Content	200 kbps	3 mbps	10 MB
Assignment	136 kbps	2.65 mbps	8 MB
Assessment	80 kbps	9.6 mbps	5 MB
PLEASE NOTE:			
<p>1 The Android operating system is supported by Edgenuity, but the Android browser is not. Android users should download and only use the Chrome browser to access Edgenuity.</p> <p>2 Slow Internet connections will affect the performance of multimedia elements found in the Edgenuity courses. Recommended workstation Internet access speeds are based on use of an Edgenuity Media Appliance.</p> <p>3 Students will need access to audio capabilities including microphones, speakers and/or headsets.</p> <p>4 Content within Middlebury PowerSpeak World Languages courses rely upon Adobe Flash. Edgenuity Courseware does not require this plug-in. Adobe Flash is required when using desktop and laptop workstations. Adobe Flash is not supported on mobile devices.</p> <p>5 Example mobile devices listed above have been tested to be functional when using Edgenuity. Devices not listed may be used providing they meet the minimum requirements. Smart phone and smart watch devices are not supported by Edgenuity.</p>			

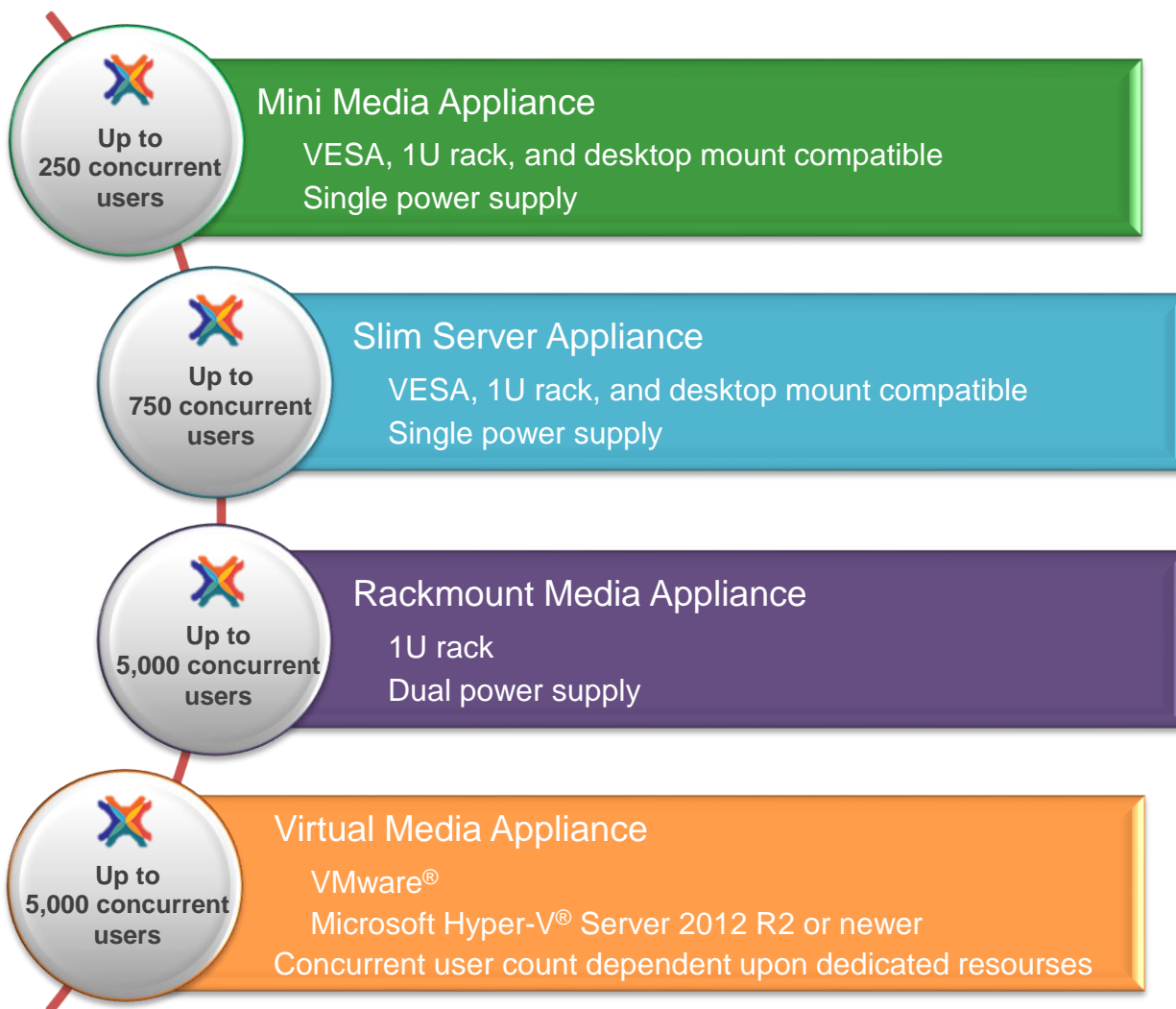
# Edgenuity Media Appliance Overview

Districts can ensure minimal bandwidth requirements of less than or equal to 384 kbps on average per concurrent user on the school infrastructure by placing an Edgenuity Media Appliance at the individual school or district. When a media appliance is housed within the district or individual school firewall, student computers will access the Student Portal via the Internet with information transfer requirements equivalent to standard website interactions. Instructional Videos, when required as part of a user experience, are pulled directly from the local media appliance. This ensures reduced load times with no additional bandwidth requirements, providing a positive end-user experience with minimal delay for page downloads.

## Edgenuity Media Appliances

Edgenuity offers four (4) media appliances to our customers based on concurrent user needs. Each appliance is a self-contained, read-only device rated for concurrent user connections. Appliances utilize custom programming. Backups and user maintenance is not required when routing and white list rules have been applied.

Edgenuity Media Appliances require Secure Sockets Layer (SSL) and Hyper Transfer Protocol Secure (HTTPS) security protocols. By using SSL and HTTPS protocols, Edgenuity can provide a level of security and confidence within the information being exchanged with our users.



