

SUPERVISOR

Xdb

Version 5.2

User Guide

V5r2m09

Software Management, Inc.

(951) 359-1087

www.smisupervisor.com

Contents

Contents	3
CROSS-REFERENCE	5
Introducing SuperVisor 5's Cross Reference	6
Why a Cross-Reference.....	6
What SuperVisor Cross-Reference Supports	6
Support for Command Files	7
Cross Reference and Across Systems or Logical Partitions	7
Overview of Using the Cross Reference	8
SUPERVISOR XDB DEFINITION	10
Cross Reference Definition.....	11
Xdb Definition	12
Create an New Cross-Reference Definition	13
Enter or Edit Cross-Reference Definitions.....	13
Cross-Reference Library List	14
Source File Usage	15
Executable Source.....	17
Additional Objects.....	17
Omit Objects.....	18
SuperVisor Xdb Definition Command Line Functions	19
BUILDING THE XDB DATA BASE	20
Building SuperVisor Xdb Data Base	21
Process Xdb Definition to Build Xdb Data Base	21
Write Data directly to Xdb Data Base	22
Build Database Command Prompt.....	22
Xref data base	22
Build or refresh data base.....	22
Rebuild command file	22
Remove QTEMP module reference	22
Printer Output Queue/Library	23
Submit Job Queue/Library	23
Job Description for Submit Job/Library.....	23
Schedule date/time.....	23
Build Database Reports	23
Object Source Reconciliation Report	23
Object Processed Log Report	23
Copy Book Source Reconciliation	24
Source Scan Exception Report	24
Work with the XBLDXDB job.....	24
USING THE XDB DATA BASE	26
Using the Cross-Reference	27
Navigating the Interface	27
Find where a copy book is being used	32
Work with Object References.....	35
Creating an Output file with XWRKOBJXDB	41
Work with Objects Where Used	41
Work with Files	42
Work with Fields	43
Work with Job Stream (XWRKJOBSTM).....	44
Work with System/36	46
XDB	48
ADDITIONAL TOPICS	48
SuperVisor Xdb and ILE	49
ILE Import and Export.....	49
ILE Service Program Signature.....	49
ILE Sub Procedures.....	50
Using the SuperVisor Xdb Output Files	52
USING SUPERVISOR XDM	65
Field Expansion Projects.....	66
SuperVisor Field Analysis	66
Cross Reference Data Base	66
Where Fields are used in files.....	67
Reference Fields where used	68
Fields used in programs.....	69
The Cross Reference Data Base alone is not enough.....	71
Build Data Dictionary using existing everything.....	72
Exception processing.....	72
Analyze All fields in file throughout the system using partial names	73
Differences make all the difference	73
APPENDIX	75
Appendix A: Enhance the Cross-Reference Database	76
Convert Information into a Programming Model.....	76

SuperVisor Xdb Introduction

Job Scheduler Data	76
Other Database Files	77
SuperVisor Xdb Files	77
Typical AS/400 configuration	77
IBM Job Scheduler as an example.....	77
IBM Job Scheduler Interface.....	77
Unique at each site.....	78
Appendix B: How do I verify the Xdb Data Base Data.....	80
Xdb Definition	80
Xdb Build	80
Xdb Data Base Cleanup	80
Xdb Build Analysis	80
Executable Objects.....	80
Did the Xdb Build complete.....	80
SuperVisor Xdb Build.....	81
Source Reconciliation XR0201	82
Object Processed XR0204.....	82
Copy Book/Includes XR0204B.....	82
Source Exceptions XR0204J	83
Analyze source without comments.....	83
Work with Objects in Xdb.....	84
Verify Object References	86
What to do to get help.....	87
Working with Field References	87
What to do to get help.....	89
Using the Scan Source to verify information.....	89

CROSS-REFERENCE

Introducing SuperVisor 5's Cross Reference

Why a Cross-Reference

A key to planning for and implementing any software enhancement is properly defining the scope of the components involved. If one expands this field, what will be affected? If this subroutine is modified, which programs will be affected? The SuperVisor Cross-Reference enables programmers and designers to better analyze and plan enhancement projects, because it documents the system and provides an interface that enables programmers and analysts to identify the components involved in any change being considered.

