

Integration Solutions Banner Intcomp Release Guide

June 2006
Release 7.2



SUNGARD HIGHER EDUCATION

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Banner Intcomp

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Section 1 Introduction

The SunGard Higher Education software changes and problem resolutions described in this release guide are delivered with the 7.2 release of Banner Intcomp.

Banner Intcomp comprises the Banner product components that support data synchronization and messaging with third-party components. Specifically, it includes the Banner components that support Integration for e-Learning, which includes integration between Banner, Luminis, WebCT, Blackboard, and Nuventive TracDat and iWebfolio.

Dependencies for Implementing the Banner Intcomp 7.2

For Banner Intcomp release requirements for previous versions, refer to *Integration Solution Dependencies*, a document available from the SunGard Higher Education Customer Support Center.

Required Products

Your institution must be licensed for the following products that support Banner Intcomp Release 7.2:

- Banner General 7.3.1
- Banner Student 7.3
- Learning Management Gateway 3.1

Supported Optional Products

The following optional Banner products are supported by Banner Intcomp Release 7.2:

- Banner Finance 7.2
- Banner Advancement 7.2
- Banner HR 7.2

Related Documentation

You should refer to the following related documentation during the installation and configuration of Banner Integration for e-Learning. Your success with the installation will depend on it.

- *Integration for e-Learning Banner Administration Guide* - describes implementing the e-Learning product, ensuring data synchronization and successful event and report processing.
- *Integration for e-Learning Banner Installation Guide* – describes how to install and configure Banner and Luminis components with partner systems.
- *LMB Installation and Administration Guide* – describes how to install and set up the Luminis Message Broker, the software component used to transfer information between Banner and WebCT systems.
- *Integration for e-Learning Banner Message Reference Guide* – defines the business processes and XML messages that are part of Integration for e-Learning Version 3.1.
- *Integration Solutions Interdependencies* document – contains all of the hardware and software dependencies required for installing Integration for e-Learning.
- Release and upgrade guides for various Banner baseline, self-service Web products, and Integration Technologies component middleware– describe how to install and implement the products used with the Integration for e-Learning. The specific manuals you use depend on which products your institution is using. You can find the latest documentation for this software on the Customer Support Center under the product name.
- Luminis platform documentation – describes installation and configuration of the Luminis products.
- *Data Integration SDK Protocol IMS Specification* – provides guidelines for developing adapters to support the integration with products such as Luminis Platform that use the SunGard Higher Education Integration Technologies. This document was known as *LDIS-P Protocol Specification 2.0*.
- WebCT or Blackboard documentation – describes installation and configuration of the WebCT product. Find the most current WebCT documentation for Integration for e-Learning on the WebCT Web site.

Summary of Changes in This Release

This Banner Intcomp 7.2 release guide features the following information:

- New method for LDI Event Processing
- Support for Multi Institutional Functionality (MIF)
- Role calculation enhancement for person roles
- Learning Management Gateway 3.1
- Miscellaneous enhancement and Requests for Product Enhancements (RPEs)
- Resolutions for problems found in Banner Intcomp 7.1
- Objects: Processes, Seed Data, database proceures, and DBA installation scripts

