Extracting Data from Non-R/3 Databases with the DB Connect Feature of BW 3.0B

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Introduction

Extracting data from a non-SAP database and transferring it to a SAP BW database for analysis is an involved task. But with the DB Connect feature of BW 3.0B, it will become easier and simpler.

This report presents the results of tests of the DB Connect feature conducted on a OS/390 based SAP BW 3.0B system.

Summary

The DB Connect feature of BW 3.0B was tested in three different OS/390 based BW 3.0B configurations. Data from a non-SAP Oracle database as well as data from a non-SAP DB2 database was successfully extracted and transferred into the PSA. The verification process was performed by comparing the data in the original databases against the one stored in the PSA.

Test Configurations

Three configurations are tested:

1. Data is extracted from a non-SAP Oracle database and transferred to a DB2 390 database of a BW 3.0B system. The non-SAP Oracle source database runs on a UNIX machine. The BW application server used to access it runs on Window 2000. This will be referred to as configuration A.
2. The non-SAP DB2 source database runs in the same LPAR as the SAP BW 3.0B DB2 database. A BW application server defined in the same LPAR is used to access the non-SAP source database. This configuration will be referred to as configuration B.
3. Data is extracted from a non-SAP DB2/390 database and transferred remotely to a DB2 390 database of a BW 3.0B system. A BW application server defined on a remote AIX machine is used to access the data of the non-SAP source database. This will be referred to as configuration C.

Configurations Setup

This section describes the setup of the tested configurations.

Extracting and Transferring Data From Oracle to BW on OS/390

Configuration A

This is an interesting situation. An example of it is: Oracle Financials is running on a Window or UNIX machine. Its data must be transferred to an OS/390 based SAP BW system for analysis.

An Oracle source database running on UNIX or Window can only be accessed from a OS/390 based BW system by application servers on UNIX or Window. OS/390 applications servers do not have the Oracle client code to achieve this access. In the case of AIX, there is currently a problem. BW 3.0B is available on the AIX platform only with AIX 5L 64-bit. The current Oracle 8.17 cannot run on AIX 5L 64-bit because of the binary incompatibility between AIX 4.3.3 64-bit and AIX 5L. The support of Oracle 9i on AIX 5L is not available yet. For those reasons we decided to run the DB Connect test under Window 2000. A dialog instance was therefore built on the *Netfinity* machine **ibmcc34** to support this test. The Central Instance runs on OS/390. DFS on OS/390 was used to distribute common filesystems between OS/390 and Window 2000. This configuration is shown in Figure 1.

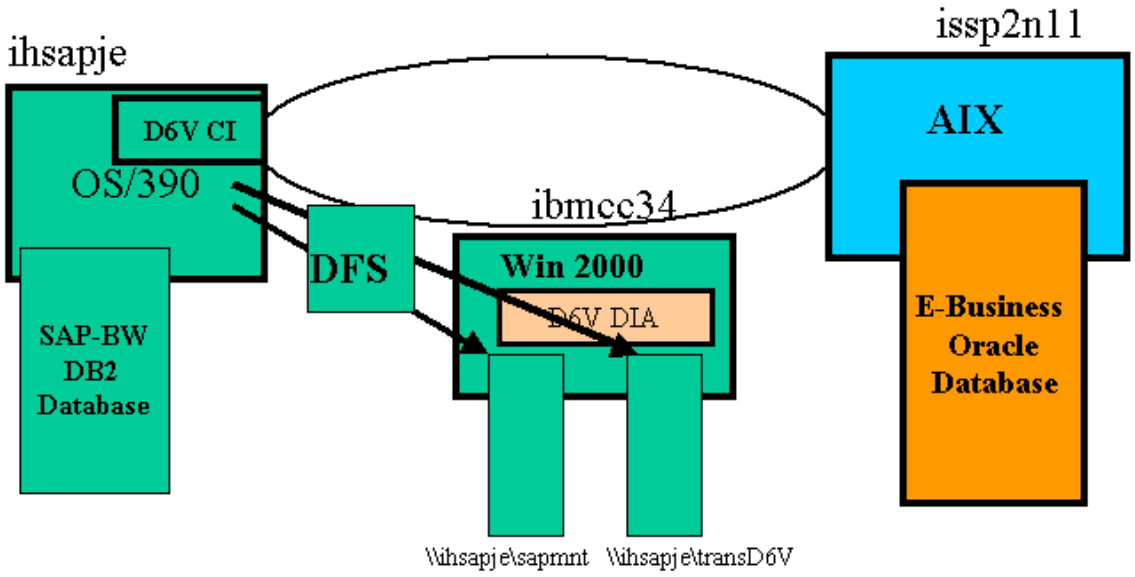


Figure 1. Test System Configuration for Data Extraction from Oracle

The client code for Oracle and the SAP Oracle access library as well as a configured TNS are required to make the access to the database possible.

Defining the Oracle Database Source System in an OS/390 Based BW 3.0B System

The necessary steps to define the Oracle Database Source System are:

1. Go to the BW instance that can access the Oracle database, in our case the dialog instance on Window 2000 for the reasons given in the previous section
2. Use the Administrator Workbench and select Source Systems
3. Create a Source System with type Database
4. Enter the following required information:
   DB Connection: Name of this connection, for instance: BWIORA
   DBMS: ORA
   User name : a user defined in the Oracle database and whose tables/views are to be extracted to BW
   DB password: password of the previous user
   Conn.Info: TNS alias
5. Save
6. Back

Note: The Source System will not be created if BW cannot access the source database

Extracting Data from Oracle

Once the source system is created, the communication with the non-SAP Oracle database is validated. The data can then be extracted using transaction **rsdbc.** A list of tables and views belonging to the user defined in the previous step is shown for possible extraction. See Figure 2.

