Chapter 2

CDB Maintenance

Section 1: CDB Creation

To create a CDB, the ADDS data administrator (a DBA or CDBA) must have both a physical schema (the design of the original database) and a plan for a logical schema (how the relation will look in ADDS). For the CDB to be created in this section, the data has the following physical schema:

```
DBMS type: SQL/DS
Relation name: WINES
Relation owner: ADDS

Field Name      Data Type    Nulls
WINENAME        CHAR(24)       N
WINEMAKER       CHAR(24)       N
VINTAGEYEAR     SMALLINT       Y
REGION          CHAR(24)       N
PARKERRATING    SMALLINT       Y
SHORTNOTE       CHAR(32)       N
```

Thus, the physical database WINES was created in SQL/DS and is owned by ADDS. (Note that CDBs can be created with physical databases owned by anyone. In this case, the WINES PDB is owned by ADDS so that it can be used in this tutorial.) The WINES PDB has six fields, made up of character and small integer data types, both of which can be handled easily by ADDS.

From this information, you can begin to design the CDB. One way to do this is to create a checklist to go by when you enter ADDL. A sample checklist is shown below:

```
CDB    : _____
LDB    : _____
PDB    : _____
RELDEF : _____

    PFIELDS                FIELDS
    _____               _____
    _____               _____
    _____               _____
    _____               _____
    _____               _____
```

From the information listed in the physical schema, you can already fill in some of the blanks. The PDB for the database is WINES and the PFIELDS, or physical database fields, are WINENAME, WINEMAKER, VINTAGEYEAR, REGION, PARKERRATING and SHORTNOTE. Following is how the checklist looks now:

```
CDB    :_____
LDB    :
PDB    :WINES
RELDEF :_____
```

```
       PFIELDS              FIELDS
       WINENAME             _____
       WINEMAKER            _____
       VINTAGEYEAR          _____
       REGION               _____
       PARKERRATING         _____
       SHORTNOTE            _____
```

You must develop a description for the remaining blanks in the checklist. For the purpose of this tutorial, call the CDB "TEST" (be sure the leave out the quote marks).

Since the physical database was developed in SQL/DS, call the logical database (LDB) "WINESQL". And since the PDB is a list of wines, call the resultant relation definition (RELDEF) "WINELIST".

Unlike the physical field (PFIELDS) names, the FIELDS names are limited to eight characters in ADDS. Thus, a PFIELDS name such as WINEMAKER or VINTAGEYEAR must be shortened. If the PFIELDS name is already eight characters or less, the same name can be used in the FIELDS description.

Thus, the checklist in its final form looks like this:

```
CDB    :TEST
LDB    :WINESQL
PDB    :WINES
RELDEF :WINELIST
```

```
       PFIELDS              FIELDS
       WINENAME             WINENAME
       WINEMAKER            WINEMAKR
       VINTAGEYEAR          VINTAGE
       REGION               REGION
       PARKERRATING         PARKRTG
       SHORTNOTE            SHORTNOT
```

To begin the creation of a CDB, start ADDL (for more information on entry to ADDL, see Chapter 1). After logging onto ADDL, you will see screen A000:

```
        A D D S   D A T A   D E F I N I T I O N              A000

              SELECT ACTION VIA PF KEY


  PF1/13  - ADDS DATA DICTIONARY (COMPONENT - ACTION    )

  PF2/14  - ADDS DATA DICTIONARY (ACTION    - COMPONENT)

  PF3/15  - CDB/VIEW AUTHORIZATION

  PF4/16  - USER AUTHORIZATION

  PF5/17  - UNLOAD USER AUTHORIZATION

  PF6/18  - UNLOAD CDB DEFINITION

  PF7/19  - EXECUTE COMMAND FILE

  PF8/20  - CHANGE DEFAULT OPTIONS

  PF10/22 - PLACE CDB COMPONENT ONLINE

  PF11/23 - SERVER DEFINITION



                                      PF9/21   HELP
                                      PF12/24  EXIT
```

Screen A000 is the "Main Menu" of ADDS. From here, you can initiate many ADDS functions, such as CDB creation, modification and deletion, user authorization and ADDS server definition.

Keep in mind that, depending upon your own authorization, you may not see all the options listed here on your screen. PF4/16 and PF5/17 are limited to DBAs shared to ADDS only, and PF10/22 and PF11/23 are limited to DBAs and DBAs shared to ADDS.

To begin CDB creation, you are given two choices: PF1/13 or PF2/14. Pressing PF1/13 will show you a list of data dictionary components (CDB, FIELDS, LDB, PDB, etc.), while PF2/14 will show you a list of ADDS actions (ADD, MODIFY, DELETE, etc.).

