ETL Process and Architectural Overview

Business Objects Server

XS Dashboards

The XS dashboards contain scorecards, perspectives, objectives, and key performance indicators (KPIs).

Universes and Analytic Views

The universes provide business-oriented views of the data and act as an interface between the data warehouse and the components that display the data. The universes contain a schema of the tables and joins in the data warehouse. They also contain analytic views that ensure the consistency and quality of the data.

XS Dashboards

FPA Dashboards

Universes and Analytic Views

FPA Analytics

FPA Dashboards

The FPA dashboards provide a convenient, interactive view of actual versus planned performance.

FPA Analytics

The FPA analytics summarize or aggregate data to help managers identify trends, analyze volumes of data, plan, forecast, and make business or strategic decisions.

Business Objects Server

Web Application Server

XS KPI Engine

The Executive Scorecard KPI engine calculates the value of a KPI using the formula specified for the KPI and provides the status and score for the KPI using the thresholds specified for the KPI.

FPA Allocation Engine

The FPA allocation engine provides to the FPA web application status information about allocations when stages or rules change.

XS KPI Engine

FPA Allocation Engine

FPA Cost Explorer

FPA Cost Explorer

The FPA cost explorer tool provides multidimensional cost analysis. It enables you to interactively view and filter allocation results in the form of charts that show variance between planned and actual costs.

Web Application Server

DW Target Database

Target Tables

The data warehouse target tables contain the data the applications use for reporting purposes. The data resides in standard fact and dimension tables.

FPA Fact Tables

Target Dimension Tables

Target Fact Tables

FPA Allocation Views

AACOST_FACT
APCOST_FACT

FPA Allocation Views

The allocation views contain allocation scenarios, stages, and rules.

Target Layer

DW Target Database

DW Staging Database

Dimensional Transform (XFR)

The Transformation Layer contains load-ready tables in the structure of the target tables. Load-Ready New (XFRN) tables contain new records. Load-Ready Update (XFRU) tables contain records that need to be updated, and Load-Ready Delete (XFRD) tables contain records that have been flagged as deleted.

The transform processes extract data from the MSC tables, convert it into a dimension and fact format that is compatible with the target database, and load it into the load-ready target staging tables.

XFRN
XFRU
XFRD

Transformation Layer

Multiple Source Consolidation (MSC)

The Multiple Source Consolidation (MSC) tables contain data from the MSI tables that is combined into a single consolidated entity.

Cross Reference (XREF)

The Cross Reference (XREF) tables contain descriptions of enterprise key to business key relationships, source entities, consolidated entities, and priority relationships. The ETL process uses this information to combine data records from different source models into a single record in the consolidation model.

MSC
XREF
CSNP

Consolidated Snapshot (CSNP)

The Consolidated Snapshot (CSNP) tables contain the data from the MSC tables as it existed at the end of the previous ETL cycle. The ETL process uses data in the CSNP tables to determine whether a record is new, updated, or deleted.

Consolidation Layer

Multiple Source Identity (MSI)

The Multiple Source Identity (MSI) tables contain data from the SSI tables with the addition of the enterprise key.

Single Source Identity (SSI)

The Single Source Identity (SSI) processes restructure the diverse source system data from the EXT tables into standard structures. The SSI tables contain this conformed data.

Since the data warehouse uses data from multiple source systems that do not use the same business keys for the same entities, the ETL process creates an internal enterprise key to link entity records. The ETL process uses data in the SSI tables to generate the enterprise keys, which are used during the consolidation process.

MSI
SSI
SSNP

Single Source Snapshot (SSNP)

The Single Source Snapshot (SSNP) tables contain the data from the SSI tables as it existed at the end of the previous ETL cycle. The ETL process uses the SSNP tables as part of the process to backfill the MSI tables.

Identification Layer

Extract Staging Tables (EXT)

The Extract Staging (EXT) tables store data in database form. After validating the data, The ETL process loads data from the EXTRACT_FF and EXTRACT_DELETE_FF flat files and alternate source spreadsheets into the EXT tables. The EXT tables also contain pre-fill records from the Transactional Snapshot (TSNP). For each data source, IThe files are zipped and stored in an archive file.

