

**CA IDMS™**

# Scenario Guide

Release 18.5.00



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# Chapter 1: How to Expand the Employee Demo Database With Mixed Page Group Index Sets

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## Introduction

**Product: CA IDMS™**

**Release: 18.5**

This scenario describes how a database administrator can use mixed page group index sets to expand the employee demo database.

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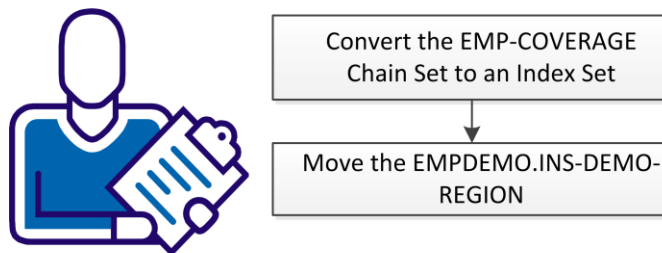
## Expanding your Database

Most CA IDMS customer databases have been in production for many years. Some have started to approach the limit for the maximum number of pages available to the database and need more database space. Perhaps business needs have changed since the database was initially set up, and the current structure is too limiting. Perhaps your company's data retention practices require storing records indefinitely. Any number of circumstances can impact your ability to create and retain new records.

This scenario describes how to expand the size of a CA IDMS database using the multiple page group index set (MPGI) enhancement to the multiple page group feature. This feature allows index sets to cross between areas that are defined in different segments using different page groups. The employee demo database that is provided by CA Technologies is used as the example in this document.

The following diagram shows the steps to follow to expand the size of the employee demo database:

### How to Expand the Employee Demo Database With Mixed Page Group Index Sets



Systems  
Programmer / DBA  
or  
Application DBA

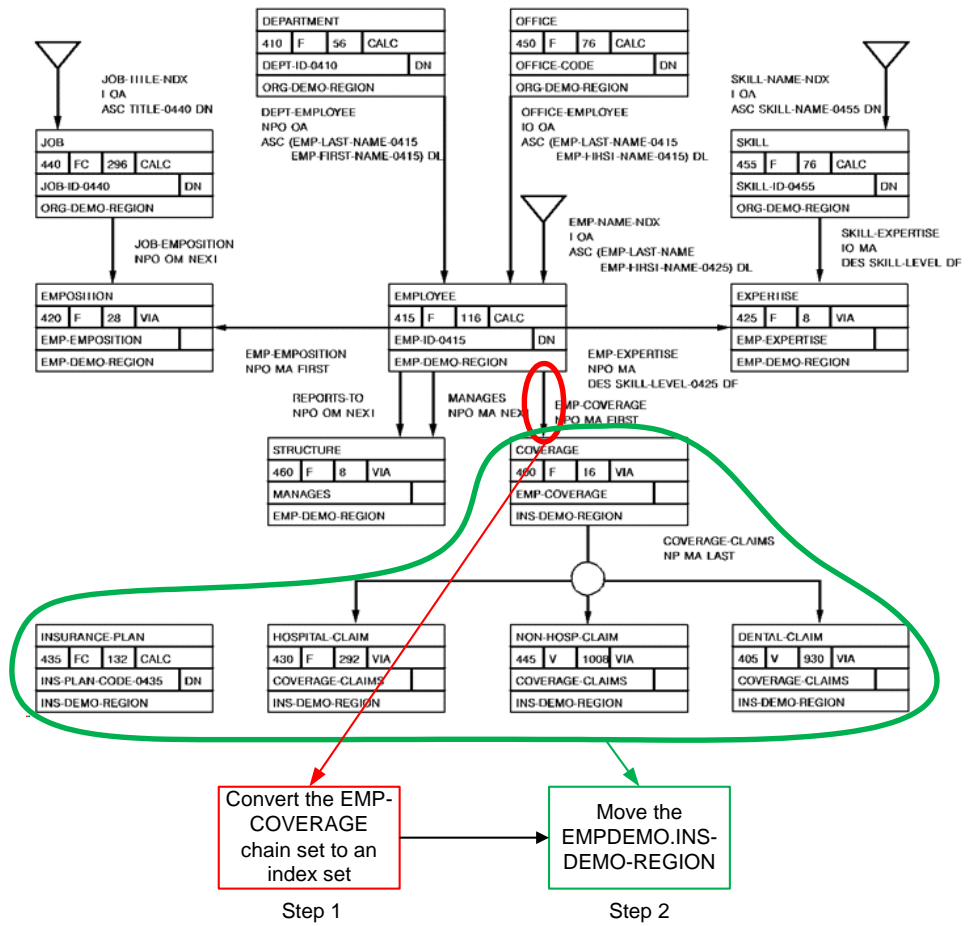
**Follow these steps:**

1. [Convert the EMP-COVERAGE chain set to an index set](#) (see page 10)
2. [Move the EMPDEMO.INS-DEMO-REGION](#) (see page 12)



The following diagram shows how these steps relate to the employee demo database in detail:

Expanding the Employee Demo Database



## Convert the EMP-COVERAGE Chain Set to an Index Set

In CA IDMS releases before Release 18.5, the MPG feature does not support referential sets that cross page group boundaries. However, you can now convert a chain set to a user-owned index set so you can use it with the MPGI feature enhancement. The MPGI feature enhancement allows you to have index sets that cross page group boundaries, opening up additional space for database growth.

When expanding the employee demo database as outlined in this document, you must convert the EMP-COVERAGE set from a chain set to a user-owned index set.

### Follow these steps:

1. Modify your schema definitions for record and set changes.
  - a. Create a new version of your schema based on the current schema. To get the source of your current schema you can punch it to a data set member using IDMSCHEM.
  - b. Once you have access to the source, convert the set mode of the EMP-COVERAGE set from chained set to user-owned indexed set. Update to a new version number. Leave the set name the same.

```
SET NAME IS EMP-COVERAGE  
ORDER IS FIRST  
MODE IS CHAIN
```

becomes

```
SET NAME IS EMP-COVERAGE  
ORDER IS FIRST  
MODE IS INDEX BLOCK CONTAINS 40 KEYS
```

- c. Validate the new schema by adding 'Validate.' at the bottom of the schema.

**Note:** For more information about compiling a schema, see the chapters 9 & 10 in the *CA IDMS Database Administration Guide*.

