



Data Synchronization Overview: Guardian Data Model

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Data Synchronization with Communicate

SchoolMessenger Communicate synchronizes data with thousands of customers daily, and we are 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.

Data Synchronization Overview

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

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

1. Extract the necessary data elements from your database.
2. Format the data for the system as needed.
3. Encrypt and transfer the data into your account.

Our support and project management has a wide range of experience integrating with various Student Information System (SIS) packages. For this reason, we strongly recommend that your database administrator work directly with Communicate support to determine the best strategy for data synchronization prior to any actual configuration taking place.

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, described in Option 1: Export Data to a File.



Note: For a list of fields to include in the extract, see [Appendix A: Data Fields to Export](#).

Common Methods for Providing Data

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

Option 1: Export Data to a File

Using this method, you will create a file containing the data that 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, potentially.

If you choose this option, please carefully review *Step 2: Format the Data* 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.

 **Note:** *The 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 the Option 3: Secure FTP under the Step 3: Transfer the Data section for more details.*

 **Important:** *Scheduled or automated data file exports require synchronization between your export schedule, the Upload Utility's schedule, and your Repeating Broadcast start times, such as Attendance notifications. You should contact 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.*

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 dataview from your query. We have tools for safely reading the dataview 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.

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 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.

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.

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*.

Option 1: The 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 on the computer where the extracted data files are stored or, if the extracted data files reside in a shared network directory, it can be installed on a different machine that has access to that directory, or 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.



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: *Scheduled or automated data file exports require synchronization between your export schedule, the Communicate Upload Utility's schedule, and your Repeating Broadcast start times, such as Attendance notifications. You should contact Support before changing the data export schedule to determine if corresponding changes will be required to the Communicate import configurations.*

Option 2: Manual User Upload

For customers who cannot automate the creation of their source data files or wish to upload data from a spreadsheet that they manage themselves instead, using the application's web interface to simply browse for their CSV data files and upload 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.



Note: *Using the same column order in the file each time is best practice to prevent mapping issues.*

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. User Name 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 Communicate before doing so.

In addition to basic contact data, certain Communicate features may also require that other specific types of data be available.

Student Contact/Demographic Data Fields

Field Description	Data Format	Max Characters	Required?	Notes
Student ID Number	Alphanumeric	255	<input checked="" type="checkbox"/>	Must be unique and unchanging for each student
First Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Last Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Phone Number w/ area code	Alphanumeric	10	<input checked="" type="checkbox"/>	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	<input checked="" type="checkbox"/>	
Home/Correspondence Language Code	Alphanumeric	255	<input type="checkbox"/>	If no language code is available English will be the default for everyone
Alternative Phone Number w/ area code	Alphanumeric	10	<input type="checkbox"/>	10 numeric digits, can include any additional formatting characters but those characters will be stripped during import
Email Address	Alphanumeric	100	<input type="checkbox"/>	
Grade Level	Alphanumeric	255	<input type="checkbox"/>	
Gender	Alphanumeric	255	<input type="checkbox"/>	

Student Attendance Data fields

Field Description	Data Format	Max Characters	Required?	Notes
Student ID Number	Alphanumeric	255	<input checked="" type="checkbox"/>	Must match the student ID used when importing student contact/demographic data
Absence Reason Code	Alphanumeric	N/A	<input type="checkbox"/>	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	<input type="checkbox"/>	Standard date formatting mm/dd/yyyy is preferred.
Periods Missed	Alphanumeric	255	<input type="checkbox"/>	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.

Staff Contact/Demographic Data Fields (optional)

Field Description	Data Format	Max Characters	Required?	Notes
Staff ID Number	Alphanumeric	255	<input checked="" type="checkbox"/>	Must be unique and unchanging for each staff member and must not duplicate any ID numbers used for students.
Last Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
First Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Phone Number w/ area code	Alphanumeric	10	<input checked="" type="checkbox"/>	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	<input checked="" type="checkbox"/>	
Home/Correspondence Language Code	Alphanumeric	255	<input type="checkbox"/>	If no language code is available English will be the default for everyone
Position/Title Code	Alphanumeric	255	<input type="checkbox"/>	
Alternative Phone Number w/ area code	Alphanumeric	10	<input type="checkbox"/>	10 numeric digits, can include any additional formatting characters but those characters will be stripped during import
Email Address	Alphanumeric	100	<input type="checkbox"/>	

Appendix B: Including Guardian Contact Data

Using the data exports described in Appendix A, contact record data will be associated with each student, the most common 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:

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

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.

