Hydrologic Database (HDB): Meta Data Application Installation

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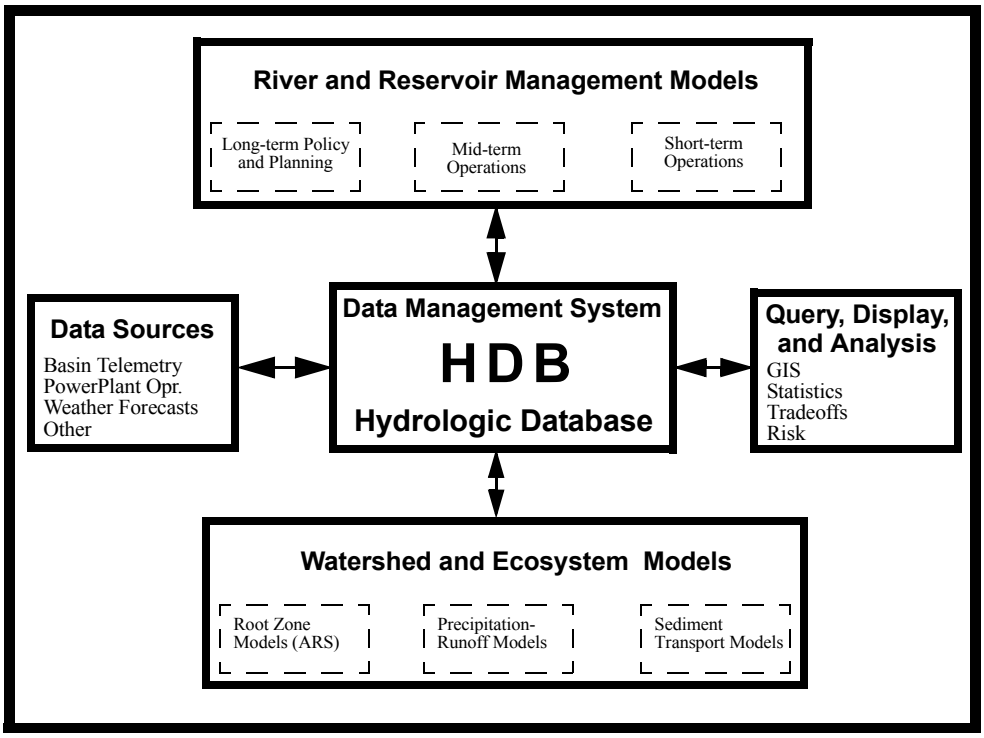

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Section 1 Intended Audience

This document is intended for the administrator of the Meta Data Application.

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Section 2 Application Overview

Application Purpose

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The Meta Data Application is an Oracle Forms application designed to make the viewing and maintenance of all HDB Meta Data more simple and efficient. Meta data is any data in HDB that is not time series data; it includes:

- all site, datatype, and unit lookup information (names, IDs, etc.);
- water accounting forms, such as the one for maintaining release annotations;
- other lookup information, such as that for states, rivers, dam types, gage types, etc.;
- model lookup data, including model IDs, model types, and model users (model run IDs are *not* maintained via this application);
- physical characteristic data;
- site coefficient data;
- application driver data (such as that for ref_agg_disagg, the DMIs, the Hydromet applications, and the Derivation Application);
- database instance information.

Installation Types

There are three types of installations for the Meta Data Application.

- Master Site: A Master site installation is used for a database installation, such as UCHDB, which has one or more database installations (LCHDB) whose hdb_ tables are a read-only snapshot of the tables at the master site. This is a master/ snapshot relationship. The data at the snapshot installation will not reflect changes made at the master site until a *refresh* of the snapshots is done.
- Snapshot Site: A Snapshot site installation is an installation whose hdb_ tables are read-only snapshots of a Master site. A Snapshot site's ref_ tables are writable; they do not depend on the Master site.
- Island Site: An Island site installation is a stand-alone database (such as YAKHDB) which has no dependent Snapshot sites, and does not depend on a Master site. In other words, its hdb_ data is not synchronized with that of any other database.

