

Banner Student VBS Using FGAC Technical Training Workbook

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April 2008	New version that supports 8.0 software.

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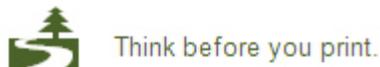


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Introduction



Course goal

The goal of this workbook is to provide you with the knowledge and practice to set up and maintain VBS using FGAC at your institution. The workbook is divided into these sections:

- Introduction
- Set Up
- Reference

Course objectives

In this course you will learn how to

- define the domain and the driver
- define the tables for the domain
- establish the VBS rule code
- set up business profiles and assign user IDs to the profiles
- set up the VBS rules that define restrictions
- create Oracle policies by running the appropriate SQL scripts
- view the restrictions for each user ID and table
- perform the analysis to create new policies.

Intended audience

System administrators and technical staff members who support the Banner Student System.

Prerequisites

To complete this course, you should have

- completed the Education Practices computer-based training (CBT) tutorial *Banner 8 Fundamentals*, or have equivalent experience navigating in the Banner system
- Oracle Database Administration knowledge.

Process Introduction

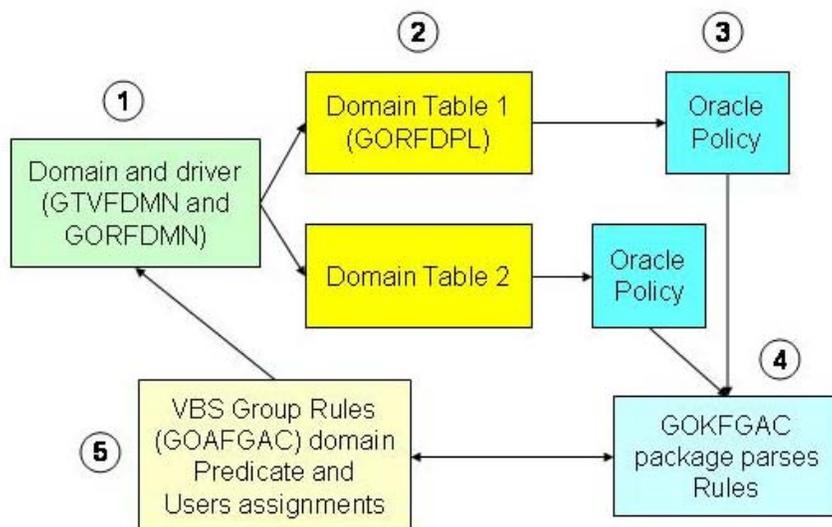
About the process

These steps make up the process.

- Perform analysis on where the VBS restriction should reside.
- Define the domain, which is the driver table for the VBS restrictions.
- Define all tables that are members of the domain and will be restricted by the VBS rule.
- Have the DBA create ORACLE policies on all.
- Identify the users who need to be restricted by the VBS rule.
- Create the business profile and add restricted users to the business profile.
- Create the VBS rule for the domain; assign the business profile.

Flow diagram

The diagram represents a high-level overview of the entire process.



What happens

The table describes what happens in the process.

Stage	Description
1	The domain is the center of your restrictions, usually the parent table of a module. Each domain has a driver table for which you will write the VBS rules.
2	The tables are part of the domain and will follow the same restrictions as the domain.
3	The GFVBSADDPOL.SQL script is run to create the policies for the tables defined in the domain.
4	Executes dynamically when you access a table. You have the option to future-date a rule or to disable a table policy.
5	VBS rules: the group rule code, domains, the predicate and the users are established.

Example

Assume that an institution has two colleges: the College of Arts and Sciences and the College of Education.

Each college has a separate Admissions Office that can insert, update, delete, and select all applications in its own college and admit its applicants into its college (but cannot change the Student record).

Each college is restricted to viewing the application for its own college.

Set Up



Introduction

The purpose of this section is to outline the setup process and detail the procedures of the setup for VBS using FGAC.

Objectives

In this section you will learn how to

- define the domain and the driver
- define the tables for the domain
- establish the VBS rule code
- set up business profiles and assign user IDs to the profiles
- set up the VBS rules that define restrictions
- create Oracle policies by running the appropriate SQL scripts
- view the restrictions for each user ID and table
- perform the analysis to create new policies.

Note: The DBA is responsible for creating the Oracle policies by running the appropriate SQL scripts.

Analysis Worksheet

Introduction

This analysis must be done in tandem with the functional Banner Business Analysts at your institution. The goal of the analysis is to fill in all the pieces that are required for setting up the VBS group rule, and be able to trace its ramifications.

Our example will require we set up two rules. One to control maintenance by college and the other to control viewing the application by college.

About curriculum data

Starting with Banner 7.0, maintenance of the curriculum has been moved from the admissions table SARADAP to the new curriculum tables SORLCUR and SORLFOS. Curriculum data on SARADAP is automatically converted to the new curriculum tables when the SAAADMS page is opened.

The user enters the application information on the first tab of SAAADMS, and then navigates to the Curriculum tab to enter the curriculum and field of study. After the user commits on the curriculum tab, the curriculum data is backfilled to the original SARADAP columns. Before the backfill has completed, the curriculum data columns on SARADAP are blank. Selection restrictions based on curriculum on SARADAP need to check that the curriculums are alternatively blank.

All Banner reports and processes will be dependent on the old curriculum column values during the initial foundation phases of the Concurrent Curricula project.

Example

Below are the details behind the Admissions example.

Domain:	Driver:
SB_ADMISSIONS_VBS	SARADAP
SB_CURRICULUM_VBS	SORLCUR

Policy Tables for SB_ADMISSIONS_VBS	Join
SARACMT	EXISTS (SELECT 'X' FROM SARADAP WHERE SARADAP_PIDM = SARACMT_PIDM AND SARADAP_TERM_CODE_ENTRY = SARACMT_TERM_CODE AND SARADAP_APPL_NO = SARACMT_APPL_NO)
SARADAP	
SARAPPD	EXISTS (SELECT 'X' FROM SARADAP WHERE SARADAP_PIDM = SARAPPD_PIDM AND SARADAP_TERM_CODE_ENTRY = SARAPPD_TERM_CODE_ENTRY AND SARADAP_APPL_NO = SARAPPD_APPL_NO)
SARCHKL	EXISTS (SELECT 'X' FROM SARADAP WHERE SARADAP_PIDM = SARCHKL_PIDM AND SARADAP_TERM_CODE_ENTRY = SARCHKL_TERM_CODE_ENTRY AND SARADAP_APPL_NO = SARCHKL_APPL_NO)
SARCHRT	EXISTS (SELECT 'X' FROM SARADAP WHERE SARADAP_PIDM = SARCHRT_PIDM AND SARADAP_TERM_CODE_ENTRY = SARCHRT_TERM_CODE_ENTRY AND SARADAP_APPL_NO = SARCHRT_APPL_NO)
SARDSCL	EXISTS (SELECT 'X' FROM SARADAP WHERE SARADAP_PIDM = SARDSCL_PIDM AND SARADAP_TERM_CODE_ENTRY = SARDSCL_TERM_CODE AND SARADAP_APPL_NO = SARDSCL_APPL_NO)

Policy Tables for SB_ADMISSIONS _VBS	Join
SARQUAN	EXISTS (SELECT 'X' FROM SARADAP WHERE SARADAP_PIDM = SARQUAN_PIDM AND SARADAP_TERM_CODE_ENTRY = SARQUAN_TERM_CODE_ENTRY AND SARADAP_APPL_NO = SARQUAN_APPL_NO)
SARRRAT	EXISTS (SELECT 'X' FROM SARADAP WHERE SARADAP_PIDM = SARRRAT_PIDM AND SARADAP_TERM_CODE_ENTRY = SARRRAT_TERM_CODE AND SARADAP_APPL_NO = SARRRAT_APPL_NO)
SARRSRC	EXISTS (SELECT 'X' FROM SARADAP WHERE SARADAP_PIDM = SARRSRC_PIDM AND SARA DAP_TERM_CODE_ENTRY = SARRSRC_TERM_CODE_ENTRY AND SARADAP_APPL_NO = SARRSRC_APPL_NO)
SARAATT	EXISTS (SELECT 'X' FROM SARADAP WHERE SARADAP_PIDM = SARAATT_PIDM AND SARA DAP_TERM_CODE_ENTRY = SARAATT_TERM_CODE_ENTRY AND SARADAP_APPL_NO = SARAATT_APPL_NO)
SABSUPL	EXISTS (SELECT 'X' FROM SARADAP WHERE SARADAP_PIDM = SABSUPL_PIDM AND SARA DAP_TERM_CODE_ENTRY = SABSABL_TERM_CODE_ENTRY AND SARADAP_APPL_NO = SABSUPL_APPL_NO)

Policy Table for SB_CURRICULUM _VBS	Join
SORLCUR	

FGAC Group Rule:	

Business Case	SQL Predicate
College Admissions offices can maintain and view application curriculums based on the college code.	SORLCUR_COLL_CODE = 'AS'
College Admissions offices can select, update and delete applications based on the college code.	(SARADAP_COLL_CODE_1 = 'AS' OR SARADAP_COLL_CODE_1 IS NULL)

Analyzing restrictions and outcomes

The table that follows lists the various Banner objects that are impacted by the VBS Group Rule. These need to be analyzed before activating the rule. In this example, even though the VBS rules are on Banner Student tables. In addition to core Banner objects, other components of the Banner Unified Digital Campus should also be analyzed. You should analyze the impacts of the VBS Rule on any of the active Workflows that you may have in place.

