

TouchNet Integration with Banner Connect 6

Host Integration Guide
For Users of Banner by Ellucian
(TouchNet DataCenter Installations)

August 2012

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About this Guide

TouchNet Integration with Banner Connect 6 is for the administrator of TouchNet U.Commerce solutions with the Banner by Ellucian student system.

TouchNet Integration with Banner Connect 6 in the TouchNet DataCenter is for the administrator whose TouchNet U.Commerce solution includes the Banner Connect module and is hosted in the TouchNet DataCenter.

In this guide, we assume that the reader has prior knowledge of software operations, host systems, web technologies and concepts, database management, and the specific database software used. This guide does not explain how to use operating systems on which your software may work, or specifics of any host system.

Please visit the TouchNet web site for the latest releases, updates, and information about this product.

To Contact Client Services

For technical assistance, continuing customer support, or other questions, contact us at:

TouchNet Client Services is available Monday through Friday between 7:00 a.m. and 7:00 p.m. Central Time. Extended support hours are available by agreement with TouchNet.

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Web site:	www.touchnet.com/support
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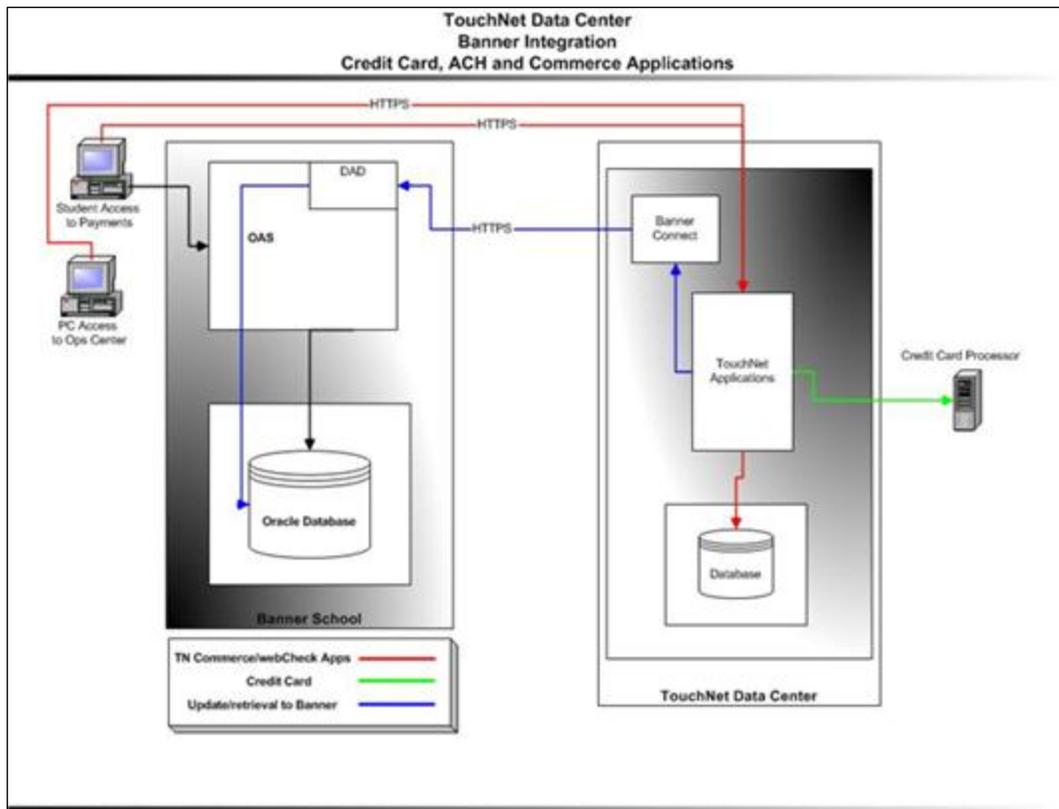
1.0 Host Integration Core Concepts

Host integration is the process of connecting your TouchNet web applications to data in your host systems. For Banner users, this is accomplished through TouchNet's Banner Connect module in the TouchNet DataCenter and through stored procedures loaded on your Banner system.

