

API for SIS First Steps: Choosing an Integration Solution

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What's an API for SIS?

eCollege's Application Program Interface (API) for Student Information Systems (SIS) provides an efficient method of transferring user and enrollment information between your student information tracking system and the eCollege database, regardless of your underlying system for housing student information. The goal of the API for SIS is to provide one system of record so that user creation and enrollments in either your SIS or the eCollege system are reconciled in near real-time or within 24 hours.

Specifically, you can use the eCollege API for SIS to create users in your online program, automatically enroll users in courses, and update personal information, like names and email addresses, as well as enrollment statuses (like Add or Drop). If you choose, the API for SIS can automatically generate passwords for your users when they are created in the eCollege system.

During times of high activity, such as the rollout of your online campus or the beginning of a term, the API for SIS allows you to create and enroll tens of thousands of students in a single operation. The synchronous API integration option (discussed below) automatically updates user and enrollment information in your online campus as soon as a change is made in your SIS.

What are my choices for integration?

There are several choices you'll need to make as far as how your institution will integrate your SIS with the eCollege system—specifically, you need to decide how you will format your user and enrollment data, how this data will be sent or uploaded to the eCollege system, and you'll need to identify an acceptable turnaround time in which transmitted data becomes available. Some of these choices are compatible; others, however, are exclusive. For example, synchronous integration is only available for data formatted using XML and transmitted using web services. You'll need to carefully evaluate the needs and requirements of your institution, as well as your capabilities, to determine the best solution.

This section will give you an overview of integration options. The following section will then present a series of questions that will help steer you toward the integration method most appropriate for your institution. In rare instances, it may be necessary to use two different types of integration; however, we strongly recommend using a single integration strategy.

Data format options

There are two ways you can format your user and enrollment data:

- **Delimited file**; or
- **XML**

Delimited file. This stripped-down file format includes a fixed number of columns, each separated by a “delimiter” like a comma, a tab, or a pipe character. Delimited files can be easily created using a spreadsheet like Microsoft Excel or text editor like Notepad and have a .txt extension.

XML. Similar to HTML, XML, or Extensible Markup Language, provides a basic structure and rules for users to create their own custom markup tags and enables the definition, transmission, validation, and interpretation of data between applications and organizations, regardless of where the applications and organizations reside. The actual markup looks very much like HTML,

although the grammar rules for an XML document are more strict. The eCollege API adheres to the IMS Enterprise v1.1 XML schema for user and enrollment information.

You'll need to provide your user and enrollment information as either a delimited file or as XML.

Transmitting options

Once you've formatted or created your data file, there are three ways that you can send or upload the file to the eCollege system:

- **Web services;**
- **Secure File Transfer Protocol (SFTP); or**
- **Administrative Pages upload**

Web services. Web services allow applications from various sources to work together regardless of where they reside or how they were implemented. In the case of the eCollege SIS API, your SIS application generates an XML message, which then contacts the eCollege web service. Using industry standards, the web service validates the file formatting and schema and then processes the request (creates, updates, or enrolls the user). Although this option does provide extended integration options, it also requires development and coding effort on your end. Sample code, as well as troubleshooting help, will be provided for those who select this option.

Secure File Transfer Protocol (SFTP). You can use an automated or manual Secure FTP client to contact the eCollege FTP server and send a file to your directory on the eCollege system. The eCollege SIS API monitors that drop-off point and will then pick up the file to be processed.

Administrative Pages. Users with access to the eCollege Administrative Pages can upload a batch file (either a delimited file or an XML file) to the eCollege Administrative Pages. When you upload directly to the Admin Pages, the file you submit will be validated for formatting during the upload process and you'll be notified immediately if the file has formatting problems.

Synchronous vs. asynchronous integration

The communication between your SIS and the eCollege API can occur either

- **synchronously;** or
- **asynchronously**

Synchronous integration. You have the option of automatically updating user and enrollment information in your online eCollege campus as soon as a change is made in your SIS—a near-synchronous data exchange. This allows users and enrollments to be created, updated, and available in real-time. Synchronous integration is accomplished using **web services and XML, so if you need real-time integration, you must transmit XML user data via web services.** Synchronous communication can only contain one user and one course enrollment for that user; however, you can send as many communications as you want; each will be created or updated in real-time.

Asynchronous integration. Asynchronous integration allows users and enrollments to be created and updated within 24 hours. Any "scheduled" integration time (i.e., update

users and enrollments hourly, daily, weekly, every Monday and Friday, etc.) requires asynchronous processing. Asynchronous processing can read either delimited files or XML.