Pressing PF2/14 will show you screen C000:

```
        A D D S   D A T A   D E F I N I T I O N              C000

              CHOOSE ACTION VIA PF KEY


  PF1/13  - ADD

  PF2/14  - MODIFY

  PF3/15  - RENAME

  PF4/16  - DELETE

  PF5/17  - LIST



                                      PF9/21   HELP
                                      PF12/24  RETURN
```

This screen allows you to choose one of several actions available in ADDI. Those actions are:

PF1/13 - ADD
Allows you to create new CDBs or add information to existing CDBs.

PF2/14 - MODIFY
Allows you to modify existing information (except names of fields, etc.) in a CDB.

PF3/15 - RENAME
Allows you to rename data dictionary components (CDB, FIELDS, LDB, etc.).

PF4/16 - DELETE
Allows you to delete data dictionary components.

PF5/17 - LIST
Allows you to list CDB information.

Thus, to begin creation of a CDB, you must press PF1/13 (ADD). This takes you to screen C001:

```
        ·    A D D S    D A T A    D E F I N I T I O N              C001

         CHOOSE ADDS DATA DICTIONARY COMPONENT VIA PF KEY -- ADD


     PF1/13  - CDB     - COMPOSITE DATABASE

     PF2/14  - FIELDS  - LOGICAL DATA FIELDS

     PF3/15  - LDB     - LOGICAL DATABASE

     PF4/16  - PDB     - PHYSICAL DATABASE COMPONENTS

     PF5/17  - PFIELDS - PHYSICAL DATABASE FIELDS

     PF6/18  - RELDEF  - LOGICAL RELATION

     PF7/19  - RELFLD  - LOGICAL RELATION FIELDS

     PF8/20  - VIEWS   - VIEW DEFINITION


                                        PF9/21    HELP
                                        PF12/24   RETURN
```

This screen lists all the possible data dictionary components to which you can make additions, including VIEWS, which will be discussed later.

Step 1: CDB, FIELDS and LDB

ADDL lets you create a CDB in three steps, returning you to screen C001 at the end of each step. In the first step, you will give the CDB a name, list its logical fields and enter information about the logical database. Next, you will input information about the physical database components and the physical database fields. Finally, you will complete information about the logical relation and its fields.

To begin the creation of the CDB, press PF1/13 (CDB). This will take you to screen D000:

```
         A D D S    D A T A    D E F I N I T I O N              D000

           ENTER COMPOSITE DATABASE INFORMATION


   COMPOSITE DATABASE NAME  _____


   COMPOSITE DATABASE DESCRIPTION

    -
   _____


   _____


   PF1/13   DIRECTORY      PF2/14   EXECUTE      PF3/15   PREVIOUS SCREEN
   PF4/16   NEXT SCREEN
                                                 PF9/21   HELP
   PF10/22  FORWARD        PF11/23  BACKWARD     PF12/24  RETURN
```

When you enter this screen, the cursor will be positioned on the first space after the words "COMPOSITE DATABASE NAME". In this space, enter the name of the CDB to be created (the description of CDB you made in your checklist). Press the Return key and enter a description of the CDB.

For the CDB you set up in your checklist, the word "TEST" would be entered in the CDB name field. In the CDB description field, enter:

     A LIST OF WINES AND WINEMAKERS

Screen D000 should now look like this:

```
        A D D S   D A T A   D E F I N I T I O N              D000

            ENTER COMPOSITE DATABASE INFORMATION


   COMPOSITE DATABASE NAME TEST_____


   COMPOSITE DATABASE DESCRIPTION

   A LIST OF WINES AND WINEMAKERS_____


   _____


   PF1/13   DIRECTORY      PF2/14   EXECUTE     PF3/15   PREVIOUS SCREEN
   PF4/16   NEXT SCREEN
                                                PF9/21   HELP
   PF10/22  FORWARD        PF11/23  BACKWARD    PF12/24  RETURN
```

Now that you have given the CDB a name and a description, you can continue the CDB
creation process by pressing PF4/16 (NEXT SCREEN). This takes you to screen D001, where
you will input information about the logical fields in the CDB:

```
        A D D S   D A T A   D E F I N I T I O N              D001

            ENTER LOGICAL FIELDS INFORMATION


   COMPOSITE DATABASE NAME TEST_____

   FIELD    TYPE    LENGTH UNIT K N    DESCRIPTION
   NAME

   _____ _____ _____ _____ _ _  _____
                                     _____

   _____ _____ _____ _____ _ _  _____
                                     _____

   _____ _____ _____ _____ _ _  _____
                                     _____

   _____ _____ _____ _____ _ _  _____
                                     _____

   _____ _____ _____ _____ _ _  _____
                                     _____
                                        SCREEN    1 OF   1
   PF1/13   DIRECTORY      PF2/14   EXECUTE     PF3/15   PREVIOUS SCREEN
   PF4/16   NEXT SCREEN
   PF7/19   RIGHT PAGE                          PF9/21   HELP
   PF10/22  FORWARD        PF11/23  BACKWARD    PF12/24  RETURN
```

The name you gave the CDB will be listed in the blank next to "COMPOSITE DATABASE
NAME".