Transactions defined in your TouchNet Commerce web application send data to your host system and retrieve data from it. The web application uses data in the standard XML format; your host system, however, does not store data in this format. On receiving a transaction request, the Banner Connect module does these things:

- Transforms the data, if needed, from its given XML format to the XML format used by Banner Connect.
- Matches the transaction request to the corresponding stored procedure.
- Executes the correct stored procedure with the required input data.

The stored procedure returns response data in the XML format required by the application. Banner Connect passes the response data back to the application through the Transaction Manager component of Payment Gateway.



About the Banner Connect Module

In your TouchNet Solution, the Banner Connect module uses stored procedures to connect Payment Gateway's transaction processing component to the data stored in your Banner system. For any transaction request from your TouchNet Solution, Banner Connect contains the logic to run the correct stored procedure for data retrieval or update in your host system.

The Banner Connect module requires stored procedures, delivered with Banner Connect, to be installed in your Banner database. The Banner Connect module matches each transaction request to the correct stored procedure, then passes the data back in a standard XML format.

Banner Connect is one of TouchNet's JHost modules. These are Java-based modules that contain logic for integration with databases or host systems, and that connect to the Transaction Manager component within TouchNet Payment Gateway.

Note: The typical implementation connects the Banner Connect module to the Transaction Manager component internal to Payment Gateway.

The Banner Connect module requires stored procedures to be installed in your Banner database. The Banner Connect module is installed in the TouchNet DataCenter. It matches each transaction request to the correct stored procedure, then passes the data back in a standard XML format.

About the TouchNet Commerce Interface

The TouchNet Commerce Interface installed on your Banner system consists of packages of stored procedures. You load only those packages required for your TouchNet Commerce solutions.

Transactions in the TouchNet Commerce solutions, such as TouchNet Cashiering or TouchNet Bill + Payment Suite, correspond to stored procedures in the TouchNet Commerce Interface. Procedures in the TouchNet Commerce Interface provide functionality to:

- Validate Student ID and PIN and retrieve general student data.
- Validate that a PIDM and student ID and PIN belong to the same user.
- Validate card and amount information, then apply payments to accounts.
- Perform account balance inquiry either by term or with all detail.
- For TouchNet Commerce solutions that work with Banner Finance, update tables that, during the course of normal Banner processes (and if you use Banner Finance), will ensure the General Ledger tables are updated.

2.0 Banner Connect Setup Details

Much of your implementation is performed by TouchNet in the TouchNet DataCenter. This and the following chapter describe the setup that must be completed at your school.

Note: Details of your implementation can vary from those described here, depending on your existing system setup and administrative preferences. Ask your TouchNet representative for assistance or direction with setup steps that must be customized for you.

Note on Firewall Software

Some firewall software products that include protocol analysis, validating packet data against known protocols, may not validate TouchNet data. When such firewall software is used, you may experience difficulty or inability to communicate and update data passed by TouchNet software.

TouchNet recommends that you exercise care in your choice of firewall software. When you test your critical systems as part of a firewall change or upgrade, be sure to include tests that confirm the continued system performance of TouchNet solutions and data passed through TouchNet solutions.

Note on Required Software

The following components are required on the server where you will place the Banner Connect files and from which you will run the Stored Procedures Utility:

- Banner Connect requires the Java SE Development Kit (JDK) at a minimum of version 1.6.0, available from Sun® Microsystems.
- JDBC driver file corresponding to the Banner database version. You will copy this file to the required location in a later step.

Step 1: Create the Database User

You must create a user for your Banner database and grant this user permission to create a type:

```
GRANT CREATE TYPE TO TOUCHNET
```

This user is typically named **TOUCHNET** in most implementations. (TouchNet instructions and documents, including this one, may assume that this database user is named **TOUCHNET**.)

Important! If you are upgrading and had previously created the TOUCHNET user, make sure that this user has been granted permission to create a type.

Note: This document assumes that you are creating the **TOUCHNET** user as shown here. If you create a different user, you must use that username throughout the rest of the installation process.

Note: An example script is provided for you.

- Windows users, locate it at:

```
\touchnet\hostint\bannerconnect\utils\bannerconnect_example_create_user.sql
```

- Solaris users, locate the script at:

```
.../touchnet/hostint/bannerconnect/utils/dbscripts/bannerconnect_example_create_user.sql.
```

Step 2: Extract Files

TouchNet will provide you the *tn-bc-hostedsolutions.zip* file (for Windows users) or the *tn-bc-hostedsolutions.tar.gz* file (for Solaris users).