The idea behind the Cross Reference is to enable the use of the iSeries Db2 Relational Data Base to analyze and document the iSeries business applications. The way this is done is to use an Xdb Definition to define the scope of the application. Then an Xdb Build process takes place which converts the object information into a Db2 Data Base. We can then use all the power of Db2 Relational Data Base to turn the information upside and link vital information together in ways that just cannot be done any other way.

The SuperVisor Cross-Reference "Xdb" is very effective because it bases the analysis on objects. For each object all information available on the iSeries is processed and included as object references. Source code is treated as an object attribute. Objects created from source include additional references due to intensive analysis looking for details that can be found, only in the source code. At the same time, the SuperVisor interface enables users to filter, drill down and navigate around the system exposing just those components of interest for the project at hand.

Each SuperVisor function is command driven and can be executed anywhere any IBM command can be executed. An easy to use menu system provides a straightforward approach for learning and using SuperVisor. Information can be displayed on the screen, printed on reports or placed in output files. SuperVisor screens work in ways similar to the IBM Programming Development Manager (PDM), including Supervisor's own user defined option.

What SuperVisor Cross-Reference Supports

SuperVisor 5's Cross-Reference is comprehensive. It supports the System/36, System/38, Native and ILE development models and supports all objects referenced by program objects across multiple iSeries or Logical Partitions.

In addition to program objects, the following objects are analyzed so the Cross-Reference includes relationships for the following objects.

- Named literals hard-coded in programs, modules or service programs
- Binding Directories
- IBM Commands
- User written commands
- 3rd party commands provided in packages
- Files
- Remote Files
- File Triggers
- File Journaling
- IBM Job Scheduler (Scheduled Entries and Advanced JS)
- Job Descriptions
- Database Relations
- File Record Formats
- Files As External Data Structures
- RPG Subroutines
- Copybook and Include References
- Menus
- Modules
- Sub-Systems

SuperVisor Xdb Introduction

- Service Programs
- SQL Packages
- SQL Source
- AS/400 Queries
- Query Manager Queries
- User Profiles
- System/36 OCL
- User Spaces
- Data Queues
- Activation Groups
- Service Program Signatures
- Export Source Files
- Entry Modules
- Output Queues
- File Fields
- Fields where used in files
- Fields where used in programs and copybooks
- Field Alias
- Derived Fields
- Remote object references
- File name used in COBOL source
- Libraries

Support for Command Files

In addition the cross-reference supports command files. Command files are database files that contain commands executed as a part of an application. Job schedulers and dynamic menu systems are examples of applications that use command files. Command files can be either LOCAL files or REMOTE files. This capability provides the ability to have the SuperVisor Xdb reside on the development AS/400, and have it include the Job Scheduler data from the production AS/400.

In many cases, data base files, contain references to system objects. An example of this is a report routing file. This file would contain the names of different printer files, and output queues. Assistance and sample programs are available to allow this data to be included in the SuperVisor Xdb.

The Cross-Reference Data Base (Xdb) application has been written using the new ILE programming model. Extensive use of IBM API's has been used. No MI (machine interface) programs have been used, so SuperVisor Xdb will work at ALL AS/400 security levels.

Cross Reference and Across Systems or Logical Partitions

The Cross Reference Data base is a form of program analysis that breaks a program application down to its smallest parts and places the information into the iSeries Db2 relational data base. Once converted to Db2, the benefits of Db2 can be applied to the detailed analysis of the application.

The limitation of these systems is that until now, the Cross Reference Data Base was created on the development system and scope of the analysis was limited to what was available on the development computer. In today's modern installation the development iSeries is just one of many iSeries systems included in the iSeries network. The iSeries network includes not only the development iSeries, but multiple production iSeries systems and Logical Partitions (LPARS).

SuperVisor Xdb is extended by using SuperVisor SDM to return vital information from production systems that can then be added to the Cross Reference Data Base. This open ended design allows all important relationship to be included in the Xdb, from anywhere on the network.