In this screen, you enter information about the logical fields (FIELDS) of the CDB. If it
seems illogical to name the logical fields at this point, consider that the FIELDS definition is
needed so the logical fields can be mapped by both the physical fields component (PFIELDS)
and relational fields component (RELFLD).

To fill in the correct information on this screen, you must refer to both your CDB checklist and the physical schema for the database. The first blank, under the heading "FIELD NAME", should be filled in with the name of the field. Type:

    WINENAME

Press the Tab Forward key to advance to "TYPE". This should be filled in with a data type that is compatible with ADDS. In the case of WINENAME, the "CHAR", or character, data type is compatible with ADDS, so type:

    CHAR

under "TYPE" and press the Tab Forward key to advance to "LENGTH". This is for the character length of the field, which in the case of WINENAME is 24. Type:

    24

and press the Tab Forward key to advance to "UNIT". This field indicates the unit of measure of the logical data field. Since there is no special unit of measure for WINENAME, no entry is needed here and you can press the Tab Forward key to advance to "K".

The "K" field allows you to indicate whether the logical field is an indexed or "key" field. Since the name of the wine is considered secondary to the winemaker, type an "N" for No under the field "K" and press the Tab Forward key.

This advances the cursor to the "N" field, which allows you to indicate whether nulls are allowed in the field. By checking the schema for the database, you'll find that nulls are not allowed in the WINENAME field. Type an "N" for No under the field "N" and press the Tab Forward key.

The cursor will advance to the beginning of the Description field, where you can enter a description of up to 60 characters. This is necessary because ADDS limits the FIELDS name to only eight characters. The description you enter can be as simple as:

    NAMES OF WINES

When you finish entering this information it should look something like this:

```
 ADDS  DATA  DEFINITION                          D001
        ENTER LOGICAL FIELDS INFORMATION


COMPOSITE DATABASE NAME TEST

FIELD      TYPE      LENGTH UNIT K N      DESCRIPTION
NAME
WINENAME  CHAR      24          N N  NAMES OF WINES
_____  _____   _____ ____ _ _  _____
                                     _____

_____  _____   _____ ____ _ _  _____
                                     _____

_____  _____   _____ ____ _ _  _____
                                     _____

_____  _____   _____ ____ _ _  _____
                                     _____
                                     SCREEN   1 OF   1
PF1/13   DIRECTORY      PF2/14    EXECUTE      PF3/15   PREVIOUS SCREEN
PF4/16   NEXT SCREEN
PF7/19   RIGHT PAGE                            PF9/21   HELP
PF10/22  FORWARD        PF11/23   BACKWARD     PF12/24  RETURN
```

Enter the name, information and description of the remaining fields the same way. When you run out of room on this page, you can get a new page by pressing the PF10/22 (FORWARD) key. To return to this page, press PF11/23 (BACKWARD). You can tell which page you are on by the screen number listing above PF3/15.

When finished, your first page should look like this:

```
    A D D S   D A T A   D E F I N I T I O N            D001
            ENTER LOGICAL FIELDS INFORMATION

    COMPOSITE DATABASE NAME TEST

    FIELD      TYPE      LENGTH UNIT K N     DESCRIPTION
    NAME
    WINENAME  CHAR       24   ____  N N  NAMES OF WINES

    WINEMAKR  CHAR       24   ____  Y N  NAMES OF WINE MAKERS

    VINTAGE   INTEGER  2      ____  N Y  VINTAGE YEAR OF WINE

    REGION    CHAR       24   ____  N N  REGION OF COUNTRY OR STATE

    PARKRTG   INTEGER  2      ____  N Y  RATING OF WINE (0-100)

                                        SCREEN    1 OF   2
    PF1/13    DIRECTORY    PF2/14   EXECUTE     PF3/15   PREVIOUS SCREEN
    PF4/16    NEXT SCREEN
    PF7/19    RIGHT PAGE                        PF9/21   HELP
    PF10/22   FORWARD      PF11/23  BACKWARD    PF12/24  RETURN
```

Notice that the names had to be shortened to eight characters in order to fit. Also notice that the SMALLINT data type in SQL/DS had to be changed to INTEGER in ADDS. Since SMALLINT does not exist in ADDS, it must be converted to a data type ADDS can read. For more information about data type conversion, refer to Appendix C: ADDL Data Field Types.