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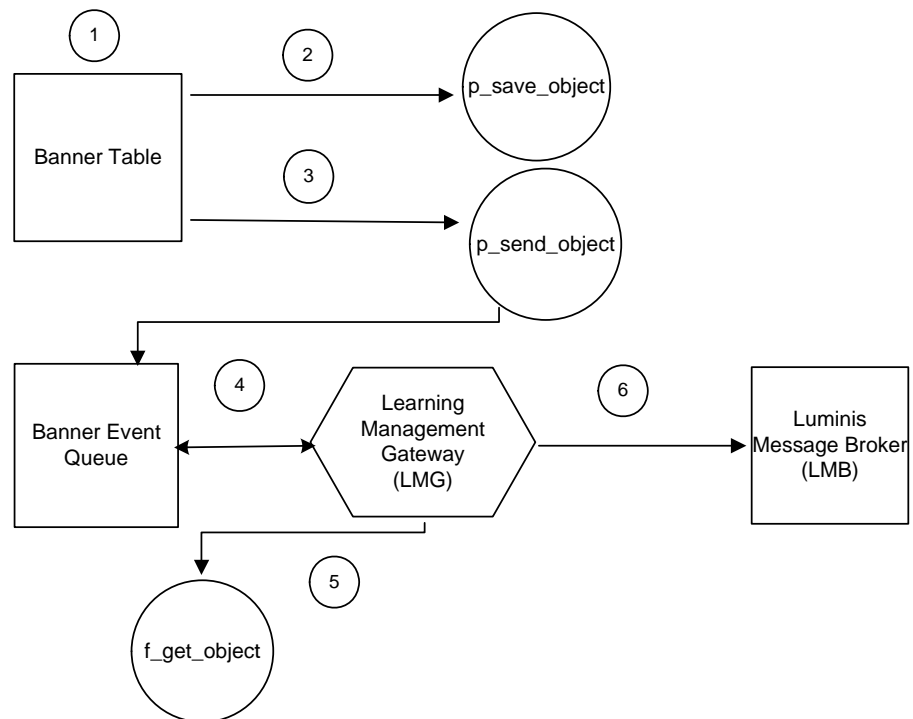
Section 2 Event Processing

This section details changes in the architecture for the processing between Banner Events and the Luminis Platform with the release of Banner Intcomp 7.2.

Full event data is no longer placed into the Banner Event Queue tables and forms and instead, a simple, generic set of event data is used. With the release of Intcomp 7.2 a smaller set of seed data is used. All events share the same event parameters. An event need not implement all the parameters, just those required for event processing.

The Event Queue is now used to store event key data that are picked up by the Learning Management Gateway (LMG). LMG then calls Banner back to retrieve the full event details. As a consequence, the majority of processing has been moved out to the callback, thereby improving performance for all Banner users.

The following summarizes the processing steps for the new Banner Intcomp architecture:



1. Creation, revision, or deletion occurs on a Banner table. The data changed are significant to Integration for e-Learning.
2. Row level trigger calls Intcomp p_save_object (Example: p_save_person) to save event key data.

3. Statement level Trigger calls Intcomp p_send_object procedure (Example: p_send_person) to save event header data in Event Queue.
4. LMG polls Event Queue for new events and retrieves new event headers.
5. LMG calls Intcomp f_get_object function (Example: f_get_person) with event header. If event is publishable, the function returns full event details.
6. LMG generates XML from event details and sends to LMB.

Publication Logic

All publication logic has been moved to the callback to improve performance. Therefore, some events will be placed in the event queue which will not in fact ever be published. For example, LDIPERSON events will only ever be sent to LMB if the person has a valid role. Since the check to see if the person has a valid role is done in the f_get_person callback, then events for non-eligible persons could and will be placed in the event queue. LMG flags such events with a status code of 3, "Incomplete Event" and does not process them. These events can be safely ignored and do not hinder event handling.

Seed Data

Full event data are no longer placed into the event queue and instead a simple, generic set of event data is utilized. You will note in the following table that all events on GOREQNM are a member of the LDIEVENT event group.

<i>GOREQPG_EQPG_CODE</i>	<i>GOREQPG_EQPM_CODE</i>
LDIEVENT	EVENTTYPE
LDIEVENT	DATATYPE
LDIEVENT	SOURCEDID1
LDIEVENT	SOURCEDID2
LDIEVENT	RECSTATUS
LDIEVENT	PARAMETER1
LDIEVENT	PARAMETER2

Section 3 Support for Multi Institutional Functionality (MIF)

Intcomp 7.2 has been enhanced to support MIF when it is implemented in Banner using VPD. This section describes how Banner Intcomp 7.2 supports MIF. With VPD, data in Banner can be partitioned by institution at a multi-institution facility.