Extract the contents of the file. You can extract the files to any location on your system.

The extracted contents include this directory structure:

```
\bannerconnect\bannerconnect.prp
\bannerconnect\bcsputility.jar
\bannerconnect\commons-logging.jar
\bannerconnect\jdbc
\bannerconnect\log4j.jar
\bannerconnect\log4j.xml
\bannerconnect\util-logging.jar
\bannerconnect\utils\dbscripts\*.sql
\bannerconnect\utils\bannerconnect_example_create_user.sql
\bannerconnect\INDEXES.txt
```

Step 3: Copy Your JDBC Driver

Banner Connect requires the correct JDBC driver for your Banner database version on the server where Banner Connect is installed.

Copy your Oracle JDBC driver (*ojdbc6.jar*) to the extracted *\bannerconnect\jdbc* folder.

Note: Your Oracle installation includes JDBC drivers in the *ORACLE_HOME\jdbc* directory. If you update your Oracle database, also update your JDBC driver to the one packaged with the new database. If the file name delivered by Oracle has changed, rename the JAR file to *ojdbc6.jar* after placing it into Banner Connect's *jdbc* folder. This will ensure that the file is correctly picked up from the classpath.

Step 4: Set URL Value in the Properties File

Follow these steps to specify the URL to your database in the *bannerconnect.prp* file.

- 1 Use a text editor to open the *\bannerconnect\bannerconnect.prp* file.
- 2 Locate this property, which configures connectivity to your database.

```
URL=jdbc:oracle:thin:@[SERVER]:1521:[SID]
```

- 3 Modify the JDBC URL to include the server name and SID used when connecting to the database. (Replace brackets and instructions with your values.)
- 4 Save and close the file.

Step 5: Editing the webcheck Package (for webCheck Users Only)

If you use TouchNet webCheck, you must complete the following steps before you install the **webcheck** package.

- 1 In a text editor, open the *webcheck.sql* script. This file is in the following location:
 - **For Windows users:** `\touchnet\hostint\bannerconnect\utils\dbscripts`
 - **For Solaris users:** `.../touchnet/hostint/bannerconnect/utils/dbscripts`

- 2 In the script, locate the following line:

```
return_full_amount_due CONSTANT VARCHAR2(1) := 'N';
```

- If `return_full_amount_due` is set to 'N' (as shown), Banner will return the amount due only for the selected term. The payer will be forced to select a term.
- If the value is set to 'Y', Banner will return the current balance due, ignoring any term considerations.

- 3 Save and close the file.

With the `return_full_amount_due` value set to 'N', the `p_wcpayment` procedure assumes that the payment is against the current term, and the `p_wcpayment_term` procedure forces the student to select a term.

With the value set to Y, both the `p_wcpayment` and `p_wcpayment_term` procedures return the current balance, ignoring term considerations.

Step 6: Run Required Grant

Before installing the stored procedures, run the following grant as SYS:

```
GRANT EXECUTE ON dbms_crypto TO TOUCHNET
```

If you neglect to run the grant, you will be prompted to run it before your installation of stored procedures can be completed. Once you run the grant, you do not need to run it again for future Banner Connect upgrades, however, there are no adverse effects if you run it more than once.

Step 7: Install Stored Procedures

Follow these steps to run the Banner Connect Stored Procedures Utility, which installs your required stored procedures.

Note: You will need to know your Banner database SYSTEM password to complete the installation.

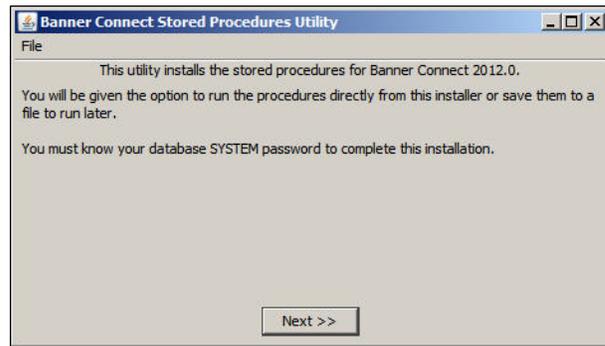
- 1 From the `\bannerconnect` directory you extracted in the previous steps, run the `bcsputility.jar` file. To do this, right-click on the `bcsputility.jar` file, choose Open With, and select your version of Java. The installer will start.