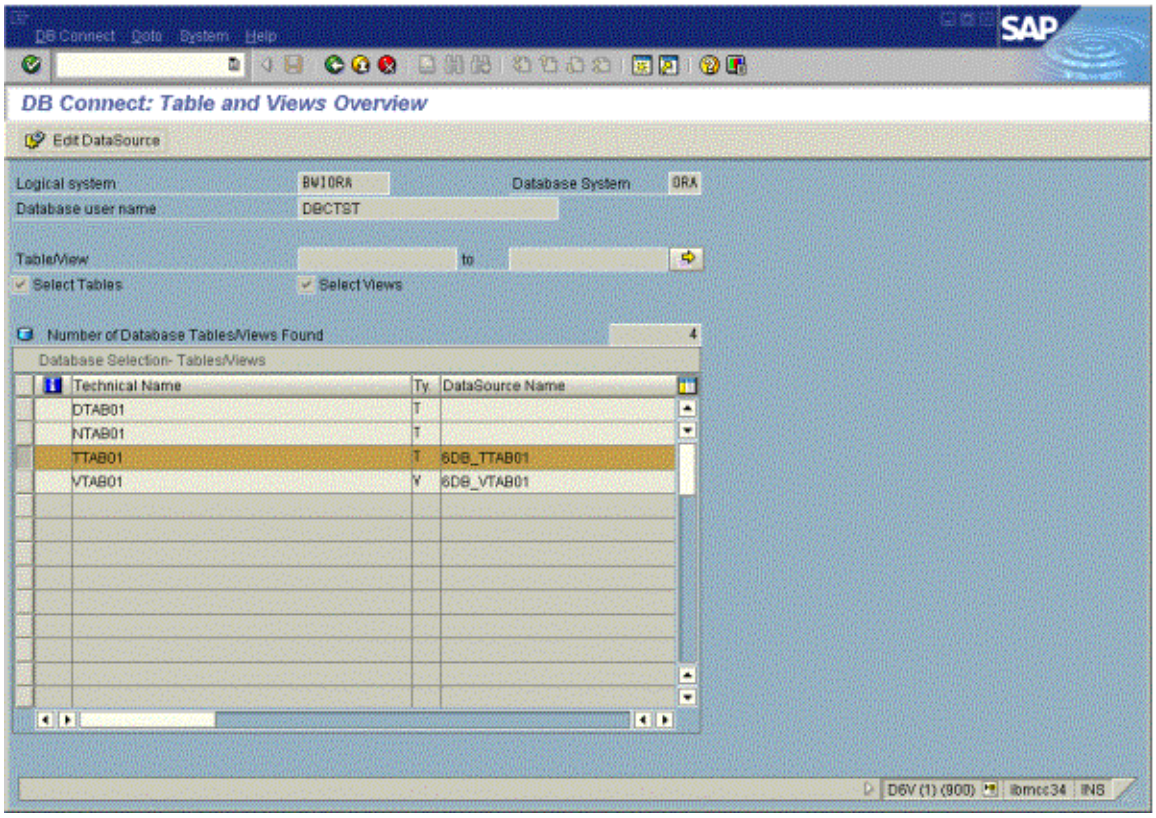


Figure 2. Extracting Data From Oracle with Transaction rsdbc

Requirements for Extraction

Extractable database tables or views must have their name in upper characters in the source database. Database fields that are not extractable because there is no equivalent data type in the SAP dictionary are marked in the I field. Fields with a name that has more than 30 characters will cause a problem during generation of the DataSource. To extract those fields, a view that converts and renames the fields into acceptable format and length must be created in the source system. The view rather than the table will then be used for extraction.

Generating a DataSource in BW

After having selected the appropriate fields from a view or a table, a data source is generated by pressing on the Generate DataSource button of the application tool bar. See Figure 3. The name of the DataSource is always prefixed with 6DB_ and is appended to the table or view name. Figure 3 shows 6DB_VTAB01 as an example of such a DataSource. In that example, we chose only three fields for extraction. They are: ID, D_2A, and T_2A. InfoSource and Infopackage are then defined in order to request the data from this DataSource. This is shown in Figure 4. The extraction process is then scheduled and monitored. In our case we load the three fields of the view VTAB01 to the PSA only. So, update rules and InfoObject assignment are irrelevant. Figure 5 and Figure 6 show the creation of the InfoPackage for DataSource 6DB_VTAB01 and a successful extraction process seen from the Workbench Monitor.

