

SUNGARD HIGHER EDUCATION


www.sungardhe.com

Enterprise Data Warehouse (EDW) Training For Foothill - De Anza Community College District


R. Joanne Keys, SunGard Higher Education
Banner Performance Reporting and Analytics
November 17 - 19, 2009

Copyright © SunGard Higher Education Inc. 2008. All rights reserved.

Introductions



- Name
- Responsibility at the University
- Involvement with Reporting and ODS/EDW?
- What you hope to get out of the class?




SUNGARD HIGHER EDUCATION

www.sungardhe.com 2

Copyright © SunGard Higher Education Inc. 2008. All rights reserved.

The Week's Agenda

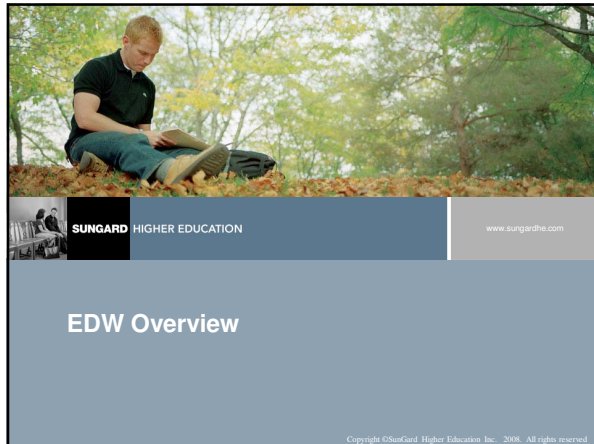
- Introductions
- An EDW Overview
 - Functional
 - Purpose
 - Setup
 - Technical
 - Oracle
 - Reporting from the EDW
- Questions and Answers
- Testing the EDW (Beginning after the training and continuing until complete)

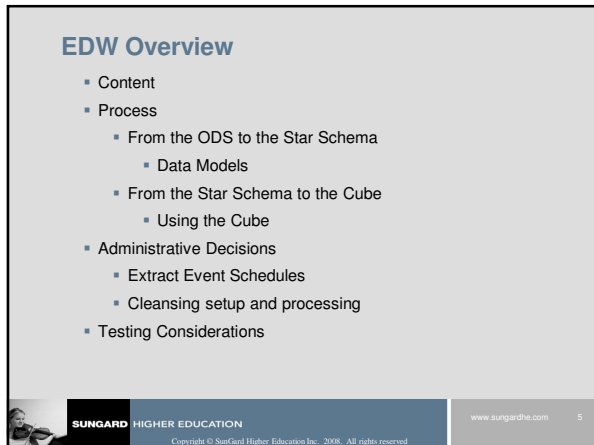


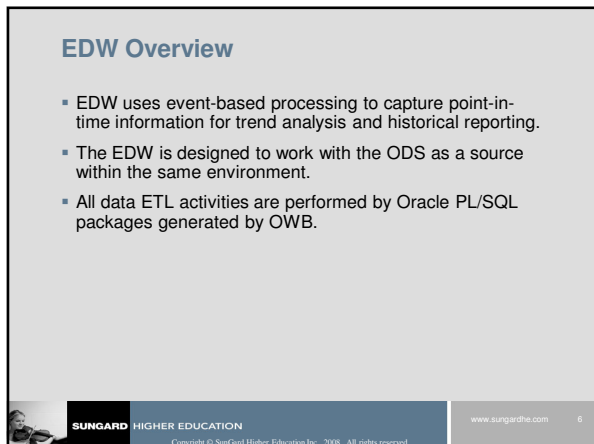
SUNGARD HIGHER EDUCATION

www.sungardhe.com 3

Copyright © SunGard Higher Education Inc. 2008. All rights reserved.







EDW Overview

Subject Content

Advancement	Financial Aid	Accounts Receivables	Financials Management	Human Resources	Student/Academic
Gift Summary	Pre-student Financial Aid	AR Customer	General Ledger	Employee	Recruiting And Admissions
	Student Financial Aid	AR Revenue	Operating Ledger	Employee Position	Course Registration
			Grants and Projects	Employee Application	Academic Program Course
				Employee Degree	Enrollment
					Graduation Completion

- Broad Analytics Coverage**
 - Conformed, shared dimensions enable cross-functional analysis
 - Provides best flexibility for satisfying broad, diverse standard and ad-hoc reporting requirements
- Specifically Designed for Multi-Dimensional Analysis**
 - Star Schemas
 - ** Optional** Cognos FM metadata packages and PowerPlay cubes
- Captures Historical Information**
 - Event Snapshots Based on Institutional Business Need
 - Enables Trend Analysis, Forecasting

SUNGARD HIGHER EDUCATION www.sungardhe.com 7
Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

EDW Overview

Data Presentation

Star Schemas

- Dimension tables: used to store unique combination of descriptive attributes
- Fact tables: used to store the measures (amounts, counts, etc.)
- Staging tables: used as temporary storage of extraction information so that it may be manipulated with little or no effect to the actual star models.

Views

- Views exist on top of each star schema as a means to load the cubes more effectively.

Cubes

- Stores presorted information that has been aggregated based on an underlying data relationship.

SUNGARD HIGHER EDUCATION www.sungardhe.com 8
Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

EDW Overview

Oracle

The Database

The ODS

- ODSMGR
- ODSLOV
- OWBREP

The EDW

- EDWMGR
- EDWSTG
- OWBREP

The Administrative UI

SUNGARD HIGHER EDUCATION www.sungardhe.com 9
Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

EDW Overview

Naming Standards

Star Schema Tables (EDWMGR Schema)

- 1st Character **W** - Warehouse
- 2nd Character **D** - Dimension
- 3rd Character **F** - Fact
- 3rd Character **T** - Table
- 4th Character **_** (underscore)
- 5-30th Characters Unique Descriptor

Staging Tables (EDWSTG Schema)

- 1st Character **W** - Warehouse
- 2nd Character **T** - Temporary Warehouse Table Type
- 3rd Character **T** - Table Object Identifier
- 4th Character **_** (underscore)
- 5th-30th Characters Unique Descriptor, ending in any:
 - _INPUT**
 - _CLEAN**
 - _ERROR**
 - _WKEYS**

SUNGARD HIGHER EDUCATION
Copyright © SunGard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 10

EDW Overview

Information Model

- Information needs to reach all levels of campus
- Data from lower levels must be transformed to upper levels
- Refined focus on supporting the actual business processes

Performance Management
 EXECUTIVES:
 Need visibility into progress towards our goals, objectives
 "Am I achieving my goals?"

