HP OpenView DecisionCenter

Data Warehouse

For the Windows® Operating System

Software Version: 1.00

Integration Guide

Document Release Date: November 2006
Software Release Date: November 2006

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Contents

Preface

The information in this document is for advanced users who are responsible for customizing, installing, and configuring the HP OpenView DecisionCenter data warehouse. Refer to the HP OpenView *Online Help* for standard changes to the data warehouse.

Refer to the HP OpenView *DecisionCenter Installation Guide* for information about migrating an out-of-box DecisionCenter. This document has instructions for migrating a customized data warehouse.

You must be familiar with data warehouse schemas, Connect-It scenarios, and Business Objects universes. Ensure that you have access to, and permissions to use, the resources on the computer and network of the HP OpenView DecisionCenter 1.00 installation.

1 Advanced Customization

The data warehouse, formerly called the Reporting Data Store (RDS), is a repository of integrated information that is available for queries and analysis. It contains the universe, which stores information in the data warehouse database. Administrators can customize the data warehouse by editing the data warehouse schema, Connect-It scenario, and the universe. DecisionCenter Analytics online help provides customization guidelines. Advanced data warehouse customization requires additional technical information to implement the changes. Familiarization with the *Data Warehouse Administration Online Help* topics is a prerequisite to advanced data warehouse customization.

Customization Overview

You can customize the data warehouse schema by editing the out-of-box AssetCenter `rdsac_etl.xml` file and ServiceCenter `rds_etl.xml` file. When you edit any `xml` file, use an `xml` editor tool such as XML Spy, which validates your changes against the schema file.

Implementation Plan

Planning the customization implementation is critical when you change the ServiceCenter schema or DecisionCenter Analytics reporting content. By completing the DecisionCenter Analytics Questionnaire, you can prepare to implement your plan. For more information, see Appendix A, DecisionCenter Analytics Questionnaire.

The pilot project is responsible for ensuring that the DecisionCenter Analytics content is satisfactory before moving to the production environment. A successful pilot project requires these actions:

- Define the requirements analysis of reports and systems such as data sources, version, and data volume
- Install DecisionCenter Analytics in a test environment that includes configuring DecisionCenter Analytics and creating reports based on the requirements

The specific task to customize DecisionCenter Analytics includes modifying the schema, Connect-It scenarios, and the universe (see Task 2). Complete all the tasks to implement the plan.

Task 1: Review requirements analysis of reports and current system (1-3 days).

- Step 1a: Review current system and overall DecisionCenter Analytics deployment environment.
- Step 1b: Verify assumptions and gather requirements, such as data sources, ServiceCenter version, data volume, and sync back point.
- Step 1c: Complete the DecisionCenter Analytics Questionnaire on page 81.

Task 2: Customize your environment.

- Step 2a: Customize the Schema on page 16.
- Step 2b: Customize the Connect-It Scenario on page 34.
- Step 3: Customize the Universe on page 41.

Task 3: Implement your customization changes in a test environment (1-5 days).

- Step 3a: Install DecisionCenter Analytics with a typical configuration on the test servers.
- Step 3b: Configure all components to start DecisionCenter Analytics.
- Step 3c: Create a test DecisionCenter Analytics user account with logon rights.

For more information, refer to the *HP OpenView DecisionCenter Installation Guide*.

Task 4: Map and test the tailored data schema (3-12 days).

- Step 4a: Customize the DecisionCenter Analytics data schema and synchronization.
- Step 4b: Test the following:
  - Schema difference checking based on ServiceCenter 5.1 schema
  - Customization for changed fields
  - Data warehouse schema updates
  - Connect-It scenarios updates
  - Universe updates
  - Connect-It data warehouse scenario execution
  - Report creation for 3-5 reports

For more information, refer to the *HP OpenView DecisionCenter Installation Guide*.

Task 5: Deploy DecisionCenter Analytics to a production environment.

For more information, refer to the *HP OpenView DecisionCenter Installation Guide*.

Task 6: Continue to customize the schema, scenarios, and universe, as needed.

Customization is an ongoing process. To adhere to best practices, always back up your files before you make changes.

Best Practices for Data Warehouse Customization

For easy migration and maintenance, set proper naming conventions for customized fields and tables. For example, to modify the data warehouse schema, the new attributes or tables can start with `C_` to mean `Customized`.

Always back up the `rds_etl.xml` file before you modify the data warehouse schema. To adhere to best practices, do not remove the out-of-box data warehouse files and fields.

When customizing any `xml` file, use an `xml` editor tool to validate your changes against the schema file.

The DecisionCenter synchronization process marks AssetCenter and ServiceCenter deletion event records in the data warehouse. To adhere to best practices, do not customize the deletion process because it may break the existing metadata and sample reports.

Naming Conventions

The data warehouse uses consistent naming conventions.

- All the entities in the data warehouse, such as tables or fields, use uppercase. For example, `INCIDENT_D`.
- All the attributes or fields for the data warehouse `xml` data use single ('…') quotation marks. For example, ‘`dimensionTableFields`’.

All the files or fields for ServiceCenter use double (“…”) quotation marks. For example, “`incident.id`”.

- All the sample codes or `xml` data definition use Italic font, for example, *sample code*.

Schema Overview

The *Overview: Data warehouse* and *Schema description* online help topics provide an introduction to the schemas.

Schema Names

Data warehouse tables use the following categories:

- Dimension tables
- Fact tables
- Aggregates of fact tables
- Associate and join tables
- Hierarchy tables
- Directing mapping tables from ServiceCenter transaction tables
- Data warehouse system tables

Table names use these conventions:

- Dimension table names end with `_D` and have a maximum 15 characters. If the primary key for the dimension name is `Z_RDSXXX_DID`, assume the dimension table name is `XXX_D`.
- Fact table names end with `_F`.
- Aggregate table names end with `_AGG`.
- Associate or bridge table names are the first 8 characters from the two associated table names with an underscore (_) as the separator. All the associate or bridge table names end with `_ASS`.
- Direct mapping table names are identical to the source name.
- Hierarchy table names and data warehouse Extract, Transform, and Load (ETL) process-related table names begin with `BI_`.
- Data warehouse system table names begin with `RDS_`.

Most dimension table fields map directly from ServiceCenter tables through Connect-It. Dimension tables have additional data warehouse ETL attributes.

The dimension tables come from the ServiceCenter files. The attributes have history, are time-related, or have searchable criteria for multiple ServiceCenter reporting modules.

There are more schema changes for AssetCenter dimension tables comparing AssetCenter source tables. For examples, `AMASSET_D` table is the result of de-normalized `amPortfolio`, `amComputer`, `amAsset`, and `amSoftIntsall` tables. Fact tables are the data warehouse tables created to store the measurements and join relationships for associated dimension tables. Data warehouse fact tables, hierarchy tables, or aggregate tables store the summary data for Online Analysis Process (OLAP) reporting. Data warehouse direct mapping tables come from the ServiceCenter transaction tables that contain the attributes that are not historic reserved data. Direct mapping tables use the measurements for detail reporting. Associate, or bridge, tables created in the data warehouse are used for sub-dimension tables or solving many-to-many relationships. Data warehouse system tables created in the data warehouse audit the ETL process and store DecisionCenter security and system data. You can review the ETL statistics data and data integrity by querying data warehouse system tables through DecisionCenter.

DecisionCenter Analytics Content

The data warehouse default schema contains tables for ServiceCenter OLAP summary reporting and operational detail reporting as well as AssetCenter Portfolio, Finance, and Contract.

Sample reports are available for ServiceCenter and AssetCenter modules. Common support files are linked with ServiceCenter modules. For more information about how AssetCenter tables in the data warehouse relate to each other, see Appendix D, Data Warehouse AssetCenter ERD.

Table 1 Default Schema Content

Content	ServiceCenter	AssetCenter
Modules	• Change Management • Configuration Management • Incident Management • Problem Management • Service Level Agreement Management • Service Management	• Portfolio • Finance • Contract
Common Support Files	• Contacts • Location • Dept • Company • Operator • Vendor • Model	

Metadata Overview

The data warehouse metadata consists of the data warehouse schema, Extract, Transform, and Load (ETL) process, and the data warehouse semantic layer (the universe).

Schema

The `rds_etl.xml` file provides data warehouse schema data. The `rds_etl.xsd` file defines the `xml` schema syntax. These files are in the `<DataWarehouse_Installation>\conf` directory.

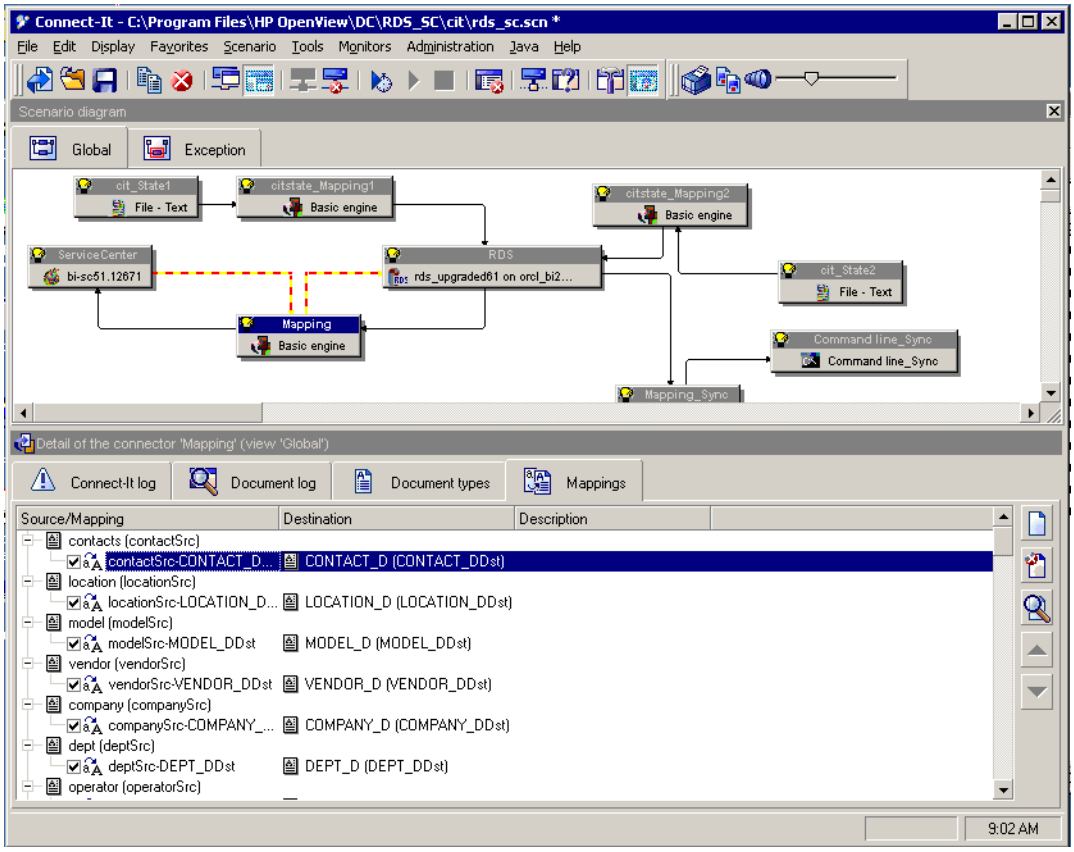
ETL Mapping Information

Connect-It data warehouse scenarios such as `rds_sc.scn` describe the metadata for ETL.

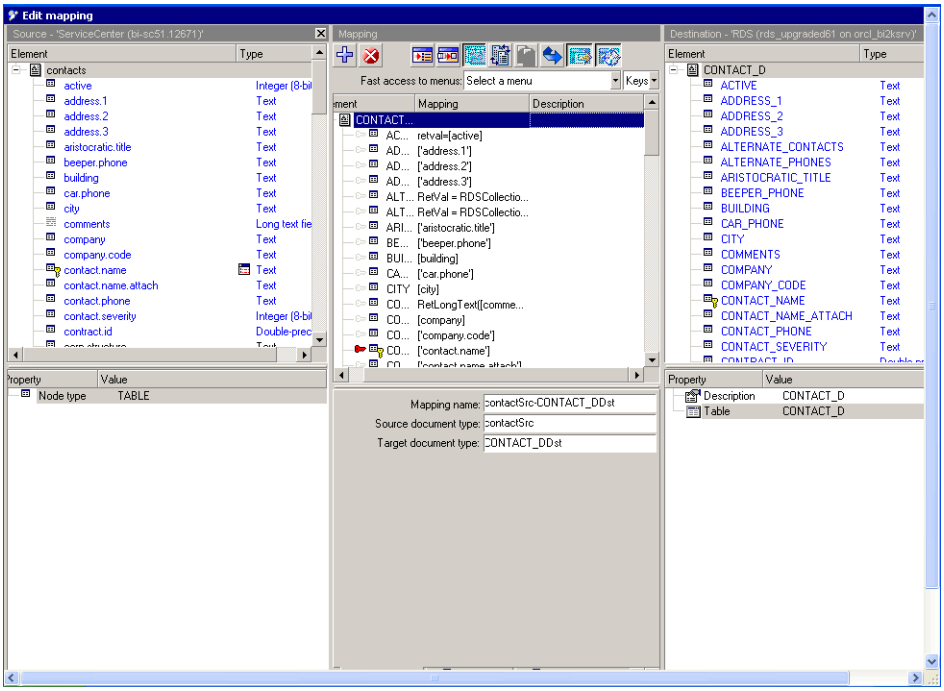
To View the Mapping

1. From the Windows **Start** menu, click **Programs > Connect-It > Scenario Builder**.
2. Open `rds_sc.scn`. The default path is: `<DataWarehouse_Installation>\cit\rds_sc.scn`
3. Click **Scenario > Open all connectors** to ensure that you configured the connectors correctly.
4. Select any **Source/Mapping** and click the **Edit** icon to review the ETL mapping information.

   The following diagram shows the mapping for **Contact**.



5 Click the **Edit a mapping** icon.



The ServiceCenter data source appears on the left and the data warehouse destination table is on the right. The middle section defines the mapping script for each attribute. Refer to the *Connect-It User Guide* for more information.

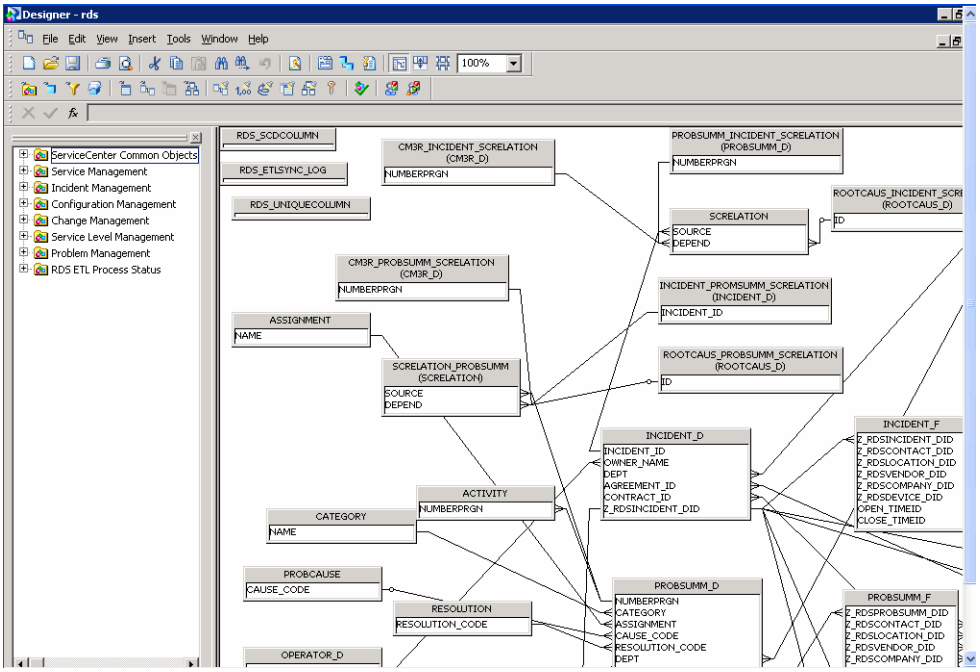
Semantic Layer—Universe

You can use the Business Objects designer tool to develop the data warehouse universe.

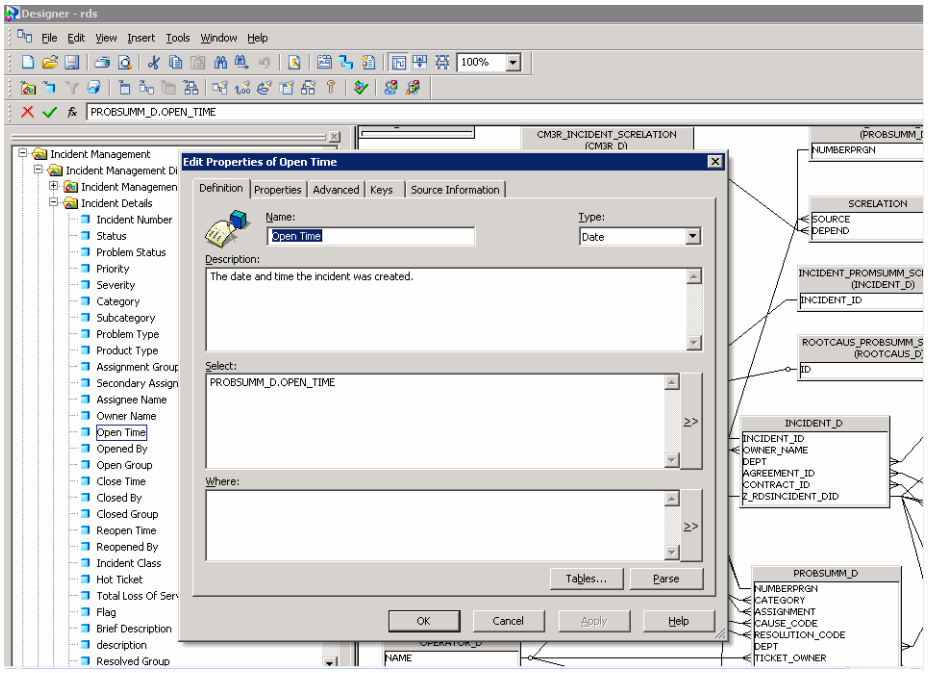
1 From the Windows **Start** menu, click **Programs > BusinessObjects XI Release 2 > BusinessObjects Enterprise > Designer**.

2 Log on as the designer user (`Administrator`).

3 Click **File > Open** and navigate to `ITPA Service Management`. The default path is: *<BusinessObjects_Installation>*`\Universes`. The following diagram shows the data warehouse universe for ServiceCenter.



4 Open the object properties to determine the object definitions for the data warehouse data sources. The following diagram shows the **Open Time** object where `OPEN_TIME` is the data source field in the `PROBSUMM_D` table.



Generate the Universe PDF File

You can use the designer tool to produce the universe metadata.

1. From the Windows **Start** menu, click **Programs > BusinessObjects XI Release 2 > BusinessObjects Enterprise > Designer**.
2. Log on as the designer user (`Administrator`).
3. Click **File > Open** and navigate to `ITPA Service Management`. The default path is: `<BusinessObjects_Installation>\Universes`.
4. Click **File > Save As**.
5. From the **Save as types** drop-down list, select **Portable Document Format (*.pdf)** and type the file name and location.
6. Click **Save**.

You can use the Business Objects designer tool (**Tools > Options > Print/PDF**) to set the information covered in the universe `pdf`.

Customize the Schema

The instructions to add tables and fields are available in the *DecisionCenter Data Warehouse Administration Online Help*. The examples that add new tables are direct-mapping type tables. The following information contains some exceptions for more advanced customization scenarios, such as adding new dimension tables or fact tables for new customized modules. Data warehouse schema customization changes the `rds_etl.xml` file.

Customize the Data Warehouse Schema

You can customize the data warehouse schema by editing the out-of-box `rds_etl.xml` file, located in the `<DataWarehouse_Installation>\conf` directory. When customizing any XML file, use an XML editor tool such as XML Spy, which validates your changes against the schema file.

Follow these steps to customize the data warehouse schema:

1. Back up the following files:

   `rds_etl.xml` (ServiceCenter)

   `rdsac_etl.xml` (AssetCenter)

   `rdbms_keywords.xml`

   `rds_sc.scn` (ServiceCenter)

   `rds_ac.scn` (AssetCenter)

2. Modify `rds_etl.xml`.

   This file defines the structure of all fields and tables in the schema. Add or edit objects as required. To adhere to best practices, do not delete objects. The HP OpenView Connect-It scenario and Business Objects universe deal with unused and obsolete structures.

3. Validate the XML file.
4. Run the `rds_init` utility with the appropriate parameters. This creates the schema defined in step 2. For more information, see The rds_init Utility on page 33.

5 Open the scenario in the Connect-It Scenario Builder.

6 If necessary, configure the connectors.

7 Open all the connectors. If any consistency errors appear, copy the text to a text file and save it.

8 Add and edit documents and mappings as required to match your schema changes. Mark any unused objects *inactive* by clearing the check box next to the mapping and associated documents.

9 Change the data warehouse scenario scheduler from the Connect-It Service Console to include all the new data file mappings.

10 Open the `rds.unv` file in Business Objects Designer. Modify the universe to reflect changes in your schema. Hide any objects that refer to unused fields and tables. For best practices, do not delete objects, as this may break out-of-box reports.

11 Export the universe.

XML Schema Descriptions

The data warehouse XML files have several types of defined tables. Each table has a unique purpose and definition. The tables are:

Table 2 Data Warehouse Tables

Table Type	Description
`Dimension`	Dimension tables map the tables in your source database containing the dimensions and measures at the heart of your reports. Good candidates for this type of table are financial information (`expline`, `amExpenseLine`), Configuration Items (`device`, `amAsset`), Call and Incident (`incidents`, `probsummary`), or any tables containing counts and sums that require tracking. Dimension tables are often paired with: • `Fact` tables, which contain simplified measure information and links to other common Dimension tables, and • `Aggregate` tables, which roll up measures based on the most common grouping fields for faster processing.
`Direct Mapping`	You can map tables that are useful for reports in a supporting capacity as direct mappings. These tables are simplest to set up.
`Associate`	Associate, or bridge, tables normalize many-to-many relationships, thus preventing many of the traps that can lead to bad data.
`Hierarchy`	Drill down functions in reports rely on parent-child relationships between records. Hierarchy tables create a drill tree for easy layering of data. These are useful for organization charts, CI relationships, and locations.

Each table type has its own section in the XML file. Make sure that you create a table within the defined tags for that type. The following sections explain each table type and its syntax in detail.

Dimension, Fact, and Aggregate Tables

Dimension tables are robust tables with associated fact (measure) and aggregate tables. Use dimension tables to map tables with commonly used measure information. Otherwise, map the table as a direct mapping table.

The following code is a simplified version of the out-of-box `INCIDENT_D` dimension table.

```
<dimension name="INCIDENT" rdsVersion="5.3" attributeAction="update">
      <dimensionTableName>
        INCIDENT_D
      </dimensionTableName>
      <dataSourceTableName>
        incidents
      </dataSourceTableName>
      <dimensionTableFields>
        <dimensionTableField name="INCIDENT_ID" type="char" size="100"/>
        <dimensionTableField name="CONTACT_NAME" type="char" size="140"/>
        <dimensionTableField name="SEVERITY" type="char" size="60"/>
        <dimensionTableField name="HANDLE_TIME" type="float"/>
        <dimensionTableField name="OPEN_TIME" type="date"/>
        <dimensionTableField name="CLOSE_TIME" type="date"/>
        <dimensionTableField name="FIRST_CALL" type="char" size="1"/>
        <dimensionTableField name="ASSIGNMENT" type="long"/>
        <dimensionTableField name="AGEDURATION" type="float"/>
      </dimensionTableFields>
      <uniqueKeys name="incident_unique">
        <uniqueKey fieldName="INCIDENT_ID"  srcFieldName="''incident.id''" srctype="char"
size="100"
          seqIndex="1" defaultValue="no match"/>
      </uniqueKeys>
      <facts>
        <fact name="INCIDENT_F">
          <factKeys>
             <factKey name="Z_RDSINCIDENT_DID"/>
             <factKey name="Z_RDSCONTACT_DID" fieldName="CONTACT_NAME"
               tableName="CONTACT_D" matchFieldName="CONTACT_NAME"/>
          </factKeys>
          <factMeasures>
             <factMeasure name="HANDLE_TIME" srcType="src"/>
             <factMeasure name="INCIDENT_OPEN" srcType="rdsfactless"/>
             <factMeasure name="INCIDENT_CLOSE" srcType="rds"
sqlConditions="CLOSE_TIME is
               not null" resetCount="INCIDENT_OPEN"/>
             <factMeasure name="FIRST_CALL_COUNT" srcType="rds" sqlConditions="FIRST_CALL
='1'"
               resetCount=""/>
          </factMeasures>
        </fact>
      </facts>
      <scdKeys>
        <scdKey rdsFieldName="OPENPRGN" srcFieldName="OPEN" srctype="char"/>
        <scdKey rdsFieldName="SEVERITY" srcFieldName="SEVERITY" srctype="char"/>
      </scdKeys>
      <aggregateKeys>
        <aggregateKey name="SEVERITY" type="char" size="60"/>
        <aggregateKey name="OPEN_TIME" type="TIME"/>
      </aggregateKeys>
    </dimension>
```

You need to understand the tags and their attributes before you customize the schema. The following sections describe the attributes and tags in this sample code.