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Section 3 System Requirements

Software

Oracle for Windows

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The Meta Data Application runs on Windows NT, 2000 and XP. You must have Oracle installed on a Windows machine, including, at a minimum:

- Oracle Developer 2000, version 6i. (The most recent version at this writing is Patch 13, version 6.0.8.22.1.) Typical installation is recommended, but at the very least you need Oracle Forms Runtime, and an 8.0 Oracle Client. (The following instructions assume that you install Oracle under C:\orant; if not, adjust directory paths as needed below.)
- Tnsnames.ora configured to include specifications for all databases you will want to connect to from this Windows machine. For any snapshot or master installations, you must include both the master and snapshot(s) in the supersystem. This file can be found in C:\orant\Net80\admin.

Verify the correctness of tnsnames.ora by running sqlplus and connecting to all databases.

All installations and edits should be done as Administrator.

Hardware

N/A.

Section 4 Dependencies and Environment Settings

Directories

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Create the folder MetaData under C:\orant\Forms60. Do this as Administrator.

This directory will hold the executable forms for the Meta Data Application.

Note: If this is the second version of the Meta Data Application you will have running on a single machine (e.g., perhaps you have a version for HDB1, and are installing a version for HDB2), you need to create another, separate directory for the new executables. For instance, you might call the new directory MetaData2. The new directory must still be located under C:\orant\Forms60. If you do this, substitute your directory name for MetaData in the remaining instructions.

Parameters

Registry

As administrator, edit your registry. This will change the settings for all users; you only need do it once.

1. Go to your Start menu, select Run, and type "regedit"
2. expand HKEY_LOCAL_MACHINE
3. expand SOFTWARE
4. display ORACLE (click on the folder; contents will be displayed in right side of window)
5. double-click on FORMS60_PATH; edit the contents. At the end of the path, add

   "; C:\orant\Forms60\MetaData"

   If your registry does not contain this variable, you must add it.
6. Create a new variable. Under the Edit menu, select New/String Value. Create a string with the name *FORMS60_USER_DATE_FORMAT*. Set its value to DD-MON-YYYY.
7. exit the Registry Editor

Section 4 Dependencies and Environment Settings

Miscellaneous

Ensure that your Document Resolution on your Windows machine is set to a resolution of 1024 x 768 or finer. To do this, go to Start -> Settings -> Control Panel -> Display -> Settings -> Desktop Area. This will ensure that large forms are completely visible and behave properly.

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Location

The zip file with all the executable forms is in your most recent release directory: <RELEASE>/metaData/HDB2MetaData.ZIP

Description

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HDB2MetaData.ZIP: A zip file containing all the executable forms, as well as libraries and icon files, needed to run the application.

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Editing

N/A.

Running

Unzipping the Executables

As administrator:

1. Port the file <RELEASE>/metaData/HDB2MetaData.ZIP from your Unix installation to your Windows machine. (<RELEASE> is your most recent release directory.)
2. Unzip HDB2MetaData.ZIP into C:\orant\Forms60\MetaData

Creating a Shortcut to the Meta Data Application

On the Windows machine, as every user that will run the Meta Data Application:

1. Browse through the folders to get to C:\orant\Forms60\MetaData\METADATA_STARTUP.fmx
2. Right click on the file icon, and choose "Create Shortcut"
3. Move the created shortcut from the current folder to your desktop, if desired
4. Rename the shortcut, if desired
5. Right click on the shortcut icon, and choose "Properties", then "Shortcut"

Section 5 Installation Scripts

6. Edit the "Target" field:
7. - if there are quotation marks, remove them
8. - change your target to: ifrun60.EXE METADATA_STARTUP
9. Click OK

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Location

All scripts are in <RELEASE>/oracle_script/METADATA and its subdirectories.

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These are the scripts which make changes to the HDB2 schema to support the Meta Data Application. Essentially, they create Meta Data installations on the involved database servers.

As such, all of the following actions need to take place on the database server. You may be logged in as any user, but it is best to be logged in as your DBA. You must first decide what type of installation you are: master, snapshot, or island. Proceed to the appropriate subsection for your type of installation.

Note that these instructions assume that your database schema, with respect to meta data tables, is synchronous with the most current release of HDB.

Editing

N/A

Running

Master Installation

Note: If you are creating a master installation from a currently-existing island installation, follow these same instructions with the noted exceptions.

1. You must ensure that meta_data_user exists on your initial snapshot installation before proceeding:

   1.1 log into the snapshot installation database server (or have someone at the snapshot installation do it)

   1.2 change directories to <RELEASE>/oracle_script/METADATA/SNAPSHOT_SITE

1.3 run precreate_snapshot_inst.sh:

> precreate_snapshot_inst.sh

You must supply the Oracle password that the user *meta_data_user* will be created with.