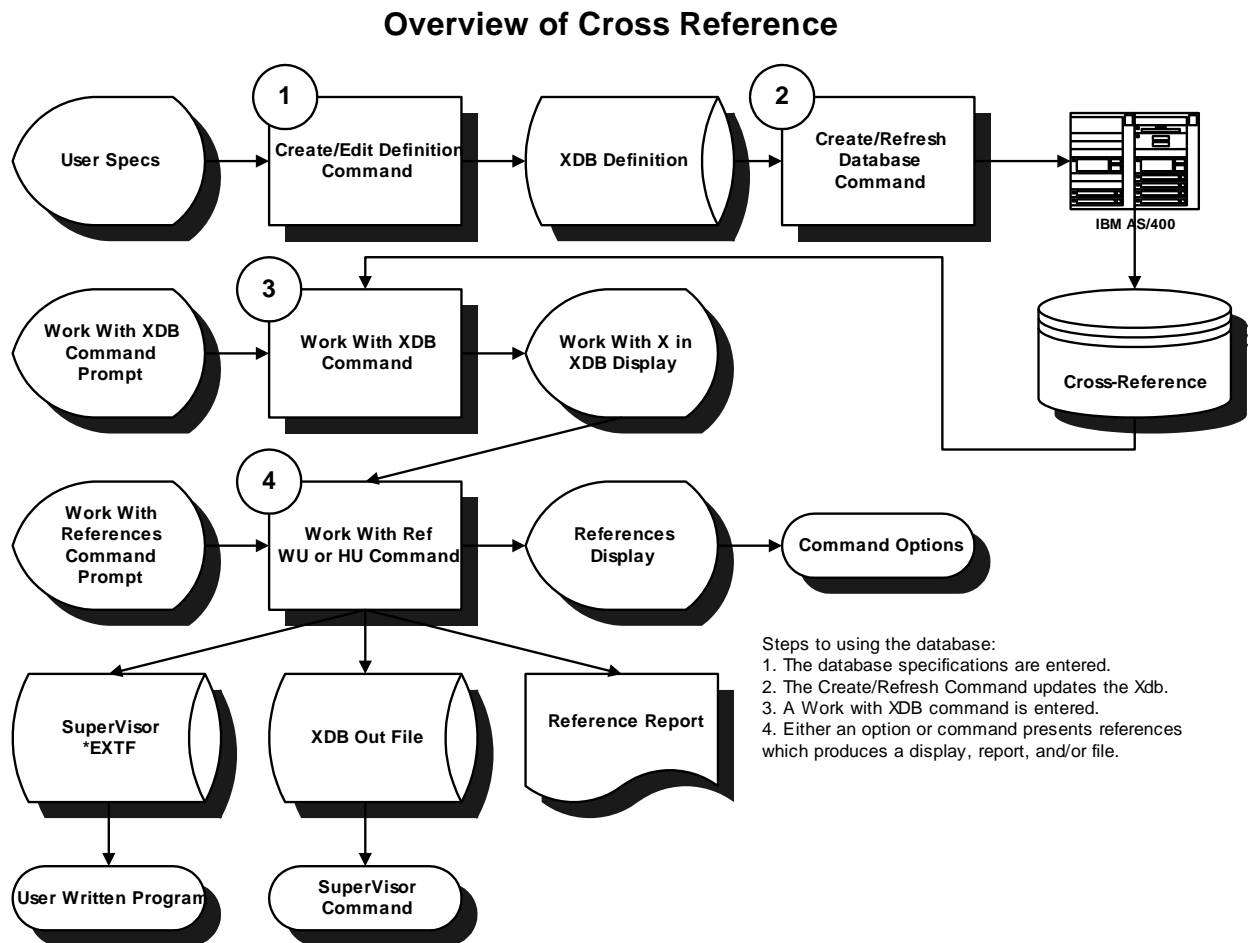
SuperVisor Xdb Introduction

For Example,

- Do you need to know that a program is also an auto-start job on the production QBATCH subsystem.
- How great would it be to include all jobs executed on the production job scheduler in the Xdb, when searching for where a program is used.
- Want to explode all programs that can be executed for a specified production end user, from the Xdb located on the development iSeries.

These are just some of the benefits provided by SuperVisor because of the fact that you have both Cross Reference Data technology combined with the real-time cross platform support of SuperVisor SDM.

Overview of Using the Cross Reference



As shown above the SuperVisor Xdb is made up of 4 parts.

1. Xdb Definition
2. Xdb Build Process
3. Xdb Data Base

SuperVisor Xdb Introduction

4. Xdb Work with Commands

The Xdb Definition is accessed by the Xdb Build process to build the Xdb Data Base. The different Xdb “Work with” commands access the Xdb Data Base to present the information in different screens, reports or to specified output files.

