EchoSystem 5.5 Documentation
Device Monitor User Guide

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Echo360 is continually updating the documentation. This manual is a snapshot as of the date above. Check the Echo360 documentation wiki for the most current version: http://confluence.echo360.com/display/55/EchoSystem+Welcome+and+FAQs

Server Installation Guide

In this section:

- [Overview](#)

Overview

This document provides EchoSystem installation and upgrade instructions specific to EchoSystem 5.5. It covers all aspects of EchoSystem installation including EchoSystem Server (ESS), capture devices, media processors and configuration details. It also covers publishing configuration information for systems such as Blackboard.

This Server Installation Guide includes the following sections:

- [Before You Begin](#)
- [Server Requirements](#)
- [Install the ESS](#)
- [Initial ESS Configuration](#)
- [Manage the Media Processor](#)
- [Manage the Security Certificate](#)
- [Upgrade to EchoSystem 5.5](#)
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- [Uninstall the ESS](#)
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Before You Begin

In this section:

- [Before You Begin](#)
- [Installation Checklists](#)
- [EchoSystem Server Settings](#)
- [EchoSystem Server Basics](#)
- [Storage](#)
- [Capture Devices](#)

Before You Begin

Have the following information ready before beginning EchoSystem component installation and configuration. Initial component requirements are outlined below.

Installation Checklists

> ☑ **Best Practice**
> Refer to the [Prerequisite Installation Checklist](#) and [Post-Installation Checklist](#) documents during installation.

EchoSystem Server Settings

Licensing and Customer ID

Echo360 provides you with a **customer ID** that is used to uniquely identify your university and the product licenses you have purchased. For more information regarding your customer ID, contact Echo360 Technical Support.

Time Server

The EchoSystem uses time extensively to ensure the messages between devices are not corrupted, spoofed by an attacker, or in some other way compromised. **The accuracy of time synchronization on all components in the EchoSystem is extremely important to a successful deployment**. You must ensure that the computer you are installing the EchoSystem Server (ESS) onto is correctly synchronizing with a network time server. If your network policy allows it, we strongly recommend that you configure the ESS to use a reliable time service such as those provided by pool.ntp.org or time.nist.gov. EchoSystem defaults to its own pool of time servers provided by ntp.org (0.echo360.pool.ntp.org, 0.echo360.pool.ntp.org, 0.echo360.pool.ntp.org, 0.echo360.pool.ntp.org).

Third-Party Database Server

The ESS supports the use of MySQL and MSSQL. For version information, see Supported Third Party Components on the Supported Technologies page.

Follow the pre-configuration steps outlined in Install the ESS. At the completion of these steps, and before you begin the installation of the ESS, you must have:

- The database server IP address or Fully Qualified Domain Name (FQDN) and the port running the database in the form of a URL
- The database schema (for MySQL)
- The user name and password of an account that has read/write access to the EchoSystem database

EchoSystem Server Basics

Logging in to ESS

The ESS user interface requires login. Logging into ESS is referenced throughout this document. Any standard browser can open the ESS. To log in, simply open your browser on the server where the ESS is running and navigate to **https://localhost:8443**.

You can also log in from another computer by replacing "localhost" with the IP address or the fully qualified domain name of the ESS host server.

Log in with these values:

- Username: ess@echo360.com
- Password: password (the word "password")

> ⚠ **SSL Certificate**
>
> ESS includes a self-signed SSL certificate for SSL encryption. Recent browsers warn you when they connect to the ESS. Additionally, Firefox requires you to store the certificate locally. You can replace the certificate.

Restart the ESS Service

You will have to restart the ESS service or daemon during the configuration process and at certain other times. Follow the instructions for your platform.

> ⚠️ **Expect to Wait**
> After a restart, you may have to wait for a few minutes before the EchoSystem Server becomes responsive.

Restart ESS on Windows

1. From the Windows taskbar select **Start** > **Programs** > **Administrative Tools** > **Services**.
2. The Services dialog opens. Select the **EchoSystem Server** service.
3. Click **Restart**. The ESS service restarts on your local computer.

Restart ESS on Linux

1. Open a terminal prompt.
2. Type the restart command. Be sure to include the space between the file name and the restart command.

```
sudo /etc/init.d/echosystemserverd.sh restart
```

3. Notice the status messages showing that the service stops and starts.

Restart the Wowza Service

Restart Wowza on Windows

1. From the Windows taskbar select **Start** > **Programs** > **Administrative Tools** > **Services**.
2. The Services dialog opens. Select the **Wowza Media Server** service.
3. Click **Restart**. The Wowza service restarts on your local computer.

Restart Wowza on Linux

1. Open a terminal prompt.
2. Type the restart command:

```
sudo /etc/init.d/WowzaMediaServer restart
```

3. You see status messages showing the service stop and then start.

Storage

Shared storage is utilized in most EchoSystem deployments. Storage volumes for EchoSystem files are defined during initial configuration. File system paths and credentials should be known at installation time. This information can be changed later.

Capture Devices

Capture Appliance

If you are installing capture appliances in your classrooms, you need:

- The MAC address for each device, which is printed on the base of each unit. This number is used when you register the capture appliance with the ESS.
- A USB flash drive to transfer configuration software to the capture appliances. Note: must be a FAT32 file

system.
- The name or number of the venue (classroom or lecture hall) where the capture appliance will be installed. This location is used in the room assignment step during capture appliance configuration.

Classroom Capture Software

If you are installing Classroom Capture software packages in your classrooms, you need access to the podium PCs where the software is to be installed. You also need network access to the ESS to retrieve the Classroom Capture software installer and to register the software with the ESS.

Personal Capture

If you are installing Personal Capture for faculty members, you need to have access to their PC or Mac laptops where the application is to be installed. You also need network access to the ESS to retrieve the Personal Capture installer downloads and to test the configured connection to the ESS so that faculty can upload their captures.

Prerequisite Installation Checklist

In this section:

- Server Infrastructure
- Capture Infrastructure

✅ **Best Practice: Print This Page**
   Print this page and mark off each item in the checklist as you complete it.

Server Infrastructure

Supporting Application Servers

Completed	Item	Description
☐	Third-Party Database Server	The ESS supports several third-party database servers. See Supported Third-Party Components of the Supported Technologies page.
☐	Web Services	ESS bundles Jetty for native web services. In this context Jetty primarily provides for content delivery. You are not required to use Jetty, however. Other web servers can be configured to provide this service. See Supported Third-Party Components of the Supported Technologies page.

	Streaming Services	ESS allows for the use of a Wowza Media Server (Wowza) or Adobe Flash Media Streaming Server (Adobe FMS3). See Configure the Flash Media Streaming Server for configuration recommendations and instructions. See also Supported Third-Party Components of the Supported Technologies page.
	File Transfer Services	ESS bundles Maverick SSHD for native secure file transfer (SFTP) services. Other SFTP or FTP servers may also be used.

EchoSystem Server (ESS)

Completed	Item	Description
	Server Acquired/Identified	The ESS system has been procured and racked in the location for production operation.
	Server Meets Specifications	The ESS specifications have been reviewed and the system meets the requirements for production operation. These requirements are detailed in Server Requirements. In addition, the drive/directory where ESS is to be installed or upgraded *must have at least 5 GB of free space available*. **For Linux servers**, the ulimit setting for the "maximum number of open file descriptors per-process" on the server must be set to at least 64K (64x1024). If this setting is lower, the installer will ask to change it. To view a list of the per-process resource limits currently enforced by the operating system, log on as the 'root' user and execute the command `ulimit -a`. For more details, do a `man ulimit` at the Unix command prompt, or see http://linux.about.com/library/cmd/blcmdl1_ulimit.htm.

Completed	Item	Description
☐	Third-Party Database Server Installed	The ESS supports several third-party database servers. See Supported Third-Party Components of the Supported Technologies page.
☐	Licensing and Customer ID	Each server installation requires a customer identifier (customer ID) that is used to uniquely identify your institution and the product licenses you have purchased.
☐	Storage Provisioned	All storage provisioning should be completed before deployment of the ESS. This includes archival, deletion, upload, and online storage areas.
☐	Networking and Firewall Rules Established	Address the networking and firewall requirements detailed in Firewall Requirements for Installation prior to installation of the ESS software.
☐	Fully Qualified Domain Name (FQDN) Established	The IP address of the ESS should be registered with a DNS server and configured with a Fully Qualified Domain Name (FQDN).
☐	Time Synchronized with NTP Server	Time is a critical element to many ESS and device activities. Ensure that the ESS system is set up to synchronize time with an internal or external time server. Echo360 recommends that the ESS and the capture devices use the same time server to synchronize their time.

EchoSystem Media Processor

Completed	Item	Description
☐	Server Acquired/Identified	The EchoSystem Media Processor system(s) have been procured and racked in the location for production operation.

	Server Meets Specifications	The EchoSystem Media Processor specifications have been reviewed and the system meets the requirements for production operation. These requirements are detailed in Server Requirements.
☐		

Capture Infrastructure

EchoSystem Capture Appliance

Completed	Item	Description
☐	VGA/RGB run to capture appliance location	A standard HD-15 VGA cable is required to input the RGB signal into the capture appliance.
☐	VGA/RGB Signal Checked	Verify a quality VGA signal is available at the capture device location. Verify that the VGA signal delivers the capture appliance a supported capture resolution by reviewing Supported VGA Resolutions.
☐	Audio cable run to the capture appliance location	The EchoSystem capture appliance supports unbalanced RCA and 1/4" audio connections for capture. Ensure that the audio cabling has been run to the capture device location.
☐	Audio Signal Checked	The audio signal should be checked for volume and levels adjusted as needed. Audio is captured from a professional line-level (1.28Vrms, +4dBu) source using unbalanced RCA pair or 1/4" stereo input.
☐	Video cable run to the capture appliance location	Video is captured from NTSC or PAL sources via a composite signal with RCA termination or an S-Video signal with S-Video termination

Completed	Item	Description
☐	Video Signal Checked (optional)	The video signal should be checked to ensure that high quality video signal is present at the capture station. An external video monitor or video scope may be helpful to test the video signal.
☐	Network connection available for the capture appliance	A network connection to the ESS is required for normal operation of the capture device. DHCP and static addressing are options IP addressing for the device. If the institution requires MAC address registration for dynamic addressing, this should be completed prior to installation of the capture device.

Classroom Capture Software

Completed	Item	Description
☐	Audio cable run to the capture location	Typical Classroom Capture software devices support 1/8" and USB audio devices for capture. Ensure that the audio cable has been run to the podium PC for capture. See Supported USB Devices for a list of supported USB microphones.
☐	Audio Signal Checked	The audio signal should be checked for volume and levels adjusted as needed.
☐	(Optional) Video source connected to the podium PC	If the captures from the installation are to include video, install and configure the USB camera on the podium PC. See Install USB Cameras for Classroom Capture for instructions and Supported USB Devices for a list of supported cameras. **NOTE:** This step may be completed as a Post-Installation Checklist step if preferred.

☐	(Optional) Video signal checked and adjusted	Use the camera's vendor software to adjust the camera settings (such as aperture or resolution quality). Classroom capture will respect these settings. **NOTE:** This step may be completed as a Post-Installation Checklist step if preferred.
☐	Network connection available for the Classroom Capture software.	A network connection to the ESS is required for normal operation of the Classroom Capture software.

Personal Capture Software

Completed	Item	Description
☐	Audio source available	Typical Personal Capture audio sources are internal laptop microphones, 1/8" microphones and USB audio devices. Ensure that the audio source is installed and configured.
☐	Webcam (optional)	Webcam video is an optional capture source. Install the webcam drivers and webcam.
☐	Windows - Administrator access	Ensure you have administrator or elevation access for Windows.
☐	Windows - Internet access	Personal Capture for Windows requires Internet access to download required software components during installation.

Firewall Requirements for Installation

In this section:

- EchoSystem Server
- EchoSystem Media Processor
- EchoSystem Capture Appliances
- Wowza Media Server
- Classroom Capture Software
- Personal Capture

> ⚠️ **Tables Use the ESS Default Port Numbers**
>
> The ports referred to in these tables for HTTP (8080), HTTPS (8443) and SFTP (8022) are the EchoSystem Server (ESS) default port numbers. These firewall rules change to ports set when configuring the system.
>
> On Windows, the ESS can be configured to run on the following native ports: HTTP (80), HTTPS (443), and SFTP (22). On Linux, the ESS cannot be configured to run on protected ports below 1024.
>
> Do not change the following ESS default ports: HTTP (8080), HTTPS (8443), and SFTP (8022).