When doing analysis related to the VBS restriction on the table, you need to determine the various programs that access the table. The Banner Enlighten product can be used for this analysis. The Possible Outcomes shown are for Oracle Users that have been assigned to the VBS Group rule either individually or to a business profile.

Note: The table that follows does not include objects that have a type JOBS. Batch processes are delivered as exempt from FGAC processing.

Objects that may be impacted	Access to Predicate	Possible Outcomes
SAAADMS	Select, Update, Delete, Insert	User will not know if applications for other colleges exist. They will also be restricted from insert and deleting curriculum unless the college is AS.
SAADCRV	Select, Update, Delete, Insert	User will not know if applications for other colleges exist. They will also be restricted from insert, updating and deleting decisions unless the application's college is AS.
SAADCBT	Select, Update, Delete, Insert	User will not know if applications for other colleges exist. They will also be restricted from insert, updating and deleting decisions and rating information unless the application's college is AS.
SAAACKL	Select, Update, Delete, Insert	User will not know if applications for other colleges exist. They will also be restricted from insert, updating and deleting checklist items unless the application's college is AS.
SAARRAT	Select, Update, Delete, Insert	User will not know if applications for other colleges exist. They will also be restricted from insert, updating and deleting ratings unless the application's college is AS.

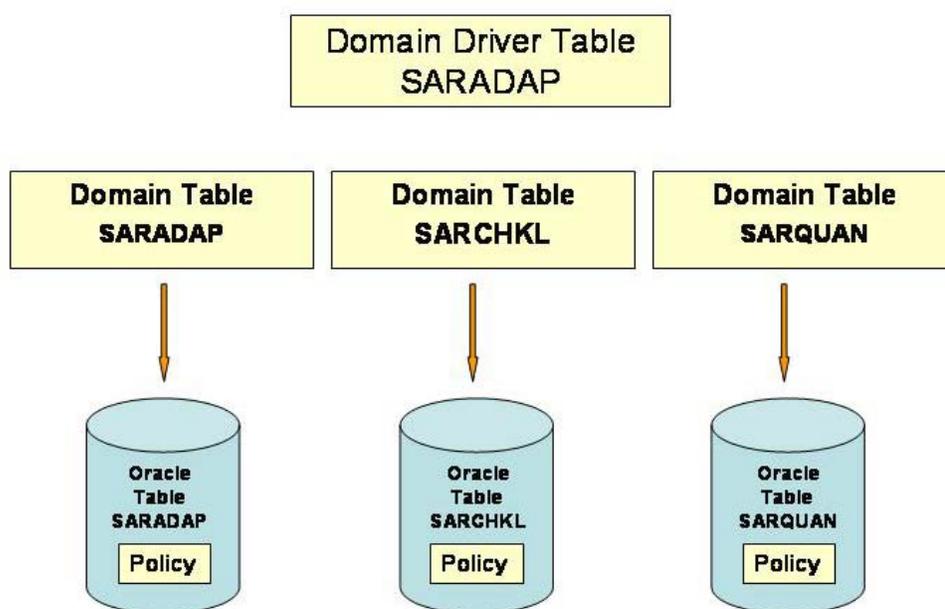
Objects that may be impacted	Access to Predicate	Possible Outcomes
SAAQUAN	Select, Update, Delete, Insert	User will not know if applications for other colleges exist. They will also be restricted from insert, updating and deleting question/answers unless the application's college is AS.
SOASUPL	Select, Update, Delete, Insert	User will not know if applications for other colleges exist. They will also be restricted from insert, updating and deleting additional application information unless the application's college is AS.
SAAQUIK	Select, Update, Delete, Insert	User will be restricted from inserting the application unless the learner's college is AS.
SAAEAPS	Select, Update, Delete, Insert	User cannot push electronic application unless the incoming college is AS.
SRIPREL	Select, Update, Delete, Insert	User cannot create an application from the electronic prospect records unless the incoming college is AS.
RPALAPP, RPAELAP, ROASTAT, RPOLEDG	Select	User cannot view application and decision information.
SAASUMI	Select	User cannot see applications that do not have a college AS.
SOASRVW	Select	User cannot see applications that do not have a college AS.

Defining the Domain

Domain setup diagram

The diagram represents the setup involved in defining the domain.

The tables shown here represent a sampling of the number required for the Admissions domain.



Domains

Domains define the driver for your VBS rules. Each domain has a driver table for which the VBS rule is written.

Note: The domain is usually the parent table of a module.

Naming conventions

Because the domain table could become very large, you should follow a standard naming convention for your domains. Preface each domain with the product abbreviation and B, followed by the entity name and VBS.

Note: This is the same naming convention that is used for API package names.

Examples:

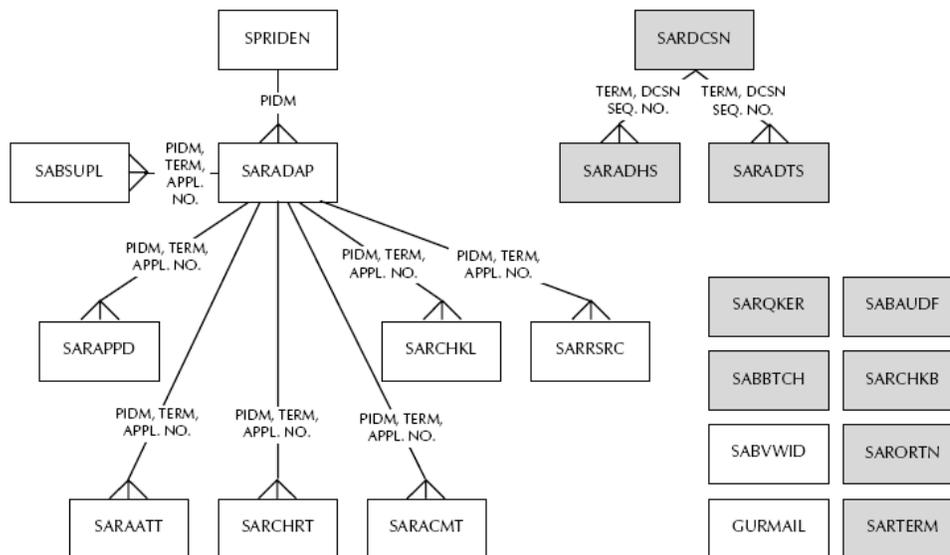
- SB_ADMISSIONS_VBS
- SB_CURRICULUM_VBS

Defining your domains

Usually, you will select the central table for a module or processing area. For reference, it may be helpful to consult the Entity Relationship Diagrams (ERDs), the Banner Technical Reference Manuals (TRMs), or the Banner Enlighten Product.

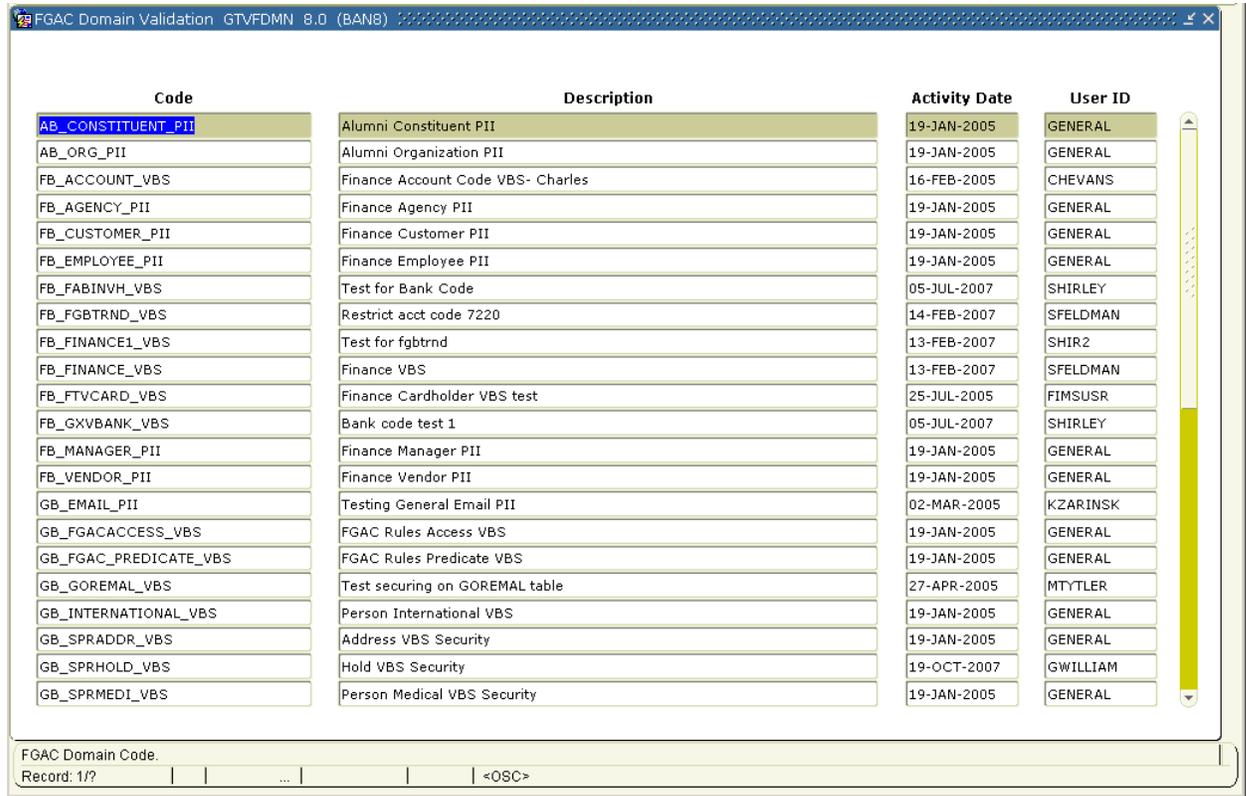
Example

Examples shown in this workbook use the Student TRM on Admissions. SARADAP is the central table and is our domain driver.