EXT
TSNP

Transactional Snapshot (TSNP)

The Transactional Snapshot (TSNP) tables contain a version of the source data as it existed at the beginning of the previous ETL cycle. The ETL process uses the TSNP tables to identify deleted records by comparing the business keys in the EXTRACT_DELETE_FF flat files to the business keys in the TSNP tables. If a key exists in the TSNP tables but not in EXTRACT_DELETE_FF, the ETL process identifies the associated record as a deleted record and loads it into the EXT tables. The ETL process also uses the TSNP tables as part of the pre-fill process.

Extraction Layer

DW Staging Database

File System

Alternate Sources

Alternate sources use Excel spreadsheets as a platform. Use the alternate source spreadsheets to load into the data warehouse data from a non-HP data source. The ETL process extracts data from the alternate source spreadsheets to flat files.

Alternate Sources

ALT_ACTUALCOST.xls
ALT_CFGITEM.xls
ALT_CHANGE.xls
ALT_CONTRACT.xls
ALT_COSTCENTER.xls
ALT_EMPLOYMENT.xls
ALT_EXCHANGE.xls
ALT_INCIDENT.xls
ALT_INTERACTION.xls
ALT_LOCATION.xls
ALT_MODEL.xls
ALT_ORG.xls
ALT_PERSON.xls
ALT_PLANNEDCOST.xls
ALT_PROJOBJECTIVE.xls
ALT_PROJECT.xls
ALT_PROJECTTASK.xls
ALT_REVENUE.xls
ALT_SERVICE_DIM.xls
ALT_SERVICESTATUS_FACT.xls
ALT_SLA_DIM.xls
ALT_SLAOUTAGE.xls
ALT_SLASTATUS.xls
ALT_SURVEY.xls
ALT_SURVEYSCORE.xls
ALT_TIME_TO_MARKET.xls

AllocationMetric.xls

FPA Allocation Metric Spreadsheet

The FPA Allocation Metric spreadsheet enables you to use metric-based allocation to allocate costs based on values that change from period to period. The ETL process loads the data from this spreadsheet directly into the target tables.

External Sources

External sources use Excel spreadsheets as a platform. Use the external source spreadsheets to consolidate data manually or use data from a non-HP data source. The ETL process loads some external source spreadsheet data into the consolidation process (MSC tables) and some directly into the target tables.

External Sources

Budget.xls
CostCategory.xls
ITFUNCTIONS.xls
MeasureType.xls
PROGRAMS.xls
STATUS.xls

EXTRACT_FF
EXTRACT_DELETE_FF

Flat File Extracts

The extract processes extract delta data from the source systems and spreadsheets and write it to delimited flat files on the file system. The flat files (EXTRACT_FF and EXTRACT_DELETE_FF) decouple the data warehouse from the source systems. EXTRACT_FF files contain records that were updated or inserted since the last time ETL ran. EXTRACT_DELETE_FF files contain the complete list of business keys from the source view and are used to identify delete records.

File System

Source Databases

Data Integration Interface

For AM, PPM, and SM, the data warehouse accesses source data through predefined views that contain the logic required to convert the data to a format that the extract process can use.

For BSM and UCMDB, the data warehouse accesses source data through BusinessObjects Data Services (BODS) custom adapters that rely on integration technologies such as Web services.

For ALM, the data warehouse accesses source data using a BusinessObjects Data Services (BODS) generic adapter.

For NA, the data warehouse accesses source data using the FBO Extractor Database.

For NNM, AP, and DP, the data warehouse accesses source data using a FPI Extractor specific to the data source. The integration is performed using the File Based Integration (FBI) mechanism.

Predefined Views
BODS Custom Adapters
FBI Extractor Database
Specific FBI Extractor
Specific FBI Extractor

AM
PPM
SM
BSM
UCMDB
ALM
NA
SA
BSM-APM
DP
NNM

Source Systems

The source systems contain the current source data. You can extract data from HP Asset Manager (AM), HP Business Service Management (BSM), HP Project and Portfolio Management (PPM), HP Service Manager (SM), HP Universal Configuration Management Database (UCMDB), HP Application LifeCycle Management (ALM), HP Network Automation (NA), HP Network Node Manager (NNM), HP Server Automation (SA) and HP DataProtector (DP). These source systems reside in remote databases managed by an RDBMS.

The data warehouse uses the change data capture (CDC) technique for extracting data from the source tables. The ETL process extracts data if the last modification date is greater than or equal to the maximum last modification date value.

Source Databases

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