Enterprise Data Warehouse
 MANAGEMENT:
 Need timely trends, summaries, analytics of our operations
 "How am I doing?"

Operational Data Store
 KNOWLEDGE WORKERS:
 Need to analyze trends and root causes
 "Why is this happening?"

STAFF:
 Need detailed reports in many formats and ad-hoc access
 "What is going on?"
 "What do I need to do?"

Performance data
 Trend, summary data
 Detailed data

SUNGARD HIGHER EDUCATION
Copyright © SunGard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 11

EDW Overview

BPRA Data Warehouse Solution

- Ensures Consistent Reporting Results
 - Common Data Source
 - Common Business Concepts
- Operational Data Store (ODS): Ad-hoc querying and daily reporting
- Enterprise Data Warehouse: Historic, trend reporting and analytics

Admin Tools

EDW: History
 Jan Feb Mar Apr May ...

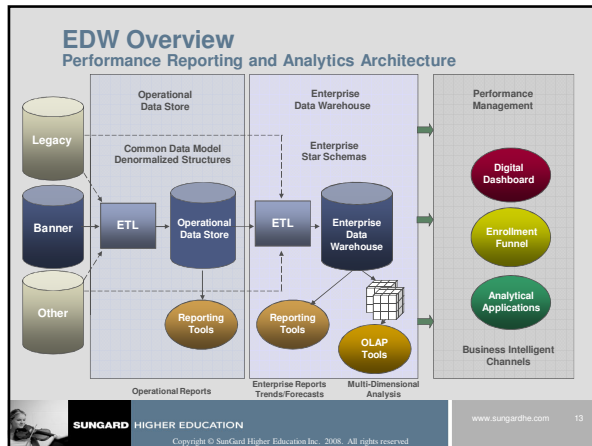
ODS: Today

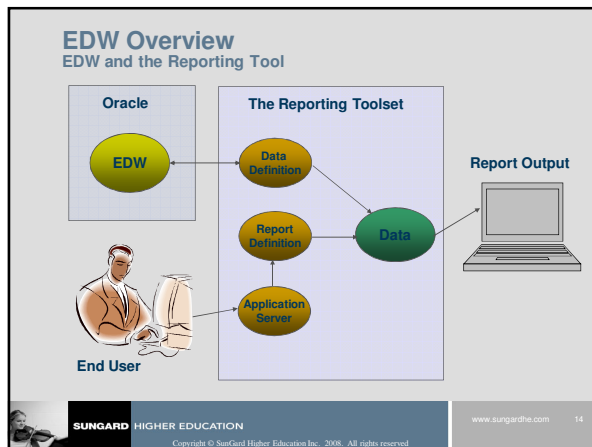
Finance HR EM Student Advancement AR

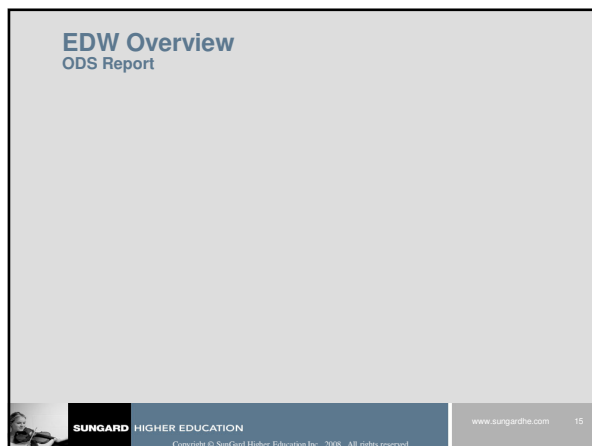
- Data Snapshots Based on Dates and Events
- Data Sets 'Frozen' for Point in Time
- Historic, Trend Reporting
- Analytics
- One Set of Data
- Data Changes Daily
- Daily Reporting

SUNGARD HIGHER EDUCATION
Copyright © SunGard Higher Education Inc. 2008. All rights reserved.


www.sungardhe.com 12







EDW Overview
EDW Report




SUNGARD HIGHER EDUCATION

www.sungardhe.com


EDW Overview
Why use the EDW?


- Designed for Higher Education.
- Presents a coherent picture of business conditions at a single point-in-time.
- Provides integrated, reliable information to support the institution's evolving decisions analytics, performance measurement, and management information needs.
- Nonvolatile: once entered into the data warehouse, data should not change.
- Time Variant: focus on change over time.
- Designed to work with the ODS.



SUNGARD HIGHER EDUCATION

www.sungardhe.com






SUNGARD HIGHER EDUCATION

www.sungardhe.com

Data Warehouse Concepts

Data Warehouse Concepts

- **Source**
 - The ODS (whose source is Banner)
 - Other external data
- **Target**
 - Cleansing control tables
 - Business information process tables
 - Detailed Star Schema
 - The Reporting Tool Presentation Environment (Olap Cube)




SUNGARD HIGHER EDUCATION
Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com 19

Data Warehouse Concepts

- **Cleansing**
 - Manage, and build the descriptions associated with codes (Default, Long, and Short)
 - Create new concepts and descriptions (Test Score Ranges, Percentile Ranges, Age)
 - Identify anomalies within the data (a.k.a. data integrity audit, preferably managed in the OLTP system)
- **Extract Events Schedule**
 - Data extracts that are scheduled based on a business need or the volatility of the data.




SUNGARD HIGHER EDUCATION
Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com 20

Data Warehouse Concepts

- **Star Schema**
 - **Fact Table**
 - Contain measures, or numerical information, that are used to perform analysis
 - **Dimension Tables**
 - Contain the attributes, or characteristics that describe observations and their associated measures
 - **Surrogate, or calculated keys**
 - Join fact to dimensions



SUNGARD HIGHER EDUCATION
Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com 21

Data Warehouse Concepts

▪ Dimensions

- Characteristics of the people, places, or things represented in the data.
- Stored in dimension tables.
- One row represents a unique combination of the characteristics .
- The unique combination is assigned a surrogate (sequential) key.



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

22

Data Warehouse Concepts

▪ Measures/Facts

- Numbers that are related to the attributes by the surrogate key. They generally represent counts, sums, or percentages and other ratios.
- They may be stored and retrieved.
- They may be calculated from stored measures as the query is executed.
- Additive vs. non-additive measures.



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

23

Data Warehouse Concepts

▪ Detailed Fact Tables

- Store most granular level of detail in the warehouse
- Support information audit when linked to Banner

▪ Summary Fact Tables

- Faster responses for queries



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

24

Data Warehouse Concepts

▪ Cubes

- Multi-dimensional
- Pre-calculate numbers for all intersections of dimensions
- Fast – fetching rows
- Flexibly rigid (Flexible within the confines of its defined dimensions and hierarchies.)