Note: If you need to run the utility from a command line, use this command:

```
$JAVA_HOME/bin/java -jar bcsputility.jar
```

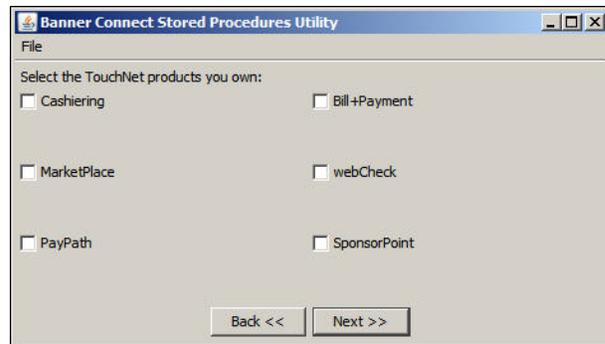
where `JAVA_HOME` is the location of the Java SDK (JDK).

The utility opens. Click Next:



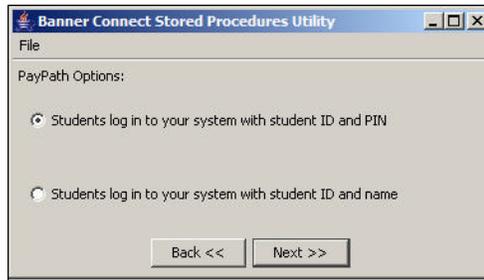
- 2 Select the TouchNet products you are licensed to use, then click Next.

Note: Choosing products you are not licensed for will not enable those products, but stored procedures that you do not need will be installed on your system.

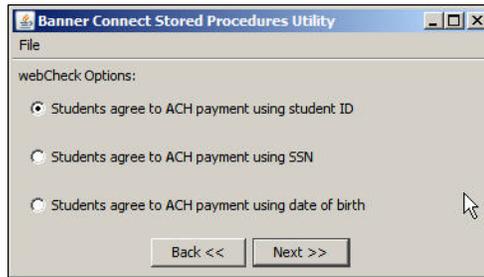


The next few installer screens prompt you with options for the products that you checked as licensed. You will not see prompts for products you did not select.

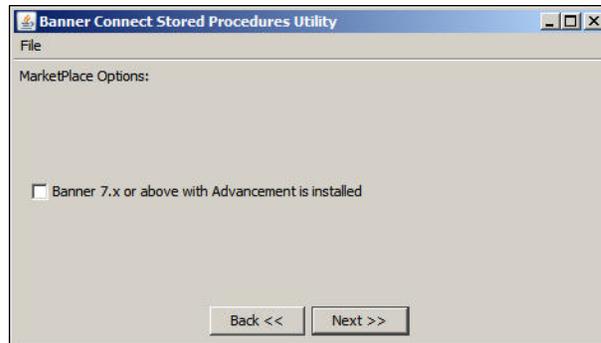
- 3 **If you selected PayPath:** Select the option that describes how students log into your Banner student system. Click Next.



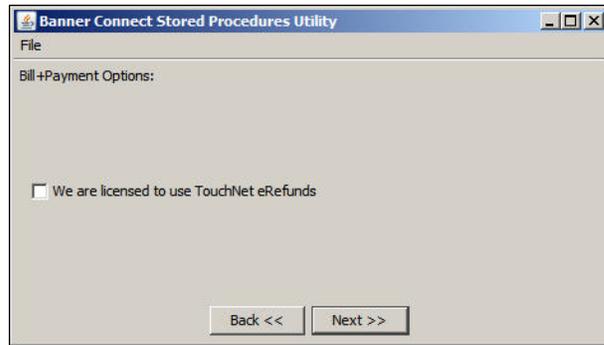
- 4 **If you selected webCheck:** Select the option that describes how students log into your Banner student system. Click Next.



- 5 **If you selected Marketplace:** Mark the checkbox only if you are using Banner 7.x with Advancement.