EchoSystem Server

Outbound Traffic Proxy Not Supported

The ESS does not support being placed behind an outbound traffic proxy. We are aware that many IT departments require use of an outbound traffic proxy and that the ESS requires an exception. An outbound traffic proxy (even a transparent proxy) imposes numerous communications issues. It is not supported.

Native Ports and ESS Default Ports

A *native port* for a service is the assumed port. That is, when no port number is specified, web browsers and any connecting client assume that a particular service is running on its native port.

For three services (HTTP, HTTPS, and SFTP) the ESS default ports are different from the native ports, as shown in the table below.

Port Description	Native Port	ESS Port
SFTP (Secure File Transfer Protocol)	22	8022
HTTP (Hypertext Transfer Protocol)	80	8080
HTTPS (Secure Hypertext Transfer Protocol)	443	8443

For example, the URL for the admin interface running on the EchoSystem default port would be:

```
https://yourdns.edu:8443
```

If running on the native port, the URL would be:

```
https://yourdns.edu
```

> ⚠ **Two Options if You are Running Windows**
> - Change the default ESS ports back to their native ports. See Change ESS Default Ports to Native Ports and follow the port configurations in ESS Firewall Ports for Windows-Only Configuration with Native Ports.
> - Leave them at the ESS defaults. Follow the port configurations in ESS Default Firewall Ports for Windows and Linux.

Change ESS Default Ports to Native Ports

Follow these steps.

1. Navigate to **System** > **System Settings.**
2. Click **Edit**.
3. Change the port for HTTPS back to its native port by removing **:8443** from the Application Base URL for Application Settings.
4. Change the port for HTTP back to its native port by removing **:8080** from the Echo Base URL for Application Settings.
5. Change the port for SFTP back to its native port by changing the FTP Port for Intake Settings to **22**.
6. Change the port for HTTP back to its native port by removing **:8080** from the Internal Base URL for Active Echo Settings.
7. Click **Save**.
8. Restart the EchoSystem Service.

ESS Default Firewall Ports for Windows and Linux

This configuration assumes that you are using the built-in support for the ESS to provide a web server, SFTP server, and Wowza Media Server (Wowza). If these services are being provided by dedicated or external services, the applicable firewall rules need to be applied to those systems instead.

The following table lists the default ESS firewall port configurations for each supported protocol.

Port Description	Port	Port Direction	Protocol	Comment	Open on local/server firewall?	Open between the institution and rest of world?
FTP (File Transfer Protocol)	21	outbound	TCP	If using the Easy captioning plugin	Yes	Yes

SFTP (Secure File Transfer Protocol)	22	outbound	TCP	To upload log files to Echo360 support	Yes	Yes
SMTP (Simple Mail Transfer Protocol)	25	outbound	TCP	To send email alerts and notifications via your mail server	Yes	–
DNS (Domain Name Service)	53	outbound	UDP	–	Yes	–
HTTP (Hypertext Transfer Protocol)	80	outbound	TCP	If using Echo360 search indexing Publisher	Yes	Yes
NTP (Network Time Protocol)	123	outbound	UDP	–	Yes	–
HTTPS (Secure Hypertext Transfer Protocol)	443	outbound	TCP	Needed to register for and use the [Collaboration and Statistics Service](#)	Yes	Yes
RTMP (Real Time Messaging Protocol)	1935	inbound	TCP	–	Yes	Yes
HTTP (Apple HTTP Streaming Protocol)	1935	inbound	TCP	–	Yes	Yes
SFTP (Secure File Transfer Protocol)	8022	inbound	TCP	–	Yes	–

HTTP (Hypertext Transfer Protocol)	8080	inbound	TCP	–	Yes	Yes
HTTPS (Secure Hypertext Transfer Protocol)	8443	inbound	TCP	–	Yes	Yes
HTTPS (Secure Hypertext Transfer Protocol)	8446	outbound	TCP	Required for Server Licensing	Yes	Yes

ESS Firewall Ports for Windows-Only Configuration with Native Ports

This configuration assumes that you are using the built-in support for the ESS to provide a web server, SFTP server, and Wowza Media Server. If these services are being provided by dedicated or external services, the applicable firewall rules need to be applied to those systems instead.

The following table lists the default ESS firewall port configurations for the native ports on a Windows-Only environment.

Port Description	Port	Port Direction	Protocol	Comment	Open on local/server firewall?	Open between the institution and rest of world?
FTP (File Transfer Protocol)	21	outbound	TCP	If using the Easy captioning plugin	Yes	Yes
SFTP (Secure File Transfer Protocol)	22	outbound	TCP	To upload log files to Echo360 support	Yes	Yes
SMTP (Simple Mail Transfer Protocol)	25	outbound	TCP	To send email alerts and notifications via your mail server	Yes	–

DNS (Domain Name Service)	53	outbound	UDP	–	Yes	–
HTTP (Hypertext Transfer Protocol)	80	both	TCP	If using Echo360 search indexing Publisher	Yes	Yes
NTP (Network Time Protocol)	123	outbound	UDP	–	Yes	–
HTTPS (Secure Hypertext Transfer Protocol)	443	both	TCP	–	Yes	Yes
RTMP (Real Time Messaging Protocol)	1935	inbound	TCP	–	Yes	Yes
HTTP (Apple HTTP Streaming Protocol)	1935	inbound	TCP	–	Yes	Yes
SFTP (Secure File Transfer Protocol)	8022	inbound	TCP	–	Yes	--
HTTPS (Secure Hypertext Transfer Protocol)	8446	outbound	TCP	Required for Server Licensing	Yes	Yes

EchoSystem Media Processor

The following table lists the default port configurations for the EchoSystem Media Processor.

Port Description	Port	Port Direction	Protocol

DNS (Domain Name Service)	53	outbound	UDP
HTTPS (Secure Hypertext Transfer Protocol) *to EchoSystem Server*	8443	outbound	TCP
NTP (Network Time Protocol)	123	outbound	UDP
SFTP (Secure File Transfer Protocol) *to EchoSystem Server*	8022	outbound	TCP

EchoSystem Capture Appliances

The following table lists the **default** port configurations for the EchoSystem capture appliances. Some of these can be changed on the System Settings page. See Change ESS Default Ports to Native Ports.

Port Description	Default Port	Port Direction	Protocol	Comment
DHCP (Dynamic Host Configuration Protocol) *Appliance may be set to static addressing later but requires DHCP initially*	67, 68	both	UDP	–
DNS (Domain Name Service)	53	outbound	UDP	–
HTTP (Hypertext Transfer Protocol) *Optional, for Ad Hoc interface*	8080	inbound	TCP	Can be changed on the System Settings page. See Change ESS Default Ports to Native Ports.
HTTPS (Secure Hypertext Transfer Protocol) *Outbound required to EchoSystem Server Inbound optional for Ad Hoc interface*	8443	both	TCP	Can be changed on the System Settings page. See Change ESS Default Ports to Native Ports.

NTP (Network Time Protocol) *to *.pool.ntp.org*	123	outbound	UDP	–
SFTP (Secure File Transfer Protocol) *to EchoSystem Server*	8022	outbound	TCP	Can be changed on the System Settings page. See [Change ESS Default Ports to Native Ports].

Wowza Media Server

Port Configurations

The following table lists the port configurations for the Wowza Media Server.

Port Description	Port	Port Direction	Protocol	Comments
HTTP (Hypertext Transfer Protocol)	80	outbound	TCP	Used to validate the Wowza license. The Wowza 3 server sends a registration request when: • It starts up. • The license file is changed. The ESS rewrites the Wowza license file each time the System Settings page is updated or an Update Licenses action is taken. The request is sent to: • wowzalicense1.wowzamedia.com • wowzalicense2.wowzamedia.com • wowzalicense3.wowzamedia.com • wowzalicense4.wowzamedia.com
RTMP (Real Time Messaging Protocol)	1935	both	TCP	
HTTP (Apple HTTP Streaming Protocol)	1935	both	TCP	

Live Webcasting	49152-65535	both	UDP	Port allocation between the SafeCapture HD and Wowza Media Server for Live Webcasting. See [Port Allocation Between the SafeCapture HD and Wowza (Live Webcasting)](#) for details and examples.

Port Allocation Between the SafeCapture HD and Wowza (Live Webcasting)

Live webcasting uses the RTP protocol (over UDP) for communication between the SafeCapture HD and Wowza.

Ports are dynamically allocated by the ESS in groups of eight for each webcast. The port block is reserved 30 minutes before the event starts and is freed 15 minutes after the event completes.

Port allocation begins at the top of the IANA dynamic or private port range of 49152 to 65535 and works down:

- group 0 = UDP ports 655**28**-655**35**
- group 1 = UDP ports 655**20**-655**27**

and so on until...

- group 2046 = UDP ports 491**60**-491**67**
- group 2047 = UDP ports 491**52**-491**59**

If you need more than 2047 overlapping port group reservations for a single ESS, we will grow below the start of the IANA dynamic port range.

Within each port group, ports are allocated to different functions:

- Even numbered ports are for media streams
- The next higher odd numbered port is for the control stream for that media stream

This means that a single port group can support up to four media streams, allocated as shown:

This pair...	Is...
First pair	Used for audio
Second pair	Used for graphics channel 1 (primary display/secondary video)
Third pair	Used for for graphics channel 2 (primary video, secondary display)
Fourth pair	Reserved for future use

Port Allocation Example - Audio/Display/Video Capture (Live Webcasting)

If port group 0 (ports 65528-65535) is used for an audio/display/video capture, allocation would be like this:

Allocation	Port Number
Primary audio stream	65528
Primary audio control	65529
Primary display stream	65530
Primary display control	65531
Primary video stream	65532
Primary video control	65533
Unused	65534
Unused	65535

Port Allocation Example - Audio/Dual Video Capture (Live Webcasting)

If port group 14 (ports 65416-65423) is used for an audio/dual video capture, allocation would be like this:

Allocation	Port Number
Primary audio stream	65416
Primary audio control	65417
Secondary video stream	65418
Secondary video control	65419
Primary video stream	65420
Primary video control	65421
Unused	65422
Unused	65423

Classroom Capture Software

The following table lists the default port configurations for Classroom Capture.

Port Description	Port	Port Direction	Protocol
DNS (Domain Name Service)	53	outbound	UDP
HTTP (Hypertext Transfer Protocol) *Optional, for ad hoc scheduling*	8080	both	TCP

HTTPS (Secure Hypertext Transfer Protocol) *Optional, for ad hoc scheduling*	8443	both	TCP
NTP (Network Time Protocol) to *.pool.ntp.org	123	outbound	UDP
SFTP (Secure File Transfer Protocol) *to EchoSystem Server*	8022	both	TCP

Personal Capture

The following table lists the default port configurations for Personal Capture.

> ℹ Personal Capture always connects to the ESS via HTTPS. For hosted environments, that port is always 443; for on-site deployments, the default is 8443, however this setting is configurable.

Port Description	Port	Port Direction	Protocol
DNS (Domain Name Service)	53	outbound	UDP
HTTP (Hypertext Transfer Protocol) *for downloading third-party installer requirements*	80	outbound	TCP
HTTPS (Secure Hypertext Transfer Protocol) *to EchoSystem Server*	8443 or 443 (see above note)	outbound	TCP
SFTP (Secure File Transfer Protocol) *to EchoSystem Server*	8022	outbound	TCP

Additional Installation Considerations

In this section:

- [Publish to CMS/LMS/VLE Systems](#)
- [Firewall Requirements](#)
- [System Imaging - Classroom Capture](#)
- [Configure Virus Scanners](#)
- [External Web Server Configuration for Live Chat](#)
- [Best Practice - Establish a Temporary Storage Location](#)

Publish to CMS/LMS/VLE Systems

EchoSystem provides native support for publishing presentation links into CMS/LMS/VLE systems. See Publishing f or instructions on installing additional software, the publishing process, and publisher configuration.

Firewall Requirements

See Firewall Requirements for Installation.

System Imaging - Classroom Capture

When using system imaging or configuration management suites such as Faronics Deep Freeze, you must configure the tool so that Classroom Capture is allowed access to key directories and files, and must have capture storage directories that are not automatically purged/cleared by other applications. The critical directories are shown in the table below.

Access needed for...	Default Location	When used
Program files	c:\Program Files\Echo360\Client\	during upgrades and patches
Content	c:\Documents and Settings\All Users\Application Data\Echo360\Client\task	temporary location during a capture
Content backup	c:\Documents and Settings\All Users\Application Data\Echo360\Client\saved-content	after upload
Configuration files	c:\Documents and Settings\All Users\Application Data\Echo360\config (and all subdirectories)	at any time

Two registry entries are created during the installation of the Classroom Capture software. These registry entries do not normally change during the course of use of Classroom Capture.