2. Create a new subschema for the implementation. Change the name of the subschema. The schema it references requires the updated version number you updated in an earlier step. In order to create a new subschema you can use IDMSUBSC to punch out a copy of your current subschema and load up a new version into your dictionaries.

**Note:** For more information about compiling a subschema, see the chapters 9 & 10 in the *CA IDMS Database Administration Guide*.

3. Write and execute a program that sweeps the area for each EMPLOYEE record, walks each EMP-COVERAGE set, and calls IDMSTBLU to perform a BUILD function. This program generates the input for Maintain index.

```
//RELDCTL DD DSN=user.reldctl,DISP=(NEW,CATLG),UNIT=nnnn,
//          VOL=SER=nnnnnn,
```

```
//SYS002 DD DSN= user.dbl002,DISP=(NEW,CATLG),
//          UNIT= tape002,SPACE=(TRK,1)
```

```
//SYSPCH DD DSN=&&sort,DISP=(NEW,PASS),UNIT=disk,
//          SPACE=(TRK,1),DCB=BLKSIZE=80
```

**Note:** Use the SYSPCH, SYS002, and RELDCTL work files that IDMSTBLU generates as input to the MAINTAIN INDEX utility (Step 6) SYS001, SYS003, and RELDCTL respectively.

**Note:** For a sample program, see [Appendix A: Sample Program to Call IDMSTBLU BUILD Function](#) (see page 14).

4. Run IDMSRSTC to produce the IDMSRSTT macros and assemble and link the IDMSRSTT module. These items are used as input for the Restructure step.

OLD SCHEMA NAME IS old-schema

NEW SCHEMA NAME IS new-schema.

**Note:** For more information about the IDMSRSTC program, see the *CA IDMS Utilities Guide*: Chapter 6 for general information and Chapter 7 for JCL examples.

For more information about the IDMSRSTT macro, see the *CA IDMS Utilities Guide*: Appendix B for general information and Chapter 7 for sample JCL.

5. Use the RESTRUCTURE utility on the affected areas to remove old pointer positions and add new ones.

```
RESTRUCTURE SEGMENT EMPDEMO USING old-ssc RSTTMOD IDMSRSTT;
```

**Note:** For information about the Restructure Utility, see Chapter 5 in the *CA IDMS Utilities Guide*. For sample JCL, see Chapter 7 in the *CA IDMS Utilities Guide*.

6. Execute MAINTAIN INDEX from SORT3.

```
MAINTAIN INDEX IN SEGMENT EMPDEMO USING new-ssc FROM SORT3 ;
```

**Note:** Use the SYSPCH, SYS002, and RELDCTL work files that IDMSTBLU generates as input to the MAINTAIN INDEX utility as SYS001, SYS003, and RELDCTL respectively. To see the full JCL for this step, see Chapter 7 in the *CA IDMS Utilities Guide*. For additional information about Maintain Index, see Chapter 5 in the *CA IDMS Utilities Guide*.

7. Test your applications using the test schema and subschema to verify that you can navigate the new sets and that they are populated correctly.
8. Update the original schema and subschema with the test versions.

The conversion of the chain set to a user-owned index set is complete.

## Move the EMPDEMO.INS-DEMO-REGION

This procedure, the final part of the process to expand the employee demo database, moves the EMPDEMO.INS-DEMO-REGION to a unique page group.

### Follow these steps:

1. Modify the DMCL for physical area and segment changes.
  - a. Create the INSDEMO segment.

**Note:** With the MPGL feature enhancement, you can assign segment INSDEMO to a different page group than the one to which EMPDEMO is assigned.

```
CREATE
SEGMENT INSDEMO
FOR NONSQL
PAGE GROUP 1
MAXIMUM RECORDS PER PAGE 255
;
```

- b. Modify the file and area assignments for INS-DEMO-REGION to associate them with the INSDEMO segment.

```
ALTER SEGMENT INSDEMO;
CREATE
FILE INSDEMO.INSDEMO-FILE
ASSIGN TO INSDEMO
DISP SHR
NONVSAM
;
```

```
CREATE
PHYSICAL AREA INSDEMO.INS-DEMO-REGION
WITHIN FILE INSDEMO
;
```

- c. Remove the file and area assignments for INS-DEMO-REGION that associate them with the EMPDEMO segment.

```
ALTER SEGMENT EMPDEMO;  
DROP  
PHYSICAL AREA EMPDEMO.INS-DEMO-REGION  
;  
DROP  
FILE EMPDEMO.INSDEMO  
;
```

2. Add the INSDEMO segment to DMCL

```
ALTER DMCL xxxxDMCL  
INCLUDE SEGMENT INSDEMO;
```

3. Generate the modified DMCL.

4. Modify all affected DBNAME table entries to allow mixed page group binds, if not already done, and include the new INSDEMO segment.

```
ALTER DBTABLE xxxxDBTB;  
ALTER DBNAME EMPDB  
MIXED PAGE GROUP BINDS ALLOWED;  
INCLUDE SEGMENT INSDEMO;
```

5. Generate the modified DBNAME table.

The employee demo database is now organized to allow for additional database space and maximum growth.