Banner form

Use the FGAC Domain Validation Form (GTVFDMN) to define the domain codes.



The screenshot shows a window titled "FGAC Domain Validation GTVFDMM 8.0 (BAN8)". It contains a table with the following columns: Code, Description, Activity Date, and User ID. The table lists various domain codes and their associated details. The first row is highlighted in blue.

Code	Description	Activity Date	User ID
AB_CONSTITUENT_PII	Alumni Constituent PII	19-JAN-2005	GENERAL
AB_ORG_PII	Alumni Organization PII	19-JAN-2005	GENERAL
FB_ACCOUNT_VBS	Finance Account Code VBS- Charles	16-FEB-2005	CHEVANS
FB_AGENCY_PII	Finance Agency PII	19-JAN-2005	GENERAL
FB_CUSTOMER_PII	Finance Customer PII	19-JAN-2005	GENERAL
FB_EMPLOYEE_PII	Finance Employee PII	19-JAN-2005	GENERAL
FB_FABINVT_VBS	Test for Bank Code	05-JUL-2007	SHIRLEY
FB_FGBTRND_VBS	Restrict acct code 7220	14-FEB-2007	SFELDMAN
FB_FINANCE1_VBS	Test for fgbtrnd	13-FEB-2007	SHIR2
FB_FINANCE_VBS	Finance VBS	13-FEB-2007	SFELDMAN
FB_FTVCARD_VBS	Finance Cardholder VBS test	25-JUL-2005	FIMSUSR
FB_GXVBANK_VBS	Bank code test 1	05-JUL-2007	SHIRLEY
FB_MANAGER_PII	Finance Manager PII	19-JAN-2005	GENERAL
FB_VENDOR_PII	Finance Vendor PII	19-JAN-2005	GENERAL
GB_EMAIL_PII	Testing General Email PII	02-MAR-2005	KZARINSK
GB_FGACACCESS_VBS	FGAC Rules Access VBS	19-JAN-2005	GENERAL
GB_FGAC_PREDICATE_VBS	FGAC Rules Predicate VBS	19-JAN-2005	GENERAL
GB_GOREMAL_VBS	Test securing on GOREMAL table	27-APR-2005	MTYTLER
GB_INTERNATIONAL_VBS	Person International VBS	19-JAN-2005	GENERAL
GB_SPRADDR_VBS	Address VBS Security	19-JAN-2005	GENERAL
GB_SPRHOLD_VBS	Hold VBS Security	19-OCT-2007	GWILLIAM
GB_SPRMEDI_VBS	Person Medical VBS Security	19-JAN-2005	GENERAL

At the bottom of the window, there is a status bar with the text "FGAC Domain Code." and "Record: 1/?" followed by navigation icons including "<OSC>".

Steps

Follow these steps to define the domain code.

1. Access the FGAC Domain Validation Form (GTVFDMN).
2. Enter the domain code in the **Code** field.

Examples: *SB_ADMISSIONS_VBS* and *SB_CURRICULUM_VBS*

3. Enter the description.
4. Click the **Save** icon.
5. Click the **Exit** icon.

Banner form

Use the FGAC Domain Driver Rules Form (GORFDMN) to enter the domain driver.

FGAC Domain Driver Rules GORFDMN 8.0 (BAN8)

Domain	Driver Table	Type	Enable PII	System Required	PII Column Name
AB_CONSTITUENT_PII	APBCONS	PII	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	APBCONS_PIDM User ID: MTYTLER
AB_ORG_PII	AOBORG	PII	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AOBORG_PIDM User ID: GENERAL
FB_ACCOUNT_VBS	FTVACCT	VBS	<input type="checkbox"/>	<input type="checkbox"/>	FTVACCT_PIDM User ID: CHEVANS
FB_AGENCY_PII	FTVAGCY	PII	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FTVAGCY_AGCY_CODE_PIDM User ID: GENERAL
FB_CUSTOMER_PII	FTVCUST	PII	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FTVCUST_PIDM User ID: GENERAL
FB_EMPLOYEE_PII	FCBEMPL	PII	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	FCBEMPL_PIDM User ID: GENERAL
FB_FABINVH_VBS	FABINVH	VBS	<input type="checkbox"/>	<input type="checkbox"/>	FABINVH_PIDM User ID: SHIRLEY
FB_FGBTRND_VBS	FGBTRND	VBS	<input type="checkbox"/>	<input type="checkbox"/>	FGBTRND_PIDM User ID: SFELDMAN
FB_FINANCE1_VBS	FGBTRND	VBS	<input type="checkbox"/>	<input type="checkbox"/>	FGBTRND_PIDM User ID: SHIR1
FB_FINANCE_VBS	FTVACCT	VBS	<input type="checkbox"/>	<input type="checkbox"/>	FTVACCT_PIDM User ID: SFELDMAN
FB_FTVCARD_VBS	FTVCARD	VBS	<input type="checkbox"/>	<input type="checkbox"/>	FTVCARD_PIDM User ID: FIMSUSR

Domain Code: Record: 1/? ... <OSC>

Steps

Follow these steps to create the domain rules.

1. Access the FGAC Domain Code Rules Form (GORFDMN).

2. Enter the domain driver in the **Domain** field.

Example: *SB_ADMISSIONS_VBS* and *SB_CURRICULUM_VBS*

3. Enter the driver table.

Example: *SARADAP* for *SB_ADMISSIONS_VBS* and *SORLCUR* for *SB_CURRICULUM_VBS*.

4. Enter *VBS* in the **Type** field for each domain.

5. Click the **System Required** checkbox, if applicable.

Note: The system required indicator is usually checked if the row is delivered as SEED data by SunGard Higher Education.

6. Click the **Save** icon.

7. Click the **Exit** icon.

Defining the Tables

Overview

Each domain will have at least one table, the driver table. The purpose of the domain tables is to define the launch pad for creating the Oracle policy. The tables defined for a domain carry the same restrictions that are defined for the driver.

Example: The domain is for Admissions and the driver is SARADAP. Some of the “children” tables for Admissions are SARCHKL and SARQUAN. When a VBS restriction is built for the Admissions domain, access to SARCHKL and SARQUAN will be defined by the restriction on SARADAP.

The domain tables answer the question of “where else” the VBS restriction should execute besides the domain driver.

Tables to include

List the tables that are either children of the domain driver or will follow the same restrictions as the domain driver. Use the ERD or TRM user guides, or even primary key and constraints to list all tables that should be included in a domain.

Writing the SQL

For each table, write the partial SQL statement that will join the table to the driver table. You will build a piece of a SQL statement that will ultimately be appended to your executing statement.

Example

Table: SARCHKL

Domain driver: SARADAP

VBS rule: (SARADAP_COLL_CODE_1= 'AS' OR SARADAP_COLL_CODE_1 IS NULL)

In this example, we are restricting on the college code.

Example of a “normal” query

A normal query to join SARCHKL and SARADAP would be as follows.

```
SELECT 'X' FROM SARCHKL
WHERE EXISTS
  ( SELECT 'X' FROM SARADAP
    WHERE SARADAP_PIDM = SARCHKL_PIDM
    AND SARADAP_TERM_CODE_ENTRY = SARCHKL_TERM_CODE_ENTRY
    AND SARADAP_APPL_NO = SARCHKL_APPL_NO)
```

Partial SQL

The partial SQL for the driver SQL join would be as follows.

```
EXISTS
  ( SELECT 'X' FROM SARADAP
    WHERE SARADAP_PIDM = SARCHKL_PIDM
    AND SARADAP_TERM_CODE_ENTRY = SARCHKL_TERM_CODE_ENTRY
    AND SARADAP_APPL_NO = SARCHKL_APPL_NO)
```

When the predicate is built, FGAC will append the above partial statement to the executing SQL statement, along with the VBS rule (SARADAP_COLL_CODE_1 = 'AS.' OR SARADAP_COLL_CODE_1 IS NULL)

Requirements for setup

The example below shows a breakdown of the pieces required for setup.

Note: This does not include the embedded comments that GOKFGAC will add.