### Please Note:

Middlebury Powerspeak World Language courses and Sophia® Dual Credit courses do not require use of a media appliance.

Please contact Edgenuity for questions regarding virtual operating systems not listed. Mini and Slim Media Appliances include Kensington slot locks to stabilize and provide additional security to mounted appliances.

# Edgenuity Media Distribution System

The Edgenuity Media Distribution System (MDS) ensures proper updates and maintenance for media appliances uses while providing a seamless end user experience. MDS is designed to be behind-the-scenes and should not impact overall network performance. The system has 3 essential pieces of Content Updates, Monitoring Solution, and System Updates.

The MDS utilizes ports 80, 443, 6505, and 22 for connection to **MDX.edgenuity.com** and **MDM.edgenuity.com** for all hosts. If the network prevents these ports the appliance will not function properly.



## Content Updates

The primary purpose of MDS is to ensure appliances have the latest content. Media Appliances utilize web caching for content delivery from **MDM.edgenuity.com**.

We continually strive to maximize content updates using as little bandwidth as possible. The **OnDemand** update mode is offered for all single media appliance sites to ensure bandwidth usage is minimized.

OnDemand mode is an option used per media file with cached files. As content is requested, a media appliance will download and store cached versions of the media file. The stored cache will become available for subsequent requests for future use preventing multiple downloads of same content from different requests / requestors.

OnDemand reduces bandwidth required to serve students who may all need access to the same media; the first time any particular media is needed it must be downloaded from Edgenuity first. While this will use minimal bandwidth usage, slightly longer load times will occur for the first student accessing the media.

## MDS Monitoring Solution

The monitoring solution is a hardware and software level monitor that allows for smarter updating as well as failure alerts. Monitoring relays encrypted TCP packets containing the monitoring data via ports 22\*, 80, 443, and 6505\* to hosts **MDM.edgenuity.com** and **MDX.edgenuity.com**. This allows the ability to do smart updates while targeting and replacing high risk appliances before issues may begin. The monitor also allows us to perform similar identification with software by monitoring the web server that distributes files to students and pinpoints any potential performance or configuration modifications that may be needed.