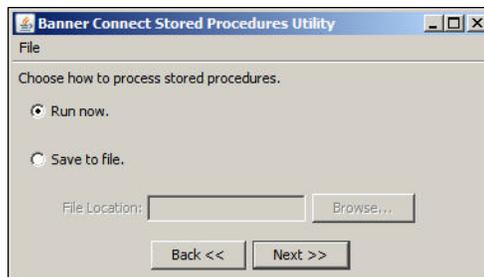
- 6 **If you selected Bill + Payment:** Mark the checkboxes that describe your use of Bill + Payment:
- If you are licensed for TouchNet eRefunds, mark its checkbox.



- 7 Enter the DAD user name used in Banner Self-Service. The default setting is WWW_USER. If your Banner Self-Service username is different, enter it here. Click Next.



- 8 Select an option for installing stored procedures.
- If you choose “Run Now,” click Next.
 - If you choose “Save to file,” click the Browse button to navigate to the directory where you want to save the file. You can choose any filename to save the file, but it must have the **.sql** extension. The file will be saved as a SQL script, and you will run the script on your Oracle database after the installation utility completes.
- After you select an option and specify either the executable or file location, click Next.



- 9 Enter your Banner database SYSTEM password. Click Next.



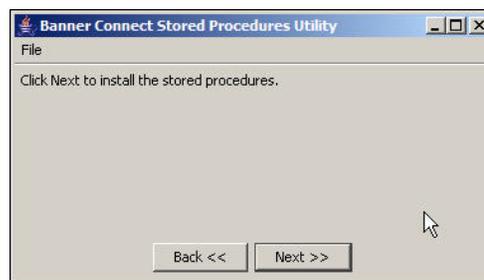
- 10 Enter the password for your TOUCHNET user.

Note: If you created a different username in "Banner Connect Setup Details" on page 7, enter both the username and its password.)

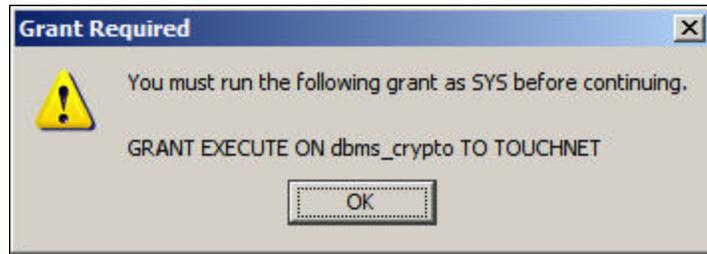
Click Next.



- 11 Your selections are complete. Click Next to install the stored procedures. If you chose "Run Now," the stored procedures will be installed. If you chose "Save to file," the file will be created.



- 12 If you receive the following message, you must run the grant shown before you can continue with the installation. (See page 7 for more details.)



13 For webCheck users: The following message may appear:

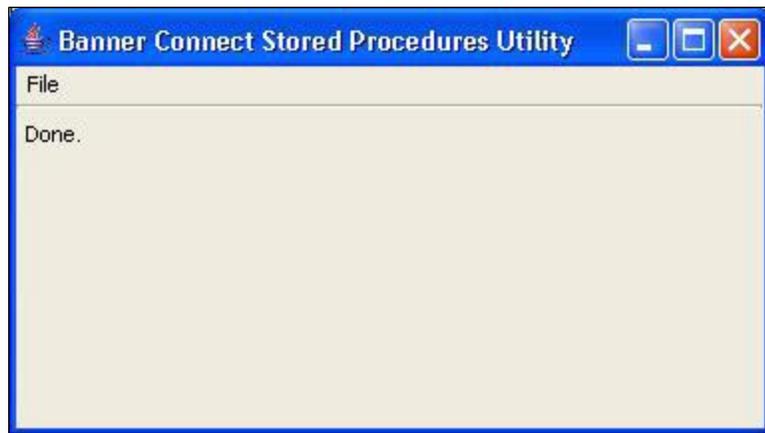


If you receive this message, the installer will successfully complete, but you must run the statement shown in the message after you finish the installation. Make a note of the required statement so that you can run it later, then click OK.

You may also receive an error if you have incorrectly entered a database username or password. If this happens, close the installer and restart it.

For any other errors, please contact TouchNet Client Services.