The <dimension> Tag

The `<dimension>` tag frames the whole object.

```
<dimension name="INCIDENT" rdsVersion="5.3" attributeAction="update">
```

It has the following attributes:

Table 3 <dimension> Attributes

Attribute	Description
`name`	The root name (not including suffixes) of the dimension table, and any related fact or aggregate tables. The data warehouse uses the following conventions as best practices: • The name must be unique in the data warehouse. • The name matches the name of the source table in HP OpenView ServiceCenter or HP OpenView AssetCenter. • The name cannot be longer than 15 characters. • If the source table name is plural, use the singular version of the word. For example, `incidents` becomes `incident`.
`rdsVersion`	If you set this to `"5.0"`, the table ignores the `rdbms_keywords.xml` file. Any other setting is simply informative. For more information, see The rdbms_keywords.xml File on page 34.
`attributeAction`	Optional. This attribute tells the migration program how to properly handle the changes. See Table 17 on page 53 and Table 18 on page 54 for more information about migration attributes.

For proper formatting, make sure that you include `</dimension>` as the closing tag.

The <dimensionTableName> and <dataSourceTableName> Tags

The `<dimensionTableName>` displays the name of the table with the `_D` suffix. Make sure that this matches the name attribute from the `<dimension>` tag.

The `<dataSourceTableName>` tag contains the name of the source table as it appears in HP OpenView ServiceCenter or HP OpenView AssetCenter. Make sure that the name matches exactly because it is case-sensitive.

```
<dimensionTableName>
  INCIDENT_D
</dimensionTableName>
<dataSourceTableName>
  incidents
</dataSourceTableName>
```

The <dimensionTableField> Tag

The `<dimensionTableField>` contains the main body of the table, defining each field.

```
<dimensionTableFields>
   <dimensionTableField name="INCIDENT_ID" type="char" size="100"/>
   <dimensionTableField name="CONTACT_NAME" type="char" size="140"/>
   <dimensionTableField name="SEVERITY" type="char" size="60"/>
   <dimensionTableField name="HANDLE_TIME" type="float"/>
   <dimensionTableField name="OPEN_TIME" type="date"/>
   <dimensionTableField name="CLOSE_TIME" type="date"/>
   <dimensionTableField name="FIRST_CALL" type="char" size="1"/>
   <dimensionTableField name="ASSIGNMENT" type="long"/>
   <dimensionTableField name="AGEDURATION" type="float"/>
 </dimensionTableFields>
```

It has the following attributes:

Table 4 <dimensionTableField> Attributes

Attribute	Description
`name`	The name that you use for the field. The data warehouse uses the following conventions as best practices: • The name must be unique in the table. • The name matches the name of the source table in HP OpenView ServiceCenter or HP OpenView AssetCenter. • The underscore character (_) replaces the period (.) in the field name. For example, `contact.name` becomes `CONTACT_NAME`.

Table 4 <dimensionTableField> Attributes

Attribute	Description
type	This is the data type to use. The data warehouse uses four data types: char, float, date, and long. The following chart shows how they map from common HP OpenView ServiceCenter data types:
size	You use this attribute only when type="char". This is the length of the field according to your data.
attributeAction	Optional. This attribute tells the migration program how to properly handle the changes. See Table 17 on page 53 and Table 18 on page 54 for more information about migration attributes.

ServiceCenter Data Type	Data Warehouse Data Type
character	char
number	float
date	date
date (relative)	float
logical	char size=1
array (simple)	long
array of structure	map to new table (see Handling Arrays on page 31.

The <uniqueKeys> Tag

The <uniqueKeys> tag defines the unique key for the table. It has only the name property. For best practices, use the name of the table, followed by "_unique". This name must be unique in the database.

```
<uniqueKeys name="incident_unique">
 <uniqueKey fieldName="INCIDENT_ID" srcFieldName="''incident.id''"
srctype="char" size="100" seqIndex="1" defaultValue="no match"/>
</uniqueKeys>
```

Inside the <uniqueKeys> set of tags is one or more <uniqueKey> tag with the following attributes:

Table 5 <uniqueKey> Attributes

Attribute	Description
fieldName	This is the name of the field from the <dimensionTableField> tag. The data warehouse uses the following conventions as best practices: • The <dimensionTableFields> section must have an equivalent field defined. • The field must be type="char". If the key field is a different data type, create a second field with the extension _KEY to contain the text version of the data. For example, the OUTAGE_D table has the the following code: <dimensionTableField name="OUTAGE_ID" type="float"/> <dimensionTableField name="OUTAGE_ID_KEY" type="char" size="60"/> The original numeric data is mapped to OUTAGE_ID, and a text equivalent is mapped to OUTAGE_ID_KEY. The <uniqueKey> tag uses the latter.
scrFieldName	This is the name of the field as it appears in HP OpenView ServiceCenter or HP OpenView AssetCenter. This is case-sensitive. The data warehouse uses the following conventions as best practices: • If the field is contained in a structure, include the structure name, separated by a period. For example, In the PROBLEM table, srcFieldName="header.number". • If the field name contains a period, surround the name with two single quotation marks. For example, in the INCIDENT table, the attribute reads: srcFieldName="''incident.id''" The TZFILE_SWITCH table has the following key: srcFieldName="switchover.''local.switchover.time''"
scrType	This is the data type of the original field (char, date, float, or long). If you converted the field to char from another type, list the data warehouse data type closest to the original type.

Table 5 <uniqueKey> Attributes

Attribute	Description
size	You use this attribute only when type="char". This is the size of the field from the <dimensionTableField> tag.
seqIndex	If you use more than one field in the key, the order to process the fields starts from 1. The data warehouse uses the following conventions as best practices: • To determine which fields to use and in what order, open the Database Dictionary tool from HP Openview ServiceCenter. View the structure of the source table and look at the Indexes section on the right. Find the FIRST key with a unique designation. Mimic the order of these fields. This ensures that deletion sync works properly. • You can use a maximum of 5 fields in a composite key for a dimension table. If the table requires more than that, consider making a direct mapping table instead.
defaultValue	This must always be "no match".

The Fact Table Definition

The fact table definition section is optional. If you do not need a fact table, replace the entire section with the <facts/> tag.

```
<facts>
 <fact name="INCIDENT_F">
   <factKeys>
     <factKey name="Z_RDSINCIDENT_DID"/>
     <factKey name="Z_RDSCONTACT_DID" fieldName="CONTACT_NAME"
      tableName="CONTACT_D" matchFieldName="CONTACT_NAME"/>
     <factKey name="OPEN_TIMEID" fieldName=OPEN_TIME"
tableName=RDS_TIMEDIM_D" matchFieldName="FULLDATE"/>
    </factKeys>
    <factMeasures>
       <factMeasure name="HANDLE_TIME" srcType="src"/>
       <factMeasure name="FIRST_CALL_COUNT" srcType="rds"/>
sqlConditions="FIRST_CALL ='1'"
               resetCount=""/>
       <factMeasure name="INCIDENT_OPEN" srcType="rdsfactless"/>
       <factMeasure name="INCIDENT_CLOSE" srcType="rds"
sqlConditions="CLOSE_TIME is not null" resetCount="INCIDENT_OPEN"/>
    <factMeasures>
   </fact>
</facts>
```

A fact table has two sections: <factKeys> and <factMeasures>.

The <factKeys> section defines the links between dimension tables. The first key is the unique fact key for this table. It contains only the name attribute. For best practices, use the naming convention Z_RDS<*table name*>_DID.

All other keys are foreign keys to other dimension tables. They use the following attributes:

Table 6 Foreign Key Attributes

Attribute	Description
name	The name of the fact key for the foreign table.
fieldName	The name of the dimension table field (from this table) used for the join.
tableName	The name of the foreign dimension table.
matchFieldName	The name of the dimension table field (from the foreign table) used for the join.

Use the following conventions as best practices for fact keys:

- At least one fact key must be a DATE field linked to RDS_TIMEDIM_D.FULLDATE.
- The maximum number of fact keys in a single table is 10.

The <factMeasures> section contains the numeric fields that you want to track and aggregate. Most measures are mappings for fields from the <dimensionTableFields> section. In that case, use only the attribute srcType="src".

A special pair of types, rdsfactless and rds, create a flag field to use for counts and filters.

To create a simple flag, use the properties srcType="rds" and resetCount="". For each record, this flags the column with a 1 if the criteria in the sqlConditions is met, and with a 0 if not met. FIRST_CALL_COUNT is an example of this method.

A more advanced option is to create a binary pair of flags where one is always true and one false. To do this, create one measure with the attribute srcType="rdsfactless" (see INCIDENT_OPEN in the previous code). Then create a second with the properties srcType="rds" sqlConditions="<your criteria>" resetCount="<factless measure name>" (see INCIDENT_CLOSE in the previous code). For each record, the ETL process determines if the condition in the sqlConditions attribute is met. If it is, INCIDENT_OPEN gets a value of 0, and INCIDENT_CLOSE gets a value of 1. If not, the opposite happens.

You can have only one rdsfactless measure per table.

The <scdKeys> Tag

The Slowly Changing Dimension (SCD) fields section is optional. If you do not need a fact table, replace the entire section with the <scdKeys/> tag.

```
<scdKeys>
  <scdKey rdsFieldName="OPENPRGN" srcFieldName="OPEN" srctype="char"/>
  <scdKey rdsFieldName="SEVERITY" srcFieldName="SEVERITY" srctype="char"/>
</scdKeys>
```

The SCD key tracks the history of a field. When you update a record in a way that alters the SCD key, a copy of the record is made. The original record is marked *obsolete*, but remains in the database.

The maximum number of SCD fields is 10.

SCD fields have the following attributes:

Table 7 SCD Field Attributes

Attribute	Description
rdsFieldName	This is the name of the field from the <dimensionTableFields> section. The data warehouse uses the following conventions as best practices: • There must be an equivalent field defined in the <dimensionTableFields> section. • The field must be type="char". If the key field is a different data type, create a second field with the extension _KEY to contain the text version of the data.
srcFieldName	This is the name of the field as it appears in HP OpenView ServiceCenter or HP OpenView AssetCenter. The data warehouse uses the following conventions as best practices: • If the field is contained in a structure, include the structure name, separated by a period. For example, In the PROBLEM table, srcFieldName="header.number". • If the field name contains a period, surround the name with two single quotation marks. For example, in the INCIDENT table, the attribute reads: srcFieldName=" ''incident.id''" The TZFILE_SWITCH table has the following key: srcFieldName="switchover.''local.switchover.time''"
srctype	This is the data type of the original field (char, date, float, or long). If you converted the field to char from another type, list the data warehouse data type closest to the original type.

The <aggregateKeys> Tag

The aggregate table definition section is optional. If you do not need an aggregate table, replace the entire section with the <aggregateKeys/> tag.

```
<aggregateKeys>
   <aggregateKey name="SEVERITY" type="char" size="60"/>
   <aggregateKey name="OPEN_TIME" type="TIME"/>
</aggregateKeys>
```

All the measures from your fact table are summed up over time for each unique value in each aggregate key.

Aggregate keys have the following attributes:

Table 8 <aggregateKeys> Attributes

Attribute	Description
name	This is the name of the field from the <dimensionTableFields> section.
type	This is the data type of the field (char, date, float, or long).
size	You use this attribute only when type="char". This is the size of the field from the <dimensionTableField> tag.

Aggregate keys use the following conventions:

- Aggregate keys (except the last key) must use the attribute type="char".
- The last aggregate key **must** be a date field with the attribute type="TIME". Only one date type is allowed.
- The maximum number of aggregate keys is 15.

For proper formatting, include </dimension> as the closing tag.

Associate Table

The associate tables, also called the bridge tables, are used for many-to-many relationships between dimension tables.

```
<associates>
  <associate name="INCIDENT_MODEL_ASS" tableName="INCIDENT"
fieldName="MODEL" tableName2="MODEL"fieldName2="MODEL"/>
  <associate name="CM3R_DEVICE_ASS" tableName="CM3R"
fieldName="logical_name" longFieldName="assets" tableName2="DEVICE"
fieldName2="LOGICAL_NAME"/>
</associates>
```

Associate tables have the following parameters:

Table 9 Associate Table Parameters

Parameter	Description
name	The unique name for this table. For best practices, use the first 8 letters of the tables to be joined, separated by an underscore, followed by the extension _ASS.
tableName	The name of the first dimension table (with no suffix).
fieldName	The name of the field to bridge in the first dimension table.
longFieldName	Optional. If the join in question involves a list of values (such as an array of character field in HP OpenView ServiceCenter), map that array to a long data type in the dimension table, then refer to that long field here. The data in the array of character field merges with the field in fieldName to create a list of associate records.

For example, the `cm3r` table (Change Management) contains a primary configuration item for the change (`cm3r.logical.name`) and an array of additional configuration items (`cm3r.assets`).

If your original record contains:

Change Number: C1

Primary CI: Server101

Affected CIs: PC001, PC002, PC003

the associate table will contain these records:

Change Number	Logical Name
C1	Server101
C1	PC001
C1	PC002
C1	PC003

- `tableName2` The name of the second dimension table (with no suffix).
- `fieldName2` The name of the field to bridge in the second dimension table.

Hierarchy Table

Hierarchy tables based on dimension tables are created for Online Analytical Processing (OLAP) summary reports. You can use the hierarchy levels to drill to lower, or detail, levels. The predefined hierarchy examples in HP OpenView ServiceCenter include location, department, contacts, and device.

```
<hierarchies>
     <hierarchy tablename="location" type="fullpath" level="5"
uniquefieldName="location" fullpathfieldname="location_full_name"/>
     <hierarchy tablename="contact" type="parent" level="5"
uniquefieldName="contact_name" parenttableName="contact"
parentfieldname="manager"/>
</hierarchies>
```

The two types of hierarchies are: *fullpath* and *parent*.

The fullpath style of hierarchy assumes the presence of a field in the table containing the fully qualified path of the object in the hierarchy. This is the traditional method that HP OpenView AssetCenter tables use. The location in the previous example illustrates this method.

The parent style of hierarchy assumes the table contains a foreign key that maps to the unique key of the parent record. The contact table in the previous example uses this method. Each contact record contains a manager field holding the ID of another contact record.

Hierarchies have the following attributes:

Table 10 Hierarchy Table Attributes

Attribute	Description
`tablename`	The name of the dimension table to extract the hierarchy from.
`type`	Enter *fullpath* or *parent* as appropriate.
`level`	The number of tiers to process. By default this is 5. The maximum is 10.
`uniquefieldName`	For a *fullpath* type, this contains the field used to build the fullpath. For a *parent* type, this contains the unique ID of the parent table.
`fullpathfieldname`	For the *fullpath* type only, this is the field containing the fully qualified path.
`parenttablename`	For the *parent* type only, this is the name of the table containing the parent record. This can be the same as the tablename attribute if the table refers to itself.
`parentfieldname`	For the *parent* type only, this is the field containing the foreign key.

Direct Mapping Table

Direct mapping tables are simple structures with no associated fact, hierarchy, or aggregate tables. Use direct mappings for supporting and detail tables.

The following code is a simplified version of the out-of-box `Activity` direct mapping table.

```
    <directMapping name="activity" rdsVersion="5.0" dataSourceTableName="activity"
      parentDimensionTableName="PROBSUMM" attributeAction="update">
      <directMappingFields>
        <directMappingField name="THENUMBER" type="char" size="50"/>
        <directMappingField name="NUMBERPRGN" type="char" size="60"/>
        <directMappingField name="TYPE" type="char" size="60"/>
        <directMappingField name="NEGDATESTAMP" type="float"/>
      </directMappingFields>
      <directMappingIndexes>
        <directMappingIndex name="UNIQACTIVITY_IDX">
          <DirectMappingIndexKey fieldName="numberprgn" srcFieldName="number"
srctype="char"
            size="60" seqIndex="1"/>
          <DirectMappingIndexKey fieldName="negdatestamp" srcFieldName="negdatestamp"
            srctype="date" seqIndex="2"/>
          <DirectMappingIndexKey fieldName="thenumber" srcFieldName="thenumber"
srctype="char"
            size="60" seqIndex="3"/>
        </directMappingIndex>
        <directMappingIndex name="DELACTIVITY_IDX">
          <DirectMappingIndexKey fieldName="NUMBERPRGN" srcFieldName="NUMBERPRGN"
            srctype="char" size="60"/>
        </directMappingIndex>
      </directMappingIndexes>
    </directMapping>
```

You need to understand the tags and their attributes before you customize the schema. The following sections describe the attributes and tags in this sample code.

The <directMapping> Tag

The <directMapping> tag frames the whole object.

```
<directMapping name="activity" rdsVersion="5.0" dataSourceTableName="activity"
      parentDimensionTableName="PROBSUMM" attributeAction="update">
```

It has the following attributes:

Table 11 <directMapping> Attributes

Attribute	Description
name	The root name for the table. This must match the name of the source table
rdsVersion	If you set this to "5.0", the table ignores the rdbms_keywords.xml file. Any other setting is simply informative. For more information, see The rdbms_keywords.xml File on page 34.
dataSourceTableName	The name of the table as it appears in HP OpenView ServiceCenter or HP OpenView AssetCenter.
parentDimensionTableName	Optional. If you use cascading deletions, this is the name of the dimension table where deletions trigger a deletion of related records in your direct mapping table. You must specify a delete index.
attributeAction	Optional. This attribute tells the migration program how to properly handle the changes. See Table 17 on page 53 and Table 18 on page 54 for more information about migration attributes.

For proper formatting, make sure that you include </directMapping> as the closing tag.

The <directMappingField> Tag

The <directMappingField> contains the main body of the table, defining each field.

```
<directMappingFields>
  <directMappingField name="THENUMBER" type="char" size="50"/>
  <directMappingField name="NUMBERPRGN" type="char" size="60"/>
  <directMappingField name="TYPE" type="char" size="60"/>
  <directMappingField name="NEGDATESTAMP" type="float"/>
</directMappingFields>
```

It has the following attributes:

Table 12 <directMappingField> Attributes

Attribute	Description
name	The name that you use for the field. The data warehouse uses the following conventions as best practices: • The name must be unique in the table. • The name matches the name of the source table in HP OpenView ServiceCenter or HP OpenView AssetCenter. • The underscore character (_) replaces the period (.) in the field name. For example, contact.name becomes CONTACT_NAME.
type	This is the data type to use. The data warehouse uses four data types: char, float, date, and long. The following chart shows how they map from common HP OpenView ServiceCenter data types: ServiceCenter Data Type → Data Warehouse Data Type character → char number → float date → date date (relative) → float logical → char size=1 array (simple) → long array of structure → map to new table (see Handling Arrays on page 31.
size	You use this attribute only when type="char". This is the length of the field according to your data.
attributeAction	Optional. This attribute tells the migration program how to properly handle the changes. See Table 17 on page 53 and Table 18 on page 54 for more information about migration attributes.

The <directMappingIndex> Tag

The two index types are *unique* and *delete*. The unique key is required. You only use the delete key if you set up a cascading delete, described in the parentDimensiontableName attribute on page 29.

The <directMappingIndex> tag has one attribute: name. The name attribute typically follows the pattern UNIQ<*TABLENAME*>_IDX for unique keys and DEL<*TABLENAME*>_IDX for delete keys.

Inside the <DirectMappingIndexKey> set of tags is one or more <DirectMappingIndexKey> tag with the following attributes:

Table 13 <directMappingIndexKey> Attributes

Attribute	Description
fieldName	This is the name of the field from the <directMapingField> tag.
scrFieldName	This is the name of the field as it appears in HP OpenView ServiceCenter or HP OpenView AssetCenter. This is case-sensitive. The data warehouse uses the following conventions as best practices: • If the field is contained in a structure, include the structure name, separated by a period. For example, In the PROBLEM table, srcFieldName="header.number". • If the field name contains a period, surround the name with two single quotation marks. For example, in the INCIDENT table, the attribute reads: srcFieldName="''incident.id''" The TZFILE_SWITCH table has the following key: srcFieldName="switchover.''local.switchover.time''"
scrType	This is the data type of the original field (char, date, float, or long). Unlike dimension tables, direct mapping keys can be any data type.
size	You use this attribute only when type="char". This is the size of the field from the <dimensionTableField> tag.
seqIndex	If you use more than one field in the key, the order to process the fields starts from 1. The data warehouse uses the following conventions as best practices: • To determine which fields to use and in what order, open the Database Dictionary tool on HP OpenView ServiceCenter. View the structure of the source table and look at the Indexes section on the right. Find the FIRST key with a unique designation. Mimic the order of these fields. This ensures that deletion sync works properly. • A maximum of 10 fields is allowed in a composite key for a direct mapping table.

For proper formatting, include </directMapping> as the closing tag.

Handling Arrays

HP OpenView ServiceCenter tables contain array and structure data types that typical RDBMS systems do not support. As such, they require special handling.

The two methods for mapping arrays are:

- Simple Array of Char type fields (a list of strings) where you can create a single field in the main table of type long. This concatenates all lines into a single body of text. This is useful for comments and lists of items that do not need to be individually processed.

- Complex items, such as `Array of Structure` types, where you must map the data to a new data warehouse table that is associated to the original.

The clock table in the following example contains an array of structure called events.

The main table, created as a dimension table because it contains measure information, is `CLOCK_D`. The array is mapped to direct mapping table `CLOCK_EVENTS` because it contains only supporting data.

```
<directMapping name="CLOCK_EVENTS" rdsVersion="5.3" attributeAction="add"
  parentDimensionTableName="CLOCK">
```

As a best practice, the name contains the name of the parent and the name of the array, separated by an underscore. The `parentDimensionTableName` attribute is set to `CLOCK`, indicating that this table is dependent on another table.

```
<directMappingFields>
  <directMappingField name="TYPE" type="char" size="60"/>
  <directMappingField name="KEY_CHAR" type="char" size="60"/>
  <directMappingField name="KEY_NUMERIC" type="float"/>
  <directMappingField name="NAME" type="char" size="60"/>
  <directMappingField name="START" type="date"/>
  <directMappingField name="STOP" type="date"/>
</directMappingFields>
```

The events array contains only two fields: `START` and `STOP`. Because it is necessary to associate each record with the parent record from `CLOCK_D`, you must add a copy of all fields that comprise the unique key for the parent table. In this case, `CLOCK_D` has a composite key made of four fields: `TYPE`, `KEY_CHAR`, `KEY_NUMERIC`, and `NAME`.

```
<directMappingIndexes>
  <directMappingIndex name="UNIQCLOCKEV_IDX">
    <DirectMappingIndexKey fieldName="TYPE" srcFieldName="type"
srctype="char" size="60"
      seqIndex="1"/>
    <DirectMappingIndexKey fieldName="KEY_CHAR"
srcFieldName="''key.char''" srctype="char"
      size="60" seqIndex="2"/>
    <DirectMappingIndexKey fieldName="KEY_NUMERIC"
srcFieldName="''key.numeric''"
      srctype="float" seqIndex="3"/>
    <DirectMappingIndexKey fieldName="NAME" srcFieldName="name"
srctype="char" size="60"
      seqIndex="4"/>
    <DirectMappingIndexKey fieldName="START" srcFieldName="events.start"
srctype="date"
      seqIndex="5"/>
    <DirectMappingIndexKey fieldName="STOP" srcFieldName="events.stop"
srctype="date"
      seqIndex="6"/>
  </directMappingIndex>
```

Arrays do not contain their own unique key, so it is necessary to build a unique set of fields. You start by adding all the unique keys from the parent table. Then you add as many fields as necessary from the array to enforce uniqueness. In this case, you cannot guarantee a unique record unless you add both START and STOP. The result is a six-part composite key.

```
<directMappingIndex name="DELCLOCKEV_IDX">
  <DirectMappingIndexKey fieldName="TYPE" srcFieldName="type"
srctype="char" size="60"
    seqIndex="1"/>
  <DirectMappingIndexKey fieldName="KEY_CHAR" srcFieldName="''key.char''"
srctype="char"
    size="60" seqIndex="2"/>
  <DirectMappingIndexKey fieldName="KEY_NUMERIC"
srcFieldName="''key.numeric''"
    srctype="float" seqIndex="3"/>
  <DirectMappingIndexKey fieldName="NAME" srcFieldName="name"
srctype="char" size="60"
    seqIndex="4"/>
   </directMappingIndex>
  </directMappingIndexes>
</directMapping>
```

Because the data warehouse only tracks deletions on source tables, it is necessary to associate this table with the parent for cascading deletes. A second index is made containing all fields that comprise the unique key for the parent.