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

25

Data Warehouse Concepts

Sample Fact Table



SUNGARD HIGHER EDUCATION

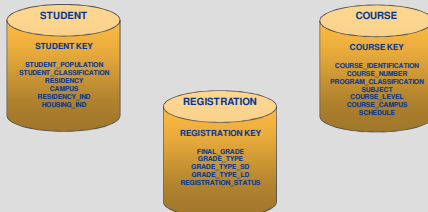
Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

26

Data Warehouse Concepts

Sample Dimension Table(s)

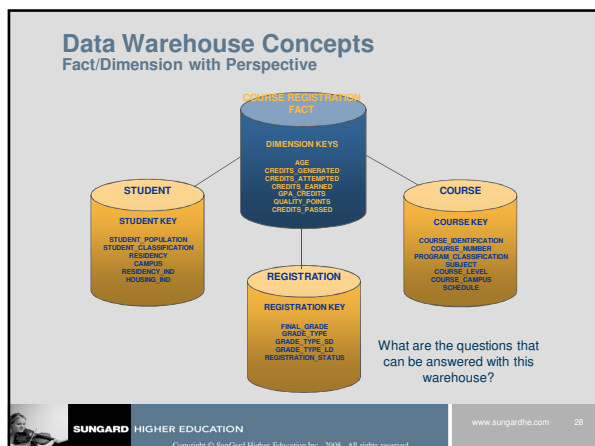


SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

27



Data Warehouse Concepts

Sample Course Dimension

KEY	COURSE IDENTIFICATION	COURSE NUMBER	SUBJECT
1	ELET101	101	ELET
2	ENGL101	101	ENGL
3	ACCT2310	2310	ACCT
4	BIOL1010	1010	BIOL

SUNGARD HIGHER EDUCATION
Copyright © SunGard Higher Education Inc. 2008. All rights reserved.
www.sungardhe.com 29

Data Warehouse Concepts

Sample Student Dimension


KEY	STUDENT POPULATION	CAMPUS	RESIDENCY IND
1	Continuing	M	Y
2	New First Time	M	Y
3	Continuing	M	N
4	New First Time	M	N

SUNGARD HIGHER EDUCATION
Copyright © SunGard Higher Education Inc. 2008. All rights reserved.
www.sungardhe.com 30

Data Warehouse Concepts

Sample Course Registration Fact

TIME_KEY	CRSE_KEY	STUD_KEY	AGE	CREDITS GENERATED
1	1	1	18	15
1	2	1	18	12
1	1	2	23	15
1	3	2	23	15
2	3	1	16	4
2	1	1	27	15
2	1	1	30	12
2	2	1	33	15





SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

31





SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.


www.sungardhe.com

The Star Schema

The Star Schema

EDW Snapshot Star Schemas

- STUDENT
 - ACADEMIC_PROGRAM_COURSE
 - COURSE_REGISTRATION
 - ENROLLMENT
 - GRADUATION_COMPLETION
 - RECRUITING_AND_ADMISSION
- FINANCE
 - GENERAL_LEDGER
 - OPERATING_LEDGER
 - GRANT_AND_PROJECT
- HR
 - EMPLOYEE
 - EMPLOYEE_DEGREE
 - EMPLOYEE_POSITION
 - EMPLOYMENT_APPLICATION
- ADVANCEMENT
 - ADVANCEMENT_GIFT
- AR
 - RECEIVABLE_CUSTOMER
 - RECEIVABLE_REVENUE
- FINAID
 - FINANCIAL_AID_PRE-STUDENT
 - FINANCIAL_AID_STUDENT



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

33

The Star Schema

- **Fact tables**
 - Contain Measures Used to Perform Analysis
- **Dimension Tables**
 - Contain Attributes
 - Surrogate (Calculated) Keys

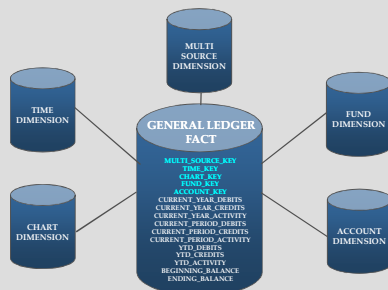


SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com 34

The Star Schema General Ledger

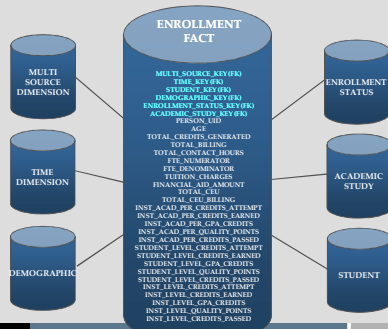


SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com 35


The Star Schema Enrollment



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com 36



SUNGARD


HIGHER EDUCATION

www.sungardhe.com
57

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

The Star Schema Handbook

- A review of the EDW Handbook – Chapter 7



SUNGARD


HIGHER EDUCATION

www.sungardhe.com
38

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.



The Event Schedule



SUNGARD

HIGHER EDUCATION

www.sungardhe.com
39

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

The Event Schedule

- Business use focus
- Information volatility focus
- Supports comparison across time

The Event Schedule

- An Event is a logical point in time when you extract information from the ODS and load it into the EDW, essentially freezing the data and giving you a snapshot of the data at that point in time.
 - End of Month
 - Close of Month
 - 1st Day of Class
 - Census Date
 - Nov 1st
- A Final Event is a flag that is set to indicate you are done taking snapshots of the data for that point in time.
 - For example, an academic period in the Enrollment Star, a Calendar Year/Month for the Employee Star.