(Note: SuperVisor reuses deleted records in the database, reducing the need to reorganize or rebuild.)

Multiple cross-references can coexist and the specifications can have some or all of the same libraries, in the same or different sequences.

Each Xdb Definition may contain up to 999 libraries.

Source is considered an extension to the object description. Up to 999 different source files can be specified for each library, specified in the Xdb Definition.

Executable source such as System/36 OCL procedures or SQL source types are identified as an attribute to the source file entry.

(Note: Never specify the Executable source attribute on source files used to create objects. This will corrupt the Xdb Data Base with unexpected results.)

Once the cross reference is built the displays, reports, and output files can be created from database contents.

SUPERVISOR XDB DEFINITION

SuperVisor Xdb Xdb Definition

Cross Reference Definition

From the SuperVisor main menu page down to page 2 of 3/.

```
MAIN                               SuperVisor5(tm) Main Menu                               System: SMI5
Select one of the following.
SuperVisor SDM "Software Development Manager"                Authorized
                                                             *TEMP
    3. Object/Source Reconciliation
    4. Archive Obsolete Objects
    5. Test Data Management
    6. Tools and utilities
More...
Selection
====>
F3=Exit    F5=Next Menu- *SELECT    F6=Display Message    F10=Command entry
F12=Cancel F14=Work with jobs     F16=Main menu        F18=Work with output
F21=Print menu help
```

This brings forward the cross-reference main menu.

```
MAIN                               SuperVisor5(tm) Main Menu                               System: SMI5
Select one of the following.
SuperVisor Xdb "Cross Reference Data Base"                  Authorized
                                                             *TEMP
    15. Work with Xdb Definition
    16. Manage the Xdb Data Base
Use the Xdb Data base
    19. Work with object references
    20. Work with objects where used
    21. Work with files
    22. Work with fields
    23. Work with programs
    24. Work with System/36 OCL
More...
Selection
====>
F3=Exit    F5=Next Menu- *SELECT    F6=Display Message    F10=Command entry
F12=Cancel F14=Work with jobs     F16=Main menu        F18=Work with output
F21=Print menu help
```

SuperVisor supports multiple cross-reference databases. Ordinarily a cross-reference is created to correspond to a user environment that is associated with a given library list. AS/400 installations supporting multiple applications groups and/or work groups may find it more precise to establish multiple cross-references in support of these different user and/or developer environments.

SuperVisor Xdb Xdb Definition

Xdb Definition

The parameters for a cross-reference are stored in a cross-reference definition. Selecting Option 15 from the above menu will bring forward the Work with Cross-Reference Data Base Definition Menu.

```
XDB04                      Work with the Xdb Definition                      System: SMI5

Select one of the following.

Cross Reference Definition Setup

    3. Create Xref Data Base Definition          XCRTXDB
    4. Edit Xref Data Base Definition           XEDTXDB
    5. Delete Xref Data Base                    XDLTXDB
    6. Reorganize Xref data base files         XRGZXDB
    7. Edit Xdb Executable Object Types       XEDTEXE

More...

Selection
====>
F3=Exit      F5=Next Menu- *SELECT      Xref Data Base SPO      F10=Command entry
F12=Cancel   F14=Work with jobs         F6=Display Message      F18=Work with output
F21=Print menu help      F16=Main menu
```

The first page presents options that allow you to create and manage the Xdb Definition interactively. Page down to age 2 to view commands that allow the same sort of management, but are commands that can manipulate the definition from the command line.

```
XDB04                      Work with the Xdb Definition                      System: SMI5

Select one of the following.

Edit Xdb Definition from the command line

    15. Create Xdb Definition                   XCRTXDB
    16. Add Library to Xdb Definition          XADDLIBXDB
    17. Remove library from Xref Data Base     XRMVLIBXDB
    18. Delete Xdb Definition                 XDLTXDB
    19. Clear Entire Xdb Data Base           XCLRXDB

Bottom

Selection
====>
F3=Exit      F5=Next Menu- *SELECT      Xref Data Base SPO      F10=Command entry
F12=Cancel   F14=Work with jobs         F6=Display Message      F18=Work with output
F21=Print menu help      F16=Main menu
```

Using these commands allow you to write CL programs that can perform all the functions automatically the same way as the commands on the first page let you manage the Xdb Definition interactively.