14 If you selected "Run Now": Your stored procedure installation is complete. Close the installation utility.

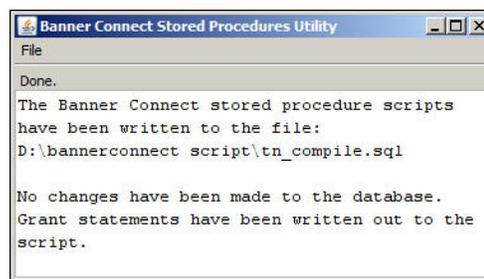


- 15 webCheck users:** if you received the “Failed to grant execute permissions” message during installation, run the statement shown in that message on your Banner database. The statement is:

```
GRANT EXECUTE ON [username].webcheck to [Self-Service
username]
```

where [username] and [Self-Service username] match your values used in the installer screens. The username is typically **TOUCHNET**, and the Self-Service username is typically **WWW_USER**.

- 16 If you selected “Save to file”:** the final screen shows the file location for the SQL file that you saved. Note the file name and location.



- 17** Close the installer, then use SQL*Plus to run your saved SQL script. When you run the script, you will be prompted for:

- The SID to the database.
- The SYSTEM password.
- The TOUCHNET user’s password.

Note: You must run the generated script against the same Banner database that you specified when you entered your installer settings. Do not attempt to run the script against a different Banner database. If you must install stored procedures to more than one database (for example, test and production), run the Stored Procedures Utility

again, specifying the database where you will install the stored procedures.

About the Utility Log Files

When you run the Banner Connect Stored Procedures Utility, it generates a log file that can be used for troubleshooting as needed.

- The *scriptoutput.log* file is created in the same directory as your *bcsputility.jar* file.
- If you choose "Save to file," then when you run the generated file later, the SQL*Plus *origcompileoutput.lst* log file is also created. It is located in the directory from which you ran the generated file.

Step 8: Send Setup Values to TouchNet

TouchNet will need the following values to complete your installation. Contact your implementation specialist to give the following values to TouchNet:

- **URL for the application server.** This is the URL for the application server for your self-service product. For example:

```
https://oraclegateway.school.edu/pls/TNCOMMERCE
```

Note: For security, this URL is required to use https.

- **GTVSDAX_EXTERNAL_CODE value.** This is the alphanumeric string (maximum length of 15 characters) used by the database to verify that a procedure call is coming from Banner Connect. You will insert this same value into GTVSDAX (see "All Users: Required User Verification Setup" on page 19).
- **Verification type.** If you are licensed for TouchNet's webCheck software, choose from the available options on how to verify the last four digits of the user's ID number:
 - **N**, if verification of the last four digits will only be on the spriden_id for the current record (change_ind is null).
 - **A**, if verification of the last four digits will be against all spriden_id regardless of status. This is the default option.
 - **S**, if verification of the last four digits will be against the SPBPERS on the SPBPERS_SSN or SPBPERS_ITIN.

Optional: Create Table Indexes as Desired

For better performance for Oracle Cost-Based queries, TouchNet recommends that your institution consider creating the table indexes shown below. Index creation is optional. Your institution must determine if the creation of additional indexes for performance outweighs the resources used by tablespace size.

Important! Do not duplicate indexes. Before creating indexes, verify that the tables and columns listed below are not already indexed.

TBRACCD Table

```
CREATE INDEX TAISMGR.TBRACCD_TN_EREFUNDSUM
ON TAISMGR.TBRACCD (TBRACCD_DETAIL_CODE, TBRACCD_TERM_CODE)
```

Note: Use this index only if your school uses eRefunds within TouchNet Bill + Payment.

TBRDEPO Table

```
CREATE INDEX TAISMGR.TBRDEPO_TN_TRM_SUM
ON TAISMGR.TBRDEPO (TBRDEPO_PIDM, TBRDEPO_TERM_CODE)
```

TBRMEMO Table

```
CREATE INDEX TAISMGR.TBRMEMO_TN_TRM_SUM
ON TAISMGR.TBRMEMO (TBRMEMO_PIDM, TBRMEMO_TERM_CODE)
```

Note: The indexes on TBRDEPO and TBRMEMO were determined from queries based on WHERE clauses like this:

```
WHERE tbrdepo_pidm = :pidm AND tbrdepo_term_code = :term_code
```


3.0 Required Setup in the Banner Database

Note: This chapter is for new Banner Connect users. If you are upgrading from a previous version, you should have already completed the setup in this chapter. Upgrade users may want to doublecheck that these steps are completed; all new users must complete these steps.