MIF impacts Banner Intcomp in two ways:

- As defined by the LDIS-P Protocol, Banner Intcomp publishes unique event objects. The approach taken to enforce uniqueness and maintain support of the protocol, is to include the VPDI code in the event object key (sourcedid id) when the key data are derived from a table with a VPD policy. Refer to the latest *Data Integration SDK Protocol IMS Specification* for details and examples.
- When an event object contains VPD data which is child data of non-VPD data, then Banner Intcomp must publish all child event data for all institutions to conform to the LDIS-P Protocol. When this case exists, all data is selected from all institutions.

Intcomp VPD Object Configuration

In a VPD environment, LDIS objects (Person, Section, Term, etc.) can fall into one of three configurations. The configuration of each object is specific to the VPD configuration of the instance. The following table outlines the configurations.

<i>Type</i>	<i>Description</i>
A	Both object key and data contain VPD data
D	Object key is not VPD but object contains VPD data
N	Neither the object key or data contains VPD data

Setting Up MIF

INTCOMP supports VPD via four new set up rules located on GTVSDAX:

<i>Internal Code</i>	<i>Description</i>
LDIVPDCONF	Determines the VPD configuration of each Intcomp object created during the installation. It does this by looking at the configurations stored in GTVSDAX.
LDIVPDRole	Determines for Banner Intcomp which role calculations include VPD data and to be published with role associations
LDINSTEx	Excludes GTVVPDI institution codes that you indicate in the GTVSDAX record so that you don't include them in Integration for e-Learning data processing.

For detailed descriptions about how to set up MIF at your institution, refer to the Multi Institution Functionality chapter in the *Integration for e-Learning Banner Administration Guide*.

Event Processing in a VPD Environment

With the release of Integration for e-Learning 3.1, the architecture governing event processing has changed. The Event Queue now stores event key data which are picked up by LMG. LMG then calls Banner back to retrieve the full event details. When callback occurs, institution contexts are switched to select all data for an event. Processing the event as a callback ensures the safety of the VPD contexts switch.

General Processing Based on Event VPD Configuration

Alternate processing will occur based on the event VPD configuration. The configuration is determined at runtime after the GTVSDAX records inserted during installation are analyzed.

Institution-specific Custom Roles

In a VPD environment, extra role information can be published. In addition to standard institution role and customrole elements, if a role calculation involves VPD information, it will include a custom role element whose value is the name of the role with @inst_code appended.

GORIROL Person Role in a VPD Environment

Individual person role codes are stored in the GORIROL table. These roles are the result of GORRSQL calculations. If a calculation contains data that are VPD, then that calculation is considered institution specific. During data extraction or event generation, selections are made from the GORIROL table to obtain person role information. To publish all data about a person and conform to Data Integration Protocol IMS Specification, all roles at all institutions must be published. Therefore, in a VPD environment, role and institution information, stored in GORIROL, can be selected and published. If a role is based on VPD data, the GORIROL_VPDI_CODE field is populated with the appropriate institution code. This is done within the GB_INSTITUTION_ROLE.P_MAINTAIN_ROLE API which is used to maintain GORIROL. To aid runtime processing, VPD configurations that relate to Intcomp roles are detected during the upgrade process and stored.

General Extract Processing in a VPD Environment

In versions prior to Banner Intcomp 7.2, for each object type required, ICGORLDI first opened a driving cursor to select a list of object keys. For each key the extract then selected object data and wrote them to a file in XML format.

Banner Intcomp 7.2 works in a similar way. However, if the object key is on a table that has been VPD'd, the process loops through each institution to select all objects at all institutions. The process detects this case using the VPD configuration GTVSDAX outlined previously. If the configuration is A, the process loops through all institutions.

The data output by the extract is consistent with the data published in the corresponding events. For example, an institution code will be concatenated to the start of the sourcedid/id if the key is VPD'd.

Process ICGOVPDI (ICGOVPDI Institution Code Extract Process)

Banner is the authoritative source for institution code and description data. Process ICGOVPDI extracts all institutions into an XML format that can be loaded into Data Integration Protocol IMS consumers. For more information how to run this process, refer to the Multi Institution Functionality chapter of the *Integration for e-Learning Administration Guide*.

Performance Considerations

SunGard Higher Education recommends that institutions with large amounts of data run the extract several times. A general strategy would be to run the extract for each individual object type (term, course, course section, etc.) and verify the results before running for the next object. It is likely that you will extract a large number of person objects.

