



Acellus Media Server

Information and Specification Sheet

The Acellus Media Servers are used to serve up video lessons, audio clips, images and drills used in the various courses. This takes the majority of the network load off of the school's wide area network connection. The Acellus Media Servers work best when installed on the same local area network where the students will be using Acellus. A 1000BaseT LAN connection to the server can handle up to 2,000 students online simultaneously. With a 100BaseT connection, the number of simultaneous users drops to 300. To the extent that bandwidth is available, the servers will automatically fail over to other servers in other buildings while replacement units can be obtained and installed.

The servers are locked down with GoldKey Security to perform the Acellus function. No user programs can be installed. Installation involves connecting power and LAN, and then setting the IP address using a front panel display and input keys. Typical installation time is less than 5 minutes. Installation instructions can be found here: http://www.science.edu/Acellus/support/quick-start/Acellus7_QuickStart.pdf

Typically, the servers are installed in a rack in a wiring closet at each building location. Each unit occupies 2U of rack space and consumes 350 watts of power at 110 volts. If sufficient Internet bandwidth is available, the Media Servers can be located at the International Academy of Science data center, but in the case of large installations, a substantial amount of Internet bandwidth will be required to support the system during periods of peak usage.

The equipment is serviced and maintained by the International Academy of Science. In the event of a failure, a replacement unit is shipped to the school for swap out. Telephone technical support is provided. On-site support, though rarely needed is available, though additional service fees do apply.

Frequently Asked Questions:

What are the size of the streams, how much bandwidth per stream is required?

Each video stream 333 Kbps. Typically, an online user plays video 50% of the time.

How many concurrent users per server?

With Gigabit connections to the media servers, they can simultaneously support 2,000 students.

Is it a multicast stream, and what protocols are used?

Video content is played using HTTP over a TCP connection. Multicasting is not used since Acellus is designed to allow students to work asynchronously at their own pace.

What sockets are needed through a firewall?

Media server updates use outbound TCP ports 80 and 22. Students access the media servers and our online servers over TCP port 80. Teachers will also use outbound TCP port 443 to access our servers online and goldkeyvault.com (used for multi-factor authentication).

Do all the streams come from the servers or is some of it brought in to the servers or clients from the internet?

Media servers will automatically update every night to make sure they have the latest course content (videos, problem graphics, etc). All new or updated content will be included in this update. The media server will download these updates over HTTP. In the event that a video file cannot be found, the client will access the file via the Internet.

Since the machines will be managed remotely by Acellus, what is required for the remote management? Is a VPN account needed or is something else used on the appliances for this?

Each server has a built-in front panel that can be used to change its basic settings, such as its IP address, default gateway, DNS servers, etc. The servers create an outbound connection on TCP port 22 that can be used by our support staff for advanced management and remote troubleshooting. No VPN account is required.