Using the Connect-It scenario, you must create a new mapping for this destination table. You can reuse the same produced document from HP OpenView ServiceCenter that mapped the parent, but you must make a separate mapping.

The rds_init Utility

After you edit and validate your XML file, you must run rds_init to build or edit the database schema. You can use the rds_init utility to start the RDSInitRun command, which causes the changes you make in the default rds_etl.xml file to take effect.

If you are running a clean installation, run the <DataWarehouse_Installation>\common\bin\rds_init.bat file.

Do not run this file if you are updating an existing data warehouse because it will delete and recreate all the tables.

If you are migrating from an existing data warehouse, make sure that you add all the appropriate attributeAction tags to any objects you altered or added (see Chapter 2, Advanced Migration), then run the <DataWarehouse_Installation>\common\bin\rds_init_migrate.bat file.

The rds_init program generates two output files in the <DataWarehouse_Installation>\Logs directory.

Table 14 Output Files

File Name	Description
rds_etl_init.log	Stores all the executed SQL statements.
rds_etl_init.err	Tracks all the error messages.

If the err file size is not 0, check the error messages, correct the problem, and rerun the program.

The rdbms_keywords.xml File

The data warehouse has a predefined rdbms_keywords.xml file to accommodate every RDBMS set of reserved words. When the field names specified in the rds_etl.xml file match one of the keywords in rdbms_keywords, the data warehouse field name uses the field name with the suffix of PRGN. For example, the type field name becomes the TYPEPRGN field name.

For backward compatibility, reserved words **domain** and **value** do not change for PROBSUMM_D and DEVICE_D. Reserved words **type**, **month**, **year**, and **action** do not change for direct mapping tables with the <rdsVersion> attribute set to 5.0.

Customize the Connect-It Scenario

The data warehouse uses HP OpenView Connect-It scenarios to synchronize data. You can customize the AssetCenter rds_ac.scn and ServiceCenter rds_sc.scn mappings with Connect-It Scenario Builder.

Changes to the scenario require several tasks that involve modifying and verifying the schema, running the scenario in a test or production environment, and reviewing global functions. Complete the tasks in the recommended order.

Task 1: Modify and verify the data warehouse Connect-It scenarios.

- Open the Scenario to Verify the Schema on page 35.
- Reconfigure the Connectors That Fail to Connect on page 36.
- Verify the Schema on page 36.
- Modify Data Sources Document Types on page 36.
- Modify Produced Data Sources for Data Warehouse Tables on page 37.
- Modify the Mapping Scripts on page 37.

Task 2: Run the modified scenario in a test and production environment.

- Test the Scenario on page 37.

Task 3: Review the data warehouse global functions for the scenario.

- Map Field Array on page 38.

ETL Process Modules

The data warehouse ETL process has the following components:

- Data warehouse Connect-It scenario (`rds_sc.scn` or `rds_ac.scn`)
- Data warehouse synchronization module (`rds_sync.bat`) that populates data warehouse fact tables, dimension SCD records, associated tables and system tables
- Data warehouse aggregation (`rds_agg.bat`) population module
- Data warehouse hierarchy (`rds_hier.bat`) population module

The `rds_all` Connect-It scheduler groups all these modules. The data warehouse ETL process runs daily, based as the incremental updates.

These programs generate the output files in the <*DataWarehouse_Installation*>\logs directory and save error messages to `err` files. Check the `err` files to verify that the size is not greater than 0 bytes. If so, check the errors and correct them accordingly.

Modify and Verify Connect-It Scenarios

Follow these steps to verify and modify data warehouse Connect-It scenarios.

1. Click **Start > Programs > Connect-It > Scenario Builder**.
2. Click **File > Open** and navigate to `rds_sc.scn`.
3. Select the a connector.
4. Select the **Document Types** tab.
5. Modify the Data sources document type.
6. Modify the produced document types:
   - Dimension tables mapping scripts.
   - Direct mapping tables mapping scripts.
7. Run the modified Connect-It scenario in your test or production environment.

Open the Scenario to Verify the Schema

1. Open the Windows command prompt.
2. Change to the <*DataWarehouse_Installation*>\common\bin directory.
3. Run the `test_rdssc.bat` command.
4. Check the `test_rdssc.log` log file in <*DataWarehouse_Installation*>\logs.

   The file contains the synchronization activity records.
5. Search for the string `-53`.

- If you do not find `-53`, the verification is successful.
- If you find `-53` or `-XX`, errors, confirm that the connectors' configuration information is correct by verifying `config_rdssc.txt` in the `<DataWarehouse_Installation>\cit` directory. The `rds_init` program must be error-free before you can run the Connect-It scenario.

Reconfigure the Connectors That Fail to Connect

1. With a text editor, modify the content of `config_rdssc.txt` in the `<DataWarehouse_Installation>\cit` directory.
2. Open the Windows command prompt.
3. Change to the `<DataWarehouse_Installation>\common\bin` directory.
4. Run the following commands and check the corresponding log files in the `<DataWarehouse_Installation>\logs` directory. Make sure the test log files have **successful** in the last line.
   - `upd_rdssc.cmd`
   - `test_rdssc.cmd`

Verify the Schema

1. Back up `rds_sc.scn` located in `<DataWarehouse_Installation>\cit`.
2. Click **Start > Programs > Connect-It > Scenario Builder.**
3. Click **File > Open** and navigate to `rds_sc.scn`.
4. Click **Scenario > Open all connectors** to ensure that you configured the connectors correctly.
5. Click the **Mapping** connector.
6. Select the **Mappings** tab.
7. Select any predefined mapping; for example, `contactSrc CONTACT_DDst to CONTACT_D (CONTACT_DDst).`
8. Click the **Edit a mapping** icon.

The verification is successful if no schema error window appears. If not successful, copy the schema errors to Notepad and save as a text file for later use.

Modify Data Sources Document Types

If you have schema verification errors, or if you need to map new ServiceCenter files or fields to data warehouse, modify the data sources.

1. Click **Start > Programs > Connect-It > Scenario Builder.**
2. Click **File > Open** and navigate to `rds_sc.scn`.
3. Click **Scenario > Open all connectors.**
4. Select the **ServiceCenter** connector.
5. Select the **Document Types** tab.
6. Modify **Produced document types** for the updates or error ServiceCenter files by removing, updating, or adding the tables.

Modify Produced Data Sources for Data Warehouse Tables

1. Click **Start > Programs > Connect-It > Scenario Builder.**
2. Click **File > Open** and navigate to `rds_sc.scn`.
3. Click **Scenario > Open all connectors.**
4. Select the **RDS** connector.
5. Select the **Document Types** tab.
6. Modify **Produced document types** for the updates or error data warehouse tables by removing, updating, or adding tables.

Modify the Mapping Scripts

1. Click **Start > Programs > Connect-It > Scenario Builder.**
2. Click **File > Open** and navigate to `rds_sc.scn`.
3. Click **Scenario > Open all connectors.**
4. Select the **Mapping** connector.
5. Select the **Mappings** tab.
6. Click the **Edit the mapping** icon.

Test the Scenario

Before you run the new scenario through the Connect-It service console, test the scenario from Connect-It builder.

1. Click **Start > Programs > Connect-It > Scenario Builder.**
2. Click **File > Open** and navigate to `rds_sc.scn`.
3. Click **Scenario > Open all connectors.**
4. Check or clear the tables that you want to include in the synchronization.
   a. From the **ServiceCenter** connector, click **Document Types** and check or clear the tables. from **Produced document types.**
   b. From the **Mapping** connector, click **Mappings** and check or clear the tables from **Source/ Mapping.**
   c. From the **Mapping** connector, click **Document Types** and check or clear the tables from **Produced document types.**
5. Set the condition.
   a. From the **ServiceCenter** connector, click **Produced document type**, then click **Edit produced document type.**
   b. Add the condition to the `WHERE` clause. For example:

      ```
      sysmodtime > '11/15/03'
      ```
6. Click **Tools > Produce now** to test the modified scenario.
7. Validate the data and log file to ensure that you have no `-xx` errors.
8. Click **Scenario > Scheduling** to modify the scheduling if you have new mapping data sources.

9 Start the rds_sc service through the Connect-It Service Console.

Review Global Functions

You can use predefined data warehouse global functions for data warehouse scenarios mapping scripts.

To Review Global Functions

1 Click **Start > Programs > Connect-It > Scenario Builder**.

2 Click **File > Open** and navigate to rds_sc.scn.

3 Click **Scenario > Global functions**.

4 Select the rds.bas script.

To ensure that the data warehouse Connect-It global functions work, you must name the data warehouse connector **RDS**.

Map Field Array

You can map a simple field array and a simple field array in a substructure.

Simple Field Array—RDSCollection2LongText

You can map alternate.contacts from the ServiceCenter contacts file to the CONTACT_D alternate_contacts long text field with the data warehouse RDSCollection2LongText method.

```
RDSCollection2LongText("'alternate.contacts'")
```

Simple Field Array in Substructure—RDSAnyCollection2LongText

The approval.structure in cm3r mapping defines the simple field array approvals.req.seq. You can map the CM3R_D approved_req_seq long string field with the data warehouse RDSAnyCollection2LongText method.

```
RDSAnyCollection2LongText("'approval.structure'.'approvals.req.seq'",
"'approvals.req.seq'")
```

Map Substructure Array

By using the separate table created for the structure array, you can edit the rds50db.cfg to associate the main table with the separate dependent table. Follow the steps in this example to complete the Connect-It scenario changes. For SLA_D, you create the SLAARAVA_D separate table for the sla availability structure array.

To Map the Array in Connect-It

1 With a text editor, open rds50db.cfg. The default path is:

<*Connect-It_Installation*>\RDS_SC\cit

2 Create the relationships between SLA_D and SLAARAVA_D.

```
{ STRUCT SLA_D_OUT
    MODEOUT = 0
    TABLE = SLA_D sl
```

```
    { ATTRIBUTE AllFields
      FIELD = sl.self
    }
    { ARRAY SLA_AVAILABILITY
      TABLE = SLAARAva_D
      LINK = @{…agreement_id_key} = agreement_id_key
      { ATTRIBUTE AllFields
        FIELD = self
      }
    }
…
```

3 Save and close the file.

4 Click **Start > Programs > Connect-It > Scenario Builder**.

5 Click **File > Open** and navigate to `rds_sc.scn`.

6 Click **Scenario > Open all connectors**.

7 Select the **Mappings** connector.

8 In **Source/Mapping,** select **SLA** and click the **Edit a mapping** icon.

9 Create the mappings from the availability array to **SLA_AVAILABILITY** elements.

10 Select the **SLA_AVAILABILITY** collection, type **`availability`** for the **Source for the collection mapping**.

11 Check **Active collection reconciliation**.

Map Unique Key Fields

If you modify the unique keys or add new tables, you must update the data warehouse scenario.

1 Click **Start > Programs > Connect-It > Scenario Builder**.

2 Click **File > Open** and navigate to `rds_sc.scn`.

3 Click **Scenario > Open all connectors**.

4 Select the **Mappings** connector.

5 Select the appropriate **Source/Mapping** mapping, then click the **Edit a mapping** icon.

6 Select the unique key element.

7 Start the key.

8 Use the `CSTR` mapping function.

```
CONTACT_NAME in CONTACT_D mapping is one of the unique key mappings:
CSTR(['contact.name'])
```

Map Function for Date Field—retdate

You can use the `retdate` data warehouse function to map the date field. For example, in the `CONTACT_D` mapping, the mapping for `VALID_FROM` is:

```
retdate(['valid.from'])
```

Map Function for Long String Data Field—RetLongText

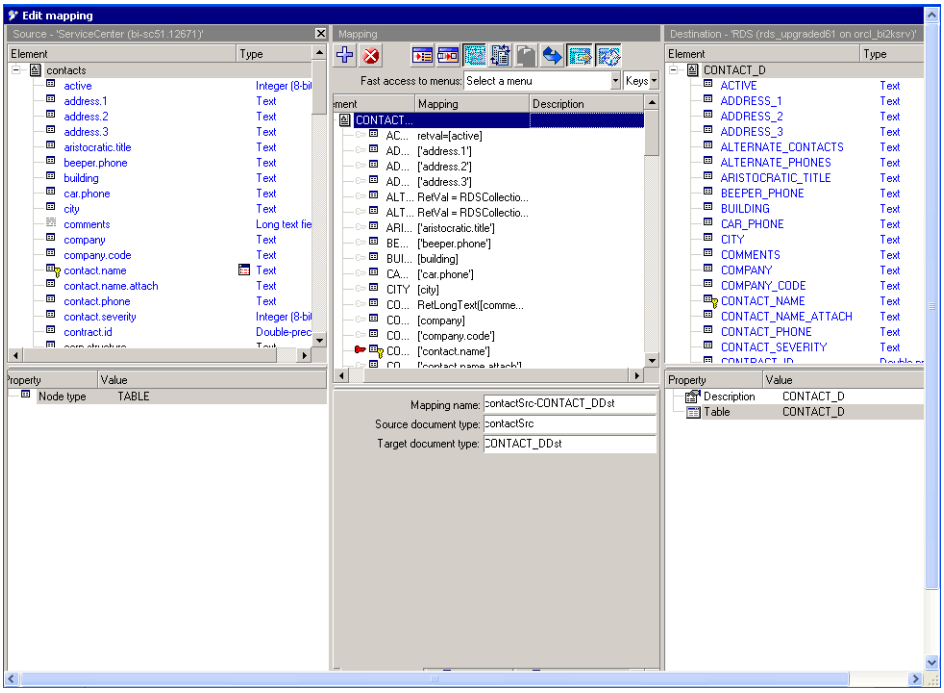
You can use the `RetLongText` data warehouse function to map the long field. For example, in `CONTACT_D` mapping, the mapping for the comment field is:

```
RetLongText([comments])
```

Map Function for Dimension Table

The following functions populate dimension data. The input variable names are based on the dimension name. Check any predefined dimension mapping for detail examples, such as `CONTACT_D`.

The following example is from the `CONTACT_D` OpenSession method.



To Create the OpenSession Method at the Dimension Table Level

1. Click **Start > Programs > Connect-It > Scenario Builder.**
2. Click **File > Open** and navigate to `rds_sc.scn`.
3. Click **Scenario > Open all connectors**.
4. Select the **Mappings** connector.
5. In the **OpenSession** method, use the dimension name without `_D` for the global variable names and the input parameter.
6. At the root level, `AMCONTRACT_D` in this example, define the mapping scripts as:

   ```
   g_tableName = "AMCONTRACT"
   Dim etlStatus as string
   etlStatus=RetETLStatus()
   ```

   You need to change only the `g_tableName` based on the dimension name without `_D`.

Functions for Dimension Attributes

The following functions use the CONTACT_D table. Replace **contact** with the proper dimension table name.

Table 15 Dimension data warehouse attributes

Attribute	Function
Z_ETLSTATUS field	g_ETLProcess_Status
Z_RDSACTIVESTATUSIND field	"Y"

Z_RDSCONTACT_DID system unified sequence key	newID=RetRDSDID(g_lMaxCounter_contact)
	if newID > g_lMaxCounter_contact then
	  g_lMaxCounter_contact = newID
	end if
	retval = newID

Z_RDSCREATEDDATE field	retval = RetRDSCreateDateAll()
Z_RDSLASTMODDATE field	retval = RetRDSLastModDateAll()
For Z_RDSTRANSLASTIND field	"Y"

Complete Dimension Table Mappings

You can create mappings for the dimension element from the appropriate ServiceCenter source fields. Make sure that you define the ServiceCenter sysmodtime file for more efficient data synchronization.

Start the dimension primary key by using the unique key fields and data warehouse system unified sequence key field Z_RDSXXX_DID. The dimension name is XXX_D.

Customize the Universe

You can use the Business Objects Designer tool to customize the universe (unv) file. The universe is the metadata layer that contains data attributes and data structures. The universe files are in your Business Objects directory.

Default Joins for ServiceCenter

You can group all data warehouse joins by different ServiceCenter modules for the ITPA Service Management file.

Service Management Module

```
COMPANY_D.Z_RDSCOMPANY_DID=INCIDENT_F.Z_RDSCOMPANY_DID
CONTACT_D.Z_RDSCONTACT_DID=INCIDENT_F.Z_RDSCONTACT_DID
INCIDENT_D.Z_RDSINCIDENT_DID=INCIDENT_F.Z_RDSINCIDENT_DID
INCIDENT_F.Z_RDSLOCATION_DID=LOCATION_D.Z_RDSLOCATION_DID
INCIDENT_F.Z_RDSVENDOR_DID=VENDOR_D.Z_RDSVENDOR_DID
INCIDENT_MODEL_ASS.Z_RDSINCIDENT_DID=INCIDENT_D.Z_RDSINCIDENT_DID
INCIDENT_MODEL_ASS.Z_RDSMODEL_DID=MODEL_D.Z_RDSMODEL_DID
DEPT_D.COMPANY=COMPANY_D.COMPANY
```

```
OPERATOR_D.NAME*=INCIDENT_D.OWNER_NAME
SCRELATION.DEPEND=PROBSUMM_D.NUMBERPRGN
INCIDENT_D.Z_RDSINCIDENT_DID=CLOCK_F.Z_RDSINCIDENT_DID
CLOCK_D.Z_RDSCLOCK_DID=CLOCK_F.Z_RDSCLOCK_DID
OUTAGEDETAIL.OUTAGE_ID=OUTAGE_D.OUTAGE_ID
OUTAGE_D.Z_RDSOUTAGE_DID=OUTAGE_F.Z_RDSOUTAGE_DID
INCIDENT_D.Z_RDSINCIDENT_DID=OUTAGE_F.Z_RDSINCIDENT_DID
INCIDENT_D.INCIDENT_ID=SCRELATION.SOURCE
INCIDENT_F.OPEN_TIMEID=RDS_TIMEDIM_D.RDS_TIMEDIM_DID
CM3R_D.NUMBERPRGN=SCRELATION.DEPEND
INCIDENT_F.CLOSE_TIMEID=RDS_TIMEDIM_D.RDS_TIMEDIM_DID
INCIDENT_F.Z_RDSDEVICE_DID=DEVICE_D.Z_RDSDEVICE_DID
DEVICE_D.Z_RDSDEVICE_DID=BI_DEVICE.DEVICEID
CONTACT_D.Z_RDSCONTACT_DID=BI_CONTACT.CONTACTID
LOCATION_D.Z_RDSLOCATION_DID=BI_LOCATION.LOCATIONID
DEPT_D.Z_RDSDEPT_DID=BI_DEPT.DEPTID
DEPT_D.DEPT=CONTACT_D.DEPT
INCIDENT_D.DEPT=DEPT_D.DEPT
CMLABOR_F.Z_RDSCMLABOR_DID=CMLABOR_D.Z_RDSCMLABOR_DID
INCIDENT_D.Z_RDSINCIDENT_DID=CMLABOR_F.Z_RDSINCIDENT_DID
CMPART_F.Z_RDSCMPART_DID=CMPART_D.Z_RDSCMPART_DID
INCIDENT_D.Z_RDSINCIDENT_DID=CMPART_F.Z_RDSINCIDENT_DID
SCRELATION.DEPEND=ROOTCAUS_D.ID
INCIDENT_D.CONTRACT_ID=SERVICEC_D.CONTRACT_ID
INCIDENT_D.AGREEMENT_ID=SLA_D.AGREEMENT_ID
CMLABOR_F.Z_RDSOPERATOR_DID=OPERATOR_D.Z_RDSOPERATOR_DID
MODEL_D.Z_RDSMODEL_DID=CMPART_F.Z_RDSMODEL_DID
```

Incident Management Module

```
MODEL_D.Z_RDSMODEL_DID=PROBSUMM_MODEL_ASS.Z_RDSMODEL_DID
PROBSUMM_MODEL_ASS.Z_RDSPROBSUMM_DID=PROBSUMM_D.Z_RDSPROBSUMM_DID
PROBSUMM_D.Z_RDSPROBSUMM_DID=PROBSUMM_F.Z_RDSPROBSUMM_DID
PROBSUMM_F.Z_RDSCONTACT_DID=CONTACT_D.Z_RDSCONTACT_DID
PROBSUMM_F.Z_RDSVENDOR_DID=VENDOR_D.Z_RDSVENDOR_DID
PROBSUMM_F.Z_RDSLOCATION_DID=LOCATION_D.Z_RDSLOCATION_DID
PROBSUMM_F.Z_RDSCOMPANY_DID=COMPANY_D.Z_RDSCOMPANY_DID
DEPT_D.COMPANY=COMPANY_D.COMPANY
OPERATOR_D.NAME*=PROBSUMM_D.TICKET_OWNER
SCRELATION.SOURCE=PROBSUMM_D.NUMBERPRGN
SCRELATION.DEPEND=INCIDENT_D.INCIDENT_ID
CLOCK_D.Z_RDSCLOCK_DID=CLOCK_F.Z_RDSCLOCK_DID
OUTAGEDETAIL.OUTAGE_ID=OUTAGE_D.OUTAGE_ID
OUTAGE_D.Z_RDSOUTAGE_DID=OUTAGE_F.Z_RDSOUTAGE_DID
CATEGORY.NAME=PROBSUMM_D.CATEGORY
ACTIVITY.NUMBERPRGN=PROBSUMM_D.NUMBERPRGN
ASSIGNMENT.NAME=PROBSUMM_D.ASSIGNMENT
PROBCAUSE.CAUSE_CODE*=PROBSUMM_D.CAUSE_CODE
RESOLUTION.RESOLUTION_CODE=PROBSUMM_D.RESOLUTION_CODE
LOCATION_D.COUNTRY=COUNTRY.NAME
PROBSUMM_F.OPEN_TIMEID=RDS_TIMEDIM_D.RDS_TIMEDIM_DID
CM3R_D.NUMBERPRGN=SCRELATION.DEPEND
PROBSUMM_F.CLOSE_TIMEID=RDS_TIMEDIM_D2.RDS_TIMEDIM_DID
PROBSUMM_F.Z_RDSDEVICE_DID=DEVICE_D.Z_RDSDEVICE_DID
DEVICE_D.Z_RDSDEVICE_DID=BI_DEVICE.DEVICEID
```

```
CONTACT_D.Z_RDSCONTACT_DID=BI_CONTACT.CONTACTID
LOCATION_D.Z_RDSLOCATION_DID=BI_LOCATION.LOCATIONID
DEPT_D.Z_RDSDEPT_DID=BI_DEPT.DEPTID
DEPT_D.DEPT=CONTACT_D.DEPT
PROBSUMM_D.DEPT=DEPT_D.DEPT
SCRELATION.DEPEND=ROOTCAUS_D.ID
CMLABOR_F.Z_RDSCMLABOR_DID=CMLABOR_D.Z_RDSCMLABOR_DID
PROBSUMM_D.Z_RDSPROBSUMM_DID=CMLABOR_F.Z_RDSPROBSUMM_DID
CMPART_F.Z_RDSCMPART_DID=CMPART_D.Z_RDSCMPART_DID
PROBSUMM_D.Z_RDSPROBSUMM_DID=CMPART_F.Z_RDSPROBSUMM_DID
PROBSUMM_D.Z_RDSPROBSUMM_DID=CLOCK_F.Z_RDSPROBSUMM_DID
PROBSUMM_D.Z_RDSPROBSUMM_DID=OUTAGE_F.Z_RDSPROBSUMM_DID
PROBSUMM_D.CONTRACT_ID=SERVICEC_D.CONTRACT_ID
PROBSUMM_D.AGREEMENT_ID=SLA_D.AGREEMENT_ID
CMLABOR_F.Z_RDSOPERATOR_DID=OPERATOR_D.Z_RDSOPERATOR_DID
MODEL_D.Z_RDSMODEL_DID=CMPART_F.Z_RDSMODEL_DID
```

