



# Hybridge<sup>®</sup> and Pathblazer<sup>®</sup> Technical Overview



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Edgenuity solutions are designed for ease of use with deployment, maintenance, and functionality in a typical educational technology environment. The systems predominantly run 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.

## Edgenuity Solutions Overview

Edgenuity offers dynamic product solutions based on your needs. Solutions include online content for grades K-12 to support a variety of blended and virtual implementations. Our learning management systems give educators the flexibility to personalize learning, customize curriculum, and manage program options with real-time data and reporting. For students, our digital content blends rigorous, standards-based instruction with lessons from expert, on-screen teachers along with multimedia tools and resources. Real-world applications ensure students build content knowledge and inspire deeper understanding.



Edgenuity

### Hybridge®

*Blended Learning in Math and Reading for grades K – 6*

Hybridge® offers dynamic online content that can be used alongside core instruction to help students practice and master grade-level skills.

This flexible program is aligned to Common Core and state standards and offers an easy transition to blended learning in elementary school classrooms.



Edgenuity

### Pathblazer®

*Intervention for grades K – 6*

Pathblazer® helps educators engage discouraged students, hold their attention, and deliver engaging instruction in math and reading to accelerate students to grade level.

Pathblazer immediately identifies where students are struggling and provides the targeted instruction they need to close learning gaps.

# Hybridge and Pathblazer Network Requirements

Minimum System Requirements: Hybridge and Pathblazer		
<b>Operating Systems <sup>1</sup></b> <ul style="list-style-type: none"> <li>Mac® OS® X 10.9+</li> <li>Windows® 7, 8, 10</li> </ul>		<b>Browsers <sup>2</sup></b> <ul style="list-style-type: none"> <li>Chrome® 58+</li> <li>Firefox® 53+</li> <li>Safari® 9.0+</li> <li>Internet Explorer® 11</li> <li>Microsoft® Edge</li> </ul>
<b>Required Ports</b> <ul style="list-style-type: none"> <li>Port 80</li> <li>Port 443</li> </ul>		<b>Memory &amp; Hard Disk Space</b> <ul style="list-style-type: none"> <li>2+ GB RAM</li> <li>1 GB available disk space for browser cache</li> </ul>
<b>Workstation Network / Speed Connection <sup>3</sup></b> <ul style="list-style-type: none"> <li>100Mbps NIC</li> <li>Internet access of 256Kbps per student</li> <li>Wi-Fi or Mobile access of 512Kbps per device</li> </ul>		<b>Sound <sup>4</sup></b> <ul style="list-style-type: none"> <li>Microphone</li> <li>OS supported sound card</li> <li>Speakers or headsets (recommended)</li> </ul>
<b>Plug-Ins <sup>5</sup></b> <ul style="list-style-type: none"> <li>Adobe® Acrobat® Reader®</li> <li>Adobe Flash® Player 18+</li> <li>Adobe Shockwave® Player 10+</li> <li>Javascript™ 1.2</li> <li>QuickTime® 7.6+</li> <li>Sun Java™ J2SE™ 6</li> </ul>		<b>Mobile Devices <sup>6</sup></b> <p><b>Chromebook™:</b>            Browser: Chrome            Speed Connection: 256Kbps per student</p>
<b>White List <sup>7</sup></b>		
<b>Hybridge and Pathblazer Sites</b> <p>brightcove.com            compasslearning2.mindtouch.us            macmillandictionary.com            odysseyreporting.thelearningodyssey.com            student.skillwriter.com            thelearningodyssey.com            wordsmythclient.net</p>		<b>Virtual Professional Development:</b> <p>pd1.compasslearning.com            student.gototraining.com</p>
<p>Odyssey™ and CompassLearning High School™ are no longer available for new implementation but are supported by Edgenuity. Network requirements within this document should be applied for these products.</p> <p>1 Power PC and Windows XP are no longer supported.            2 Please allow third-party cookies within browser. Chrome browser versions 42 or later may not allow functionality for some plug-ins. As of April, 2017 Microsoft Vista™ is no longer a supported operating system by Microsoft.            3 A slow Internet connection will affect the performance of multimedia elements found in the CompassLearning courses.            4 Students will need access to audio capabilities including speakers and/or headsets.            5 All instructional computer stations will need sufficient network-user permissions to ensure full functionality when using certain plug-in applications. QuickTime is required for CompassLearning High School elective courses only. Sun Java and Adobe Shockwave Player 10 or 11 are required for ELL learning activities.            6 Hybridge and Pathblazer are not Android™ or iPad® tablet compatible at this time. Smart phone and smart watch devices are not supported.            7 Certain tasks and teacher-created Authentic Tasks require Internet access. In the interest of security standards and IT best practices, Edgenuity recommends you ONLY whitelist URLs to which your users need access, and only when access is needed. Some content filters, web proxies, and/or classroom management software may also require additional white listing within your network.</p>		

**Please Note:**

Hybridge and Pathblazer minimum system requirements may differ from Courseware and MyPath minimum system requirements.