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com 40

The Event Schedule

How to determine an Event

- **Data Volatility**
 - Operational Activities**
 - Enrollment
 - Registration
 - Pay Event
 - Finance Posting
- **Business Reason**
 - Strategic Goals**
 - Strategic Assessment
 - Accreditation
 - Federal/State Requirements



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com 41

The Event Schedule

	A	B	C	D	E	F	G	H	I	J
1	Current Descriptions									
2	EDW Value	Long Desc	Short Desc							
3	REG000	00 Beginning of Registration	REGISTRATION DAY 1							
4	REG001	01 Registration Week 1	REGISTRATION WEEK 1							
5	REG002	02 Registration Week 2	REGISTRATION WEEK 2							
6	REG003	03 Registration Week 3	REGISTRATION WEEK 3							
7	REG004	04 10 Weeks Before Classes	10 Wk Before							
8	REG005	05 9 Weeks Before Classes	9 Wk Before							
9	REG006	06 8 Weeks Before Classes	8 Wk Before							
10	REG007	07 7 Weeks Before Classes	7 Wk Before							
11	REG008	08 6 Weeks Before Classes	6 Wk Before							
12	REG009	09 5 Weeks Before Classes	5 Wk Before							
13	REG010	10 4 Weeks Before Classes	4 Wk Before							
14	REG011	11 3 Weeks Before Classes	3 Wk Before							
15	REG012	12 2 Weeks Before Classes	2 Wk Before							
16	REG013	13 1 Week Before Classes	1 Wk Before							
17	REG014	14 Beginning of Classes	FIRST DAY CLASS							
18	REG015	15 First Week of Classes	Class Wk 1							
19	REG016	16 Second Week of Classes	Class Wk 2							
20	REG017	17 Third Week of Classes	Class Wk 3							
21	REG018	18 Fourth Week of Classes	Class Wk 4							
22	REG019	19 Fifth Week of Classes	Class Wk 5							
23	REG020	20 Census 1 Enrollment and Registration	CENSUS 1							
24	REG021	21 Census 2 Enrollment and Registration	CENSUS 2							
25	REG022	22 Midterm of Classes	MIDTERM							
26	REG023	23 Last Day of Classes	LAST DAY CLASS							
27	REG024	24 End of Academic Year	END OF YEAR							




SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com 42

The Administrative UI

- EDW Metadata
 - Baseline EDW metadata
 - EDW stars
 - Maintain EDW metadata


SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 40

The Administrative UI

Set up parameters

SUNGARD HIGHER EDUCATION

Preferences & Security Information Access Options Information Access Meta Data New Web Tailor Administration

Search

RETURN TO INFO ACCESS OPTIONS SITE MAP HELP EXIT

Set Up a Parameter

Click Create to add a new Parameter.

Create

Select the Internal Group and/or Internal Code for the Parameters you want to modify, then click Search.

Show All Internal Groups Show All Internal Codes Search

ADMIN PREFERENCES

EDW EXTRACT PARAMETERS

CLEANSING DEFAULT LINK

CLEANSING DEFAULT VALUES

CLEANSING EFF. DATE ELEMENTS

CLEANSING PREFIX ELEMENTS


CLEANSING RAVERSE ELEMENTS

CLEANSING SOURCES

EDW EXTRACT PARAMETERS

ETL CONTROL GROUP

EDW Parameters For Cleansing and Extract

SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 47

The Administrative UI


Set up parameters

Cleansing Data Elements

- Information Access uses this parameter during the cleansing process when building the dimension tables for the EDW star schemas.
- This parameter defines the Data Elements that exist within each dimension.
- The elements listed here are what show up in the drop-down lists for cleansing description and code value screens.


Cleansing Default Link

- The Information Access uses this parameter to set up links between Data Elements and ODS values which are used to load default cleansing translations and descriptions.

SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 48



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com
49

The Administrative UI


Set up parameters

Cleansing Default Values

- Define the value, and long and short descriptions, used in the EDW for NULL and BAD (i.e. value not found in cleansing values list) cleansing values.

Cleansing Prefix Elements

- Information Access uses this parameter during the cleansing process to determine when to combine the values of one data element with the values of another data element as a prefix.
- This concept is most used in the area of finance where you want to look at all values of some data elements (fund, account, organization) across all values of your charts of accounts.



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com
50

The Administrative UI

Set up parameters

Cleansing Range Elements


- Distinct values from the source system that are combined into a range of values in Banner EDW.
- For example, salaries are stored in a range of values so that you can group employees by salary categories. If an employees annual salary is 75,550, the value gets cleansed and stored in the salary range value 70000 - 79999.99

Cleansing Sources

- Use to find the cleansing rules for a specific source system. It defines the data sources to Banner EDW.

Cleansing Eff_date Elements

- Not currently used



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com
51

The Administrative UI

Set up parameters

EDW Extract Parameters

- This parameter is used to populate the EDW. It helps to control how certain EDW extracts operate when moving information from the ODS to the EDW.
 - EARNINGS - includes values for Earnings that let you group your institution's earning codes into one of three categories: regular, overtime and other. The Earnings parameter values are used by the Load EDW Employee and Load EDW Employee Position jobs to group earning information before loading it into the EDW.
 - HR_APPL_STAT
 - Student Groups—STUDENT_LEVEL_GROUP, STUDENT_LEVEL_GROUP_TEST, TEST

The Administrative UI

Schedule a process

Schedule EDW Mappings

- **Load**
 - Use the Load options to run a mapping that will load the corresponding star.
- **Fix**
 - Use the Fix options to run a mapping that load the corresponding star, but use the cleansing error table as input.



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

52

The Administrative UI

Schedule a process

EDW Utilities

- **EDW Checks and Balances**
 - Provides valuable information after an upgrade or intermittently to ensure EDW components exist and are valid.
- **Load EDW Data Default Cleansing Values**
 - Load EDW Data Default Cleansing Values must be run before loading the stars.



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

53

The Administrative UI

View Control Reports

Preferences & Security Information Access Options Information Access Data Link New Web Tailor Administration

Search: []

RETURN TO INFO ACCESS OPTIONS SITE MAP HELP EXIT

Select a Control Report

Click a Process in the table below to select the Control Report you want to display. Refresh Job Status Codes

152 reports are found. 1-100 are listed below. Select all | Unselect all

Delete	Run Date	Job Number	Process	UserID	Status
<input type="checkbox"/>	Aug 26, 2008 12:24 pm	1363	LOAD_EDW_EMPLOYEE_POSITION	KIML	Terminated
<input type="checkbox"/>	Aug 26, 2008 11:53 am	1362	LOAD_EDW_EMPLOYEE_POSITION	KIML	Complete
<input type="checkbox"/>	Jul 17, 2008 02:43 pm	1339	LOAD_EDW_EMPLOYEE_POSITION	MFURTA00	Complete
<input type="checkbox"/>	Jul 17, 2008 02:42 pm	1338	LOAD_EDW_EMPLOYEE_POSITION	MFURTA00	Complete
<input type="checkbox"/>	Jul 17, 2008 02:42 pm	1337	LOAD_EDW_EMPLOYEE_POSITION	MFURTA00	Complete
<input type="checkbox"/>	Jul 17, 2008 02:39 pm	1336	LOAD_EDW_EMPLOYEE_POSITION	MFURTA00	Complete
<input type="checkbox"/>	Jul 17, 2008 02:38 pm	1335	LOAD_EDW_EMPLOYEE_POSITION	MFURTA00	Complete
<input type="checkbox"/>	Jul 17, 2008 02:37 pm	1334	LOAD_EDW_EMPLOYEE_POSITION	MFURTA00	Complete
<input type="checkbox"/>	Jul 17, 2008 02:35 pm	1333	LOAD_EDW_EMPLOYEE_DEGREE	MFURTA00	Complete
<input type="checkbox"/>	Jul 17, 2008 02:34 pm	1332	LOAD_EDW_EMPLOYEE_DEGREE	MFURTA00	Complete
<input type="checkbox"/>	Jul 17, 2008 02:19 pm	1331	LOAD_EDW_EMPLOYEE_DEGREE	MFURTA00	Complete
<input type="checkbox"/>	Jul 17, 2008 01:47 pm	1330	LOAD_EDW_GRADUATION_COMPLETION	KIML	Complete
<input type="checkbox"/>	Jul 17, 2008 01:47 pm	1329	LOAD_EDW_GRADUATION_COMPLETION	KIML	Complete
<input type="checkbox"/>	Jul 17, 2008 01:45 pm	1328	LOAD_EDW_GRADUATION_COMPLETION	KIML	Complete