Change Management Module

```
CLOCK_D.Z_RDSCLOCK_DID=CLOCK_F.Z_RDSCLOCK_DID
CM3R_D.Z_RDSCM3R_DID=CM3R_F.Z_RDSCM3R_DID
CM3T_D.PARENT_CHANGE=CM3R_D.NUMBERPRGN
MODEL_D.Z_RDSMODEL_DID=CM3R_F.Z_RDSMODEL_DID
CM3R_F.Z_RDSLOCATION_DID=LOCATION_D.Z_RDSLOCATION_DID
CM3R_F.Z_RDSVENDOR_DID=VENDOR_D.Z_RDSVENDOR_DID
CM3R_F.Z_RDSCOMPANY_DID=COMPANY_D.Z_RDSCOMPANY_DID
CM3R_D.NUMBERPRGN=APPROVALLOG.NUMBERPRGN
CM3R_D.NUMBERPRGN=ERP_INSTANCE.NUMBERPRGN
SCRELATION_CM3R.SOURCE=CM3R_D.NUMBERPRGN
INCIDENT_D.INCIDENT_ID=SCRELATION.DEPEND
PROBSUMM_D.NUMBERPRGN=SCRELATION.DEPEND
CM3R_F.DATE_ENTEREDID=RDS_TIMEDIM_D.RDS_TIMEDIM_DID
CM3R_D.CURRENT_PHASE=*CM3RCATPHASE.NAME
CM3T_D.CURRENT_PHASE=*CM3TCATPHASE.NAME
CM3RCATPHASE.APPROVALS=*CM3RGROUPS.NAME
CM3R_D.Z_RDSCM3R_DID=CM3R_DEVICE_ASS.Z_RDSCM3R_DID
CM3R_DEVICE_ASS.Z_RDSDEVICE_DID=DEVICE_D.Z_RDSDEVICE_DID
DEVICE_D.Z_RDSDEVICE_DID=BI_DEVICE.DEVICEID
LOCATION_D.Z_RDSLOCATION_DID=BI_LOCATION.LOCATIONID
ROOTCAUS_D.ID=SCRELATION.DEPEND
CMLABOR_F.Z_RDSCMLABOR_DID=CMLABOR_D.Z_RDSCMLABOR_DID
CM3R_D.Z_RDSCM3R_DID=CMLABOR_F.Z_RDSCM3R_DID
CMPART_F.Z_RDSCMPART_DID=CMPART_D.Z_RDSCMPART_DID
CM3R_D.Z_RDSCM3R_DID=CMPART_F.Z_RDSCM3R_DID
SERVICEC_D.Z_RDSSERVICEC_DID=SERVICEC_F.Z_RDSSERVICEC_DID
CM3R_D.Z_RDSCM3R_DID=CLOCK_F.Z_RDSCM3R_DID
CM3R_D.CONTRACT_ID=SERVICEC_D.CONTRACT_ID
CM3SLA.TYPE_LEVEL1=CM3R_D.TYPEPRGN AND
CM3SLA.TYPE_LEVEL2=CM3R_D.TYPE_LEVEL2
  AND CM3SLA.COMPANY = CM3R_D.COMPANY
CMLABOR_F.Z_RDSOPERATOR_DID=OPERATOR_D2.Z_RDSOPERATOR_DID
MODEL_D.Z_RDSMODEL_DID=CMPART_F.Z_RDSMODEL_DID
```

Configuration Management Module

```
DEPT_D.COMPANY=COMPANY_D.COMPANY
MAINFRAME.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
COMPUTER.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
FURNISHINGS.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DISPLAYDEVICE.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
HANDHELDS.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=NETWORKCOMPONENTS.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=OFFICEELECTRONICS.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=SOFTWARELICENSE.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=STORAGE.LOGICAL_NAME
DEVICE_D.Z_RDSDEVICE_DID=DEVICE_F.Z_RDSDEVICE_DID
COMPANY_D.Z_RDSCOMPANY_DID=DEVICE_F.Z_RDSCOMPANY_DID
CONTACT_D.Z_RDSCONTACT_DID=DEVICE_F.Z_RDSCONTACT_DID
DEVICE_F.Z_RDSLOCATION_DID=LOCATION_D.Z_RDSLOCATION_DID
DEVICE_F.Z_RDSVENDOR_DID=VENDOR_D.Z_RDSVENDOR_DID
DEVICE_D.LOGICAL_NAME=TELECOM.LOGICAL_NAME
DEVICE_ADDL.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_FEATURES.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_SCANS.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=DEVICE_SUPCONTACT.LOGICAL_NAME
DEVICE_DRIVERS.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_CONNECTIONS.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=DEVICE_PORTS.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=DEVICE_USB.LOGICAL_NAME
DEVICE_LOGICALDRIVERS.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_PHYSICALDRIVERS.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_POINTING.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=DEVICE_VIDEO.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=DEVICE_PROCESSORS.LOGICAL_NAME
DEVICE_PRINTER.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_KEYBOARDS.LOGICAL_NAME=DEVICE_D.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=DEVICE_MAINFRAMEALTERNATE.LOGICAL_NAME
DEVICE_D.LOGICAL_NAME=DEVICE_SLOT.LOGICAL_NAME
OUTAGEDETAIL.OUTAGE_ID=OUTAGE_D.OUTAGE_ID
OUTAGE_D.Z_RDSOUTAGE_DID=OUTAGE_F.Z_RDSOUTAGE_DID
DEVICE_F.INSTALL_DATEID=RDS_TIMEDIM_D.RDS_TIMEDIM_DID
DEVICE_D.LOGICAL_NAME=PCSOFTWARE.LOGICAL_NAME
MODEL_D.Z_RDSMODEL_DID=DEVICE_F.Z_RDSMODEL_DID
DEVICE_F.Z_RDSDEPT_DID=DEPT_D.Z_RDSDEPT_DID
OPERATOR_D.NAME*=DEVICE_D.USER_ID
DEVICE_F.LAST_SCANID=RDS_TIMEDIM_D2.RDS_TIMEDIM_DID
DEVICE_D.Z_RDSDEVICE_DID=BI_DEVICE.DEVICEID
CONTACT_D.Z_RDSCONTACT_DID=BI_CONTACT.CONTACTID
LOCATION_D.Z_RDSLOCATION_DID=BI_LOCATION.LOCATIONID
DEPT_D.Z_RDSDEPT_DID=BI_DEPT.DEPTID
DEPT_D.DEPT=CONTACT_D.DEPT
OUTAGE_F.Z_RDSDEVICE_DID=DEVICE_D.Z_RDSDEVICE_DID
```

SLA Management Module

```
CLOCK_D.Z_RDSCLOCK_DID=CLOCK_F.Z_RDSCLOCK_DID
OUTAGEDETAIL.OUTAGE_ID=OUTAGE_D.OUTAGE_ID
OUTAGE_D.Z_RDSOUTAGE_DID=OUTAGE_F.Z_RDSOUTAGE_DID
```

```
SLA_F.Z_RDSSLA_DID=SLA_D.Z_RDSSLA_DID
SLAARAVA_F.Z_RDSSLAARAVA_DID=SLAARAVA_D.Z_RDSSLAARAVA_DID
SLAARAVA_F.Z_RDSSLA_DID=SLA_D.Z_RDSSLA_DID
DEVICE_D.Z_RDSDEVICE_DID=SLAARAVA_F.Z_RDSDEVICE_DID
SLAARRES_F.Z_RDSSLA_DID=SLA_D.Z_RDSSLA_DID
SLAARRES_F.Z_RDSSLAARRES_DID=SLAARRES_D.Z_RDSSLAARRES_DID
SLA_D.AGREEMENT_ID=SERVICEENT.SLA_ID
SLA_D.AGREEMENT_ID=SLARESPONSE.AGREEMENT_ID
SLA_D.AGREEMENT_ID=SLAMONTHLY.AGREEMENT_ID
SLA_D.AGREEMENT_ID=SLAMONTHLYAG.AGREEMENT_ID
OUTAGEDETAIL.AGREEMENT_ID=SLA_D.AGREEMENT_ID
CLOCK_F.Z_RDSSLA_DID=SLA_F.Z_RDSSLA_DID
```

Problem Management Module

```
ROOTCAUS_D.ID=SCRELATION.SOURCE
SCRELATION.DEPEND=PROBSUMM_D.NUMBERPRGN
SCRELATION.DEPEND=CM3R_D.NUMBERPRGN
```

CM Parts

```
CMPART_F.Z_RDSCMPART_DID=CMPART_D.Z_RDSCMPART_DID
SERVICEC_D.Z_RDSSERVICEC_DID=CMPART_F.Z_RDSSERVICEC_DID
CM3R_D.Z_RDSCM3R_DID=CMPART_F.Z_RDSCM3R_DID
PROBSUMM_D.Z_RDSPROBSUMM_DID=CMPART_F.Z_RDSPROBSUMM_DID
INCIDENT_D.Z_RDSINCIDENT_DID=CMPART_F.Z_RDSINCIDENT_DID
RDS_TIMEDIM_D.RDS_TIMEDIM_DID=CMPART_F.DATEUSED_DID
MODEL_D.Z_RDSMODEL_DID=CMPART_F.Z_RDSMODEL_DID
```

CM Labor

```
CMLABOR_F.Z_RDSCMLABOR_DID=CMLABOR_D.Z_RDSCMLABOR_DID
SERVICEC_D.Z_RDSSERVICEC_DID=CMLABOR_F.Z_RDSSERVICEC_DID
CM3R_D.Z_RDSCM3R_DID=CMLABOR_F.Z_RDSCM3R_DID
PROBSUMM_D.Z_RDSPROBSUMM_DID=CMLABOR_F.Z_RDSPROBSUMM_DID
INCIDENT_D.Z_RDSINCIDENT_DID=CMLABOR_F.Z_RDSINCIDENT_DID
RDS_TIMEDIM_D.RDS_TIMEDIM_DID=CMLABOR_F.DATEWORKED_DID
OPERATOR_D.Z_RDSOPERATOR_DID=CMLABOR_F.Z_RDSOPERATOR_DID
```

Expense Line Management

```
EXPLINE_F.Z_RDSEXPLINE_DID=EXPLINE_D.Z_RDSEXPLINE_DID
DEVICE_D.Z_RDSDEVICE_DID=EXPLINE_F.Z_RDSDEVICE_DID
SERVICEC_D.Z_RDSSERVICEC_DID=EXPLINE_F.Z_RDSSERVICEC_DID
RDS_TIMEDIM_D.RDS_TIMEDIM_DID=EXPLINE_F.DATECUT_DID
RDS_TIMEDIM_D2.RDS_TIMEDIM_DID=EXPLINE_F.DATEPROCESSED_DID
LOCATION_D.Z_RDSLOCATION_DID=EXPLINE_F.Z_RDSLOCATION_DID
COMPANY_D.Z_RDSCOMPANY_DID=EXPLINE_F.Z_RDSCOMPANY_DID
CONTACT_D.Z_RDSCONTACT_DID=EXPLINE_F.Z_RDSCONTACTEB_DID
CONTACT_D2.Z_RDSCONTACT_DID=EXPLINE_F.Z_RDSCONTACTES_DID
```

Service Contract Management Module

```
CMLABOR_F.Z_RDSCMLABOR_DID=CMLABOR_D.Z_RDSCMLABOR_DID
```

```
SERVICEC_D.Z_RDSSERVICEC_DID=CMLABOR_F.Z_RDSSERVICEC_DID
OPERATOR_D.Z_RDSOPERATOR_DID=CMLABOR_F.Z_RDSOPERATOR_DID
CMPART_F.Z_RDSCMPART_DID=CMPART_D.Z_RDSCMPART_DID
SERVICEC_D.Z_RDSSERVICEC_DID=CMPART_F.Z_RDSSERVICEC_DID
MODEL_D.Z_RDSMODEL_DID=CMPART_F.Z_RDSMODEL_DID
SERVICEREVIEWS.CONTRACT_ID=SERVICEC_D.CONTRACT_ID
SERVICEC_D.Z_RDSSERVICEC_DID=SERVICEC_F.Z_RDSSERVICEC_DID
RDS_TIMEDIM_D.RDS_TIMEDIM_DID=SERVICEC_F.STARTDATE_DID
RDS_TIMEDIM_D2.RDS_TIMEDIM_DID=SERVICEC_F.ENDDATE_DID
CONTACT_D.Z_RDSCONTACT_DID=SERVICEC_F.Z_RDSCONTACTIN_DID
CONTACT_D2.Z_RDSCONTACT_DID=SERVICEC_F.Z_RDSCONTACTEX_DID
CONTACT_D3.Z_RDSCONTACT_DID=SERVICEC_F.Z_RDSCONTACTES_DID
COMPANY_D.Z_RDSCOMPANY_DID=SERVICEC_F.Z_RDSCOMPANYPRO_DID
COMPANY_D2.Z_RDSCOMPANY_DID=SERVICEC_F.Z_RDSCOMPANYCLI_DID
```

Clock

```
INCIDENT_D.Z_RDSINCIDENT_DID=CLOCK_F.Z_RDSINCIDENT_DID
CLOCK_D.Z_RDSCLOCK_DID=CLOCK_F.Z_RDSCLOCK_DID
PROBSUMM_D.Z_RDSPROBSUMM_DID=CLOCK_F.Z_RDSPROBSUMM_DID
CLOCK_F.OPEN_DATEID=RDS_TIMEDIM_D.RDS_TIMEDIM_DID
CLOCK_F.CLOSE_DATEID=RDS_TIMEDIM_D2.RDS_TIMEDIM_DID
CLOCK_F.Z_RDSSLA_DID=SLA_F.Z_RDSSLA_DID
CM3R_D.Z_RDSCM3R_DID=CLOCK_F.Z_RDSCM3R_DID
```

Default Joins for HP OpenView AssetCenter

You can group all data warehouse joins by different AssetCenter modules for the `rds_ac.unv` file.

Portfolio Expense Line Module

```
AMCOMPANY_D.Z_RDSAMCOMPANY_DID=AMASSET_F.Z_RDSAMCOMPANY_DID
AMASSET_F.Z_RDSAMASSET_DID=AMASSET_D.Z_RDSAMASSET_DID
AMMODEL_D.Z_RDSAMMODEL_DID=AMASSET_F.Z_RDSAMMODEL_DID
AMREGION_D.Z_RDSAMREGION_DID=AMASSET_F.Z_RDSAMREGION_DID
AMEMPLDEPT_D.Z_RDSAMEMPLDEPT_DID=AMASSET_F.Z_RDSAMEMPLDEPT_DID
AMCOSTCENTER_D.Z_RDSAMCOSTCENTER_DID=AMASSET_F.Z_RDSAMCOSTCENTER_DID
AMMODEL_D.Z_RDSAMMODEL_DID=BI_AMMODEL.AMMODELID
AMREGION_D.Z_RDSAMREGION_DID=BI_AMREGION.AMREGIONID
BI_AMEMPLDEPT.AMEMPLDEPTID=AMEMPLDEPT_D.Z_RDSAMEMPLDEPT_DID
AMCONTRACT_D.Z_RDSAMCONTRACT_DID=BI_AMCONTRACT.AMCONTRACTID
AMASSET_D.Z_RDSAMASSET_DID=BI_AMASSET.AMASSETID
AMEMPLDEPT_D_DEPT.NAME= (CASE WHEN BI_AMEMPLDEPT.SLEVEL = 4 THEN
BI_AMEMPLDEPT.LEVEL_3_NAME
WHEN BI_AMEMPLDEPT.SLEVEL = 3 THEN BI_AMEMPL
DEPT.LEVEL_2_NAME
WHEN BI_AMEMPLDEPT.SLEVEL = 2 THEN BI_AMEMPLDEPT.LEVEL
_1_NAME
ELSE
BI_AMEMPLDEPT.LEVEL_0_NAME
END)
AND AMEMPLDEPT_D_DEPT.C_BDEPARTMENT = 'Yes'
```

```
AMASSET_D.Z_RDSAMASSET_DID=AMEXPENSELINE_F.Z_RDSAMASSET_DID
AMEXPENSELINE_D.Z_RDSAMEXPENSELINE_DID=AMEXPENSELINE_F.Z_RDSAMEXPENSELINE
_DID
SCHDED_RETIRE_TIMEDIM.RDS_TIMEDIM_DID=AMASSET_F.BIRETIRE_TIMEID
INSTALL_TIMEDIM.RDS_TIMEDIM_DID=AMASSET_F.INSTALL_TIMEID
AMASSET_F.ACQUISITION_TIMEID=RDS_TIMEDIM_D.RDS_TIMEDIM_DID
AMASSET_D.LSTOCKID=AMSTOCK.LSTOCKID
AMPROJECT.LBUDGCNTRID=AMBUDGCENTER_D.LBUDGCNTRID
AMEXPENSELINE_F.BILL_TIMEID=BILLING_TIMEDIM.RDS_TIMEDIM_DID
AMCONTRACT_D.Z_RDSAMCONTRACT_DID=AMASSET_F.Z_RDSMAINTCNTR_DID
AMCONTRACT_D_ACQU.Z_RDSAMCONTRACT_DID=AMASSET_F.Z_RDSACQUCNTR_DID
AMASTPROJDESC.LPROJID=AMPROJECT.LPROJID
AMASSET_D.LASTID=AMASTPROJDESC.LASTID
AMBUDGCENTER_D.Z_RDSAMBUDGCENTER_DID=BUDGET_COST_CENTER.LBUDGCNTRID
AMBUDGCENTER_D.LBUDGCNTRID=AMBUDGLINE.LBUDGCNTRID
BI_AMMODEL.LEVEL_1_NAME=SOFTWARE_EXPENDITURE.LEVEL1
AMASSET_D.LASTID=AMWORKORDER.LASTID
AMCOSTCENTER_D.Z_RDSAMCOSTCENTER_DID=BI_AMCOSTCENTER.AMCOSTCENTERID
EXPENSE_COST_CATEGORY.LCOSTCATID=AMEXPENSELINE_D.LCOSTCATID
AMASSET_D.LCOSTCATID=AMBIUPDCOSTCAT_D.LCOSTCATID
AMBIBRAND_D.LBRANDID_KEY=AMMODEL_D.LBRANDID_KEY
AMBIUPDNATURE_D.LNATUREID_KEY=AMMODEL_D.LNATUREID_KEY
BI_AMBIBRAND.AMBIBRANDID=AMBIBRAND_D.Z_RDSAMBIBRAND_DID
AMPERIOD.LPERIODID=AMBUDGLINE.LPERIODID
```

Acquisition Contract Module

```
AMCONTRACT_D_ACQU.Z_RDSAMCONTRACT_DID=AMCONTRACT_F.Z_RDSAMCONTRACT_DID
END_TIMEDIM.RDS_TIMEDIM_DID=AMCONTRACT_F.END_TIMEID
AMCOSTCENTER_D.Z_RDSAMCOSTCENTER_DID=AMCONTRACT_F.Z_RDSAMCOSTCENTER_DID
AMCOMPANY_D.Z_RDSAMCOMPANY_DID=AMCONTRACT_F.Z_RDSAMCOMPANY_DID
AMCONTRACT_D_ACQU.Z_RDSAMCONTRACT_DID=AMCNTRRENT_F.Z_RDSAMCONTRACT_DID
AMCNTRRENT_F.Z_RDSAMCNTRRENT_DID=AMCNTRRENT_D.Z_RDSAMCNTRRENT_DID
AMCONTRACT_D_ACQU.Z_RDSAMCONTRACT_DID=BI_AMCONTRACT.AMCONTRACTID
RDS_TIMEDIM_D.RDS_TIMEDIM_DID=AMCONTRACT_F.START_TIMEID
ACQU_CONTRACT_COST_CATEGORY.LCOSTCATID=AMCONTRACT_D_ACQU.LCOSTCATID
```

Maintenance Contract Module

```
AMCONTRACT_D.Z_RDSAMCONTRACT_DID=BI_AMCONTRACT.AMCONTRACTID
AMCONTRACT_D.Z_RDSAMCONTRACT_DID=AMCONTRACT_F.Z_RDSAMCONTRACT_DID
END_TIMEDIM.RDS_TIMEDIM_DID=AMCONTRACT_F.END_TIMEID
AMCOSTCENTER_D.Z_RDSAMCOSTCENTER_DID=AMCONTRACT_F.Z_RDSAMCOSTCENTER_DID
AMCOMPANY_D.Z_RDSAMCOMPANY_DID=AMCONTRACT_F.Z_RDSAMCOMPANY_DID
AMCONTRACT_D.Z_RDSAMCONTRACT_DID=AMCNTRRENT_F.Z_RDSAMCONTRACT_DID
AMCNTRRENT_F.Z_RDSAMCNTRRENT_DID=AMCNTRRENT_D.Z_RDSAMCNTRRENT_DID
RDS_TIMEDIM_D.RDS_TIMEDIM_DID=AMCONTRACT_F.START_TIMEID
AMCONTRACT_D.LCOSTCATID=MAINT_CONTRACT_COST_CATEGORY.LCOSTCATID
```

Integrity Check

After you modify the data warehouse universe, make sure to perform an integrity check to detect any join loops or context errors.

1. From the Windows **Start** menu, click **Programs > BusinessObjects XI Release 2 > BusinessObjects Enterprise > Designer**.
2. Log on as the designer user (`Administrator`).
3. Click **Tools > Check Integrity**.
4. Select **Check All**.
5. Click **OK**. The utility scans the universe and suggests potential problems.
6. Correct any problems.
7. Save your changes.

Schema Changes through Business Objects Designer

Because DecisionCenter Analytics sample reports use the out-of-box data warehouse universe, limit your changes to the examples in the following section.

For more information about universe schema changes, refer to the *Business Objects Designer Guide*.

Sample Universe Changes

After you modify the data warehouse universe, make sure to perform an integrity check to detect any join loops or context errors.

1. From the Windows **Start** menu, click **Programs > BusinessObjects XI Release 2 > BusinessObjects Enterprise > Designer**.
2. Log on as the designer user (`Administrator`).
3. Click **Tools > Connections** to change an existing connection or create a new connection.
4. Refresh the database structure and perform an integrity check.
5. Limit your universe changes to:
   - Table and joins
   - Context
   - Alias
   - Class/objects (Description, SQL and Where)
   - Aggregation

Changes to an Existing Universe

The Business Objects Designer tool enables you to make the following types of changes to an existing universe:

- Add tables to the universe structure.
- Insert joins and set cardinalities.
- Detect aliases.
- Detect contexts.
- Create new objects.
- Set up Hierarchies.

Impact of Universe Changes

The changes you make to the universe impact your schema and existing documents.

Table 16 Impact of Universe Changes

Change Element	Description
Schema	• Enhanced Impact: — Adding new columns — Adding new tables • Severe Impact: — Renaming or moving the database — Changing existing column and table names — Deleting tables and columns
Existing Document	• No Impact: — Redefining Object SQL — Renaming an Object — Copying to a different class — Moving in the same class or to a different class — Adding new objects • Impact: — Deleting an existing object — Deleting and then recreating an object with exactly the same definition

Optimizing Universe Samples

Use these suggestions to improve the performance of your universe customization:

- Modify the Array Fetch parameter in **Universe Parameters**.
- Use shortcut joins.
- Create and use aggregate tables in your database.

Export the Universe

After you modify the data warehouse universe, export the universe to the universe domain to have the new universe take effect.

1. From the Windows Start menu, click **Programs > BusinessObjects XI Release 2 > BusinessObjects Enterprise > Designer**.
2. Click **File > Export**.
3. From the **Domain** drop-down list, select your domain.
4. In the **Groups** list, select an application group.
5. Click **OK** to export the universe to the application group. You see a message indicating that the export is successful.

2 Advanced Migration

The migration process requires you to update your data warehouse database schema and HP OpenView Connect-It scenarios. After you verify these changes, you can begin the advanced migration of merging your customized XML file with the current one. Refer to the HP OpenView *DecisionCenter Installation Guide* for information about migrating an out-of-box DecisionCenter.

To adhere to best practices, back up any customizations and configuration files from previous releases.

Preparing for the Migration

Before you can begin the advanced migration process, you must do the following tasks:

Task 1: Set up your environment on page 52.

You must stop the scenario prior to migrating the data warehouse and running the installer.

Task 2: Update the data warehouse database schema on page 52.

Run the migration batch file.

Task 3: Upgrade to HP OpenView Connect-It 3.6 on page 55.

Make sure that your environment is running HP OpenView Connect-It 3.6.

Task 4: Upgrade to Business Objects XI Release 2 on page 55.

Make sure that your environment is running BusinessObjects XI R2.

Task 5: Update the DecisionCenter settings in ServiceCenter on page 55.

Import the `dca10.unl` unload file from the installation media.

Task 6: Update the Connect-It scenario page 56.

Synchronize user records with the data warehouse by updating the scenario.

Task 7: Edit the Connect-It synchronization times page 56.

Changes in the schema require some tables to completely re-synchronize to properly get the updates.

Task 8: Remove deleted records page 57.

To improve the general performance for identifying the records to delete, HP OpenView ServiceCenter invokes a delete trigger.

Setting up Your Environment

Stop the scenario before you begin the migration process.

1. From the Windows **Start** menu, click **Programs > Connect-It > Service Console**.
2. Select the `rds_sc.scn` from the Scenario panel.
3. Click **Stop**.
4. Back up the `<DataWarehouse_Installation>\RDS_SC` directory.
5. Insert the data warehouse media in the CD-ROM drive and run the installer.