SuperVisor Xdb Xdb Definition

Create an New Cross-Reference Definition

This menu is used to maintain the cross-reference definition and the cross-reference database. To create new definitions select Option 3 from page one of the Xdb Definition Maintenance Menu XDB04.

```

                                Create Xref Data Base Defn (XCRTXDB)

Type choices, press Enter.

Xref Data Base Name . . . . . XDB
Text description . . . . . TEXT          *SAME
Include IBM Information . . . . . IBMINFO *SAME
Include IBM Basic Job Sched . . . . . IBMBJS *SAME
Include Retrive CL Source . . . . . IRTVCLSRC *SAME
Include Dynamic Menu File:      DYNMENU
  Dynamic Menu File Name . . . . .        *SAME
  Dynamic Menu Library . . . . .         *SAME
  Field Name contains command . . . . .  *SAME
Include Dynamic Job Schedule:  DYNJOBSCD
  Dynamic JS File Name . . . . .         *SAME
  Dynamic JS Library . . . . .          *SAME
  Field Name contains command . . . . .  *SAME

                                                    Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

This display is used to assign a name to the cross-reference database. Enter up to 10 characters for the cross-reference name and a description. When enter is pressed an empty cross-reference definition is created.

Note: The command parameters are optional and represent information that can be entered using the Edit Xdb Definition (XEDTXDB) command.

```

XDB04                                Work with the Xdb Definition                                System: SMI5

Select one of the following.

Cross Reference Definition Setup

    3. Create Xref Data Base Definition      XCRTXDB
    4. Edit Xref Data Base Definition       XEDTXDB
    5. Delete Xref Data Base               XDLTXDB
    6. Reorganize Xref data base files     XRGZXDB
    7. Edit Xdb Executable Object Types    XEDTEXE

                                                    More...

Selection
====>
F3=Exit   F5=Next Menu- *SELECT   F6=Display Message   F10=Command entry
F12=Cancel F14=Work with jobs     F16=Main menu        F18=Work with output
F21=Print menu help
```

Enter or Edit Cross-Reference Definitions

To enter or edit a definition enter option 4 to execute the XEDTXDB command.

SuperVisor Xdb Xdb Definition

```

                                Edit Xref Data Base (XEDTXDB)

Type choices, press Enter.

Xref data base . . . . . > SPO          Character value, *PRV...

                                Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

This brings forward the definition selection display any exiting cross-reference name may be entered. The default *PRV is the last definition edited by the current user. *SELECT will display a list existing of cross-reference definitions. Pressing enter will bring forward the Edit Xdb Data Base definition display.

```

XEDTXDBB          Edit Xref Data Base definition          1/04/00
Xref
Data Base   Description
SPO         Sample PO System
Enter the name of each library you wish to include in the cross reference.
Use the sequence to control the order the libraries are processed.
Type options, press enter

2=Edit source list  4=Remove library
                   Field
Opt Seq   Library   Analysis Description
1.00 SPOOBJ      Y (Y,N)
2.00 SPOSUP      (Y,N)
3.00 SPOSRC      (Y,N)
4.00             (Y,N)
5.00             (Y,N)
6.00             (Y,N)

                                More...

x F3=Exit   F5=Edit omit list  F6=Edit default omit list  F7=Include objects
F14=Post changes
```

Note: Once a library is entered, you cannot change the name. Simply remove the library and add the library you desire to use instead. Change to order the libraries appear using by changing the sequence number, then press enter. The screen will re-sequence for you automatically.

Cross-Reference Library List

This display is used to enter the definition's library list. In this example the application is made up of three libraries, SPOOBJ, SPOSUP, and SPOSRC. As with an application's execution the order the libraries are

SuperVisor Xdb Xdb Definition

entered is important. This is because, like OS/400 SuperVisor uses this library list to select objects during the build/refresh process.

Think of this list of libraries as you would a working development environment. To be complete it needs to include all libraries needed to compile and execute the application be analyzed. Missing libraries will prevent the Xdb Build from locating references it will encounter.

A library can be removed by using option 4. When option 4 is selected, a batch job is created which will process the Cross-reference and remove all records associated to the library in the Xdb Data Base. As the last step in it's processing, library will be removed from the Cross-reference definition. .

