CA ERwin® Data Modeler Workgroup Edition

Implementation Guide

Version 9.0.0

CA Technologies Product References

This document references the following CA Technologies products:

- CA ERwin® Data Modeler Workgroup Edition (CA ERwin DM WE)
- CA ERwin® Data Modeler Navigator Edition (CA ERwin DM NE)

Documentation Changes

The following documentation updates have been made since the last release (r8.2) of this documentation:

- Installing and Configuring Mart (see page 17)—Updated this section per the new Mart architecture requirements.
- Prepare your DBMS Environment (see page 22)—Updated this section to remove topics that are not relevant per the new Mart architecture.

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Understanding your Support

Review support maintenance programs and offerings.

Registering for Support

Access the CA Support online registration site to register for product support.

Accessing Technical Support

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Contents

Chapter 1: Modeling in the Multiuser Environment

CA ERwin Data Modeler Workgroup Edition coordinates the development and management of data models created with CA ERwin Data Modeler.

This section contains the following topics:

CA ERwin Data Modeler Workgroup Edition

CA ERwin Data Modeler Workgroup Edition provides a multiuser modeling environment that makes coordinated, large-scale modeling possible. It enables collaboration among project managers, data modeling team members, and standards administrators by providing workgroup modeling services, including conflict resolution, versioning, security, and standards management. You can coordinate the efforts of model teams to document existing systems, create new eBusiness systems, and drive data standardization. Model sharing encourages teamwork, so modelers can work together more efficiently to optimize model-based development. Your modelers get more work done in less time with better results.

Workgroup modeling operates in a three-tier architecture, where CA ERwin Data Modeler connects to Mart server through a web server. The models are held in a database or Mart; you can use Microsoft SQL Server, Oracle, or Sybase as the host database.

Workgroup modeling features are provided to help control updates to models when you are opening, closing, and saving models. The administrator installs the program and initializes the database on the DBMS server. The administrator also has the responsibility of setting up the library structure in which models are organized, and assigning security profiles to users. After a model is saved to the database, control of who can work on the model and how changes are saved to the model is handled by profiles, making it possible for workgroups to work on large models without confusion. CA ERwin Data Modeler Workgroup Edition supports many security and administrative features related to its multiuser capabilities. For this reason, routine management is usually performed by a dedicated administrator. Administrators can find detailed information regarding their tasks and responsibilities in the *Administration Guide*.

You can also use CA ERwin Data Modeler Navigator Edition with CA ERwin Data Modeler Workgroup Edition. Read-only access is permitted to data models, so your workgroup can use this to share information with others without the risk that unauthorized changes might be saved to Mart.

Model Life Cycle Frameworks

Use one of the following model life cycle frameworks in your organization:

Model-Driven Development

Changes to the schema are made to the model first and then forward-engineered.

System-Driven Models

Changes are made directly to the schema and the schema is reverse-engineered into the model to reflect the changes.

Informational Models

Contains logical-only models, enterprise-wide models, or standards and sample models.

Each type of framework has different considerations that you must think about when configuring your database and developing its supporting policies. You are not required to choose a particular framework, however, it helps to know your development process before building a library structure.

Model-Driven Development Framework

In the model-driven framework, the model is always the source of all changes. You create a new database schema by forward engineering the model. The life cycle of a model in the model-driven Development framework can follow a path like this:

- Create the library structure (for example, Development, Test, and Production) and populate them with CA ERwin Data Modeler templates.
- Create the logical model in a development library.
- Promote the model to the test library when it is ready.
- Generate the schema from the test library.
- Modify the test model as required and synchronize it to the schema.
- Promote the model to the production library when it is ready.
- Publish the refreshed production model.
- Update the enterprise-wide model, if necessary.
- Incorporate changes into the development model for further changes, and repeat the process.

System-Driven Model Framework

In the system-driven framework, there is an established information system from which you can reverse engineer database tables. The life cycle of a model in the system-driven Development framework can follow a path as described below:

- Create the library structure (for example, Reverse Eng, Test, Production). You do not require CA ERwin Data Modeler templates because you do not create models from scratch.
- Reverse engineer the model from the information system into the designated library.
- Enhance the model with logical information and input from analysts.
- Update the model to reflect changes in the physical schema.
- Create a version of the model.
- Synchronize the schema and the model using Complete Compare.
- Publish the model.
- Repeat the last three steps as the system is modified.

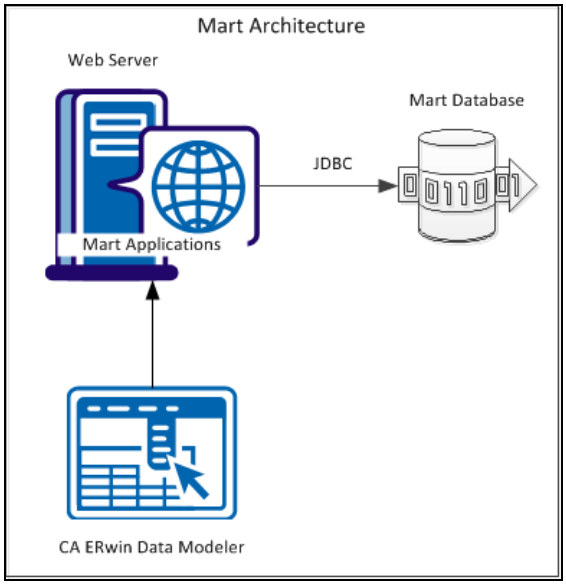
Informational Model Framework

In the Informational Model framework, CA ERwin Data Modeler Workgroup Edition contains logical-only models, enterprise-wide models, or standards and sample models. There is no forward engineering with the intent of using the schema. The life cycle of a model in the Informational Model framework can follow a path as described below:

- Create the library structure and populate them with templates.
- Develop the initial model. Use reverse engineering and model new components as required.
- Publish the initial model to the appropriate parties for modification and refinement.
- Get approval, and then version the model.
- Publish the approved model.
- Update and publish models as the enterprise model evolves.

Chapter 2: Mart Architecture

In the previous versions, CA ERwin Data Modeler connected to the Mart server directly. Now, CA ERwin Data Modeler connects to the Mart server through a web server. The following diagram shows the new architecture:



The new architecture has the following benefits:

- Separate logical and physical users: In the previous versions, Mart (or Model Manager) users required database level privileges to access Mart functionality. The Mart database administrators added or deleted users in the Mart database. This approach is changed now. The logical users are separated from physical users, so Mart Administrators can create Mart users without creating the corresponding database users.
- Authentication through Active Directory services: Earlier, if you wanted to provide access to a user group, you added each user individually. Now, because of the new architecture, you can use the Active Directory services and can provide access to the group. Anyone who is part of the group gets access.
- Mart administration outside CA ERwin Data Modeler: In the previous versions, Mart Administrators used CA ERwin Data Modeler for administrative activities such as permissions management. This required non-modelers to know how to use CA ERwin Data Modeler. In the new architecture, the administration component (CA ERwin Web Admin) is built on a separate layer on top of CA ERwin Data Modeler and is hosted on a Web server. Mart Administrators can access CA ERwin Web Admin from any computer and can perform administrative activities through a web console.

Chapter 3: Checklist

To use Oracle as the Mart database:

- You know the user name and password to connect to the database.
- You know the port number where Oracle is running.
- You know the name of the database.
- You know the IP address or the name of the computer where the database is running.
- You have created a data tablespace of at least 32 MB.
- You have created an index of at least 32 MB.
- You have created a temporary tablespace.
- You have assigned data tablespace as default tablespace to this user.
- You have assigned the temporary tablespace that you have created to this user.
- You have created the CA ERwin Data Modeler Workgroup Edition Installer role.
- You have granted Oracle privileges to the Installer role.

To use SQL Server as the Mart database:

- You know the user name and password to connect to the database.
- You have verified that SQL Server is running.
- You have verified that TCP/IP is enabled.
- You know the port number where SQL Server is running, if you are not using the default port.
- You know the IP address or the name of the computer where the database is running.
- You know the name of the database.
- The minimum size of the database is 60 MB.
- The minimum file size of the transaction log is 50 MB.
- The size of tempdb is at least 16 MB.

To use Sybase as the Mart database:

- You know the user name and password to connect to the database.
- If you are not using the default port, you know the port number where Sybase is running.
- You know the IP address or the name of the computer where the database is running.
- You know the name of the database.
- The minimum size of the database is 32 MB.
- You have located the data device on a different disk than the transaction log.

- The size of the Stored Procedure Cache is at least 20MB.
- The size of tempdb is at least 16MB.
- You have allocated at least 64MB RAM to the database server.

To use IIS to connect to Mart:

- You know the server name where you have installed Tomcat.
- You know the server name where you have installed IIS.
- You have created the Worker.properties, isapi_redirect.reg, isapi_redirect.properties, uriworkermap.properties, and uniworker.properties files.

To install Mart Server:

- You know the server name where you have installed the web server. For example, you know the computer name where Tomcat is installed.
- If you have changed the default port number, you know the port number on which the web server is running.
- You know the computer name where you have created the Mart database.
- You know the port number where the database is running.
- You know the database instance name if you are using SQL Server.
- You know the user name and password to connect to the database.

Chapter 4: Installing and Configuring Mart

Mart comprises the following components:

- Database
- Applications
- Web server

The Mart application includes a web-based component named CA ERwin Mart Administrator. CA ERwin Mart Administrator helps you manage Mart through a web console.

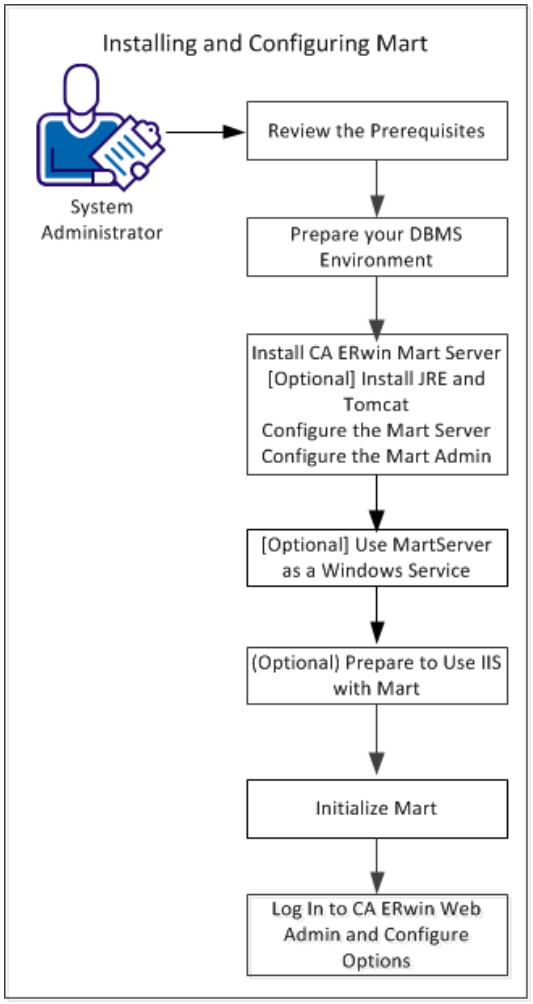
The Web server hosts CA ERwin Mart Administrator and you can use a Web server of your choice. If you have not installed a Web server, use the ERwin Mart Server option and install Tomcat.

Install one of the following databases for the Mart database:

- SQL Server 2000, 2005, 2008, or 2012
- Oracle 10g or 11g
- Sybase 15.x

After installing Web server and the Mart server, provide the details of their properties.

The following diagram illustrates how to install and configure Mart:



Complete the following steps to install and configure Mart:

1. Review the prerequisites (see page 19).
2. Prepare Your DBMS Environment. (see page 22)
3. Install CA ERwin Mart Server. (see page 31)
4. (Optional) Use MartServer as a Windows Service. (see page 34)
5. (Optional) Prepare to Use IIS with Mart. (see page 34)
6. Initialize Mart (see page 36).
7. Log in to CA ERwin Mart Administrator and configure options (see page 39).

Review the Prerequisites

Before you install Mart components, help ensure that the minimum system requirements that are outlined in this topic are met.

System requirements for Mart server

Hardware requirements (based on physical hardware performance, not a virtual environment):

- 2 GHZ or higher dual core processor
- 4 GB RAM (8 GB or more for large marts)
- 4 GB of disk space or more as required to support your specific mart

Operating system:

- Microsoft Windows Vista
- Microsoft Windows 2008 Server SP2
- Microsoft Windows 2003 Server SP2
- Microsoft Windows XP SP3
- Microsoft Windows 7

  Notes:

  - CA ERwin Data Modeler has only been certified on the 32-bit versions of the Windows operating systems described in the preceding list. CA ERwin Data Modeler is a 32-bit application. You may experience problems running CA ERwin Data Modeler on a 64-bit operating system.
  - CA ERwin Data Modeler is compatible with Microsoft Windows 8 Release Preview. You may experience problems with shortcuts and CA ERwin DM third-party components.
- Microsoft .NET Framework 3.5 or higher
- All current Microsoft Windows critical updates are applied

Database:

The Mart Server can use a “standalone” or share an existing database server:

- Microsoft SQL Server 2000, 2005, 2008, or 2012
- Oracle 10g or 11g
- Sybase 15.x

CA ERwin Mart Administrator web client:

- Supported browsers:
  - Microsoft Internet Explorer 8® or newer
  - Mozilla Firefox® v.9.0 or newer
  - Google Chrome 14 or newer
  - Apple Safari 5 or newer
- Adobe Flash plug-in version 8 or newer for the respective browser

Other requirements

Help ensure that the following additional requirements are met:

- If you want to use Microsoft IIS as the web server, you have configured it.
- The DBMS is installed and prepared for creating the Mart Database.
- The Mart database is created. At least one user with administrator privileges is present. If you are using Oracle, you have run the initial queries. For more information about the initial queries, see the Implementation Guide.

