

Data Synchronization of Student and Guardian Data

Introduction

SchoolMessenger Communicate synchronizes with thousands of its customers' data sources (i.e. SIS software accounts) on a daily basis. With decades of experience doing K-12 data integration work, the SchoolMessenger team is familiar with most of the common data sources found in the market. Your project manager may recommend a specific option for data synchronization based on prior customer experience, but regardless of the specific synchronization strategy employed, this guide will help you understand the basic process flow by which data is synchronized with your Communicate account.

This document is intended to familiarize you with the steps required for data synchronization and to give you a general overview of the additional options available at each step. There are more options than those mentioned here, and if you need guidance, reach out to your project manager or SchoolMessenger support for assistance.

The data synchronization process can be divided into three fundamental steps necessary for synchronizing data:

- Extract the necessary data elements from your database
- Format the data for the system as needed
- Encrypt and transfer the data into your account

Our teams have a wide range of experience integrating with many school software programs. For this reason, we strongly recommend that your database administrator works directly with SchoolMessenger to determine the best strategy for data synchronization prior to any actual configuration taking place.

I. Importing Student Schedule Data

Schools and districts routinely import demographic data into their SchoolMessenger Communicate account along with an individual's contact information. This allows users to selectively target certain groups of recipients. For example, if a user needs to contact all of the students at a single school in a district, the school associated with each student would be used to create the recipient list. The students' school affiliation is an example of demographic data which is imported along with contact information.

Student schedule data is another type of demographic data which can be used to target groups of students based on their class enrollment or specific subjects and courses that are taught. As with other types of demographic data, users may be restricted to viewing students who are enrolled only in specific classes. This is particularly useful if your district allows teachers to send notifications to their students.

This document covers the data export files you will need for importing student class schedule data as well as an optional data export file for creating restricted teacher accounts, allowing teachers to send messages to their students.

Important note: The option to import student schedule data is included in our SchoolMessenger Chat add-on module. Contact your sales representative for additional information.

Important note: After creating the data extracts described below, it is strongly recommended that you work with a SchoolMessenger support representative to ensure your account is properly configured and to test the automated daily imports of your data files. Under each of the columns, if there was a message for that destination type, there will be a checkmark icon to the right of the language section in which it was created.

A. Data Import Files

Student schedule data is imported using two separate data import files: a Section Data File and an Enrollment Data File. You will need to create these exports from your database.

A1. Section Data File

The section data file contains data describing the classes (sections) that are taught at each school. This file does not contain any student-specific information. The fields typically included in this file will be described in further detail in the Section Field Data section below.

A2. Enrollment Data File

The enrollment data file contains data which maps the students to the classes they are enrolled in. The contents of this file will be described in the Enrollment Field Data section below.

A3. Teacher User Data File (Optional)

The teacher user data file allows you to create teacher user accounts which restrict teachers to being able to contact the students who are enrolled in the classes they are teaching. You will only need to create this data file if you plan to allow teachers to access the system and send messages to their students.

B. Data File Format

The final format of the data file to be imported into your Communicate account must be an ASCII-encoded Comma Separated Values (CSV) file with a carriage return (CR) and line feed (LF) at the end of each record.

C. Section Field Data

Section data defines the attributes of each class (section) taught at each school. The most important fields are the section ID and the school at which that section takes place; the combination of section ID and school must be unique. You can think of section data as a complete list of every class offered by a school district. Each section should display as a separate record in the data file.

C1. Section Data Fields

Field Description	Data Format	Max Characters	Required	Notes
Staff / Teacher ID	Alphanumeric	255	Yes	If you plan to import teacher user account data and allow teachers to log into the system to send messages to their students, then this Staff / Teacher ID must match the Staff ID number used when creating teacher user accounts.
School ID	Alphanumeric	255	Yes	Should be the same values as those used in the student contact and demographic data import.
Section ID	Alphanumeric	255	Yes	Represents a unique class taught by a particular teacher. This value cannot be duplicated within a particular school location.
Period Number	Alphanumeric	255	Yes	
Course Name	Alphanumeric	255	Yes	Human-readable course name.
Instructor Name	Alphanumeric	255	No	Name of the teacher or course instructor.

Important note: The option to import student schedule data is included in our SchoolMessenger Chat add-on module. Contact your sales representative for additional information.