## Appendix A: Sample Program to Call IDMSTBLU BUILD Function

```
*RETRIEVAL
*NO-ACTIVITY-LOG
*DMLIST
IDENTIFICATION DIVISION.
PROGRAM-ID.      CTICOBL.
ENVIRONMENT DIVISION.
IDMS-CONTROL SECTION.
PROTOCOL MODE IS BATCH DEBUG
                IDMS-RECORDS WITHIN WORKING-STORAGE.

DATA DIVISION.

SCHEMA SECTION.
*****
*EMPSS01 = OLD-SSC
*EMPSCHM = OLD-SCHEMA
*****
DB EMPSS01 WITHIN EMPSCHM VERSION 100.

WORKING-STORAGE SECTION.
01 MISC-WORK-FIELDS.
    02 WS-END-OF-MEM1-SW    PIC X(01) VALUE 'N'.
    88 END-OF-MEM1         VALUE 'Y'.
    02 WS-END-OF-OWN1-SW   PIC X(01) VALUE 'N'.
    88 END-OF-OWN1         VALUE 'Y'.
    02 WS-END-OF-MEM2-SW   PIC X(01) VALUE 'N'.
    88 END-OF-MEM2         VALUE 'Y'.
    02 WS-END-OF-OWN2-SW   PIC X(01) VALUE 'N'.
    88 END-OF-OWN2         VALUE 'Y'.
*****
*   EMPSS02 -> NEW-SSC
*   EMPDEMO -> DBNAME
*   R180DMCL -> DMCL
*****
01 SUBSCHEMA-TYPE.
    02 FILLER    PIC S9(8)  COMP VALUE +1.
    02 FILLER    PIC X(8)   VALUE IS 'EMPSS02'.
    02 FILLER    PIC X(8)   VALUE IS 'EMPDEMO'.
    02 FILLER    PIC X(8)   VALUE IS 'R180DMCL'.

01 OWNER-TYPE.
    02 FILLER    PIC S9(8)  COMP VALUE +2.
    02 OWNER-FUNCTION PIC X(8).
    02 OWNER-SET   PIC X(16).
    02 OWNER-DBKEY  PIC S9(8)  COMP.

01 MEMBER-TYPE.
```

```

02 FILLER      PIC S9(8)  COMP VALUE +3.
02 MEMBER-REC  PIC X(16).
02 MEMBER-DBKEY PIC S9(8)  COMP.
02 MEMBER-NUM-SETS PIC S9(8)  COMP VALUE IS +1.
02 MEMBER-SET   PIC X(16).
02 MEMBER-OWN-DBK PIC S9(8)  COMP.

01 EOF-TYPE.
  02 FILLER      PIC S9(8)  COMP VALUE IS -1.

*
PROCEDURE DIVISION.
*
0010-INITIALIZATION SECTION.
*
  MOVE 'CTICOBL ' TO PROGRAM-NAME.
  BIND RUN-UNIT.
  PERFORM IDMS-STATUS.
  BIND EMPLOYEE.
  PERFORM IDMS-STATUS.
  BIND COVERAGE.
  PERFORM IDMS-STATUS.
  READY USAGE-MODE IS RETRIEVAL.
  PERFORM IDMS-STATUS.
  CALL 'IDMSTBLU' USING SUBSCHEMA-TYPE.
*****
* MAIN PROCESSING LOOP
*EMPLOYEE  -> OWNER RECORD
*EMP-DEMO-REGION -> OWNER AREA
*****
  OBTAIN FIRST EMPLOYEE WITHIN EMP-DEMO-REGION.
  IF DB-STATUS-OK
    PERFORM 2200-REPORT-OWNER THRU 2299-EXIT
    UNTIL END-OF-OWN2
  ELSE
    DISPLAY 'NO EMPLOYEES IN DB '
      (ERROR STATUS: ' ERROR-STATUS ').
  CALL 'IDMSTBLU' USING EOF-TYPE.
  FINISH.
  PERFORM IDMS-STATUS.
  GOBACK.

*****
2200-REPORT-OWNER.
  MOVE 'N' TO WS-END-OF-MEM2-SW.

*****
*EMP-COVERAGE  -> SET NAME
*****

```

```
MOVE 'BUILD ' TO OWNER-FUNCTION.  
MOVE 'EMP-COVERAGE ' TO OWNER-SET.  
MOVE DBKEY TO OWNER-DBKEY.  
CALL 'IDMSTBLU' USING OWNER-TYPE.
```

```
*****  
*COVERAGE -> MEMBER RECORD  
*EMP-COVERAGE -> SET NAME  
*****  
OBTAIN FIRST COVERAGE WITHIN EMP-COVERAGE.  
IF DB-STATUS-OK  
PERFORM 2300-REPORT-MEM THRU 2399-EXIT  
UNTIL END-OF-MEM2  
ELSE  
DISPLAY ' NO COVERAGES FOR THIS EMPLOYEE '  
(ERROR STATUS: ' ERROR-STATUS ').
```

```
2280-GET-NEXT-OWN.  
*****  
*EMPLOYEE -> OWNER RECORD  
*EMP-DEMO-REGION -> OWNER AREA  
*****  
OBTAIN NEXT EMPLOYEE WITHIN EMP-DEMO-REGION.  
IF ERROR-STATUS = '0307'  
MOVE 'Y' TO WS-END-OF-OWN2-SW.
```

```
2299-EXIT.  
EXIT.
```

```
*****  
*COVERAGE -> MEMBER RECORD  
*EMP-COVERAGE -> SET NAME  
*****  
2300-REPORT-MEM.  
MOVE 'COVERAGE ' TO MEMBER-REC.  
MOVE 'EMP-COVERAGE ' TO MEMBER-SET.  
MOVE OWNER-DBKEY TO MEMBER-OWN-DBK.  
MOVE DBKEY TO MEMBER-DBKEY.  
CALL 'IDMSTBLU' USING MEMBER-TYPE.
```

```
*****  
*COVERAGE -> MEMBER RECORD  
*EMP-COVERAGE -> SET NAME  
*****  
2380-GET-NEXT-COVERAGE.  
OBTAIN NEXT COVERAGE WITHIN EMP-COVERAGE.  
IF ERROR-STATUS = '0307'  
MOVE 'Y' TO WS-END-OF-MEM2-SW.
```



```
2399-EXIT.  
EXIT.  
*  
*  
COPY IDMS IDMS-STATUS  
IDMS-ABORT SECTION.  
IDMS-ABORT-EXIT.  
EXIT.
```



# Chapter 2: How to Use SQL Web Connect

---

## Introduction

**Product: CA IDMS™**

**Release: Release 18.5.00**

This scenario describes how a Systems Programmer / DBA or Application DBA can use the SQL Web Connect feature to implement SQL, ODBC, and JDBC connectivity technology.

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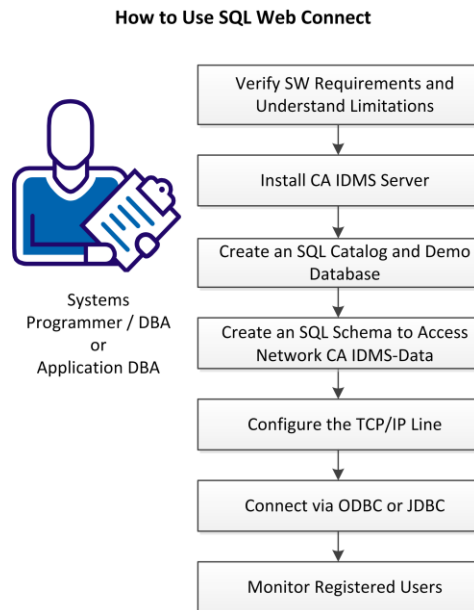
## Using SQL Web Connect

Today's users need to be able to access their data in real time, using modern interfaces. As a CA IDMS DBA, you can facilitate access to both your network and native-SQL CA IDMS-data using the CA IDMS SQL Web Connect feature. SQL Web Connect provides you with the interfaces you need to ensure your CA IDMS systems seamlessly integrate with your application architecture and business requirements.