## Software Updates

Software updates are checked nightly via port 80 and 443 to hosts **MDM.edgenuity.com** and **MDX.edgenuity.com**. This solution is designed to utilize low bandwidth and maintain versioning across all media appliance variants. Even when larger updates are needed they rarely take longer than a few minutes to download and install.

Updates are applied with a keep-alive download and patching system allowing for downloads to resume if a connection is dropped and is then re-established. Updates will only be applied after the complete patch has been downloaded and scanned for corruption.

System updates must be installed from the Media Appliance Management Portal.

\* Port 22 is used as a failover should port 443 be inaccessible. Port 6505 is used as a failover should port 80 be inaccessible. Proxy and content filters may disrupt communication on all ports.

# SSL Protocols

Edgenuity Media Appliances requires Secure Sockets Layer (SSL) and Hyper Transfer Protocol Secure (HTTPS) security protocols. By using SSL and HTTPS protocols, Edgenuity can provide a level of security and confidence within the information being exchanged with our users.

Additional configuration will be required for customers using an Edgenuity Media Appliance. Instructions for deploying SSL within an Edgenuity Media Appliance will complete the installation of an appliance locally.

## What is SSL?

SSL encrypts information to create secure transactions online. X.509 certificates and asymmetric cryptography are used to verify the counterparty with whom they are communicating with, and to exchange a symmetric key. The session key is then used to encrypt data being exchanged between the Edgenuity website and the student session. This allows for data / message confidentiality, and message authentication codes for message integrity, establishing message authentication as a by-product.

SSL is becoming required by most internet browsers. Not applying SSL settings within a network may disrupt media delivery from Edgenuity to the students within your school(s).

## What are HTTPS URLs?

HTTPS is a communication protocol for secure communication over a computer network. HTTPS is designed to withstand and help prevent insecurity and weaknesses within a network. Standard HTTP URLs are insecure. This insecurity could result in weakness within a network, allowing others to gain access to website accounts and sensitive information without permission.

## FQDN and Changes to DNS

A fully qualified domain name (FQDN), also referred to as an absolute domain name, is a domain name that specifies its exact location in the tree hierarchy of the Domain Name System (DNS). It specifies all domain levels, including the top-level domain and the root zone. A fully qualified domain name is distinguished by its lack of ambiguity: it can only be interpreted one way.

The certificate, [\\*.ma.edgenuity.com](https://*.ma.edgenuity.com), has been established for use by our customers for DNS and SSL settings and has been applied to the media appliance. Please contact Media Appliance Support to verify the FQDN has been set up for appliance(s) within the network. Only then will the students be able to access media from the appliance without receiving a warn-level error from their browser.

Please contact a Media Appliance Support, [masupport@edgenuity.com](mailto:masupport@edgenuity.com), for questions and/or assistance with these required updates.

## Frequently Asked Questions

<b>Q:</b> Is SSL required or optional when using Edgenuity?	<b>A:</b> SSL is required by all Edgenuity users. Additional configuration will be required for customers using an Edgenuity Media Appliance.
<b>Q:</b> What are the benefits of moving to SSL?	<b>A:</b> SSL encrypts the information to make the transactions more secure for users.
<b>Q:</b> What port does SSL use?	<b>A:</b> SSL uses port 443.
<b>Q:</b> If a school is using SSL to access Edgenuity but their appliance does not have a SSL certificate, what happens when they load a video?	<b>A:</b> Videos will not load from the local school media appliance if a school is using mixed content. Content instead will be delivered from the Edgenuity Media Cloud via the Internet.

# Edgenuity System Login and Security: Enhanced Passwords

Edgenuity provides a number of security features including **Enhanced Password Security** for secure student access.

Edgenuity has signed the Student Privacy Pledge developed by the Future of Privacy Forum (FPF) and the Software & Information Industry Association (SIIA). The provisions require additional security to protect student data against unauthorized third-party access.

All passwords are encrypted within Edgenuity preventing the information from being visible within the Student and Educator profile screens. Storing and transmitting encrypted passwords prevents anyone from acquiring passwords and sensitive student data.