  Note: For Microsoft SQL Server 2005, 2008, and 2012 select Mixed Mode Authentication during installation. For Oracle Version 10g and 11g, modify the following parameters in the initialization file (InitSID.ora):

  ```
  Remote_OS_Authent=""

  OS_Authent_Prefix=TRUE
  ```

- If you want to add Windows Group users, you have the Active Directory Server details.

Important disclaimer notice on all requirements

1. The requirements mentioned previously define the minimum requirements which permit CA ERwin Data Modeler r9 to run with reasonable performance based on a small business use case scenario. The actual requirements for an enterprise wide use case based on larger models and configurations require significantly greater resources to obtain acceptable performance.
2. These requirements are based on actual physical hardware (no virtual environment) and the following assumptions:
   - Minimal to no network overhead (both the database and application servers are locally installed)
   - Vendor's default install of the current version of their software (with all current service or fix packs)
   - No other applications sharing the defined hardware configuration (e.g., a “clean” machine)

   Any other hardware/software configurations are acceptable as long as they provide the same (or better) performance characteristics identified.

Prepare Your DBMS Environment

Perform the following setup tasks in your DBMS environment before you can install and use the software:

1. Install the DBMS on the server where you plan to store the mart.

   For more information about memory and disk space requirements, see the system requirements for each DBMS (Microsoft SQL Server, Sybase, and Oracle).

2. Create the mart.

   Use the DBMS features to create or identify the required storage objects and the mart. The specific requirements vary depending on your DBMS type.

Note: To create, update, or delete a mart in CA ERwin Data Modeler Workgroup Edition, you must have the following database rights:

- For Microsoft SQL Server 2000, 2005, 2008, and 2012 you must be the database owner (dbo).

  Notes:

  - The dbo is no longer required to have the sysadmin role.
  - The SQL Server 2005, 2008, and 2012 TRUSTWORTHY database property is no longer required for the mart. After you install this product, you can optionally reset this property to OFF.

- For Oracle, you must be the database schema owner and have the DBA role.

Tasks to Create a Microsoft SQL Server DBMS

The following tasks must be performed by the DBA and system administrator responsible for installing CA ERwin Data Modeler Workgroup Edition on a Microsoft SQL Server DBMS:

1. Use a graphical user interface (GUI) tool, ISQL (all versions), SQL Administrator, or Enterprise Manager to create the CA ERwin Data Modeler Workgroup Edition database. If a GUI tool is not available, you can use ISQL to type in the appropriate commands manually.

   Your database should meet the following criteria:

   - The initial size of the database file should be set to 60 MB.
   - The initial size of the transaction log file should be set to 50 MB.
   - Set the maximum file size to unrestricted file growth for both files (recommended, but not required).
   - Increase the Set Auto grow file by 10 percent (recommended, but not required).

   The new database is *owned* by the user who created it.

   Set the Truncate Log on Checkpoint option and have the server generate checkpoints frequently. By selecting this option, the log is emptied periodically and should not fill up and cause rollbacks.

   Note: For best performance ensure that separate devices are used to store the data and the transaction log.

2. Verify tempdb size.

   Significant temporary space is required for installation and use. The temporary segments need at least 16 MB of available space. You should also increase available space as the number of concurrent users increase.

Microsoft SQL Server 2005 Permissions

For SQL Server 2000, you only need the public permission assigned to save to Mart. However, when the repository is on a SQL Server 2005 instance, you must have the *bulkadmin* permission designated too. The ability to do bulk inserts (which the public permission permitted previously) is no longer part of the public permission. As the administrator, you explicitly define this permission. Assign the bulkadmin permission to the physical user that connects to the database. If you do not define the permission, when you create a mart using a SQL Server 2005 database, and save it, an error appears.

Specify Use of Foreign Characters With Microsoft SQL Server 2000

For Microsoft SQL Server 2000, select specific settings in the Client Network Utility to have certain foreign language characters in your models recognized.

Follow these steps:

1. Click Programs, Microsoft SQL Server, Client Network Utility on the Start menu.

   The SQL Server Client Network Utility dialog opens.

2. Select the following check boxes on the DB-Library Options tab:

   - Automatic ANSI to OEM conversion
   - Use international settings

3. Click OK.

   Your configuration is set to recognize foreign language characters in your models.

Specify Use of Foreign Characters With Microsoft SQL Server 2005

For Microsoft SQL Server 2005, 2008, and 2012 modify your registry settings to have certain foreign language characters in your models recognized.

Follow these steps:

1. Click Run on the Start menu.
2. Enter *regedit*.

   The Registry Editor opens.

3. Verify or add the following registry entry:

   [HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSSQLServer\Client\DB-Lib]

   "AutoAnsiToOem"="ON"

   "UseIntlSettings"="ON"

4. Click File, Exit.

   Your configuration is set to recognize foreign language characters in your models.

Tasks to Create a Sybase DBMS

The DBA and the system administrator responsible for installing the software on a Sybase database management system perform the following tasks:

1. Use a graphical user interface (GUI) tool, ISQL (all versions), SQL Administrator, Sybase Central Java, or Enterprise Manager to create the mart database. If a GUI tool is not available, use ISQL to type the appropriate commands manually.

   Your database must meet the following criteria:

   - The size of the data device you create determines the size of the database. The minimum database size is 32 MB so there has to be at least one device that is 32 MB. Create the data device on a different disk (and disk controller) than the transaction log.
   - For optimum performance, verify that separate devices are used to store the data and the transaction log. For example, you can increase performance by creating a 50-MB data device and a 25-MB log device. A minimum of 40 MB of disk space (data and log) is required.

2. Verify the Stored Procedure Cache.

   Set the Stored Procedure Cache size to at least 8 MB. Setting it higher improves performance, especially when many users are accessing the server concurrently. Setting it lower results in fatal errors and rollbacks when the Stored Procedure Cache size is exceeded.

   Note: The installation creates more than 100 stored procedures. The client invokes these stored procedures to control changes to the data in the database.

3. Verify tempdb size.

   Significant temporary space is required for installation and use. The temporary segments need at least 16 MB of available space. Increase the available space as the number of concurrent users increase.

4. Verify the memory allocated to the database server.

   Allocate at least 32 MB of RAM to the database server. The amount of RAM allocated is ideally half of the available RAM on the server.

Transact-SQL Commands

If a graphical DBMS access tool is not available, you can use Transact-SQL commands through ISQL.

Example: Create a device using the Transact-SQL DISK INIT command through ISQL

```
DISK INIT NAME = 'mmdata',       /* The logical name. */
PHYSNAME = 'C:\SQL\DATA\mmdata.dat',     /* The physical name. */
VDEVNO = 1<= virtual_device_number => 255
/* System dependent. */
 SIZE = number_of_2K_blocks      /* 1024 here is 2MB!!! */
 [, VSTART = virtual_address,    /* Optional */
CNTRLTYPE = controller_number]   /* Optional */
```

Example: Create a database using the Transact-SQL CREATE DATABASE command through ISQL

```
CREATE DATABASE mmmaster
 [ON {DEFAULT | database_device} [= size_in_megabytes] /* The device created in #1.
*/
 [, database_device [= size_in_megabytes]]...]  /* A database can span devices. */
 [LOG ON database device [= size_in_megabytes>]  /* Separate log device. */
 [, database device [= size_in_megabytes]]...] /* A transaction log can span devices.
*/
```

Example: Add logins to the database with the *sp_addlogin* and *sp_adduser* commands using Transact-SQL through ISQL

```
sp_addlogin login_id [, passwd [, defdb [, deflanguage]]]

sp_adduser login_id [, username [, grpname]]
```

After you execute these commands, the DBA can alias an existing login as the Database Owner (dbo) or change the dbo to an existing login using *sp_changedbowner*. Use ISQL to execute the following:

```
sp_changedbowner login_id [,true]
```

Tasks to Create an Oracle DBMS

The DBA and the system administrator responsible for installing the software on an Oracle database management system performs these tasks.

Use graphical tools or SQL *Plus (all versions), SQL*DBA, or the Oracle Enterprise Management Console to perform these tasks. Examples of SQL commands are included where appropriate. Data file paths, data file sizes, role names, and user names are included for example only.

1. Check SYSTEM tablespace.

   The installation creates several stored procedures. All triggers, stored procedures, and packages are kept in the Oracle SYSTEM tablespace. The standard size of the SYSTEM tablespace assumes that you are not using procedural options, so the SYSTEM tablespace often needs to be expanded. If other Oracle applications are not using procedural code, then the SYSTEM tablespace should be expanded to 32 MB. If other Oracle applications also use procedural code, expand the SYSTEM tablespace to at least 32 MB.

2. Check Rollback Segment tablespace.

   If your instance uses UNDO tablespace, do not create rollback segments.

   Significant rollback space is required for installation and use. The rollback segments should be in their own separate tablespace and each have at least 16 MB of available space. There should be one rollback segment for every four concurrent users, with a maximum of 50 rollback segments. The available space should scale upward with increasing numbers of rollback segments. Finally, the rollback segment optimal parameter should be set to control rollback segment growth and space consumption.

   Note: For Steps 3, 4, and 5, use Dictionary-managed tablespaces.

3. Create a data tablespace of at least 32 MB.

   For example:

   ```
   CREATE TABLESPACE MyMart

   DATAFILE '/db01/oracle/rdbms9i/data/mymart.ora' SIZE 100M;

   Or For Locally Managed extents:

   CREATE TABLESPACE Mymart

   DATAFILE '/db01/oracle/rdbms9i/data/mymart.ora' SIZE 100M

   EXTENT MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO;
   ```

4. Create a index tablespace of at least 32 MB.

   For example:

   ```
   CREATE TABLESPACE MMARTINDEX

   DATAFILE '/db02/oracle/rdbms9i/data/mmartindex.ora' SIZE 75M;

   Or For Locally Managed extents:

   CREATE TABLESPACE MMARTINDEX

   DATAFILE '/db02/oracle/rdbms9i/data/mmartindex.ora' SIZE 75M

   EXTENT MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO;
   ```

5. Create a temporary tablespace.

   For example:

   ```
   CREATE TEMPORARY TABLESPACE MMTEMP TEMPFILE
   '/db03/oracle/rdbms9i/data/mmarttemp.ora' SIZE 50M;

   Or For Locally Managed extents:

   CREATE TEMPORARY TABLESPACE MMTEMP TEMPFILE
   '/db03/oracle/rdbms9i/data/mmarttemp.ora' SIZE 50M

   EXTENT MANAGEMENT LOCAL UNIFORM SIZE 1M;
   ```

   Note: For more details about syntax and options regarding tablespace creation, see the appropriate Oracle documentation.

6. Create an Oracle user with DBA privileges to be used by the CA ERwin Data Modeler Workgroup Edition Installer or designated schema owner.

   Assign the data tablespace as this user's default tablespace, and the temporary tablespace as this user's temporary tablespace.

   For example:

   ```
   CREATE USER STEVE IDENTIFIED BY STEVE

   DEFAULT TABLESPACE MyMart

   TEMPORARY TABLESPACE MMTEMP

   QUOTA UNLIMITED ON MyMart

   QUOTA UNLIMITED ON MMARTINDEX;
   ```

7. Create the CA ERwin Data Modeler Workgroup Edition Installer role.

   The following example is the role required by the Oracle user installing CA ERwin Data Modeler Workgroup Edition.

   ```
   CREATE ROLE MMINSTALL;
   ```

8. Grant Oracle privileges to the Installer role.

   The following example shows the Oracle privileges that the CA ERwin Data Modeler Workgroup Edition Installer needs to install on Oracle. For the last command, you must log in as sys with the sysdba role in the user-name or the command will fail.

   ```
   grant create sequence to MMINSTALL;

   grant create table to MMINSTALL;

   grant create view to MMINSTALL;

   grant drop public synonym to MMINSTALL;

   grant create public synonym to MMINSTALL;

   grant create procedure to MMINSTALL;

   grant select on dba_data_files to MMINSTALL;
   ```

9. Create the CA ERwin Data Modeler Workgroup Edition User role.

   For example:

   ```
   CREATE ROLE MMUSER;
   ```

   When you select this role as the CA ERwin Data Modeler Workgroup Edition User role during Step 4 of the installation procedure, the Setup program generates grant statements that grant object level privileges to this role.

10. Grant the create session Oracle privilege to the User role.

    For example:

    ```
    grant create session to MMUSER;
    ```

    Note: The create session privilege is the only privilege that an Oracle user needs to use the database.

11. Grant the CA ERwin Data Modeler Workgroup Edition User role to the Installer role.

    For example:

    ```
    grant MMUSER to MMINSTALL;
    ```

12. Select the CA ERwin Data Modeler Workgroup Edition tablespaces and User role.

    When prompted for tablespace and role information, select the CA ERwin Data Modeler Workgroup Edition data tablespace, the CA ERwin Data Modeler Workgroup Edition index tablespace, and the CA ERwin Data Modeler Workgroup Edition User role (the role created in Step 9).