This scenario explains how to use the SQL Web Connect feature so that you can utilize SQL, ODBC, and JDBC connectivity technology with CA IDMS to this end. Using SQL Web Connect is ideal for purposes such as:

- Prototyping
- Pilot projects
- Application development
- Low-volume application usage
- Business intelligence, analytics, and reporting

The following diagram shows the steps to follow when using the SQL Web Connect functionality:



**Follow these steps:**

1. [Verify SW Requirements and Understand Limitations](#) (see page 21)
2. [Install CA IDMS Server](#) (see page 22)
3. [Create an SQL Catalog and Demo Database](#) (see page 23)
4. [Create an SQL Schema to Access Network CA IDMS-Data](#) (see page 25)
5. [Configure the TCP/IP Line](#) (see page 27)
6. [Connect via ODBC or JDBC](#) (see page 29)
7. [Monitor Registered Users](#) (see page 35)

## Verify SW Requirements and Understand Limitations

The SQL Web Connect feature works by tracking product usage across all CVs for a given LPAR. Two concurrent users of both CA IDMS SQL and CA IDMS Server ODBC/JDBC technology are permitted. When two simultaneous users of either IDMS SQL or ODBC/JDBC are registered, any subsequent attempt to use that technology will result in either a failure or an LMP warning, as dictated by the current RHDCPINT product bit setting as well as the presence of the appropriate LMP key. You can continue to use the RHDCPINT module to prevent unwanted product usage above the usage that is permitted by the SQL Web Connect feature.

On z/OS, usage is tracked using IBM's Product Registration facility. Calls to the IBM Product Registration facility are handled using the LMP Seat License Registration Service within CA Common Services (CCS). The CA LMP Seat License Registration Service is a relatively new component within CCS. The CA Common Services releases that contain the Seat License Registration Service are:

- CCS r14.1 (or greater)
- CCS r14.0 with PTF RO33298
- CCS r12.0 with PTF RO40748

No action is needed in order to activate the SQL Web Connect feature. Usage tracking automatically takes place when the following two conditions are fulfilled:

- An ODBC/JDBC connection or an SQL session (or both) is established.
- The system determines that you do not have an LMP key for the product in use (in other words, you are not licensed for the product).

No LMP warnings occur for connections and sessions that are established under SQL Web Connect.

### Limitations of Use

The following limitations apply to the usage of the SQL Web Connect feature:

- SQL Web Connect cannot be used to limit SQL and/or ODBC/JDBC usage for users who have fully licensed CA IDMS SQL and CA IDMS Server. The SQL Web Connect feature only operates when the user does not have full licenses for either the CA IDMS SQL or CA IDMS Server.
- Some use-cases cannot be covered using SQL Web Connect. Full licenses for CA IDMS SQL and CA IDMS Server are needed for:
  - More than two concurrent users of the same product on an LPAR.
  - Pre-compiled SQL in CA ADS, COBOL, PL/1, and assembler programs.

## Install CA IDMS Server

The use of the JDBC and ODBC communication interfaces used with the SQL Web Connect functionality requires the installation of CA IDMS Server. If you have already installed CA IDMS Server, verify that the version you are using is compatible with the communication interface you plan to use:

- JDBC users must run CA IDMS Server r16.0 or greater.
- ODBC users must run CA IDMS Server r17.0 or greater.

**Note:** The version (32-bit or 64-bit) of the ODBC driver you need to install depends on the bit version of the ODBC application you intend to run. The bit version of the driver and the ODBC application must match.

If you need to install the CA IDMS Server client component, acquire and install the software from one of the following sources:

1. [From CA Support Online](#) (see page 22)
2. [From the CA IDMS Installation PAX File](#) (see page 23)

### Install CA IDMS Server from CA Support Online

Download CA IDMS Server from CA Support Online and install the application.

**Follow these steps:**

1. Browse to the Download Center page on CA Support Online, at: <https://support.ca.com/>.
2. Select the product 'CA IDMS/DB– MVS' and the latest version/release number from the drop-down lists and click the Go button.
3. On the following screen, click the Download function next to the 'IDMS SRVR CD ZIP FILE ESD ONLY' item.
4. Extract the installation files after the ZIP file is downloaded.
5. Invoke the setup.exe file to initiate the installation.

**Note:** You do not need to install the CCI component when you install IDMS Server. The CCI communications interface is not supported with SQL Web Connect.

**Note:** For more information about the configuration and usage of CA IDMS Server, see the *CA IDMS Server User Guide*.

## Install CA IDMS Server from CA IDMS Installation PAX File

Install CA IDMS Server from the CA IDMS installation PAX file, which contains the install image for the latest version of CA IDMS Server.

1. Invoke the installation of CA IDMS. When the SMP/e portion of the CA IDMS installation is complete, the install image for CA IDMS Server is available in the CAGJDATV SMP library under member IDSERV17.
2. FTP this member (in BINARY mode) to an appropriate location on your hard drive.
3. Extract the installation files after the ZIP file is downloaded.
4. Invoke the setup.exe file to initiate the installation.

**Note:** You do not need to install the CCI component when you install IDMS Server. The CCI communications interface is not supported with SQL Web Connect.

**Note:** For more information about the configuration and usage of CA IDMS Server, see the *CA IDMS Server User Guide*.

## Create an SQL Catalog and Demo Database

To use SQL Web Connect, an SQL Catalog needs to be available for your system.

**Note:** If you have created an SQL Catalog for your system at an earlier point, for example, for use with CA IDMS Visual DBA, you can skip this step.

When creating the SQL Catalog, you can also create and populate the SQL version of the Employee Skills Demo Database on one or more of your CVs. Creating a Demo Database lets you verify the validity of the SQL Web Connect functionality using non-production native SQL data. You are free to run SELECT, DROP, UPDATE & INSERT commands against this database without fear of corrupting sensitive data. Alternatively, you can [create an SQL Schema](#) (see page 25), which allows you to access your network CA IDMS-data using SQL.