C2. Section Data File Sample

The following example shows a few lines of a representative section data file:

```
Staff ID,School ID#,Section#,Period,Course Name,Instructor
"10081","001","MATH345-1","1","Mathematics","Mr. Anderson"
"10083","314","PE980-3","3","Physical Education","Ms. Andrews"
"10080","423","MATH301-2","2","Mathematics","Mr. Henry"
"10024","227","SCI739-1","1","Science","Mrs. Robbins"
"001","ENG913-5","10038","5","English","Mr. Johnson"
```

D. Enrollment Field Data

Enrollment data links each student to their classes (sections) and only contains three fields. Each section that a student is enrolled in should display as a separate record in the data file.

D1. Enrollment Data Fields

Field Description	Data Format	Max Characters	Required	Notes
Student ID	Alphanumeric	255	Yes	Must match the student ID number used in the student contact and demographic data import.
School ID	Alphanumeric	255	Yes	Should be the same values as those used in the student contact and demographic data import.
Section ID	Alphanumeric	255	Yes	Represents a unique class taught by a particular teacher. This value cannot be duplicated within a particular school location.
Period Number	Alphanumeric	255	Yes	
Course Name	Alphanumeric	255	Yes	Human-readable course name.
Instructor Name	Alphanumeric	255	No	Name of the teacher or course instructor.

D2. Enrollment Data File Sample

The following example shows a few lines of a representative enrollment data file:

```
Student ID,School ID#,Section#,Period,Course Name,Instructor
"309482094","001","MATH345-1","1","Mathematics","Mr. Anderson"
"487598475","314","PE980-3","3","Physical Education","Ms. Andrews"
"93824729","423","MATH301-2","2","Mathematics","Mr. Henry"
"57646463","227","SCI739-1","1","Science","Mrs. Robbins"
"001","ENG913-5","10038","5","English","Mr. Johnson"
```

E. Teacher User Data

If you plan to allow teachers to access the system to send notifications to their classes, it will be necessary to create a special user import item that automatically creates the teacher accounts and restricts them to only those students who are enrolled in classes that the teacher instructs.

E1. Teacher User Data Fields

Field Description	Data Format	Max Characters	Required	Notes
Teacher ID	Alphanumeric		Yes	Must match the teacher ID value used in the section data file.
First Name	Alphanumeric		Yes	
Last Name	Alphanumeric		Yes	
User Name	Alphanumeric		Yes	This will typically be the first part of the user's email address.
Email Address	Alphanumeric	100	Yes	
Description	Alphanumeric			

E2. Teacher Data File Sample

The following example shows a few lines of a representative enrollment data file.

```
ID#,FirstName,LastName,UserName,Email,Description
"10081","Albert","Anderson","aanderson","aanderson@example.com","Elementary Teacher"
"10034","John","Smith","jsmith","jsmith@example.com","Middle School Teacher"
"10081","Mary","Thomas","mthomas","mthompson@example.com","Elementary Teacher"
"10034","Bill","Williams","bwilliams","bwilliams@example.com","High School Teacher"
"10083","Sally","Andrews","sandrews","sandrews@example.com","High School Teacher"
"10080","Tom","Henry","thenry","thenry@example.com","High School Teacher"
"10024","Margaret","Robins","mrobins","mrobinson@example.com","Middle School Teacher"
```

II. Importing Guardian Data

A. Step 1: Data Extraction

Most likely, the data you want to synchronize with your Communicate account resides in a database, although some contact data could simply be in the form of a spreadsheet that you maintain. This section is primarily concerned with extracting data from your database, but if you do have data you maintain in a spreadsheet, uploading it to the system will be very similar to uploading a file from a database export, as described in “Option 1: Export Data to a File” below.

Important note: For a list of fields to include in the extract, see “Appendix A: Data Fields To Export.”

A1. Common Methods For Providing Data

This section contains some of the most common methods used to make data available to Communicate.

A1a. Option 1: Export Data To A File

Using this method, you will create a file containing the data which will then be securely uploaded to the system. Most common database applications include a feature for exporting data. Often, these exports can also be scheduled, allowing data exports and synchronization to be automated. This can make the job of data synchronization much easier to maintain.

If you choose this option, please carefully review “Step 2: Format The Data” below for a description of the ideal exported data file format.

Please note that in the data transfer step, the location of the CSV file will need to be accessible by the Communicate Upload Utility. Also, the name of the extracted file needs to be the same name each day in order for the upload utility to locate the correct file. Most customers simply overwrite the old exports each day with a new export file.