Database Objects Installation

Install the software on an Oracle DBMS to create the following database objects:

- Tables
- Indexes
- Stored procedures
- Public synonyms

Oracle SQL Commands

If a graphical DBMS access tool is not available, you can use Oracle SQL commands through SQL*DBA or SQL*Plus.

Example: Create a tablespace using the CREATE TABLESPACE command

```
CREATE TABLESPACE mm_data       /* The tablespace name. */
DATAFILE 'C:\ORANT\DATABASE\mmdata.dat'Ą/* The data file name. */
SIZE integer_value K or M or G   /* The data file size */
DEFAULT STORAGE (       /* The default storage parameters */
    INITIAL integer_value K or M or G    /* The initial extent size */
    NEXT integer_value K or M or G       /* The next extent size */
    PCTINCREASE integer_value    /* The percent to grow extents */
    MINEXTENTS integer_value     /* The minimum number of extents */
    MAXEXTENTS integer_value     /* The maximum number of extents */
);
```

Example: Create an Oracle user using the CREATE USER command

```
CREATE USER mm_user_1  /* The user id name */
IDENIFIED BY password  /* The user password */
DEAFULT TABLESPACE tablespace_name  /* The user's default tablespace */
TEMPORARY TABLESPACE tablespace_name  /* The user's temporary tablespace */
QUOTA unlimited_or_integer_K_M_G ON tablespace_name /* The user's quota on a
tablespace */
;
```

Example: Grant user privileges using the GRANT command

```
GRANT role_or_privilege_name
TO user_or_role
;
```

Mart Creation Requirements

To create the mart, you must meet one of the following requirements:

- You must be the database owner (dbo) in the target database on the Microsoft SQL Server 2005, 2008, 2012 or Sybase server

  Note: The database owner (dbo) is necessary only during the software installation or upgrade. It is not necessary after you create the mart.

- You must be the database schema owner user and have the DBA role in the target database on the Oracle server.

Install CA ERwin Mart Server

The Mart Server and Mart Admin war files are deployed on a Web server. You can either use an existing web server, or install the web server through the CA ERwin MartServer Installation Wizard. You must install CA ERwin Mart Server and configure it regardless of whether you use Mart Server as a Windows service.

Follow these steps:

1. Do one of the following tasks:
   - Insert the installation DVD and select Mart Server Installation.
   - Download the Mart Server.exe file from the online CA Technologies product page and run it.

   The CA ERwin MartServer Installation Wizard appears.

2. Go through the wizard steps to install CA ERwin Mart Server.

   Depending on the options you select, CA ERwin Mart Server and/or Java Runtime Environment (JRE) and Tomcat are installed.

   Note: If Java (any version) is already available in the computer and the environment variable JRE_HOME is set, the installer overwrites JRE_HOME with the new Java path. The JRE version that is shipped with the installer is *1.6.0_31*. If a Tomcat web server is already installed in the computer and the environment variable CATALINA_HOME is set, the installer replaces CATALINA_HOME with the new path.

3. After you close the wizard, from the Windows Start menu, click All Programs, CA, ERwin, ERwin Mart Server r9, Configure MartServer.

   The CA ERwin Mart Configuration dialog appears.

Configure the CA ERwin Mart Server

1. Complete the following fields in the Mart Server tab:

Database Type

Specifies database server type.

Port No.

Specifies the port number of the database server.

Server Name

Specifies the name of the database server where you have installed the Mart database. For example, suppose that you are using SQL Server 2008 as the Mart database. Enter the name of the computer where SQL Server 2008 is installed.

Instance Name

Specifies the name of the database instance.

Database Name

Specifies the name of the Mart database.

Note: Use a new database. Do not specify the name of an existing database that you have used for an older version of Mart.

User Name

Specifies the user name to connect to the Mart database.

Password

Specifies the password to connect to the Mart database.

Note: The following fields--Domain Controller Name, Domain/User Name, and Password are required only if you are using Active Directory authentication.

Domain Controller Name

Specifies the fully qualified name of the Active Directory Server (Domain Controller).

Domain/User Name

Specifies the domain name and user name in the <domain name>/<user name> format.

Password

Specifies the password of the domain user.

Configure CA ERwin Mart Administrator

1. Enter the following information in the Mart Administrator tab:

   Server Name

   Specifies the name of the computer where the Web Server is present. For example, if you are using Tomcat, enter the name of the computer where Tomcat is installed.

   Default: localhost

   Port Number

   Specifies the port number on which the Web Server is running.

   Default: 18170

   Use IIS

   Specifies that you want to use the IIS web server to connect to Mart. This check box is available only if you have configured IIS.

   Application Name

   Specifies the application name with which the Web Server is identified.

   Default: MartServer

2. Click Configure.

   The CA ERwin Mart Administrator and the Mart Server are configured.

More information:

Configure IIS Web Server (see page 35)

Use Mart Server as a Windows Service

CA ERwin DM Version 9.0 Mart provides two ways to start the web server that hosts Mart Server:

- Start the web server manually.
- Use a Windows service to start the web server.

For example, if you have used Tomcat as the web server to host Mart Server, you can start Tomcat in two ways:

- Start Tomcat through the startup.bat file or through a shortcut to this file.
- Use a Windows service to start Tomcat.

The benefits of using a Windows service to start a web server are as follows:

- Any user with administrative privileges on a computer can start the Windows service, whereas, only designated users can start a web server manually.
- A Windows service runs regardless of whether a user has logged in. A manually-started web server shuts down when the user who started it logs out.

Follow these steps:

1. From the Windows Start menu, click All Programs, CA, ERwin, ERwin Mart Server r9, Create MartServer Service to create the MartServer Windows service.

   Creating the service is a one-time task. After the service is created, you only have to start and stop the service.

2. From the Windows Start menu, click All Programs, CA, ERwin, ERwin Mart Server r9, Start MartServer Service to start the web server.

Prepare to Use IIS with Mart

If you want to use Microsoft Internet Information Services (IIS) as the web server, configure it before deploying Mart Server.

Configure IIS Web Server

The Mart Server is built using Java technology. Therefore, if you want to connect to Mart through IIS, configure IIS to use the JK ISAPI redirector plugin. Using this plugin, IIS sends servlet and JSP requests to Tomcat.

Follow these steps:

1. Help ensure that Tomcat is working properly. Open a browser and type the following in the Address bar:

   `http://<servername>:18170/web-console`

   The default Tomcat home page appears. <servername> is the name of the computer where you have installed Tomcat. 18170 is the default port number where Tomcat is running. If you are using a different port number, use that port number here. In addition, help ensure that the port number you are using is included in the server.xml file. Typically, the server.xml file is available in the *<Tomcat_Home>/conf* folder.

2. Install IIS.
3. Create a folder on the computer where you have installed IIS. Download the isapi_redirect.dll file for Windows from the Apache Tomcat website and copy to the new folder.
4. Create the workers.properties file in the folder that you created in the previous step.
5. Create the uniworkers.properties file in the folder that you created in Step 5.
6. Follow these steps and create an IIS filter for the DLL placed in Step 5:
   a. From the Windows Start menu, click Run, and then type inetmgr.

      The Internet Information Services (IIS) Manager window opens.

   b. Click the computer name, Sites.
   c. Click Default WebSite, right-click and select Add Virtual Directory.

      The Add Virtual Directory dialog appears.

   d. Enter the path for the isapi_redirect.dll file in the Physical Path field and click OK.
   e. Click the newly added virtual directory.

      The Default Web Site Home window opens.

   f. Double-click ISAPI filters and click Add in the top right corner.
   g. Enter the filter name. Enter the path for the isapi_redirect.dll file in the Executables field.
   h. Click OK.
7. Create the isapi_redirect.reg file to indicate the location of workers.properties files are created previously. Double-click this file and update the registry.

8. Restart the IIS web server.
9. Stop the MartServer service and start it again.

Note: See the Appendix for sample workers.properties, uniworkers.properties, isapi_redirect.reg, isapi_redirect.properties, and uriworkermap.properties files.

Initialize Mart

When you access the Mart database through CA ERwin Mart Administrator for the first time, you must initialize the database.

Note: Before you proceed, verify that you have installed a DBMS and created the Mart database. If you are using Oracle, verify that you have run the initial queries. If the Mart is already initialized, the Login page appears.

When you open CA ERwin Mart Administrator for the first time, the Initialize Mart web page that is relevant to your Mart database appears.

Note: Initializing a Sybase Mart is same as initializing a SQL Server Mart.

More information:

Prepare Your DBMS Environment (see page 22)

Initialize SQL Server Mart

Initialize a SQL Server Mart

Follow these steps:

1. If you are using MartServer as a Windows service, help ensure that the service is started. If not, from the Windows Start menu, click All Programs, CA, ERwin, ERwin Mart Server r9, Start Mart Server to start the Mart Server.

   A Windows command prompt window appears and indicates when the server starts.

2. From the Windows Start menu, click All Programs, CA, ERwin, ERwin Mart Server r9, CA ERwin Mart Administrator.

   CA ERwin Mart Administrator opens in your default browser.

3. Complete the following fields:

   Username

   Defines the user name with which you want to access the Mart.

   Password

   Defines the password for the user name.

   Confirm Password

   Confirms the password that you entered in the previous field.

   Email Address

   Defines the email address for the user account that you are creating.

4. Click Initialize.

   The user name is added as an administrator of Mart, Mart is initialized, and the Login web page appears. Initializing is a one-time task. After Mart is initialized, the user who initialized must log in first. Later, any other user who wants to use CA ERwin Mart Administrator can log in.

Note: The user name that is entered here is an application level user and not a database user. Remember the password that you have entered here, because without the password you cannot log in to CA ERwin Mart Administrator for the first time.

Initialize an Oracle Mart

Initialize an Oracle Mart

Follow these steps:

1. If you are using MartServer as a Windows service, help ensure that the service is started. If not, from the Windows Start menu, click All Programs, CA, ERwin, ERwin Mart Server r9, Start Mart Server to start the Mart Server.

   A Windows command prompt window appears and indicates when the server starts.

2. From the Windows Start menu, click All Programs, CA, ERwin, ERwin Mart Server r9, CA ERwin Mart Administrator.

   CA ERwin Mart Administrator open in your default browser.

3. Complete the following fields:

   Username

   Defines the user name with which you want to access the Mart.

   Password

   Defines the password for the user name.

   Confirm Password

   Confirms the password that you entered in the previous field.

   Email Address

   Defines the email address for the user account that you are creating.

   Mart Role

   Defines the role of the user for the Mart.

   Table Tablespace

   Defines the table tablespace in which the Mart tables are created.

   Index Tablespace

   Defines the index tablespace in which the Mart indexes are created.

4. Click Initialize.

   The user name is added as an administrator of Mart, Mart is initialized, and the Login web page appears. Initializing is a one-time task. After Mart is initialized, the user who initialized must log in first. Later, any other user who wants to use CA ERwin Mart Administrator can log in.

Note: The user name that is entered here is an application level user and not a database user. Remember the password that you have entered here, because without the password you cannot log in to CA ERwin Mart Administrator for the first time.

Log In to CA ERwin Mart Administrator and Configure Settings

After Mart is initialized, the user who initialized must log in first. When you log in to Mart for the first time, configure it per the requirements of your organization. You can configure the following settings:

- Default profile for the model creator
- Use default password
- Email notification

Follow these steps:

1. From the Windows Start menu, click All Programs, CA, ERwin, ERwin Mart Server r9, CA ERwin Mart Administrator and log in.

   The CA ERwin Mart Administrator home page appears.

2. Click Settings.

3. Complete the following fields:

   Default profile for model creator

   Specifies the profile that is assigned to a user on a model. This profile is assigned whenever a user creates a model and saves it to Mart for the first time. The user inherits the permissions of the default profile selected here on the model that is saved. For example, suppose that User1 is assigned with Modeler profile and the System Administrator selects Architect as the default profile for model creator. If User1 creates Model1 and saves it to Mart, for Model1, User1 inherits the permissions of Architect. Now, suppose that the System Administrator selects Viewer as the default profile for model creator, and suppose that User1 creates Model2 and saves it to Mart. For Model2, User1 inherits the permissions of Viewer.

   Use Default Password

   Specifies the default password that you want to use for new users and for resetting passwords, in the absence of an SMTP server for emails.

   Note: Select this option only if you do not have an SMTP server that is configured for emails.

   SMTP host name

   Specifies the name of the SMTP host. Enter the name in the mail.domain.com format. Notification emails are sent from this server.

   Port number

   Specifies the port number of the SMTP server. The default port number is 25. If your company is using an alternate port number for the mail server, specify that port number.

   Authenticate

Specifies whether transactions with the SMTP server are authenticated. Select the check box to authenticate.

User name

Specifies the user name to authenticate the SMTP server. Select the Authenticate check box to enable authentication.

Password

Specifies the password to authenticate the SMTP server. Select the Authenticate check box to enable authentication.

Administrator email

Specifies the email ID of the Mart administrator. Notifications to Mart users are sent from this ID.

No-reply email from

Specifies the email ID from which administrative emails such as the password reset email are sent.

4. Click Save.

   Mart options are configured.

You have installed and configured CA ERwin DM version 9.0 Mart.