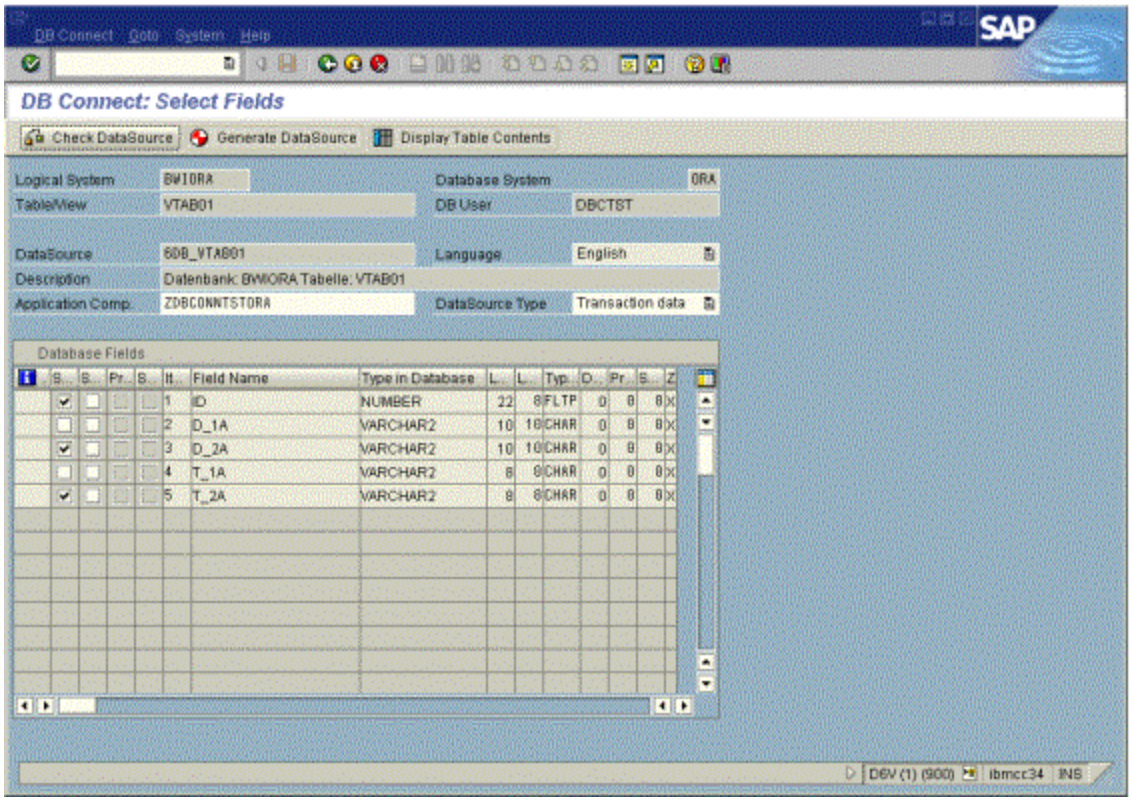


Figure 3. Generating a DataSource

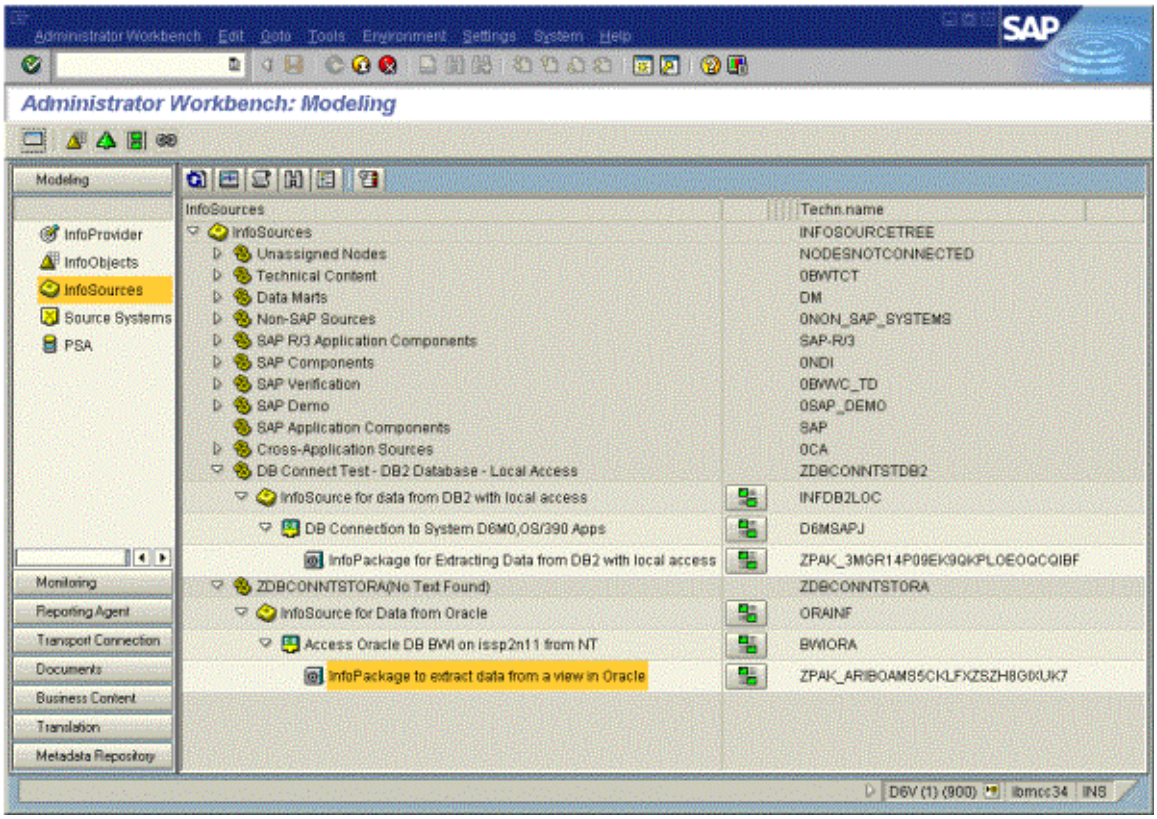


Figure 4. InfoSource and InfoPackage for Extracting a View in Oracle

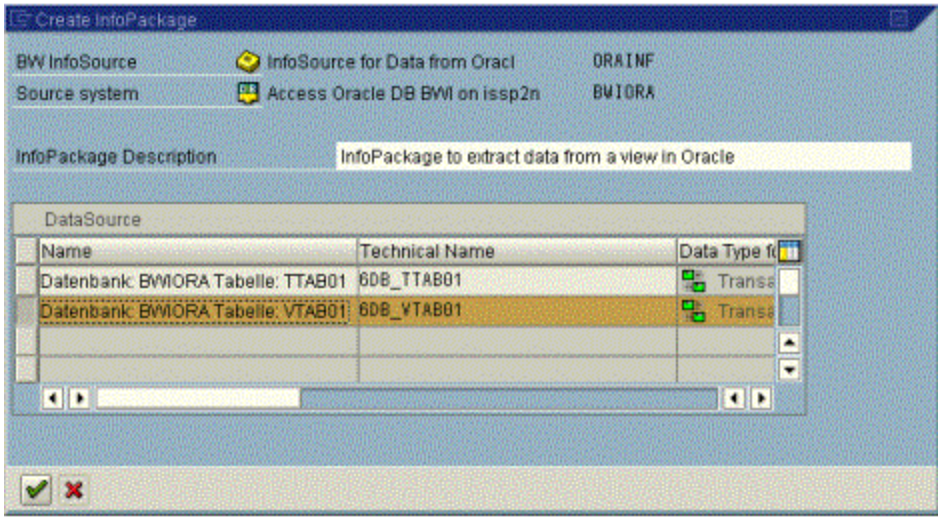


Figure 5. InfoPackage Creation

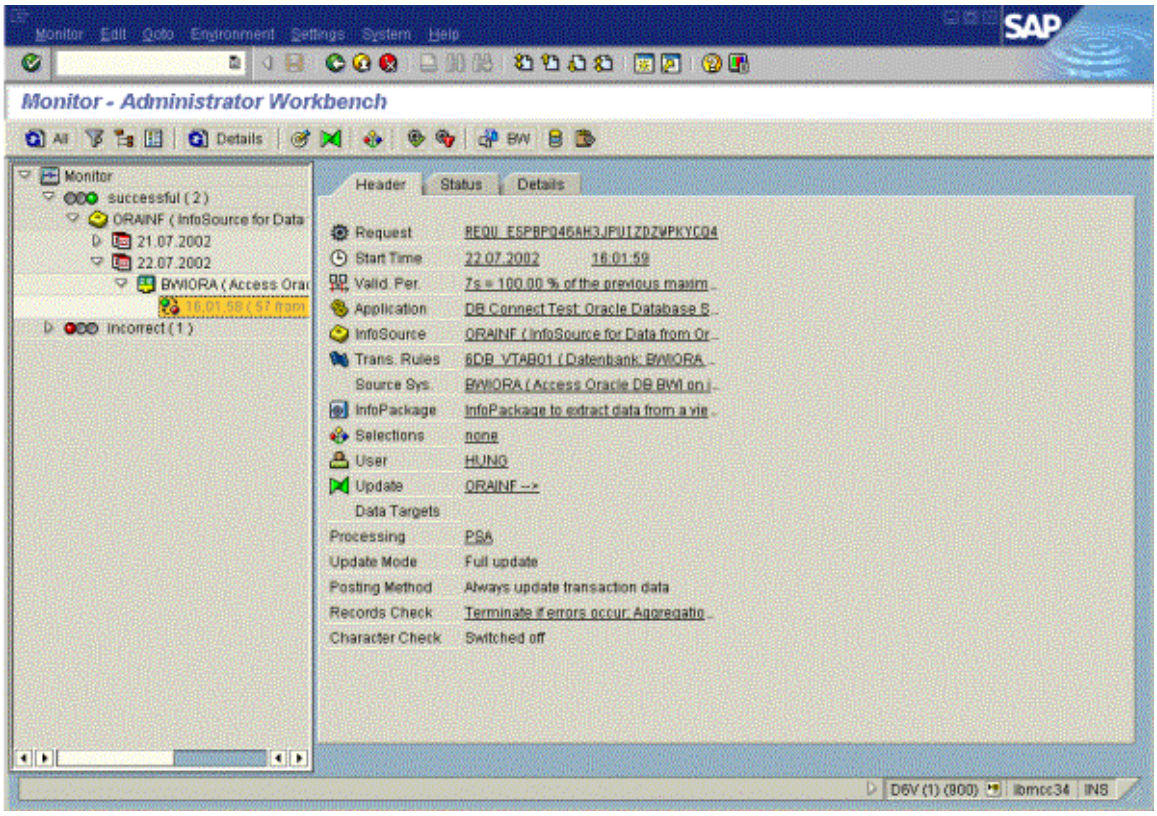


Figure 6. Successful Extraction Shown in the Workbench Monitor

To ensure that the data is loaded correctly we compare it with the data in the source system.

In the PSA the name of the database table used to load the data from DataSource 6DB_VTAB01 is /BIC/B0000235000. Figure 7 shows the first 27 rows of /BIC/B0000235000 using the data browser (transaction se16). Figure 8 shows the first 19 rows of the original data in the Oracle database.

