

Support Technical Exchange: TPAE Data Dictionary – Part 1

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Introduction

- Abstract:

This session will explain the functions of the core tables of the Tivoli Processing Automation Engine data dictionary.

- Objectives:

Understand how Java objects are defined.

Understand how database objects are defined.

Not Covered

A few areas of the data dictionary are documented and will not be covered in this session.

- E-Audit
- E-Signature
- Localization and Multi-Language setup

Perspectives

- Java object definition
 - Maximo Business Object (MBO)

- Database object definition
 - Table
 - View
 - Index

Java Objects - MBOs

- **MAXOBJECT**
 - Object and Java class

- **MAXATTRIBUTE**
 - Attributes of an object
 - Datatype and size
 - Validation

- **MAXRELATIONSHIP**
 - Associate child objects with a parent

Persistence

- **MAXOBJECT.PERSISTENT**
 - 0 Java-only object.
 - 1 There is a table or view where (some) data persists.
- **MAXATTRIBUTE.PERSISTENT**
 - 0 The value is for input or derived at runtime.
 - 1 The value persists in a table or view.

If the object is not persistent, then no attribute may be persistent.

If the object is persistent, then it must have some persistent attributes.

What Is The Name

- **MAXOBJECT**
 - OBJECTNAME Name of the object.
 - ENTITYNAME Table or view name of persistent object.

- **MAXATTRIBUTE**
 - ATTRIBUTENAME Name of the attribute.
 - TITLE The default title displayed on screen and used in error messages. Override in Application Designer.

Where Does It Come From?

- **MAXATTRIBUTE.ENTITYNAME**
 - Same as the object's entity name for a persistent attribute.
 - If non-persistent, the entity name of the object it comes from.
 - If null, then this is a calculated or input attribute

- **MAXATTRIBUTE.COLUMNNAME**
 - Same as the attribute name for a persistent attribute.
 - If non-persistent, the attribute name of the object it comes from.
 - If null, then this is a calculated or input attribute

QUESTIONS?

Ownership

- **MAXOBJECT.USERDEFINED** (also in **MAXATTRIBUTE**)
 - 0 Created for one of the installed products
 - 1 Customer created

- **MAXOBJECT.IMPORTED**
 - 0 Created using Database Configuration application.
 - 1 Created in database and registered in the data dictionary using import action of Database Configuration.

IMPORTED objects are always **USERDEFINED** and will not be dropped from database if dropped from TPAE data dictionary.

Base Object, Extension, Main Object

- **MAXOBJECT.EXTENDSOBJECT**
 - If null, this is a base object.
 - If not null, then this object extends the object named here, and this object's Java class extends the extended object's class.

- **MAXOBJECT.MAINOBJECT**
 - 1 This is a main object which can be put into workflow
 - 0 Not a main object for workflow purposes.
 - Also determines if main object for Escalation or Integration.

Categories

- **MAXOBJECT.INTERNAL**
 - 1 Reserved for internal use. (Filtered out of list in Database Configuration)
 - 0 Not reserved.

- **MAXOBJECT.ISVIEW**
 - 0 It's a table or non-persistent.
 - 1 It's a view and must be persistent.

Integration

- **MAXATTRIBUTE.ALIAS**
 - Alternate name used in Integration Object Structures

- **MAXATTRIBUTE.RESTRICTED**
 - When 1, value can only be changed by methods within it's own object.

Classname

- **MAXOBJECT.CLASSNAME**
 - The Java class which represents this object.

- **MAXATTRIBUTE.CLASSNAME**
 - The Java class which validates the value of this attribute.

Services and Site-Org Type

- MAXOBJECT.SERVICENAME
 - Name of service which owns this object.
 - Listed in MAXSERVICE table.

- MAXOBJECT.SITEORGTYP
 - What level is data defined at?
 - SYSTEM, SITE, ORG
 - SYSTEMORGSITE, SYSTEMSITE, ORGSITE
 - ITEMSET, COMPANYSET

QUESTIONS?

MAXATTRIBUTE Initialization

- **DEFAULTVALUE**
 - Value to set in this attribute when a new object is created.
- **CANAUTONUM=1 plus AUTOKEYNAME**
 - Automatically numbered from the AUTOKEY table record.