Chapter 5: Troubleshooting

This section explains the errors that you can encounter while installing and configuring Mart, and how you can troubleshoot them.

Note: The Mart Server log files are available in the following location:

`Windows XP: {user.home}/Local Settings/Application Data/CA/ERwin Mart Server/logs/application.log`

`Windows 7: {user.home}/AppData/Local/CA/ERwin Mart Server/logs/application.log`

Port out of range

Symptom:

Every time I connect to the web server, I get the following error message:

```
java.lang.IllegalArgumentException: port out of range 80821.
```

Solution:

Type the correct port number in the Configure CA ERwin Mart Administrator's Server dialog and then restart your web server.

Call failed on the server

Symptom:

When I try to connect to the Mart server, I get the following error:

```
500 The call failed on the server; see server log for details
```

Solution:

The probable reasons for this error could be one of the following reasons:

- The server name is not correct.
- The application name is not correct. By default, the application name is MartServer and it is case sensitive.

Type the correct server name and application name in the CA ERwin Mart Administrator's Server dialog and the Configure MartServer Details dialog. Restart the web server.

Application Internal Error

Symptom:

When I try to connect to the database, I get the following error:

```
Application Internal Error
```

Solution

You get this error when the MartServer application is unable to connect to the required database. The probable reasons for this error could be the following:

- The database details provided in the Configure MartServer Details dialog are incorrect.
- The username and the password for the database are incorrect.
- The database is not present.
- The port number for the database is incorrect.
- The network is down.

Ensure that you enter the correct details of your database in the Mart Server tab of the CA ERwin Mart Configuration dialog.

ORA-12514 TNS listener does not currently know of service requested in connect descriptor

Symptom:

When I try to open the CA ERwin Mart Administrator page, I get the Application Internal Error. The Tomcat windows shows the following error message:

```
ORA-12514, TNS:listener does not currently know of service requested in connect
descriptor
```

Solution:

Use a fully-qualified instance name when starting the Mart Server.

Mart already exists. Specify another database name

Symptom:

When I try to connect to Mart, I get the following error message:

```
An earlier mart is already present in the database you are trying to initialize. This process can not be continued. Please specify another database name to continue.
```

Solution:

You get this error when you try to connect to an old Mart that you have used for CA ERwin DM Release 7.x, 8.x, or release 9 pre-Beta.

Create a database and provide its details in the Configure MartServer Details dialog.

Initialize page is not loading in Internet Explorer

Symptom:

When I type the URL to initialize my Mart in Internet Explorer, the Initialize Mart page is taking a long time to load.

Solution:

The Initialize Mart page does not load because the Active Scripting option in Internet Explorer is disabled.

To enable Active Scripting, follow these steps:

1. In Internet Explorer, click Tools, Internet Options.
2. In the Security tab, click the Custom Level button.

   The Security Settings – Local Intranet Zone window opens.
3. From the list of options, locate Scripting, Active Scripting, and select Enable. Click OK.
4. Restart Internet Explorer and enter the URL to initialize Mart.

   The Mart Initialize page opens.

The Tomcat server is not starting properly. The Configure button is disabled.

Symptom:

My administrator has given me the Administrator rights and when I start the Tomcat server, I get a series of errors. Also, I cannot click the Configure button in the configuration dialog because it is disabled.

Solution:

Right-click Start Server, and click Run as Administrator.

The Tomcat server starts without any error, and the configuration button is enabled.

A connection with the server could not be established

Symptom:

When I try to connect to the web server from CA ERwin Data Modeler, I get the following error message:

```
A connection with the server could not be established
```

Solution:

Verify that you have provided the correct port number and then reconnect to the web server.

The server name or address could not be resolved

Symptom:

When I try to connect to the web server from CA ERwin Data Modeler, I get the following error message:

```
The server name or address could not be resolved
```

Solution:

Verify that the server name where the web server is installed is correct and then reconnect to the server.

Note: If the web server and CA ERwin Data Modeler are installed in the same computer, you can give the server name as localhost. If the web server is installed in one computer and CA ERwin Data Modeler is installed in another computer, then the server name will be the name of the computer where you have installed the web server.

Invalid user ID or password

Symptom:

When I try to connect to the server, I get the following error message:

```
Invalid user ID or password. Please try again to login.
```

Solution:

Type the correct user name and password.

Note: The user should be an application level user and not a database user.

Error 12029

Symptom:

When I connect to the web server, I get the following error message:

```
Error 12029
```

Solution:

Restart the web server.

Unable to load the web page from my web browser

Symptom:

When I type the URL in Internet Explorer or Google Chrome to connect to the web server, I get the following error messages:

For Internet Explorer

```
Internet Explorer cannot display the webpage
```

For Google Chrome

```
Oops! Google Chrome could not connect to localhost:18170
```

Solution:

Restart the web server.

Test connection failed

Symptom:

When I try to upgrade to CA ERwin DM version 9.0 Mart on a 64-bit computer, I get the following message:

```
Test connection failed
```

Solution:

CA ERwin DM is a 32-bit application. When you try to upgrade to version 9.0 Mart on a 64-bit computer, the COM components do not work.

Follow these steps:

1. Paste the code included at the bottom of this topic to a Notepad file and name it as 64_Bit_Upgrade.reg. Note down the folder where you have created this file.

2. After installing CA ERwin DM version 9.0, right-click 64_Bit_Upgrade.reg and select Merge.
3. From the Windows Start menu, go to Run and type the following commands to re-register the r8 and r9 EAL components:

   ```
   regsvr32.exe  "<Install Dir>\CA\ERwin Data Modeler r9\EAL.dll"
   ```

   ```
   regsvr32.exe  "<Install Dir>\CA\ERwin Data Modeler r9\
   Upgrade\R8_Binaries\EAL.dll".
   ```

4. Right-click 64_Bit_Upgrade.reg and select Merge again.

   You can now upgrade to version 9.0 Mart on a 64-bit computer.

64_Bit_Upgrade.reg

Copy the following code and paste it to a new Notepad file:

```
Windows Registry Editor Version 5.00

[HKEY_CLASSES_ROOT\Wow6432Node\CLSID\{9527D0BA-ED75-4b0e-BF4B-E35565DE9852}]

@="CA ERwin Data Modeler Script Client API"

"AppID"="{9527D0BA-ED75-4b0e-BF4B-E35565DE9852}"

[HKEY_CLASSES_ROOT\Wow6432Node\AppID\{9527D0BA-ED75-4b0e-BF4B-E35565DE9852}]

"DllSurrogate"=""

[HKEY_CLASSES_ROOT\Wow6432Node\CLSID\{40FDB0E6-D772-455d-B1C8-83CE79445403}]

@="CA ERwin Data Modeler Script Client API Property Bag"

"AppID"="{40FDB0E6-D772-455d-B1C8-83CE79445403}"

[HKEY_CLASSES_ROOT\Wow6432Node\AppID\{40FDB0E6-D772-455d-B1C8-83CE79445403}]

"DllSurrogate"=""

[HKEY_CLASSES_ROOT\Wow6432Node\CLSID\{6774E2C3-06E9-4943-A8D4-E3007AB1F42E}]

@="CA ERwin Data Modeler Script Client API"

"AppID"="{6774E2C3-06E9-4943-A8D4-E3007AB1F42E}"

[HKEY_CLASSES_ROOT\Wow6432Node\AppID\{6774E2C3-06E9-4943-A8D4-E3007AB1F42E}]

"DllSurrogate"=""

[HKEY_CLASSES_ROOT\Wow6432Node\CLSID\{7D7B1602-9832-4ac6-A224-F0092FAF0D7E}]

@="CA ERwin Data Modeler Script Client API Property Bag"

"APPID"="{7D7B1602-9832-4ac6-A224-F0092FAF0D7E}"
```

```
[HKEY_CLASSES_ROOT\Wow6432Node\AppID\{7D7B1602-9832-4ac6-A224-F0092FAF0D7E}]

"DllSurrogate"=""

[HKEY_LOCAL_MACHINE\SOFTWARE\Classes\AppID\{9527D0BA-ED75-4b0e-BF4B-E35565DE9852}
]

[HKEY_LOCAL_MACHINE\SOFTWARE\Classes\AppID\{40FDB0E6-D772-455d-B1C8-83CE79445403}
]

[HKEY_LOCAL_MACHINE\SOFTWARE\Classes\AppID\{6774E2C3-06E9-4943-A8D4-E3007AB1F42E}
]

[HKEY_LOCAL_MACHINE\SOFTWARE\Classes\AppID\{7D7B1602-9832-4ac6-A224-F0092FAF0D7E}
]
```

Appendix A: Sample Files

This section contains the following topics:

Sample workers.properties File

The workers.properties file includes the following parameters:

```
worker.list

worker.<workername>.host

worker.<workername>.port

worker.<workername>.type

worker.<workername>.connection_pool_size
```

The descriptions of the parameters are as follows:

workers. list

Lists all the workers that are defined. When you start the web server, the plug-in instantiates these workers.

worker.<workername>.host

Defines the IP address of the computer where Tomcat (WA-OP) is installed.

worker. <workername>.port

Defines the port that the AJP workers inside Tomcat listen to. By default, AJP13.Workers listen to port 8009.

worker. <workername>.type

Defines the type of worker. The type of the worker can be ajp13, ajp14, jni, lb, or status.

worker. <workername>.connection_pool_size

Defines the number of connections made to AJP back-end.

The following is a sample workers.properties file:

```
# This file provides minimal jk configuration properties needed to

# connect to Tomcat.

#

# The workers that jk should create and work with

#

worker.list=lb,jk-status

#

# Defining a worker named node1 and of type ajp13

# Note that the name and the type do not have to match.

#

worker.node1.type=ajp13
```

```
worker.node1.host=localhost
worker.node1.port=8009
#
# Defining a load balancer
#
worker.lb.type=lb
worker.lb.balance_workers=node1
#
# Define status worker
#
worker.jk-status.type=status
```

Sample isapi_redirect.properties File

The following is a sample isapi_redirect.properties file:

```
extension_uri=/jakarta/isapi_redirect.dll
# Full path to the log file for the ISAPI Redirector
log_file=C:\apache-tomcat-7.0.21\bin\logs\isapi_redirect.log
# Log level (debug, info, warn, error or trace)
log_level=info
# Full path to the workers.properties file
worker_file=C:\apache-tomcat-7.0.21\bin\native\workers.properties
# Full path to the uriworkermap.properties file
worker_mount_file=C:\apache-tomcat-7.0.21\bin\native\uriworkermap.properties
```

In this example, *jakarta* refers to the virtual directory you have added before you created the ISAPI filter.

Sample isapi_redirect.reg File

The following is a sample isapi_redirect.reg file:

```
REGEDIT4

[HKEY_LOCAL_MACHINE\SOFTWARE\Apache Software Foundation\Jakarta Isapi
Redirector\1.0]

"extension_uri"="/jakarta/isapi_redirect.dll"

"log_file"="C:\\apache-tomcat-7.0.21\\bin\\logs\\isapi.log"

"log_level"="debug"

"worker_file"="C:\\apache-tomcat-7.0.21\\bin\\native\\workers.properties"

"worker_mount_file"="C:\\apache-tomcat-7.0.21\\bin\\native\\uriworkermap.prop
erties"
```

In this example, *jakarta* refers to the virtual directory you have added before you created the ISAPI filter.

Sample uniworkers.properties File

The following is a sample uniworkers.properties file:

```
/MartServer/*=node1
```

Sample uriworkermap.properties File

The following is a sample uriworkermap.properties file:

```
# This file provides sample mappings for example wlb

# worker defined in workermap.properties.minimal

# The general syntax for this file is:

# [URL]=[Worker name]

/*=lb

#

# Mount jkstatus to /jkmanager

# For production servers you will need to

# secure the access to the /jkmanager url

#

/jk-manager=jk-status
```

Chapter 6: Upgrading Mart

Earlier, when you upgraded to a new version of CA ERwin DM, only the schema was upgraded. To upgrade your models, you opened each model in the new version. This process took much of your time, especially when you had to upgrade large models. In CA ERwin DM Version 9.0, upgrading models is automated through the Mart Upgrade utility. The utility lets you upgrade not just models, but users, profiles, and permissions too. In addition, the utility also lets you upgrade to a different database.

If your source Mart version is release 7.0 through 7.3.11, the upgrade happens in two stages. First, the Mart is upgraded to CA ERwin DM version 8.0 and then it is upgraded to version 9.0. The existing upgrade process is used to upgrade from a lower version to 8.0. After the source Mart is brought up to version 8.0, the new Upgrade Mart utility is used to upgrade to version 9.0. In the new Upgrade Mart utility, you must select the models that you want to upgrade.

Note: The Upgrade Mart utility is available only if you install it while installing CA ERwin DM Version 9.0.