Field level analysis takes time and disk space. For this reason, building field level references is optional. In this example, field level analysis is selected only for the library SPOOBJ, this because this is the only library containing executable programs.

Source File Usage

Some references such as program fields, copybooks, RPG subroutines, and commands require source to make the cross-reference complete. Pressing enter will automatically cause the source definition screen to be displayed for each new library being entered. Option 2 will bring up the source definition screen for existing libraries.

```
XEDTXDBB          Edit Xref Data Base definition          8/16/04
Xref
Data Base   Description
SPO         Purchase Order Sample
Enter the name of each library you wish to included in the cross reference.
Use the sequence to control the order the libraries are processed.
Type options, press enter

  2=Edit source list  4=Remove library
                    Field
Opt Seq   Library   Analysis Description
  2   1.00 SPOOBJ    Y (Y,N) SuperVISOR Tutor (PO Object Library)
      2.00 SPOSUP    Y (Y,N) SuperVISOR Tutor (PO Support Library)
      3.00 SPOSRC    Y (Y,N) SuperVISOR Tutor (PO Source Library)
      4.00           (Y,N)
      5.00           (Y,N)
      6.00           (Y,N)

More...

F3=Exit   F5=Edit omit list  F6=Edit default omit list  F7=Include objects
F14=Post changes
```

OS/400 stores the source library and file names used to create objects when they are created. The top panel of this display defines how SuperVisor finds source used in the building the cross-reference. Option 1 searches the OS/400 object information first, then the source file listed in the lower panel. Option 2 searches the source file listed first, then the object source reference.

The lower panel is used to enter source libraries and files to be searched for source required to complete the cross-reference. Source files can be removed from the list using option 4. The sequence of the source files can be adjusted by using the sequence field. Type the new sequence number and press F14 to post changes.

SuperVisor Xdb Xdb Definition

```
XEDTXDB          Edit Source File List          8/16/04
Xdb SPO          Purchase Order Sample

Opt
 2 1. Process object description, then source list.
   2. Process source list, then object description.
Library  Description
SPOOBJ   SuperVISOR Tutor (PO Object Library)
4=Remove source file
      Source      Source      Executable Source (Y/N)
Opt Seq  File      Library     Description
 1.00 QRPGLSRC   SPOSRC      RPG ILE Source Programs
 2.00 QCLLESRC   SPOSRC      CLP ILE Program Source
 3.00 QDDSSRC   SPOSRC      Purchase Order DDS Source
 4.00 QS36PRC   SPOSRC      Y System/36 procedure file
 5.00 QSQLSRC   SPOSRC      Y executable source
 6.00 QCFGSRC   SPOSRC      Y System Configuration Source
 7.00
 8.00

F3=Exit  F12=Return  F14=Post Changes

More...
```

For each library included in the Xdb, up to 999 source files may be entered. SuperVisor Xdb provides the ability to search source file in the sequence you enter to locate the objects related source.

```
XEDTXDB          Edit Source File List          8/16/04
Xdb SPO          Purchase Order Sample

Opt
 2 1. Process object description, then source list.
   2. Process source list, then object description.
Library  Description
SPOOBJ   SuperVISOR Tutor (PO Object Library)
4=Remove source file
      Source      Source      Executable Source (Y/N)
Opt Seq  File      Library     Description
 1.00 QRPGLSRC   SPOSRC      RPG ILE Source Programs
 2.00 QCLLESRC   SPOSRC      CLP ILE Program Source
 3.00 QDDSSRC   SPOSRC      Purchase Order DDS Source
 4.00 QS36PRC   SPOSRC      Y System/36 procedure file
 5.00 QSQLSRC   SPOSRC      Y executable source
 6.00 QCFGSRC   SPOSRC      Y System Configuration Source
 7.00
 8.00

F3=Exit  F12=Return  F14=Post Changes

More...
```

Warning: Specify "Executable Source" Yes, only when the source is NOT used to create objects.

Search option may prioritize the object description or the source search list.

Whenever executable source is found in the application, it can be identified on this screen. Enter "Y" to identify that the source file includes executable source code. Program source can be included in the cross reference without the need to actually have the program object.