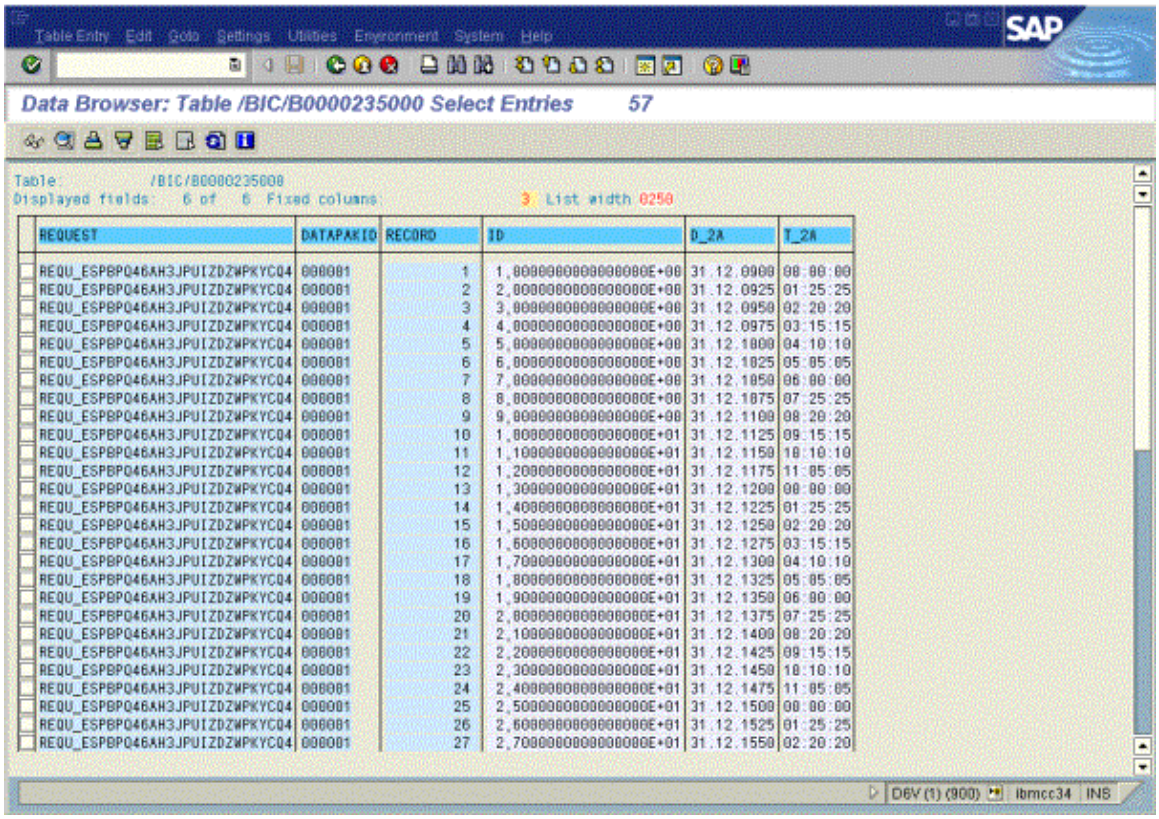


Figure 7. Extracted Data in the BW PSA

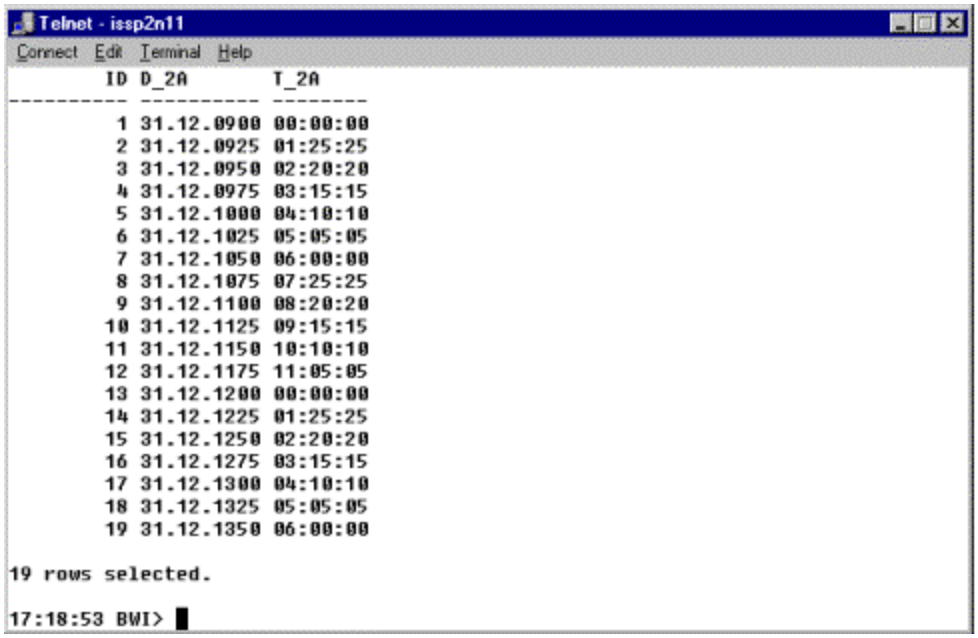


Figure 8. Original Data in the Oracle Database

Extracting and Transferring Data from a Non-SAP DB2 Database to BW on OS/390

For an application such as R/3 to access a DB2 database, we need a plan and a primary authorization ID. Unfortunately, those two parameters are not part of the connection information of table DBCON. A design error maybe? So BW will access the non-SAP database with the default plan name and authorization ID.