Updating the Data Warehouse Database Schema

Run the migration batch file that is in the data warehouse installation directory.

1. From the Windows command prompt, navigate to the `<DataWarehouse_Installation>\RDS_SC\common\bin` directory.
2. Run the `rds_sc61_migrate.bat` batch file.

Checking the Migration

The first time you run the program, you receive the following message:

```
Migration verification failed…Please make sure you have installed RDS 5.2
before proceeding
```

Exit the program and do the following:

1. Set up the data warehouse RDS 5.1.
2. Upgrade to the data warehouse RDS v5.2 without completing the manual process.
3. Run the data warehouse installer for 5.2.1
4. Run the `rds_sc61_migrate.bat` program.

You see the following message:

```
Migration check is complete, continue migration message.
```

This ensures that you installed the data warehouse RDS 5.2 before proceeding with the migration.

To test:

1. From the Windows command prompt, navigate to the `<DataWarehouse_Installation>\RDS_SC\common\bin` directory.
2. Run the `rds_sc61_migrate.bat` batch file.

Migrating the Problem Management Module

Make sure that the `rds_etl_migrate.err` file in the `<DataWarehouse_Installation>\RDS_SC\logs` directory has no entries. You can check the `rds_etl_migrate.log` for processing details.

Before you run the migration program, back up the data warehouse database and record the number of rows in each table with an attributeAction="update" in the rds_etl.xml file.

Table 17 Problem Management attributeAction Parameter

Value	Table	Description
update	Outage_d dimension	A successful migration has two new columns in the table: outage_start_key and outage_end_key. Ensure that the data in the outage_d and outage_f table is not deleted and that the following fields have data: Z_ETLSTATUS Z_RDSOUTAGE_DID Z_RDSTRANSLASTIND Z_RDSACTIVESTATUSIND Z_RDSCREATEDDATE
update	ServiceC_d dimension	You see a record in the RDS_UNIQUECOLUMN table for SERVICEC with a key column set to contract_id_key.
update	SCRELATION direct mapping	You see four records in the RDS_UNIQUECOLUMN table for SCRELATION with key columns set to source, source_filename, depend, and depend_filename.
update	DEVICEPARENT direct mapping	You see two records the in RDS_UNIQUECOLUMN table for DEVICEPARENT with key columns set to logical_name and parent.
update	OUTAGEDETAIL direct mapping	You see two new columns in the table: slo_id and closed. You see four records in the RDS_UNIQUECOLUMN table with key columns set to slo_id, logical_name, year and month.
updatewithfact	Rootcaus_d	You see 21 new columns in the table: INCIDENT_CATEGORY, CURRENT_PHASE, INCIDENT_COUNT, INITIAL_IMPACT, FUTURE_IMPACT, IMPACT, PROBLEM_START_TIME, EXPECTED_RESOLUTION_TIME, LOCATION_TYPE, FREQUENCY, PROPOSED_SOLUTION, REVIEW_NOTES, CAUSE_CODE, AFFECTED_COMPANIES, AFFECTED_CI_COUNT, LAST_TASK_NO, AGREEMENT_ID, CONTRACT_ID, SLA_BREACH, NEXT_BREACH, AFFECTED_CI You have a new fact table: rootcaus_f. Ensure that the data in the table is not deleted. You see a record in the RDS_SCDCOLUMN table for ROOTCAUS with the scd key set to current_phase.
add	Knownerror direct mapping	You see a record in the RDS_UNIQUECOLUMN table for Knownerror with the key column set to ID.

For all associate tables, make sure that you set rdsVersion="5.2.1". Ensure that you see the ROOTCAUS_DEVICE_ASS associate table.

Migrating the Service Level Agreement (SLA) Module

Make sure that the `rds_etl_migrate.err` file in the `<DataWarehouse_Installation>\RDS_SC\logs` directory has no entries. You can check the `rds_etl_migrate.log` for processing details.

Table 18 SLA attributeAction Parameter

Value	Table	Description
historical	SLA_D dimension SLARAva_D dimension SLASRRES_D dimension	Ensure that you mark the records in these tables as historical. You must update the following fields: Z_RDSTRANSLASTIND = 'N' Z_RDSTRANSENDDATE = Current Date Z_RDSTRANSMODDATE = Current Date
historical	SLA_F fact table SLAARva_F fact table SLASRRES_F fact table	You must udpate these fact tables.
add	SLAMONTHLYD_D dimension SLARESPONSED_D dimension SLO_D dimension LOAVAIL_D dimension SLORESPONSE_D dimension	Ensure that you see these dimension tables. Make sure the tables have entries in the RDS_UNIQUECOLUMN table.
add	SLADIRECT direct mapping	Ensure that you see this direct mapping table. Make sure the table has entries in the RDS_UNIQUECOLUMN table.
add	SLAMONTHLYD_F fact SLARESPONSED_F fact SLORESPONSE_F fact	Ensure that you see these fact tables.
deletedata	SLAMONTHLY direct mapping SLARESPONSE direct mapping	Ensure that all records in these direct mapping tables are deleted.

Verifying Indexes

Ensure that the following indexes exist and verify the details:

outage_unique
Rootcause_unique
Sla_unique
SLAARAva_unique
SLAARRES_unique
SERVICEC_unique
SLAMON_unique
SLARESP_unique
LO_Unique
SLORESP_unique
UNIQKNOWNERR_IDX
UNIQSCRELATION_IDX
UNIQDEVICEP_IDX
UNIQSLAMONTHLY_IDX
UNIQSLARESP_IDX
UNIQSLA_IDX
UNIQOUTDET_IDX

Upgrading HP Openview Connect-It

Refer to the HP Openview Connect-It documentation to upgrade from Connect-It 3.4.1 to Connect-It 3.6. In a test environment, you can uninstall your current Connect-It application and install Connect-It 3.6.

Upgrading Business Objects

Refer to the Business Objects documentation to upgrade from Business Objects e6.5.x to BusinessObjects XI Release 2. After you upgrade, you must migrate the old repository objects into the new CMS repository.

You must apply Business Objects hot fixes prior to deploying the content.

Updating DecisionCenter Settings in ServiceCenter

Unload files contain records that you need to use HP OpenView ServiceCenter with DecisionCenter. The Data Warehouse for ServiceCenter media contains one required unload file: `dca10.unl`. The path is:

```
\\SupportFiles\ServiceCenter\unload
```

Your user profile must have system administration rights to complete this procedure. To import ServiceCenter files:

1. From the Data Warehouse for ServiceCenter installation media, copy the contents of this directory to your local hard drive:

   ```
   \\SupportFiles\ServiceCenter\unload files
   ```

2. Start the ServiceCenter client that connects to the server where ServiceCenter is running.
3. From the ServiceCenter Navigation, click **Toolkit > Database Manager**.
4. Right-click anywhere on the screen to open the pop-up menu.
5. Select **Import/Load**.
6. Click **Browse** to locate the files you copied to your local hard drive.
7. Select `dca10.unl` to import.
8. Click **Open**.
9. Click **Load FG** on the toolbar. ServiceCenter displays a confirmation message.
10. Return to the Database Manager and open the triggers file.
11. Search for and delete the following trigger names:

    ```
    serviceent.bi.after.delete
    cm3sla.bi.after.delete
    slamonthly.bi.after.delete
    outagedetail.bi.after.delete
    outage.bi.after.delete
    ```

12. Close the ServiceCenter client.

Updating the Connect-It Scenario

You update the scenario to synchronize your user records with the data warehouse.

1. Open the `rds_sc.scn` scenario.
2. Open all connectors. Click **OK** through any error messages.
3. Click on the **Mapping** connector.
4. Click the **Mappings** tab.
5. Edit the **SLADIRECT** mapping. Click **OK** through any error messages.
6. Delete the mapping for the **DESCRIPTION** field.
7. Click **OK**.
8. Click the **ServiceCenter** connector.
9. Click the **Document Types** tab.
10. Edit the **sla (slaSrc)** document. Click **OK** through any error messages.
11. Highlight and delete the **Description** field.
12. Add the field description back in the mapping. It should read: **data type Long Text**.
13. Click **OK**.
14. Click on the **Mapping** connector.
15. Click the **Mappings** tab.
16. Edit the **SLADIRECT** mapping.
17. Highlight the **Description** field in the Source pane on the left. Click and drag it to the **DESCRIPTION** field in the Destination pane on the right.
18. Click **OK**.
19. Save the scenario.
20. To test, close and reopen the scenario. Edit the **SLADIRECT** mapping. If the mapping displays no errors when it opens, the problem is corrected.

Editing Connect-It Synchronization Times

Due to changes in the schema, certain tables must completely re-sync to get updates properly. To insure this happens, do the following:

1. Using a text editor, open the `\\Program Files\HP\DC\RDS_SC\cit\rds_sc.ini` file.
2. Delete the following lines.

```
slaSrc (Required)
deviceparentSrc (Required)
screlationSrc (Required)
servicecontractSrc (Required)
slaresponseSrc (Required)
slamonthlySrc (Required)
Rootcausesrc1 (Optional, but strongly encouraged)
outagedetailSrc (Optional)
categorySrc (Optional)
```

Deleting these lines causes a complete scan of the table; therefore, the more lines that you remove, the longer the next synchronization takes.

Removing Deleted Records

In previous versions of the data warehouse, the delete synchronization function did not work correctly for some tables because of primary key issues. You may have leftover records from previous deletions that never successfully processed. To correct this, remove or mark data historical in the tables in question. Do the following:

1. Using an RDBMS tool (SQL Query Analyzer for SQL Server or SQL Plus Worksheet for Oracle), copy and execute following SQL statements:

```
DELETE FROM DEVICEPARENT;
DELETE FROM SCRELATION;
```

2. From the Connect-It service console, start the `rds_sc.scn` scenario file.

3. After the scenario runs completely at least once, return to your RDBMS tool and run the following SQL statements.

   For **Oracle**, run the following script.

```
UPDATE RDS_ETL_WORK
SET ETL_DATE =
(
SELECT max(Z_RDSLASTMODDATE) from SERVICEC_D
);

UPDATE SERVICEC_D
  SET Z_RDSDELETEDDATE= sysdate, Z_RDSLASTMODDATE = sysdate,
Z_RDSACTIVESTATUSIND='N'
  WHERE CONTRACT_ID_KEY in (
  SELECT CONTRACT_ID_KEY from SERVICEC_D WHERE
to_number(to_char(Z_RDSLASTMODDATE,'HH24'))*60+to_number(to_char(Z_RDSLAS
TMODDATE,'MI'))+1000 <
    (SELECT
to_number(to_char(max(Z_RDSLASTMODDATE),'HH24'))*60+to_number(to_char(max
(Z_RDSLASTMODDATE),'MI')) from SERVICEC_D)
  );
```

   For **SQL Server**, run the following script:

```
UPDATE RDS_ETL_WORK
SET ETL_DATE =
(
SELECT max(Z_RDSLASTMODDATE) from SERVICEC_D
);

UPDATE SERVICEC_D
  SET Z_RDSDELETEDDATE= GETDATE(), Z_RDSLASTMODDATE = GETDATE(),
Z_RDSACTIVESTATUSIND='N'
  WHERE CONTRACT_ID_KEY in (
    SELECT CONTRACT_ID_KEY from SERVICEC_D, RDS_ETL_WORK
    WHERE datediff(hh, ETL_DATE, Z_RDSLASTMODDATE) > 1 or datediff(hh,
ETL_DATE, Z_RDSLASTMODDATE) < -1
  );
```

Customized Migration

A successful migration requires that you customize the `rds_etl.xml` file, add new tags to the XML, modify the Connect-It scenario, and identify changes to the universe structure.

Changes to the XML File for HP OpenView ServiceCenter 6.1 Support

If you customized your XML file, you must manually merge the changes for this release with your XML file. The following XML file lists only the changed or additional objects in the `rds_etl.xml` file. Nothing was deleted.

Lines in **bold sans serif** are field changes. Replace the line with the updated text.

Lines in **`bold Courier`** are key changes. Replace the entire **`<uniquekey>`** section with the updated text.

Lines in *`italics Courier`* are new. Insert the new text where appropriate.

```
<!-- ========================================================================
Dimension tables
======================================================================== -->

<!-- ========================================================================
OUTAGE - This table has had the keys changes to sync with ServiceCenter's primary unique
key. New fields are added to create char versions of dates that can be used as keys in the
RDS.
======================================================================== -->
    <dimension name='OUTAGE' rdsVersion="5.0" attributeAction="update">
          <dimensionTableName>
            OUTAGE_D
          </dimensionTableName>
          <dataSourceTableName>
            outage
          </dataSourceTableName>
          <dimensionTableFields>
            <dimensionTableField name="logical_name" type="char" size="60"/>
            <dimensionTableField name="outage_start" type="date"/>
            <dimensionTableField name="outage_end" type="date"/>
            <dimensionTableField name="outage_start_key" type="char" size="60"
attributeAction="add"/>
            <dimensionTableField name="outage_end_key" type="char" size="60"
attributeAction="add"/>
            <dimensionTableField name="outage_id" type="float"/>
            <dimensionTableField name="outage_id_key" type="char" size="60"/>
            <dimensionTableField name="last_posting" type="date"/>
            <dimensionTableField name="closed" type="char" size="1"/>
            <dimensionTableField name="skip_post" type="char" size="1"/>
            <dimensionTableField name="has_sla" type="char" size="1"/>
            <dimensionTableField name="reference_file" type="char" size="40"/>
            <dimensionTableField name="reference_key" type="char" size="40"/>
            <dimensionTableField name="sysmodcount" type="float"/>
            <dimensionTableField name="sysmoduser" type="char" size="40"/>
            <dimensionTableField name="sysmodtime" type="date"/>
            <dimensionTableField name="AgeDuration" type="float"/>
          </dimensionTableFields>
          <uniqueKeys name="outage_unique">
            <uniqueKey fieldName="outage_id_key"  srcFieldName="''outage.id''"
srctype="float" size="60" defaultValue="no match"/>
          </uniqueKeys>
          <facts>
            <fact name="OUTAGE_F">
              <factKeys>
```

```
                <factKey name="Z_RDSOUTAGE_DID"/>
                <factKey name="Z_RDSINCIDENT_DID" fieldName="reference_key"
tableName="incident_D" matchFieldName="incident_ID"/>
                <factKey name="Z_RDSprobsumm_DID" fieldName="reference_key"
tableName="probsumm_D" matchFieldName="numberprgn"/>
                <factKey name="Z_RDSdevice_DID" fieldName="logical_name"
tableName="device_D" matchFieldName="logical_name"/>
                <factKey name="outage_startID" fieldName="outage_start"
tableName="RDS_TIMEDIM_D" matchFieldName="FULLDATE"/>
                <factKey name="outage_endID" fieldName="outage_end"
tableName="RDS_TIMEDIM_D" matchFieldName="FULLDATE"/>
             </factKeys>
             <factMeasures>
                <factMeasure name="AgeDuration" srcType="src"/>
             </factMeasures>
          </fact>
        </facts>
        <scdKeys/>
        <aggregateKeys/>
      </dimension>

<!-- ============================================================================
ROOTCAUS - New fields have been added to sync with additional fields in SC 6.1 and later.
Fact and aggregates have been added as well.
============================================================================= -->
```