SuperVisor Xdb Xdb Definition

Note: The SuperVisor Xdb is most effective when both source and objects are available, but has the flexibility to provide the best information it can using whatever information is available.

Executable Source

Each source file entry can be identified as “Executable Source”. This feature should **never** be used with a source file used to create objects. If the source file contains some “Executable Source” and source used to compile objects, the “Executable Source” should be copied to a second source file.

Note: QS36PRC is executable System/36 OCL procedures. QSQLSRC are SQL source statements executed using the RUNSQLSTM command. QCFGSRC is CL source created using the RTVCFGSRC command and represents the hardware configuration, but has not been compiled.

Note: Using this feature with source used to create objects, will corrupt the Xdb for those objects.

Additional Objects

To include user profile, IBM basic Job Scheduler, or Command File references press F7.

XEDTXDBB	Edit Xref Data Base definition	1/04/00
Include User Profiles N (Yes,No)	Include IBM Job Schedule N (Yes,No)	
Many times commands are stored in data base files, that are retrieved and executed by programs. SuperVisor provides for a Dynamic Menu and Job Scheduler File. If your application uses files like these, enter the name of the data base file, library. Also enter the name of the data base field that contains the command to be executed.		
Dynamic Menu File name	Library Name	Command Field name
Job Scheduler File name	Library Name	Command Field name
F3=Exit F5=Edit omit list F6=Edit default omit list F7=Include objects F14=Post changes		
Press F14 to post changes		

User profiles and IBM Job Schedule references are added to the cross-reference by entering a Y in the option field. Up to two command files can also be included. Command files are database files that used to store executable commands,

Note: SuperVisor has such a file. It is the UMNOPXX file. The field UMCMD contains commands to be executed when an option is entered SuperVisor menus.

Press F14 to post these cross-reference options.

SuperVisor Xdb Xdb Definition

```

XEDTXDBB          Edit Xref Data Base definition          8/16/04
Xref
Data Base   Description
SPO         Purchase Order Sample
Enter the name of each library you wish to included in the cross reference.
Use the sequence to control the order the libraries are processed.
Type options, press enter

  2=Edit source list  4=Remove library
                    Field
Opt Seq   Library   Analysis Description
  2      1.00 SPOOBJ   Y (Y,N) SuperVISOR Tutor (PO Object Library)
          2.00 SPOSUP   Y (Y,N) SuperVISOR Tutor (PO Support Library)
          3.00 SPOSRC   Y (Y,N) SuperVISOR Tutor (PO Source Library)
          4.00           (Y,N)
          5.00           (Y,N)
          6.00           (Y,N)
                                           More...

F3=Exit   F5=Edit omit list  F6=Edit default omit list  F7=Include objects
F14=Post changes

```

Omit Objects

Another feature of the SuperVisor cross-reference is the ability to omit objects that would only generate clutter in the database. Candidate objects ones that are used often for some support feature. An example might be objects used to display user help. To enter a list of objects to be omitted, press F6.

```

XEDTXDBE          Edit Omit List                          1/11/06
QPADEV0001          06:36:04
Data Base   Description
*XDB        Default omit list
1=Add  4=Delete
Opt Omit Entry

      A           F           N           TAG
      B           FDC        O           U
      C           FNC        P           V
CHGVAR     FOC          PGM          W
      D           G          Q           X
      DCL        GOTO       QLEAWI     Y
      DO         H          QLEBWI     Z
      E         I          QLECW
      ELSE       J          QRNXIE
      END        K          R
      ENDDO     L          S
      ENDPGM    M          T

F3=Exit      F12=Cancel

```

The above display is presented. To add an object, select option 1, type the object name and press enter. As each object is entered, it will be added to the display. Use option 4 to remove an object from the list. When all changes are entered, use F3 or F12 to exit this screen.

SuperVisor Xdb Xdb Definition

```

XEDTXDBB          Edit Xref Data Base definition          8/16/04
Xref
Data Base   Description
SPO         Purchase Order Sample
Enter the name of each library you wish to included in the cross reference.
Use the sequence to control the order the libraries are processed.
Type options, press enter

  2=Edit source list  4=Remove library
                    Field
Opt Seq   Library   Analysis Description
  2    1.00 SPOOBJ   Y (Y,N) SuperVISOR Tutor (PO Object Library)
        2.00 SPOSUP   Y (Y,N) SuperVISOR Tutor (PO Support Library)
        3.00 SPOSRC   Y (Y,N) SuperVISOR Tutor (PO Source Library)
        4.00           (Y,N)
        5.00           (Y,N)
        6.00           (Y,N)
                                           More...

F3=Exit   F5=Edit omit list  F6=Edit default omit list  F7=Include objects
F14=Post changes

```

Press F14 to post changes to the cross-reference definition.