Person Considerations

The following are recommendations for implementing person roles:

- Enable only the roles that your institution requires.
- Note:** In compliance with the Data Integration IMS Protocol Specification, a person is only published if having at least one valid role. This compliance is maintained in Banner Intcomp 7.2.
- Inactivate all unused roles to reduce the number of role calculations.
 - Use Population Selection for person extracts to reduce the maximum run time for any one extract.

Miscellaneous Considerations

Refer to the Multi Institution Functionality chapter in the *Integration for e-Learning Banner Administration Guide* to learn specific MIF considerations for:

On Demand Synchronization

Group Maker Processing

Event Technical Changes Supporting MIF

The following event procedures and callback functions support MIF processing.

New Event Elements

College Event

Event Procedures:	icsckldi.p_save_college icsckldi.p_send_college
Callback Function:	icsckldi.f_get_college

Course Event

Event Procedures:	icsckldi.p_save_course icsckldi.p_send_course
Callback Function:	icsckldi.f_get_course

Cross-listed Group Event

Event Procedures:	icsskldi.p_save_crosslist_group icsskldi.p_send_crosslist_group
Callback Function:	icsskldi.f_get_crosslist_group

Cross-listed Membership Event

Event Procedures	<i>icsskldi.p_save_crosslist_membership</i> <i>icsskldi.p_send_crosslist_membership</i>
Callback Function	<i>icsskldi.f_get_crosslist_membership</i>

Course Section Event

Event Procedures	icsskldi.p_save_section icsskldi.p_send_section
Callback Function	icsskldi.f_get_section

Department Event

Event Procedures	<i>icsckldi.p_save_department</i> <i>icsckldi.p_send_department</i>
Callback Function	<i>icsckldi.f_get_department</i>

Faculty Assignment Event

Event Procedures	<i>icsikldi.p_save_assignment</i> <i>icsikldi.p_send_assignment</i>
Callback Function	<i>icsikldi.f_get_assignment</i>

Person Event

Event Procedures	<i>icspkldi.p_save_person</i> <i>icspkldi.p_send_person</i>
Callback Function	<i>icspkldi.f_get_person</i>

Student Enrollment Event

Event Procedure:	<i>icsfkldi.p_save_enrollment</i> <i>icsfkldi.p_send_enrollment</i>
Callback Function:	<i>icsfkldi.f_get_enrollment</i>

Term Event

Event Procedures	<i>icsokldi.p_save_term</i> <i>icsokldi.p_send_ter</i>
Callback Function	<i>icsokldi.f_get_term</i>

Section 4 Role Administration

Administrators continue to control role processing through GORRSQL settings.

General Role Processing

Beginning with Intcomp 7.2, person role information is stored in the GORIROL table. GORRSQL will continue to be the source of the role definitions. GORIROL will contain one record for each role a person possesses. This table is initially seeded with the GURIROL process which loops through all persons, executing the GORRSQL role definitions for each and creates the role records appropriately.

This process is run during the installation of Intcomp 7.2. However, GURIROL runs any time a need arises to maintain the table. GURIROL can also be run with a population selection.

Supplying a role definition name to the process indicates that it should only update GORIROL with respect to this role. Use this functionality to update the table when a new role is activated.

With Intcomp 7.2 installed, and GORIROL seeded, normal runtime processing can resume. At runtime, when a LDIPERSON event is triggered, the GB_INSTITUTION_ROLE.P_MAINTAIN_ROLE API is called to update GORIROL to reflect any changes. This API looks at the state of the roles before the event fired and compares it to the current role state. If there is a difference, the table is updated to reflect the current role state.

Note that there are no event triggers on GORIROL.

For information about the Person Role in a VPD environment, refer to “GORIROL Person Role in a VPD Environment” on page 13.

Refer to the *Banner General User Guide* and the *Integration for e-Learning Banner Administration Guide* for more information about GORRSQL.

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Section 5 Learning Management Gateway 3.1

This component of Integration for e-Learning has a new release. Learning Management Gateway (LMG) 3.1 changes the processing between Banner Events and the Luminis Platform with the release of Banner Intcomp 7.2.