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

54

The Administrative UI

Maintaining Descriptions

- Original long descriptions from Banner validation tables, sometimes with codes as prefixes
- Original short descriptions validation table descriptions from Banner
- Manually entered descriptions, if present, will over-ride initial ones (e.g. Academic Periods, Majors)
- Descriptions are associated with codes from business information during the load of the warehouse



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

55

The Administrative UI

Maintain Descriptions For Code Values (event → enrollment)

Preferences & Security Information Access Options Information Access Meta Data **New Web Tailor Administration**

Search RETURN TO INFO ACCESS OPTIONS SITE MAP

Select an Existing Description for Code Values

To set up new Descriptions for a Code Value, choose a Data Element and click Create.

EVENT_ENROLLMENT

To update an existing Description, select a Data Element and enter any other desired search criteria, then click Search.

Data Element: EDW Prefix: EDW Value: [\[Set Up Values \]](#)

Click a Long Description in the table below to select the Description you want to update or delete.

26 records are found for this data element. 1-25 are listed below.

EDW Value	EDW Long Description	User Long Description	EDW Short Description	User Short Description	Sys Maint
REG000	00 Beginning of Registration		REGISTRATION DAY 1		Yes
REG001	01 Registration Week 1		REGISTRATION WEEK 1		Yes
REG002	02 Registration Week 2		REGISTRATION WEEK 2		Yes
REG003	03 Registration Week 3		REGISTRATION WEEK 3		Yes
REG004	04 10 Weeks Before Classes		10 Wk Before		Yes
REG005	05 9 Weeks Before Classes		9 Wk Before		Yes
REG006	06 8 Weeks Before Classes		8 Wk Before		Yes



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

56

The Administrative UI

Maintain Descriptions For Code Values (academic period)

Preferences & Security Information Access Options Information Access Meta Data **New Web Tailor Administration**

Search RETURN TO INFO ACCESS OPTIONS

Select an Existing Description for Code Values

To set up new Descriptions for a Code Value, choose a Data Element and click Create.

ACADEMIC_PERIOD

To update an existing Description, select a Data Element and enter any other desired search criteria, then click Search.

Data Element: EDW Prefix: EDW Value: [\[Set Up Values \]](#)

Click a Long Description in the table below to select the Description you want to update or delete.

56 records are found for this data element. 1-25 are listed below.

EDW Value	EDW Long Description	User Long Description	EDW Short Description	User Short Description	Sys Maint
000000	The Beginning of Time		The Beginning of Time		Yes
198810	Fall 1987		Fall 1987		Yes
198820	Spring 1988	Spring	Spring 1988	Spring	Yes
198830	Summer 1 1988		Summer 1 1988		Yes
198840	Summer 2 1988		Summer 2 1988		Yes
198910	Fall 1988		Fall 1988		Yes
198920	Spring 1989	Spring	Spring 1989	Spring	Yes
198930	Summer 1 1989		Summer 1 1989		Yes



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

57

The Administrative UI Translating Codes

- Codes as found in Banner can be associated with different code values in the warehouse
 - Simple translation, one-to-one
 - Range translation
- More than one code in Banner can be associated with one code and its description in the warehouse



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

58

The Administrative UI Translate Code Values from Source Data (event → enrollment)

Preferences & Security Information Access Options Information Access Meta Data **New Web Toolset Administration**

Search: RETURN TO INFO ACCESS OPTIONS SITE MAP HELP

Select an Existing Code Value Translation

To set up a new Code Value, choose a Data Element and click Create.

EVENT_ENROLLMENT

To update an existing Code Value, select a Data Element and enter any other desired search criteria, then click Search.

Data Element: EVENT_ENROLLMENT Source: Source Prefix: Source From Value: [Set Up Descriptions](#)

Click the EDW Description in the table below to select the Code Translation you want to update or delete.

26 records are found with this Data Element. 1-25 are listed below.

Source	Source Value	EDW Value	EDW Long Description
Sungard HE University of Malvern Pennsylvania	REG000	REG000	00 Beginning of Registration
Sungard HE University of Malvern Pennsylvania	REG001	REG001	01 Registration Week 1
Sungard HE University of Malvern Pennsylvania	REG002	REG002	02 Registration Week 2
Sungard HE University of Malvern Pennsylvania	REG003	REG003	03 Registration Week 3
Sungard HE University of Malvern Pennsylvania	REG004	REG004	04 10 Weeks Before Classes
Sungard HE University of Malvern Pennsylvania	REG005	REG005	05 9 Weeks Before Classes
Sungard HE University of Malvern Pennsylvania	REG006	REG006	06 8 Weeks Before Classes
Sungard HE University of Malvern Pennsylvania	REG007	REG007	07 7 Weeks Before Classes



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

59

The Administrative UI Translate Code Values from Source Data (academic period)

Preferences & Security Information Access Options Information Access Meta Data **New Web Toolset Administration**

Search: RETURN TO INFO ACCESS OPTIONS SITE MAP HELP

Select an Existing Code Value Translation

To set up a new Code Value, choose a Data Element and click Create.

ACADEMIC_PERIOD

To update an existing Code Value, select a Data Element and enter any other desired search criteria, then click Search.

Data Element: ACADEMIC_PERIOD Source: Source Prefix: Source From Value: [Set Up Descriptions](#)

Click the EDW Description in the table below to select the Code Translation you want to update or delete.

36 records are found with this Data Element. 1-25 are listed below.