**Follow these steps:**

1. Select either CAISAG or CA Chorus Software Manager (CA CSM) to create the SQL Catalog and, optionally, the Demo Database. If you select to use CAISAG, continue with step 2. If you select to use CA CSM (the recommended method), continue with step 3.
2. Create the SQL Catalog and Demo Database using CAISAG.

Several VARBLIST configuration variables assist you in the creation of an SQL Catalog and Demo Database on your system. Use the appropriate variables depending on whether you are running a 'Base', 'Upgrade' or 'Add-On' configuration:

- a. Use the following variables for a 'Base' configuration of CA IDMS:
  - SYSSQL = YES—Governs the creation of System SQL catalog.
  - SQLDEMO = YES—Governs the creation of the SQL Demo Database.
- b. Use the following variables for an 'Upgrade' configuration of CA IDMS:
  - UPGSYSQL = YES—Governs the creation of the System SQL catalog.
  - UPGQDEMO = YES—Governs the creation of the SQL Demo Database.
- c. If you have already upgraded your CA IDMS system, but would like to create an SQL Catalog, SQL Demo Database, or both 'after the fact', perform an 'Add-On' installation to accomplish this task. Use the following variables for an 'Add-On' configuration of CA IDMS:
  - BEGINMEM = SQL—Sets the prefix for generated members to 'SQL'.
  - ADDSYSQL = YES—Governs the creation of System SQL catalog.
  - ADDQDEMO = YES—Governs the creation of the SQL Demo Database.

When the CAISAG job is run, several new SQL-prefixed members are added into your CAISAG configuration library. The following jobs contain the steps necessary to add the SQL catalog and Demo Database to your system for an 'Add-On' installation:

- SQL05—This job allocates the SQL catalog and Demo Database files.
- SQL08—This job builds the new SQL catalog.
- SQL10—This job formats and populates the new SQL catalog.
- SQL15—This job builds, formats, and populates the new SQL Demo Database.

**Note:** For more information about modifying the VARBLIST member, see the [SQL Web Connect VARBLIST Variables](#) (see page 36) section.



3. Create the SQL Catalog and Demo Database using CA Chorus Software Manager (CA CSM). The process of adding the SQL catalog and Demo Database is described within the CA CSM interface itself.

When using CA CSM, you have the same options/variables available for adding the SQL catalog and SQL Demo Database as described in the preceding step for CAISAG.

**Note:** CA CSM refers to an 'Add-On installation' as an 'Update installation' (or 'Update configuration').

**Important!** The addition of the SQL Catalog, SQL Demo Database, or both requires updates to both the global DMLC and Database name Table (DBTB) of your CV. These updates are performed automatically in the job steps that are generated by both CAISAG and CSM. Backups of both the global DMCL and DBTB are also performed during these job steps.

**Note:** Specify 'NO' for the CA IDMS SQL Option if you do not have a license for it. Specifying 'NO' creates an RHDCPINT module without SQL selected and assembles the IDMSCINT macro with SQL=NO. New configuration variables (detailed above) allow you to select whether to install the SYSSQL catalog component and the SQL Demo Database. These two choices are independent of your product selection. This process allows you to install the SYSSQL catalog component and the SQL Demo Database even if you do not have a license for the CA IDMS SQL Option. The SYSSQL catalog component is a prerequisite for the SQL Demo Database. The SYSSQL database uses 600 tracks (40 CYL) and the SQL Demo Database uses 25 tracks (<2 CYL).

## Create an SQL Schema to Access Network CA IDMS-Data

To enable SQL access to a network database it is necessary to create an SQL Schema. The SQL Schema is defined in the SQL Catalog and identifies:

- The network schema
- The database instance (optional)

No definitions other than the schema are stored in the SQL Catalog.

**Note:** Even if you do not wish to access your IDMS network data using SQL, we nevertheless recommend that you complete this step, as the example schema you create here is used further on in this scenario when [connecting via JDBC or ODBC](#) (see page 29).

**Follow these steps:**

1. Bring up OCF, the CA IDMS online command facility.
2. Verify that you have the necessary rights to create the SQL Schema:
  - The CREATE privilege on the schema named in the statement.
  - The USE privilege on the non-SQL schema.
  - If you specify DBNAME, you must have USE privilege on the database; if you do not specify DBNAME or specify a value of NULL, you must have DBADMIN privilege on DBNAME SYSTEM.
3. Type an SQL CREATE SCHEMA statement that identifies the network schema and database instances as follows:

```
CREATE SCHEMA schema-name
FOR NONSQL SCHEMA
nonsql-schema specification
DBNAME nonsql-database-name;
```

Set the following parameters to appropriate values:

- *schema-name*—Specifies the name of the schema being created. *schema-name* must be a 1- through 18-character name that follows the conventions for SQL identifiers. *schema-name* must be unique within the dictionary.
- *nonsql-schema specification*—Identifies the non-SQL-defined schema to associate with the SQL schema.
- *nonsql-database-name*—Identifies the database containing the data described by the non-SQL-defined schema. *nonsql-database-name* must be a segment name or a database name that is defined in the database name table. Omit this line if you want to access multiple physical instances with the same logical definition.

For example, to create an SQL Schema against the network version of the Employee Demo Database, submit the following statement:

```
CREATE SCHEMA EMPSQL
FOR NONSQL SCHEMA
APPLDICT.EMPSCHM V 100
DBNAME EMPDEMO;
```

4. Submit the CREATE SCHEMA statement.

All records in the schema are now automatically accessible as tables, and their elements are visible as columns.

5. Issue a SELECT statement using the newly created SCHEMA to test that SQL access is functioning correctly. For example, to retrieve all employees using the EMPSQL Schema created above, use the following code:

```
SELECT * FROM EMPSQL.EMPLOYEE;
```

**Note:** For more information about SQL schemas and accessing non-SQL-defined databases, see:

- The description of the 'Create Schema' statement and the information about the FOR NONSQL SCHEMA clause contained within that description in the *CA IDMS SQL Reference Guide*.
- The 'Accessing Non-SQL Defined Databases' section in the *CA IDMS SQL Programming Guide*.

## Configure the TCP/IP Line

Both the ODBC and JDBC Drivers require that a TCP/IP line be defined on the target CA IDMS CV. Sample SYSGEN syntax for the installation of a TCP/IP line is provided below, as well as a listener definition for the CA IDMS Server listener. All Program and Task definitions are also provided.