Cannot have both a default value and autonumbering.

MAXATTRIBUTE Primary Data Key(s)

- PRIMARYKEYCOLSEQ = number
 - The data key consists of all attributes with a value here
 - Value must be continuous integer sequence starting with 1
 - Unique index is built with columns in this order

MAXATTRIBUTE User Interface Controls

- **SEARCHTYPE**
 - How the QBE methods should construct query conditions.
- **TEXTDIRECTION**
 - Display text left to right or right to left.
- **COMPLEXEXPRESSION**
 - Format for data which cannot be right to left, such as URL, XML, SQL.
- **ISLDOWNER**
 - If 1, then attribute has been enabled for long description.
 - Will have associated attributename_LONGDESC attribute.

MAXATTRIBUTE Data Validation

- **MAXTYPE, LENGTH, and SCALE**
 - Valid data type
 - Valid length (and scale for decimal numbers)
- **DOMAINID**
 - Value must exist in the domain
- **ISPOSITIVE**
 - If 1 and numeric type, must be a positive number or 0.
- **REQUIRED**
 - Cannot be null.

Definition Synchronization

- **SAMEASOBJECT and SAMEASATTRIBUTE**

If both null, then this is either a root attribute, or if MAXTYPE is GL or ACCOUNT, kept in sync by a different method.

If not null, then this attribute has same type, length, and scale as the named object and attribute.

- **MUSTBE**

- If 1, then cannot be changed in Database Configuration. (MUST BE left unchanged.)
- If 0 then can be changed.

Attribute Order

- **MAXATTRIBUTE.ATTRIBUTENO**
 - A continuous sequence of integers starting with 1
 - No gaps. Gaps can cause obscure errors.
 - Matches alphabetical order of attribute names.
 - Order of table columns for persistent attributes.

Remarks

- **MAXATTRIBUTE.REMARKS**

- Describes the attribute
- Displayed when you put cursor in a field and press ALT-I
- Useful place to write instructions for custom attributes

QUESTIONS?

Relationships

- Associate child objects to a parent object
- Used to instantiate MBO Sets
- **MAXRELATIONSHIP.CARDINALITY**
 - Identifies if relationship is one-to-one (SINGLE) or one-to-many (MULTIPLE) or indeterminant (UNDEFINED)
- **MAXRELATIONSHIP.DBJOINREQUIRED**
 - IF 1, the relationship requires that tables be joined.

Defining Database Objects

- **MAXTABLE**
 - Table definition

- **There is no MAXCOLUMN**
 - Info is in MAXATTRIBUTE

- **MAXVIEW**
 - View definition

- **MAXVIEWCOLUMN**
 - View column mapping to table columns

MAXTABLE Specifics

- **STORAGEPARTITION**
 - Tablespace (DB2, Oracle) or Segment (SQL Server) where table resides.
- **UNIQUECOLUMNNAME**
 - Column which contains the integer key. Should have a unique index defined on it.
- **TRIGROOT**
 - Root of name for rowstamp trigger(s).
- **TEXTSEARCHENABLED**
 - If true, the table has at least one text index defined for a column.

MAXTABLE and Integration

- **MAXTABLE.ALTIXNAME**
 - Name of alternate index for use by Integration
 - Used when primary keys are not sufficient for retrieval
 - Does not need to be unique

QUESTIONS?

Configuration Tables - Tables

MAXOBJECTCFG, MAXATTRIBUTECFG, MAXTABLECFG

- Changes planned in Database Configuration saved here.
- Will match their non-CFG counterparts when no changes planned or immediately following Apply Changes

Configuration Tables - Indexes

MAXSYSINDEXES and MAXSYSKEYS

- Only used for index changes, not while running.
- Can be updated with back end changes with Refresh Index Tables (which does not change the indexes).
- Text indexes cannot be changed here. Change SEARCHTYPE of the attribute instead.

Configuration Tables - Views

MAXVIEWCFG and MAXVIEWCOLUMNCFG

- Planned view definitions stored here

FINAL QUESTIONS?