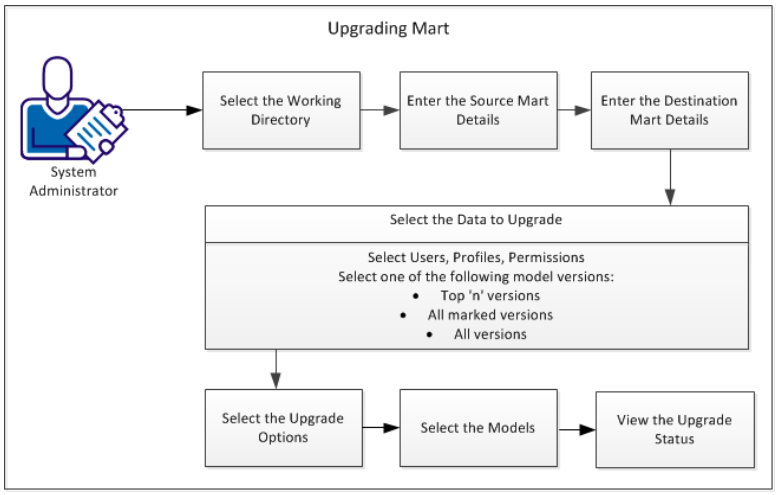
The Upgrade Mart utility lets you upgrade models in several ways. You can choose the best way that helps you get started with your work quickly. Upgrade models in one of the following ways:

- Upgrade the top ‘n’ versions.
- Upgrade only the marked versions.
- Upgrade all marked versions and top 'n' versions.
- Upgrade all the versions of all the models.

Regardless of the option you select, you can start working on a model after the model is upgraded. You do not need to wait until all the models are upgraded.

The Upgrade Mart utility lets you pause the process any time and start again. When you pause, the utility completes upgrading the current model before stopping. When you restart the upgrade process, the utility continues from the point it had stopped. The utility then displays the models that are not yet upgraded in the list of models that you had selected.

The following diagram illustrates how you upgrade models:



Complete the following tasks to upgrade Mart:

1. Review the prerequisites. (see page 54)
2. Select the working directory. (see page 57)
3. Enter the source Mart details. (see page 58)
4. Enter the destination Mart details. (see page 59)
5. Select the data to upgrade. (see page 60)
6. Select upgrade options. (see page 62)
7. Select models. (see page 63)
8. View the upgrade status. (see page 64)

Review the Prerequisites

Review the following prerequisites:

- The models in the source Mart do not have any locks.
- CA ERwin DM release 9.0 Mart is installed.
- A minimum of 2-GB space is available on the drive on which you select the working directory.

- Prerequisites for the computer on which you run the upgrade process are as follows:
  - The operating system is 32-bit. If you are using a 64-bit operating system and the application does not work, see the Running CA ERwin DM on a 64-bit Operating System (see page 55) topic.
  - A licensed copy of CA ERwin DM release 8.x is available.

    Note: If you are using CA ERwin DM release 8.0 or 8.1, copy the license as follows:

    For Windows XP and Windows 2003

    Copy from: C:\Documents and Settings\<user id>\Local Settings\Application Data\CA\ERwin Data Modeler\8.0

    Copy to: C:\Documents and Settings\All Users\Application Data\CA\ERwin Data Modeler\8

    For Windows 7 and Windows 2008

    Copy from: C:\Users\<user id>\AppData\Local\CA\ERwin Data Modeler\8.0

    Copy to: C:\ProgramData\CA\ERwin Data Modeler\8
  - The database client for the source Mart database is installed. For example, for a Microsoft SQL Server Mart, install the SQL Server Native Client on the computer that is designated to run the upgrade process.

Running CA ERwin DM on a 64-bit Operating System

If you have installed CA ERwin DM on a 64-bit operating system, the application may not run properly. CA ERwin DM APIs use 32-bit COM objects and these objects are not designed for use in a 64-bit environment.

Follow these steps:

1. Paste the code included at the bottom of this topic to a Notepad file and name it as 64_Bit_Upgrade.reg. Note down the folder where you have created this file.

2. After installing CA ERwin DM version 9.0, right-click 64_Bit_Upgrade.reg and select Merge.
3. From the Windows Start menu, go to Run and type the following commands to re-register the r8 and r9 EAL components:

   ```
   regsvr32.exe  "<Install Dir>\CA\ERwin Data Modeler r9\EAL.dll"
   ```

   ```
   regsvr32.exe  "<Install Dir>\CA\ERwin Data Modeler r9\
   Upgrade\R8_Binaries\EAL.dll".
   ```

4. Right-click 64_Bit_Upgrade.reg and select Merge again.

   You can now upgrade to version 9.0 Mart on a 64-bit computer.

64_Bit_Upgrade.reg

Copy the following code and paste it to a new Notepad file:

```
Windows Registry Editor Version 5.00

[HKEY_CLASSES_ROOT\Wow6432Node\CLSID\{9527D0BA-ED75-4b0e-BF4B-E35565DE9852}]

@="CA ERwin Data Modeler Script Client API"

"AppID"="{9527D0BA-ED75-4b0e-BF4B-E35565DE9852}"

[HKEY_CLASSES_ROOT\Wow6432Node\AppID\{9527D0BA-ED75-4b0e-BF4B-E35565DE9852}]

"DllSurrogate"=""

[HKEY_CLASSES_ROOT\Wow6432Node\CLSID\{40FDB0E6-D772-455d-B1C8-83CE79445403}]

@="CA ERwin Data Modeler Script Client API Property Bag"

"AppID"="{40FDB0E6-D772-455d-B1C8-83CE79445403}"

[HKEY_CLASSES_ROOT\Wow6432Node\AppID\{40FDB0E6-D772-455d-B1C8-83CE79445403}]

"DllSurrogate"=""

[HKEY_CLASSES_ROOT\Wow6432Node\CLSID\{6774E2C3-06E9-4943-A8D4-E3007AB1F42E}]

@="CA ERwin Data Modeler Script Client API"

"AppID"="{6774E2C3-06E9-4943-A8D4-E3007AB1F42E}"

[HKEY_CLASSES_ROOT\Wow6432Node\AppID\{6774E2C3-06E9-4943-A8D4-E3007AB1F42E}]

"DllSurrogate"=""

[HKEY_CLASSES_ROOT\Wow6432Node\CLSID\{7D7B1602-9832-4ac6-A224-F0092FAF0D7E}]

@="CA ERwin Data Modeler Script Client API Property Bag"

"APPID"="{7D7B1602-9832-4ac6-A224-F0092FAF0D7E}"
```

```
[HKEY_CLASSES_ROOT\Wow6432Node\AppID\{7D7B1602-9832-4ac6-A224-F0092FAF0D7E}]

"DllSurrogate"=""

[HKEY_LOCAL_MACHINE\SOFTWARE\Classes\AppID\{9527D0BA-ED75-4b0e-BF4B-E35565DE9852}
]

[HKEY_LOCAL_MACHINE\SOFTWARE\Classes\AppID\{40FDB0E6-D772-455d-B1C8-83CE79445403}
]

[HKEY_LOCAL_MACHINE\SOFTWARE\Classes\AppID\{6774E2C3-06E9-4943-A8D4-E3007AB1F42E}
]

[HKEY_LOCAL_MACHINE\SOFTWARE\Classes\AppID\{7D7B1602-9832-4ac6-A224-F0092
FAF0D7E}]
```

Select the Working Directory

Working directory is the folder where the configuration and log files are stored. This directory is continuously used during the Mart upgrade process. You can use the same working directory to upgrade all your models, or you can use a different directory for a different set of models. However, we recommend that you use the same working directory for all your models.

If you pause the upgrade process and continue later, you can select the same working directory. If you select the same working directory, all the details you have previously entered are populated, except for the password. You cannot change the details.

Follow these steps:

1. From the Windows Start menu, open the Upgrade Mart utility.

   The Mart Upgrade dialog appears.

2. Select a folder on a drive that has a minimum of 2-GB free space.

   The message, *If your source Mart version is release 7.0 through 7.3.11, you must first upgrade it to release 8. Click Yes to upgrade* appears.

3. If your source Mart is CA ERwin DM 7.0 through 7.3.11, click Yes.

   The Connection Manager dialog appears.

   a. Enter the details that are required to connect to the source Mart. Click Connect.

      The Mart dialog appears.

b. Click Update.

The source Mart is upgraded to CA ERwin DM release 8.0.

c. Click Close.

The current wizard closes and the Upgrade Wizard appears. The Upgrade Wizard lets you upgrade from CA ERwin DM release 8.0 or later to version 9.0.

4. If your source Mart is CA ERwin DM 8.0 through 8.2.5, click No.

The Upgrade Wizard appears.

Enter the Source Mart Details

When you upgrade Mart, CA ERwin DM connects to your existing Mart to get your models. Provide your existing Mart information, including the user credentials. If you restart the upgrade process and select an existing working directory, the details you have selected previously are populated, except the password. You cannot change the details.

Note: If your source Mart is CA ERwin DM release 7.0 through 7.3.11, enter the same details that you provided in the Connection Manager dialog.

Follow these steps:

1. In the Upgrade Wizard, click Source Mart Details.
2. Complete the following fields:

Database Type

Specifies the type of Mart database.

Server

Specifies the server on which the source Mart is hosted. This parameter is not valid for Oracle.

Database

Specifies the database on which the source Mart is hosted. This parameter is not valid for Oracle.

Connection String

Specifies the connection string that is required to connect to a database. This parameter is valid only for Oracle.

Authentication

Specifies the type of authentication you use to connect to Mart.

User Name

Specifies the user name to connect to Mart.

Password

Specifies the password to connect to Mart.

3. Click Test Connection.

   If the data that you have provided is valid, a message appears that the connection is successful. If the connection fails, enter valid data and test again.

Enter the Destination Mart Details

When you upgrade Mart, models in your existing version of CA ERwin DM are converted to CA ERwin DM Version 9. The destination Mart is a CA ERwin DM Version 9 Mart and the Mart database can be any database. For example, if your source Mart database is Microsoft SQL Server, the destination Mart database can be Oracle 11g.

At any time if you restart the upgrade process and select an existing working directory, the details you have selected previously are populated. The password is not populated.

Follow these steps:

1. On Upgrade Wizard, click Destination Mart Details.
2. Complete the following fields:

   Server Name

   Defines the name of the web server where you have installed the Mart.

   Application Name

   Defines the application name of the Mart that you want to connect to.

   Default: MartServer

   Port No.

   Specifies the port number to access the web server.

   Use IIS

   Specifies that you want to use IIS to connect to Mart. This check box is available only if you have configured IIS.

   Authentication

   Specifies the type of authentication you want to use.

User Name

Defines the name of the user.

Password

Defines the password of the user.

3. Click Test Connection.

   If the data that you have provided is valid, a message appears that the connection is successful. If the connection fails, enter valid data and test again.

Select the Data to Upgrade

The Upgrade Mart utility lets you upgrade not just models, but users, profiles, and permissions too. Select the objects that you want to upgrade, including the versions of models.

Note: Suppose that your source Mart version is CA ERwin DM release 7.0 through 7.3.11, and you complete upgrading it to 8.0. You must still select the models that you want to upgrade to version 9.0.

You can upgrade models in the following ways:

- Upgrade the top ‘n’ versions.
- Upgrade only the marked versions.
- Upgrade all marked versions and top 'n' versions.
- Upgrade all the versions of all the models.

Choose the best way that helps you get started with your work quickly.

The time that is taken to upgrade models depends on the number of models and number of versions of models present in your Mart. If you choose to upgrade only selected versions, the Upgrade Mart utility first upgrades the selected versions and then the remaining versions.

If you restart the upgrade process and select the same working directory, the details you have selected previously are populated, except for the password.

Follow these steps:

1. On Upgrade Wizard, click Data to Upgrade.
2. Complete the following fields:

Upgrade Users

Specifies that you want to upgrade users. The users are upgraded and the passwords of Server and Windows users are left blank. The upgraded users are assigned to their corresponding models and versions as owners. If users are not upgraded, the owners for models and versions are left blank. After the users are upgraded, open CA ERwin Mart Administrator and for each user, enter the email ID and reset the password.

Upgrade Models

Specifies that you want to upgrade models.

Note: You can upgrade models only if users and profiles are upgraded.

Upgrade Profiles

Specifies that you want to upgrade profiles. If a profile matches with a profile in the source Mart, the corresponding profile available in CA ERwin DM Version 9.0 is used. If a profile does not match with any profile in the source Mart, then it is created.

Upgrade Permissions

Specifies that you want to upgrade permissions. Permissions are upgraded only if users, models, and profiles are upgraded.

Note: Subject Area-level permissions are ignored when you upgrade permissions to CA ERwin DM Version 9.0.

To Select the Top 'n' Versions

Selective

Specifies that you want to upgrade the selected versions first.

No. of Top Versions to Upgrade

Specifies the number of top versions that you want to upgrade. Only those versions are selected from your Mart that are not marked versions and are not deleted. These models are upgraded first and then the remaining models are upgraded.

Note: To upgrade only the marked versions of all models, enter zero for *No. of Top Versions to Upgrade*.

To Select the All the Marked Versions

All Marked Versions

Specifies that you want to upgrade the all the marked versions. If you specify the number of top versions to upgrade, all the marked versions are upgraded first and then the top n versions are upgraded.

To Select All the Versions

All

Specifies that you want to upgrade all the versions. In the first iteration, the newest versions of all models are upgraded. In the next iteration, the next-newest versions are upgraded. This process goes on until all the versions are upgraded.

Select Upgrade Options

If you are upgrading from CA ERwin DM Version 7.0 through 7.3.11, you can select the upgrade options for the main subject areas and transforms. At any time if you restart the upgrade process and select an existing working directory, the details you have selected previously are filled up automatically.