Source	Source Value	EDW Value	EDW Long Description
Sungard HE University of Malvern Pennsylvania	000000	000000	The Beginning of Time
Sungard HE University of Malvern Pennsylvania	198810	198810	Fall 1987
Sungard HE University of Malvern Pennsylvania	198920	198920	Spring
Sungard HE University of Malvern Pennsylvania	198830	198830	Summer 1 1988
Sungard HE University of Malvern Pennsylvania	198840	198840	Summer 2 1988
Sungard HE University of Malvern Pennsylvania	198910	198910	Fall 1988
Sungard HE University of Malvern Pennsylvania	198920	198920	Spring
Sungard HE University of Malvern Pennsylvania	198930	198930	Summer 1 1989



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

60

The Administrative UI

The Administrative UI

List Events for an EDW Star

Search [RETURN TO INFO ACCESS PORTAL](#)

List Events for an EDW Star

To view the Events loaded for an EDW Star, click that Star and click List Events.

EDW Star: [List Events](#)

# Rows	Event	Date Loaded	Multi Source Qualifier	Academic Period	Acad Yr	List Event	Ind
26	REG09B - 98 Final Academic Period	30-Nov-2007 10:06:06	SGHE	199510			
28	REG09B - 98 Final Academic Period	30-Nov-2007 10:16:42	SGHE	199520		Y	
61	REG09B - 98 Final Academic Period	30-Nov-2007 10:19:23	SGHE	199610			
64	REG09B - 98 Final Academic Period	30-Nov-2007 10:20:48	SGHE	199610			
20	REG09B - 98 Final Academic Period	30-Nov-2007 10:23:13	SGHE	199210			
34	REG09B - 98 Final Academic Period	30-Nov-2007 10:29:04	SGHE	199420		Y	
69	REG09B - 98 Final Academic Period	30-Nov-2007 11:53:03	SGHE	199520		Y	
20	REG09B - 98 Final Academic Period	30-Nov-2007 11:54:06	SGHE	199220		Y	
34	REG09B - 98 Final Academic Period	30-Nov-2007 11:55:25	SGHE	199410			

RELEASE: ODS 3.1 / EDW 1.4

Copyright © SunGard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

[illegible]

The Administrative UI

Users

- Oracle users who require an Oracle user account in your source system so they can access the ODS to build reports
- Administrative users who require a user account in the Administrative UI so they can use the UI to maintain the ODS/EDW

Layers

- Reporting tool
- Database objects
- Data values

Value based security is implemented using Oracle's Fine Grained Access (FGAC).

The Administrative UI

EDW Security


Users

- Oracle users who require an Oracle user account in your source system so they can access the ODS to build reports
- Administrative users who require a user account in the Administrative UI so they can use the UI to maintain the ODS/EDW

Layers

- Reporting tool
- Database objects
- Data values

Value based security is implemented using Oracle's Fine Grained Access (FGAC).

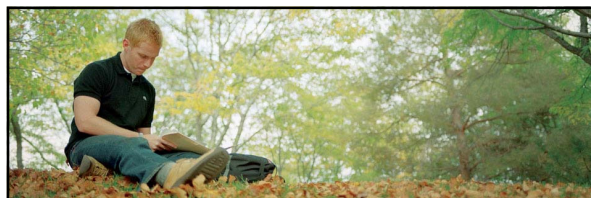


SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

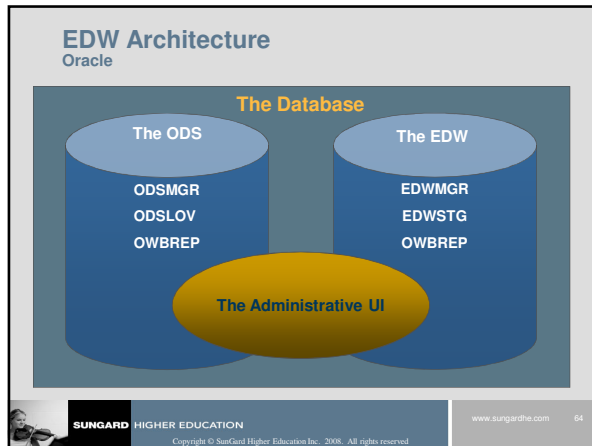
www.sungardhe.com

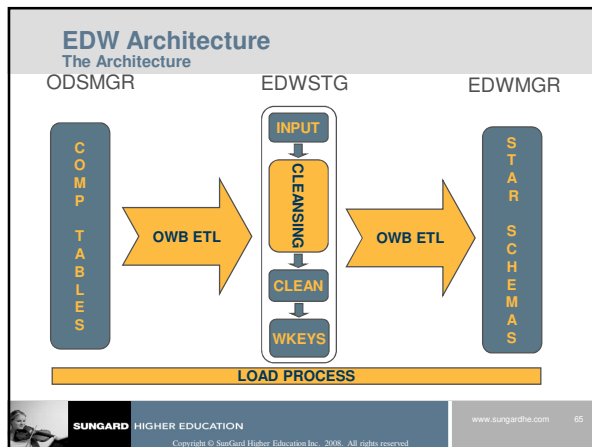
62

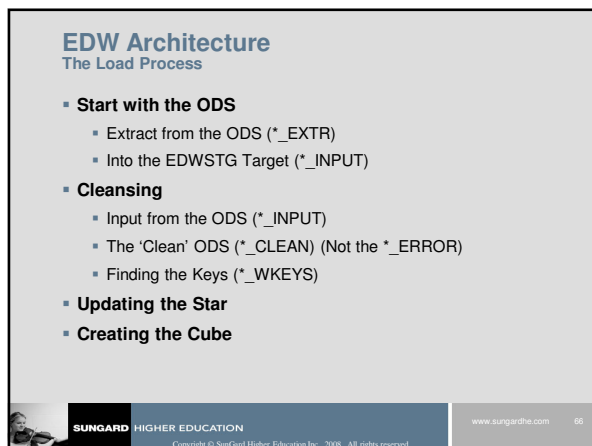


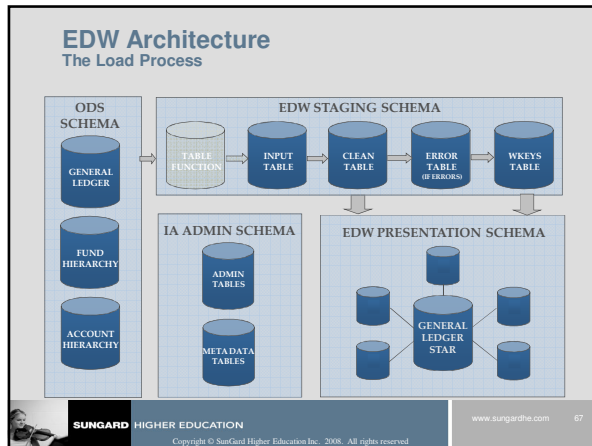
SUNGARD HIGHER EDUCATION

EDW Architecture









EDW Architecture The Cleansing Process

- "Cleansing" is the process of verifying ODS code values and possibly translating them to standardized code values in the EDW. It's used to:
 - Remove duplicate code values before loading them into the EDW.
 - Translate a code value in the ODS to a new value in the EDW.
 - Change an ODS description value to a new value in the EDW.
 - Group together a range of ODS code values into one EDW value.