- HKEY_LOCAL_MACHINE\SOFTWARE\Echo360\Client\DataDir
- HKEY_LOCAL_MACHINE\SOFTWARE\Echo360\Client\ProgramDir

Classroom Capture - Executables Footprint

The following table lists the executable files for Classroom Capture, along with the amount of space they use both on the disk and in memory.

Program	Function	Size on disk (MB)	Size in memory (MB)
echo_capture_software_ntservice.exe	capture	1.2 MB	1.3 MB
echo_task_manager.exe	restarting applications	1.5 MB	5.1 MB

echo_system_status.exe	system status	900 KB	4.4 MB
echo_upload_content.exe	uploading content	1.6 MB	3.3 MB
echo_upload_log.exe	uploading logs	1.6 MB	4.1 MB
echo_adhoc_control.exe	ad hoc UI controls	1.6 MB	3.6 MB

Configure Virus Scanners

The EchoSystem creates, moves, and manages many different files as it prepares presentations for students. These files are moved between system components several times during processing.

On-access features available with anti-virus programs can be configured to scan every file that is created, modified or accessed on a given volume. This means that:

- Certain files will be scanned multiple times on the same system
- Scanning may slow ESS performance to an unacceptable level

> ☑ **Best Practice: Modify the On-Access Scanner**
>
> Echo360 recommends modifying the on-access scanner in the antivirus program used on the ESS. You can:
>
> - Disable the on-access scanner completely.
> - Tell the scanner to skip (that is, not to scan) files used by EchoSystem applications. Use this method if your antivirus program allows you to do so.

If you can specify files that should be skipped, specify the files listed in the table below. The following table lists the file type, the file type extension, and the EchoSystem application that uses that file type.

File Type	Extension	EchoSystem Applications
Flash Video movie	.flv	EchoPlayer
Flash SWF movie	.swf	EchoPlayer
Thumbnail and flipbook images	.jpg	EchoPlayer
MP3 audio	.mp3	Podcast
MPEG-4 video	.m4v	Vodcast
Capture appliance raw video & visual content	.h264	Content digital masters

Classroom Capture raw visual content & Personal Capture for Mac raw video and visual content	.mov	Content digital masters
Personal Capture for Windows raw video and visual content	.wmv	Content digital masters
Raw audio content	.aac	Content digital masters
Raw wrapper files	.mp4, .m4a	Media preparation
Supporting files	.xml	Media preparation
Log files	.yaml	Capture device logging
Log files	.log	System logging
Transfer completion recognition	.complete	FTP / SFTP

External Web Server Configuration for Live Chat

If you use the **Jetty** web server provided with the ESS distribution, this section does not apply to you

If you have configured an external web server, such as **Apache** or **Microsoft IIS**, you may need to make a small change in the web server configuration.

If all of the following statements apply to your system, you must make the configuration change described:

- You are using an external Apache or IIS web server
- You are using live webcasting to deliver some content
- You have the Collaboration and Statistics Service, which allows you to use the chat feature of live webcasting
- A chat participant (student or Academic Staff) might use international (non-English) characters for chat text, including accented characters as in French or Spanish

All chat text from a live webcast is packaged and posted as a chat log along with the Echo generated for the webcast. The default configurations for Apache and IIS web servers do not recognize international characters and will not display them when delivering the text/html file of the chat log. These characters in the chat log then appear as nonsense or "garbage" characters, making the chat log illegible.

To solve this problem, you must configure the web server to serve files with the extension ".chatlog" using the MIME type "text/plain;charset=UTF-8". This ensures that the web server can tell the browser to display the chat log using the UTF-8 character set, which should render all international characters correctly.

For Apache, add the following line to the `httpd.conf` file (or equivalent configuration file; the name of the file may differ depending on your particular build of Apache):

```
AddType 'text/html;charset=utf-8' chatlog
```

For more information, see the following article on the Apache website: [http://httpd.apache.org/docs/current/mod/mo d_mime.html](http://httpd.apache.org/docs/current/mod/mod_mime.html) .

For **IIS**, the following article provides instructions for adding MIME elements: [http://technet.microsoft.com/en-us/libra ry/cc725608%28v=ws.10%29.aspx](http://technet.microsoft.com/en-us/library/cc725608%28v=ws.10%29.aspx). Use the information from the article and substitute the following values:

- The value to use for the filename extension is: `.chatlog`
- The value to use for the MIME type text box is: `text/plain;charset=utf8`

Best Practice - Establish a Temporary Storage Location

When you reprocess a file or edit media, the ESS makes a copy of the original file and stores it in the **.tmp** directory. The ESS takes this precaution so the original file can be recovered if the reprocess or edit operation fails. However, it is possible for the .tmp directory to become full. Especially when the echo being edited or reprocessed is very long (3 hours or more), and/or users are editing the echo and using the Save as New option.

To avoid this possibility, we recommend that you edit the **wrapper.conf** file to establish a temporary storage location when you install the server. This storage location should have sufficient space to store temporary copies of multiple echoes, and a *minimum* of 15 GB is recommended.

The default storage locations are not exposed (not explicitly listed) in the **wrapper.conf** file. When you add the lines of code below, you specify, and explicitly list, the storage locations.

1. Navigate to **{ESS_HOME}/etc/**. In a Windows system, **{ESS_Home}** might translate to **<Install Location>/echo360/server/etc**.
2. Open the **wrapper.conf** file in a text editor.
3. You will be typing a statement in the form **java.additional.<unique number>=<some value>**. You will need to type a unique number, that is, a number that has not already been used in other **java.additional...**statements.
   a. Search the wrapper file for statements in that form to determine which numbers have already been used.
   b. Make a mental note of the unique number you will use.
4. Add the following lines of code to the file:

   - For **Linux** - where **/var** in the statement below is the location of the data partition:

     ```
     wrapper.java.additional.<unique
     number>=-Decho.app.temp.dir=/var/echo360/temp
     ```

   - For **Windows** - where **d:** in the statement below is the location of the data partition:

     ```
     wrapper.java.additional.<unique
     number>=-Decho.app.temp.d:\echo360\temp
     ```

5. When finished, save and close the file.

Server Requirements

> In this section:
>
> -
> -
> -

Supported Operating Systems

EchoSystem Server (ESS) and Media Processor are supported on the following operating systems:

Windows:

- Windows Server 2012 - Standard, 64-bit. Pen/touch input was not tested.
- Windows Server 2008 (and R2) - Standard or Enterprise Only, 64-bit.

Linux: RHEL Server release 6 and 7, 64-bit; CentOS 6.5 32/64-bit.

Hardware Requirements

The hardware recommendations listed below are designed to serve a basic initial deployment scenario, and accomodate modest growth:

- Up to 10 classrooms,
- 25 Personal Capture users,
- 10-50 hours of capture per day, and
- up to 250 concurrent student views

These requirements are provided for the EchoSystem Server and the EchoSystem Media Processor. Refer directly to vendor documentation for supporting server hardware recommendations.

Minimum Recommended EchoSystem Server Hardware

- 4 Physical Core CPUs or 4 virtual CPUs (see note below)

- 8GB RAM

- 80GB HDD minimum, providing space for the OS, the ESS application, plus additional storage for content (200 GB or more is recommended)

- Two dedicated 1 Gbit or higher network interfaces (one for ESS, streaming, and HTTP content; one for file transfer)

With respect to CPUs, while it is possible to use virtual CPUs, the ESS processes tend to generate very high CPU and disk I/O, making it a bad candidate for virtualization. Where possible, use physical CPUs on the ESS server.

Minimum Recommended EchoSystem Media Processor Hardware

- 4 Physical Core CPUs or 4 virtual CPUs

- 8GB RAM

- 160GB HDD minimum, providing space for the OS, the application, and data (200GB or more recommended)

With respect to Media Processor recommendations, here are a few things to keep in mind:

- More CPUs = More concurrent processing jobs = Larger disk requirement. With 4 CPUs, 160GB is a *minimum* space recommendation.

- Windows allows you to specify a separate data directory from the application files (where the processing is done); Linux does not. Regardless of OS, if you maintain the media processor application and the data on the same drive (the main partition), be sure to allow for sufficient space.
- Processing long recordings, and especially editing long recordings, consumes a lot of temporary space on the media processor. As a result, be sure your configuration allows for **at least 32 GB of free space on the main partition at all times** (the partition onto which the media processor application is installed).
- For a large production system, calculate space based on 40GB per CPU core. In addition, if the media processor server contains 8 cores or more, we strongly suggest that you specify the data directory to be 2 or more RAID 0 SAS drives. The reason is that without the RAID, the disk I/O for the processing becomes a bottle neck, wasting the additional core processing capability. Using a RAID for data also allows you to plan for future growth and to scale the system appropriately.

Supported Application Servers

Supported Third-Party Database Servers

You must use a third-party database server. For a list of supported third-party database servers, see Supported Third-Party Components of the Supported Technologies page.

Supported Web and Streaming Servers

EchoSystem presentations use standard HTML and can be served by any web server supporting the HTTP 1.1 protocol.

EchoSystem supports the use of Wowza Media Server or Adobe Media Server to stream on-demand and live content. See Configure the Flash Media Streaming Server.

For a list of supported web and streaming servers, see Supported Third-Party Components of the Supported Technologies page.

Supported File Transfer Servers

See File Transfer Servers.

Install the ESS

In this section:

- Overview
- Installation Checklists
- Flash Streaming Media Server Installation
- Third-Party Database Installation
- Windows ESS Installation
- Linux ESS Installation

Overview

The EchoSystem Server (ESS) is supported on Windows and Linux platforms. For specific operating system support, see the Deployment Guide. You must have administrative/root privileges to install the ESS.

The installation software is provided through a compressed file downloaded from the Echo360 customer support

portal. Save it to a directory location on the hard drive of the machine where you want to run the ESS.

> ℹ️ **Installation Pre-Requisites**
>
> Please note the following space and setting requirements prior to installation:
>
> - Be sure you have *at least 5 GB of free space available* on the installation directory/drive before you install the ESS. The installer will check the drive and return an error message if there is insufficient space on the drive. Installation cannot continue until more space is made available.
> - If you are installing on Linux, the **ulimit** setting for the "maximum number of open file descriptors per-process" on the server MUST be set to at least 64K (64x1024) in order for ESS installation to succeed. If this setting is lower, the installer will ask to change it. See Linux ESS Installation below for more information.

Installation Checklists

> ✅ **Best Practice**
> Refer to the Prerequisite Installation Checklist and Post-Installation Checklist documents during installation.

Flash Streaming Media Server Installation

You will need to install and configure a Wowza Media Server from v3.5 through v4.1, or an Adobe Media Server to serve flash streaming content to users. The flash media server is used to stream both on-demand content (echoes) as well as live webcasts. See Configure the Flash Media Streaming Server for additional information and configuration instructions.

Third-Party Database Installation

You will need to install and configure a MySQL or MSSQL database server on either the ESS computer itself or on an external server. See Supported Third-Party Components on the Supported Technologies page for a list of supported databases.

Configure MySQL

MySQL can be installed on either Linux or Windows. This section does not describe how to install a MySQL server. These directions assume it is already installed.

Basic configuration instructions are as follows:

1. Verify you are running a supported version of MySQL (Community or Enterprise 5.5 or 5.6) See Supported Technologies if necessary.
2. Log into the MySQL server as the root user configured when MySQL was installed.
3. If the MySQL binary log is enabled, make sure you are using a binary logging format of either ROW or MIXED. Consult your Database Administrator if necessary.
4. Create an ESS database/schema named **essdata**, and if not already set, configure the character set for **utf8**.
5. Create an ESS user for the database named **essuser**.
6. Assign *all* privileges to the **essuser** for the **essdata** database schema.

If you require more detailed instructions for creating a database and user, refer to the section below that corresponds with the MySQL installation you are running.

Configure MySQL on Linux

Create the ESS database/schema:

```
CREATE DATABASE essdata CHARACTER SET 'utf8' COLLATE 'utf_general_ci';
```

Create the ESS user for the ESS database, and grant all necessary privileges:

```
grant all on essdata.* to 'essuser'@'%' identified by <your-passwd>;
```

Configure MySQL on Windows through MySQL Workbench

Create the ESS database/schema:

1. In the left pane of MySQL Workbench, right-click Schema and select Create New Schema.
2. Enter **essdata** into the Name field, and retain the other defaults.
3. Click **Apply**, then click **Finish**.

Create the ESS user for the ESS database, and grant all necessary privileges:

1. In the left pane, click **Users and Privileges** (enter your password to access this feature).
2. Click **Add Account**.
3. Enter **essuser** in the Login Name field.
4. Enter and confirm a **password** for the user.
5. Click the **Schema Privileges** tab to activate it.
6. Click **Add Entry**.
7. Enable the **Selected Schema** radio button.
8. Select the newly created **essdata** schema from the list.
9. Click **OK**.
10. Click **Select All** to select all of the privileges listed.
11. Click **Apply**.