# Edgenuity System Login and Security

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.

Edgenuity solutions are hosted within secure and monitored environments. Stored data, or Personally Identifiable Information (PII), includes student and teacher names. Use of student ID number and identification of student attributes is optional. Results data, as displayed in reports, is attached to the student's name as locally entered into the management system.

Strict security procedures are implemented to prevent personally identifiable student files from unauthorized access. Parties with access to student information are limited to authorized employees and contractors, school districts, and/or the student's immediate family with proper request and identification. User profile types (e.g. student vs. teacher vs. administrator) are used to grant application access to specific data. Access is protected by user ID and password at the application, database, and operating system levels.

- ✘ Student information is protected by user profile types and user ID / password.
- ✘ Operating system levels are available to system and database administrators by user ID / password to access to all servers, files, and resources.
- ✘ Firewall security blocks all unauthorized external access to the network. Outside access can be gained only through application authentication or virtual private network (VPN) access by an authorized system administrator.

## Integration

### Single Sign-On Integration

Single Sign-On (SSO) integration allows students and teachers to access licensed solutions directly from within another website or Learning Management System (LMS). With SSO implemented, a link can be placed on the district's website or LMS. When this link is selected, the student launch pad or Odyssey Manager is launched without the need for a secondary log in.

Slight modification to the website or LMS log in page is required for Single Sign-On integration. This feature is supported for students and teachers. Account credentials used to log into the district website or LMS must match the credentials currently established within Odyssey for each unique user to accomplish a simultaneous log in.

### LDAP Authentication Integration

Edgenuity supports Lightweight Directory Access Protocol (LDAP) with Active Directory. LDAP Authentication can be set for teacher, student, and parent accounts. The use of LDAP for authentication is indicated in the account. Administrators identify which of the three user types applies to the authentication during account setup. Edgenuity personnel will assist with configuration and testing required for connection with the customer-provided LDAP directory service for log-on authentication.

Edgenuity also earned IMS Learning Tools Interoperability (LTI) v1.1 Conformance. Custom work is required for integration of content within another LMS; the technical team will be happy to discuss specific district questions or configurations with you.

## User Provisioning

With use of the Nightly Import Client, student data can be imported into a school database. Edgenuity provides student and teacher templates containing fields required to import data from a Student Information System (SIS) or other database system. Direct or native interfaces are available.

The Import Client application requires teacher and student source data be in comma-separated-value (.csv) text format for validation and upload. The school district populates the file with data in the required fields, enabling automatic user record updates (for the process of creating new students or teachers, transferring students between schools, etc.).

Validated data files uploaded into the Import Client automatically populate school or district enrollment data. Districts can schedule the Import Client to process import file(s) automatically at a designated time, detecting whether the source file has changed since the last update.

Nightly Import Client is a stand-alone application. The application can reside on any file server or workstation that can connect locally or remotely to the CompassLearning URL (Hosted or Enterprise). Supported file server operating systems include Windows Server® 2008 or Windows Server 2012, supported workstation operating systems include Windows 7.

# Hybridge and Pathblazer Cache Appliance Overview

Cache appliances are dedicated servers that store multimedia content locally within your district's network. By functioning as a proxy server, content requests are fulfilled by this local server instead of being downloaded from within the program. Cache appliances can be populated with nearly 100% of Hybridge and Pathblazer multimedia content.

## Benefits of Using Cache Appliances

Bandwidth requirements for Hybridge and Pathblazer content can be reduced by over 80% due to multimedia content within a cache appliance being housed locally and served from within your school/district network.

Benefits include:

- ✘ Faster load times
- ✘ Reduced bandwidth requirements
- ✘ Improved user experience

## Cache Appliances

Edgenuity offers three (3) cache appliances to our Hybridge and Pathblazer customers based on concurrent user needs. Each appliance is a self-contained, read-only device rated for concurrent user connections.

**Up to 1,000 concurrent users**

### Slim Cache Appliance - HWS6

**Specs:** Intel® Core i3 7100U 2.4 GHz, 8MB Cache, 2 core Processor / 4 Threads  
8 GB DDR4 2400 MHz RAM, 1 TB Solid State Drive, Dual 1 GB NIC  
**Mount / Power Options:** VESA, 1U Rack / Desktop Mount compatible, Single Power Supply  
**Weight:** Approximately 2 pounds each

**Up to 5,000 concurrent users**

### Rackmount Cache Appliance - HWS7

**Specs:** Intel Xeon® E5-2630L V3 1.8 GHz, 8 core processor / 16 threads  
32 GB DDR4 2133 MHz ECC RAM, 500 GB SATA Solid State Drive, Quad 1 GB NIC  
**Mount / Power Options:** 1U Rack, Single Power Supply  
**Weight:** Approximately 45 pounds each

**Up to 5,000 concurrent users**

### Virtual Cache Appliance

**Virtual Platforms:** VMWare 5.0+, Microsoft Hyper-V Server 2012 R2 or newer  
**Minimum Virtual Platform Requirements:** 4 Processors, 8GB RAM, 500 GB available disk space

## Additional Specifications for Cache Appliances

- ✘ **Operating System:** Linux® – Ubuntu® 14.04 LTS
- ✘ **Caching Software:** Squid
- ✘ Cache Appliances contain multimedia content for Edgenuity Hybridge and Pathblazer products.
- ✘ Edgenuity recommends cache appliances are placed within an environment suitable for computer equipment.
- ✘ Network configuration is the responsibility of the District. Please contact Edgenuity if changes occur within your network that may impact your cache appliance or if additional assistance is needed.