Student and Educator passwords can be in any format you wish, and are case sensitive. For security reasons, we recommend against creating passwords with predictable patterns such as student ID numbers. Reset features are incorporated into Edgenuity for Educators assisting users in password retrieval.

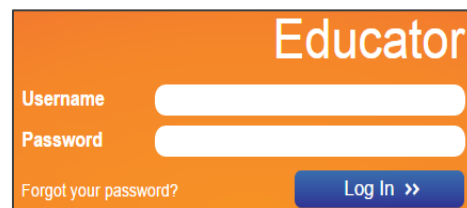
## User-Initiated Password Reset

### Forgot Your Password

**Forgot your password** is a self-service feature that can be selected within the Edgenuity login screen should a user be unable to log into their account. Users receive a password reset email to the address on file to regain access.

Password reset emails will come from 'noreply@edgenuity.com'. It is recommended to check Junk or Spam folders within the email account supplied if an email is not received shortly.

**Please note:** Edgenuity does not require a user email address; it is recommended all educators update their Edgenuity account to include a current email address for the password retrieval feature. Alternative options are available should students not have an email address associated with their Edgenuity account.



## Educator-Initiated Password Reset Features

Educators with the security permissions can assist student and fellow educator users in regaining access to their Edgenuity account with *Change Educator (or Student) Password*, *Send Password Reset Email*, and *Get Temporary Password* features.

**Please note:** When using *Get Temporary Password* the user's original password is removed from the account and will no longer work.

### Change Educator (or Student) Password

Change Educator (or Student) Password allows an educator to enter a new student or educator user password.

### Send Password Reset Email

A password reset email can be sent if the user account has an associated email address.

### Get Temporary Password

Educators can establish a temporary password for users to log in.

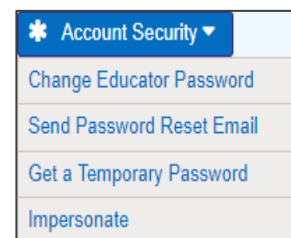
The user must establish a new password after log in. This feature can be used if you don't want the person changing the password to know the final password.

### Impersonate

Educators can assist students by logging into the Edgenuity account as the user. Once the account is accessed the educator can view and interact within the system as the user. Impersonation sessions are recorded and logged within Recent Actions similar to other actions that occur within the system.

**Please note:** When using the Impersonate feature, please be aware of the following:

- A warning will display for an active session if the student is currently logged into their account. Continuing with *Impersonate* will log the student off their active session.
- Any actions taken during an impersonation session will be logged as though the student completed them.



\* Password encryption does not affect login credentials managed via API, LTI, LDAP, or SAML integration. Users sign in with credentials managed by a school and are not maintained by Edgenuity. Passwords will not be overwritten for users with nightly imports where manual password changes may occur.



# Edgenuity System Login and Security: IP Registry

Edgenuity provides a number of security features including IP Registry for secure student access. The IP Registry feature allows schools to prevent students from logging into Edgenuity from outside the school's network.

IP Registry can also be configured to allow student access to Edgenuity from home to complete instructional activities, but require all assessments be completed at school once students are back on the school's network.

## How Do I Prepare?

Once you've made the following decisions, you are prepared to enable IP Address Registry.

- ✘ For each school, decide which Educator account holders will be given the user permissions to create and administer IP Address Registry and individual student bypasses.
- ✘ For each school, determine the IP addresses (or ranges) of the firewall or edge router that represents the 'gateway' to the Internet. You will enter this IP address or range in the Edgenuity configuration page.
- ✘ Decide whether you want students on non-approved IP addresses to be completely blocked from accessing Edgenuity, or to be allowed access to coursework but not assessments.
- ✘ If you have individual students with permission to do coursework and assessments from home, prepare a list of those students. You will be able to put those student accounts on a bypass list that lets them access Edgenuity from outside the block of registered IP addresses.

Additional information regarding IP Address Registry is available within the Educator portal. Please contact Customer Support for more information for this feature.

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