Configure MySQL on Windows through MySQL Administrator

Create the ESS database/schema:

1. Click **Catalogs**
2. Right-click under **Schemata** and select **Create New Schema**.
3. Enter **essdata** for the schema name.
4. Click **OK**.

Create the ESS user for the ESS database, and grant all necessary privileges:

1. Click **User Administration** and click the **Add new user** button.
   - MySQL User: **essuser**
   - Password: <your-passwd>
   - Confirm: <your-passwd>
2. Click the **Schema Privileges** tab.
3. Under Schemata, select **essdata**.
4. Select all the Available Privileges and move them to the Assigned Privileges.

Configure Microsoft SQL Server

The procedure below provide instructions for creating a new Microsoft SQL Server database for use with the ESS. After completing the following steps, be sure to see Prevent Deadlocking immediately below for additional

configuration tasks.

1. Verify that you are running a supported version of the Microsoft SQL Server. See <u>Supported Technologies</u>.
2. If necessary, install or upgrade to a supported version of the Microsoft SQL Server and Manager.
3. Log into the Microsoft SQL Server.
4. Run SQL Server Manager or Management Studio.
5. Create a user (SQL Server user) for the database.
   a. Right-click **Security** and select **New Login**.
   b. Enter **essuser** for the Login Name and select **SQL Server Authentication**.
   c. Enter an appropriate password and other desired properties.
   d. Click **OK**.

   > ⚠ **Unsupported Features**
   >
   > Mapped certificates, asymmetric keys, and credentials were not tested and are not supported.

6. Create an ESS database.
   a. Right-click **Databases** and select **New Database**.
   b. Enter **essdata** for the Database Name and select **essuser** for the Owner.
   c. Set all other desired properties.
   d. Click **OK**.

Prevent Deadlocking

The SQL Server database is subject to deadlocking. You can prevent this possibility by setting READ_COMMITTED_SNAPSHOT to on.

1. Run this command:

   ```
   SELECT IS_READ_COMMITTED_SNAPSHOT_ON FROM sys.databases WHERE name=
   '<ess-dbname>';
   ```

2. If you get a **1** in response, you are done.

3. If you get a **0** in response, follow these steps:
   a. Make sure that only the connection executing the ALTER DATABASE command is open.
   b. Run these commands, which set READ_COMMITTED_SNAPSHOT to on.

   ```
   ALTER DATABASE <ess-dbname> SET SINGLE_USER WITH ROLLBACK IMMEDIATE;
   ALTER DATABASE <ess-dbname> SET READ_COMMITTED_SNAPSHOT ON;
   ALTER DATABASE <ess-dbname> SET MULTI_USER;
   ```

   c. Run the SELECT command again:

```
SELECT IS_READ_COMMITTED_SNAPSHOT_ON FROM sys.databases WHERE name=
'<ess-dbname>';
```

       d. Verify that you see a **1** in response.

Windows ESS Installation

There is one version of the Windows installer available for download from the Echo360 Customer Support web site, supporting 64-bit distributions. The installation process is similar for either version, as described below. You must be a user with administrator rights to perform installation.

1. Extract the zip file downloaded from the Echo360 website. Navigate to the EchoSystem 5.5 directory. Double-click the installer executable.
    a. On 64-bit Windows systems you will be prompted to move an existing 32-bit installation (if one existed) to the correct directory before proceeding.
    b. Follow the instructions if applicable and click **OK**.
2. The installer opens to the Introduction screen. Quit all other programs before continuing. Click **Next**.
3. Read the License agreement and select the radio button to accept the terms. Click **Next**.
4. Select the directory location for the install folder. You may choose to specify a custom location, or accept the default location at C:\Program Files\Echo360\Server\. Click **Next**.
5. Select the radio button for the database server you will use and click **Next**.
    a. Selecting MySQL elicits prompts for information to connect to the database.
    b. Enter this information and proceed.
6. The pre-installation summary screen identifies the directory locations for the ESS install and its Java component. Click **Install**.
7. The installation runs.
8. The final screen shows the installation directory location, the URL to open the ESS UI in your browser, and your login credentials. Make a note of these credentials.
9. Click **Done**.
10. Proceed to Initial ESS Configuration.

Linux ESS Installation

There are two versions of the Linux installer available for download from the Echo360 Customer Support web site, supporting either 32-bit or 64-bit distributions. You must be a user with root privileges or use `sudo` to perform installation.

This procedure assumes you have already downloaded the installation file (the .tar.gz file) from the Echo360 download page.

> ⚠ **Maximum Number of Open File Descriptors Must Be At Least 64K**
>
> If you are installing on Linux, the **ulimit** setting for the "maximum number of open file descriptors per-process" on the server MUST be set to at least 64K (64x1024) in order for ESS installation to succeed. If this setting is lower, the installer will ask to change it. If you select N (no), the installation will stop and exit.
>
> To view a list of the per-process resource limits currently enforced by the operating system, log on as the 'root' user and execute the command `ulimit -a`. For more details, do a `man ulimit` at the Unix command prompt, or see http://linux.about.com/library/cmd/blcmdl1_ulimit.htm .

Follow these steps.

1. If you are installing on a RHEL 6 64-bit system, the required 32-bit compatibility libraries must be installed first. RHEL 6 64-bit no longer ships with these libraries by default. The installer will give an error until it successfully detects these libraries. From a terminal prompt, type this command:

   ```
   yum install glibc-2*.i686 libstdc++-4*.i686
   ```

2. Extract the .tar.gz file downloaded from the Echo360 website. From a terminal prompt, navigate to the extracted EchoSystem 5.5 directory.
3. The installer binary file may need the right permissions set to run as an executable. From a terminal prompt, type this command:

   ```
   sudo chmod +x echosystem_5.4_linux...bin
   ```

4. Launch the binary file. From a terminal prompt, type this command:

   ```
   ./echosystem_5.4_linux32....bin
   ```

5. The installer opens to the Introduction screen. Quit all other applications before continuing. Click **Enter** to continue.
6. Read the License agreement. Click **Enter** to continue. When you reach the end, type **Y** to accept the terms of the license agreement.
7. Enter the directory location for the install folder (absolute path), or click **Enter** to accept the default (/usr/local/echo360).
8. You have the option to create a dedicated user account for administration of the ESS, if one doesn't already exist. Follow the onscreen instructions and type your selection from the list of options, then click **Enter**. You can also click **Enter** to accept the default option.
9. If you opted to create an ESS Admin Username, type it in now. Then click **Enter**. You will then be prompted to enter an ESS Admin Password. When complete, click **Enter**, then type again for confirmation, and click **Enter**.
10. Select the radio button for the database server you will use and click **Next**.
    a. Selecting MySQL elicits prompts for information to connect to the database.
    b. Enter this information and proceed.
11. The pre-installation summary screen identifies the ESS install location, and the disk space required. Click **Enter** to continue.
12. The Database Install runs first. Click **Enter** to continue. Note: this may take a few moments. Once complete, click **Enter** to continue with the installation.
13. The final screen shows the installation directory location, the URL to open the ESS UI in your browser, and your login credentials. Make a note of these credentials.

14. Click **Enter** to exit the installer.
15. Proceed to Initial ESS Configuration.

Initial ESS Configuration

> In this section:
>
> - Log in to the ESS
> - Configure System Settings
> - Change the Admin Password
> - Accept or Override Default Settings
> - License the Server
> - Manage the SSL Certificate

> ☑ **Best Practice**
> Refer to the Prerequisite Installation Checklist and Post-Installation Checklist documents during installation.

Log in to the ESS

The first step in configuring the system is to log in to the EchoSystem Server (ESS). Open your browser on the server where the ESS is running, and navigate to **https://localhost:8443**.

You can also log in from another computer, by replacing "localhost" with the IP address or fully qualified domain name of the ESS host server.

Log in with these values:

- Username: ess@echo360.com
- Password: password (the word "password")

Configure System Settings

The first screen presented after logging in is the System Settings page. This page stores various system settings such as the license, directory paths, streaming settings, and so on. See Configure System Settings.

Change the Admin Password

Change the ESS administrator password after you configure system settings.

1. Click the user name link ("ess@echo360.com") in the lower-right corner of the browser window. This opens the **Change Password** screen.
2. Enter and confirm your new password.
3. Press **Save**.

Accept or Override Default Settings

Defaults streamline device management and capture workflow and apply to devices, EchoSystem overall, and organizations. These defaults allow you to define settings shared among various objects at a global level and also pass the setting values down to related objects such as devices, sections, and schedules.

Deciding whether or not to accept or override these defaults may require some up-front planning. We recommend reviewing the defaults for devices after first installing or upgrading EchoSystem. All of the default settings can be changed later.

For more information, see Defaults and Inheritance.

License the Server

You should have received a Customer Identifier from Echo360. You will use this ID to license the ESS. The licensing procedure requires outbound Internet access from the ESS. Licenses are securely transferred from the Echo360 licensing system. See Manage Licenses for instructions and other licensing information.

Manage the SSL Certificate

You may want to provide your own SSL certificate for the ESS to use for secure connections. See Manage the Security Certificate for instructions. You may also want to refer to the following Knowledge Base article for details on generating and installing a new certificate for the Jetty web server: ESS interface SSL certificate.

> ⚠ **Accessing the Knowledge Base**
> You will need a customer portal login to access the Knowledge Base. Contact Technical Support if you need a login.

Manage the Media Processor

> In this section:
>
> - Install the Media Processor
> - Download the Installer
> - Run the Windows Installer
> - Run the Linux Installer
> - Register the Media Processor
> - Move the Media Processor to a New Location

Install the Media Processor

Installing the EchoSystem Media Processor consists of three phases:

1. [Download the Installer](#)
2. Run the Installer for [Windows](#) or [Linux](#)
3. [Register the Processor](#)

> **ℹ️ Headless Linux Graphics Environments**
>
> Please note that this type of environment may require the XVFB binary to be installed prior to installation of the Linux Media Processor. More information on XVFB can be found here: https://en.wikipedia.org/wiki/Xvfb.

Download the Installer

The Media Processor installer is downloaded from the EchoSystem Server (ESS). Installers are provided for both Windows and Linux. Once the installer runs, it installs the Media Processor and automatically starts the service. You are guided through a wizard during installation.

1. Log in to the ESS.
2. Navigate to the **Downloads** tab. The Software Installer Downloads page appears.
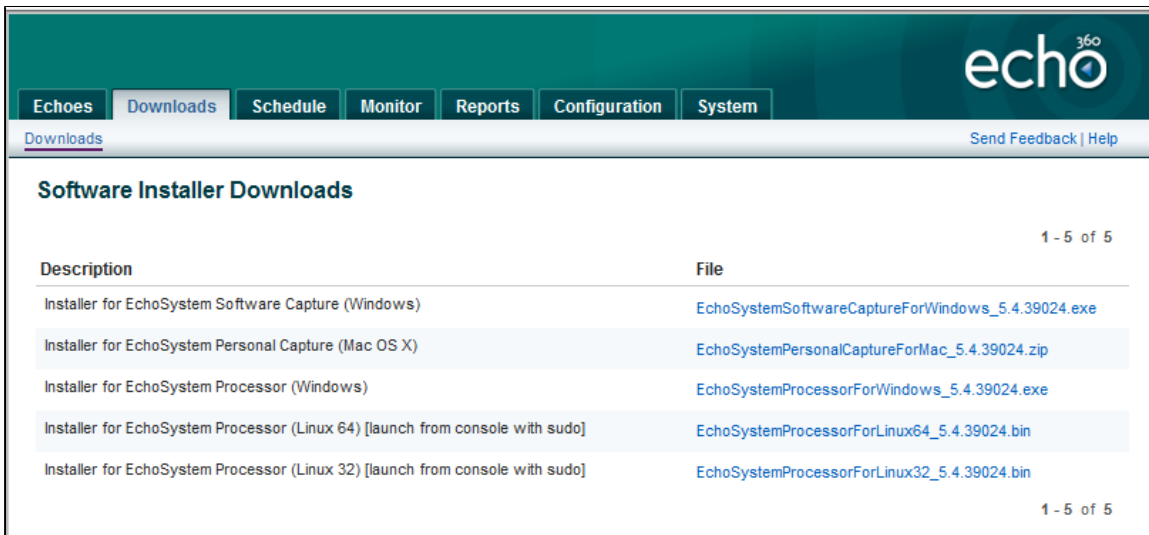
3. Download the installer by clicking the appropriate link. You must run the installer locally. Save the file to the target computer.