SQL Predicate	Source
<pre>SELECT sarchkl_pidm, sarchkl_admr_code FROM sarchkl WHERE sarchkl_pidm = :pidm AND sarchkl_term_code_entry = :term_in</pre>	<p>User executes this SQL query</p>
<pre>AND</pre>	<p>Oracle automatically connects the SQL query to the FGAC predicate with an AND</p>
<pre>EXISTS (SELECT 'x' FROM saradap WHERE saradap_pidm = sarchkl_pidm AND saradap_term_code_entry = sarchkl_term_code_entry AND saradap_appl_no = sarchkl_appl_no</pre>	<p>The join statement you defined for the domain table is appended</p>
<pre>AND (saradap_coll_code_1 = 'AS' OR saradap_coll_code_1 is null)</pre>	<p>The VBS rule coded on GOAFGAC</p>
<pre>)</pre>	<p>GOKFGAC concludes the predicate with) if necessary</p>

Banner form

Use the FGAC VBS Table Rules Form (GORFDPL) to enter the domain tables.

Note: If rules are being created for other child tables, they are added here. They are joined back-to-back to the main driver table using an *exists* subquery. The trailing parenthesis is left out in the clause since it gets added later when creating the policy.

The screenshot shows the 'FGAC VBS Table Rules' form with the following data:

Domain	Table	Active Indicator	System Required	Activity Date	User ID	Validate SQL
FB_ACCOUNT_VBS	FTVACCT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	13-FEB-2007	SFELDMAN	<input checked="" type="checkbox"/>
FB_FABINVH_VBS	FABINVH	<input checked="" type="checkbox"/>	<input type="checkbox"/>	18-JUL-2007	SHIR7	<input checked="" type="checkbox"/>
FB_FGBTRND_VBS	FGBTRND	<input checked="" type="checkbox"/>	<input type="checkbox"/>	21-FEB-2007	SFELDMAN	<input checked="" type="checkbox"/>

SQL Validation Message:

VBS Domain Code.
Record: 1/?

Steps

Follow these steps to enter the domain tables.

1. Access the FGAC VBS Table Rules Form (GORFDPL).
2. Enter *SB_ADMISSIONS_VBS* in the **Domain** field.
3. Enter the table for the rule.
4. Check the **Active Indicator**, if necessary.

Note: The **Active Indicator** is important. You may want to uncheck this indicator to inactivate all rules for this domain and table. The GOKFGAC process will not pick up rules for a predicate if this indicator is unchecked. Once you create the policy and build the rules, you can check this indicator to activate it.

5. In the **Driver SQL** field, enter the partial SQL statement to join the table to the domain driver.
6. Click the **Save** icon.
7. Click the **Exit** icon.

Creating Oracle Policies

Introduction

Once the domain tables are defined, the policies can be created on the tables. Creating the Oracle policies is done for all tables defined in the domain.

Running the script

Follow these steps to create the table policies.

1. Connect as BANINST1 to SQLPlus.
2. Enter *@gfvbsaddpol* at the sql prompt.
3. You will be prompted for the table name. Enter *SARADAP*.

Note: You can use wildcards, for example, *SAR%* will pick up all tables in GORFDPL that begin with SAR.

Viewing policy data

To view policy data from SQLPlus select * from dba_policies where object_name = 'SARADAP'.

Dropping a policy

To drop the policy, run the gfgacdroppol.sql script.

Note: This script accepts wildcards for the table name prompt.

About VBS Rules

Introduction

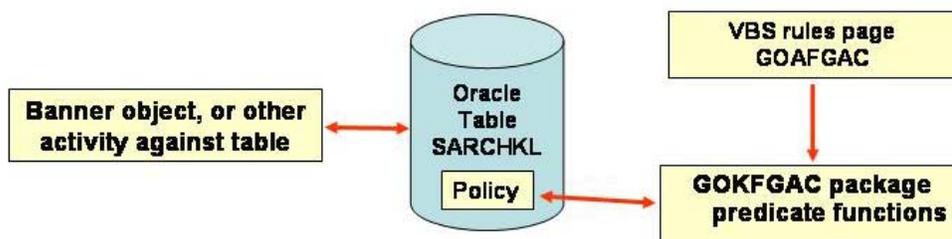
These are the steps to setting up VBS rules.

- Establish the FGAC Group rule code on GTVFGAC.
- Set up the Business Profile and assign users to it.
- Enter the group rule code, domains and the predicate and Users on GOAFGAC.
- View the resulting predicate for table and User ID on GOIFGAC.

The FGAC Group rule code defined on GTVFGAC is meant to be like a header to common business cases.

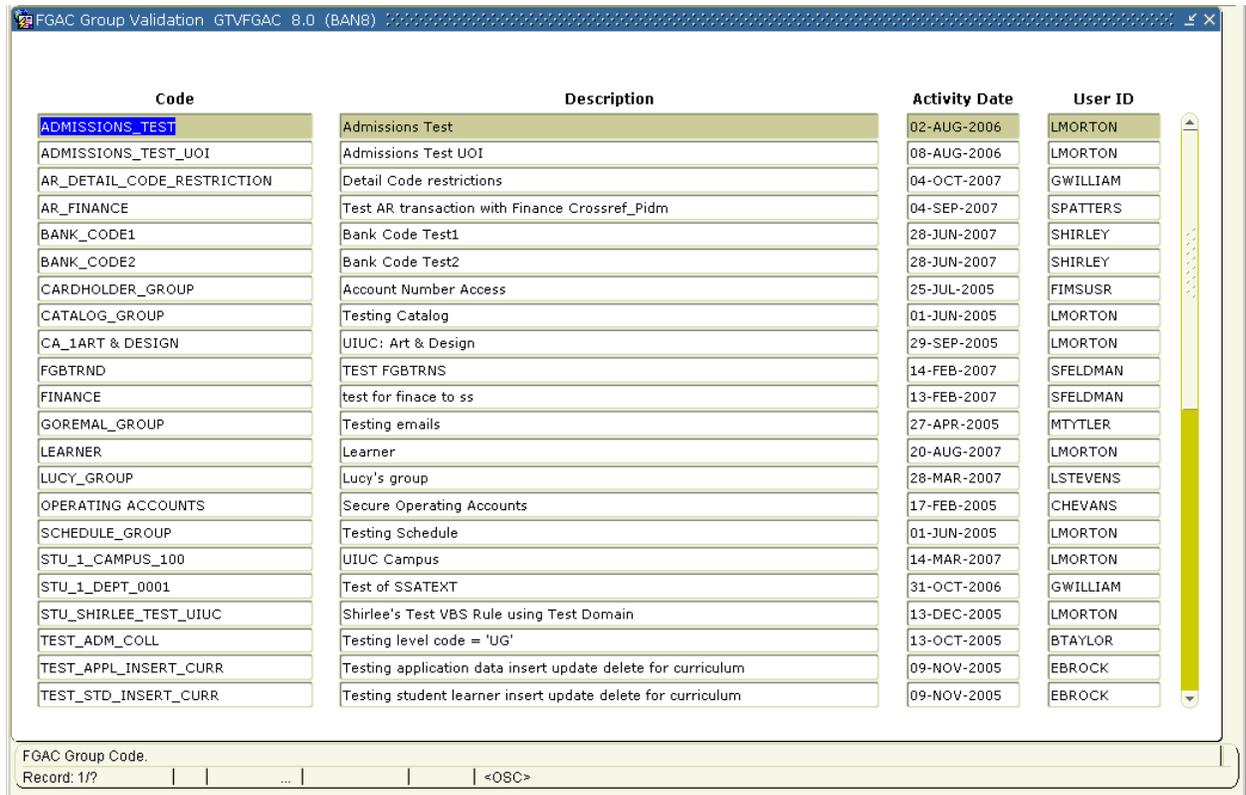
VBS restrictions and Banner

The diagram shows how the VBS restrictions work with Banner.



Banner form

Use the FGAC Group Validation Form (GTVFGAC) to set up the group code.



The screenshot shows a window titled "FGAC Group Validation GTVFGAC 8.0 (BAN8)". It contains a table with four columns: Code, Description, Activity Date, and User ID. The first row is highlighted in blue.

Code	Description	Activity Date	User ID
ADMISSIONS_TEST	Admissions Test	02-AUG-2006	LMORTON
ADMISSIONS_TEST_UOI	Admissions Test UOI	08-AUG-2006	LMORTON
AR_DETAIL_CODE_RESTRICTION	Detail Code restrictions	04-OCT-2007	GWILLIAM
AR_FINANCE	Test AR transaction with Finance Crossref_Pidm	04-SEP-2007	SPATTERS
BANK_CODE1	Bank Code Test1	28-JUN-2007	SHIRLEY
BANK_CODE2	Bank Code Test2	28-JUN-2007	SHIRLEY
CARDHOLDER_GROUP	Account Number Access	25-JUL-2005	FIMSUSR
CATALOG_GROUP	Testing Catalog	01-JUN-2005	LMORTON
CA_1ART & DESIGN	UIUC: Art & Design	29-SEP-2005	LMORTON
FGBTRND	TEST FGBTRNS	14-FEB-2007	SFELDMAN
FINANCE	test for finance to ss	13-FEB-2007	SFELDMAN
GOREMAL_GROUP	Testing emails	27-APR-2005	MTYTLER
LEARNER	Learner	20-AUG-2007	LMORTON
LUCY_GROUP	Lucy's group	28-MAR-2007	LSTEVENS
OPERATING ACCOUNTS	Secure Operating Accounts	17-FEB-2005	CHEVANS
SCHEDULE_GROUP	Testing Schedule	01-JUN-2005	LMORTON
STU_1_CAMPUS_100	UIUC Campus	14-MAR-2007	LMORTON
STU_1_DEPT_0001	Test of SSATEXT	31-OCT-2006	GWILLIAM
STU_SHIRLEE_TEST_UIUC	Shirlee's Test VBS Rule using Test Domain	13-DEC-2005	LMORTON
TEST_ADM_COLL	Testing level code = 'UG'	13-OCT-2005	BTAYLOR
TEST_APPL_INSERT_CURR	Testing application data insert update delete for curriculum	09-NOV-2005	EBROCK
TEST_STD_INSERT_CURR	Testing student learner insert update delete for curriculum	09-NOV-2005	EBROCK

At the bottom of the window, there is a status bar with the text "FGAC Group Code." and "Record: 1/?".