<dimension name="ROOTCAUS" rdsVersion="5.0" attributeAction="updatewithfact">

```
        <dimensionTableName>
          ROOTCAUS_D
        </dimensionTableName>
        <dataSourceTableName>
          rootcause
        </dataSourceTableName>
        <dimensionTableFields>
          <dimensionTableField name="ID" type="char" size="60"/>
          <dimensionTableField name="CATEGORY" type="char" size="60"/>
          <dimensionTableField name="ASSIGNMENT" type="char" size="60"/>
          <dimensionTableField name="STATUS" type="char" size="60"/>
          <dimensionTableField name="LOGICAL_NAME" type="char" size="60"/>
          <dimensionTableField name="BRIEF_DESCRIPTION" type="char" size="250"/>
          <dimensionTableField name="DESCRIPTION" type="long"/>
          <dimensionTableField name="ROOT_CAUSE" type="long"/>
          <dimensionTableField name="UPDATE" type="long"/>
          <dimensionTableField name="OPEN" type="char" size="1"/>
          <dimensionTableField name="OPEN_TIME" type="date"/>
          <dimensionTableField name="OPENED_BY" type="char" size="60"/>
          <dimensionTableField name="UPDATE_TIME" type="date"/>
          <dimensionTableField name="UPDATED_BY" type="char" size="60"/>
          <dimensionTableField name="CLOSE_TIME" type="date"/>
          <dimensionTableField name="CLOSED_BY" type="char" size="60"/>
          <dimensionTableField name="REOPEN_TIME" type="date"/>
          <dimensionTableField name="REOPENED_BY" type="char" size="60"/>
          <dimensionTableField name="PRIORITY_CODE" type="char" size="60"/>
          <dimensionTableField name="TICKET_OWNER" type="char" size="60"/>
          <dimensionTableField name="SEVERITY" type="char" size="60"/>
          <dimensionTableField name="SYSMODTIME" type="date"/>
          <dimensionTableField name="SYSMODCOUNT" type="float"/>
          <dimensionTableField name="SYSMODUSER" type="char" size="60"/>
          <dimensionTableField name="STATE" type="char" size="30"/>
          <dimensionTableField name="ASSIGNEE_NAME" type="char" size="60"/>
          <dimensionTableField name="SUBCATEGORY" type="char" size="60"/>
          <dimensionTableField name="PRODUCT_TYPE" type="char" size="60"/>
          <dimensionTableField name="PROBLEM_TYPE" type="char" size="60"/>
          <dimensionTableField name="COMPANY" type="char" size="60"/>
          <dimensionTableField name="DUMP" type="char" size="60"/>
          <dimensionTableField name="RESOLUTION" type="long"/>
          <dimensionTableField name="WORKAROUND" type="long"/>
```

```
          <!-- All fields below are new to SC6_1 -->
          <dimensionTableField name="INCIDENT_CATEGORY" type="char" size="60"
attributeAction="add"/>
          <dimensionTableField name="CURRENT_PHASE" type="char" size="60"
attributeAction="add"/>
         <dimensionTableField name="INCIDENT_COUNT" type="float" attributeAction="add"/>
          <dimensionTableField name="INITIAL_IMPACT" type="char" size="60"
attributeAction="add"/>
          <dimensionTableField name="FUTURE_IMPACT" type="char" size="60"
attributeAction="add"/>
          <dimensionTableField name="IMPACT" type="char" size="60" attributeAction="add"/>
          <!-- <dimensionTableField name="USERS_AFFECTED" type="float"
attributeAction="add"/> -->
          <dimensionTableField name="PROBLEM_START_TIME" type="date"
attributeAction="add"/>
          <dimensionTableField name="EXPECTED_RESOLUTION_TIME" type="date"
attributeAction="add"/>
          <dimensionTableField name="LOCATION_TYPE" type="char" size="60"
attributeAction="add"/>
          <dimensionTableField name="FREQUENCY" type="char" size="60"
attributeAction="add"/>
          <dimensionTableField name="PROPOSED_SOLUTION" type="char" size="60"
attributeAction="add"/>
          <dimensionTableField name="REVIEW_NOTES" type="char" size="60"
attributeAction="add"/>
          <dimensionTableField name="CAUSE_CODE" type="char" size="60"
attributeAction="add"/>
          <dimensionTableField name="AFFECTED_COMPANIES" type="long"
attributeAction="add"/>
          <dimensionTableField name="AFFECTED_CI_COUNT" type="float"
attributeAction="add"/>
          <dimensionTableField name="LAST_TASK_NO" type="float" attributeAction="add"/>
          <dimensionTableField name="AGREEMENT_ID" type="float" attributeAction="add"/>
          <dimensionTableField name="CONTRACT_ID" type="float" attributeAction="add"/>
          <dimensionTableField name="SLA_BREACH" type="char" size="1"
attributeAction="add"/>
          <dimensionTableField name="NEXT_BREACH" type="date" attributeAction="add"/>
          <dimensionTableField name="AFFECTED_CI" type="long" attributeAction="add"/>
        </dimensionTableFields>
        <uniqueKeys name="rootcause_unique">
          <uniqueKey fieldName="ID" srcFieldName="id" srctype="char" size="60"
defaultValue="no match"/>
        </uniqueKeys>
        <facts>
        <!-- Fact table, scd, aggregates are new to SC6.1 -->
          <fact name="ROOTCAUS_F">
            <factKeys>
               <factKey name="Z_RDSROOTCAUS_DID"/>
               <factKey name="Z_RDSOPERATOR_DID" fieldName="TICKET_OWNER"
tableName="OPERATOR_D" matchFieldName="name"/>
               <factKey name="START_TIMEID" fieldName="PROBLEM_START_TIME"
tableName="RDS_TIMEDIM_D" matchFieldName="FULLDATE"/>
               <factKey name="RESOLUTION_TIMEID" fieldName="EXPECTED_RESOLUTION_TIME"
tableName="RDS_TIMEDIM_D" matchFieldName="FULLDATE"/>
            </factKeys>
            <factMeasures>
               <factMeasure name="INCIDENT_COUNT" srcType="src"/>
               <factMeasure name="AFFECTED_CI_COUNT" srcType="src"/>
            </factMeasures>
          </fact>
        </facts>
        <scdKeys/>
        <aggregateKeys>
          <aggregateKey name="INCIDENT_CATEGORY" type="char" size="60"/>
          <aggregateKey name="CAUSE_CODE" type="char" size="60"/>
          <aggregateKey name="PROBLEM_START_TIME" type="TIME"/>
```

```
        </aggregateKeys>
      </dimension>

<!-- ========================================================================
SLA - This table has been replaced in the RDS with the direct mapping table SLADIRECT.
The historical tag notifies the migration program to mark all data within (from older
versions) as historical.
======================================================================== -->
    <dimension name="SLA" rdsVersion="5.1" attributeAction="historical">
      <!--!!! name is the first eight characters from original source table name!!! -->
        <dimensionTableName>
          SLA_D
        </dimensionTableName>
        <dataSourceTableName>
          sla
        </dataSourceTableName>
        <dimensionTableFields>
        <!--!!! types are: char, float, date and long!!! -->
          <dimensionTableField name="agreement_id" type="float"/>
          <dimensionTableField name="agreement_id_key" type="char" size="100"/>
          <dimensionTableField name="title" type="char" size="100"/>
          <dimensionTableField name="description" type="long"/>
          <dimensionTableField name="expiration" type="date"/>
          <dimensionTableField name="service_hours" type="char" size="80"/>
          <dimensionTableField name="target" type="float"/>
          <dimensionTableField name="time_to_complete" type="float"/>
          <dimensionTableField name="schedule_to_complete" type="char" size="50"/>
          <dimensionTableField name="suspend_states" type="long"/>
          <dimensionTableField name="sysmodcount" type="float"/>
          <dimensionTableField name="sysmoduser" type="char" size="60"/>
          <dimensionTableField name="sysmodtime" type="date"/>
        </dimensionTableFields>
        <uniqueKeys name="sla_unique">
          <uniqueKey fieldName="title"  srcFieldName="title" srctype="char" size="100"
defaultValue="no match"/>
        </uniqueKeys>
        <facts>
          <fact name="SLA_F">
            <factKeys>
               <factKey name="Z_RDSSLA_DID"/>
               <factKey name="expirationD_DID" fieldName="expiration"
tableName="RDS_TIMEDIM_D" matchFieldName="FULLDATE"/>
            </factKeys>
            <factMeasures>
               <factMeasure name="target" srcType="src"/>
               <factMeasure name="time_to_complete" srcType="src"/>
            </factMeasures>
          </fact>
        </facts>
        <scdKeys/>
        <aggregateKeys/>
      </dimension>

<!-- ========================================================================
SLAARAva (SLA availability targets array) - This table has been replaced in the RDS with
the dimension table SLOAVAIL_D.
The historical tag notifies the migration program to mark all data within (from older
versions) as historical.
======================================================================== -->
    <dimension name="SLAARAva" rdsVersion="5.1" attributeAction="historical">
      <!--!!! It is in SLA availability structure array!!! -->
        <dimensionTableName>
          SLAARAva_D
        </dimensionTableName>
        <dataSourceTableName>
          <!--!!! There is no direct source table!!! -->
```

```
          SLA_AVAILABILITY_ARRAY_OF_STRUCTURE
        </dataSourceTableName>
        <dimensionTableFields>
        <!--!!! types are: char, float, date and long!!! -->
          <dimensionTableField name="agreement_id" type="float"/>
          <dimensionTableField name="agreement_id_key" type="char" size="100"/>
          <dimensionTableField name="logical_name" type="char" size="60"/>
          <dimensionTableField name="percentage" type="float"/>
          <dimensionTableField name="cpm" type="float"/>
          <dimensionTableField name="cpm_currency_code" type="char" size="60"/>
          <dimensionTableField name="schedule" type="char" size="60"/>
          <dimensionTableField name="weight" type="float"/>
        </dimensionTableFields>
        <uniqueKeys name="SLAARAva_unique">
          <!--!!! dimension table uniqueKeys type has to be (or converted to) char!!! -->
          <uniqueKey fieldName="agreement_id_key"  srcFieldName="''agreement.id''"
srctype="float" size="100" defaultValue="no match"/>
          <uniqueKey fieldName="logical_name"  srcFieldName="''logical.name''"
srctype="char" size="20" defaultValue="no match"/>
        </uniqueKeys>
        <facts>
          <fact name="SLAARAva_F">
            <factKeys>
               <factKey name="Z_RDSSLAARAva_DID"/>
               <factKey name="z_rdsdevice_did" fieldName="logical_name"
tableName="device_D" matchFieldName="logical_name"/>
              <factKey name="z_rdsSLA_did" fieldName="agreement_id_key" tableName="SLA_D"
matchFieldName="agreement_id_key"/>
            </factKeys>
            <factMeasures>
               <!--!!! Don't use count in measurement names, because BO E6 bugs!!! -->
               <factMeasure name="percentage" srcType="src"/>
               <factMeasure name="cpm" srcType="src"/>
               <factMeasure name="weight" srcType="src"/>
            </factMeasures>
          </fact>
        </facts>
        <scdKeys/>
        <aggregateKeys/>
      </dimension>

<!-- ================================================================================
SLAARRES (SLA response targets array) - This table has been replaced in the RDS with the
dimension table SLO_D.
The historical tag notifies the migration program to mark all data within (from older
versions) as historical.
================================================================================ -->
    <dimension name="SLAARRES" rdsVersion="5.1" attributeAction="historical">
        <!--!!! It is in SLA response structure array!!! -->
          <dimensionTableName>
            SLAARRES_D
          </dimensionTableName>
          <dataSourceTableName>
            <!--!!! There is no direct source table!!! -->
            SLA_RESPONSE_ARRAY_OF_STRUCTURE
          </dataSourceTableName>
          <dimensionTableFields>
          <!--!!! types are: char, float, date and long!!! -->
            <dimensionTableField name="agreement_id" type="float"/>
            <dimensionTableField name="agreement_id_key" type="char" size="100"/>
            <dimensionTableField name="name" type="char" size="100"/>
            <dimensionTableField name="initial" type="char" size="100"/>
            <dimensionTableField name="final" type="char" size="100"/>
            <dimensionTableField name="time" type="float"/>
            <dimensionTableField name="schedule" type="char" size="100"/>
            <dimensionTableField name="weight" type="float"/>
```

```
        </dimensionTableFields>
        <uniqueKeys name="SLAARRES_unique">
          <!--!!! dimension table uniqueKeys type has to be (or converted to) char!!! -->
          <uniqueKey fieldName="agreement_id_key"  srcFieldName="''agreement.id''"
srctype="float" size="100" defaultValue="no match"/>
          <uniqueKey fieldName="name"  srcFieldName="name" srctype="char" size="20"
defaultValue="no match"/>
        </uniqueKeys>
        <facts>
          <fact name="SLAARRES_F">
            <factKeys>
               <factKey name="Z_RDSSLAARRES_DID"/>
              <factKey name="z_rdsSLA_did" fieldName="agreement_id_key" tableName="SLA_D"
matchFieldName="agreement_id_key"/>
            </factKeys>
            <factMeasures>
               <!--!!! Don't use count in measurement names, because BO E6 bugs!!! -->
               <factMeasure name="time" srcType="src"/>
               <factMeasure name="weight" srcType="src"/>
            </factMeasures>
          </fact>
        </facts>
        <scdKeys/>
        <aggregateKeys/>
      </dimension>

<!-- ============================================================================
SERVICEC - This table has had the keys changes to sync with ServiceCenter's primary unique
key.
============================================================================= -->
    <dimension name="SERVICEC" rdsVersion="5.1" attributeAction="update">
      <!--!!! It is in SERVICECONTRACT!!! -->
        <dimensionTableName>
          SERVICEC_D
        </dimensionTableName>
        <dataSourceTableName>
          servicecontract
        </dataSourceTableName>
        <dimensionTableFields>
        <!--!!! types are: char, float, date and long!!! -->
          <dimensionTableField name="contract_id" type="float"/>
          <dimensionTableField name="contract_id_key" type="char" size="100"/>
          <dimensionTableField name="name" type="char" size="60"/>
          <dimensionTableField name="start_date" type="date"/>
          <dimensionTableField name="end_date" type="date"/>
          <dimensionTableField name="provider" type="char" size="60"/>
          <dimensionTableField name="cost_centre" type="char" size="60"/>
          <dimensionTableField name="internal_contact" type="char" size="90"/>
          <dimensionTableField name="internal_contact_phone" type="char" size="60"/>
          <dimensionTableField name="escalation_contact" type="char" size="90"/>
          <dimensionTableField name="escalation_phone" type="char" size="60"/>
          <dimensionTableField name="client" type="char" size="90"/>
          <dimensionTableField name="external_contact" type="char" size="90"/>
          <dimensionTableField name="duty_calendar" type="char" size="60"/>
          <dimensionTableField name="alert_period" type="date"/>
          <dimensionTableField name="call_time_limit" type="float"/>
          <dimensionTableField name="warning_time" type="float"/>
          <dimensionTableField name="budgeted_amount" type="float"/>
          <dimensionTableField name="budgeted_currency" type="char" size="60"/>
          <dimensionTableField name="root_budget_amount" type="float"/>
          <dimensionTableField name="root_currency" type="char" size="60"/>
          <dimensionTableField name="spent_root" type="float"/>
          <dimensionTableField name="date_of_budget" type="date"/>
          <dimensionTableField name="discreet_problems" type="float"/>
          <dimensionTableField name="used_problems" type="float"/>
          <dimensionTableField name="discreet_calls" type="float"/>
```

```
          <dimensionTableField name="used_calls" type="float"/>
          <dimensionTableField name="discreet_service_reviews" type="float"/>
          <dimensionTableField name="used_service_reviews" type="float"/>
          <dimensionTableField name="discreet_site_visits" type="float"/>
          <dimensionTableField name="used_site_visits" type="float"/>
          <dimensionTableField name="site_visit_cost" type="float"/>
          <dimensionTableField name="named_users" type="long"/>
          <dimensionTableField name="sysmodcount" type="float"/>
          <dimensionTableField name="sysmoduser" type="char" size="60"/>
          <dimensionTableField name="sysmodtime" type="date"/>
        </dimensionTableFields>
        <uniqueKeys name="SERVICEC_unique">
          <!--!!! dimension table uniqueKeys type has to be (or converted to) char!!! -->
           <uniqueKey fieldName="contract_id_key"  srcFieldName="''contract.id''"
srctype="float" defaultValue="no match"/>
        </uniqueKeys>
        <facts>
          <fact name="SERVICEC_F">
            <factKeys>
               <factKey name="Z_RDSSERVICEC_DID"/>
               <factKey name="Z_RDSCONTACTIN_DID" fieldName="internal_contact"
tableName="CONTACT_D" matchFieldName="CONTACT_NAME"/>
               <factKey name="Z_RDSCONTACTEX_DID" fieldName="external_contact"
tableName="CONTACT_D" matchFieldName="CONTACT_NAME"/>
               <factKey name="Z_RDSCONTACTES_DID" fieldName="escalation_contact"
tableName="CONTACT_D" matchFieldName="CONTACT_NAME"/>
               <factKey name="z_rdscompanyPro_did" fieldName="provider"
tableName="COMPANY_D" matchFieldName="COMPANY"/>
               <factKey name="z_rdscompanyCli_did" fieldName="client"
tableName="COMPANY_D" matchFieldName="COMPANY"/>
               <factKey name="startdate_dID" fieldName="start_date"
tableName="RDS_TIMEDIM_D" matchFieldName="FULLDATE"/>
              <factKey name="enddate_dID" fieldName="end_date" tableName="RDS_TIMEDIM_D"
matchFieldName="FULLDATE"/>
            </factKeys>
            <factMeasures>
               <!--!!! Don't use count in measurement names, because BO E6 bugs!!! -->
               <factMeasure name="call_time_limit" srcType="src"/>
               <factMeasure name="warning_time" srcType="src"/>
               <factMeasure name="budgeted_amount" srcType="src"/>
               <factMeasure name="root_budget_amount" srcType="src"/>
               <factMeasure name="spent_root" srcType="src"/>
               <factMeasure name="discreet_problems" srcType="src"/>
               <factMeasure name="used_problems" srcType="src"/>
               <factMeasure name="discreet_calls" srcType="src"/>
               <factMeasure name="used_calls" srcType="src"/>
               <factMeasure name="discreet_service_reviews" srcType="src"/>
               <factMeasure name="used_service_reviews" srcType="src"/>
               <factMeasure name="discreet_site_visits" srcType="src"/>
               <factMeasure name="used_site_visits" srcType="src"/>
               <factMeasure name="site_visit_cost" srcType="src"/>
            </factMeasures>
          </fact>
        </facts>
        <scdKeys/>
        <aggregateKeys/>
      </dimension>

<!-- ============================================================================
SLM Module Tables - The remaining Dimension tables are new additions created to adapt to
changes in the
structure of the Service Level Management module in ServiceCenter 6.1 and later.
============================================================================= -->
      <dimension name="SLAMONTHLYD" rdsVersion="5.2.1" attributeAction="add">
        <dimensionTableName>
          SLAMONTHLYD_D
```

```
        </dimensionTableName>
        <dataSourceTableName>
          slamonthly
        </dataSourceTableName>
        <dimensionTableFields>
          <dimensionTableField name="AGREEMENT_ID" type="float"/>
          <dimensionTableField name="AGREEMENT_ID_KEY" type="char" size="100"/>
          <dimensionTableField name="MONTH" type="float"/>
          <dimensionTableField name="MONTH_KEY" type="char" size="100"/>
          <dimensionTableField name="YEAR" type="float"/>
          <!-- Startday will be YEAR/MONTH/01. Do we need Endday? -->
          <dimensionTableField name="STARTDAY" type="date"/>
          <dimensionTableField name="YEAR_KEY" type="char" size="100"/>
          <dimensionTableField name="EXPECTED" type="float"/>
          <dimensionTableField name="ACTUAL" type="float"/>
          <dimensionTableField name="LOGICAL_NAME" type="char" size="100"/>
          <dimensionTableField name="PERCENTAGE" type="float"/>
          <dimensionTableField name="COST" type="float"/>
          <dimensionTableField name="WEIGHTED" type="float"/>
          <dimensionTableField name="TARGET" type="float"/>
          <dimensionTableField name="ROOT_COST" type="float"/>
          <dimensionTableField name="ROOT_CURRENCY_CODE" type="char" size="20"/>
          <dimensionTableField name="COST_CURRENCY_CODE" type="char" size="20"/>
          <dimensionTableField name="SYSMODCOUNT" type="float"/>
          <dimensionTableField name="SYSMODUSER" type="char" size="100"/>
          <dimensionTableField name="SYSMODTIME" type="date"/>
          <dimensionTableField name="SLO_ID" type="float"/>
          <dimensionTableField name="SLO_ID_KEY" type="char" size="100"/>
          <dimensionTableField name="CLOSED" type="char" size="1"/>
          <dimensionTableField name="RESULT" type="float"/>
          <dimensionTableField name="NEXT_BREACH" type="date"/>
          <dimensionTableField name="TOTAL_OUTAGES" type="float"/>
         <dimensionTableField name="AVG_OUTAGE_DURATION" type="float"/>
          <dimensionTableField name="MTBF" type="float"/>
          <dimensionTableField name="MAX_DUR_BREACHES" type="float"/>
          <dimensionTableField name="DUR_PERCENTAGE" type="float"/>
          <dimensionTableField name="MTBF_ADJUSTED" type="float"/>
          <dimensionTableField name="AVAIL_TYPE" type="char" size="100"/>
        </dimensionTableFields>
        <uniqueKeys name="SLAMON_UNIQUE">
          <uniqueKey fieldName="SLO_ID_KEY" srcFieldName="''slo.id''" srctype="float"
defaultValue="no match" seqIndex="1"/>
          <uniqueKey fieldName="LOGICAL_NAME" srcFieldName="''logical.name''"
srctype="CHAR" size="60" defaultValue="no match" seqIndex="2"/>
          <uniqueKey fieldName="YEAR_KEY" srcFieldName="year" srctype="float"
defaultValue="no match" seqIndex="3"/>
          <uniqueKey fieldName="MONTH_KEY" srcFieldName="month" srctype="float"
defaultValue="no match" seqIndex="4"/>
        </uniqueKeys>
        <facts>
          <fact name="SLAMONTHLYD_F">
            <factKeys>
               <factKey name="Z_RDSSLAMONTHLYD_DID"/>
               <factKey name="Z_RDSSLOAVAIL_DID" fieldName="SLO_ID_KEY"
tableName="SLOAVAIL_D" matchFieldName="SLO_ID_KEY"/>
              <factKey name="STARTDAY" fieldName="STARTDAY" tableName="RDS_TIMEDIM_D"
matchFieldName="FULLDATE"/>
            </factKeys>
            <factMeasures>
              <factMeasure name="ACTUAL" srcType="src"/>
              <factMeasure name="PERCENTAGE" srcType="src"/>
              <factMeasure name="COST" srcType="src"/>
              <factMeasure name="ROOT_COST" srcType="src"/>
              <factMeasure name="RESULT" srcType="src"/>
              <factMeasure name="TOTAL_OUTAGES" srcType="src"/>
              <factMeasure name="AVG_OUTAGE_DURATION" srcType="src"/>
```

```
            <factMeasure name="MTBF" srcType="src"/>
            <factMeasure name="MAX_DUR_BREACHES" srcType="src"/>
            <factMeasure name="DUR_PERCENTAGE" srcType="src"/>
            <factMeasure name="MTBF_ADJUSTED" srcType="src"/>
          </factMeasures>
        </fact>
      </facts>
      <scdKeys/>
      <aggregateKeys>
        <aggregateKey name="AGREEMENT_ID_KEY" type="char" size="100"/>
        <aggregateKey name="LOGICAL_NAME" type="char" size="100"/>
        <aggregateKey name="STARTDAY" type="TIME"/>
      </aggregateKeys>
    </dimension>
    <dimension name="SLARESPONSED" rdsVersion="5.2.1" attributeAction="add">
      <dimensionTableName>
        SLARESPONSED_D
      </dimensionTableName>
      <dataSourceTableName>
        slaresponse
      </dataSourceTableName>
      <dimensionTableFields>
        <dimensionTableField name="RECORD_ID" type="float"/>
        <dimensionTableField name="RECORD_ID_KEY" type="char" size="100"/>
        <dimensionTableField name="AGREEMENT_ID" type="float"/>
        <dimensionTableField name="RESPONSE_NAME" type="char" size="60"/>
        <dimensionTableField name="MEAN" type="float"/>
        <dimensionTableField name="MEDIAN" type="float"/>
        <dimensionTableField name="DEVIATION" type="float"/>
        <dimensionTableField name="MONTH" type="float"/>
        <dimensionTableField name="YEAR" type="float"/>
        <!-- Startday will be YEAR/MONTH/01. Do we need Endday? -->
        <dimensionTableField name="STARTDAY" type="date"/>
        <dimensionTableField name="WEIGHTED" type="float"/>
        <dimensionTableField name="PERHIT" type="float"/>
        <dimensionTableField name="SYSMODCOUNT" type="float"/>
        <dimensionTableField name="SYSMODUSER" type="char" size="60"/>
        <dimensionTableField name="SYSMODTIME" type="date"/>
        <dimensionTableField name="TOTAL_RECORDS" type="float"/>
        <dimensionTableField name="TOTAL_BREACHED" type="float"/>
        <dimensionTableField name="SLO_ID" type="float"/>
        <dimensionTableField name="SLO_ID_KEY" type="char" size="100"/>
      </dimensionTableFields>
      <uniqueKeys name="SLARESP_UNIQUE">
        <uniqueKey fieldName="RECORD_ID_KEY" srcFieldName="''record.id''"
srctype="float" defaultValue="no match"/>
      </uniqueKeys>
      <facts>
        <fact name="SLARESPONSED_F">
          <factKeys>
             <factKey name="Z_RDSSLARESPONSED_DID"/>
             <factKey name="Z_RDSSLO_DID" fieldName="SLO_ID_KEY" tableName="SLO_D"
matchFieldName="SLO_ID_KEY"/>
             <factKey name="STARTDAY" fieldName="STARTDAY" tableName="RDS_TIMEDIM_D"
matchFieldName="FULLDATE"/>
          </factKeys>
          <factMeasures>
            <factMeasure name="MEAN" srcType="src"/>
            <factMeasure name="MEDIAN" srcType="src"/>
            <factMeasure name="DEVIATION" srcType="src"/>
            <factMeasure name="PERHIT" srcType="src"/>
            <factMeasure name="TOTAL_RECORDS" srcType="src"/>
            <factMeasure name="TOTAL_BREACHED" srcType="src"/>
          </factMeasures>
        </fact>
      </facts>
```

```
        <scdKeys/>
        <aggregateKeys/>
      </dimension>
      <dimension name="SLO" rdsVersion="5.2.1" attributeAction="add">
        <dimensionTableName>
          SLO_D
        </dimensionTableName>
        <dataSourceTableName>
          slo
        </dataSourceTableName>
        <dimensionTableFields>
          <dimensionTableField name="SLO_ID" type="float"/>
          <dimensionTableField name="SLO_ID_KEY" type="char" size="100"/>
          <dimensionTableField name="AGREEMENT_ID" type="float"/>
          <dimensionTableField name="SERVICE_AREA" type="char" size="100"/>
          <dimensionTableField name="NAME" type="char" size="100"/>
          <dimensionTableField name="CONDITION" type="char" size="1"/>
          <dimensionTableField name="INITIAL_STATE" type="char" size="100"/>
          <dimensionTableField name="FINAL_STATE" type="char" size="100"/>
          <dimensionTableField name="DURATION_TYPE" type="char" size="100"/>
          <dimensionTableField name="TIME" type="float"/>
          <dimensionTableField name="TIME_SP" type="char" size="100"/>
          <dimensionTableField name="SCHEDULE" type="char" size="100"/>
          <dimensionTableField name="TZ_TYPE" type="char" size="100"/>
          <dimensionTableField name="TIME_ZONE" type="char" size="100"/>
          <dimensionTableField name="ALERT_NAMES" type="long"/>
          <dimensionTableField name="SUSPEND_STATES" type="long"/>
          <dimensionTableField name="COMMENTS" type="char" size="100"/>
        <dimensionTableField name="CREATED_FROM_WIZ" type="char" size="1"/>
          <dimensionTableField name="SYSMODCOUNT" type="float"/>
          <dimensionTableField name="SYSMODUSER" type="char" size="100"/>
          <dimensionTableField name="SYSMODTIME" type="date"/>
          <dimensionTableField name="PROCESS_OWNER" type="char" size="100"/>
          <dimensionTableField name="END_OF_DAY_WINDOW" type="date"/>
          <dimensionTableField name="END_OF_WEEK" type="float"/>
          <dimensionTableField name="TYPE" type="char" size="100"/>
        </dimensionTableFields>
        <uniqueKeys name="SLO_UNIQUE">
          <uniqueKey fieldName="SLO_ID_KEY" srcFieldName="''slo.id''" srctype="float"
defaultValue="no match"/>
        </uniqueKeys>
        <facts/>
        <scdKeys/>
        <aggregateKeys/>
      </dimension>
      <dimension name="SLOAVAIL" rdsVersion="5.2.1" attributeAction="add">
        <dimensionTableName>
          SLOAVAIL_D
        </dimensionTableName>
        <dataSourceTableName>
          sloavail
        </dataSourceTableName>
        <dimensionTableFields>
          <dimensionTableField name="SLO_ID" type="float"/>
          <dimensionTableField name="SLO_ID_KEY" type="char" size="100"/>
          <dimensionTableField name="AGREEMENT_ID" type="float"/>
          <dimensionTableField name="NAME" type="char" size="100"/>
          <dimensionTableField name="CI" type="char" size="100"/>
          <dimensionTableField name="SCHEDULE" type="char" size="100"/>
          <dimensionTableField name="TIME_ZONE" type="char" size="100"/>
          <dimensionTableField name="REQ_UPTIME" type="float"/>
         <dimensionTableField name="MAX_OUTAGE_DURATION" type="float"/>
          <dimensionTableField name="COMMENTS" type="char" size="100"/>
          <dimensionTableField name="ALERT_NAMES" type="long"/>
          <dimensionTableField name="AVAIL_TYPE" type="char" size="100"/>
          <dimensionTableField name="SYSMODCOUNT" type="float"/>
```

```
            <dimensionTableField name="SYSMODUSER" type="char" size="100"/>
            <dimensionTableField name="SYSMODTIME" type="date"/>
            <dimensionTableField name="PERCENTAGE" type="float"/>
            <dimensionTableField name="NEXT_BREACH" type="date"/>
            <dimensionTableField name="RESULT" type="float"/>
            <dimensionTableField name="PROCESS_OWNER" type="char" size="100"/>
            <dimensionTableField name="TYPE" type="char" size="100"/>
          </dimensionTableFields>
          <uniqueKeys name="SLOAVAIL_UNIQUE">
            <uniqueKey fieldName="SLO_ID_KEY" srcFieldName="''slo.id''" srctype="float"
defaultValue="no match"/>
          </uniqueKeys>
          <facts/>
          <scdKeys/>
          <aggregateKeys/>
        </dimension>
        <dimension name="SLORESPONSE" rdsVersion="5.2.1" attributeAction="add">
          <dimensionTableName>
            SLORESPONSE_D
          </dimensionTableName>
          <dataSourceTableName>
            sloresponse
          </dataSourceTableName>
          <dimensionTableFields>
            <dimensionTableField name="FOREIGN_FILENAME" type="char" size="100"/>
            <dimensionTableField name="FOREIGN_KEY" type="char" size="100"/>
            <dimensionTableField name="SLO_ID" type="float"/>
            <dimensionTableField name="SLO_ID_KEY" type="char" size="100"/>
            <dimensionTableField name="SLO_NAME" type="char" size="100"/>
            <dimensionTableField name="INITIAL_STATE" type="char" size="100"/>
            <dimensionTableField name="FINAL_STATE" type="char" size="100"/>
            <dimensionTableField name="EXPIRATION_TIME" type="date"/>
            <dimensionTableField name="RUNNING" type="char" size="1"/>
            <dimensionTableField name="SUSPENDED" type="char" size="1"/>
            <dimensionTableField name="BREACHED" type="char" size="1"/>
            <dimensionTableField name="CURRENT_STATUS" type="float"/>
            <dimensionTableField name="ACTIVE" type="char" size="1"/>
            <dimensionTableField name="START_TIME" type="date"/>
            <dimensionTableField name="END_TIME" type="date"/>
            <dimensionTableField name="AGREEMENT_ID" type="float"/>
            <dimensionTableField name="TOTAL_TIME" type="float"/>
            <dimensionTableField name="SYSMODTIME" type="date"/>
            <dimensionTableField name="SYSMODUSER" type="char" size="100"/>
            <dimensionTableField name="SYSMODCOUNT" type="float"/>
          </dimensionTableFields>
          <uniqueKeys name="SLORESP_UNIQUE">
            <uniqueKey fieldName="FOREIGN_FILENAME" srcFieldName="''foreign.filename''"
srctype="CHAR" size="100" defaultValue="no match"/>
           <uniqueKey fieldName="FOREIGN_KEY" srcFieldName="''foreign.key''" srctype="CHAR"
size="100" defaultValue="no match"/>
            <uniqueKey fieldName="SLO_ID_KEY" srcFieldName="''slo.id''" srctype="float"
defaultValue="no match"/>
          </uniqueKeys>
          <facts>
            <fact name="SLORESPONSE_F">
              <factKeys>
                 <factKey name="Z_RDSSLORESPONSE_DID"/>
                  <factKey name="Z_RDSSLO_DID" fieldName="SLO_ID_KEY" tableName="SLO_D"
matchFieldName="SLO_ID_KEY"/>
                <factKey name="STARTTIME" fieldName="START_TIME" tableName="RDS_TIMEDIM_D"
matchFieldName="FULLDATE"/>
                 <factKey name="ENDTIME" fieldName="END_TIME" tableName="RDS_TIMEDIM_D"
matchFieldName="FULLDATE"/>
              </factKeys>
              <factMeasures>
                <factMeasure name="TOTAL_TIME" srcType="src"/>
```

```
            </factMeasures>
          </fact>
        </facts>
        <scdKeys/>
        <aggregateKeys/>
      </dimension>

<!-- ========================================================================
Associate tables
======================================================================== -->

<!-- ========================================================================
Formerly, only a single Configuration Item (asset) was associated with a Problem (root
cause). Now, an array of Cis can be associated, necessitating an associate table between
rootcaus and device.
======================================================================== -->
       <associate name="ROOTCAUS_DEVICE_ASS" rdsVersion="5.2.1" tableName="ROOTCAUS"
fieldName="LOGICAL_NAME" longFieldName="AFFECTED_CI" tableName2="DEVICE"
fieldName2="LOGICAL_NAME"/>

<!-- ========================================================================
Direct mapping tables
======================================================================== -->

<!-- ========================================================================
KNOWNERROR - This table is new in SC 6.1
======================================================================== -->
     <directMapping name="KNOWNERROR" rdsVersion="5.2.1" dataSourceTableName="knownerror"
attributeAction="add">
        <directMappingFields>
          <directMappingField name="ID" type="char" size="60"/>
          <directMappingField name="CATEGORY" type="char" size="60"/>
          <directMappingField name="ASSIGNMENT" type="char" size="60"/>
          <directMappingField name="STATUS" type="char" size="60"/>
          <directMappingField name="LOGICAL_NAME" type="char" size="60"/>
          <directMappingField name="BRIEF_DESCRIPTION" type="char" size="250"/>
          <directMappingField name="DESCRIPTION" type="long"/>
          <directMappingField name="ROOT_CAUSE" type="long"/>
          <directMappingField name="UPDATE" type="long"/>
          <directMappingField name="OPEN" type="char" size="1"/>
          <directMappingField name="OPEN_TIME" type="date"/>
          <directMappingField name="OPENED_BY" type="char" size="60"/>
          <directMappingField name="UPDATE_TIME" type="date"/>
          <directMappingField name="UPDATED_BY" type="char" size="60"/>
          <directMappingField name="CLOSE_TIME" type="date"/>
          <directMappingField name="CLOSED_BY" type="char" size="60"/>
          <directMappingField name="REOPEN_TIME" type="date"/>
          <directMappingField name="REOPENED_BY" type="char" size="60"/>
          <directMappingField name="PRIORITY_CODE" type="char" size="60"/>
          <directMappingField name="TICKET_OWNER" type="char" size="60"/>
          <directMappingField name="SEVERITY" type="char" size="60"/>
          <directMappingField name="SYSMODTIME" type="date"/>
          <directMappingField name="SYSMODCOUNT" type="float"/>
          <directMappingField name="SYSMODUSER" type="char" size="60"/>
          <directMappingField name="ASSIGNEE_NAME" type="char" size="60"/>
          <directMappingField name="SUBCATEGORY" type="char" size="60"/>
          <directMappingField name="PRODUCT_TYPE" type="char" size="60"/>
          <directMappingField name="PROBLEM_TYPE" type="char" size="60"/>
          <directMappingField name="COMPANY" type="char" size="60"/>
          <directMappingField name="DUMP" type="char" size="60"/>
          <directMappingField name="RESOLUTION" type="long"/>
          <directMappingField name="WORKAROUND" type="long"/>
          <directMappingField name="INCIDENT_CATEGORY" type="char" size="60"/>
          <directMappingField name="CURRENT_PHASE" type="char" size="60"/>
          <directMappingField name="INCIDENT_COUNT" type="float"/>
          <directMappingField name="INITIAL_IMPACT" type="char" size="60"/>
```

```
            <directMappingField name="FUTURE_IMPACT" type="char" size="60"/>
            <directMappingField name="IMPACT" type="char" size="60"/>
            <directMappingField name="USERS_AFFECTED" type="float"/>
            <directMappingField name="PROBLEM_START_TIME" type="date"/>
            <directMappingField name="EXPECTED_RESOLUTION_TIME" type="date"/>
            <directMappingField name="LOCATION_TYPE" type="char" size="60"/>
            <directMappingField name="FREQUENCY" type="char" size="60"/>
            <directMappingField name="PROPOSED_SOLUTION" type="char" size="60"/>
            <directMappingField name="REVIEW_NOTES" type="char" size="60"/>
            <directMappingField name="PARENT_PROBLEM" type="char" size="60"/>
            <directMappingField name="MATCHING_CI_COUNT" type="float"/>
            <directMappingField name="MATCHING_CI" type="long"/>
            <directMappingField name="AFFECTED_COMPANIES" type="long"/>
            <directMappingField name="CAUSE_CODE" type="char" size="60"/>
          </directMappingFields>
          <directMappingIndexes>
            <directMappingIndex name="UNIQKNOWNERR_IDX">
              <DirectMappingIndexKey fieldName="ID" srcFieldName="id" srctype="char"
size="60" seqIndex="1"/>
            </directMappingIndex>
          </directMappingIndexes>
        </directMapping>

<!-- ========================================================================
ROOTCAUSETASK - This table is new in SC 6.1. It is not being used at this time, but the
definition
remains in the XML (commented out) for easy insertion.
========================================================================= -->
<!-- ========================================================================
        RootCauseTask - new in 6.1

        <directMapping name="ROOTCAUSETASK" rdsVersion="5.2.1"
dataSourceTableName="rootcausetask" attributeAction="add">
          <directMappingFields>
            <directMappingField name="ID" type="char" size="60"/>
            <directMappingField name="PARENT_PROBLEM" type="char" size="60"/>
            <directMappingField name="PRIORITY_CODE" type="char" size="60"/>
            <directMappingField name="TICKET_OWNER" type="char" size="60"/>
            <directMappingField name="BRIEF_DESCRIPTION" type="char" size="60"/>
            <directMappingField name="ASSIGNMENT" type="char" size="60"/>
            <directMappingField name="LOGICAL_NAME" type="char" size="60"/>
            <directMappingField name="ASSIGNEE_NAME" type="char" size="60"/>
            <directMappingField name="DUE_DATE" type="date"/>
            <directMappingField name="STATUS" type="char" size="60"/>
            <directMappingField name="WORKAROUND" type="char" size="60"/>
            <directMappingField name="TASK_CATEGORY" type="char" size="60"/>
            <directMappingField name="TASK_RESOLUTION" type="char" size="60"/>
            <directMappingField name="OPEN" type="char" size="1"/>
            <directMappingField name="INITIAL_IMPACT" type="char" size="60"/>
            <directMappingField name="SEVERITY" type="char" size="60"/>
            <directMappingField name="OPENED_BY" type="char" size="60"/>
            <directMappingField name="UPDATED_BY" type="char" size="60"/>
            <directMappingField name="CLOSED_BY" type="char" size="60"/>
            <directMappingField name="REOPENED_BY" type="char" size="60"/>
            <directMappingField name="OPEN_TIME" type="date"/>
            <directMappingField name="UPDATE_TIME" type="date"/>
            <directMappingField name="CLOSE_TIME" type="date"/>
            <directMappingField name="REOPEN_TIME" type="date"/>
            <directMappingField name="INCIDENT_CATEGORY" type="char" size="60"/>
            <directMappingField name="SUBCATEGORY" type="char" size="60"/>
            <directMappingField name="PRODUCT_TYPE" type="char" size="60"/>
            <directMappingField name="PROBLEM_TYPE" type="char" size="60"/>
            <directMappingField name="DESCRIPTION" type="long"/>
            <directMappingField name="UPDATE" type="long"/>
            <directMappingField name="ROOT_CAUSE" type="long"/>
            <directMappingField name="AGREEMENT_ID" type="float"/>
```

```
          <directMappingField name="CONTRACT_ID" type="float"/>
          <directMappingField name="SLA_BREACH" type="char" size="1"/>
          <directMappingField name="NEXT_BREACH" type="date"/>
          <directMappingField name="SYSMODTIME" type="date"/>
          <directMappingField name="SYSMODUSER" type="char" size="60"/>
          <directMappingField name="SYSMODCOUNT" type="float"/>
        </directMappingFields>
        <directMappingIndexes>
          <directMappingIndex name="UNIQRCTASK_IDX">
            <DirectMappingIndexKey fieldName="ID" srcFieldName="id" srctype="char"
size="60" seqIndex="1"/>
          </directMappingIndex>
        </directMappingIndexes>
      </directMapping>
================================================================================ -->

<!-- ================================================================================
SCRELATION - This table has had the keys changes to sync with ServiceCenter's primary
unique key.
================================================================================ -->
    <directMapping name="SCRELATION" dataSourceTableName="screlation" rdsVersion="5.0"
attributeAction="update">
        <directMappingFields>
          <directMappingField name="source" type="char" size="50"/>
          <directMappingField name="source_filename" type="char" size="50"/>
          <directMappingField name="depend" type="char" size="50"/>
          <directMappingField name="depend_filename" type="char" size="50"/>
          <directMappingField name="type" type="char" size="50"/>
          <directMappingField name="source_active" type="char" size="1"/>
          <directMappingField name="depend_active" type="char" size="1"/>
          <directMappingField name="sysmodcount" type="float"/>
          <directMappingField name="sysmoduser" type="char" size="30"/>
          <directMappingField name="sysmodtime" type="date"/>
          <directMappingField name="descprgn" type="char" size="300"/>
          <directMappingField name="depend_call" type="char" size="50"/>
          <directMappingField name="depend_change" type="char" size="50"/>
          <directMappingField name="depend_incident" type="char" size="50"/>
          <directMappingField name="depend_quote" type="char" size="50"/>
          <directMappingField name="depend_rootcause" type="char" size="50"/>
        </directMappingFields>
        <directMappingIndexes>
          <directMappingIndex name="UNIQSCRELATION_IDX">
            <DirectMappingIndexKey fieldName="source" srcFieldName="source"
srctype="char" size="60" seqIndex="1"/>
            <DirectMappingIndexKey fieldName="source_filename"
srcFieldName="''source.filename''" srctype="char" size="60" seqIndex="2"/>
            <DirectMappingIndexKey fieldName="depend" srcFieldName="depend"
srctype="char" size="60" seqIndex="3"/>
            <DirectMappingIndexKey fieldName="depend_filename"
srcFieldName="''depend.filename''" srctype="char" size="60" seqIndex="4"/>
          </directMappingIndex>
        </directMappingIndexes>
      </directMapping>

<!-- ================================================================================
OUTAGEDETAIL - This table has had the keys changes to sync with ServiceCenter's primary
unique key.
Two new fields have also been added.
================================================================================ -->
    <directMapping name="OUTAGEDETAIL" rdsVersion="5.1" dataSourceTableName="outagedetail"
attributeAction="update">
        <directMappingFields>
          <directMappingField name="LOGICAL_NAME" type="char" size="60"/>
          <directMappingField name="AGREEMENT_ID" type="float"/>
          <directMappingField name="OUTAGE_ID" type="float"/>
          <directMappingField name="DOWNTIME" type="float"/>
```

```
            <directMappingField name="MONTH" type="float"/>
            <directMappingField name="YEAR" type="float"/>
            <directMappingField name="COST" type="float"/>
            <directMappingField name="COST_CURRENCY_CODE" type="char" size="30"/>
            <directMappingField name="SYSMODCOUNT" type="float"/>
            <directMappingField name="SYSMODUSER" type="char" size="30"/>
            <directMappingField name="SYSMODTIME" type="date"/>
         <directMappingField name="SLO_ID" type="float" attributeAction="add" />
            <directMappingField name="CLOSED" type="char" size="1" attributeAction="add" />
          </directMappingFields>
          <directMappingIndexes>
            <directMappingIndex name="UNIQOUTDET_IDX">
               <DirectMappingIndexKey fieldName="SLO_ID" srcFieldName="''slo.id''"
srctype="FLOAT" seqIndex="1"/>
               <DirectMappingIndexKey fieldName="LOGICAL_NAME"
srcFieldName="''logical.name''" srctype="CHAR" size="60" seqIndex="2"/>
               <DirectMappingIndexKey fieldName="YEAR" srcFieldName="year"
srctype="FLOAT" seqIndex="3"/>
               <DirectMappingIndexKey fieldName="MONTH" srcFieldName="month"
srctype="FLOAT" seqIndex="4"/>
            </directMappingIndex>
          </directMappingIndexes>
        </directMapping>

<!-- ============================================================================
CATEGORY - several fields have had their data types changed from Date to Float. The data in
ServiceCenter
is actually a relative date (elapsed time), which is better represented as a number of
seconds.
============================================================================== -->
    <directMapping name="category" rdsVersion="5.0" dataSourceTableName="category" attributeAction="update">
          <directMappingFields>
            <directMappingField name="name" type="char" size="50"/>
            <directMappingField name="activity" type="long"/>
            <directMappingField name="open_format" type="char" size="60"/>
            <directMappingField name="update_format" type="char" size="60"/>
            <directMappingField name="close_format" type="char" size="60"/>
            <directMappingField name="countprgn" type="float"/>
          <directMappingField name="alert1" type="float" attributeAction="update"/>
          <directMappingField name="alert2" type="float" attributeAction="update"/>
          <directMappingField name="alert3" type="float" attributeAction="update"/>
          <directMappingField name="reassign" type="float" attributeAction="update"/>
            <directMappingField name="default_assign" type="char" size="50"/>
            <directMappingField name="avail_post" type="char" size="1"/>
            <directMappingField name="qbe_format" type="char" size="60"/>
          <directMappingField name="dl_alert" type="float" attributeAction="update"/>
            <directMappingField name="dl_group" type="char" size="60"/>
            <directMappingField name="print_override" type="char" size="1"/>
            <directMappingField name="print_open" type="char" size="1"/>
            <directMappingField name="print_open_format" type="char" size="60"/>
            <directMappingField name="print_update" type="char" size="1"/>
            <directMappingField name="print_update_format" type="char" size="60"/>
            <directMappingField name="print_close" type="char" size="1"/>
            <directMappingField name="print_close_format" type="char" size="60"/>
            <directMappingField name="alert_pages" type="char" size="1"/>
            <directMappingField name="initial_format" type="char" size="60"/>
            <directMappingField name="check_duplicates" type="char" size="1"/>
            <directMappingField name="check_parents" type="char" size="1"/>
            <directMappingField name="include_unexpired" type="char" size="1"/>
            <directMappingField name="expires_after" type="date"/>
            <directMappingField name="script" type="char" size="50"/>
            <directMappingField name="browse_format" type="char" size="60"/>
            <directMappingField name="category_format" type="char" size="40"/>
            <directMappingField name="wdClsDuration" type="float"/>
            <directMappingField name="wdUD1" type="float"/>
            <directMappingField name="wdUD2" type="float"/>
```

```
          <directMappingField name="wdPriority" type="float"/>
          <directMappingField name="wdClsCustSatisfaction" type="char" size="30"/>
          <directMappingField name="wdClsActDuration" type="float"/>
          <directMappingField name="wdClsRoot" type="float"/>
          <directMappingField name="wdClsLevel" type="float"/>
          <directMappingField name="wdClsParent" type="float"/>
          <directMappingField name="wdClsInflatePriority" type="float"/>
          <directMappingField name="wdClsTimeStamp" type="float"/>
          <directMappingField name="print_format" type="char" size="30"/>
          <directMappingField name="active" type="char" size="1"/>
          <directMappingField name="sysmodcount" type="float"/>
          <directMappingField name="sysmoduser" type="char" size="30"/>
          <directMappingField name="sysmodtime" type="date"/>
          <directMappingField name="copy_open_link" type="char" size="30"/>
          <directMappingField name="company" type="char" size="60"/>
          <directMappingField name="alert1_expression" type="long"/>
          <directMappingField name="alert2_expression" type="long"/>
          <directMappingField name="alert3_expression" type="long"/>
          <directMappingField name="dl_expression" type="long"/>
          <directMappingField name="reass_expression" type="long"/>
          <directMappingField name="device_types" type="long"/>
          <directMappingField name="review_print_formats" type="long"/>
          <directMappingField name="open_print_formats" type="long"/>
          <directMappingField name="update_print_formats" type="long"/>
          <directMappingField name="close_print_formats" type="long"/>
          <directMappingField name="assignment_expression" type="long"/>
          <directMappingField name="wdTips" type="long"/>
          <directMappingField name="engine_alerts" type="long"/>
        </directMappingFields>
        <directMappingIndexes>
          <directMappingIndex name="UNIQCATEGORY_IDX">
            <DirectMappingIndexKey fieldName="name" srcFieldName="name" srctype="char"
size="60" seqIndex="1"/>
          </directMappingIndex>
        </directMappingIndexes>
      </directMapping>

<!-- ============================================================================
DEVICEPARENT - This table has had the keys changes to sync with ServiceCenter's primary
unique key.
============================================================================= -->
    <directMapping name="deviceparent" rdsVersion="5.0" dataSourceTableName="deviceparent"
attributeAction="update">
        <directMappingFields>
          <directMappingField name="logical_name" type="char" size="60"/>
          <directMappingField name="parent" type="char" size="50"/>
          <directMappingField name="relationship" type="char" size="50"/>
          <directMappingField name="sysmodcount" type="float"/>
          <directMappingField name="sysmoduser" type="char" size="30"/>
          <directMappingField name="sysmodtime" type="date"/>
          <directMappingField name="port_no" type="float"/>
          <directMappingField name="comments" type="long"/>
        </directMappingFields>
        <directMappingIndexes>
          <directMappingIndex name="UNIQDEVICEP_IDX">
             <DirectMappingIndexKey fieldName="logical_name"
srcFieldName="''logical.name''" srctype="char" size="60" seqIndex="1"/>
             <DirectMappingIndexKey fieldName="parent" srcFieldName="parent"
srctype="char" size="50" seqIndex="2"/>
          </directMappingIndex>
        </directMappingIndexes>
      </directMapping>

<!-- ============================================================================
SLA - This table has been replaced in the RDS with the Dimension table SLAMONTHLYD_D.
The deletedata tag notifies the migration program to remove all data (from older versions)
```

```
========================================================================== -->
    <directMapping name="slamonthly" rdsVersion="5.1" dataSourceTableName="slamonthly"
attributeAction="deletedata">
          <directMappingFields>
            <directMappingField name="agreement_id" type="float"/>
            <directMappingField name="logical_name" type="char" size="100"/>
            <directMappingField name="month" type="float"/>
            <directMappingField name="year" type="float"/>
            <directMappingField name="expected" type="float"/>
            <directMappingField name="actual" type="float"/>
            <directMappingField name="target" type="float"/>
            <directMappingField name="percentage" type="float"/>
            <directMappingField name="weighted" type="float"/>
            <directMappingField name="cost" type="float"/>
            <directMappingField name="cost_currency_code" type="char" size="20"/>
            <directMappingField name="root_cost" type="float"/>
            <directMappingField name="root_currency_code" type="char" size="20"/>
            <directMappingField name="sysmodcount" type="float"/>
            <directMappingField name="sysmoduser" type="char" size="60"/>
            <directMappingField name="sysmodtime" type="date"/>
          </directMappingFields>
          <directMappingIndexes>
            <directMappingIndex name="UNIQSLAMONTHLY_IDX">
              <DirectMappingIndexKey fieldName="agreement_id"
srcFieldName="''agreement.id''" srctype="FLOAT" seqIndex="1"/>
              <DirectMappingIndexKey fieldName="logical_name"
srcFieldName="''logical.name''" srctype="CHAR" size="60" seqIndex="2"/>
              <DirectMappingIndexKey fieldName="year" srcFieldName="year" srctype="FLOAT"
seqIndex="3"/>
             <DirectMappingIndexKey fieldName="month" srcFieldName="month" srctype="FLOAT"
seqIndex="4"/>
            </directMappingIndex>
          </directMappingIndexes>
        </directMapping>

<!-- ========================================================================
SLA - This table has been replaced in the RDS with the Dimension table SLARESPONSED_D.
The deletedata tag notifies the migration program to remove all data (from older versions)
========================================================================== -->
    <directMapping name="slaresponse" rdsVersion="5.1" attributeAction="deletedata"
dataSourceTableName="slaresponse">
          <directMappingFields>
            <directMappingField name="record_id" type="float"/>
            <directMappingField name="agreement_id" type="float"/>
            <directMappingField name="response_name" type="char" size="60"/>
            <directMappingField name="month" type="float"/>
            <directMappingField name="year" type="float"/>
            <directMappingField name="mean" type="float"/>
            <directMappingField name="median" type="float"/>
            <directMappingField name="deviation" type="float"/>
            <directMappingField name="weighted" type="float"/>
            <directMappingField name="perhit" type="float"/>
            <directMappingField name="sysmodcount" type="float"/>
            <directMappingField name="sysmoduser" type="char" size="60"/>
            <directMappingField name="sysmodtime" type="date"/>
          </directMappingFields>
          <directMappingIndexes>
            <directMappingIndex name="UNIQSLARESP_IDX">
              <DirectMappingIndexKey fieldName="agreement_id"
srcFieldName="''agreement.id''" srctype="FLOAT" seqIndex="1"/>
              <DirectMappingIndexKey fieldName="response_name"
srcFieldName="''response.name''" srctype="char" seqIndex="2"/>
              <DirectMappingIndexKey fieldName="year" srcFieldName="year" srctype="FLOAT"
seqIndex="3"/>
             <DirectMappingIndexKey fieldName="month" srcFieldName="month" srctype="FLOAT"
seqIndex="4"/>
```

```
          </directMappingIndex>
        </directMappingIndexes>
      </directMapping>

<!-- ============================================================================
SLADIRECT - This replaces the old Dimension table SLA_D. The importance of the SLA table is
diminished in SC 6.1 and later.
============================================================================= -->
      <directMapping name="SLADIRECT" rdsVersion="5.2.1" dataSourceTableName="sla"
attributeAction="add">
        <directMappingFields>
          <directMappingField name="AGREEMENT_ID" type="float"/>
          <directMappingField name="TITLE" type="char" size="100"/>
          <directMappingField name="EXPIRATION" type="date"/>
          <directMappingField name="SERVICE_HOURS" type="char" size="80"/>
          <directMappingField name="SYSMODCOUNT" type="float"/>
          <directMappingField name="SYSMODUSER" type="char" size="60"/>
          <directMappingField name="SYSMODTIME" type="date"/>
          <directMappingField name="DESCRIPTION" type="long"/>
          <directMappingField name="START" type="date"/>
          <directMappingField name="CUSTOMER" type="char" size="100"/>
          <directMappingField name="SERVICE_CONTRACT" type="float"/>
          <directMappingField name="AGREEMENTS" type="char" size="100"/>
        </directMappingFields>
        <directMappingIndexes>
          <directMappingIndex name="UNIQSLA_IDX">
            <DirectMappingIndexKey fieldName="AGREEMENT_ID"
srcFieldName="''agreement.id''" srctype="FLOAT" seqIndex="1"/>
          </directMappingIndex>
        </directMappingIndexes>
      </directMapping>
```