Important note: The Communicate Upload Utility can be installed on the same computer where the exported files reside or can be on a different server that has access to a shared network directory containing the export files. In certain situations, the data could be sent to a Secure FTP server on the Communicate side, where the upload utility will also be located. See “Option 3: Secure FTP” under the “Step 3: Transfer the Data” section below for more details.

Important note: Scheduled or automated data file exports require synchronization between your export schedule, the upload utility's schedule, and your Repeating Broadcast start times (i.e. attendance notification start times). You should contact SchoolMessenger support before changing the data export schedule to determine if corresponding changes need to be applied to the Communicate import configurations, as is often the case.

A1b. Option 2: Direct Database Connectivity (ODBC)

If your database does not come with built-in export features, it may be possible to export the data using a query if the database is ODBC compliant. This technique requires knowledge of SQL as well as knowledge of the underlying schema of your database.

One technique to simplify using this method is to create a data view from your query. We have tools for safely reading the data view and converting it into a properly-formatted data file that will be securely transferred into your account.

For this solution to be successful, it is important to verify that an ODBC driver or other connection option is available for the host operating system prior to implementing this type of solution. Additionally, your database administrator must provide the connection information and any queries necessary to extract the required data. Furthermore, the database administrator must also be available for any testing and troubleshooting necessary to ensure the data synchronization is fully implemented and working properly.

B. Step 2: Format the Data

The final format of the data file to be imported into your Communicate account must be an ASCII-encoded Comma Separated Values (CSV) file with a carriage return (CR) and line feed (LF) at the end of each record. For best results, each field value should be encapsulated in double quotes to avoid any problems due to stray commas in the data field values themselves. There is no required field order, but the column order of the final, formatted data file should typically stay the same each time to avoid issues with the mapping of the imported data to Communicate fields. If new columns need to be added or the order rearranged, make sure to contact SchoolMessenger support so that the appropriate corresponding Import Field Mapping changes can be made on the Communicate side as well.

If the format of your original source file does not exactly match this description, don't worry. We have tools for handling almost any data file format imaginable.

There are also certain types of data that may require specific field formatting in order to be of use. Those types of specialized requirements are handled by Communicate using specially-designed formatting tools.

C. Step 3: Transfer the Data

Once the data is in the proper format, the file must be securely transferred into your Communicate account. To keep the system up to date so that it may deliver notifications to the proper recipients and destinations, Communicate must regularly import contact data. Typically, these uploads are scheduled to occur at the same time each day and can potentially be automated for ease of maintenance.

C1. Common Methods for Transferring Data

There are multiple methods by which this transfer can occur, but by far the most common method that we strongly encourage you to use is our Communicate Upload Utility.

C1a. Option 1: The Communicate Upload Utility

The Communicate Upload Utility is a proprietary Java application designed exclusively to facilitate the secure transfer of data between the customer's site and their hosted Communicate account. The application encrypts the data using 256-bit encryption and communicates using standard SSL / HTTPS on port 443.

This software may be installed in any of these locations:

- on the computer where the extracted data files are stored
- on a different machine that has access to a shared network directory where the extracted data files reside
- on a server

Once the application is able to access the export data file, it can be configured to perform an upload automatically each day.

Important note: The names of the extracted data files need to be the same each day for the upload utility to locate them. Most customers simply overwrite the old exports each day with a new export file.

Before the upload utility performs an upload, it compresses the data file to reduce the size of the transmission, resulting in dramatically faster uploads, particularly with large data files. If there are any network interruptions during transmission, it will retry in an effort to ensure the data is transferred. After the upload is complete, the upload utility verifies that the data was transferred successfully. Finally, the application creates detailed log files of each upload attempt, which can be useful in troubleshooting.

The Communicate support team will work with you to configure and test the upload utility once you have created your source data files.

Important note: Scheduled or automated data file exports require synchronization between your export schedule, the upload utility's schedule, and your Repeating Broadcast start times (i.e. attendance notification start times). You should contact SchoolMessenger support before changing the data export schedule to determine if corresponding changes will be required to the Communicate import configurations.