For detailed information about these changes and their effects on Intcomp events, refer to the Events chapter in the *Integration for e-Learning Administration Guide*. For information about how to install the 3.1 version of the LMG, refer to the *Learning Management Gateway 3.1 Release Guide*.

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Section 6 Miscellaneous Enhancement and RPEs

The following enhancement and RPEs are delivered with this Integration for e-Learning - Banner Intcomp 7.2.

BannerINB role The BannerINB role is assigned to a person who has a record in the Enterprise Oracle Access table (GOBEACC). This role is designed to support users who have access to Banner; in most cases these are the institution administrative personnel.

This role can be selected as any other person role via the ICGORLDI extract process.

Note: If new users are created in Banner who have only BannerINB roles, they can be populated in a partner system via the extract process or by on demand synchronization. This is because the GOBEACC table is not supported by triggers.

RPEs

Display Name Prefix Suppression (RPE 1-5T-ZS6)
You now have the option to use the LDIPREFIX setting in GTVSDAX to choose whether or not you want to suppress the prefix to a person's name or withhold a person's display name. If you set the external code to *Y*, the prefix for a person is suppressed; setting the external code to *N* does not suppress it. Seed data are shipped with the default value of *N*.

Activate / De-activate GORRSQL Rules (RPE 1-90PK1)
Intcomp `role_active_ind` has been enhanced in GORRSQL for the INTCOMP process code. A script runs during installation to determine what GORRSQL rules are to be made active based on what Banner products are installed.

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Section 7 Problem Resolutions

The following problem resolutions are delivered with this Integration for e-Learning - Banner Intcomp 7.2.

Course Number	(#B035M) Description: An ORA-01480 error was encountered when ICGORODM ran from the host prompt. Course Number is defined in the code (ask_crse_num) as "char5" - in Pro*C. Each variable must be defined as being one character longer than the actual field length. Although a 5 character (5106G) "Course Number" is entered, the program variable definition must be "char6" (5 bytes for the actual field length plus 1 extra byte for the trailing null). Impact: On Demand Synchronization was not synchronizing Course Numbers. Resolution: An ICGORODM Program variable for Course Number was changed from char5 to char6.
FRIENDS and APPACCEPT roles	(#B6N4J) Description: FRIENDS or and AAPPACCEPT roles were not created in the LDIPERSON object for persons even though they were selected in the roles in the person parameter of the ICGORLDI extract process. Impact: Person functionality was impaired when these roles were not created by the extract process. Resolution: Typographical errors responsible for the problem were corrected. FRIENDS and APPACCEPT roles can now be created.
GTVSDAX ICEMAIL	(#CTAPQ) Description: The LDI 7.1 GTVSDAX ICEMAIL setting was not working. Only when the Primary/Preferred indicator was set, was the LDIPERSON event triggered into the GOAEQRM form and tables. Impact: Clients using ICEMAIL for e-mail creation no longer had this functionality. Resolution: Modifications to icgotema15.sql trigger logic were made to call p_save_person when either the preferred_ind is Y or when the sdax_ind is Y.

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Appendix A Objects

The following processes, installation scripts, and seed data are included in Banner Intcomp 7.2.

In the following table, script Types are:

c c processes
Plus Seed data
dbprocs Dabase procedures

<i>Script Name</i>	<i>Type</i>	<i>New</i>	<i>Obsolete</i>	<i>Database Object Name</i>
icgorldi.pc	c	N	N	
icgorodm.pc	c	N	N	
icgovpdi.pc	c	Y	N	
intcmplc.com	Misc.	N	N	
intcmplc.pl	Misc.	N	N	
intcmplc.shl	Misc.	N	N	
iccheck.sql	plus	N	N	
iccheck60100.sql	plus	N	Y	
intdbpr.sql	dbprocs	N	N	
icgokco1.sql	dbprocs	N	N	ICGOKCOM
icgokcom.sql	dbprocs	N	N	ICGOKCOM
icsckco1.sql	dbprocs	N	N	ICSCKCOM
icsckcom.sql	dbprocs	N	N	ICSCKCOM
icsckld1.sql	dbprocs	N	N	ICSCKLDI
icsckldi.sql	dbprocs	N	N	ICSCKLDI
icsfkco1.sql	dbprocs	N	N	ICSFKCOM
icsfkcom.sql	dbprocs	N	N	ICSFKCOM
icsfkge1.sql	dbprocs	N	N	ICSFKGEX
icsfkge1.sql	dbprocs	N	N	ICSFKGEX