All users of TouchNet solutions must have entries in the Banner database related to user verification. This allows the Banner database to recognize Banner Connect as a valid user.

TouchNet Bill + Payment Suite users should also follow the stepsBanner:tables, adding entries to in this section to add entries related to e-mail notification. All users should add receipt printer entries; Banner requires these entries though an actual printer may not be used.

3.1 All Users: Required User Verification Setup

All users of TouchNet solutions must add a row to GTVSDAX that validates the user as a Banner Connect user. Enter the following values:

GTVSDAX_EXTERNAL_CODE = The code you enter here must match a value set up for you in the DataCenter; you will decide what this value is, enter it in GTVSDAX, and provide it to TouchNet during your implementation. Note that the value is case sensitive and has a maximum length of 15 characters.

GTVSDAX_INTERNAL_CODE = ENDUSER

GTVSDAX_INTERNAL_CODE_GROUP = TOUCHNET

GTVSDAX_DESC = [Enter your own wording, for example, End User Validation]

3.2 Bill+Payment: Set Up E-mail Notification

Users of TouchNet Bill + Payment (formerly TSA), which sends automatic e-mail messages, must make sure there is a valid e-mail address for the student. Your setup in the Crosswalk Validation Form (GTVSDAX) depends on whether you use a single preferred address or an address hierarchy as the source for electronic mailing.

Changes to GTVSDAX if Using a Single Preferred Address

If your institution uses a single preferred address as the source for electronic mailing (with the GOREMAL_PREFERRED_IND entry set to 'Y' in the GOREMAL table), add the following entry to the GTVSDAX table:

```
GTVSDAX_INTERNAL_CODE_GROUP= ADDRESS
GTVSDAX_INTERNAL_CODE = TEAH
GTVSDAX_EXTERNAL_CODE = PREF
GTVSDAX_INTERNAL_CODE_SEQNO=01
GTVSDAX_DESC = TOUCHNET EMAIL ADDRESS HIERARCHY
GTVSDAX_ACTIVITY_DATE (defaults to system date)
```

Changes to GTVSDAX if Using An Address Hierarchy

If your institution uses an address hierarchy, in which several GOREMAL_EMAL_CODE entries are used to determine which e-mail address receives electronic mailings, modify the GTVSDAX table with a new row for each code to be used, in the order you want the code to be considered.

Follow the entry format shown here. You can add as many rows as you need. The following example shows a hierarchy with two entries.

Entry one

```
GTVSDAX_INTERNAL_CODE_GROUP= ADDRESS
GTVSDAX_INTERNAL_CODE = TEAH
GTVSDAX_EXTERNAL_CODE = GOREMAL_EMAL_CODE (Enter the
GOREMAL code to be used first in the hierarchy.)
GTVSDAX_INTERNAL_CODE_SEQNO=01
GTVSDAX_DESC = TOUCHNET EMAIL ADDRESS HIERARCHY
GTVSDAX_ACTIVITY_DATE (defaults to system date.)
```

Entry two

```
GTVSDAX_INTERNAL_CODE_GROUP= ADDRESS
GTVSDAX_INTERNAL_CODE = TEAH
GTVSDAX_EXTERNAL_CODE = GOREMAL_EMAL_CODE (Enter the
GOREMAL code to be used second in the hierarchy.)
GTVSDAX_INTERNAL_CODE_SEQNO=02
GTVSDAX_DESC = TOUCHNET EMAIL ADDRESS HIERARCHY
GTVSDAX_ACTIVITY_DATE (defaults to system date.)
```

3.3 Specify the Receipt Printer

Verify that the following entry exists in the Crosswalk Validation Form (GTVSDAX). Add the entry if it is not already there. Although an actual printer may not be used, Banner requires that these values be populated.

GTVSDAX_INTERNAL_CODE_GROUP=ELECTRONICPAYMENT

GTVSDAX_INTERNAL_CODE=PRINTERDEF

GTVSDAX_EXTERNAL_CODE=(Specify a printer or enter DEFAULT. The value entered here is used to update tbrcrp_printer in the tbrcrp table.)

GTVSDAX_DESC=Printer definition for TouchNet Commerce.

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