C1b. Option 2: Manual User Upload

For customers who cannot automate the creation of their source data files, or customers who wish to upload data from a spreadsheet that they manage themselves, browsing for CSV data files using the application's web interface and uploading them manually is another popular means of secure data transfer. Individual fields from the source file can be mapped to corresponding Communicate fields in an account. The settings are retained so that each subsequent upload of the same file simply requires the user to browse for the new file and upload it into their account.

Important note: To prevent data mapping issues, use the same column order in the file each time.

C1c. Option 3: Secure FTP

A small number of customers require that all data transfers to third-party vendors be handled via FTP. If this is a required policy, FTP can be used to transfer data to Communicate; however, there are certain security requirements that must be met.

- Only Secure FTP is supported; no unencrypted data transferred via plain text FTP will be accepted
- Authentication for Secure FTP transmission must be achieved using Key Pair Authentication; Username and Password authentication is not supported, as it is a less secure method of user account authentication

FTP transfers do not actually import data directly into your account. Once the data is transferred to Communicate, an additional processing step is required to import it into your account. There are no particular benefits to using FTP file transfers. FTP should only be used where policy dictates its use.

Appendix A: Data Fields To Export

This appendix contains the required and optional data fields which should be included in an export or data view for student, attendance, and staff data. Each table represents a separate data extraction. Additional or alternative fields can also be imported; however, you should confirm with SchoolMessenger before doing so. In addition to basic contact data, certain Communicate features may also require that other specific types of data be available.

A. Student Contact / Demographic Data Fields

Field Description	Data Format	Max Characters	Required	Notes
Student ID Number	Alphanumeric	255	Yes	Must be unique and unchanging for each student.
First Name	Alphanumeric	255	Yes	
Last Name	Alphanumeric	255	Yes	
Phone Number w/ Area Code	Alphanumeric	10	Yes	10 numeric digits. Can include any additional formatting characters, but those characters will be stripped during import.
School ID Number or Campus Code	Alphanumeric	255	Yes	
Home / Correspondence Language Code	Alphanumeric	255	No	If no language code is available, English will be the default for everyone.
Alternative Phone Number w/ Area Code	Alphanumeric	10	Yes	10 numeric digits. Can include any additional formatting characters, but those characters will be stripped during import.
Email Address	Alphanumeric	100		
Grade Level	Alphanumeric	255		
Gender	Alphanumeric	255		

B. Student Attendance Data Fields

Field Description	Data Format	Max Characters	Required	Notes
Student ID Number	Alphanumeric	255	Yes	Must match the student ID used when importing student contact / demographic data.
Absence Reason Code	Alphanumeric	N/A		Only required if you want the Communicate system to make calls based on the absence reason. If you intend to pre-filter the data, then the absence reason code is not required.
Absence Date	Alphanumeric	10		Standard date formatting of mm/dd/yyyy is preferred.
Periods Missed	Alphanumeric	255		Only required if you wish to include the absence periods in the message. Period attendance data can be presented as a separate record for each absence event, a single field in a single record for each student, or as multiple fields in a single record for each student.

C. Staff Contact / Demographic Data Fields (Optional)

Field Description	Data Format	Max Characters	Required	Notes
Staff ID Number	Alphanumeric	255	Yes	Must be unique and unchanging for each staff member and must not duplicate any ID numbers used for students.
Last Name	Alphanumeric	255	Yes	
First Name	Alphanumeric	255	Yes	
Phone Number w/ Area Code	Alphanumeric	10	Yes	10 numeric digits. Can include any additional formatting characters, but those characters will be stripped during import.
School (Location) ID Number or Campus Code	Alphanumeric	255	Yes	
Home / Correspondence Language Code	Alphanumeric	255		If no language code is available, English will be the default for everyone.
Position / Title Code	Alphanumeric	255		
Alternative Phone Number w/ Area Code	Alphanumeric	10	Yes	10 numeric digits. Can include any additional formatting characters, but those characters will be stripped during import.
Email Address	Alphanumeric	100		

Appendix B: Including Guardian Contact Data

Using the exports described in Appendix A, contact record data will be associated with each student. This is the most common data model used by our customers. Another method for including contact data is to maintain separate contact records for each student's guardians. This allows you to create separate contact preferences for each guardian.

A guardian data export is similar to a student data export; however, each guardian must be associated to one or more students through the pairing of the students' and guardians' unique ID values. This means you will need to:

- Ensure that each guardian record has a completely unique ID, different from all students or staff
- Provide data which connects each guardian to their respective students

A. Export Options

If you are able to provide the required data, there are three optional ways the data can be organized across the CSV files. See below for more.