1.4 When the output in metaDataUser.out looks good, log out of the snapshot server.

2. Log into the master database server

3. Change directories to <RELEASE>/oracle_script/METADATA/MASTER_SITE

4. If you are *not* currently an island installation (this is a brand new Meta Data installation), run create_master_inst.sh:

> create_master_inst.sh

Be prepared to supply:

- *database* name: SID of local (master) database
- *dba name*: name of Oracle database administrator for this instance
- *dba password*: Oracle password for the dba
- *sys password*: Oracle password for the sys database user
- *local meta_data_user_password*: password for meta_data_user to be created on local (master) installation
- *remote meta_data_user password*: password for meta_data_user which has been created on remote (snapshot) installation.
- *name of snapshot database*: SID of snapshot database
- *dba name at snapshot database*: name of Oracle database administrator for snapshot instance

Verify all file outputs as instructed.

5. If you *are* currently an island installation, run create_master_from_island.sh:

> create_master_from_island.sh

Be prepared to supply:

- *database* name: SID of local (master) database
- *dba name*: name of Oracle database administrator for this instance

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- *dba password*: Oracle password for the dba
- *sys password*: Oracle password for the sys database user
- *local meta_data_user_password*: password for meta_data_user to be created on local (master) installation
- *remote meta_data_user password*: password for meta_data_user which has been created on remote (snapshot) installation.
- *name of snapshot database*: SID of snapshot database

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Verify all file outputs as instructed.

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6. Update table ref_db_list.

6.1 Enter your local installation as session_no 1. Enter the full name (SID) of your installation, and the 3-character or less code that uniquely identifies it. If you are using Riverware, enter in the maxid and max_sync_id. (Refer to HDB Riverware DMI documentation for further information on the meaning of these columns.)

6.2 For every other installation in your supersystem (that is, for all other databases that you might need to automatically connect to in applications), enter the same information. Order of session numbers is not important other than session_no = 1 (your local database). You may also insert data for installations not in your supersystem; the Meta Data Application will not try to refresh these installations as it does other snapshots, although you may recieve warnings at application startup if these databases are unavailable. (The application verifies connections with all databases in *ref_db_list*.)

Snapshot Installation

First Snapshot in the Super-System

These instructions are for the first snapshot in the supersystem. If you are adding an additional snapshot to the system, please see the next section.

1. You must ensure that meta_data_user exists on *all* snapshot installations (including yours) before proceeding:

1.1 log into the snapshot installation database server(s) (or have someone at the snapshot installation do it)

1.2 change directories to <RELEASE>/oracle_script/METADATA/SNAPSHOT_SITE

1.3 run precreate_snapshot_inst.sh:

> precreate_snapshot_inst.sh

You must supply the Oracle password that the user will be created with.

1.4 When the output in metaDataUser.out looks good, log out of the snapshot server.

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2. Verify that your master site has run create_master_inst.sh. The snapshot installation will fail if the master installation is not complete.

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3. On the snapshot database server, change directories <RELEASE>/oracle_script/METADATA/SNAPSHOT_SITE

4. Run create_snapshot_inst.sh:

> create_snapshot_inst.sh

Be prepared to supply:

- *db name:* SID of local (snapshot) database
- *dba name*: name of Oracle database administrator for this instance
- *dba password*: Oracle password for the dba
- *sys password*: Oracle password for the sys database user
- *name of master database*: SID of master database
- *dba name at master database*: name of Oracle database administrator for master instance
- *remote meta_data_user password*: password for meta_data_user which has been created on remote (master) installation.

Verify all file outputs as instructed.

5. Because of the way snapshot refreshes are implemented, database initialization parameters for the snapshot installation must be set correctly. As Unix user Oracle:

5.1 Run server manager and determine the value of JOB_QUEUE_PROCESSES and JOB_QUEUE_INTERVAL:

> svrmgrl

SVRMGR> connect internal

SVRMGR> show parameters job

JOB_QUEUE_PROCESSES must be 1 or more;
JOB_QUEUE_INTERVAL must be 60 or less.

5.2 If this is the case, you're done (skip to Step 6). If not, edit the file $ORACLE_HOME/../../admin/<dbname>/pfile/init<dbname>.ora, and add these parameters, or change their values; e.g.:

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JOB_QUEUE_PROCESSES = 1

JOB_QUEUE_INTERVAL = 60

5.3 Shutdown and restart the database: (First ensure that no users are connected.)

> svrmgrl

SVRMGR> connect internal

SVRMGR> shutdown

SVRMGR> startup pfile=<pfile>;

SVRMGR> exit

Where <pfile> is the full path to init<dbname>.ora which you just edited.