icsfkld1.sql	dbprocs	N	N	ICSFKLDI
icsfkldi.sql	dbprocs	N	N	ICSFKLDI
icsikcol1.sql	dbprocs	N	N	ICSIKCOM
icsikcom.sql	dbprocs	N	N	ICSIKCOM
icsikld1.sql	dbprocs	N	N	ICSIKLDI
icsikldi.sql	dbprocs	N	N	ICSIKLDI
icsokcol1.sql	dbprocs	N	N	ICSOKCOM
icsokcom.sql	dbprocs	N	N	ICSOKCOM
icsokld1.sql	dbprocs	N	N	ICSOKLDI
icsokldi.sql	dbprocs	N	N	ICSOKLDI
icspkcol1.sql	dbprocs	N	N	ICSPKCOM
icspkld1.sql	dbprocs	N	N	ICSPKLDI
icspkldi.sql	dbprocs	N	N	ICSPKLDI
icsskcol1.sql	dbprocs	N	N	ICSSKCOM
icsskcom.sql	dbprocs	N	N	ICSSKCOM
icsskld1.sql	dbprocs	N	N	ICSSKLDI
icsskldi.sql	dbprocs	N	N	ICSSKLDI
icoo_ldi_nv_nt.sql	dbprocs	Y	N	LDI_NV_NT
icoo_ldi_nv.sql	dbprocs	Y	N	LDI_NV
icoo_ldi_snv_nt.sql	dbprocs	Y	N	LDI_SNV_NT
icoo_ldi_snv.sql	dbprocs	Y	N	LDI_SNV
icsatadap1.sql	dbprocs	N	N	ST_SARADAP_ AS_LDI
icsatadap2.sql	dbprocs	N	N	ST_SARADAP_ AR_LDI
icsctcrse6.sql	dbprocs	N	N	ST_SCBCRSE_ AR_LDI
icsrtrecr0.sql	dbprocs	N	N	ST_SRBRECR_ AS_LDI

icsrtrecl1.sql	dbprocs	N	N	ST_SRBRECR_ AR_LDI
icsstsect9.sql	dbprocs	N	N	ST_SSBSECT_ AR_LDI
icsttterm0.sql	dbprocs	N	N	ST_STVTERM_ AR_LDI
icgotemal5.sql	dbprocs	N	N	GT_GOREMAL_ AR_LDI

DBA Installation Scripts

The following DBA installation scripts are included in Banner Intcomp 7.2.

gurrhmu.sql (DBA)	icchkver70200.sql (DBA)
iccomp.com (DBA)	iccomp.pl (DBA)
iccomp.sh1 (DBA)	iccudv70200.sql (DBA)
icdro70200.lst (DBA)	icdro70200.sql (DBA)
icgensm.sql (DBA)	icgrant70200.sql (DBA)
icimdone.sql (DBA)	icinsfeob.sql (DBA)
icmakmdl.sql (DBA)	icmk70200.par (DBA)
icobj70200.sql (DBA)	icrevtab.sql (DBA)
icrudone.sql (DBA)	icruready.sql (DBA)
icsec70200.sql (DBA)	icuds70200.lst (DBA)
icuds70200.sql (DBA)	icudv70200.sql (DBA)
int70200.dmp (DBA)	int70200.log (DBA)
intcplc.com (DBA)	intcplc.pl (DBA)
intcplc.sh1 (DBA)	intmigr.com (DBA)
intmigr.pl (DBA)	intmigr.sh1 (DBA)
intmigr.txt (DBA)	invalid.sql (DBA)
loadmods.par (DBA)	login.sql (DBA)

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