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**.

Option 1: Two Files - File 1: Student Demographic Data Fields

Field Description	Data Format	Max Characters	Required?	Notes
Student ID Number	Alphanumeric	255	<input checked="" type="checkbox"/>	Must be unique and unchanging for each student
First Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Last Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Phone Number w/ area code	Alphanumeric	10	<input type="checkbox"/>	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	<input checked="" type="checkbox"/>	
Home/Correspondence Language Code	Alphanumeric	255	<input type="checkbox"/>	If no language code is available English will be the default for everyone
Alternative Phone Number w/ area code	Alphanumeric	10	<input type="checkbox"/>	10 numeric digits, can include any additional formatting characters but those characters will be stripped during import
Email Address	Alphanumeric	100	<input type="checkbox"/>	
Alternate Email Address	Alphanumeric	100	<input type="checkbox"/>	
Grade Level	Alphanumeric	255	<input type="checkbox"/>	

Option 1: Two Files - File 2: Guardian Demographic Data Fields

Field Description	Data Format	Max Characters	Required?	Notes
Associated Student ID Number	Alphanumeric	255	<input checked="" type="checkbox"/>	Must be unique and unchanging for each student
Guardian ID Number	Alphanumeric	255	<input checked="" type="checkbox"/>	Must be unique and unchanging for each guardian.
Guardian Category	Alphanumeric	255	<input checked="" type="checkbox"/>	Describes the guardian (for example Mother, Father, Grandmother, etc.)
First Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Last Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Phone Number w/ area code	Alphanumeric	10	<input checked="" type="checkbox"/>	10 numeric digits, can include any additional formatting characters but those characters will be stripped during import
Home/Correspondence Language Code	Alphanumeric	255	<input type="checkbox"/>	If no language code is available English will be the default for everyone
Alternative Phone Number w/ area code	Alphanumeric	10	<input type="checkbox"/>	10 numeric digits, can include any additional formatting characters but those characters will be stripped during import
Email Address	Alphanumeric	100	<input type="checkbox"/>	
Alternate Email Address	Alphanumeric	100	<input type="checkbox"/>	

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.

 **Note:** *This method is not commonly used.*

Option 2: One File - All-in-One Demographic Data Fields

Field Description	Data Format	Max Characters	Required?	Notes
Student ID Number	Alphanumeric	255	<input checked="" type="checkbox"/>	Must be unique and unchanging for each student
Student First Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Student Last Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Guardian 1 ID Number	Alphanumeric	255	<input checked="" type="checkbox"/>	Must be unique and unchanging for each guardian.
Guardian 1 First Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Guardian 1 Last Name	Alphanumeric	255	<input checked="" type="checkbox"/>	
Guardian Category	Alphanumeric	255	<input checked="" type="checkbox"/>	Describes the guardian (for example Mother, Father, Grandmother, etc.)
Guardian 1 Phone Number w/ area code	Alphanumeric	10	<input checked="" type="checkbox"/>	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	<input type="checkbox"/>	10 numeric digits, can include any additional formatting characters but those characters will be stripped during import
Guardian 1 Email Address	Alphanumeric	100	<input type="checkbox"/>	
Guardian 1 Alternate Email Address	Alphanumeric	100	<input type="checkbox"/>	
**				

**With the guardian contact information pattern repeating for as many guardians as the student has.

Option 3: Three Files

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

This 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.

File 3: Student-Guardian Association Data Fields

Field Description	Data Format	Max Characters	Required?	Notes
Student ID Number	Alphanumeric	255	<input checked="" type="checkbox"/>	Must be unique and unchanging for each student.
Associated Guardian ID Number	Alphanumeric	255	<input checked="" type="checkbox"/>	Must be unique and unchanging for each guardian.
Guardian Category	Alphanumeric	255	<input checked="" type="checkbox"/>	Describes the guardian (for example Mother, Father, Grandmother, etc.)

Questions?

If you have any questions regarding the above, please contact support.

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