Configuration B

The non-SAP database could be running some Legacy application whose data is useful to BW. In this configuration, it runs in the same LPAR as the BW database. This is shown in Figure 9.

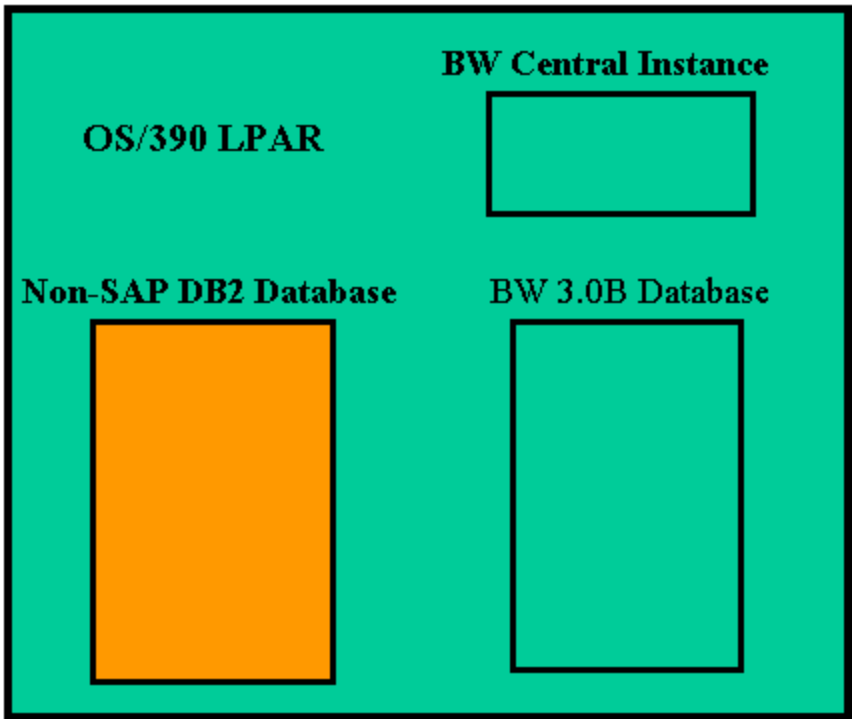


Figure 9. Test Configuration B

Setting Up the Source System

As said in the previous section, some preparatory work must be done before the connection to the source database is possible. It is described in the following steps:

1. Bind the client access code of BW to the source database with the default plan name and with the user whose data will be extracted as the owner. See 3 below.
2. Grant the default primary authorization ID *execute privilege* on the plan. Now SAP BW can attach to the non-SAP database
3. Setup the connection parameters in the following way:
    a. Use Administrator Workbench and select Source Systems

b. Create a Source System with type Database
c. BW will not create this source system if it cannot access the database so the previous steps are very important
d. In the Description of the Database Connections screen, specify DB2 as the DBMS type.
e. In the same screen specify the name of the schema whose objects are to be extracted. This is also the owner of the plan bound in step 1. The password is irrelevant. Anything would go. The DBCON architecture is a general architecture and some parameters are irrelevant for some platform.
f. In the same screen specify the two following parameters, separated by a ";" or ",":
SSID=<ssid of the source database>;SAPDBHOST=<name of the host in which the source database runs> . See Figure 10 below.

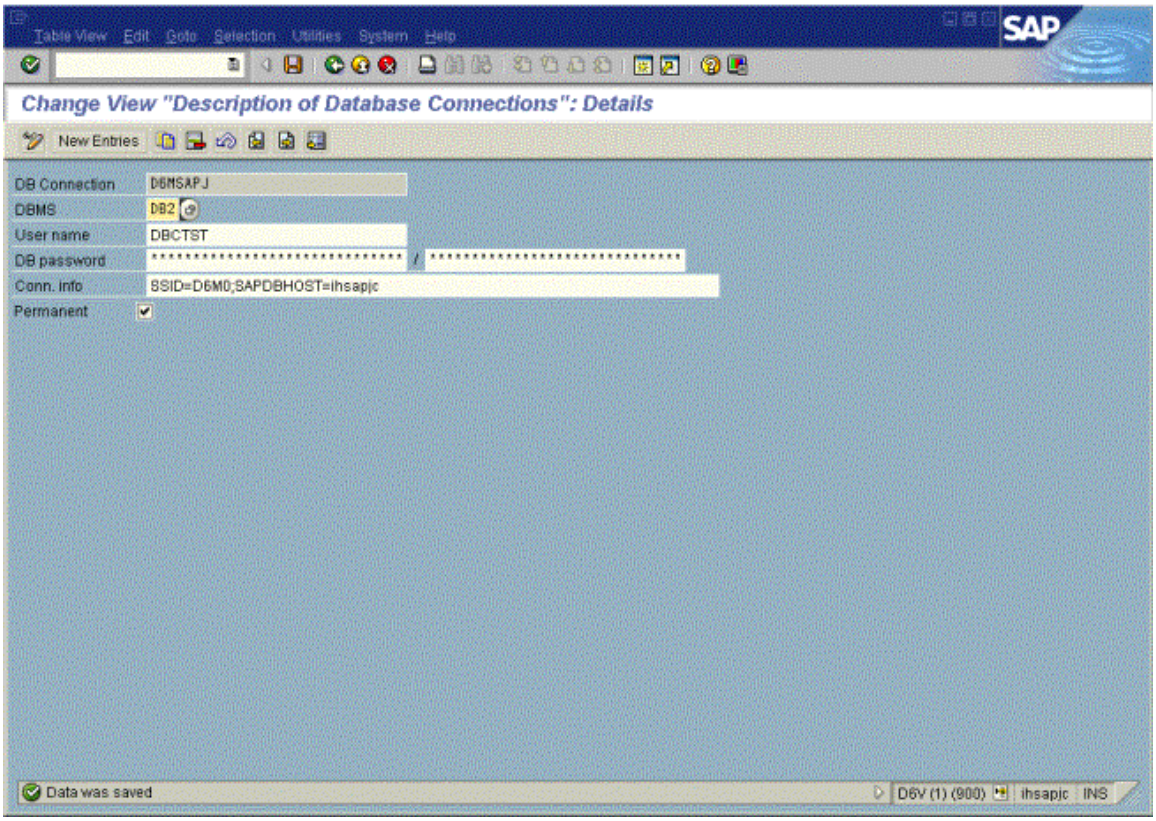
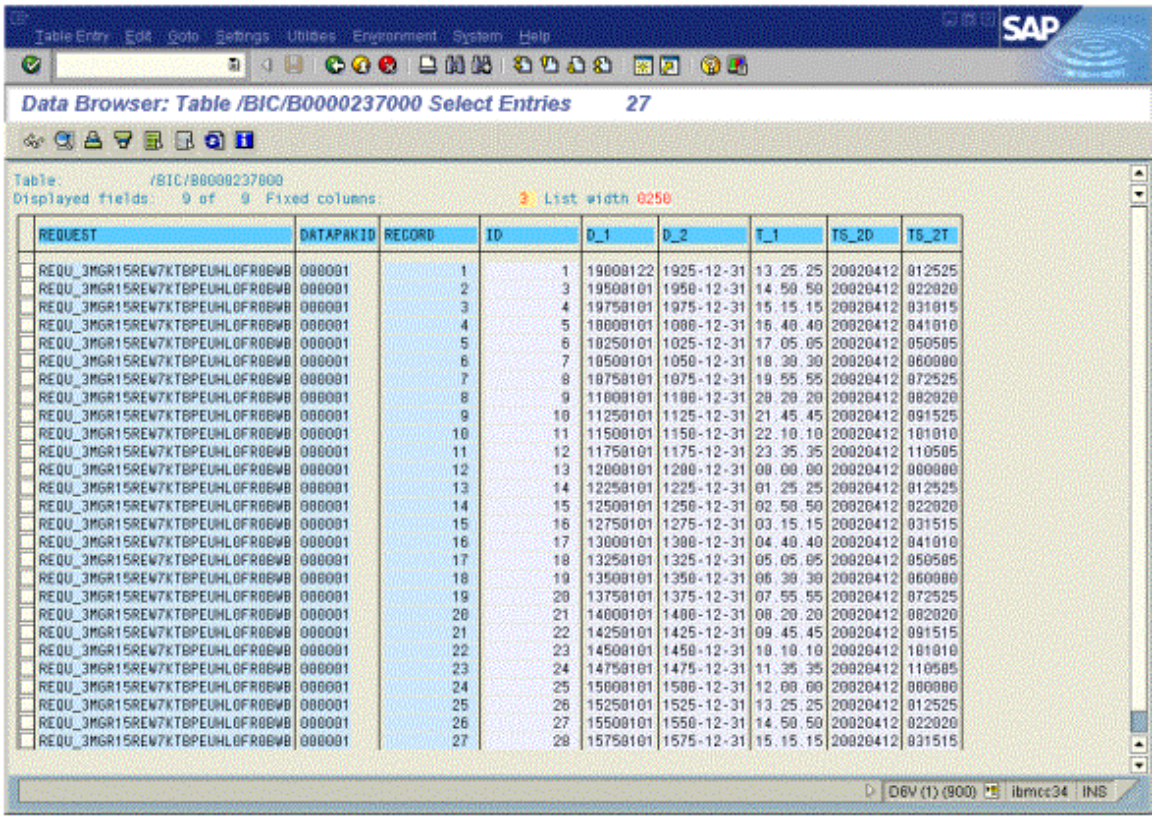