Changes to the XML File for Adding Custom Structures

The following table contains tags that the XML file uses only for migration. When you add or change tables after you run the `rds_init` utility, you can use these tags to avoid deleting tables and data.

Table 19 Valid attributeAction Tags

attributeAction Tag	Description
`Add`	Creates a new table with fields specified in `rds_etl.xml` file.
`Deletedata`	Deletes all records in the table.
`Historical`	Marks all records to be historical.
`Update`	Updates table with new fields and creates unique keys. Does not recreate the associated fact tables.
`Updatewithfact`	Updates table with new fields and creates unique keys. Recreates the associated fact tables.

The `attributeAction` tags:

- Include `add`, `deletedata`, `historical`, `update`, and `updatewithfact` values at the table level.
- Include the `add` value at the column level.

- Are not available for fact or associate tables.
- Require the `update` value when you need to change a unique key for a table.
- Do not support `attributeAction="delete"`.
- Add SQL exception entries to the `rds_etl_migrate.log` file. If you find entries in the `rds_etl_migrate.err` file, the migration is not complete. The only way to recover is to restore from your backup file and start the migration process again.
- Require the `updatedwithfact` value when you update a dimension table and add a new associated fact table.

Changes to the Connect-It Scenario for ServiceCenter 6.1 Support

The new structures needed to support ServiceCenter 6.1 required several changes to the Connect-It scenario. If you customized your scenario, you must merge the changes with your modified scenario.