As you choose your integration solution, consider your data format (delimited or XML), how you plan to send or upload your data (web services, SFTP, or Administrative Pages upload), and whether you need synchronous integration. The following matrix summarizes at a glance which options are compatible and which are not:

	How the file is sent:		
Communication type:	Secure FTP	Admin Pages	Web Service
Synchronous	No	No	Yes
Asynchronous	Yes	Yes	Yes

	Secure FTP	Admin Pages	Web Service
XML	Yes	Yes	Yes
Delimited file	Yes	Yes	No

The following section will help you think about your unique SIS workflow and requirements and will help you determine the integration method most appropriate for your institution.

Which Solution is Right for Me?

There are several variables to consider as you choose your integration solution. *The place to start, however, is to determine whether you need synchronous updates to your SIS system and whether you have the technical resources to support this integration option.* Synchronous integration offers extended integration options, like custom user properties, but it also requires development and coding effort on your end.

User and enrollment information for synchronous integration **must** be provided in XML, and the XML **must** be processed via web services, so if you know you need real-time updates, you also know that you will provide your data as XML and that you'll use web services.

The following questions will help steer you toward the integration method that is best-suited for your institution. Once you've read through the questions, refer to the matrix above for possible integration configurations. Remember, your Client Services Consultant can work with you to determine the best solution for your needs and can provide more detailed information should you need additional help. A detailed Technical Requirements and Getting Started document is available for each integration option.

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Question 1

Does your business process require you to have synchronous user creation and enrollment (i.e., user and enrollment information is automatically updated in your online campus as soon as a change is made in your SIS)?

Options

Yes, we need synchronous integration. Only **synchronous integration** allows users and enrollments to be created, updated, and available in real-time. Remember that this option requires XML and web services.

No, we don't need synchronous integration. If your student information records are updated periodically (i.e., every X hours or every X days), synchronous integration probably isn't critical. The **asynchronous** option allows users and enrollments to be created and updated quickly (within 24 hours) through a familiar workflow.

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Question 2

Is your SIS integration process automated or manual?

Options

Automated. If you use an automated system to transfer user data, you're probably a good candidate for **synchronous integration**, which transfers XML data between eCollege and your SIS via secure HTTP transfer protocol.

Manual. If you manually transfer or upload user data (using either SFTP or single user creation through the Administrative Pages), **asynchronous integration** might be the place to start. Asynchronous integration allows you to submit delimited flat files (i.e., comma, tab, or pipe separated) or XML files through SFTP or through the Administrative Pages.

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Question 3

Does the person (people) creating users and enrolling students and faculty in courses have access to the eCollege Administrative Pages which allows them to (1) upload files, and (2) view the results?

Options

Yes, the individuals creating users/enrollments at our institution have Admin Pages access. With this access, you can upload a batch file (either a delimited file or an XML file) to the eCollege Administrative Pages. When you upload directly to the Admin Pages, the file you submit will be validated for formatting during the upload process and you'll be notified immediately if the file has formatting problems. You'll also be able to view and download reports on the data you upload.

No, individuals creating users/enrollments don't currently have access to the Admin Pages. In this case, you can upload a batch file (either a delimited file or an XML file) via SFTP, or you can use the web service-based synchronous integration option. You'll need to work with your Client Services representative to view the results of any processing or to assign an individual from your institution the necessary Administrative Pages roles/rights.

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Question 4

What type of file are you most comfortable working with—XML or a delimited file? (Hint: Delimited files have a .txt extension and can be easily created using a spreadsheet or text editor and include a fixed number of columns, each separated by a “delimiter” like a comma, a tab, or a pipe character.)

Options

We are comfortable using XML. XML files can be submitted using any of the API options—synchronous, SFTP, or upload through the Administrative Pages. One benefit of using XML files is that you can create custom user properties. Similarly, the XML option is the only integration that allows you to change or update a user’s login information after it has been submitted.

We prefer a delimited file format. Flat/delimited files can be submitted by SFTP, or they can be uploaded through the Administrative Pages. For most current users, submitting through delimited files represents no change to their current integration process.

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Question 5

Do you have technical staff who are comfortable writing to web services and coding to the IMS [Enterprise](#) XML standard?

Options

Yes, we have staff who are comfortable with web services. In this case, you are well-suited for **synchronous integration**. This option uses the open IMS Enterprise Specification v1.1 for user and enrollment information. Although it does provide extended integration options, it also requires development and coding effort on your end. Sample code, as well as troubleshooting help, will be provided for those who select this option.

No, we’d rather provide information in delimited file format or XML. Flat or delimited files—as well as batch XML files—can be submitted by SFTP, or they can be uploaded through the Administrative Pages.

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Question 6

All API solutions allow you to transfer core user properties (like first/middle/last name, etc.) to the eCollege database. Do you (or will you) have a need for custom or extended user properties? (Extended properties might include things like user program, user start date, campus location, user’s assigned advisor, military service, maiden name, etc.)