6. Update table ref_db_list.

6.1 Enter your local installation as session_no 1. Enter the full name (SID) of your installation, and the 3-character or less code that uniquely identifies it. If you are using Riverware, enter in the maxid and max_sync_id. (Refer to HDB Riverware DMI documentation for further information on the meaning of these columns.)

6.2 For every other installation in your supersystem (that is, for all other databases that you might need to automatically connect to in applications), enter the same information. Order of session numbers is not important other than session_no = 1 (your local database). You may

also insert data for installations not in your supersystem; the Meta Data Application will not try to treat these installations as other snapshots.

Additional (2nd or Higher) Snapshot in the Super-System

These instructions are for creating a an additional snapshot installation in any HDB supersystem comprised of a master and some number of snapshots. The snapshot being created can be the second or the eighth -- it doesn't matter. This sequence of instructions assumes that your master and one or more snapshots are already set up and operating properly.

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1. Create user meta_data_user before proceeding:

   1.1 log into your snapshot installation database server(s)

   1.2 change directories to <RELEASE>/oracle_script/METADATA/SNAPSHOT_SITE

   1.3 run precreate_snapshot_inst.sh:

   > precreate_snapshot_inst.sh

   You must supply the Oracle password that the user will be created with.

   1.4 When the output in metaDataUser.out looks good, log out of the snapshot server.

2. On your snapshot database server, change directories <RELEASE>/oracle_script/METADATA/SNAPSHOT_SITE
3. Run create_snapshot_inst.sh:

   > create_snapshot_inst.sh

   Be prepared to supply:

   - *db name:* SID of local (snapshot) database
   - *dba name*: name of Oracle database administrator for this instance
   - *dba password*: Oracle password for the dba
   - *sys password*: Oracle password for the sys database user
   - *name of master database*: SID of master database
   - *dba name at master database*: name of Oracle database administrator for master instance

- *remote meta_data_user password*: password for meta_data_user which has been created on remote (master) installation.

Verify all file outputs as instructed.

4. In the same directory, run setup_additional_snapshots.sh. This script creates all necessary database links and synonyms between databases already in the system, and the new snapshot:

> setup_additional_snapshots.sh

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Be prepared to supply:

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- *n_snapshots:* The total number of *snapshots* now in the system, including this new one.
- *db name:* SID of local (snapshot) database
- *dba name*: name of Oracle database administrator for this instance
- *dba password*: Oracle password for the dba
- *meta_data_user_password*: password for meta_data_user on this installation.

In addition, *for each* database already in the system (the master, and all snapshots), be prepared to supply:

- other_db_name: SID of the remote database; master will be distinguished from snapshot(s) in the prompt
- *other_dba*: The name of the DBA at the just-prompted-for database.
- *other_psswd*: The password for this DBA.
- *other_meta_data_user_password*: Password for meta_data_user at this database.

If you are unable to supply the dba name, dba password, or meta_data_user password for any of these remote sites, as much processing as possible will be done without the information. Then, you must follow the instructions in RUN_REMOTE.TXT (in the same directory). This file will be re-written specifically for this run of setup_additional_snapshots.sh, so do not prematurely use this file; always run setup_additional_snapshots.sh first. If RUN_REMOTE.TXT does not exist, you provided all necessary information and need do nothing more than verify all link_to_*.out files.

5. Because of the way snapshot refreshes are implemented, database initialization parameters for the snapshot installation must be set correctly. As Unix user Oracle:

5.1 Run server manager and determine the value of JOB_QUEUE_PROCESSES and JOB_QUEUE_INTERVAL:

> svrmgrl

SVRMGR> connect internal

SVRMGR> show parameters job

JOB_QUEUE_PROCESSES must be 1 or more;
JOB_QUEUE_INTERVAL must be 60 or less.

5.2 If this is the case, you're done (skip to Step 6). If not, edit the file $ORACLE_HOME/../../admin/<dbname>/pfile/init<dbname>.ora, and add these parameters, or change their values; e.g.:

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JOB_QUEUE_PROCESSES = 1

JOB_QUEUE_INTERVAL = 60

5.3 Shutdown and restart the database: (First ensure that no users are connected.)

> svrmgrl

SVRMGR> connect internal

SVRMGR> shutdown

SVRMGR> startup pfile=<pfile>;

SVRMGR> exit

Where <pfile> is the full path to init<dbname>.ora which you just edited.