The information about the SHORTNOT field on page 2 should look like this:

```
    FIELD      TYPE      LENGTH UNIT K N     DESCRIPTION
    NAME
    SHORTNOT CHAR        32   ____  N N  QUALITATIVE RATING
```

This completes the information for the logical fields of the TEST CDB. However, there are two different kinds of logical field information you could enter. To see the other kind, press PF4/16 (NEXT SCREEN). This will take you to screen D003:

```
        A D D S   D A T A   D E F I N I T I O N              D003

              ENTER LOGICAL FIELDS INFORMATION FOR
                      AGGREGATE FIELDS


   COMPOSITE DATABASE NAME  TEST

   FIELD      TYPE        LENGTH UNIT K N     DIM       DESCRIPTION
   NAME

   _____  _____  _____ _____ _ _ _____  _____
                                                    _____

   _____  _____  _____ _____ _ _ _____  _____
                                                    _____

   _____  _____  _____ _____ _ _ _____  _____
                                                    _____

   _____  _____  _____ _____ _ _ _____  _____
                                                    _____

   _____  _____  _____ _____ _ _ _____  _____
                                                    _____

                                               SCREEN   1 OF   1
   PF1/13   DIRECTORY      PF2/14   EXECUTE    PF3/15   PREVIOUS SCREEN
   PF4/16   NEXT SCREEN
   PF7/19   RIGHT PAGE                         PF9/21   HELP
   PF10/22  FORWARD        PF11/23  BACKWARD   PF12/24  RETURN
```

This screen allows you to define arrays and other aggregate field types. It operates the same as
screen D002. However, in the TEST CDB we are creating, you will not need any aggregate
field types. To continue, press PF4/16 (NEXT SCREEN). This will take you to screen D005:

```
        A D D S   D A T A   D E F I N I T I O N              D005

                    ENTER LDB INFORMATION


   COMPOSITE DATABASE NAME  TEST

   FIELD     LDB     LDB    DBMS     DESCRIPTION
   NAME      LOC     PERF

   _____  _____  _____  _____  _____
                                   _____

   _____  _____  _____  _____  _____
                                   _____

   _____  _____  _____  _____  _____
                                   _____

   _____  _____  _____  _____  _____
                                   _____

                                               SCREEN   1 OF   1
   PF1/13   DIRECTORY      PF2/14   EXECUTE    PF3/15   PREVIOUS SCREEN
   PF4/16   NEXT SCREEN    PF5/17   SERVER DEF.
                                               PF9/21   HELP
   PF10/22  FORWARD        PF11/23  BACKWARD   PF12/24  RETURN
```

In this screen, you enter information about the logical database (LDB). The name of the CDB is already entered in the blank next to COMPOSITE DATABASE NAME. Refer to your checklist and enter the LDB name in the blank under FIELD NAME.

To find the LDBLOC (the name of the network node where the logical database is located), press PF5/17 (SERVER DEFINITION). This will take you to screen L091:

```
        A D D S   D A T A   D E F I N I T I O N              L091

            SERVER MODULE DEFINITONS


    LDBLOC      LDBDBMS            DESCRIPTION

    TRCVM       FOCUS          FOCUS SERVER AT TRCVM

    CTSVME      BFILE          BFILE SERVER AT CTSVME

    TRCVM       SQL            SQL SERVER AT TRCVM



                    PF2/14    SELECT

                                              PF9/21    HELP
    PF10/22   FORWARD    PF11/23   BACKWARD    PF12/24   RETURN
```

This screen lists all the servers available at your site. The server you select will differ according to the servers at your site. For the purpose of this tutorial, you should find an SQL server that is available at your site.

When you have found the proper server, write down both its LDBLOC and LDBDBMS names. You will need this to complete the information on the LDB screen. To return to screen D005, press PF12/24 (RETURN).

Once you have returned to screen D005, enter the LDBLOC under the column LDBLOC and next to the FIELD NAME you entered previously. Press the Tab Forward key twice and enter the LDBDBMS name under the column DBMS.

The LDBPERF column, which is a coefficient reflecting the relative performance of the LDB component, should be filled with a number between 1 and 99, depending upon the relative performance level of the DBMS. For instance, an SQL/DS database performs faster than a CMS data file. Thus, SQL/DS might have an LDBPERF of 5, while the CMS file might be 85. The smaller the number, the better the performance.

After entering the LDBDBMS, press Tab Forward and enter a description of the LDB.

When you are finished, the information should look similar to this:

```
    FIELD    LDB     LDB    DBMS        DESCRIPTION
    NAME     LOC     PERF
    WINESQL  TRC      5     SQL   WINES & WINEMAKERS IN SQL
```

Now that you are finished defining the name of the CDB, the LDB and its logical fields, press PF2/14 (EXECUTE) to save the entries you have made. In the top lefthand corner of the screen, you will see a flashing message:

```
    WAIT. . . . . EXECUTING!!
```

This indicates that your entries are being saved and checked for errors. If there are no errors, you will be returned to screen C001, where you began the CDB creation.