Figure 10. Setting-Up the Local Connection to the Source Database

Note: The Source System will not be created if BW cannot access the source database.

Extracting the Data

The data is extracted the same way as previously described for the Oracle database i.e using transaction **rsdbc.** InfoSource and InfoPackage are defined the same way with the extracted data going to the PSA only. Figure 11 and Figure 12 show the data loaded in the PSA and the data in the original DB2 database.



REQUEST	DATAPAKID	RECORD	ID	D_1	D_2	T_1	TS_2D	TS_2T
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	1	1	19000122	1925-12-31	13.25.25	20020412	012525
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	2	3	19500101	1950-12-31	14.50.50	20020412	022020
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	3	4	19750101	1975-12-31	15.15.15	20020412	031515
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	4	5	18000101	1000-12-31	16.40.40	20020412	041010
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	5	6	10250101	1025-12-31	17.05.05	20020412	050505
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	6	7	10500101	1050-12-31	18.30.30	20020412	060000
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	7	8	10750101	1075-12-31	19.55.55	20020412	072525
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	8	9	11000101	1100-12-31	20.20.20	20020412	082020
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	9	10	11250101	1125-12-31	21.45.45	20020412	091525
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	10	11	11500101	1150-12-31	22.10.10	20020412	101010
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	11	12	11750101	1175-12-31	23.35.35	20020412	110505
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	12	13	12000101	1200-12-31	00.00.00	20020412	000000
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	13	14	12250101	1225-12-31	01.25.25	20020412	012525
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	14	15	12500101	1250-12-31	02.50.50	20020412	022020
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	15	16	12750101	1275-12-31	03.15.15	20020412	031515
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	16	17	13000101	1300-12-31	04.40.40	20020412	041010
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	17	18	13250101	1325-12-31	05.05.05	20020412	050505
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	18	19	13500101	1350-12-31	06.30.30	20020412	060000
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	19	20	13750101	1375-12-31	07.55.55	20020412	072525
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	20	21	14000101	1400-12-31	08.20.20	20020412	082020
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	21	22	14250101	1425-12-31	09.45.45	20020412	091515
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	22	23	14500101	1450-12-31	10.10.10	20020412	101010
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	23	24	14750101	1475-12-31	11.35.35	20020412	110585
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	24	25	15000101	1500-12-31	12.00.00	20020412	000000
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	25	26	15250101	1525-12-31	13.25.25	20020412	012525
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	26	27	15500101	1550-12-31	14.50.50	20020412	022020
REQU_3MGR15REW7KTBPEUHL0FR0BWB	000001	27	28	15750101	1575-12-31	15.15.15	20020412	031515