Run the Windows Installer

1. Log in as an Administrator.
2. On the Media Processor computer, double-click the saved installer file. The installation file is uncompressed and runs automatically.
3. The installation begins. Select the desired locale from the list. Click **OK.**
4. The installer introduction screen opens. Quit all other programs before continuing. Click **Next**.
5. Read the license agreement and select the radio button to accept the terms. Click **Next**.
6. Select the directory location for the install folder. You may navigate to a directory location of your choosing by clicking **Choose**. You may return to the default folder setting by clicking **Restore Default Folder**. The default folder location is *C:\Program Files\Echo360\Client*. Click **Next**.
7. Select the installation directory. This should be a volume with at least 20 GB of dedicated space. Click **Install**.
8. The pre-installation summary screen identifies the installation folder, product and disk space required. Click **Install**.
9. The MAC address of the Media Processor is displayed for reference when registering the Processor. Make a

note of it.
10. The installation runs. The Install Complete screen shows the installation directory location.
11. Click **Done**.

The Media Processor service starts automatically.

Run the Linux Installer

1. On the Media Processor computer, open a terminal prompt.

2. If you are installing on a RHEL 6 64-bit system, the required 32-bit compatibility libraries must be installed first. RHEL 6 64-bit no longer ships with these libraries by default. The installer will complete but the Media Processor will not start until this step is completed. From a terminal prompt, type this command:

   yum install glibc-2*.i686 libstdc++-4*.i686

3. Navigate to the directory containing the downloaded installer file. Type these commands.

   sudo chmod +x EchoSystemProcessorForLinux<bit number>_<release number>.bin
   sudo ./EchoSystemProcessorForLinux<bit number>_<release number>.bin

4. The installation begins. Choose the desired locale by typing your selection.
5. The installer introduction text appears. Quit all other programs before continuing. Click **Enter**.
6. Read the license agreement through. Click **Enter** to continue. When you reach the end, type **Y** to accept the terms of the license agreement.
7. Enter the directory location for the install folder (absolute path), or click **Enter** to accept the default (*/usr/local/echo360/client*).
8. The pre-installation summary screen identifies the ESS install location, and the disk space required. Click **Enter** to continue.
9. The installation runs. The "Installation Complete" text appears and the Media Processor service starts.
10. Click **Enter** to exit the installer.

Register the Media Processor

The EchoSystem Media Processor begins communication with the ESS immediately after installation.

The Media Processor is a managed device in the ESS. Managed devices must be registered to be configured for use with the ESS.

1. In the ESS application, navigate to **Configuration** > **Devices**.
2. Select the **Unregistered** tab. The Unregistered Devices screen opens, showing all of the unregistered devices.

3. Highlight the media processor device. Check the MAC address shown on the screen against the MAC address you noted.
4. Click **register**.
5. Select the organization for the media processor from the drop-down list.
6. Click **register**.
7. Select the **Active** tab.
8. Notice that the MAC address of the media processor is listed in the Summary column.
9. Wait for the log upload status to change to **Idle**. This shows that the Media Processor has been successfully registered and is ready for media processing.

Move the Media Processor to a New Location

If your original installation had a media processor running on the same server as the ESS, you might want to move it to a new location when you are upgrading the ESS to a new release. Follow these steps.

1. Install the media processor on the new server.
2. Register the media processor with the ESS.
3. Uninstall the media processor software from the ESS computer.

Manage the Security Certificate

In this section:

- Overview
- Create the Certificate Signing Request (CSR)
- Install the Security Certificate
- Restart the ESS
- Review Existing Certificates
- Remove a Certificate

Overview

The EchoSystem Server (ESS) uses SSL to secure the web browser session between the server and users accessing the server. To make the initial installation as simple as possible, ESS ships with a self-signed SSL certificate that enables this secure communication. There are several reasons why you might want to replace this SSL certificate with a more sophisticated one.

- You do not want users to see (and click past) the warning that most browsers display. This warning occurs because the browser cannot verify the identity of the certificate's owner. Typical warnings look similar to the ones shown below:
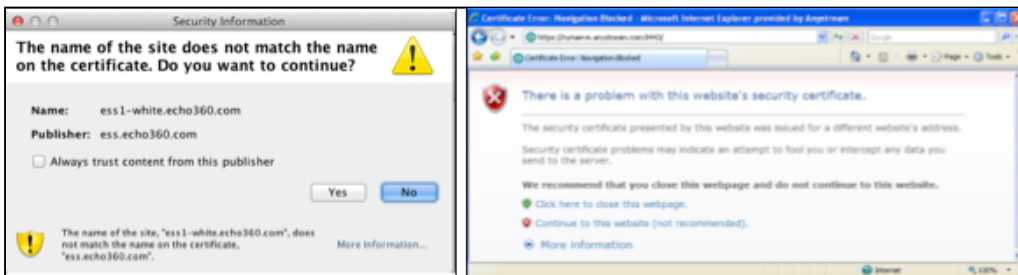
- You want to use a certificate authority (CA) of your own choosing or the CA that is required by your institution.

You can manage the certificate at any time, but you are most likely to make changes for one of the reasons listed

below.

- The existing certificate has expired
- Your institution is working with a new CA
- You are installing a new ESS

Installing a new certificate consists of these phases:

1. Create the Certificate Signing Request (CSR), using either the request capability in the ESS or other means (such as making the request on the CA website).
2. Install the security certificate. Install the certificate.
3. Restart the ESS.

You may also want to do these processes:

- Review existing certificates
- Remove a certificate

Create the Certificate Signing Request (CSR)

You can create a CSR using the ESS.

You may also create a CSR in other ways, perhaps via the CA website. If you chose an alternate method (the "CSR Not Generated by ESS" method), you can skip this section and proceed to Install the Security Certificate with your otherwise generated certificate.

A CSR is a cryptographic document that is generated for a specific entity and submitted to a CA for signing. The CSR describes the identity associated with a particular fully-qualified domain name (FQDN). The result of generating and submitting a CSR is a signed certificate that web browsers will be able to recognize as valid for the server that presents it.

After you request the certificate, you will install the security certificate you receive.

You do not have to create a public key or private key yourself when making the CSR. That is done for you as part of this phase.

Procedure

1. Navigate to **System** > **Certificates** (the Show Certificates page).

2. Click **Request Certificate**.

3. You should see the Request Certificate page. Complete the fields.

4. Click **Generate CSR**.

5. Notice that the field to the right of the fields is now populated with your certificate request. The text below the field lists the file location of the CSR. The file location is underlined in the screenshot below.

6. Click **Return**.

7. Send the certificate request to your CA. You can:
   - Copy and paste the text from the block above into an email, or
   - Send the file to the CA

8. When you receive the security certificate from the CA, install the security certificate.

Install the Security Certificate

The procedure to install the security certificate differs, depending on these factors:

- Was the CSR generated by the ESS or by other means?
- Is a root certificate already installed?

The procedure below is divided into phases. Everyone must follow:

- Phase 1 - Enter the Intermediate Certificate Text
- Phase 2 - Do You Need to Install a Root Certificate?

Depending on the results of phase 2, you will continue with one of the following phases:

- Phase 3A - Root Certificate Already Installed
- Phase 3B - Install the Root Certificate

Phase 1 - Enter the Intermediate Certificate Text

> ℹ **Do You Have an Account with a CA?**
>
> This procedure assumes that you have already set up an account with a CA and purchased a security certificate.

1. Navigate to **System** > **Certificates** (the Show Certificates page).

2. Click **Install Certificate**.
3. Notice that the Install Certificate page is the first page of a wizard. The wizard guides you through the installation procedure.
4. Click the appropriate radio button, then click **Next.**
5. Click **Next**.
   - If you used the ESS to generate your CSR, see ESS-Generated CSR.
   - If you generated your Private Key and CSR outside of the ESS, see CSR Not Generated by ESS.

ESS-Generated CSR

> ℹ️ **Have You Received the Certificate From the CA?**
>
> This phase assumes you have received the security certificate from the CA. This is often an email with an attached file that has a .pem or .cer extension (examples: **cert.pem** or **cert.cer**).
>
> You will need to open the security certificate during this phase.

1. You should see the page shown below.
   a. Open the email or text file received from the CA.
   b. Copy and paste the certificate text into the field, as shown below.
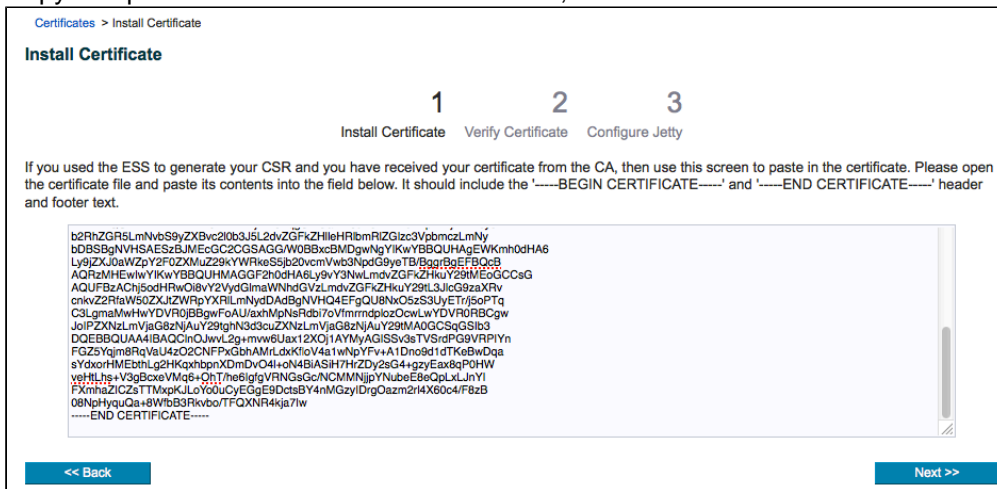
2. Click **Next**.

CSR Not Generated by ESS

> ℹ️ **Do You Have a PKCS12 File?**
>
> The procedure assumes you have generated the CSR outside the ESS, perhaps on the CA website. In this case:
>
> - You should have received a PKCS12 file from the CA
> - You clicked the second radio button ("Private Key + Certificate in PKCS12 format") on the previous page
>
> Make sure you know the location of this file and the password for it. You will upload the file in this procedure.

1. You should see the page shown below.
   a. Browse to the PKCS12 file.
   b. Enter the password for the PKCS12 file.
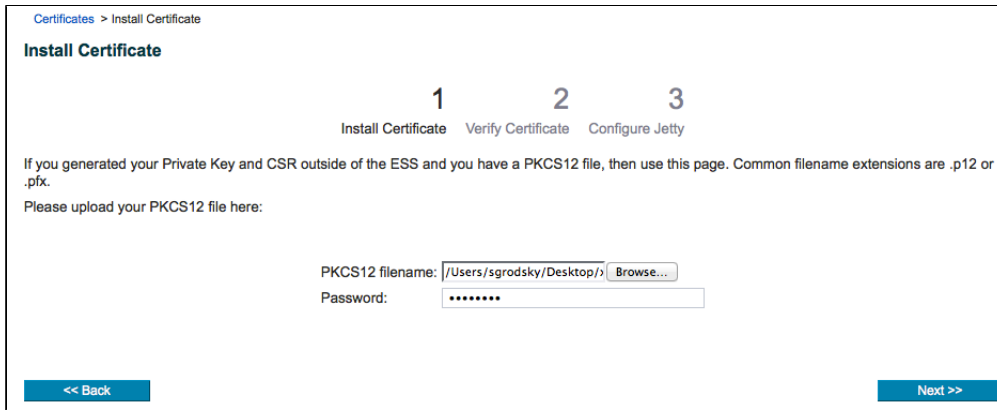
2. Click **Next**.

Phase 2 - Do You Need to Install a Root Certificate?