Follow these steps:

1. On Upgrade Wizard, click Upgrade Options.
2. Complete the fields. The following fields are not self-explanatory:

   Keep the Main Subject Area

   Specifies that you want to keep the main subject area.

   Keep the Diagrams for the Main Subject Area

   Specifies that you want to keep the diagrams for the main subject area.

   TimeOut (in Min)

   Specifies the time for which the utility waits for the following events:

   - Open an older version of the model and save it to disk: If a model version is not saved to disk in this time, this thread of the process is relaunched and the next model is saved.
   - Open a version of a model and save it to CA ERwin DM Version 9 Mart: If a model is not saved in this time, the utility relaunches this thread of the process.

   Default: 60 minutes

Retries for a Model

Specifies the number of times the utility tries to open a model version. For example, suppose that you set the value of this parameter as 3. If a model version does not load within the time specified in the TimeOut field, the utility tries to open it again. The utility tries this three times; if it is still not successful, then it moves on to the next model version.

Export Library Name

Specifies a library in the destination Mart, where you want to copy the upgraded models. Use this option if you want to copy the upgraded libraries to a specific library. If no name is provided, the libraries are copied in the root of Mart.

Select Models

The libraries and models of the source Mart are displayed in the form of a tree. You can select an entire library or an individual model under a library to upgrade. This selection and the versions you selected previously, determine the models and versions you want to upgrade. For example, suppose that you have selected to upgrade the top five versions. If you select nine models on the Select Models window, the top five versions of all the nine models are upgraded.

Follow these steps:

1. Click Select Models on Upgrade Wizard.

   The models that satisfy the criteria selected in the *Data to Upgrade* dialog are displayed. If you restart the upgrade process, only those models that are not upgraded are available for selection.

2. Select the libraries or individual models that you want to upgrade.

   If a library or model name contains special characters (?, $, ‘, \), they are converted to underscore (_) when displayed on this dialog.

   Note: If a library or model name contains a forward slash ('/'), it is not upgraded.

3. Click Finish.

   Upgrading starts and the Upgrade Progress dialog displays the progress.

Pause and play

The Upgrade Mart utility lets you pause the process any time and start again. When you pause, the utility completes upgrading the current model before stopping. When you restart the upgrade process, the utility continues from the point it had stopped. The utility then displays the models that are not yet upgraded in the list of models that you had selected. If there are several models remaining, you can select a few to upgrade. If you select the same working directory, the source and destination Mart and the model version details are filled up automatically.

If your source Mart version is older than CA ERwin DM 8.0, it is upgraded to 8.0 only once. If you upgrade a model to 8.0 and you pause the upgrade process, then the option to upgrade to 8.0 does not display again.

Note: When you pause and restart the upgrade process, you can select all the remaining models or a few models from the original list of models. Suppose that you have three libraries A, B, and C in the catalog and you select only A to upgrade. Suppose that there are ten models in library A. If you pause after the fifth model and you restart the process, only the remaining five models from library A are displayed.

View the Upgrade Status

You can view the status of upgrade, when upgrade is in progress. The Upgrade Progress dialog displays the model that is being upgraded. This information helps you determine when to pause the upgrade process, if necessary.

Note: If your source Mart is older than 8.0, the Upgrade Process dialog does not display the status of upgrade from the older version to 8.0. The Upgrade Progress dialog displays the status of upgrade from CA ERwin DM release 8.0 or later to version 9.0 only.

To view the upgrade status, click Details on the Upgrade Progress dialog. The Mart Upgrade status dialog appears and displays the libraries and models that are selected for upgrade, in the form of a tree. The status of each model is indicated next to the model.

Log Files

The Mart Upgrade utility creates the following log files in the working directory:

LogFile_Fetch_Models.txt

Includes problems if any, while fetching models to display in the model tree.

NamesWithSlash.txt

Includes the names of libraries or models that have a forward slash (/). If any of the model or library names has a forward slash (/), such names are not displayed in the model tree. Log on to the source Mart, change such names, and then load the models again.

SourceMartLogFile.txt

Includes any error that is displayed while opening models from the source Mart.

DestinationMartLogFile.txt

Includes any error that is displayed while saving models to the destination Mart.

Troubleshooting

Test Connection Failed--Source Mart

Symptom:

The Mart Upgrade utility is not connecting to the source Mart.

This problem can be for one of the following reasons:

- The details for the source Mart are incorrect.
- The database client is not installed.
- The source database is not started.
- The source database is not able to connect from the client computer.

Solution:

Depending on the reason, use one of the following solutions:

- Ensure that the database details are correct.
- Ensure that a database client installed on the computer where you want to run the Mart Upgrade Utility.
- Ensure that the database is running.
- Ensure that you can connect to the source Mart with the database client installed on your computer.

Your License does not Permit Connection to this Mart

Symptom:

The Mart Upgrade utility is not connecting to the source Mart.

This problem could be for one of the following reasons:

- The computer does not have a valid CA ERwin DM Release 8 license.
- The source Mart version is older than CA ERwin DM Release 8.

Solution:

Depending on the reason, use one of the following solutions:

- Install CA ERwin DM Release 8.x Workgroup Edition license.
- If you are using CA ERwin DM release 8.0 or 8.1, copy the license as follows:

  For Windows XP and Windows 2003

  Copy from: C:\Documents and Settings\<user id>\Local Settings\Application Data\CA\ERwin Data Modeler\8.0

  Copy to: C:\Documents and Settings\All Users\Application Data\CA\ERwin Data Modeler\8

  For Windows 7 and Windows 2008:

  Copy from: C:\Users\<user id>\AppData\Local\CA\ERwin Data Modeler\8.0

  Copy to: C:\ProgramData\CA\ERwin Data Modeler\8
- Upgrade the source Mart to CA ERwin DM release 8.x and then run the Mart Upgrade utility.

Test Connection Failed--Destination Mart

Symptom:

The Mart Upgrade utility is not connecting to the destination Mart.

This problem can be for one of the following reasons:

- The web server details are wrong.
- The web server is not started.
- Mart cannot connect to the web server.
- IIS is not configured correctly (If you are connecting to Mart using IIS).

Solution:

Depending on the reason, use one of the following solutions:

- Ensure that the web server is running.
- Ensure that the web server details are correct.
- Ensure that you can connect to the web server from the computer on which you are running the Mart Upgrade utility. Try to log in to CA ERwin Mart Administrator to help ensure that the connection can be established.
- Ensure that IIS is configured properly.

Unable to Select Upgrade Models Check Box

Symptom:

I am unable to select only the Upgrade Models check box in the Data to Upgrade step.

Solution:

When you select the data that you want to upgrade, you cannot select only the Upgrade Models check box. The reason is, you can upgrade models only if users and profiles are upgraded.

Appendix B: Microsoft SQL Server and Sybase Tuning Recommendations

This section contains the following topics:

Physical Tuning Parameters

The mart is dynamic, with many queries and data manipulations performed with each model save and load. Although the Microsoft SQL Server and Sybase architectures differ in some ways, the basic operation and configuration of both server environments is the same.

The configuration changes that must be made to Microsoft SQL Server and Sybase for optimum performance with maximum fault tolerance and recoverability are provided.

Database Placement

CA ERwin Data Modeler Workgroup Edition mart databases are written to in bursts of activity. Stored procedures and bulk insert statements are used to minimize overhead when saving data to Microsoft SQL Server. To optimize performance, place the database on low activity Microsoft SQL Server files. If possible, place the log and data segments on different physical drives to reduce contention between log writes and database reads.

Data Redundancy

Make sure that you make a copy of the transaction log on a separate drive to maximize recoverability of the database. If the up-time of the database is considered critical, make a copy of the database and the transaction logs, and other Microsoft SQL Server files you consider important.

Server-Level Tuning Parameters

You should perform the following server-level tuning tasks:

- Configure Microsoft SQL Server to use as much memory as possible. Allocating more memory to the Microsoft SQL Server caching mechanisms means less physical reads from the disk and improved database query performance.
- Allow several megabytes of disk space for the procedure cache because CA ERwin Data Modeler Workgroup Edition uses many stored procedures.

The following table shows the recommended configuration parameters for a Microsoft SQL Server running CA ERwin Data Modeler Workgroup Edition:

Parameter Type	Recommended Value	Notes
memory (Sybase 15: "total memory")	512 MB minimum **Note:** 1 GB is recommended	More memory implies less physical I/O
procedural cache	Set the cache to grow to a fixed size, such as 50 MB or 100 MB.	CA ERwin Data Modeler Workgroup Edition is stored procedure-intensive

Named Cache Configuration

For Sybase systems, consider setting up a 4 KB pool for the default data cache. Sybase writes I/O to the log more often in 4 KB increments than in 2 KB increments (the default). You can set up a 4 KB I/O pool using sp_poolconfig, but you must restart the server to enable the 4 KB I/O writes to the log. Set the pool up as a smaller subset of the cache.

Note: Be careful when making changes to the data caching systems in Sybase. Monitor your changes with SQL Monitor or sp_sysmon to ensure that the changes you make do not starve the 2 KB I/O pool or other caches.

The following shows the recommended size of the 4 KB I/O pool for small, medium, and large servers:

Server Size	Data Cache Size	4 KB I/O Pool Size
Small	128 MB	4 MB
Medium	512 MB	6 MB
Large	1 GB	10 MB

Database Tuning Parameters

You can make database tuning adjustments in three different areas:

- Transaction log
- Threshold procedures
- Database options

Transaction Log

The transaction log keeps a before and after image of each change made in the database. Microsoft SQL Server keeps a transaction log for each database.

Back up the transaction log frequently. This keeps the transaction log small and reduces the amount of data lost in the event of a severe database corruption.

Threshold Procedures

For Sybase, enable a threshold procedure for the last-chance threshold to back up the log when it runs out of disk space.

Note: Because Microsoft SQL Server does not provide such an option, you must back up the log frequently to keep the log small.

The following shows a sample Sybase threshold action procedure:

```
create procedure sp_thresholdaction
@dbname char(40),
 @segment_name char(40),
 @space_left int,
 @status int
as
/* make the thresholdaction procedure backup the log */
declare @backdevice varchar(255)
 select @backdevice= '/u/backups/tranfile'+
       convert(char(8),getdate(),4)
 dump transaction mart to @backdevice
go
```

"trunc. log on chkpt" Option

To ensure maximum recoverability, do not enable the “trunc. log on chkpt” option, since the log is cleared automatically after each checkpoint operation. If the database device becomes damaged with the log device still active and this option is set, the database cannot be recovered using the log files since they are almost empty.

Database and Log Sizing

Since the database is a dynamic environment, allow plenty of space for the models you create. Tests have shown that models generate between 10 KB and 20 KB of data per entity during initial save times. Log overhead per object is approximately 15 KB to 21 KB per entity. Allocate 50 to 65 percent of the database size to the log to avoid running out of room in the log for a typical model save.

An average mart can range in size between 200 MB and 1 Gig. Size the transaction log accordingly. A 50 MB data device can store several large models (about 2,500 entities and 100,000 total objects), but keep in mind that the database becomes more flexible and has less storage space issues when the data device is large.

The following table shows the recommended database size and log size for small, medium, and large marts:

Database Size	Database Device	Transaction Log Device
Small	200 MB	100 MB
Medium	500 MB	200 MB
Large	1 GB	400 MB

How to Maintain an Efficient Database

To maintain an efficient database, perform the following maintenance tasks:

- Run UPDATE STATISTICS and execute sp_recompile frequently on every table in the database. This keeps the statistics up-to-date for the indexes, resulting in better overall performance.
- Periodically recreate the clustered indexes in the database to reduce fragmentation. Be sure to back up the database and transaction log daily.
- Run DBCC CheckDB(), DBCC CheckCatalog(), and DBCC CheckAlloc() or DBCC NewAlloc() on the database nightly, to check for corruption and inconsistencies in the database. Check the output of these queries and look for keywords like corrupt. Any problems detected by these commands are sent to the query output, so save the files and scan them regularly.

The following table shows maintenance tasks and the recommended frequency for performing these tasks:

Maintenance Task	Recommended Frequency	Reason
DBCC Checkdb	Nightly	Check for corruption in databases.
DBCC NewAlloc	Weekly	Check for allocation corruption (Microsoft SQL Server only).
DBCC CheckAlloc	Weekly	Check for allocation corruption (Microsoft SQL Server only).
DBCC CheckCatalog	Weekly	Check for system table inconsistencies.
UPDATE STATISTICS	Nightly	Recreates the statistics page for each index.
EXEC sp_recompile	Nightly	Tells which stored procedures have changed.
Backup Database	Weekly	Full backup of database should be done at least weekly, if not nightly.
Backup Transaction Log	Daily	Backing up the transaction log daily saves all committed transactions and clears the log.

DBCC Commands

Use the following DBCC commands to perform maintenance tasks on the database:

```
DBCC CheckDB(mart)
 go
DBCC CheckAlloc(mart)
 go
DBCC CheckCatalog(mart)
 go
```

Appendix C: Oracle Tuning Recommendations

This section contains the following topics:

Recommended Disk Configurations

Oracle servers are available on many different platforms ranging from PCs to mainframes. To support the wide range of hardware platforms and application requirements, Oracle servers have a number of configuration options that you can use to tailor the behavior of an Oracle database. You can also use these configuration options to tailor your database. Some of the options documented in this guide only apply to specific Oracle versions. For further information, see the appropriate Oracle documentation.