Table 20 Scenario Changes

Change Type	Affected Table	Change
Modified Document	`INCIDENT`	Added fields: • `ESS_ENTRY` • `CALLBACK_BEEPER` • `CALLBACK_CONTACT` • `CALLBACK_EMAIL` • `CALLBACK_PHONE` • `FIRST_TOUCH` • `OTHER`
Modified Document	`PROBSUMM`	Added fields: • `PROB_MGMT_CANDIDATE` • `ESS_ENTRY`
Modified Document	`CM3R`	Added fields: • `CI_DOWN`

Table 20 Scenario Changes

Change Type	Affected Table	Change
Modified Document	CM3T	Added fields: <ATTRIBUTE Name="parent.change" Type="String"/> <COLLECTION Name="parts"> <ATTRIBUTE Name="date" Type="Timestamp"/> <ATTRIBUTE Name="part.gl.number" Type="String"/> <ATTRIBUTE Name="part.no" Type="String"/> <ATTRIBUTE Name="quantity" Type="Double"/> </COLLECTION> Removed: <COLLECTION Name="parts"> <ATTRIBUTE Name="date" Type="Timestamp"/> <ATTRIBUTE Name="part.gl.number" Type="String"/> <ATTRIBUTE Name="part.no" Type="String"/> <ATTRIBUTE Name="quantity" Type="Double"/> </COLLECTION>
Modified Document	CMETCATPHASE	Added fields: • sysmodcount • sysmodtime • sysmoduser
Modified Document	SERVICEREVIEWS	Added fields: • contract.id • contract.name • review.date • service.review.id • technical.account.manager • sysmodcount • sysmodtime • sysmoduser

Table 20 Scenario Changes

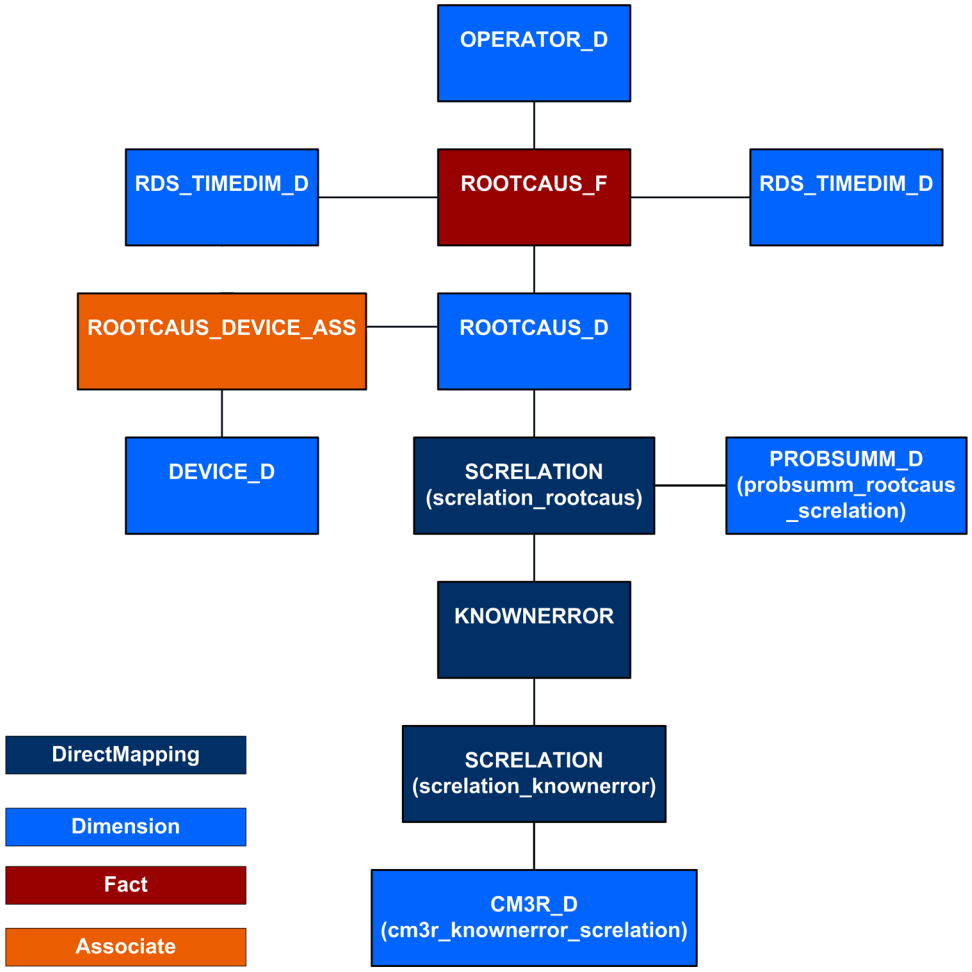
Change Type	Affected Table	Change
Modified Document	DEPT	Added fields: <STRUCTURE Name="parentCompany"> <ATTRIBUTE Name="default.sla" Type="Double"/> <ATTRIBUTE Name="sla.no" Type="String"/> </STRUCTURE> <STRUCTURE Name="defaultAgreement"> <ATTRIBUTE Name="enable" Type="Byte"/> <ATTRIBUTE Name="default.sla" Type="Double"/> </STRUCTURE>
Modified Document	SLO	Added fields: <ATTRIBUTE Name="condition" Type="String"/> <dimensionTableField name="CONDITION" type="char" size="254"/>
Added Document	OUTAGEEVENT	Added fields: • outageevent • ci.name • outage.id • record.tag • sysmodtime • sysmoduser

Changes to the Business Objects Universe for SC 6.1 Support

New structures needed to support the Problem Management and Service Level Management modules in ServiceCenter 6.1 required several changes to the Business Objects universe.

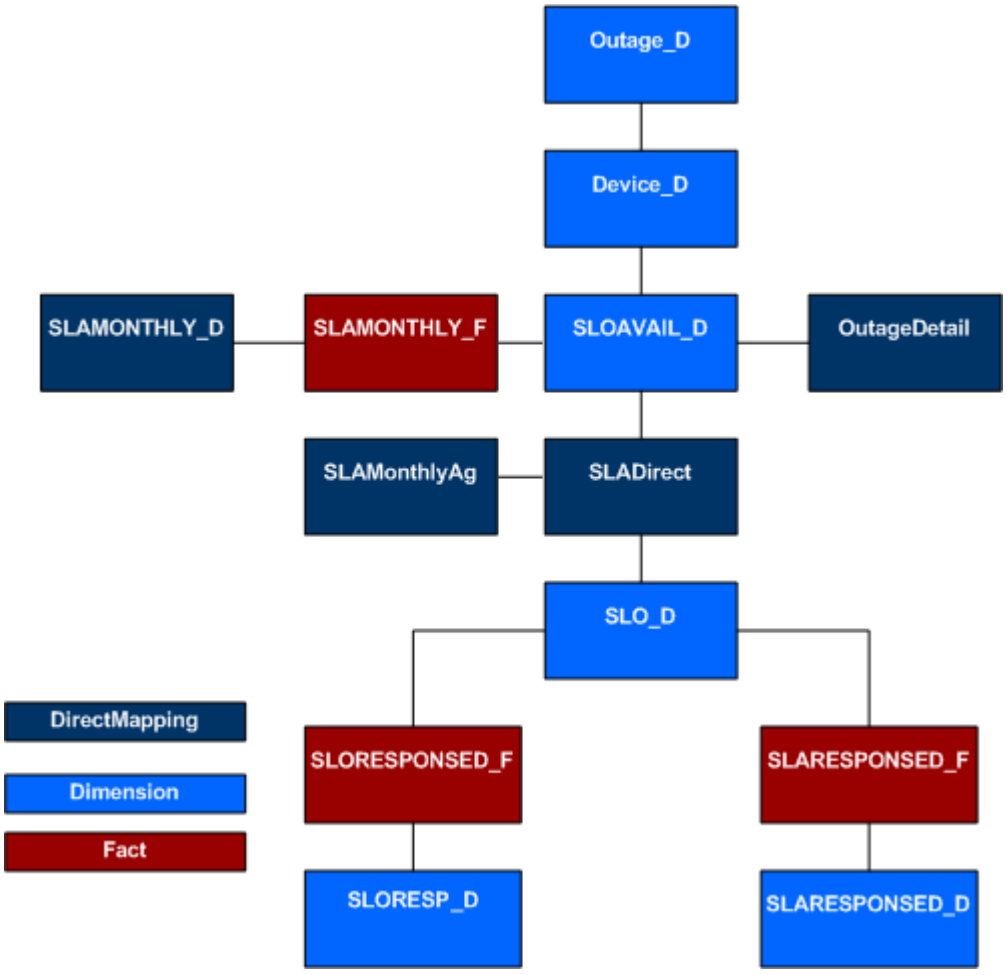
Problem Management Structure

The following diagram shows the new Problem Management structure.



Service Level Management Structure

The following diagram shows the new Service Level Management structure.



A DecisionCenter Analytics Questionnaire

By completing this questionnaire, you can optimize your DecisionCenter Analytics implementation plan.

Schema Implementation

1. Is the ServiceCenter schema upgraded as ServiceCenter 5.1?
2. What are the record numbers for ServiceCenter files, such as probsummary, incidents, devices, cm3r and cm3t?
3. Every day, what are the updates activity volumes for ServiceCenter files, such as probsummary (incident management), incidents (service management), devices (inventory management), cm3r and cm3t (change management)?
4. What is the database size if ServiceCenter uses the external RDBMS database?
5. Based on the data warehouse schema XML definition file, compared to your ServiceCenter schema, what are the differences, such as how many files are different, how many attributes are different and how many new files are needed to add in?
6. Are the unique keys the same as data warehouse default unique keys?
7. Are the Slowly Changing Dimension (SCD) fields (fields need to have historical preservation) same as default dimension SCD keys?
8. Are the aggregation fields same as the default data warehouse dimension aggregate keys?
9. Are the association relationships the same as the default data warehouse associates?
10. Are the hierarchy fields the same as data warehouse hierarchy tables' definition?
11. When is your ServiceCenter offline?
12. Is the daily-based synchronization interval defined for data warehouse data synchronization good enough for your reports users? If not, what synchronization intervals do you expect?

Data Warehouse Universe Customization

1. How many new tables must you add to the data warehouse universe?
2. How many relationships must you add to the data warehouse universe?
3. How many new query objects must you add to the data warehouse universe?
4. Do you have pre-defined hierarchies of slice-dice drill paths for ServiceCenter Service Management, Configuration Management, Incident Management, and Change Management?

5 Can you provide the top five ad hoc queries content?

Customization Reports

1 Are the canned reports from DecisionCenter Analytics sufficient for the initial deployment?

2 If not, what are your top three customized reports content?

3 Do you have the corporate customized reports templates or layout standards?

Installation and Configuration

1 What is your operating system for DecisionCenter servers? You can deploy only the DecisionCenter server module to a non-Windows operating system.

2 What is the database management system—Oracle, SQL Server?

3 What is your application server and your Web server?

4 Is your test environment the same as the production environment?

5 How many maximum concurrent DecisionCenter reporting users do you have?

6 Is your DecisionCenter deployment based on single-server deployment or multiple-server deployment?

7 If you use a multiple-server deployment, how many servers do you use for DecisionCenter server modules? DecisionCenter has three server components: DecisionCenter server, the data warehouse server, and the database server.

8 What are your servers' hardware conditions, including database server?

9 Do you have other HP OpenView applications deployed on the same portal server?

10 Do you have Business Objects products deployed in your corporation? If so, what versions are they?

B Dimension Table Sample File

You can use the code in the following `testdim.xml` file as a sample to create a new dimension table.

```
<?xml version="1.0"?>
<!-- edited with XML Spy v4.3 U (http://www.xmlspy.com) by Hewlett-Packard Development
Company (HP) -->
<rds xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="C:\BI_Development\JAXB_ETL_1.2\rds_etl.xsd">
  <!-- testdim.xml example -->
  <dimensions>
    <dimension name="CUSTOMEDIM1"  rdsVersion="5.1">
      <dimensionTableName>
        CUSTOMEDIM1_D
      </dimensionTableName>
      <dataSourceTableName>
        customdim
      </dataSourceTableName>
      <dimensionTableFields>
        <dimensionTableField name="CUSTOMEDIM_filed1" type="char" size="60"/>
        <dimensionTableField name="name" type="char" size="60"/>
        <dimensionTableField name="Printer" type="char" size="60"/>
        <dimensionTableField name="application_name" type="char" size="80"/>
        <dimensionTableField name="full_name" type="char" size="60"/>
        <dimensionTableField name="msglog_lvl" type="float"/>
        <dimensionTableField name="logoff_parm" type="char" size="1"/>
        <dimensionTableField name="password_date" type="date"/>
        <dimensionTableField name="priority" type="float"/>
        <dimensionTableField name="room" type="char" size="60"/>
        <dimensionTableField name="department" type="char" size="60"/>
        <dimensionTableField name="multi_login" type="char" size="1"/>
        <dimensionTableField name="graphics_printer" type="char" size="60"/>
        <dimensionTableField name="pm_time_limit" type="float"/>
        <dimensionTableField name="cm_time_limit" type="float"/>
        <dimensionTableField name="phone" type="char" size="60"/>
        <dimensionTableField name="beeper" type="char" size="60"/>
        <dimensionTableField name="time_zone" type="char" size="60"/>
        <dimensionTableField name="date_order" type="float"/>
        <dimensionTableField name="change_mgr_group" type="char" size="60"/>
        <dimensionTableField name="authcode" type="float"/>
        <dimensionTableField name="message_flag" type="char" size="1"/>
        <dimensionTableField name="message_count" type="float"/>
        <dimensionTableField name="external_flag" type="char" size="1"/>
        <dimensionTableField name="nodeid" type="char" size="60"/>
        <dimensionTableField name="authorid" type="char" size="60"/>
        <dimensionTableField name="profsflag" type="char" size="1"/>
        <dimensionTableField name="db_time_limit" type="float"/>
        <dimensionTableField name="email" type="char" size="70"/>
        <dimensionTableField name="max_logins" type="float"/>
        <dimensionTableField name="last_update" type="date"/>
        <dimensionTableField name="last_login" type="date"/>
        <dimensionTableField name="fax" type="char" size="60"/>
        <dimensionTableField name="password_errors" type="float"/>
        <dimensionTableField name="login_revoked" type="char" size="1"/>
        <dimensionTableField name="beeper_type" type="char" size="60"/>
        <dimensionTableField name="beeper_name" type="char" size="60"/>
```

```
        <dimensionTableField name="beeper_group" type="char" size="60"/>
        <dimensionTableField name="manager" type="char" size="60"/>
        <dimensionTableField name="pager_pin" type="char" size="60"/>
        <dimensionTableField name="pager_vendor" type="char" size="60"/>
        <dimensionTableField name="voice_mailbox" type="char" size="60"/>
        <dimensionTableField name="page_response" type="char" size="1"/>
        <dimensionTableField name="casual_user" type="char" size="1"/>
        <dimensionTableField name="wdUD1" type="float"/>
        <dimensionTableField name="wdUD2" type="float"/>
        <dimensionTableField name="wdResType" type="float"/>
        <dimensionTableField name="wdResTimeStamp" type="float"/>
        <dimensionTableField name="sc_manager" type="char" size="30"/>
        <dimensionTableField name="lines_per_page" type="float"/>
        <dimensionTableField name="max_line_width" type="float"/>
        <dimensionTableField name="print_header" type="char" size="60"/>
        <dimensionTableField name="syslanguage" type="char" size="60"/>
        <dimensionTableField name="rate_hour" type="float"/>
        <dimensionTableField name="rate_currency_code" type="char" size="80"/>
        <dimensionTableField name="display_currency_code" type="char" size="80"/>
        <dimensionTableField name="wdIsReadOnlyView" type="char" size="1"/>
        <dimensionTableField name="wdMailBoxName" type="char" size="60"/>
        <dimensionTableField name="sysmodcount" type="float"/>
        <dimensionTableField name="sysmoduser" type="char" size="60"/>
        <dimensionTableField name="sysmodtime" type="date"/>
        <dimensionTableField name="ldapauthbase" type="char" size="40"/>
        <dimensionTableField name="systemplate" type="char" size="40"/>
        <dimensionTableField name="max_attach_size" type="float"/>
        <dimensionTableField name="named_user" type="char" size="1"/>
        <dimensionTableField name="company" type="char" size="60"/>
        <dimensionTableField name="no_force_termination" type="char" size="1"/>
        <dimensionTableField name="set_user_from" type="char" size="30"/>
        <dimensionTableField name="profile_service" type="char" size="50"/>
        <dimensionTableField name="profile_incident" type="char" size="50"/>
        <dimensionTableField name="profile_rootcause" type="char" size="50"/>
        <dimensionTableField name="profile_inventory" type="char" size="50"/>
        <dimensionTableField name="user_role" type="char" size="50"/>
        <dimensionTableField name="man_lockout_user" type="char" size="1"/>
        <dimensionTableField name="user_login_count" type="float"/>
        <dimensionTableField name="reset_by" type="char" size="40"/>
        <dimensionTableField name="locked_until" type="date"/>
        <dimensionTableField name="locked_reason" type="float"/>
        <dimensionTableField name="no_lock_user" type="char" size="1"/>
        <dimensionTableField name="do_password_reset" type="char" size="1"/>
        <dimensionTableField name="expire_password" type="char" size="1"/>
        <dimensionTableField name="gl_number" type="char" size="30"/>
        <dimensionTableField name="assignment_groups" type="long"/>
        <dimensionTableField name="cap_exec" type="long"/>
        <dimensionTableField name="change_groups" type="long"/>
        <dimensionTableField name="change_approvals" type="long"/>
        <dimensionTableField name="email_events" type="long"/>
        <dimensionTableField name="groups" type="long"/>
        <dimensionTableField name="month_ext" type="long"/>
        <dimensionTableField name="month_abv" type="long"/>
        <dimensionTableField name="names" type="long"/>
        <dimensionTableField name="pm_groups" type="long"/>
        <dimensionTableField name="profile_change" type="long"/>
        <dimensionTableField name="profile_request" type="long"/>
        <dimensionTableField name="security_group" type="long"/>
        <dimensionTableField name="values" type="long"/>
        <!-- SC 5.1 new attributes -->
        <dimensionTableField name="command" type="float"/>
        <dimensionTableField name="profile_contract" type="char" size="30"/>
      </dimensionTableFields>
      <uniqueKeys name="CUSTOMEDIM1_unique">
        <uniqueKey fieldName="name" srcFieldName="name" srctype="char" size="60"
defaultValue="no match"/>
```

```
      </uniqueKeys>
      <facts/>
      <scdKeys/>
      <aggregateKeys/>
    </dimension>
  </dimensions>
  <associates/>
  <hierarchies/>
  <directMappings/>
</rds>
```

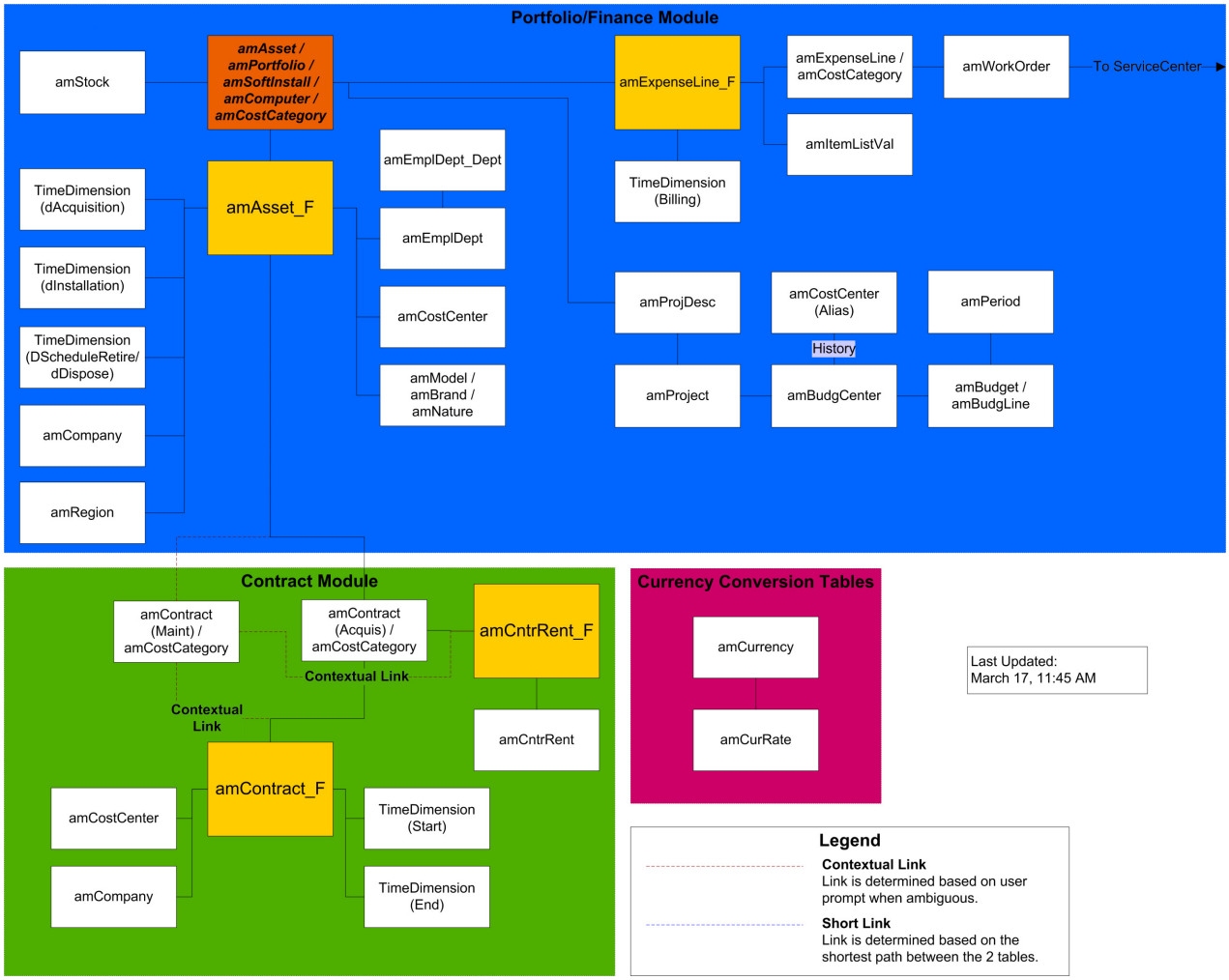
C Direct Mapping Table Sample File

You can use the code in the following `testdirect.xml` file as a sample to create a new direct mapping table.

```
<?xml version="1.0"?>
<!-- edited with XML Spy v4.3 U (http://www.xmlspy.com) by Hewlett-Packard Development
Company (HP) -->
<rds xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="C:\BI_Development\JAXB_ETL_1.2\rds_etl.xsd">
  <!-- testdirect.xml example -->
  <dimensions/>
  <associates/>
  <hierarchies/>
  <directMappings>
    <directMapping name="C_DMTABLE" rdsVersion="5.1" dataSourceTableName="sc_dmtable">
      <directMappingFields>
        <directMappingField name="logical_name" type="char" size="50"/>
        <directMappingField name="field2" type="char" size="120"/>
        <directMappingField name="field3" type="char" size="120"/>
        <directMappingField name="field4" type="char" size="120"/>
        <directMappingField name="Z_RDSLASTMODDATE" type="date"/>
      </directMappingFields>
      <directMappingIndexes>
        <directMappingIndex name="UNIQC_DMTABLE_IDX">
          <DirectMappingIndexKey fieldName="logical_name" srcFieldName="''logical.name''"
srctype="char" size="50"/>
        </directMappingIndex>
      </directMappingIndexes>
    </directMapping>
  </directMappings>
</rds>
```

D Data Warehouse AssetCenter ERD

This Entity Relationship Diagram (ERD) shows how HP OpenView AssetCenter tables in the data warehouse relate to each other.



E ETL Processes

Based on the data warehouse dimensional modeling techniques, the following scenarios include all the possible fact table Extract, Transform, and Load (ETL) processes. **Bold** text indicates changes to the DecisionCenter Analytics implementation.

Dimension Table and Referenced Dimension Table Changes

When changes to dimension tables occur in ServiceCenter, the ETL process makes changes to the data warehouse.

Table 21 Changes to Dimension Tables

	ServiceCenter Activity	ETL Activity
Main dimension table change	• Creates a new line item such as incident or portfolio	• Adds a new fact record
	• **Updates the existing line item**	• **Updates the matched fact record only when you change the dimensional foreign keys or measurements**
	• Updates the existing Slowly Changing Dimension (SCD) line item	• **Updates the matched fact records main foreign key from the old key to the new SCD3 key**
	• Marks the existing line item as *deleted*	• Marks the matched fact record as *obsolete*
Referenced dimension table changes	• Creates a new record in the referenced dimension tables	• Makes no changes in the fact table
	• Updates existing referenced dimensional records	• Makes no changes in the fact tables
	• **Updates existing referenced dimensional SCD records**	• **Updates all the related fact records and related dimensional foreign key with the new surrogate keys**
	• Deletes existing referenced dimensional records	• Makes no changes in the fact tables

Universe Filter Conditions for Query or Reporting

The universe has filters that all reports use. The fact and dimensional tables use the following filters:

- The fact table is not *obsolete*.
- Dimensional foreign keys are greater than 5 (>= 5).
- **Referenced dimensions include obsolete records**.

Index

G

H

I

K

M

N

O

P

Q

R

S

T

U

V

X