If you see the page shown below, you already have a root certificate installed. The intermediate certificate has been installed successfully and you are almost done. Continue with Phase 3A - Root Certificate Already Installed.
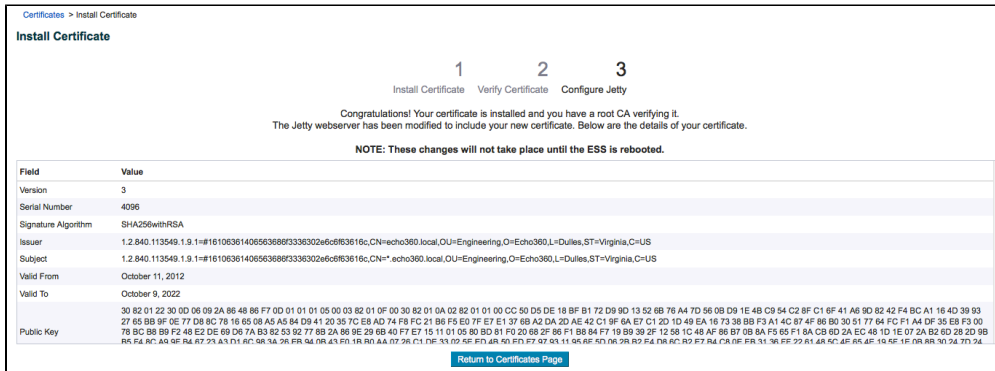
If you see the page shown below, you do not have a root certificate installed and must install one. Continue with Phase 3B - Install the Root Certificate.
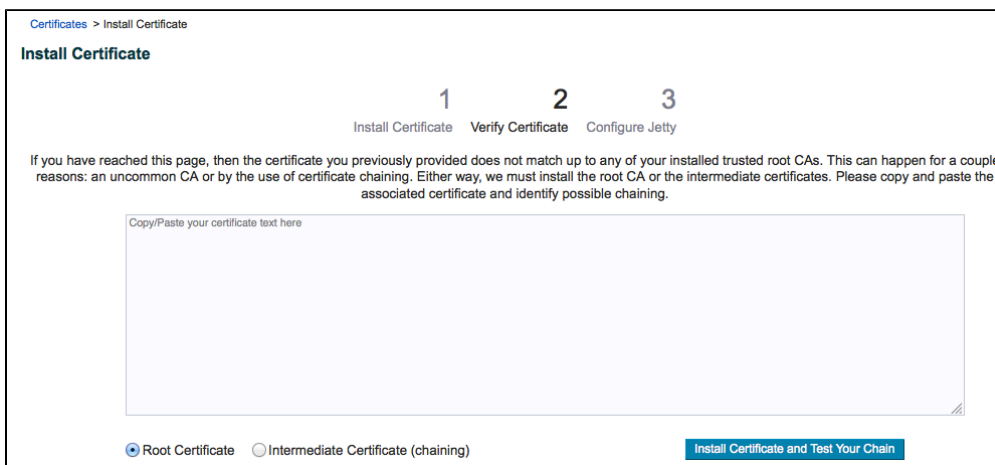
Phase 3A - Root Certificate Already Installed

1. Notice the further instructions on this page.
2. Click **Return to Certificates Page**.
3. Restart the ESS.

- The Jetty server has been reconfigured to work with the certificate

- You will need to restart the ESS to allow the server to recognize the new certificate

Phase 3B - Install the Root Certificate

1. Read and understand the instructions on this page. Typically, you will need to install a root certificate that is linked to the intermediate certificate.
2. Copy and paste the root certificate text into the field, as shown below.
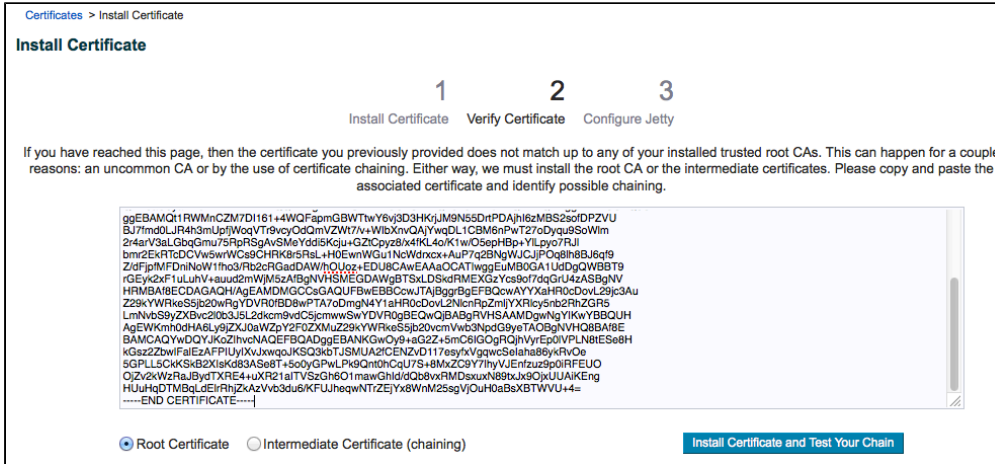
3. Click **Install Certificate and Test Your Chain**.
4. Look for a success message, as shown below.
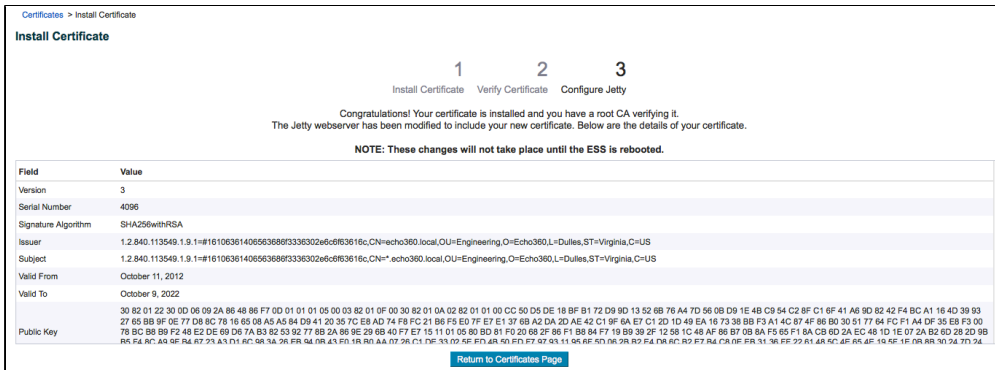
5. Click **Return to Certificates Page**.
6. Restart the ESS (instructions below).
    - The Jetty server has been reconfigured to work with the certificate

    - You will need to restart the ESS to allow the server to recognize the new certificate

Restart the ESS

After you install the new certificate, restart the ESS service or daemon. This allows the server to recognize the new certificate.

Follow the instructions for your platform.

> ⓘ **Expect to Wait**
>
> After a restart, you may have to wait for a few minutes before the ESS becomes responsive.

Restart ESS on Windows

1. From the Windows taskbar select **Start** > **Programs** > **Administrative Tools** > **Services**.
2. The Services dialog opens.
3. Select the **EchoSystem Server** service.
4. Click **Restart**. The ESS service restarts on your local computer.

Restart ESS on Linux

1. Open a terminal prompt.
2. Type the restart command. Be sure to include the space between the file name and the restart command.

```
sudo /etc/init.d/echosystemserverd.sh restart
```

3. Notice the status messages showing that the service stops and starts.

Review Existing Certificates

1. Navigate to **System** > **Certificates**.
2. Hover over the certificate of interest.

3. Click **details**.
4. Notice that details about the certificate appear in the lower part of the page.

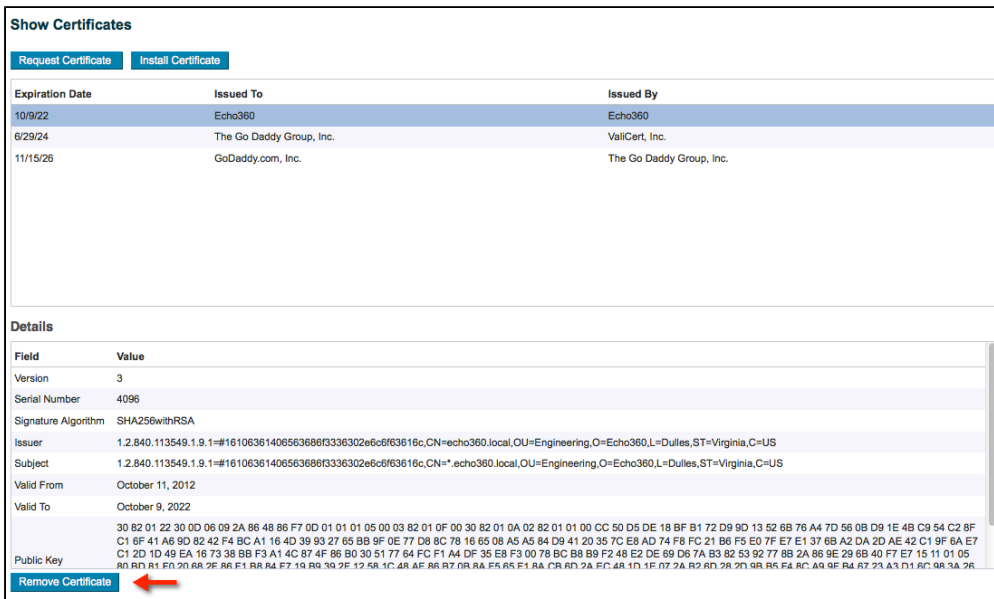## Remove a Certificate

Overview

You might remove a certificate when it expires or if your institution changes the CA it uses.

> 🚫 **The Certificate is Removed Immediately**
>
> The ESS does not ask for confirmation before removing the certificate. However, you can restore a certificate from a backup. A file called **backup_<timestamp>.jks** is created in the same directory as the keystore whenever the keystore is altered.

Procedure

1. Navigate to **System** > **Certificates**.
2. Select the certificate to be removed.
3. Click **Remove**.

4. Notice that the certificate is removed from the list.

Upgrade to EchoSystem 5.5

- Supported Upgrade Paths
- Upgrade Options
- High-Level Procedure
- Back up the ESS Application
- Stop the ESS Service
- Stop Wowza

Supported Upgrade Paths

The upgrade to EchoSystem 5.5 is supported from existing 5.4 installations of Service Pack 5 and later. If your EchoSystem has not yet been upgraded to at least EchoSystem 5.4 Service Pack 5 you will need to do so before proceeding with the upgrade to EchoSystem 5.5. Upgrade instructions can be requested from Echo360 Technical Support.

You are also ***strongly encouraged*** to review the Release Notes for EchoSystem 5.5 prior to upgrading.

Upgrade Options

The process of upgrading the ESS may be handled in two ways, depending on whether you are doing an in-place upgrade or a server migration.

- **In-place Upgrades**. The EchoSystem installation program recognizes the existing ESS release installed on the host computer, and will upgrade all of the components of the system. This is the most common upgrade option and the only one covered in this guide.
- **Server Migrations**. This is the upgrade procedure if you are moving the EchoSystem to a new server at the same time that you upgrade the EchoSystem. If you are planning on migrating servers at the time of your upgrade, contact Echo360 Technical Support.

High-Level Procedure

Follow these phases.

1. Verify that you have **at least 5 GB of free space** on the directory/drive where the ESS application upgrade is to be performed. If you do not, the upgrade will fail.
2. Back up the ESS application.
3. Back up the database. You must do this manually; database backup is not performed as a function of installation.
4. Download the upgrade package from the customer portal.
5. Upgrade the ESS.
6. Upgrade Devices.

> ⚠️ **Review The Upgrade Information in the Release Notes**
>
> Review the Release Notes for EchoSystem 5.5 for important information about additional steps needed to ensure a smooth upgrade to EchoSystem 5.5.

Back up the ESS Application

The ESS application is located on the ESS file system in the installation path. The paths below assume the default base installation path.

To back up the ESS application:

1. Stop the ESS service and Wowza Media Server (Wowza) service or daemon. See Stop the ESS Service and Stop Wowza below.
2. Create a backup directory on the same or different computer.
3. Browse to the application directory.
4. Copy all directories in *server* to the backup location.

The default locations for the ESS are listed here. Your deployment may differ based on the paths chosen at the time of your installation.

- **Windows**: C:\Program Files\Echo360\Server
- **Linux**: /usr/local/echo360/server

> ⚠️ **If You Have Modified Profiles**
>
> If you have modified capture or processing profiles, contact [Echo360 Technical Support](#) for assistance.

Stop the ESS Service

Stopping the ESS service or daemon is required during the configuration process and at other times when certain system changes are made. Follow these platform-specific instructions to stop the ESS.

To stop the ESS service on Windows:

1. From the Windows taskbar select **Start** > **Programs** > **Administrative Tools** > **Services**.
2. The Services dialog box opens. Select the **EchoSystem Server** service.
3. Click **Stop**. The ESS service will be stopped on your local computer by the Service Control.

To stop the ESS service on Linux:

1. Open a terminal prompt.
2. From the terminal prompt, type in the stop command. The command is:

```
sudo /etc/init.d/echosystemserverd stop
```

> ℹ️ **Include the Space**
>
> Be sure to include the space between the file name and the stop command. You may be prompted to enter your password to authorize this action.

3. Notice the status message indicating that the service has stopped.

Stop Wowza

To stop the Wowza service on Windows:

1. From the Windows taskbar, select **Start** > **Programs** > **Administrative Tools** > **Services**.
2. The Services dialog box opens. Select the **Wowza Media Server** service.
3. Click **Stop**. The Wowza service stops on your local computer.