SUNGARD HIGHER EDUCATION
Copyright © SunGard Higher Education Inc., 2008. All rights reserved.
www.sungardhe.com 68

EDW Architecture The Cleansing Process

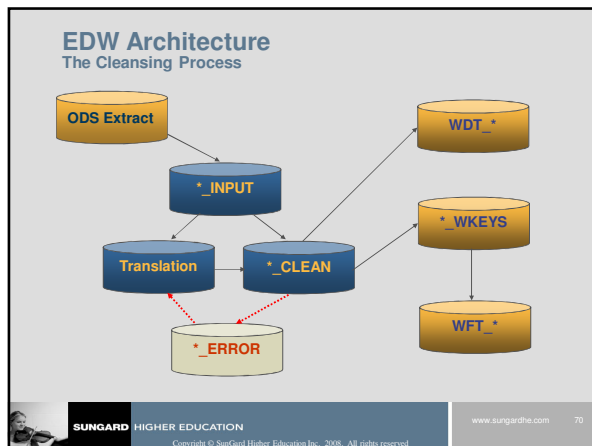
ODS EXTRACT

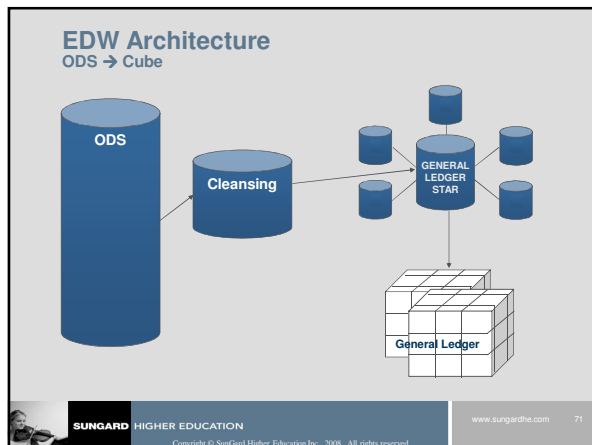
CLEANSING

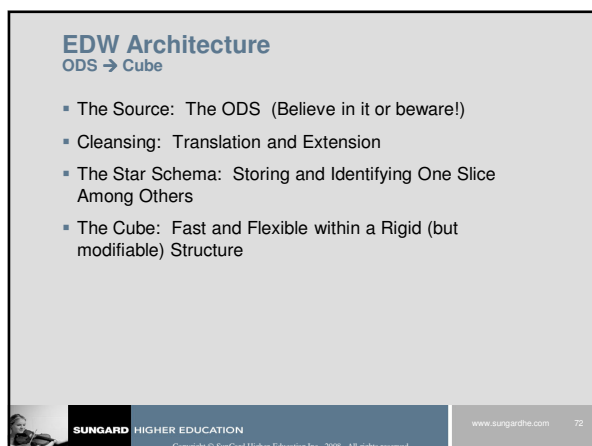
LOAD * SCHEMA

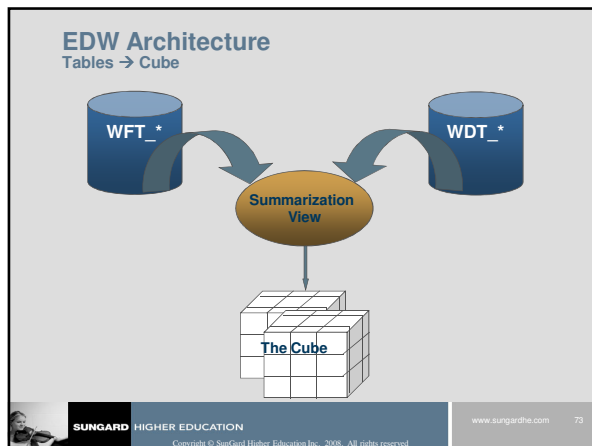
1. Extract data from the ODS into INPUT staging table.
2. Cleanse the data from the INPUT table and load it into the associated CLEAN table.
3. Update the DIMENSION tables with the unique combinations of dimensional attributes extracted from the CLEAN tables.
4. Insert the surrogate keys returned from the join of the CLEAN table with its associated DIMENSION tables into the associated WKEYS table.
5. Load data from the WKEYS table into the FACT table.

SUNGARD HIGHER EDUCATION
Copyright © SunGard Higher Education Inc., 2008. All rights reserved.
www.sungardhe.com 69









EDW Architecture

Tables → Cube

- The Tables: The EDW Fact and Dimension Tables
- View: Summarize Fact and Dimension data
- The Cube: Fast and Flexible within a Rigid (but modifiable) Structure

SUNGARD HIGHER EDUCATION
 Copyright © SunGard Higher Education Inc., 2008. All rights reserved.
 www.sungardhe.com 74

SUNGARD HIGHER EDUCATION
 www.sungardhe.com

Testing and Documentation

Copyright © SunGard Higher Education Inc., 2008. All rights reserved.

Testing and Documentation

- The ODS Foundation
- Testing at the Reporting Tool level (Cube)
- Testing at the Star Schema level
- Testing at all levels: Banner, ODS
- Identifying the information that's missing
- Identifying measures and dimensions that are not included
- Make sure the query answers the business question identified
- Identifying the default query for each cube
- Identify documentation needs



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

76

Testing and Documentation

- **Test against reports you trust**
 - Against the ODS
 - Against Banner
 - Banner forms
- **Testing at the Star Schema level**
 - Create reports as focused on potential issues
- **Testing Sufficiency of Content**
 - Are measures supportive of the Strategic Plan?
 - Are measures supportive of critical objectives?