Options

Yes, we use (or will use) extended user properties. The delimited format requires the file to include a specific number of predefined data columns. As a result, it’s only possible to create extended user fields that are unique or specific to your institution using the XML data format.

No, all the information we need is included in the “core” user properties. If you don’t need to modify or add to the existing user data fields, you can send information in either format—delimited file format or as XML.

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Question 7

Are you happy with your current integration? That is, if possible, would you prefer no changes from what you're doing now?

Options

Yes, we're happy with our current integration process. In this case, you can continue to submit your data through the **asynchronous** process. You still have the option of submitting your batch file via Secure FTP, or you can use the new upload feature in the Administrative Pages, which provides file format validation upon upload. Now, however, you'll be able to view upload results with sorting and filtering tools (reports) in the Administrative Pages instead of having to read through large log text files.

We'd like to explore more options. The new, **synchronous integration** option allows you to create and update user information almost synchronously between the eCollege database and your SIS. **XML formatting** (either batch files or web services) also gives you the option of adding extended user properties to your integration efforts. Formatting your data using XML also gives you the option of changing a user's login information after the user has been created in the system; delimited file format does not allow this functionality.

Question 8

Would you want or need to send two or more different file types (XML-formatted AND delimited files)? For example, occasionally an institution may want to send a large delimited batch file during registration and then enroll single users in real-time (XML web services) as new registrations occur.

Options

We'll be sending our files in a single format. This is recommended. In this case, you can use any integration option—batch upload (delimited or XML file) via SFTP or the Administrative Pages, or synchronous integration using web services.

We will (or may) submit using different file formats. Although this practice is highly discouraged, you *can* submit a combination of both XML and delimited files. If you need to send both XML and delimited files, you **must** send the XML format to the web service and the delimited file over Secure FTP OR upload it through the Administrative Pages. Batch XML files (i.e., asynchronous XML files) and delimited files—both of which can be submitted via Secure FTP or through the Administrative Pages—end up in the same file location. As a result, you cannot submit both XML and delimited files via SFTP and/or Admin Pages without overwriting data or “confusing” the system.

Question 9

Do you ever need to change users' login IDs once the users have been created?

Options

Yes, we change login IDs. To change an existing user's login, you need an XML-based integration, either synchronous (web services), or batch XML upload via SFTP or through the Administrative Pages.

No, we don't change login IDs. In this case, you can use any integration option—batch upload (delimited or XML file) via SFTP or the Administrative Pages, or synchronous integration using web services. Remember, though, that should you ever need to change users' login information, you'll need an XML-based integration.

Question 10

*Will your data files include historical user information (**cumulative data**), only changes that have occurred since the last time the file was run (**incremental data**), or simply the current "state" of your SIS data (**snapshot data**)?*

Options

We will submit cumulative files. To submit cumulative files, you **must** use a **delimited file** option. XML data format (whether synchronous or asynchronous) cannot include cumulative records. Remember, too, that cumulative files include a high percentage of redundant and obsolete information and are the most prone to error due to improper ordering of information in the file. Cumulative files also take the longest time to process.

We will submit incremental files. Incremental files are the ideal and can be submitted through synchronous or asynchronous integration.

We will submit snapshot files. Snapshot files provide an "image" of the current state of your SIS (current users, enrollments, etc.). For example, you may run a snapshot file at the end of the day to verify that the user/enrollment information in your SIS is exactly the same as that in the eCollege system. Snapshot files are available with any file format and can be transmitted via any method and have no effect on processing time.

Question 11

Do you want to send data at regularly scheduled times (i.e., hourly, daily, every Monday and Friday, etc.)?

Options

No, we'd like to be able to update the SIS as soon as a change occurs.

Synchronous integration allows users and enrollments to be created, updated, and available in almost real-time. This type of integration is best-suited for frequent updates.

Yes, we'd like scheduled updates. If your student information records are updated periodically and on a scheduled basis, synchronous integration probably isn't critical. The **asynchronous** option allows users and enrollments to be created and updated quickly (within 24 hours), but results are not available in near-real time. Scheduled updates are possible using any integration method (asynchronous web service, SFTP, or Administrative Pages upload). The SFTP upload works best with less frequent updates.

Question 12

Approximately how big are the files you anticipate sending for the integration process?

Options

Larger than 3MB. SFTP is the best option for very large files, as it minimizes the possibility of the upload timing out (for extremely large files). Although there is not currently a file size limit via SFTP, remember that sending cumulative files dramatically increases file size and processing time.

Smaller than 3MB. If your files are smaller than 3MB, you can use any integration option.