Run the online or batch SYSGEN compiler using the sample syntax provided below to update your CV with the necessary components.

**Note:** You need to make changes to the sample syntax to account for site-specific implementation. See the comments at the beginning of the sample syntax.

**Note:** Users who have already defined the TCP/IP line as well as the CA IDMS Server listener should skip this step.

### Sample SYSGEN Syntax

\*+ SAMPLE SYSGEN INPUT TO DEFINE IDMS JDBC TYPE 4 and ODBC Wire Protocol Listener

\*+

\*+ 1) MODIFY XX TO SYSTEM NUMBER ON FIRST LINE AND

\*+ IN PTERM TCPJSRV PORT DEFINITION.

\*+

\*+ 2) MODIFY THE REPEAT COUNT FOR PTERM TCP0001 (OPTIONAL).

\*+

DIS SYSTEM XX WITH NONE.

\*+ BUILT-IN "DUMMY" PROGRAM IN DLOddb

ADD PROGRAM RHDCNP3J

LANGUAGE ASSEMBLER

REENTRANT.

\*+ BUILT-IN LISTENER TASK IN DLOddb

\*+ INTERNAL SO IT CANNOT BE INVOKED AT A TERMINAL

\*+ ATTACHED BEFORE SIGNON

\*+ MUST BE AUTHORIZED FOR ALL USERS

ADD TASK RHDCNP3J

INTERNAL

INVOKES RHDCNP3J

INACTIVE INTERVAL IS OFF

RESOURCE TIMEOUT INTERVAL IS OFF

EXTERNAL WAIT IS SYSTEM.

\*+ BUILT-IN DEFAULT TASK IN DLOddb

\*+ INTERNAL SO IT CANNOT BE INVOKED AT A TERMINAL

\*+ ATTACHED AFTER SIGNON (OPTIONALLY)

\*+ AUTHORIZED FOR SPECIFIC USERS

ADD TASK IDMSJSRV

INTERNAL

INVOKES RHDCNP3J

INACTIVE INTERVAL IS OFF

RESOURCE TIMEOUT INTERVAL IS OFF

EXTERNAL WAIT IS SYSTEM.

\*+ System-Wide TCP/IP statement options

ADD TCP/IP

DEFAULT STATUS IS ON

DEFAULT TCP\_NODELAY OPTION IS OFF

DEFAULT STACK IS DEFAULT

MAXIMUM NUMBER OF SOCKETS IS DEFAULT

MAXIMUM NUMBER OF SOCKETS PER TASK IS DEFAULT

PLUGIN MODULE IS RHDCD1IP

SERVICES FILE IS OFF.

```
*+ LINE DEFINITION FOR MVS SOCKET INTERFACE
ADD LINE TCPIP
  TYPE IS SOCKET
  MODULE RHDCD1IP.

*+ LISTENER DEFINITION USING CONVENTION
*+ THAT PORT = 3700 + SYSTEM NUMBER
*+ (3709 IS THE DEFAULT PORT USED BY THE JDBC DRIVER
*+ AND REGISTERED FOR IDMS WITH IANA)
ADD PTERM TCPJSRV
  TYPE IS LISTENER
  PORT IS 37XX
  BACKLOG IS 100
  TASK IS RHDCNP3J
  MODE IS SYSTEM
  PARM IS 'TASK=IDMSJSRV'.

ADD LTERM TCLJSRV
  PTERM IS TCPJSRV.

*+ PTERM DEFINITION FOR 10 SOCKETS
ADD PTERM TCP0001
  TYPE IS BULK
  REPEAT COUNT IS 9.

ADD LTERM TCL0001
  PTERM IS TCP0001.

GENERATE.
```

## Connect via ODBC or JDBC

The SQL Web Connect feature provides connectivity using the ODBC and JDBC drivers within CA IDMS Server. JDBC users can use the JCF Demo application provided with their CA IDMS Server installation to test JDBC connectivity. ODBC users can use the CA Visual Express application to test ODBC connectivity. Both of these tools are free with your installation of CA IDMS Server that is provided under SQL Web Connect.

Continue with the appropriate section:

- [Connect via ODBC](#) (see page 30)
- [Connect via JDBC](#) (see page 34)

## Connect via ODBC

Create an ODBC data source and access your data using CA Visual Express (an ODBC-enabled end-user reporting tool).

### Follow these steps:

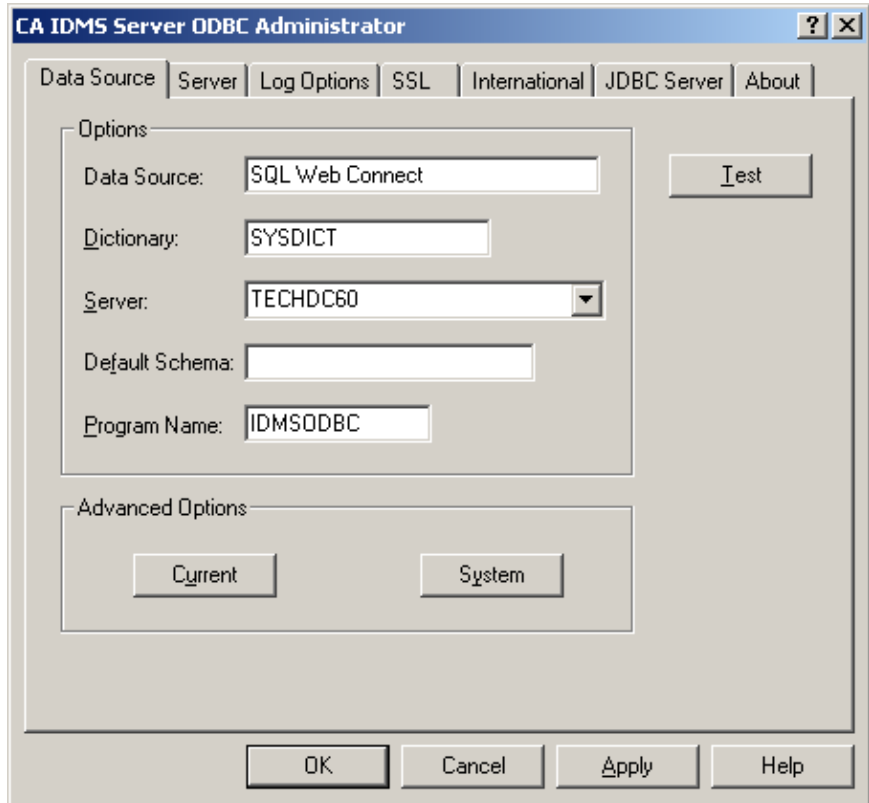
1. Create your ODBC data source:

- Go to Start, All Programs, CA, CA IDMS Server r17 and select ODBC Administrator.