If the Oracle server is not dedicated to the CA ERwin Data Modeler Workgroup Edition mart, as database administrator you must be careful to balance the requirements of all users on the server. This is particularly true for database servers that support OLTP (On Line Transaction Processing) applications that require tight response characteristics.

The layout of Oracle database files on physical disk drives plays a major role in the performance of the database. When used with CA ERwin Data Modeler Workgroup Edition, Oracle performs large bursts of database operations (fetches, inserts, updates, and deletes) in a short period of time. This usage pattern often requires Oracle to perform a significant amount of disk I/O operations. For good performance, it is important that as many I/O operations as possible be performed in parallel. This enables Oracle to retrieve data faster during fetches and to write data faster during inserts, updates, and deletes.

To maximize parallel I/O access, split the Oracle database files across many physical disks. Ideally, you should place the database on four physical disks. If this is not possible, you can use three, two, or one disk systems.

Note: Installing Oracle on a single disk system causes significant performance degradation.

Database Configuration

Proper database configuration is essential to the smooth operation and good performance of an Oracle database. You can use the configuration options described to optimize the processing of your Oracle server.

Maximum Number of Processes

Oracle must be preconfigured at startup with a maximum number of processes that can access the database. The parameter that controls the maximum number of processes, called PROCESSES, is defined in the INIT.ora or INIT<SID>.ora file. It should be set to the maximum potential number of concurrent users plus seven. The additional seven are for Oracle background processes that must also access the database. Setting the number of processes at a lower value can prevent some users from accessing the server during peak usage times. Setting the number of processes at a higher value can waste a small amount of system memory resources.

Shared Pool

The shared pool is an area of Oracle memory that includes two main structures:

- The library cache, which stores parsed SQL and PL/SQL statements
- The dictionary cache, which stores the Oracle data dictionary (or Oracle metadata)

The SHARED_POOL_SIZE parameter is defined in the INIT.ora or INIT<SID>.ora file and is used to regulate the size of the shared pool. Set the SHARED_POOL_SIZE parameter to a minimum of 3500000 (3.5 million). Setting the shared pool to a smaller value can degrade performance, forcing Oracle to do disk I/O to retrieve objects that cannot fit in the shared pool. A larger shared pool may be required, depending on the size and number of models and the number of users.

Buffer Cache

The buffer cache serves as a memory cache for all data going to and from Oracle data files. When Oracle needs a block of data it first checks whether that block exists in the buffer cache. If it does, Oracle gets the data from the buffer cache—avoiding disk access. Having a large enough buffer cache lets the Oracle server bypass most I/O requests.

Buffer cache size is controlled by the DB_BLOCK_BUFFERS parameter defined in the INIT.ora or INIT<SID>.ora file. Set the buffer cache to a minimum of 4 MB. Values smaller than 4 MB force Oracle to do many more I/O requests and significantly degrades the performance. Values larger than 4 MB improve performance and should be used if memory is available.

Note: In Oracle, the DB_BLOCK_BUFFERS parameter is specified as a number of database blocks instead of actual size in bytes. To compute the value of DB_BLOCK_BUFFERS, divide the desired buffer cache size in bytes by the database block size defined by the DB_BLOCK_SIZE parameter in the INIT.ora or INIT<SID>.ora file.

Redo Log Files

Redo log files contain a record of all Data Manipulation Language (DML) commands (such as INSERT, UPDATE, and DELETE commands) performed on the database. As DMLs are performed, the Oracle engine writes them to sequential redo log files. Periodically, an Oracle background process retrieves the DMLs from the Redo log files and writes the actual changes to the Oracle tablespace files. This mechanism lets Oracle defer most of the I/O burden associated with DMLs to a background process that does not slow down the client processes.

Note: Oracle Redo log files are treated by the database engine as a ring. When one file fills up, the engine performs a log switch and starts writing to the next log file in the ring. When that log file fills, the engine switches again.

The number and size of the Redo log files is an important performance consideration. If the log files are too small or if there are not enough of them in the ring, Oracle may have to stall on a log switch. If this happens, the DMLs in the next log in the ring may not have been written to the tablespace files, and therefore the next log file has not been archived by the background ARCH process. For more information about Redo log archiving, see the Oracle documentation.

Redo log files are created when the database is created. However, Redo log files can be added or deleted at any time using Data Definition Language (DDL) statements.

You should have at least four Redo log files, each 2 MB in size. A smaller number of Redo log files or a smaller Redo log file size can cause I/O bottlenecks. If the disk space is available, using more than four Redo log files further reduces the chances of delayed log switches. Larger Redo log files improve performance, but care must be taken to adequately schedule checkpoints that write DMLs stored in the Redo logs to the tablespace files.

If the number of disks permits, you should mirror Redo log files by creating Redo log groups with two mirrored members per group. This offers the database some protection against single disk errors.

Increase Space in Redo Logs

The number and size of the Redo log files is an important performance consideration. Redo log files are created when the database is created.

To increase space in the Redo logs

1. Log in to Oracle using SQL*Plus as SYSDBA or SYSOPER and run the following script to create eight Redo logs that are 2 MB each:

```
rem -- parm1 -- temp dir

rem Generate creation script
SELECT 'ALTER DATABASE ADD LOGFILE '''
    ||  SUBSTR ( MEMBER , 1 , INSTR ( MEMBER , '\' , -1 , 1 ) )
    || 'REDO_11.LOG'' SIZE 2M ;'
  from V$LOGFILE
 where ROWNUM = 1
   and not exists ( SELECT 1 from V$LOGFILE where MEMBER like '%REDO_11.LOG' )
 UNION

SELECT 'ALTER DATABASE ADD LOGFILE '''
    ||  SUBSTR ( MEMBER , 1 , INSTR ( MEMBER , '\' , -1 , 1 ) )
    || 'REDO_12.LOG'' SIZE 2M ;'
  from V$LOGFILE
 where ROWNUM = 1
   and not exists ( SELECT 1 from V$LOGFILE where MEMBER like '%REDO_12.LOG' )
 UNION

SELECT 'ALTER DATABASE ADD LOGFILE '''
    ||  SUBSTR ( MEMBER , 1 , INSTR ( MEMBER , '\' , -1 , 1 ) )
    || 'REDO_13.LOG'' SIZE 2M ;'
  from V$LOGFILE
 where ROWNUM = 1
   and not exists ( SELECT 1 from V$LOGFILE where MEMBER like '%REDO_13.LOG' )
 UNION
```

```
SELECT 'ALTER DATABASE ADD LOGFILE '''
    ||  SUBSTR ( MEMBER , 1 , INSTR ( MEMBER , '\' , -1 , 1 ) )
    || 'REDO_14.LOG'' SIZE 2M ;'
  from V$LOGFILE
 where ROWNUM = 1
   and not exists ( SELECT 1 from V$LOGFILE where MEMBER like '%REDO_14.LOG' )
 UNION

SELECT 'ALTER DATABASE ADD LOGFILE '''
    ||  SUBSTR ( MEMBER , 1 , INSTR ( MEMBER , '\' , -1 , 1 ) )
    || 'REDO_15.LOG'' SIZE 2M ;'
  from V$LOGFILE
 where ROWNUM = 1
   and not exists ( SELECT 1 from V$LOGFILE where MEMBER like '%REDO_15.LOG' )
 UNION

SELECT 'ALTER DATABASE ADD LOGFILE '''
    ||  SUBSTR ( MEMBER , 1 , INSTR ( MEMBER , '\' , -1 , 1 ) )
    || 'REDO_16.LOG'' SIZE 2M ;'
  from V$LOGFILE
 where ROWNUM = 1
   and not exists ( SELECT 1 from V$LOGFILE where MEMBER like '%REDO_16.LOG' )
 UNION

SELECT 'ALTER DATABASE ADD LOGFILE '''
    ||  SUBSTR ( MEMBER , 1 , INSTR ( MEMBER , '\' , -1 , 1 ) )
    || 'REDO_17.LOG'' SIZE 2M ;'
  from V$LOGFILE
 where ROWNUM = 1
   and not exists ( SELECT 1 from V$LOGFILE where MEMBER like '%REDO_17.LOG' )
 UNION

SELECT 'ALTER DATABASE ADD LOGFILE '''
    ||  SUBSTR ( MEMBER , 1 , INSTR ( MEMBER , '\' , -1 , 1 ) )
    || 'REDO_18.LOG'' SIZE 2M ;'
  from V$LOGFILE
 where ROWNUM = 1
   and not exists ( SELECT 1 from V$LOGFILE where MEMBER like '%REDO_18.LOG' )
.
 Spool &1.AddLog.ORA
/
Spool Off
COMMIT ;

SELECT 'ALTER SYSTEM SWITCH LOGFILE ;' from V$LOG where ROWNUM < 5
.
 Spool &1.SwtchLog.ORA
/
Spool Off
COMMIT ;
```

```
rem Generate Deletion script
SELECT 'ALTER DATABASE DROP LOGFILE GROUP ' || TO_CHAR ( GROUP# ) || ' ;' from
V$LOG where BYTES < 2097152
.
 Spool &1.DropLog.ORA
/
Spool Off
COMMIT ;

@&1.AddLog.ORA
$Del &1.AddLog.ORA
COMMIT ;

@&1.SwtchLog.ORA
$Del &1.SwtchLog.ORA
COMMIT ;

@&1.DropLog.ORA
$Del &1.DropLog.ORA
COMMIT ;
```

2. Run the following query to verify the new Redo log configuration:

```
SQLWKS> select group#, status, bytes from v$log;
```

Note: Oracle does not let you drop an older Redo log file that is still ACTIVE. If you must drop an older Redo log file that is still ACTIVE, drop that log file manually.

Redo Log Buffer

The Redo log buffer is an area in memory that Oracle uses to collect DMLs before they are written to the Redo log files. The log file write occurs when either a transaction commits or a Redo log buffer is full. Because CA ERwin Data Modeler Workgroup Edition tends to generate fairly large transactions, use a log buffer size of 163840 bytes. (For single disk Oracle installations, use a log buffer size of 655360 bytes.) Setting the Redo log buffer size to a value smaller than the recommended value can degrade I/O performance. Using a larger value requires more memory.

The Redo log buffer size is defined using the LOG_BUFFER parameter in the INIT.ora or INIT<SID>.ora file.

Checkpoints

An Oracle checkpoint is an event that posts DMLs from the Redo log files to the tablespace files. Checkpoints always occur after a Redo log file switch and can also be configured to occur at predefined time intervals. For CA ERwin Data Modeler Workgroup Edition, which generates large transactions, checkpoints should occur only after log switches to minimize I/O.

To ensure a checkpoint only after a log switch, *do not* set the LOG_CHECKPOINT_INTERVAL and LOG_CHECKPOINT_TIMEOUT parameters in the INIT.ora or INIT<SID>.ora file.

Storage Parameters

Object storage parameters in Oracle determine the amount of space allocated for each object in the database. Setting these parameters correctly is critical to both operation and performance of the database. Incorrect storage allocations can cause a database object to run out of space, which prevents you from saving models to the repository. Inefficient selection of storage parameters can lead to performance problems by forcing Oracle to do time-consuming space management operations during DML statement execution.

Recommendations for storage parameter values differ based on the size of your model:

- Small data models: 1 to 50 Entities
- Medium data models: 51 to 100 Entities
- Large data models: over 100 Entities

Rollback Segments

Rollback segments contain undo information for all changes performed by noncommitted transactions. Rollback segments are a shared resource used by all active transactions in the database. When a transaction starts, Oracle binds that transaction to a particular rollback segment. As DMLs in the transaction execute, rollback segment space is used. For large transactions, rollback segments may need to allocate new extents as the transaction continues. When the transaction ends, a properly configured Oracle database releases the additional rollback extents so that they can be used for other rollback segments. To ensure that the additional rollback extents are released, configure the OPTIMAL parameter for each rollback segment.

Use a maximum of five transactions per rollback segment by setting the TRANSACTIONS_PER_ROLLBACK_SEGMENT parameter in the INIT.ora or INIT<SID>.ora file. Use the following rollback segment storage parameters for small, medium, and large models:

Model Type	Initial Extent Size	Next Extent Size	Optimal Size
Small	1 MB	1 MB	~ 2 MB x (# of transactions)
Medium	6 MB	6 MB	~ 12 MB x (# of transactions)
Large	6 MB	6 MB	~ 12 MB x (# of transactions)

Note: The "# of transactions" is the maximum number of simultaneous CA ERwin Data Modeler Workgroup Edition connections to Oracle.

In Oracle it is common to see the following error statement when the Rollback logs are not set up optimally:

ORA-01562 failed to extend rollback segment number string

Set Optimal Configuration for the Rollback Logs

For large transactions, rollback segments may need to allocate new extents as the transaction continues. When the transaction ends, a properly configured Oracle database releases the additional rollback extents so that they can be used for other rollback segments. To ensure that the additional rollback extents are released, configure the OPTIMAL parameter for each rollback segment.