Steps

Follow these steps to set up the group code.

1. Access the FGAC Group Validation Form.
2. Enter the FGAC group code in the **Code** field.

Example: *COLLEGEARTS*

In this example, we are restricting select, insert, update and delete application by college.

3. Enter a description.
4. Click the **Save** icon.
5. Click the **Exit** icon.

Establishing the Business Profiles

Banner form

You can enter a business profile for specific users using the FGAC Business Profile Validation Form (GTVFBPR).

The screenshot shows a web browser window titled "FGAC Business Profile Validation GTVFBPR 8.0 (BAN8)". The main content is a table with the following data:

Code	Description	Activity Date	User ID
ADMISSION_TEST_UG_GROUP	Test for Dartmouth setup	14-OCT-2005	SAISUSR
BANK_CODE1	Bank Code Group 1	27-JUN-2007	SFELDMAN
BANK_CODE2	Bank Code Group 2	27-JUN-2007	SFELDMAN
CARDHOLDER_ID_ACCESS	Test Cardholder Account Access	25-JUL-2005	FIMSUSR
CATALOG_BUSINESS_PROFILE	Catalog Business Profile	01-JUN-2005	LMORTON
EMAIL_GROUP_ACCESS	Testing Email Group Access GOREMAL	27-APR-2005	MTYTLER
FINANCE	Finance VBS	13-FEB-2007	SFELDMAN
LUCY_PROFILE	Profile for LSTEVENS user id	28-MAR-2007	LSTEVENS
SCHEDULE_BUSINESS_PROFILE	Lori's Schedule Business Profile	01-JUN-2005	LMORTON
STU_BP_DEPT_0001	SGHE Mathematics (Dept-10g)	31-OCT-2006	GWILLIAM
STU_BP_MULTIDEPT_LAST	SGHE College of Liberal Arts & Applied Sciences (Dept-10g)	31-OCT-2006	GWILLIAM
TEST_ADM_COLL	Test for Admissions college	31-JAN-2005	DPALUBNI
UW_AR	TEST - AR Attributes	12-SEP-2007	MTYTLER
UW_OR	TEST - OR Attributes	12-SEP-2007	MTYTLER
UW_QA	TEST - QA Attributes	12-SEP-2007	MTYTLER
UW_SCHEDULE_AECL_PLNT	TEST - PLNT Schedule	12-SEP-2007	MTYTLER
UW_SCHEDULE_AGEC	TEST - AGECE Schedule	12-SEP-2007	MTYTLER
UW_SCHEDULE_ASST	TEST - ASST Schedule	12-SEP-2007	MTYTLER
UW_SCHEDULE_OUTREACH	TEST - OUTREACH Schedule	25-SEP-2007	TESTVBS3
WPM_BUSINESS_PROFILE	Bill's Business Profile for BANNER Student	27-JAN-2005	BMILLER

At the bottom of the window, there is a status bar that reads "FGAC Business Profile Code. Record: 1/20" and a navigation button labeled "<OSC>".

Steps

Follow these steps to enter a business profile.

1. Access the FGAC Business Profile Validation Form (GTVFBPR).
2. Perform an **Insert Record** function.
3. Enter a code for the business profile in the **Code** field.

Example: *ARTS&SCIENCES*

4. Enter a description of the code.

Example: *College of Arts and Sciences Admissions Users*

5. Click the **Save** icon.
6. Click the **Exit** icon.

Assigning User IDs to the Business Profile

Banner form

Use the FGAC Business Profile Assignments Form (GOAFBPR) to assign the user IDs to the business profile.

The screenshot shows a web browser window titled "FGAC Business Profile Assignments - GOAFBPR 8.0 (BAN8_WIN)". The form displays the "Business Profile" as "ARTS&SCIENCES" (Arts and Sciences). Below this is a section titled "Business Profile Assignments" containing a table with three columns: "Fine-Grained Access User ID", "Activity Date", and "User ID".

Fine-Grained Access User ID	Activity Date	User ID
SAISUSR	04-APR-2008	SAISUSR
		SAISUSR

Steps

Follow these steps to assign access to specific user IDs.

1. Access the FGAC Business Profile Assignments Form (GOAFBPR)
2. Enter the appropriate code in the Business Profile field.
Example: *ARTS&SCIENCES*
3. Perform a **Next Block** function.
4. Perform an **Insert Record** function.
5. Enter the User ID for whom you want to grant access in the **Fine-Grained Access User ID** field.
6. Click the **Save** icon.
7. Click the **Exit** icon.

Setting up the VBS Group Rule

Introduction

Use the FGAC Group Rules Form (GOAFGAC) to set up the predicate for group rules.

Using this form, you can

- enter different predicates for the same domain
- enter multiple domains with different predicates on the same group rule
- test your predicate using the validate SQL button
- inactive all predicates defined in the group rule, or future date a group rule
- use the help to list tables, columns and operators.

Note: Entering different predicates for the same domain may be necessary if different populations have different access requirements.

Banner form

FGAC Group Rules GOAFGAC 8.0 (BAN8_WIN)

Group: COLLEGEARTS College of the Arts

Group Attributes/Predicate Access to Predicate

Group Attributes

Active Effective date: 04-APR-2008

Predicate

Domain: SB_ADMISSIONS_VBS Student Admissions VBS

Predicate

```
{ SARADAP_COLL_CODE_1 = 'AS' OR SARADAP_COLL_CODE_1 IS NULL }
```

Copy Domain

Validate SQL

Table: SARADAP Column: Operator: Edit:

FGAC predicate.
Record: 1/1

Steps

Follow these steps to set up the predicate.

1. Access the FGAC Group Rules Form (GOAFGAC).
2. Enter the group in the **Group** field.
3. Perform a **Next Block** function.
4. Enter the domain code in the **Domain** field.

Example: *SB_ADMISSIONS_VBS*

5. Enter the restriction condition in the **Predicate** field.

Example: *(SARADAP_COLL_CODE_1 = 'AS' OR SARADAP_COLL_CODE_1 IS NULL)*

6. Click the **Validate SQL** button.

Note: Selecting **Validate SQL** will validate the syntax of the sql statement entered.

7. Click the **Save** icon.

Banner form

Use the Access to Predicate window of GOAFGAC to define access to the predicate. You will assign the VBS group rule to business profiles and user IDs.

Note: You must check **Select**, **Insert**, **Update** or **Delete** to indicate the access restriction. The policy for each of these operations is always created by gfvbsaddpol.sql. Checking these establishes the restriction for the particular group rule and predicate.

FGAC Group Rules GOAFGAC 8.0 (BAN8)

Group: OPERATING ACCOUNTS Secure Operating Accounts

Group Attributes/Predicate Access to Predicate

Business Profile Access to Predicate

Profile	Description	Select	Insert	Update	Delete
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

User Access to Predicate

User	Select	Insert	Update	Delete
VBS_TEST01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Business profile code; press LIST for valid codes.

Record: 1/1 | ... | List of Valu... | <OSC>

Steps - Exercise 1

Follow these steps to set up the rule for the Arts and Sciences Office.

1. Click the Access to Predicate tab to access the window.

Note: You can also select Business Profile Access to Predicate or User Access to Predicate from the **Options** menu.

2. Enter the business profile name in the Profile field.

Example: *ARTS&SCIENCES*

3. Enter a description.

4. Select the appropriate checkbox(es), based on the access the business profile should have:

- **Apply to All Users**
- **Select:** Checking this implies that the restriction is applicable whenever a row is selected from the table.
- **Insert:** Checking this implies that the restriction is applicable whenever a row is inserted into the table.
- **Update:** Checking this implies that the restriction is applicable whenever a row is updated into the table.
- **Delete:** Checking this implies that the restriction is applicable whenever a row is deleted from the table.

5. Perform a **Next Block** function to access the User Access to Predicate block.

6. Enter the specific User ID Banner_Guest in the **User** field.

7. Select the appropriate checkbox(es), based on the access the user should have.

8. Click the **Save** icon.

Steps - Exercise 2

Follow these steps to set up the restrictions on the curriculum table SORLCUR (SB_CURRICULUM_VBS).