The ODBC Data Source Administrator dialog opens.

- Click on the System DSN tab and add a data source using the CA IDMS driver.

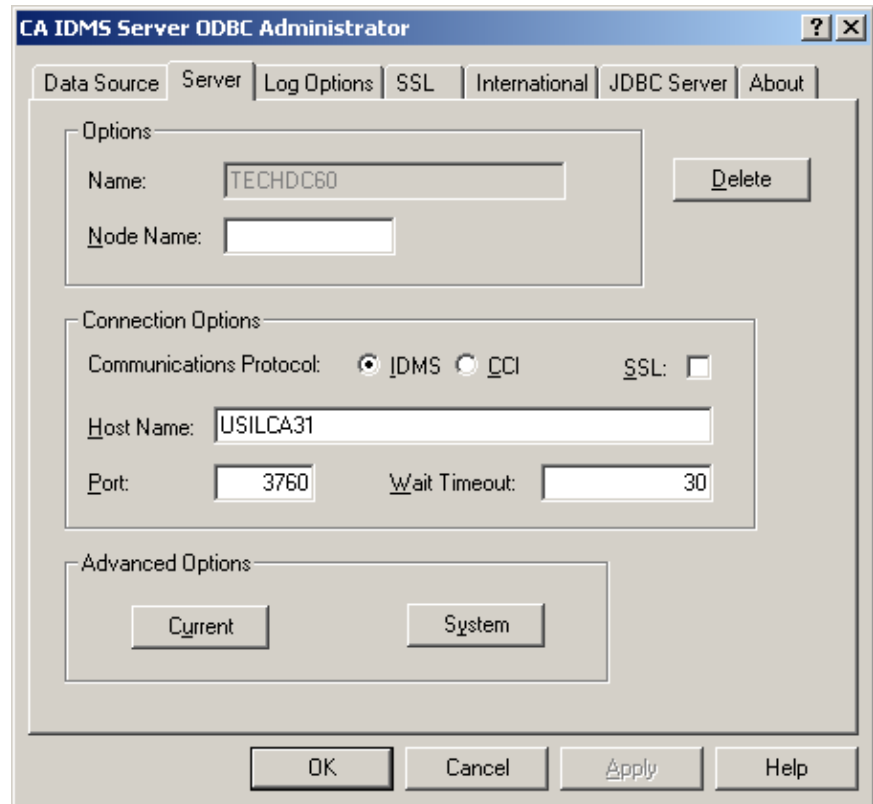
The CA IDMS Server ODBC Administrator dialog opens:



- Specify the Data Source (of your choice).  
A Data Source corresponds to an application running on a CV.
- Specify the Dictionary.
- Specify the Server (of your choice).  
A Server corresponds to a CA IDMS CV.

**Note:** Default values can be used for all other fields.

- Go to the Server tab. The following dialog is displayed:



- Configure your data source to use the 'IDMS' communications protocol
- Specify the Host Name.
- Specify the Port.
- Specify a Wait Timeout of 30.

This sets the amount of time that the client waits for a response from the IDMS CV. In most cases, 30 seconds is satisfactory.

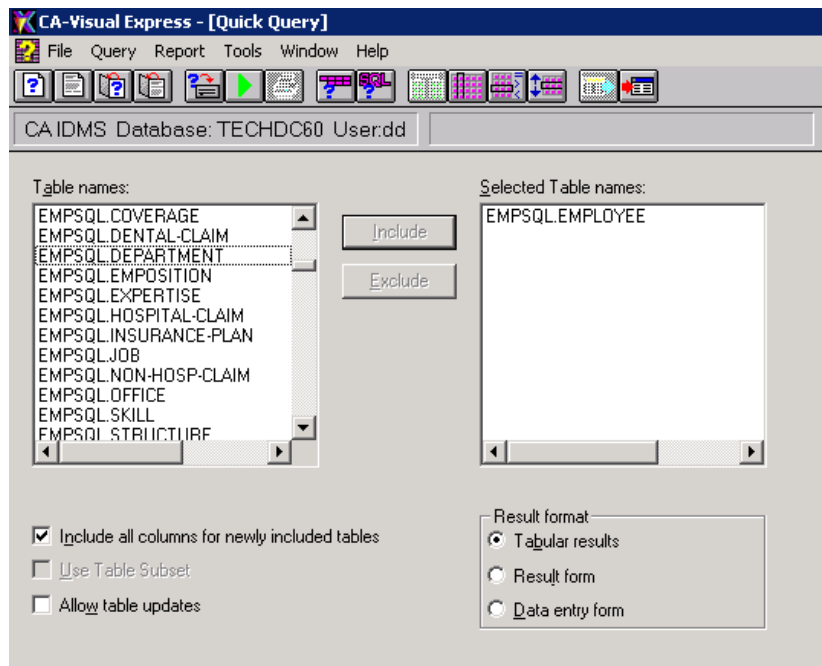
**Note:** For more information on defining ODBC data sources, see the Defining Data Sources section in the *CA IDMS Server User Guide*.

2. Download and install the CA Visual Express reporting tool:
  - Browse to the Download Center page on CA Support Online, at: <https://support.ca.com/>.
  - Select the product 'CA Visual Express Reporter - MS WINDOWS' and the latest version/release number from the drop-down lists and click the Go button.
  - On the following screen, click the Download link next to the 'Advantage CA-Visual Express Reporter CD' item.
  - The installation of CA Visual Express is provided as a disk (ISO) image. You need to have appropriate software on your machine to read this file. Free (or trial) software is available over the Internet if you do not have an ISO-image reader on your PC. Some examples of ISO reader software include IsoBuster, Virtual CD and PowerISO.
  - Invoke the setup.exe file to initiate the installation. Choose the 'Typical' installation option.
3. Run the CA Visual Express reporting tool:
  - Go to Start, Programs, Computer Associates, Advantage, CA Visual Express Reporter 1.5, CA Visual Express Reporter to start CA Visual Express.  
The CA-Visual Express application window opens.
  - Establish a connection:
    - Go to File, Connect to Database...
    - Select the Machine Data Source tab.
    - Select the Data Source name you created in step 1.
    - Fill in User ID and Password credentials in the CA IDMS DriverConnect dialog.