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

77

Testing and Documentation

- **The ODS/EDW Handbook**
 - Provide core application documentation of both supporting processing and usage considerations
 - EDW ERD
 - Delivered in Adobe Acrobat format
- **The Meta Data**
 - Provides documentation of both target and source
 - At Target Star Schema and ODS Source View level
 - At the Column level
 - Relates EDW to ODS, and ODS to Banner
 - Customizable at the local level
 - Delivered as data within the database to be subsequently generated as static HTML for deployment on the client intranet
 - Top-level page: ODS_index.html



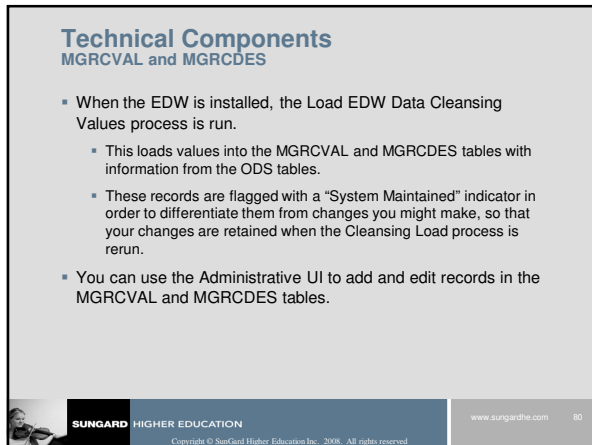
SUNGARD HIGHER EDUCATION

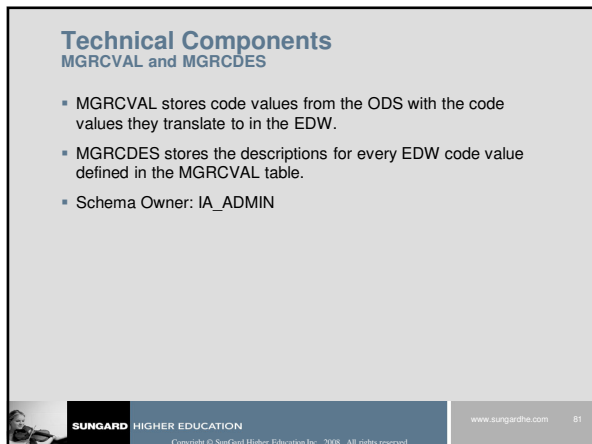
Copyright © Sungard Higher Education Inc., 2008. All rights reserved.

www.sungardhe.com

78







Technical Components MTVPARM

- MTVPARM contains the internal parameters used by the EDW during processing.
 - They are defined within the MTVPARM table with an MTVPARM_INTERNAL_CODE_GROUP of 'EDW EXTRACT PARAMETERS':
 - HR_APPL_STAT
 - EARNINGS
 - Student Groups—STUDENT_LEVEL_GROUP, TEST, STUDENT_LEVEL_GROUP_TESTS
- Schema Owner: IA_ADMIN

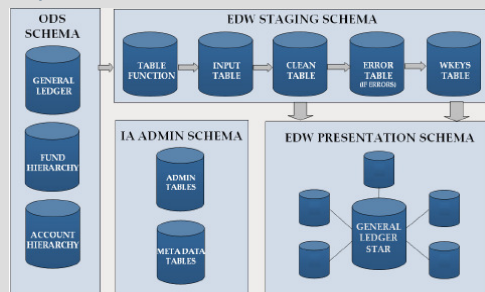


SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 62

EDW Technical Components Snapshot Star Load Process

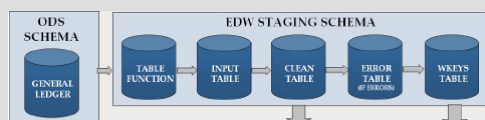


SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 63

EDW Technical Components



INPUT OWB ETL

- Data is extracted from the ODS using pipelined table functions.
- Data is extracted based upon user defined parameters for a point-in time slice of data.
- EDW_%_EXTR
- The extracted data is loaded into INPUT TABLES in a staging area

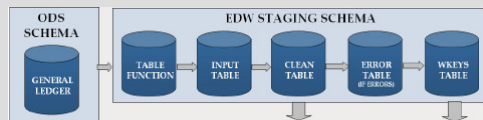


SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 64

EDW Technical Components



CLEAN OWB ETL

- Extracted data is cleansed based upon the institutional preferences.
- Cleansed data is loaded into CLEAN TABLE in the staging area
- EDW_%_CLEAN
- MGKDCLS.P_Cleanse_Input



SUNGARD HIGHER EDUCATION

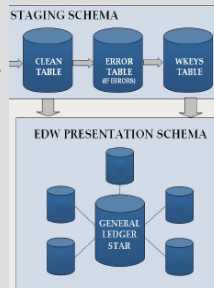
Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 65

EDW Technical Components

DIM OWB ETL

- The unique dimensional attribute combinations are then inserted into the dimension tables with a uniquely defined surrogate key
- EDW_%_DIM_TIME_INSERT/UPDATE
- EDW_%_DIM_TABLE_NAME

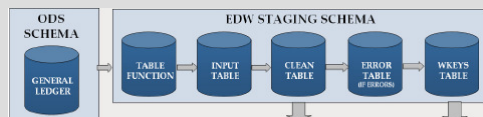


SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 66

EDW Technical Components



WKEYS OWB ETL

- New dimension data elements combinations extracted from the CLEAN table are inserted into the corresponding WKEYS table.
- EDW_%_WKEYS



SUNGARD HIGHER EDUCATION

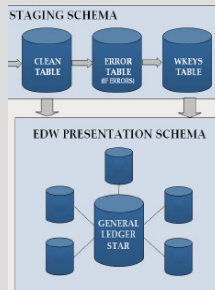
Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com 67

EDW Technical Components

FACT OWB ETL

- The facts of the extracted data are then loaded into the fact table(s) along with the surrogate keys defining each record's unique combination of dimensional attributes.
- EDW_%_FACT_INSERT/DELETE



SUNGARD HIGHER EDUCATION

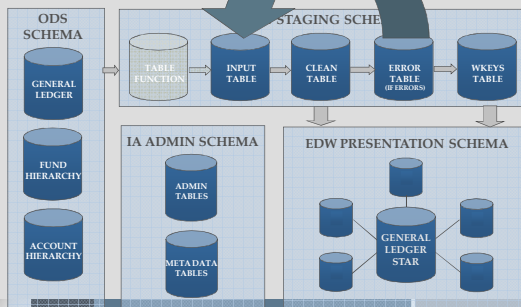
Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

88

EDW Technical Components

Snapshot Star Fix Process



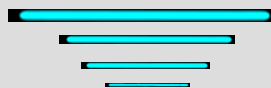
SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

89

Questions?



Thanks!

Joanne.Keys@sungardhe.com



SUNGARD HIGHER EDUCATION

Copyright © Sungard Higher Education Inc. 2008. All rights reserved.

www.sungardhe.com

90