1. Click the Group Attributes/Predicate tab.
2. Perform a Next Record function.
3. In this case, the predicate is: *SORLCUR_COLL_CODE = 'AS'*

FGAC Group Rules GOAFGAC (BAN8_WIN)

Group: COLLEGEARTS College of the Arts

Group Attributes/Predicate Access to Predicate

Group Attributes

Active Effective date: 04-APR-2008

Predicate

Domain: SB_ADMISSIONS_VBS Student Admissions VBS

Predicate

SORLCOL_COLL_CODE = 'AS'

Copy Domain

Validate SQL

Table: SORLCUR Column: Operator: Edit:

FRM-40400: Transaction complete: 1 records applied and saved.
Record: 1/?

4. Click the **Access to Predicate** tab. Set up the userid banner_guest in the user access to predicate.

Viewing the Restrictions

Introduction

Use the FGAC Predicate Inquiry Form (GOIFGAC) to display the status of the policy and the predicate for a table. This allows you to test your predicate and to see what restrictions are in effect for each user ID/table.

Banner form

The screenshot shows a web browser window titled "FGAC Predicate Inquiry GOIFGAC 8.0 (BAN8_WIN)". The form contains the following elements:

- User ID:** A dropdown menu with "SATSUSR" selected.
- Table Name:** An empty dropdown menu.
- FGAC Policy and Predicate Query:** A section with a title bar and a yellow border. It contains:
 - User ID:** An empty text input field.
 - Table Name:** An empty text input field.
 - Comments:** An empty text input field with a small icon to its right.
- Select:** A section with:
 - Policy Status:** A dropdown menu.
 - SQL Predicate:** A text input field with a small icon to its left.
- Insert:** A section with:
 - Policy Status:** A dropdown menu.
 - SQL Predicate:** A text input field with a small icon to its left.
- Update:** A section with:
 - Policy Status:** A dropdown menu.
 - SQL Predicate:** A text input field with a small icon to its left.
- Delete:** A section with:
 - Policy Status:** A dropdown menu.
 - SQL Predicate:** A text input field with a small icon to its left.

At the bottom of the form, there is a status bar with the text: "Oracle User ID; press LIST for valid Oracle users; wildcards permitted to enter query." Below this, there is a record indicator: "Record: 1/1" followed by a table of navigation buttons: "... | List of Valu... | <OSC>".

Steps

Follow these steps to view the resulting predicate for table SARADAP and User ID.

1. Access the FGAC Predicate Inquiry Form (GOIFGAC).
2. Enter the User ID and the table name in the key block.
3. Perform a **Next Block** function.

Note: The GOKFGAC package embeds comments in the predicate to tell you the domain name and then the rule names so you can easily trace where the SQL is coming from.

4. Repeat steps for next table SORLCUR.
5. Click the **Exit** icon.

Steps

Follow these steps to insert an object to be exempt.

1. Access the FGAC Excluded Objects Form (GORFEOB).
2. Perform an **Insert Record** function.
3. Enter the object that you want exempted.
4. Click the **Save** icon.
5. Click the **Exit** icon.

Self Check

Question 1

Before building the VBS group rule, a(n) _____ should be completed to fill in all the pieces that are required for setting up the rule, and to be able to trace its ramifications. This must be done in tandem with the functional Banner Business Analysts at your institution.

- A. Domain Driver
- B. Group Rule
- C. Analysis Worksheet
- D. Business Process

Question 2

A domain is often the central table for a module or processing area.

True or False

Question 3

Match the Banner form name to its purpose by entering the appropriate letter next to the description.

- _____ Enter the domain driver
 - _____ Define the domain codes and identify the domain as a VBS type
 - _____ Enter the domain tables
- A. FGAC Domain Validation (GTVFDMN)
 - B. FGAC Domain Driver Rules (GORFDMN)
 - C. FGAC VBS Table Rules Form (GORFDPL)

Question 4

These are the steps to setting up VBS rules. Place the steps in the order they would most likely occur.

- _____ Establish the FGAC Group rule code on GTVFGAC.
- _____ Enter the group rule code, domains and the predicate and Users on GOAFGAC.
- _____ View the resulting predicate for table and User ID on GOIFGAC.
- _____ Set up the Business Profile and assign users to it.

Question 5

Match the Banner form name to its purpose by entering the appropriate letter next to the description.

- _____ Set up the group code
- _____ Enter a business profile for specific users
- _____ Assign the user IDs to the business profile
- _____ Set up the predicate for group rules
- _____ Display the status of the policy and the predicate for a table

- A. FGAC Group Validation (GTVFGAC)
- B. FGAC Business Profile Validation (GTVFBPR)
- C. FGAC Business Profile Assignments (GOAFBPR)
- D. FGAC Group Rules (GOAFGAC)
- E. FGAC Predicate Inquiry (GOIFGAC)

Answer Key for Self Check

Question 1

Before building the VBS group rule, a(n) _____ should be completed to fill in all the pieces that are required for setting up the rule, and to be able to trace its ramifications. This must be done in tandem with the functional Banner Business Analysts at your institution.

- A. Domain Driver
- B. Group Rule
- C. Analysis Worksheet**
- D. Business Process

Question 2

A domain is often the central table for a module or processing area.

True

Question 3

- __B__** Enter the domain driver
 - __A__** Define the domain codes and identify the domain as a VBS type
 - __C__** Enter the domain tables
- A. FGAC Domain Validation (GTVFDMN)
 - B. FGAC Domain Driver Rules (GORFDMN)
 - C. FGAC VBS Table Rules Form (GORFDPL)

Question 4

These are the steps to setting up VBS rules. Place the steps in the order they would most likely occur.

- __1__ Establish the FGAC Group rule code on GTVFGAC.
- Enter the group rule code, domains and the predicate and Users on GOAFGAC.
- __3__
- __4__ View the resulting predicate for table and User ID on GOIFGAC.
- __2__ Set up the Business Profile and assign users to it.

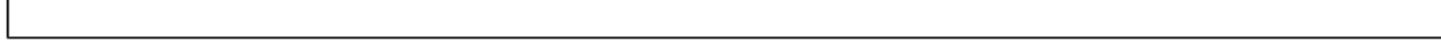
Question 5

Match the Banner form name to its purpose by entering the appropriate letter next to the description.

__D__	Set up the group code
__C__	Enter a business profile for specific users
__B__	Assign the user IDs to the business profile
__E__	Set up the predicate for group rules
__A__	Display the status of the policy and the predicate for a table

- A. FGAC Group Validation (GTVFGAC)
- B. FGAC Business Profile Validation (GTVFBPR)
- C. FGAC Business Profile Assignments (GOAFBPR)
- D. FGAC Group Rules (GOAFGAC)
- E. FGAC Predicate Inquiry (GOIFGAC)

Appendix



Forms Job Aid

Form	Full Name	Use this Form to...
GTVFDMN	FGAC Domain Validation	create and maintain domains used in FGAC.
GORFDMN	FGAC Domain Driver Rules	create and maintain driver rules for domains.
GORFDPL	FGAC VBS Table Rules	create and maintain table rules for domains.
GTVFGAC	FGAC Group Validation	create and maintain valid group names for FGAC.
GTVFBPR	FGAC Business Profile Validation	create and maintain valid business profile names for FGAC.
GOAFBPR	FGAC Business Profile Assignments	create and maintain grouping of system users for access control.
GOAFGAC	FGAC Group Rules	create and maintain access rules and privileges for groups.
GOIFGAC	FGAC Predicate Inquiry	query FGAC predicates.
GORFEOB	FGAC Excluded Objects	create and maintain list of objects excluded from FGAC.

Terminology

Business profile

A grouping of users that perform the same business functions, and as a result share the same security access restrictions. Associating users with business profiles reduces the need to data enter access restrictions for individual User IDs. A business profile is different from a BANSECR role. Maintenance of business profiles is distributed and moved out of BANSECR schema. In some cases, maintenance of business profiles can be distributed to client offices.

CRUD

An acronym for the four types of operations that can be performed on data: *Create*, *Retrieve*, *Update*, and *Delete* functions.

Domain

A functional area or functional set of information in Banner such as Course Catalog, Schedule, Admissions, Test Scores, etc. Each domain has a common driving table (usually the parent table of a module) which is used to build the rules that control a user's access to secured information.

Example: Student Admissions is an example of a VBS domain. The driver is SARADAP. All lesser tables in Admissions are part of the domain and will follow restrictions based on the rules defined for the Admissions domain.

Domain driver

The table that is designated as the driver for the business logic associated with a VBS domain. VBS group rules are written to restrict access based on specific values in columns of the driver table. The rules associated with the domain driver table cascade to the associated tables within the functional domain so that secured access is enforced uniformly.

Examples: For Admissions, SARADAP is the central table and is the domain driver behind the Admissions Application (SAAADMS) form. All group rules written for the SARADAP domain will be specific to the SARADAP columns, such as Admission Type, Residence, etc. For Banner General, GORPGEO is the central table and is the domain driver behind the Geographic Regions/Divisions (GOAPGEO) form. All group rules written for the GORPGEO domain will be specific to the GORPGEO columns, such as Region, Division, etc.

ERD

Entity Relationship Diagram. An entity relationship diagram is a data modeling technique that creates a graphical representation of the entities, and the relationships between the entities, within an information system.

ERDs, delivered with Banner documentation, present the underlying database table relationships in Banner. These can be used to help you interface other systems with Banner, and to better understand Banner's inner workings.

The Banner Enlighten Product can also be used for interactive analysis on the various tables in Banner and their interrelationships.