To set the optimal configuration for the rollback logs of large databases

1. Log in to Oracle as SYS or SYSTEM and run the following query and check the result to view the current configuration of the Rollback Segments:

   ```
   SQLWKS> select SEGMENT_NAME, INITIAL_EXTENT, NEXT_EXTENT, MIN_EXTENTS,
   MAX_EXTENTS, STATUS from dba_rollback_segs;
   ```

   The result is:

   ```
   SEGMENT_NAME INITIAL_EX NEXT_EXTEN MIN_EXTENT MAX_EXTENT STATUS
   SYSTEM        51200 51200           2       121      ONLINE
   RB_TEMP       102400102400          2       121      OFFLINE
   RB1           2097152       2097152         2       121      ONLINE
   RB2           2097152       2097152         2       121      ONLINE
   RB3           2097152       2097152         2       121      ONLINE
   RB4           2097152       2097152         2       121      ONLINE
   RB5           2097152       2097152         2       121      ONLINE
   RB6           2097152       2097152         2       121      ONLINE
   RB7           2097152       2097152         2       121      ONLINE
   RB8           2097152       2097152         2       121      OFFLINE
   RB9           2097152       2097152         2       121      OFFLINE
   RB10  2097152       2097152         2       121      OFFLINE
   RB11  2097152       2097152         2       121      OFFLINE
   RB12  2097152       2097152         2       121      OFFLINE
   RB13  2097152       2097152         2       121      OFFLINE
   RB14  2097152       2097152         2       121      OFFLINE
   RB15  2097152       2097152         2       121      OFFLINE
   RB16  2097152       2097152         2       121      OFFLINE
   18 rows selected.
   ```

   Note: In this example, there are sixteen rollback segments with 2 MB INITIAL EXTENT, 2 MB NEXT EXTENT, and MAX EXTENTS of 121 MB.

2. Run the following query for each Rollback Segment:

```
alter rollback segment rb1 offline;
 drop rollback segment rb1;
 create public rollback segment rb1
tablespace rollback_data
storage (initial 6M
next 6M
minextents 2
maxextents 121
optimal 12M);
 alter rollback segment rb1 online;
 alter rollback segment rb2 offline;
 drop rollback segment rb2;
 create public rollback segment rb2
tablespace rollback_data
storage (initial 6M
next 6M
minextents 2
maxextents 121
optimal 12M);
 alter rollback segment rb2 online;

<Repeat for each Rollback Segment>
```

This query sets the optimal Rollback Segment configuration to 6 MB INITIAL EXTENT, 6 MB NEXT EXTENT, 2 MB MIN EXTENT, 121 MB MAX EXTENT, and 12 MB OPTIMAL.

3. Run the following query to verify the Rollback segment configuration changes:

```
SQLWKS> select SEGMENT_NAME, INITIAL_EXTENT, NEXT_EXTENT,
MIN_EXTENTS,MAX_EXTENTS, STATUS from dba_rollback_segs;
```

The result is:

```
SEGMENT_NAME INITIAL_EX NEXT_EXTEN MIN_EXTENT MAX_EXTENT STATUS
SYSTEM        51200 51200       2        121        ONLINE
RB_TEMP       102400102400      2        121        OFFLINE
RB1           6291456       6291456     2        121        ONLINE
RB2           6291456       6291456     2        121        ONLINE
RB3           6291456       6291456     2        121        ONLINE
RB4           6291456       6291456     2        121        ONLINE
RB5           6291456       6291456     2        121        ONLINE
RB6           6291456       6291456     2        121        ONLINE
RB7           6291456       6291456     2        121        ONLINE
RB8           6291456       6291456     2        121        ONLINE
RB9           6291456       6291456     2        121        ONLINE
RB10  6291456       6291456     2        121        ONLINE
RB11  6291456       6291456     2        121        ONLINE
RB12  6291456       6291456     2        121        ONLINE
RB13  6291456       6291456     2        121        ONLINE
RB14  6291456       6291456     2        121        ONLINE
RB15  6291456       6291456     2        121        ONLINE
RB16  6291456       6291456     2        121        ONLINE
18 rows selected.
```

Tablespaces

To improve performance you can create more than one tablespace for indexes. Then, after you install the software, you can move some indexes to the other tablespaces.

The following table lists the suggested initial sizes for DATA and INDEX tablespaces:

Tablespace	Small	Medium	Large
DATA	200 MB	500 MB	1 GB
INDEX	200 MB	250 MB	500 MB

DATA and INDEX tablespaces with these initial sizes can accommodate at least ten models or versions.

Appendix D: CA ERwin Data Modeler Workgroup Edition Performance

This section contains the following topics:

Optimize the Performance

The performance of CA ERwin Data Modeler Workgroup Edition depends on many factors. This appendix outlines some steps you can take to improve your performance. The five main components where a slow down can occur are the database, the server, the network, the client PC, and the CA ERwin Data Modeler Workgroup Edition software.

Database
- Reindexing
- Statistics
- Tuning

Server
- RAM
- Speed (GHz)
- CPU
- Disk space
- Dedicated to CA ERwin WE or shared by multiple applications?

Network
- LAN or WAN?
- Speed
- Throughput
- Traffic

Client Machine
- RAM
- Speed (GHz)
- CPU
- Disk space and virtual memory

Software

You should regularly reindex the database and run the database statistics. Sometimes running the database statistics alone does not affect the performance, however it is good practice to run the database statistics on a regular basis to ensure the maximum performance of your database.

If you have many domains in a model, they consume a lot of memory and file space. Having too many domains can slow down CA ERwin Data Modeler Workgroup Edition. If you need to use many domains, we suggest you create a template model to house them, and then import the specific domains that you need, to each of your individual models. If you are using the domains to enforce unique attribute or column naming standards, you can alternatively use the ERwin Glossary for that purpose.

Check the CA ERwin Data Modeler Workgroup Edition Release Notes for the latest system requirements. Greater CPU speed, and more RAM and disk space result in better performance.

Reindex the Database

Over a period of time, database indexes become fragmented. A large number of inserts and deletes can lead to significant performance degradation. The scripts provided in this appendix rebuild the indexes and fix them. In some cases, it can make a significant difference in the mart performance.

We recommend that you reindex your mart database nightly or during off-peak hours. As the index is recreated, the process can temporarily degrade the performance of your database. You can create an automated batch job to do the reindex. You should also reindex the database after a large model merge, a save to the mart, and right after a conversion of the mart when upgrading to a later version of the software.

Run the Oracle DBMS Reindex Script

As the new index is being built, it coexists with the old index in the database. For this reason, you should plan for enough space to store both the old index and the new index. When the index is rebuilt, the new index becomes available, the old index is dropped, and the space is reclaimed by the database. If you encounter any errors while rebuilding the indexes, re-run the statements. If you require more space to rebuild those specific indexes, add more storage to your index tablespace, and then try rebuilding those specific indexes again.

To run the Oracle DBMS reindex script

1. Create the mmreindex.ora script and copy it locally.
2. Edit the script and replace 'MODELMART' with the name of the mart schema-owner and 'MMINDEX' with the name of the mart index tablespace. Save your changes.
3. Connect to SQL*PLUS as the user SYS.
4. Grant the 'ALTER ANY INDEX' privilege to the mart Schema Owner.
5. Run your Oracle query tool and execute the following at the SQL prompt:

   GRANT ALTER ANY INDEX TO <MART SCHEMA OWNER>;
6. Disconnect user SYS and Connect to your Oracle query tool as the Schema Owner.
7. Execute the following Script at the SQL Prompt:

   @c:\mmreindex.ora

Example: Oracle Reindex Script (MMReIndex.ora)

```
-------------------------------------------------------------------------------
-
    -- Object:   MMReIndex.ora
    -- Desc:     Use this Procedure to ReIndex the MM ORACLE Repository whenever a
    --           Merge/Save of big model is done to MM
    --           Limitation(s) is specific to Oracle Releases >= 817
    -- For ORACLE DBMS < 8i Modify the script to Use NOPARALLEL
    -- NOTE:  You will need to change MMOWNER to the Mart schema owner name.
    --        You will need to change MMINDEX to the Mart index tablespace.
    -- Oracle indexes are not self-balancing. They become fragmented after a large
    -- number of INSERTs and DELETEs which may lead to significant performance
degradation.
    -- This script rebuilds the Mart indexes and cures them.

-------------------------------------------------------------------------------
----
    set pagesize 1000
    set linesize 2000
    set verify off
    set feedback off
    set heading off
    spool c:\mmreindex.ora
    SELECT        'ALTER INDEX ' || USER || '.' || INDEX_NAME ||
    ' REBUILD PARALLEL NOLOGGING COMPUTE STATISTICS TABLESPACE MMINDEX;'
    FROM   DBA_INDEXES
    WHERE OWNER = UPPER ('MMOWNER')
    AND    (INDEX_NAME like 'XPK%' or INDEX_NAME like 'XAK%'
           or INDEX_NAME like 'XIE%')
    order by index_name;
    spool off
    set heading on
    set pagesize 24
    set verify on
    set feedback on
    @c:\mmreindex.ora
    /
```

Example: Microsoft SQL Server DBMS Reindex Script

Example: Microsoft SQL Server DBMS reindex script

```
    -- Drop the Procedure appropriately
    IF EXISTS (SELECT name FROM sysobjects WHERE name = N'usp_ReIndex' AND type = N'P')
    Begin
           DROP PROCEDURE usp_ReIndex
           Print 'Procedure Dropped'
    End
    GO

-------------------------------------------------------------------------------
---
    -- Object:    usp_ReIndex
    -- Desc:      Use this Procedure to ReIndex the MM SQL REpository whenever a
    --            Merge/Save of big model is done to MM
    -- Change History:
    -- Name              Date          Reason

-------------------------------------------------------------------------------
-
    CREATE PROCEDURE usp_ReIndex AS
           Declare
                  @Cmd   varchar(2000),
                  @Name  Sysname
           DECLARE tmp_Reindex CURSOR LOCAL FOR
                  SELECT Name
                  FROM   SysObjects
                  WHERE  Type = 'U'
          OPEN tmp_Reindex
           FETCH NEXT FROM tmp_Reindex INTO @Name
           WHILE @@FETCH_STATUS = 0
           BEGIN
                  Print 'Processing Index for Table ' + @Name
                  Set @cmd = 'DBCC DBREINDEX (' + @Name +  ', '''', 0)'
                  Exec (@Cmd)
                  If @@Error <> 0
                         Print 'Error Reindexing Table ' + @Name
                  FETCH NEXT FROM tmp_Reindex INTO @Name
           END
           Close tmp_Reindex
    go
    -- ReIndex the DB
    Exec usp_ReIndex
```

Example: Sybase DBMS reindex script (MMReIndex.ora)

```
    -- Drop the Procedure appropriately
    IF EXISTS (SELECT name FROM sysobjects WHERE name = N'usp_ReIndex' AND type = N'P')
    Begin
          DROP PROCEDURE usp_ReIndex
          Print 'Procedure Dropped'
    End
    GO

--------------------------------------------------------------------------------
---
    -- Object: usp_ReIndex
    -- Desc: Use this Procedure to ReIndex the MM SQL REpository whenever a
    -- Merge/Save of big model is done to MM
    -- Change History:
    -- Name Date Reason

--------------------------------------------------------------------------------
-
    CREATE PROCEDURE usp_ReIndex AS
       Declare
              @Cmd varchar(2000),
              @Name Sysname(100) ,
              @output_str varchar( 255 )
       DECLARE tmp_Reindex CURSOR FOR
              SELECT name
              FROM sysobjects
              WHERE type = 'U'
       OPEN tmp_Reindex
         FETCH tmp_Reindex INTO @Name
         WHILE ( @@sqlstatus = 0 )
         BEGIN
              SELECT @output_str = 'Processing Index for Table '+@Name
              Print @output_str
              --Set @Cmd = 'DBCC REINDEX (' + @Name + ')'
              --Exec (@Cmd)
         DBCC REINDEX (@Name )
         If @@Error <> 0
       Begin
              SELECT @output_str = 'Processing Index for Table1 '+@Name
              Print @output_str
         end
         FETCH tmp_Reindex INTO @Name
       END
       Close tmp_Reindex
    go
    EXEC usp_ReIndex
```

Troubleshooting the Reindexing Script

Symptom:

The query tool responds as given below:

```
no rows selected
not spooling currently
```

Solution:

You do not have the correct name for the mart schema-owner. Get the correct user name, replace 'MODELMART' with the user name, and re-run the script.

Run the Database Statistics

Database statistics show the distribution of the data in the database, and how the data is stored. When a database executes a query, it uses an optimizer to determine the best path to access the data. The optimizer relies on execution plans that specify the order in which the database accesses the tables and the exact steps used to pull the data. The database bases the creation of the execution plans on the database statistics.

As the data grows and changes, the statistics quickly become outdated and no longer reflect the true condition of the database. As a result, the execution plans no longer apply and the optimizer makes poor decisions when processing queries. You should run statistics regularly to ensure the maximum performance of your database and, therefore, your mart. We recommend that you run the database statistics nightly, and create an automated batch job to simplify the process.

Example: Oracle Statistics Commands

Note: In the following examples, the schema owner name is 'MODELMART'

To collect statistics for the mart (does not include the index statistics):

```
EXEC DBMS_STATS.gather_schema_stats ('MODELMART',DBMS_STATS.AUTO_SAMPLE_SIZE);
```

To collect statistics for the mart (includes the index statistics):

```
EXEC DBMS_STATS.gather_schema_stats (ownname => 'MODELMART',
cascade =>true, estimate_percent => dbms_stats.auto_sample_size);
```

To delete the statistics:

```
EXEC DBMS_STATS.delete_schema_stats ('MODELMART');
```

Index