Figure 11. Data From DB2 Database Loaded in BW PSA

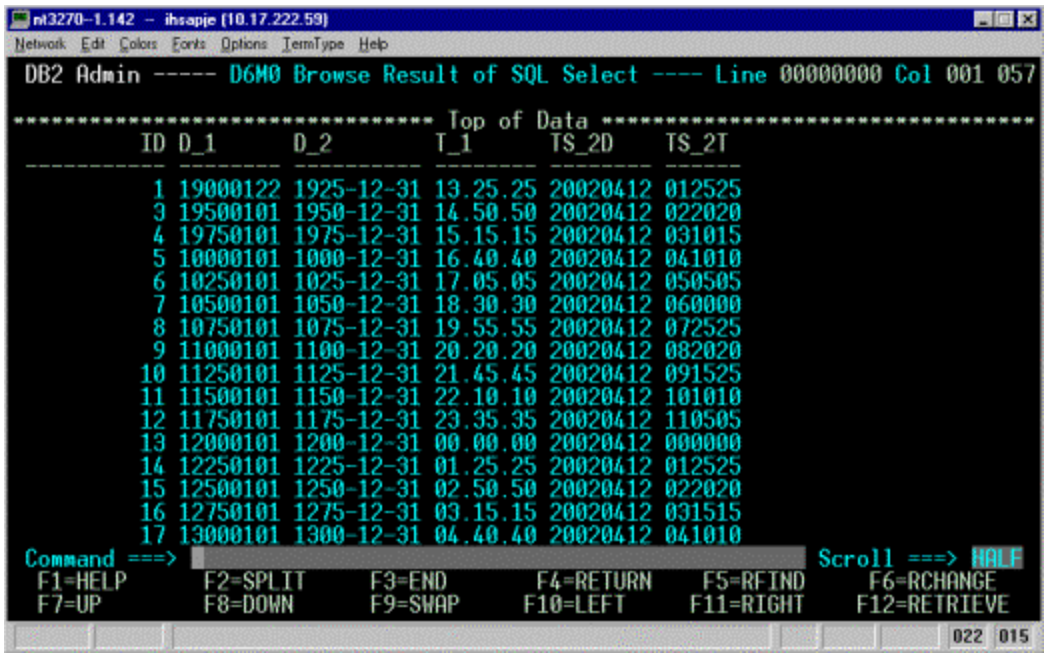


Figure 12. Original Data in the DB2 Database

Configuration C

In this configuration an application server on AIX is used to access the non-SAP DB2 database. This case applies to application servers on Window as well. This is shown in Figure 13.

Same as in the case of a local application server, preparatory work must be done to enable access from the remote application server to the non-SAP DB2 database.

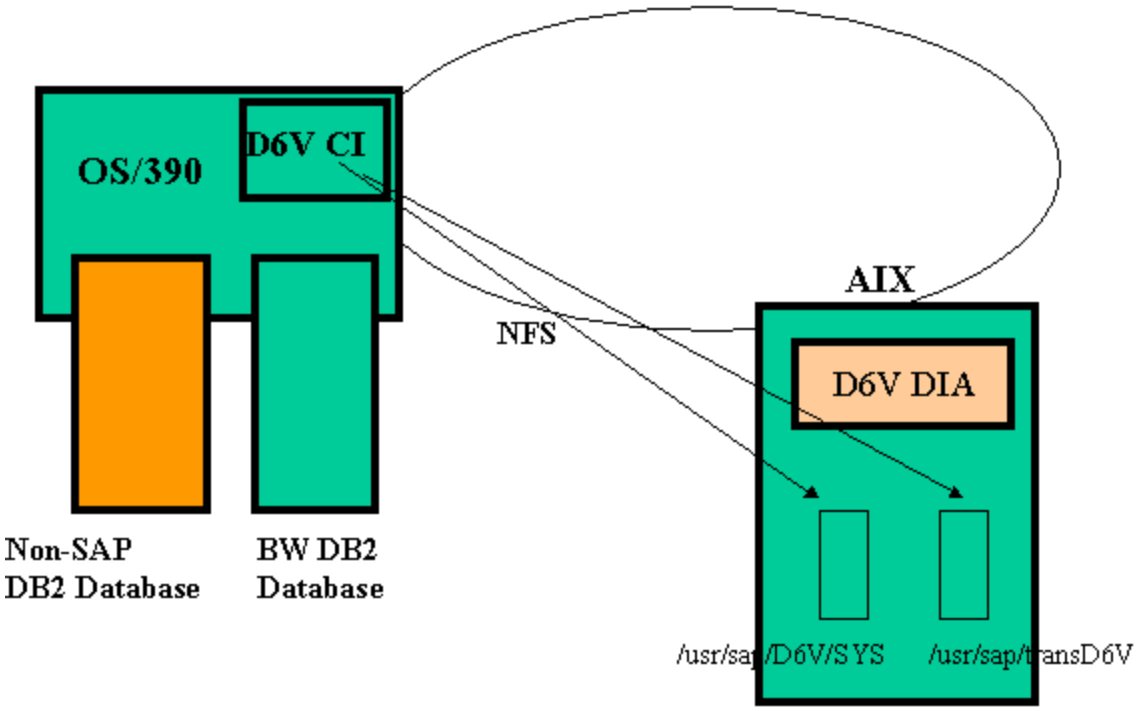


Figure 13. Configuration C

Preparing to Access the Non-SAP DB2 Database

An ICLI Server must be setup in the host where the non-SAP DB2 database runs. It is preferable that the ICLI server release is consistent with the ICLI client release that runs in the application server. The ICLI server code must be bound to the non-SAP database the sane way as in the case of a local application server. If pass-ticket is used and is different from the current pass-ticket, a separate file containing the ICLI client code and the new pass-ticked should be created and specified in the DBCON table.

Setting Up the Source System

Basically, source system setup, DataSource, InfoSource, and InfoPackage creation are the same as in the local access case. Since we did not use pass-ticket, the only parameters that are necessary to enable the access to the source DB2 are the ones that are shown in Figure 14.