A1. Option 1: Two Files

For this option, you will provide a file containing the student demographic data and another file containing the guardian association and contact data.

A1a. File One: Student Demographic Data Fields

Field Description	Data Format	Max Characters	Required	Notes
Student ID Number	Alphanumeric	255	Yes	Must be unique and unchanging for each student.
First Name	Alphanumeric	255	Yes	
Last Name	Alphanumeric	255	Yes	
Phone Number w/ Area Code	Alphanumeric	10	Yes	10 numeric digits. Can include any additional formatting characters, but those characters will be stripped during import.
School ID Number or Campus Code	Alphanumeric	255	Yes	
Home / Correspondence Language Code	Alphanumeric	255		If no language code is available, English will be the default for everyone.
Alternative Phone Number w/ Area Code	Alphanumeric	10		10 numeric digits. Can include any additional formatting characters, but those characters will be stripped during import.
Email Address	Alphanumeric	100		
Alternative Email Address	Alphanumeric	100		
Grade Level	Alphanumeric	255		

A1b. File Two: Guardian Demographic Data Fields

Field Description	Data Format	Max Characters	Required	Notes
Associated Student ID Number	Alphanumeric	255	Yes	Must be unique and unchanging for each student.
Guardian ID Number	Alphanumeric	255	Yes	Must be unique and unchanging for each guardian.
Guardian Category	Alphanumeric	255	Yes	Describes the guardian (i.e. Mother, Father, Grandmother, etc.).
First Name	Alphanumeric	255	Yes	
Last Name	Alphanumeric	255	Yes	
Phone Number w/ Area Code	Alphanumeric	10	Yes	10 numeric digits. Can include any additional formatting characters, but those characters will be stripped during import.
Home / Correspondence Language Code	Alphanumeric	255		If no language code is available, English will be the default for everyone.
Alternative Phone Number w/ Area Code	Alphanumeric	10		10 numeric digits. Can include any additional formatting characters, but those characters will be stripped during import.
Email Address	Alphanumeric	100		
Alternative Email Address	Alphanumeric	100		
Grade Level	Alphanumeric	255		

A2. Option 2: One File

For this method, a single file is used that contains one record per student and some set number of guardians. All relevant student demographic data fields and guardian contact data would be included in this one record.

Important note: This method is not commonly used.

A2a. One File - All-In-One Demographic Data Fields

Field Description	Data Format	Max Characters	Required	Notes
Student ID Number	Alphanumeric	255	Yes	Must be unique and unchanging for each student.
Student First Name	Alphanumeric	255	Yes	
Student Last Name	Alphanumeric	255	Yes	
Guardian 1 ID Number	Alphanumeric	255	Yes	Must be unique and unchanging for each guardian.
Guardian 1 First Name	Alphanumeric	255	Yes	
Guardian 1 Last Name	Alphanumeric	255	Yes	
Guardian 1 Category	Alphanumeric	255	Yes	Describes the guardian (i.e. Mother, Father, Grandmother, etc.).
Guardian 1 Phone Number w/ Area Code	Alphanumeric	10	Yes	10 numeric digits. Can include any additional formatting characters, but those characters will be stripped during import.
Guardian 1 Alternative Phone Number w/ Area Code	Alphanumeric	10		10 numeric digits. Can include any additional formatting characters, but those characters will be stripped during import.
Guardian 1 Email Address	Alphanumeric	100		
Guardian 1 Alternative Email Address	Alphanumeric	100		
**				

** - Repeat the guardian fields for each guardian the student has.

A3. Option 3: Three Files

For this option, you will provide one file containing the student demographic data, another file containing the guardian contact data, and one more file containing the student-guardian association data.

The data export for this method is almost identical to Option 1, except instead of having the associated student ID number included in the guardian data file, you will provide a third file with the following fields.

A3a. File 3: Student-Guardian Association Data

Field Description	Data Format	Max Characters	Required	Notes
Student ID Number	Alphanumeric	255	Yes	Must be unique and unchanging for each student.
Associated Guardian ID Number	Alphanumeric	255	Yes	Must be unique and unchanging for each guardian.
Guardian Category	Alphanumeric	255	Yes	Describes the guardian (i.e. Mother, Father, Grandmother, etc.).