To stop the Wowza service on Linux:

1. Open a terminal prompt.
2. From the terminal prompt, type in the stop command. The command is:

```
sudo /etc/init.d/WowzaMediaServer stop
```

3. Notice the status message indicating that the service has stopped.

Upgrade the ESS

In this section:

-
-
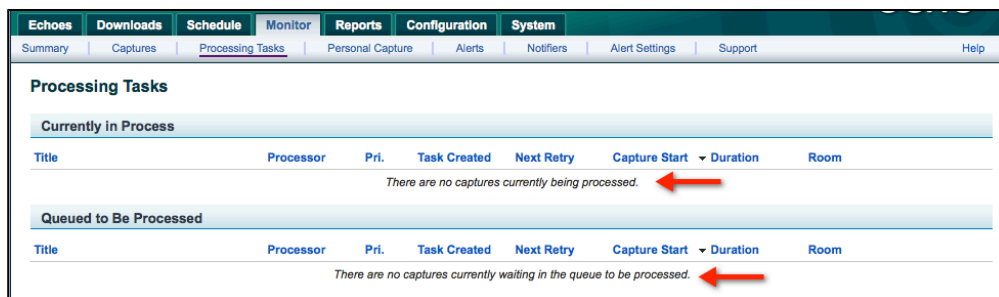-
-
-

> ⚠️ **Read the Release Notes BEFORE Upgrading**
>
> **BEFORE YOU UPGRADE:** Review the Release Notes for EchoSystem 5.5.
>
> You should also check the Supported Technologies page to make sure your existing platforms and infrastructure support EchoSystem 5.5.

Overview

The following steps provide an outline of the process you should follow to upgrade the EchoSystem Server (ESS). Links within the procedure jump to the relevant areas on this page with specific instructions for those tasks.

1. Verify that the ESS is on a machine with a supported operating system. See Supported Technologies.
2. Verify that there is **at least 5 GB of free space available** in the installation directory/drive.
3. Download the software.
4. Prepare the MySQL database if you use MySQL.
5. If you are upgrading the ESS on a **Linux** server, do the following:
   a. Navigate to **Monitor > Processing Tasks** and check both Processing Tasks queues to be sure they are completely empty, as shown in the below figure. This is necessary because a permissions issue causes any tasks in the processing queues to be lost during upgrade.

   b. Check the **ulimit** setting for the "maximum number of open file descriptors per-process" on the server; it must be set to at least 64K (64x1024) in order for ESS upgrade to succeed. If this setting is lower, the installer will ask to change it. To view a list of the per-process resource limits currently enforced by the operating system, log on as the 'root' user and execute the command `ulimit -a`. For more information, see the note in the Upgrade on Linux section below.

6. Install the upgrade. Procedures for Windows, and Linux appear below.
7. Check for retired devices. If you have venues with retired devices, you must install supported devices in those venues and verify that capture schedules point to those new devices.
8. Report upgrade problems if you encounter them.
9. If you have venues with Classroom Capture (sometimes called EchoCapture software, Software Capture, or Podium Capture), continue by upgrading the software on podium PCs in those venues. See Install Classroom Capture Software.

Download the Software

The installation software is provided through a compressed file downloaded from the [Echo360 customer support portal](#). Save it to a directory location on the hard drive of the machine where the EchoSystem Server (ESS) will be run.

Prepare the MySQL Database

If you do not use the MySQL database you can skip this section.

The ESS installer handles all necessary database interactions during the upgrade process, but follow these additional steps.

1. **Ensure** that you are using a supported version of MySQL. See [Supported Technologies](#).
2. **Convert** the Latin-1 character set to the UTF-8 character set. See [Convert Latin-1 to UTF-8](#).
3. **Check** the collations of the database and tables. You may need to change the collation of the database. See [Check Database and Table Collations](#).
4. If you expect to have captures of three hours or longer: **Increase** the **max_packet_size** parameter in the **my.cnf** file. See [Increase the max_packet_size Parameter](#).

Convert Latin-1 to UTF-8

The default MySQL configuration uses the Latin-1 character set, but the ESS requires its database to use the UTF-8 character set. The ESS upgrade process fails if the database uses the Latin-1 character set.

This KB (Knowledge Base) article ([Converting a MySQL database character set](#)) explains how to convert the Latin-1 character set to the UTF-8 character set.

> ⚠ **Accessing the Knowledge Base**
> You will need a customer portal login to access the Knowledge Base. Contact [Technical Support](#) if you need a login.

Check Database and Table Collations

The ESS allows you to choose the UTF-8 compatible collation you use. Therefore, to respect your choice, the ESS does not specify a collation when it creates tables during a new install or during an upgrade. It uses the default collation for the database. If the default collation is changed without converting the existing tables, this can cause a problem during upgrade when new tables are created with a different collation. This occurs most often when the ESS database is dumped and loaded into a new server that has a different default collation.

You must determine if the collations for the database and tables match. If they do not, you must change the default collation for the database to match the collation of the existing tables.

Follow these steps.

1. Check the collation for several existing tables. Type this command:

```
show full columns from <database_name>.<table_name>;
```

2. Check the default collation for the database. Type this command:

```
use <database_name>;
show variables like 'collation_database';
```

3. If the collations do not match, change the default collation for the database to match the collation of the existing tables. Type this command:

```
alter database <database_name> collate 'some_collation_name'
```

Increase the max_packet_size Parameter

Each capture event creates and stores in the database an xml specification that includes all the necessary information and links to supporting images and media. Long captures, which have large sets of thumbnail images, can create very large specifications. The default limit for BLOBS within MySQL is 1 MB. This may be too small for captures of three hours or longer. If you expect to capture events longer than three hours, increase the **max_packet _size** parameter in the **my.cnf** file.

Capture events that create specifications larger than the **max_packet_size** are captured and processed, but they do not appear in the list of presentations.

1. Stop MySQL. Consult the MySQL documentation for instructions.
2. Locate the **my.cnf** file on your system.
3. Open it in an editor.
4. Modify the **max_packet_size** parameter, changing it from 1 MB to 2 MB. After editing, the line in the file should look like this:

```
max_allowed_packet = 2M
```

5. Save the **my.cnf** file.
6. Restart MySQL.

Upgrade on Windows

There is one version of the Windows installer available for download from the Echo360 Customer Support web site, supporting 64-bit distributions. You must be a user with administrator rights to perform the upgrade.

These instructions assume that you used the default directories for the installation of your original ESS, and that you are not changing the location. If you are changing the installed location, even if you are not changing the host server, contact Echo360 Technical Support for assistance.

1. Navigate to **Administrative Tools** > **Services**.
2. Select the **EchoSystem Server** service.
3. Click **Stop.**
4. Select the **Wowza Media Server** service.
5. Click **Stop**.
6. Back up the ESS database and application. See Upgrade to EchoSystem 5.5.
7. Extract the zip file downloaded from the Echo360 website. Navigate to the expanded directory and

double-click the installer executable.
8. Follow the instructions on the screen to install the upgrade.
9. On successful completion of the upgrade, the ESS service is started automatically by the installer.
10. The ESS upgrades the Wowza Media Server to version 3.5, if you are using an internal configuration of Wowza.
11. Wowza is **not** started automatically. To start the Wowza Media Server service:
    a. Navigate to **Administrative Tools** > **Services**.
    b. Select the **Wowza Media Server** service.
    c. Click **Start**.

Upgrade on Linux

There are two versions of the Linux installer available for download from the Echo360 Customer Support web site, supporting either 32-bit or 64-bit distributions. The upgrade process is identical for either version, as described below.

You must be a user with root privileges or use the `sudo` command, which requires your password, to perform the upgrade.

These instructions assume that you used the default directories for the installation of your original ESS, and that you are not changing the location. If you are changing the installed location, even if you are not changing the host server, contact Echo360 Technical Support for assistance.

> ⚠ **Maximum Number of Open File Descriptors Must Be At Least 64K**
>
> If you are upgrading on Linux, the **ulimit** setting for the "maximum number of open file descriptors per-process" on the server MUST be set to at least 64K (64x1024) in order for ESS upgrade to succeed. If this setting is lower, the installer will ask to change it. If you select N (no), the upgrade will stop and exit.
>
> To view a list of the per-process resource limits currently enforced by the operating system, log on as the 'root' user and execute the command `ulimit -a`. For more details, do a `man ulimit` at the Unix command prompt, or see http://linux.about.com/library/cmd/blcmdl1_ulimit.htm .

1. Stop the **EchoSystem Server** service (daemon). From the terminal prompt, type:

   ```
   sudo /etc/init.d/echosystemserverd stop
   ```

2. Stop the **Wowza Media Server** service (daemon). From the terminal prompt, type:

   ```
   sudo /etc/init.d/WowzaMediaServer stop
   ```

3. Back up the ESS database and ESS application.
4. Download the EchoSystem 5.5 installer from Echo360. Both 32-bit and 64-bit versions are available for download.
5. Extract the **tar.gz** file and navigate to the expanded directory.

6. The installer binary file may need the right permissions set to run as an executable. From the terminal prompt, type:

```
sudo chmod +x <installer_name>.bin
```

7. Launch the binary file. From the terminal prompt, type:

```
./<installer_name>.bin
```

8. Follow the instructions on the screen.
9. **Look for a warning about Windows XP devices.** Continue with the upgrade or cancel. If you continue, be sure to [check for retired devices](#).
10. On successful completion of the upgrade, the ESS service is started automatically by the installer.
11. The ESS upgrades the Wowza Media Server to version 3.5 if you are using an internal configuration of Wowza.
12. Wowza is **not**started automatically. To start the Wowza Media Server service, from the terminal prompt type:

```
sudo /etc/init.d/WowzaMediaServer start
```

Report Upgrade Problems

If the upgrade procedure produces any error or failure messages the installer reverts back to the earlier instance. In this event, contact [Echo360 Technical Support](#) for assistance.

Upgrade Devices

In this section:

- [Registered Devices](#)
- [Manually Upgrading Capture Devices](#)
- [Move the Media Processor](#)

Registered Devices

The EchoSystem Server (ESS) automatically upgrades the Echo software (binaries) of all *registered* capture appliances, including Classroom Capture installations, and media processors that are *on-line at the time of ESS upgrade*. Upgrading to a new release also upgrades all devices to the latest revision. This ensures device compatibility with the upgraded ESS.

Devices that were unregistered, turned off, or otherwise not connected to the ESS at the time of upgrade will be **automatically** updated the next time they come on-line and are registered with the ESS.

If you need to upgrade devices manually, there are two methods for this:

- Upgrade each device individually as a function of other edits or updates to the device information.

- Select and upgrade multiple devices at one time, using the instructions below.

Personal Capture users (see Personal Capture For Windows and Personal Capture for Mac) will provide users with notifications of an available update the first time it is used after the ESS upgrade. The user can then select whether to upgrade at that time, or the defer the update to a later time. These notifications will continue to appear upon startup of the applications until the upgrade is completed.

Manually Upgrading Capture Devices

The information in this section applies to EchoSystem capture appliances, including the EchoSystem SafeCapture HD device as well as Classroom Capture software installations.

After the ESS has been upgraded to the new version, there may be firmware updates that are required, or at least recommended, for your capture appliances.

All capture appliances that were registered with the ESS at the time of upgrade will automatically and seamlessly receive upgrades. However, all devices that were not registered at the time of upgrade, or which may have been powered off or disconnected from the ESS at that time, will have to be upgraded manually. You must register a capture device with the ESS before you can upgrade it.

If there are no other changes that need to be made to the devices except the firmware upgrades, use the steps below to upgrade these devices.

1. Log on to the ESS and navigate to **Configuration > Devices**.
2. If necessary, click the **Unregistered** tab to register any unregistered devices. Then click the **Active** tab to return to the list of registered devices.
3. Use the check boxes to the left of each device to select which devices must be upgraded.
4. From the **Actions** drop-down list at the bottom of the tab, click **Upgrade selected**.
5. Alternately, you can upgrade all Active devices by clicking the **Upgrade All** button at the bottom of the tab.

If you encounter any issues with upgrading your appliances, contact Echo360 Technical Support for assistance.

Move the Media Processor

If you have a media processor running on the same server as the ESS, this an ideal time to move the media processor to another location. See Move the Media Processor to a New Location.

Post-Installation Checklist

In this section:

- Server Infrastructure
- Capture Infrastructure

✅ **Best Practice: Print This Page**
Print this page and mark off each item in the checklist as you complete it.