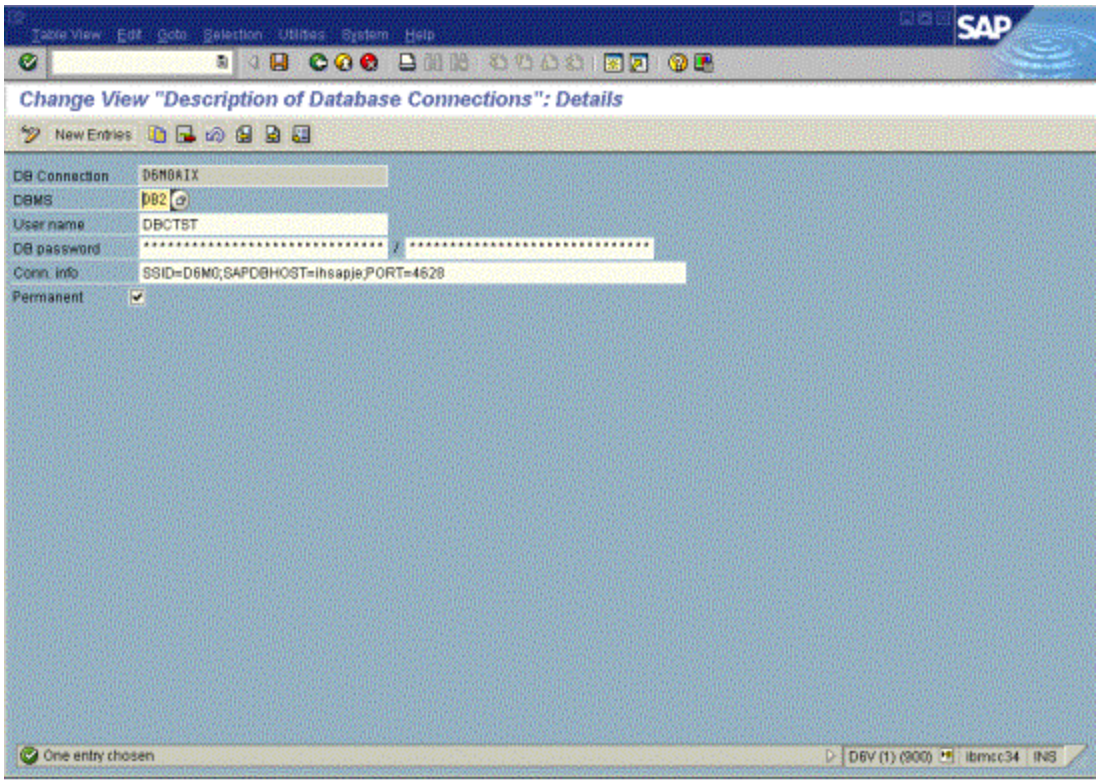


Figure 14. Connection Information Parameters

Test Results

Data of table TTAB01 is extracted and transferred to BW using this configuration. The data loaded in the PSA is shown in Figure 15 and the data in the original system is shown in Figure 16.

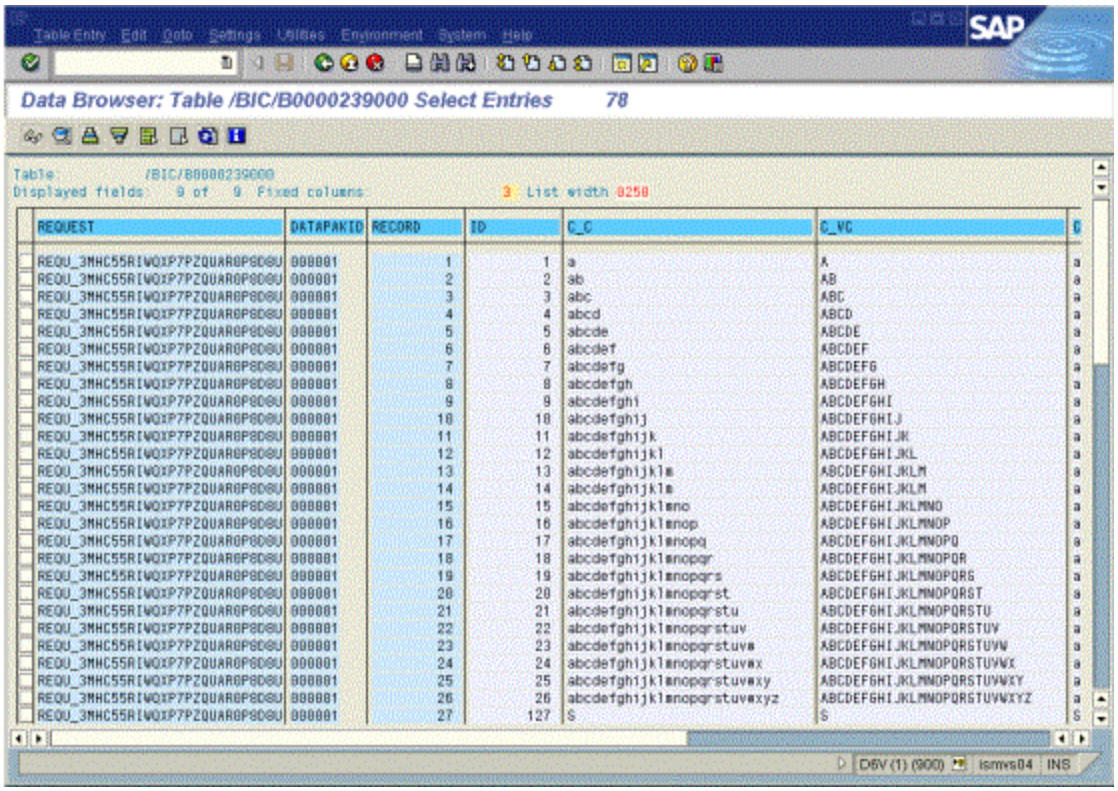


Figure 15. Data Extracted From a Non-SAP Database and Loaded in the PSA

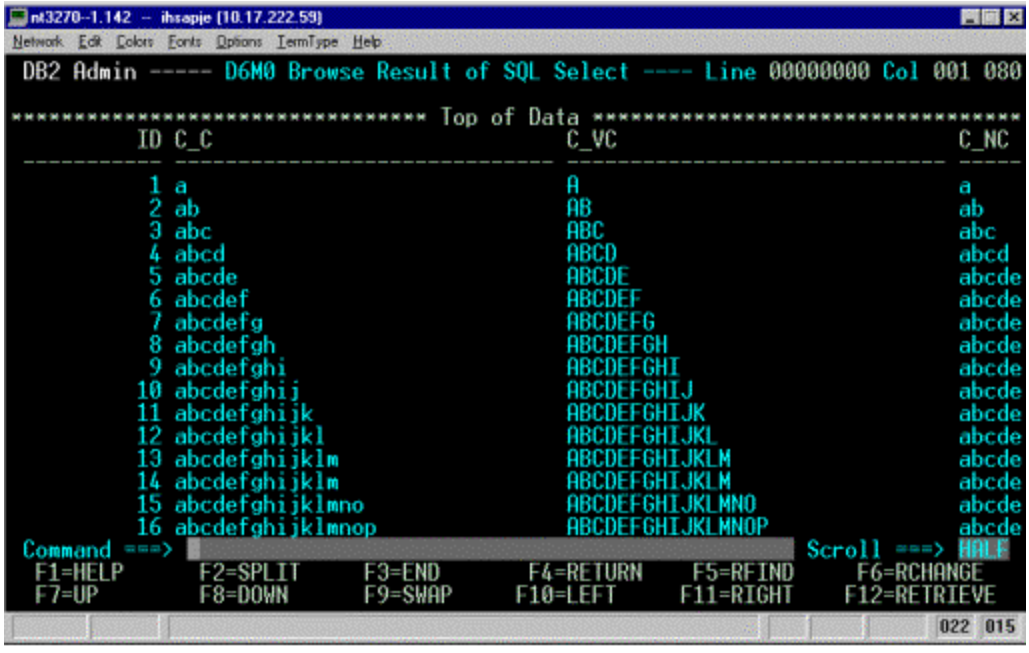


Figure 16. Original Data in the Non-SAP Database

Conclusion

For the tested configurations, the DB Connect feature on the OS/390 based BW 3.0B system works as designed.