6. Update table ref_db_list.

a. Enter your local installation as session_no 1. Enter the full name (SID) of your installation, and the 3-character or less code that uniquely identifies it. If you are using Riverware, enter in the maxid and max_sync_id. (Refer to HDB Riverware DMI documentation for further information on the meaning of these columns.)

b. For every other installation in your supersystem (that is, for all other databases that you might need to automatically connect to in applications), enter the same information. Order of session numbers is not important other than session_no = 1 (your local database). You may also insert data for installations not in your supersystem; the Meta Data Application will not try to treat these installations as other snapshots.

c. For all installations which already exist in your supersystem, add into their ref_db_list (or have their DBA do it), the information for your local installation: the new snapshot which these installations must know about. If these already-existing installations are not given this information, the application may malfunction.

Island Installation

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1. Change directories to <RELEASE>/oracle_script/METADATA/MASTER_SITE/ISLAND_SITE
2. run create_island_inst.sh:

   > create_island_inst.sh

   Be prepared to supply:

   - *dba name*: name of Oracle database administrator for this instance
   - *dba password*: Oracle password for the dba

   Verify all file outputs as instructed.
3. Update table ref_db_list.

   3.1 Enter your local installation as session_no 1. Enter the full name (SID) of your installation, and the 3-character or less code that uniquely identifies it. If you are using Riverware, enter in the maxid and max_sync_id. (Refer to HDB Riverware DMI documentation for further information on the meaning of these columns.)

   3.2 You probably won't have any other installations to insert information for, but if you do, that's fine. Inserting a record in ref_db_list does not mean that the installation will be treated as a snapshot site by the Meta Data Application. Insert information as desired; session_no is not important after session_no 1 (your local installation).

User Permissions

The following should be noted regarding users and permissions for the Meta Data Application:

- No new users need to be created for the Meta Data Application (other than meta_data_user, which is created with the above scripts). It is best if each user runs the application as him/herself.
- Each user that will run the application can be granted either HDB_META_ROLE or REF_META_ROLE, depending on the level of permissions s/he should have. (HDB_META_ROLE can change data in the hdb_ and ref_ tables; REF_META_ROLE can change data only in the ref_ tables.) If the user will use the application for query only, neither of these roles need be granted.

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Removing a Snapshot Installation

If an HDB installation which is part of a larger supersystem is destroyed, take the following precautions:

- Destroy the database as recommended by Oracle
- Recommended but optional: Remove the record for this database from ref_db_list at all installations remaining in the supersystem.
- DO NOT change the session_no in the ref_db_list table of any of the remaining installations. That is, if you destroyed DB2, which has session_no 3 in one particular ref_db_list table, and there is a session_no 4 in that same table, DO NOT update session_no = 4 to session_no = 3, just because session_no 3 is "not being used". This could seriously impact the correct functionality of the application. Once a session_no is assigned to an installation, do not ever change it to a lower number. (Higher is fine.)
- Recommended but optional: Drop all database links and synonyms on the remaning installations which point to the destroyed installation. (There is no script to accomplish this, as this scenario is unlikely.)

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Removing a Master Installation

This scenario is probably less likely than removing a snapshot installation, but if it occurs:

- Destroy the database as recommended by Oracle.
- If all dependent snapshot are not also being destroyed:
  - Set up another installation as the master. (It could be a new database, or an already existing snapshot. This process is not documented and will be rather complex.)
  - Point all remaining snapshots to the new master.
- Recommended but optional: Remove the record for this database from ref_db_list at all installations remaining in the supersystem.
- DO NOT change the session_no in the ref_db_list table of any of the remaining installations. That is, if you destroyed DB2, which has session_no 3 in one particular ref_db_list table, and there is a session_no 4 in that same table, DO NOT update session_no = 4 to session_no = 3, just because session_no 3 is "not being used". This could seriously impact the correct functionality of the application. Once a session_no is assigned to an installation, do not ever change it to a lower number. (Higher is fine.)
- Recommended but optional: Drop all database links and synonyms on the remaning installations which point to the destroyed installation. (There is no script to accomplish this, as this scenario is unlikely.)

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