FGAC

Fine Grained Access Control. Oracle-specific row-level security that dynamically modifies a SQL statement by adding a condition (WHERE clause) which restricts the rows shown to the user. The modification is transparent to the user.

GOKFGAC FGAC

The GOKFGAC package owns all of the processing related to VBS. This is the Banner application written that utilizes FGAC.

PII

Personally Identifiable Information. PII secures General Person identifiable information and is applied when data is selected. When activated, PII affects all users. Selected users and program objects (forms, processes) can be designated exempt from PII. PII has been delivered for the SPRIDEN table (table behind all the IDEN forms). To access to an identification record (SPRIDEN row), the person's ID (PIDM) must exist as a row of information in one of the PII domains assigned to the user.

Example: A user who works in Admissions can view PII only for student applicants, not enrolled students.

Note: PII and VBS can co-exist and you can use either VBS or PII without requiring both.

Policy

An Oracle technical requirement behind the scenes that enables FGAC to function. A policy must be created before PII and VBS will work. After a domain and its tables are defined, a process is run by a system administrator to create the policy on a table. In GOKFGAC FGAC, there is one policy per table.

Predicate

The SQL clause for a domain and group that defines the specific access restriction. A predicate is a piece of a SQL statement that is appended dynamically that defines restrictions.

Example: `saradap_resd_code = 'M'`

SQL

Structured Query Language. SQL is a standard interactive and programming language for getting information from and updating a database.

TRM

Technical Reference Manual. The *Banner General Technical Reference Manual (TRM)* and its product-specific supplements provide information about the overall technical operations and capabilities of Banner. TRM supplements are available for Banner Student, Financial Aid, Finance, Alumni, and Human Resources. TRMs provide information for the technical staff members who support the Banner product, including operations personnel, DBAs, programmer analysts, systems analysts, and other technical specialists.

VBS

Value-Based Security. This type of security is defined for individual users as needed and depends on a predicate being entered. Referred to as "VBS Using FGAC." VBS is a Banner term and is implemented in Banner 7.0 using Oracle FGAC.

VPD

Virtual Private Database. A VPD is used to virtually partition large amounts of data, particular when the data belongs to different organizational entities, such as multiple campuses. Like VBS, VPD is based on Oracle FGAC. The key difference between VBS and VPD is that VBS restrictions are based on columns that already exist in the table; in VPD a new column called VPDI_CODE is added to the table and its key and the restrictions are based on this new column.

Logic Behind Building Predicates

Introduction

This section attempts to explain the relationship between the FGAC group rules and domains. Because the configuration of the rules and domains is extremely flexible, there is a risk of misunderstanding the relationships.

Key points

The parsed outcome from multiple rules and domains for a single table is combined with ORs and ANDs depending on GOAFGAC rules and GORFDMN Domain definitions.

All rules for a domain are AND'd to combine a domain predicate. All predicates for different domain yet same table are OR'd.

The GOKFGAC parser embeds the domain name and the FGAC rules name in comments. This is meant to aid debugging and locating the predicate on GOAFGAC.

ORACLE always appends a parsed predicate with an AND to the executing SQL statement.

Example 1

Template of the parsed predicate and illustration of the placement of comments, ANDs and ORs:

```
<executing SQL statement>  
AND ( (/*Domain 1 */  
      (/*Group 1*/ (Predicate 1 AND Predicate 2 AND Predicate 3))  
        OR (/*Group 2*/ (Predicate 4 AND Predicate 5)))  
      OR (/*Domain 2*/ (/*Group 3*/...)))
```

Example 2

Predicates parsed from different domains are OR 'd:

Example: SARCHKL is in domains SB_ADMISSIONS_VBS and SB_CHECKLIST_VBS

My group rules are:

- GOAFGAC Group 1: Predicate for domain SB_ADMISSIONS_VBS is:
 - SARADAP_RESD_CODE = 'M'
- GOAFGAC Group 2: Predicate for domain SB_CHECKLIST_VBS is:
 - SARCHKL_ADMR_CODE = 'TAX'

The parser is going to 'OR' these two groups together:

```
( SARADAP_RESD_CODE = 'M' ) OR ( SARCHKL_ADMR_CODE = 'TAX' ) )
```

Example 3

Predicates from different Groups for the same predicate are OR'd together:

- GOAFGAC Group 1: Predicate for domain SB_ADMISSIONS_VBS is:
 - SARADAP_RESD_CODE = 'M'
- GOAFGAC Group 2: Predicate for domain SB_ADMISSIONS_VBS is:
 - SARADAP_APST_CODE = 'C'

The parser is going to OR these two together:

```
SARADAP_RESD_CODE = 'M' OR SARADAP_APST_CODE = 'C'
```

Example 4

Predicates within a single Group Rule for the same predicate are AND 'd together:

GOAFGAC Group 1:

- Predicate1 for domain SB_ADMISSIONS_VBS is
 - SARADAP_RESD_CODE = 'M'
- Predicate 2 for domain SB_ADMISSIONS_VBS is
 - SARADAP_APST_CODE = 'C'

The parser is going to AND the two predicates together:

SARADAP_RESD_CODE = 'M' AND SARADAP_APST_CODE = 'C'

Best Practices and Guidelines

Introduction

Use the tips that follow to help ensure successful implementation of Banner VBS using FGAC.

Note: SunGard Higher Education recommends hiring technical professional services for implementation of FGAC using VBS and PII, especially for complex rules.

Oracle parameter: DYN_RLS_POLICIES

Since FGAC can be turned off for specified objects, the parameter `_DYN_RLS_POLICIES` must be set as TRUE if using Banner VBS using FGAC.

The VBS predicate functions called from GOKFGAC store the final result as a context variable. The next time the table is accessed for the database activity (Select, Insert, Update, Delete) the predicate is retrieved from the context variable. Clients using Banner VBS using FGAC can turn FGAC off for specified objects.

Example: SOAIDEN, FOIIDEN, GUIALTI, GOAMTCH and GUISYST are delivered as exempt from FGAC. The Banner security procedure GSPSECR will set a flag to turn off FGAC for these objects and any other exempt. When GOKFGAC predicate functions execute and see this flag turned off it will return a null predicate. The user may execute a different Banner object which does not have FGAC turned off, and the GOKFGAC predicate function will return the full predicate.

Business profiles

- Create business profiles to reduce data entry in assigning users to VBS rules.

- Remove users from business profiles when they leave their job position.
- Include new procedure in security practices to remove them from business profiles when user leaves position.
- To view business profiles in which the user is a member, access the FGAC Person User Defaults Form (GOAFPUD) and open the Business Profile Assignments tab.

Creating rules

Be aware of all the table dependencies for the table for which you are creating the rule. Review ERD diagrams, or use Banner Enlighten for this purpose.

Search for all programs that access the table for which you are creating restrictions. You should test VBS rules on all places the table is accessed. Banner Enlighten can be used for this purpose.

Building restrictions

Do not build restrictions that allow update or insert but not select. The rule for Select should not be less than DML privileges.

Example: VBS Rule for SPRADDR: SPRADDR_STAT_CODE = 'PA' and the Select is checked on GOAFGAC. **Update, Delete and Insert** are unchecked.

User cannot select any rows from SPRADDR with a state code PA. The user can execute the following in SQLPlus:

```
Update spraddr  
Set spraddr_activity_date = sysdate;
```

Result: The above SQL will update all rows in SPRADDR. Had the VBS rule included **Update, Delete and Insert** checked, the above SQL would update just the rows with a state code of PA.

Checking access

Check individual user access by table on GOIFGAC after setting up rules on GOAFGAC.

The following setup situation may occur:

- A user exists in a business profile which has select, insert, update and delete restrictions on a particular VBS rule. The user is added to the User Access section of the same rule with insert, update and delete restrictions.

There are two different select rules entered for the user. The GOKFGAC predicate process first pulls the rule for a user where the select is checked. In the above case, the business profile select restriction will be used.

Verifying rules

Run an explain plan on predicate to verify rule does not introduce performance issues. Use the steps that follow to run an explain plan.

Run trace on forms where predicates on tables are used to verify index usage is not changed. This is a continuation of the above rule. Verify that VBS rules, when used in Banner objects, do not change the indexes used to access table which may result in full table scans or create other performance issues.

1. Open GOIFGAC and query the table. Use the editor button to get a full screen of the predicate. Select the SQL and copy to clip board.
2. Create a SQL file (testvbs.sql)

```
SELECT 'x' FROM <fgac table>  
WHERE <copy from clipboard>;
```

3. From SQLPlus:
Set autotrace on explain
@testvbs

Note: The ID that executes the above needs appropriate privileges to create explain plans in SQLplus.

Reviewing GOIFGAC

Review GOIFGAC for each user/tables after rules are constructed. There may be other rules on the same table that may that may impact the user and how they access the table.

Where not to use VBS

Avoid VBS rules on common tables, such as SPRIDEN and SPBPERS.

Avoid creating VBS restrictions on parent tables that are based on children record results.

Example: Using domain GB_SPRADDR_VBS where the driver table is SPRIDEN, set up rule on GOAFGAC with the following:

Select, Insert, Update and Delete

```
EXISTS ( SELECT 'X' FROM SPRADDR WHERE
         SPRADDR_PIDM = SPRIDEN_PIDM AND
         SPRADDR_STAT_CODE IN ( 'MA' , 'RI' ) )
```

This will restrict the user from creating a SPRIDEN row. The SPRADDR row cannot exist until the SPRIDEN row has been created.