# Cache Appliance Implementation

Cache appliance configurations are based on the number of concurrent users they can support. If the number of anticipated concurrent users exceeds available bandwidth capacity a cache appliance may be recommended. A Site Assessment is the first step in determining if a cache appliance is needed.

## Site Assessments

Site Assessments are offered as a free service to help determine if adequate bandwidth is available for the anticipated number of concurrent users. It can also help determine if a districts workstations and / or mobile devices meet our minimum system requirements. By using this technical review, we can provide insights into potential limitations and make recommendations to offset any deficiencies uncovered during the Site Assessment.

## Installation and Configuration of Cache Appliance

A preloaded script will run on the appliance(s) once installation of the operating system and caching software has occurred. This process will populate the cache appliance with nearly all content needed within the programs. Connection to power and network switch is required for use with a local cache appliance.

After installation of the cache appliance, configuration of student workstations accessing Edgenuity will occur. Configuration will include enabling a proxy for your workstation web browser. The cache appliance should be partitioned with QTY 1, 250 GB partition as the hard drive partition for the operating system and cache drive. Group policies can be applied for web browsers; manual configuration for web browsers can also occur. Cache appliances will require additional configuration for use with a current proxy server within your network as its upstream proxy.

Functionality testing is performed after installation and configuration to confirm a successful integration.

Edgenuity currently utilizes the Ubuntu Linux Operating System with Squid cache appliances.

### **Please note:**

All hardware configurations are based on manufacturer's availability and are subject to change by the manufacturer without prior notice. In accordance with Manufacturer's Policy, this hardware configuration is valid for 30 days only. Please contact Edgenuity for updated specifications.

## Cache Appliance Support

If you have questions, unable to install / verify the appliance configuration, or require additional help, please contact Media Appliance Support, [masupport@edgenuity.com](mailto:masupport@edgenuity.com).



# Network Security

## System Availability

Most cache appliance system updates are managed with little to no downtime. Anticipated down time is announced in advance, scheduled for times with the least amount of impact (weekend nights).

All components have live failover units in place. Power and internet are also provided on separate feeds with redundancy. In the event of a component failure, we would continue to operate normally with notification of the failure and part replacement within 8 hours.

Full daily and weekly differential backups of the hosting environment are conducted without affecting network performance. Backup verification assures the process has been completed correctly and data integrity is maintained. Should any problems surface, the backup process will immediately be replicated and tested until the results are successful. Copies of backups are stored offsite from the hosting facility.

## Network Monitoring

All servers and components are continuously monitored on a 24/7 basis for any disruption or irregular events. The hosted site is also monitored with a separate application that measures site performance.

Data and backups are stored in a secured and monitored environment. All servers and components are monitored 24/7. Servers are protected by world-class security, housing redundant power and Internet connections. The data center also contains two separate transformers and two separate underground utility feeds, multiple generators and fuel tanks and multiple battery back-ups.

## Backups

Daily backups are performed and transaction logs are backed up every 2 hours. Measures are also in place to ensure against downtime, including redundancy with regard to lines, UPS, generators, etc. In the event of complete hardware or data center failure, Edgenuity has a full maintenance and backup plan in place for all product solutions with a fully redundant architecture. A full support staff is available to resolve issues as soon as possible.

Full daily and weekly differential backups of the hosted environment are conducted without affecting network performance. Backup verification assures the process is completed correctly while maintaining data integrity. Should any problems arise the backup process will immediately be replicated and tested until results are successful. Edgenuity retains local and offsite backups should a restoration plan need to be executed for complete hardware or data center failure.

## Disaster Recovery

In the event of a complete hardware or data center failure, Edgenuity has a full maintenance and backup plan in place. A full support staff, including access to engineers, is available to resolve issues as soon as possible.

## Transmission Protocol / Encryption

Listed solutions utilize 256bit Secure Socket Layer (SSL) for encrypting data transported via the Internet between the hosted application and customer workstations.

HTTPS is utilized during login by all users and in the following situations:

- ✘ **Students:** HTTPS is utilized when accessing "My Portfolio" (student scores).
- ✘ **Teachers:** HTTPS is utilized with each log in, with exception of when an activity/assignment is accessed from the curriculum index.
- ✘ **School/district administrators:** HTTPS is utilized with each log in, with exception of when an activity/assignment is accessed from the curriculum index.



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