Server Infrastructure

System Settings Page

Completed	Item	Description
☐	Set Customer Identifier	This is the unique licensing identification number provided to your institution by Echo360 Sales as part of your system purchase. It is used to assign licenses to your EchoSystem Server (ESS).
☐	Set Application Settings	The application settings define access to the server for capture devices and playback. A fully qualified domain name is recommended.
☐	Set Intake Settings	Presentations are transferred by capture devices to an incoming FTP directory. The ESS provides a native SFTP server application supporting both SFTP with and without encryption. The ESS uses the Internal SFTP server by default. The ESS can also be configured for use with an external FTP server.
☐	Set Active Echo Settings	The ESS provides a native Web server application and uses this server by default. These settings define where active Echoes reside and how the HTML files for the presentations are served. Both the URL and directory must point to the same physical location. All paths (absolute, UNC or mapped drives) must be valid, and the base directories must already exist. The ESS can also be configured to use an external web server.
☐	Set Inactive Echo Settings	The ESS provides support for different storage locations.
☐	Set Streaming Settings	The ESS provides support for Flash media streaming services via a Wowza Media Server (Wowza) or an Adobe Flash Media Server. See Configure the Flash Media Streaming Server for details.

☐	Set Custom Logo	The ESS provides support for custom logos and settings to provide institution branding support for presentation content. When using a custom logo, the dimensions should not exceed 300x60 pixels. Additionally, the best practice is to place the image on the web server defined in Active Echo Settings.
☐	Set Support Settings	Presentations can have metadata inserted into the EchoPlayer to send students to the institution's help desk page and support phone number.

Final Installation Steps

Completed	Item	Description
☐	Set Default Settings	Defaults simplify system configuration and scheduling by providing values for various settings. Setting these defaults may require some up-front planning. We recommend setting the defaults during initial configuration or after upgrading EchoSystem. Defaults are covered in detail in Defaults and Inheritance.
☐	Retrieve Licenses	Licensing the ESS has two phases. First, the license must be retrieved from the Echo360 license server. Second, venue licenses must be assigned to the venues or lecture locations, and Personal Capture licenses assigned to Instructors. See Manage Licenses and Manage Rooms.
☐	Change Administrative Password	Echo360 strongly recommends changing the default administrative password to a stronger one.

	Create and Install Server SSL Certificate	The EchoSystem ships with a default SSL certificate signed for use with the echo360.com domain. Create a new SSL certificate for use with the ESS, using internal or external PKI entities.

Install and Register EchoSystem Media Processors

Completed	Item	Description
☐	Download the Media Processor installer	Log in to the ESS interface and click the **Downloads** tab. On the Software Installer Downloads page, download the Media Processor. The media processor is supported on Windows and Linux platforms.
☐	Install the Media Processor	See Manage the Media Processor.
☐	Register the Media Processor	See Register the Media Processor.

Capture Infrastructure

Install and Register EchoSystem Capture Appliances

Completed	Item	Description
☐	Physically install the capture appliance	Rack or mount the capture appliance in the desired location. Plug in cables as explained on the following pages as it applies to the appliance(s) you are using: • Install the EchoSystem Capture Appliance • Install the EchoSystem SafeCapture HD
☐	Initialize the capture appliance (USB)	Initialize the capture appliance. Use the instructions located on the following pages as applies to the appliance(s) you are using: • Configure the EchoSystem Capture Appliance • Configure the EchoSystem SafeCapture HD

	Register the capture appliance	Register the capture appliance. See [Register the Capture Appliances](#).
☐		

Install and Register Software Capture for the Classroom

Completed	Item	Description
☐	Download the Software Capture installer	Log in to the ESS interface and click the **Downloads** tab. On the Software Installer Downloads page, download the Software Capture installer. Software Capture is supported on Windows 7 and Windows 8.
☐	Install Classroom Capture software	See [Install Classroom Capture Software](#). If you are upgrading from a previous version, you will need to uninstall the existing Classroom Capture software and reinstall Software Capture in Classroom Capture mode.
☐	Video source connected to the podium PC (Required only if capturing video)	If the captures from the installation are to include video, install and configure the USB camera on the podium PC. See [Install USB Cameras for Classroom Capture](#) for instructions and [Supported USB Devices](#) for a list of supported cameras. If you did not perform this step as a [Prerequisite Installation Checklist](#) item prior to installing Classroom Capture, you should perform it prior to registering the software.
☐	Video signal checked and adjusted (Required only if capturing video)	Use the camera's vendor software to adjust the camera settings (such as aperture or resolution quality). Classroom capture will respect these settings.
☐	Register the Classroom Capture software devices	See [Register the Classroom Capture Software](#).

Install Personal Capture

Completed	Item	Description
	Download the Personal Capture installer for Windows or Mac.	Log in to the ESS interface and click the **Downloads** tab. On the Software Installer Downloads page, download either Personal Capture for Mac, or the Software Capture (for Windows) installer.
	Install Personal Capture	See Install Personal Capture for Mac.

Uninstall the ESS

In this section:

- Overview
- Uninstall from Windows Server 2008 and 2012
- Uninstall from Linux

Overview

The EchoSystem Server (ESS) has an automated installation program. The uninstaller that is also provided with the product is the preferred means of removing and cleaning up the ESS. To uninstall the ESS, follow the appropriate procedure below for your operating system.

Uninstall from Windows Server 2008 and 2012

Stop the Service
1. From the Windows taskbar, select **Start** > **Programs** > **Administrative Tools** > **Services**.
2. The Services dialog box opens. Select the **EchoSystem Server** service.
3. Click **Stop**. The ESS service stops on your local computer.
4. Stop the media processor if it is installed on this server.

Uninstall the Application
1. From the Windows Control Panel, open the Programs and Features dialog box. Right-click the **EchoSystem Server**. Click **Uninstall/Change**.
2. Confirm the removal when prompted.
3. In Windows Explorer, navigate to C:\Program Files.
4. Delete the *Echo360* folder.
5. Confirm the deletion when prompted.
6. In Windows Explorer, navigate to the C: drive.
7. Delete the *Echo360* folder.
8. Confirm the deletion when prompted.

Uninstall from Linux

Stop the Service

Stop the ESS service by going to the terminal prompt, then type in the stop command:

```
sudo
/usr/local/echo360/server/bin/echosystemserv
erd.sh stop
```

The ESS service should stop.

Remove the Application

To uninstall the application, follow these steps:

1. Deregister the service from the *init.d* system.
2. Remove the application directories.
3. Remove the Startup Scripts.

Deregister the Service

Deregister the service with the following commands. If you are using an external media server, then skip the Wowza commands.

```
sudo chkconfig echosystemserverd off
sudo chkconfig --del echosystemserverd
sudo chkconfig WowzaMediaServer off
sudo chkconfig --del WowzaMediaServer
```

Remove the Application Directories

Remove the application directories from the system using the following commands: (these are the default directories; you may have installed in other locations)

```
sudo rm -r /usr/local/echo360
sudo rm -r /var/local/echo360
sudo rm /var/.com.zerog.registry.xml
sudo rm /usr/local/WowzaMediaServer
```

Remove the Startup Scripts

Remove the startup scripts used to start the ESS, Wowza, and Media Processor services from the from the system using the following commands:

```
sudo rm /etc/init.d/echosystemserverd
sudo rm /etc/init.d/EchoSystemProcessor
sudo rm /etc/init.d/WowzaMediaServer
```

The ESS is now uninstalled.

Migrating EchoSystem Components

I want to:

- [Migrate the ESS to a New Server](#)
- [Migrate an External MySQL Database](#)

Migrate the ESS to a New Server

In this section:

- [Overview](#)
- [Addressing](#)
- [Run the ESS Installer](#)
- [Transfer the ESS Database](#)
- [Configure Paths and Transfer Content](#)
- [Configure Devices](#)

Overview

The EchoSystem Server (ESS) architecture allows for simple migration from one server to another as your deployment model changes. This page explains how to migrate the ESS, while preserving your settings, schedules, and content.

> ⚠️ **ESS on Windows in Default Locations**
>
> This article assumes that the ESS is installed on a Windows system in the default locations. System paths for Linux use a different format and will vary from the paths described in this article.

Addressing

According to best-practice recommendations, the ESS uses fully qualified domain names (FQDNs) in its configuration when URLs are required. This requires accurate name resolution to be available on your network to all

devices. An advantage of this is that the FQDN of your ESS can be preserved during migration. We recommend that you update the DNS record of the host name for your old ESS host to point to the new one so that any existing content links from external locations are not broken.

Run the ESS Installer

The ESS installer is available from the customer support area of our website. We always recommend using the latest version of the installer so that your system is operating with the most recent features and stability updates.

At this point, we are only creating a brand-new installation on the target machine. This will create the necessary folder structures, program files, and registrations with the host operating system so that an ESS can run. We will migrate the database and content after we have confirmed a successful installation.

When the installer has finished running, it automatically starts the ESS service if you are running Windows. It will not start the Wowza Media Server (Wowza) automatically. If your paths have changed, it is important that you do not start Wowza until updating them in the ESS configuration during the next stage of the migration. At this point, you may attempt to log in to the ESS with the temporary default user name and password. Do not bother to configure it; rather, verify that it is running. We will overwrite its configuration with your original database in the next step.

Transfer the ESS Database

The first step is to verify that both the ESS and Wowza Media Server services are stopped. If you are running the ESS on Windows, execute the following from the command line:

```
net stop echosystemserver

net stop wowzamediaserver
```

Linux users should use the service management tools that are available with each particular distribution.

Once the services have stopped, make the copy of your ESS database that the new machine will use. Doing this preserves your settings, schedules, and all of your content indexes.

By default, the ESS database is installed in C:\Program Files\Echo360\Server (/usr/local/echo360/server on Linux-like operating systems). Copy the entire "db" and "etc" folders to their new locations on the new machine.

> ⚠ Be sure to preserve relative path structures and to *back up* (make copies of) the brand-new "db" and "etc" folders before overwriting them with the files from your original ESS in case the migration is unsuccessful.

After you have made the copy and the database is in place, start the ESS service again.

Configure Paths and Transfer Content

Once the service has started, log in to the ESS as usual (your user name and password will have been preserved if you correctly transferred the database) to verify and, if necessary, change the folder entries for all of the content in your System Settings.

While doing this, you will be setting the paths for your content storage. These paths should be defined before the content is copied from its location on the old ESS to its storage location on the new one. Once these are defined, simply copy the content folders to where you have configured the ESS to look for them. If you have been using a SAN for the storage of your active content, you may not need to copy any files. In this case, just make sure the path is accurate.

Configure Devices

Even if the URL to your ESS has not changed, you may still need to reinitialize your devices (this is necessary if your devices have an "Overdue" status).

> ⚠️ **DHCP Assumed**
>
> These steps assume you are using DHCP. If you are using static IP address configurations for your appliances, please substitute the device specific config.xml file (retrievable from each individual device page) for the generic file in these steps.

1. Click the **Configuration** tab.
2. At the bottom of the page, click **Download generic device configuration**. This will offer a file called device.xml. Save this in an accessible location.
3. For Appliances, copy the device.xml file to the top level of a USB drive. Visit each appliance and insert the drive in any of the USB ports. It is not necessary to restart the appliance before or after receiving the flash drive; however, if you are powering on the appliance for the first time, please wait until the amber light turns off before inserting the drive. You will see a blinking light; after it stops, you can remove the drive again.
4. For Media Processors and Classroom Capture, copy the *device.xml* file to the following location and overwrite the previous instance:
    C:\Documents and Settings\All Users\Application Data\Echo360\client\config\
    (On some systems, the first few elements of this path may be different or begin with a different drive letter.)
5. The devices re-initialize with your new ESS on their next periodic updates.

Migrate an External MySQL Database

In this section:

- Overview
- Before You Begin
- Solution

Overview

Migrating an external MySQL database from one host to another can be accomplished using the mysqldump utility distributed with MySQL. This article outlines the usage of this tool for migrating the EchoSystem Server (ESS) database. For detailed information on this utility, as well as information on using it to migrate a database between different MySQL versions, see the documentation on the MySQL website for the appropriate MySQL version.

Before You Begin

Ensure that you are using a supported version of MySQL. Be advised also that database clustering is not supported. See Supported Technologies.

Solution

The path to the mysqldump utility depends on the operating system version. This command should only be executed when a short downtime can be tolerated for the ESS. Once the utility is located, execute the following command to dump the database to a text file containing SQL commands which will recreate the tables and data:

```
mysqldump -u [username] -p -B [database_name] > ess_db_backup.sql
```

This command creates a text file, ess_db_backup.sql, in the current working directory. The username parameter specifies the MySQL account, which should be used to access the database, while the `database_nameparamete r` specifies the database upon which to operate. Consult your installation notes for these parameters. Copy this file to the location of the new MySQL database, then run the following command to recreate the database.

```
mysql -u [username] -p < ess_db_backup.sql > output.tab
```

Examine the file output.tab for any errors.