Do not create VBS rules with select restrictions on Banner Finance accounting distribution, job labor distributions tables where multiple rows need to add up to 100%.

Do not create VBS rules with select restrictions on Banner Student Catalog and Schedule. The impact is far reaching on display of student data. This data is selected on the registration page, transcripts, student course display, academic history displays.

Stay away from using functions in your predicate since this may adversely impact performance. This impacts only tables where large numbers of rows are selected and returned, as in a name search.

Recursive FGAC processing

Note that when the same policy table is used in a predicate, it is not subject to FGAC. This will result in recursive FGAC processing.

Example VBS Rule for SPRADDR:

```
SPRADDR_STAT_CODE = 'PA' AND
EXISTS ( SELECT 'X' FROM SPRADDR SUB
         WHERE SUB.SPRADDR_PIDM = SPRADDR.SPRADDR_PIDM
```

```
AND SUB.SPRADDR_ATYP_CODE = 'MA')
```

Result: FGAC will not execute for the select in the sub-query SPRADDR SUB.

Working with different domains

Rules on the same table in different domains are OR'd and may not give expected results.

You should review predicates on GOIFGAC and test logic. The following is the conditional logic for how predicates from different domains and rules are combined:

<executing SQL statement>

```
AND ( /*Domain 1 */  
      ( /*Group 1*/ (Predicate 1 AND Predicate 2 AND Predicate 3))  
      OR /*Group 2*/ (Predicate 4 AND Predicate  
      OR /*Domain 2*/ ( /*Group 3*/...)))
```

Predicate errors

Oracle error 28113 means your predicate has a syntax error.

Example: Using domain GB_SPRADDR_VBS set up rule on GOAFGAC with the following:

```
SPRADDR_ATYP_CODES IN (MA,PA)
```

The above is not a valid SQL syntax and will result in the oracle error 28113 when users access SPRADDR.

After typing in a predicate, click the **Validate SQL** button on GOAFGAC to verify no syntax issues are being introduced.

Syntax for the join condition on GORFDPL

Be aware that when adding a table to a domain on GORFDPL that requires a join clause that the end parenthesis of the sub-query should not be added.

Example: Policy table is SARCHKL for domain SB_ADMISSIONS_VBS and the domain driver is SARADAP. The VBS rule is: SARADAP_RESN_CODE = 'M'

A normal query to join SARCHKL and SARADAP is the following:

```
SELECT 'X' FROM SARCHKL
WHERE EXISTS
  ( SELECT 'X' FROM SARADAP
    WHERE SARADAP_PIDM = SARCHKL_PIDM
    AND SARADAP_TERM_CODE_ENTRY = SARCHKL_TERM_CODE_ENTRY
    AND SARADAP_APPL_NO = SARCHKL_APPL_NO )
```

The partial SQL we want for our driver SQL on GORFDPL for the SARCHKL table is:

```
EXISTS
  ( SELECT 'X' FROM SARADAP
    WHERE SARADAP_PIDM = SARCHKL_PIDM
    AND SARADAP_TERM_CODE_ENTRY = SARCHKL_TERM_CODE_ENTRY
    AND SARADAP_APPL_NO = SARCHKL_APPL_NO
```

When the predicate eventually is built, the above partial SQL is appended to the executing SQL statement along with the VBS rule SARADAP_RESN_CODE = 'M'.

SQL Predicate	Source
<pre>SELECT sarchkl_pidm, sarchkl_admr_code FROM sarchkl WHERE sarchkl_pidm = :pidm AND sarchkl_term_code_entry = :term_in</pre>	User executes this SQL query
AND	Oracle automatically connects the SQL query to the FGAC predicate with an AND
<pre>EXISTS (SELECT 'x' FROM saradap WHERE saradap_pidm = sarchkl_pidm AND saradap_term_code_entry = sarchkl_term_code_entry AND saradap_appl_no = sarchkl_appl_no</pre>	The join statement you defined for the domain table is appended
<pre>AND saradap_resd_code = 'M'</pre>	The VBS rule coded on GOAFGAC along with the AND connector
)	GOKFGAC concludes the predicate with) if necessary

VBS and Sequence Number fields in tables

Beware if the domain driver table has a sequence number as part of the primary key and is incremented using addition based on maximum number of existing rows. This may present key constraint issues.

Examples: The domain driver is SARADAP, and the primary key includes SARADAP_APPL_NO which is incremented by one based on number of existing applications for the person.

Our user can only select, insert, update and delete applications with college code 'AS'. The applicant already has an application number 1 for the college 'ED'. The user tries to insert a new application for college AS but the process will not find existing applications and think the application number is 1. This will cause a foreign constraint because the application number 1 already exists. In Banner 7.0 the SARADAP processing has been modified so the application increment process turns FGAC off; calculates the new application number and then turn FGAC back on.

Using select restrictions

Use caution when giving select restrictions to users who perform a lot of data entry. The reason for this is that in Banner, in some areas when data is entered, a substantial amount of internal processing happens behind the scenes. If there are select restrictions, this may impede the additional processing that needs to happen to complete the transaction.

Restrictions and validation table codes

If select restrictions are built on validation table codes, it is best to build similar restrictions on tables that have that code value. The impact of not doing this is missing descriptions and form error messages during the query process on pages that display the code and description.

Examples: Domain GB_SPRADDR_VBS with driver SPRADDR and create new domain GB_STVATYP_VBS with driver STVATYP.

Create rule with select, insert, update and select restrictions on GB_STVATYP_VBS with predicate STVATYP_CODE IN ('MA','PR').

If user queries Banner ID with addresses MA and BI on SPAIDEN address tab, form errors will appear that the address is not valid. The user may be prevented from viewing the BI address due to validation errors caused by BI not being found in STVATYP.

Policy Error Messages

Introduction

Use caution when creating rules that allow selection but do not allow update or delete. Oracle's behavior does not return an error message if an update/delete is attempted on a table where the user has full select privileges. This is Oracle Bug 2952900.

What happens

If the user attempts to insert a row into a table that is not allowed based on the VBS rules, Banner forms return the message 'Security violation' and the Oracle error 28115 is in the display error window.

Select

If a VBS rule is for SELECT, and you query outside the values defined in the rule, a *no rows found* message is returned.

- Example VBS Rule on SPRADDR: `SPRADDR_STAT_CODE = 'PA'`
- Example Query 1: `SELECT SPRADDR_PIDM FROM SPRADDR WHERE SPRADDR_STAT_CODE = 'MD'`

The above query will return a *no rows found* message.

- Example Query 2: `SELECT SPRADDR_PIDM FROM SPRADDR WHERE SPRADDR_STATUS_IND = 'I';`

The above query will return all rows with a state code of PA that have a status indicator of I. The user will not know of other rows that exist.

Insert

If a VBS rule is for INSERT and you insert outside the values defined in the rule, a Check Policy Oracle error (ORA 28115) message is returned.

- Example VBS Rule on table STVSTAT: STVSTAT_CODE = 'PA'
- Example Insert 1: `INSERT INTO STVSTAT (STVSTAT_CODE, STVSTAT_DESC, STVSTAT_ACTIVITY_DATE) VALUES ('MD', 'Maryland', SYSDATE);`

The above will return the Oracle error 28115, policy error.

```
ORA-28115: policy with check option violation
```

Cause: Policy predicate was evaluated to FALSE with the updated values.

Update

If a VBS rule is for UPDATE, and you change a value that is defined on the rule to one that is outside the rule, you will get the Check Policy Oracle error message. If you change a value on a column, and the column is not part of the rule but one of the columns is defined in the rule and its value is outside the rule, you will *not* get a check policy error. This is the issue defined in the Oracle bug.

- Example VBS Rule for SPRADDR: SPRADDR_STAT_CODE = 'PA'
- Example Update 1:

```
UPDATE SPRADDR
SET  SPRADDR_STAT_CODE = 'MD'
WHERE SPRADDR_PIDM = 1234 AND SPRADDR_STAT_CODE = 'PA';
```

The above will return the Oracle error 28115, policy error.

```
ORA-28115: policy with check option violation
```

Cause: Policy predicate was evaluated to FALSE with the updated values.

- Example Update 2:

```
UPDATE SPRADDR
SET  SPRADDR_ACTIVE_IND = 'I'
WHERE SPRADDR_PIDM = 1234 AND
SPRADDR_STAT_CODE = 'MD';
```

The above update will not return an error, although if you re-query that row you will see that the update did not take place. The where-clause of an update statement is controlled by the Oracle SELECT policy. You can select all rows from SPRADDR, but you can only update those with a state code of PA.

Banner 7.0 APIs have been modified to interrogate the sql%row_count directly after the update. If the row count is not 1, an error is raised. Interrogating the row count is the only hint from Oracle that the transaction was not processed.

Delete

If a VBS rule is for DELETE, you never get a check policy error if you delete outside of the VBS rule.

Banner 7.0 APIs are being modified to interrogate the sql%row_count directly after the delete. If the row count is not 1, an error will be raised. Interrogating the row count is the only hint from Oracle that the transaction was not processed.