**Note:** The Account field is optional and does not need to be filled in.



- Build your Query. CA Visual Express (VE) has the ability to dynamically build your SQL statements for you. Alternatively, users can code these statements manually and execute them under VE. In this example, we will let VE build our SQL statements using the 'Quick Query' facility:
  - Go to File, New Query, Quick Query. VE will build a list of tables that you have access to on your system. In this example we will use our newly created [SQL schema](#) (see page 25) (EMPSQL), along with the 'EMPLOYEE' table for the purpose of validating our use of the ODBC API.
  - Select the EMPSQL.EMPLOYEE table from the Table names pane, and click on the Include button. This action moves the EMPSQL.EMPLOYEE table over to the Selected Table names pane:



- Various selection criteria can be added to your query, along with Joins, etc. We will not use these features of VE in this scenario.

**Note:** For more information on the use of this tool, see the *Advantage CA-Visual Express Reporter User Guide*.

- Go to Query, Run to run your query.  
VE displays the EMPSQL.EMPLOYEE table.

## Connect via JDBC

Configure JDBC and access your data using JCF (the Java Command Facility).

### Follow these steps:

1. Run the JCF reporting tool. JCF is automatically installed when CA IDMS Server is installed. To bring up JCF, go to Start, All Programs, CA, CA IDMS Server r17 and select JCF Demo App.

The IdmsJcf - CA IDMS Java Command Facility window is displayed.

2. Select the Connect button on the top right of the window.

The IdmsJcf Connection Information dialog is displayed:



3. Fill in the following fields of the dialog:
  - Specify the User ID and Password. Use an account that is present on the CV you are connecting to.
  - Specify the Database. Use a Type-4 JDBC connection URL format. The format for a JDBC Type-4 connection is:  

```
jdbc:idms://ServerName:Port/DatabaseName
```

Replace *ServerName*, *Port* and *DatabaseName* with appropriate values.
  - Click on Connect.
4. Wait until the connection is established and then overtype the sample SELECT statement ('select \* from jdbctest') in the SQL window and click on the Execute button on the right.

**Note:** For more information on using JCF, see the IdmsJcf section in the *CA IDMS Server User Guide*.

## Monitor Registered Users

When using SQL Web Connect, a maximum of two concurrent users of both CA IDMS SQL and CA IDMS Server ODBC/JDBC technology are permitted. Monitoring SQL and ODBC/JDBC user registrations differs depending on the operating system in use.

### **z/OS Users**

On z/OS, you can monitor SQL and ODBC/JDBC user registrations using one of the following methods:

- **SYSVIEW:**
  1. Bring up SYSVIEW.
  2. Enter the 'REGPROD' command at the 'Option' or 'Command' prompt.
  3. (Optional) Sort the REGPROD screen by using the 'SORT ID' command.
  4. Scroll down to view product codes:
    - GT – IDMS SQL Option
    - XS – IDMS Server Option
  
- **MVS Command Console:**
  1. Get on to the MVS Console.
  2. Enter the following console command:  
`DISPLAY PROD ID(xx)`  
Where 'xx' = either:
    - GT – IDMS SQL Option
    - XS – IDMS Server Option

### **z/VSE users**

On z/VSE, you can monitor SQL and ODBC/JDBC user registrations using the following method:

1. Get on to the VSE Console.
2. Enter the following console command:  
`'LOCK SHOW,PROD'`  
The following product codes are used:
  - 1D – IDMS SQL Option
  - 05 – IDMS Server Option

You have now set up SQL Web Connect for CA IDMS and accessed your data using both SQL as well as ODBC/JDBC-enabled tools. CA Visual Express and the JCF Demo Application are just two (rather simplistic) ODBC/JDBC-enabled tools that you can use to open your IDMS network data to your user community. There are many other tools that support these interfaces, for both end-user reporting, as well as for client-server and web-based applications. With SQL Web Connect, you can access CA IDMS mainframe data from:

- Business intelligence, analytics, and reporting application tools
- Application servers that access data through ODBC and JDBC. These servers include popular environments such as Microsoft IIS, IBM WebSphere, SAP Business Objects, Oracle WebLogic and many more.

## Appendix A: SQL Web Connect VARBLIST Variables

The following sections describe the variables available for base, upgrade and add-on configurations with respect to the SQL Web Connect feature.

### Base Configuration

SYSSQL = YES  
NO ←

The SYSSQL variable governs the creation of System SQL Catalog within the APPLDICT dictionary, on a 'Base' installation. The SQL Catalog is a required component for using SQL with SQL WEB Connect. Users who have purchased the CA IDMS SQL Option automatically receive this component.

SQLDEMO = YES  
NO ←

The SQLDEMO variable governs the creation of the SQL version of the Employee Skills Demo Database on a 'Base' installation.

### Upgrade Configuration

UPGSYSQL = YES  
NO ←

The UPGSYSQL variable governs the creation of System SQL Catalog within the APPLDICT dictionary, on an 'Upgrade' installation. The SQL Catalog is a required component for using SQL with SQL WEB Connect.

Users who purchased the CA IDMS SQL Option normally already have this component, just like Visual DBA users.

The addition of the SQL Catalog requires updates to both the global DMLC and Database name Table of your CV.

UPGQDEMO = YES  
NO ←

The UPGQDEMO variable governs the creation of SQL version of the Employee Skills Demo Database on an 'Upgrade' installation.

Specify NO if you have already installed the SQL version of the Employee Skills Demo Database. The Employee Skills database has not changed since Release 12.0.

The addition of the Employee Skills database requires updates to both the global DMLC and Database name Table of your CV.

## Add-On Configuration

ADDSYSQL = YES  
NO ←

The ADDSYSQL variable governs the creation of System SQL Catalog within the APPLDICT dictionary, on an 'Add-On' installation. The SQL Catalog is a required component for using SQL with SQL Web Connect.

The addition of the SQL Catalog requires updates to both the global DMLC and Database name Table of your CV.

ADDQDEMO = YES  
NO ←

The ADDQDEMO variable governs the creation of the SQL version of the Employee Skills Demo Database on an 'Add-On' installation.

The addition of the Employee Skills database requires updates to both the global DMLC and Database name Table of your CV.