SuperVisor Xdb Definition Command Line Functions

In addition to interactive maintenance for the SuperVisor Xdb Definition, SuperVisor provides a command interface to create, edit or delete a SuperVisor Xdb. This allows easy to write programs that can be used to create the Xdb Definition, build the Xdb Data Base, analyze the results and delete the entire Xdb in one analysis.

Following are the Xdb Definition Supporting Commands.

Command	Description
XCRTXDB	Create SuperVisor Xdb Definition
XADDLIBXDB	Add library to SuperVisor Xdb Definition
XRMLIBXDB	Remove library from SuperVisor Xdb Definition
XBLDXDB	Build SuperVisor Xdb Data Base
XPOSTXDB	Post SuperVisor Xdb Data Base for specified objects
XCLRDXDB	Clear SuperVisor Xdb Data Base
XDLTXDB	Delete SuperVisor Xdb Definition
XRGZXDB	Reorganize SuperVisor Xdb to reclaim space used by deleted records.

BUILDING THE XDB DATA BASE

SuperVisor Xdb Building the Xdb Data Base

Building SuperVisor Xdb Data Base

```
MAIN                               SuperVisor5(tm) Main Menu                               System: SMI5
Select one of the following.
SuperVisor Xdb "Cross Reference Data Base"                               Authorized
                                                                           *TEMP
    15. Work with Xdb Definition
    16. Manage the Xdb Data Base
Use the Xdb Data base
    19. Work with object references
    20. Work with objects where used
    21. Work with files
    22. Work with fields
    23. Work with programs
    24. Work with System/36 OCL
                                                                           More...
Selection
====>
F3=Exit      F5=Next Menu- *SELECT      F6=Display Message      F10=Command entry
F12=Cancel  F14=Work with jobs      F16=Main menu           F18=Work with output
F21=Print menu help
```

Select option 16 “Manage the Xdb Data Base” on the main menu to view commands used to process the Xdb Definition and build the Xdb Data Base.

```
XDB02                               Manage the Xdb Data Base                               System: SMI5
Select one of the following.
Process Xdb Definition and build Xdb Data Base
    3. Build Xdb Data Base                               XBLDXDB
    4. Post Changes to Xdb Data Base                     XPOSTXDB
Insert/Delete data directly to the Xdb Data Base
    8. Write Object Data To Xdb                         XWRTOBJXDB
    9. Write Object Reference to Xdb                   XWRTOBJREF
    10. Delete Object Data in Xdb                       XDLTOBJXDB
Selection
====>
F3=Exit      F5=Next Menu- *SELECT      Xref Data Base SPO      F6=Display Message      F10=Command entry
F12=Cancel  F14=Work with jobs      F16=Main menu           F18=Work with output
F21=Print menu help
```

Process Xdb Definition to Build Xdb Data Base

Option 3 “Build Xdb Data Base” is a process which will examine the business application objects within the scope provided by the Xdb Definition. This process basically converts the executable business system into a Db2 relational data base so that detailed relationships in the business application can be analyzed.

Option 4 “Post Changes to the Xdb Data Base” is a process that allows you to process specific objects and post information about them to the Xdb Data Base.

SuperVisor Xdb Building the Xdb Data Base

Write Data directly to Xdb Data Base

The remaining options do not perform any process, or use any objects. Use this commands to write data directly to the cross reference. Using these commands there is no need to depend SuperVisor to know how to process some kind of unique situation that may exist at your location. Instead you can write these relationships directly your self to mean anything you need to represent in the Xdb Data Base format.

Build Database Command Prompt

```
Build Xref Data Base (XBLDXDB)

Type choices, press Enter.

Xref data base . . . . . > SPO           Character value, *ALL...
Build or refresh data base . . . > *BUILD   *BUILD, *REFRESH
Rebuild command file . . . . . *YES       *YES, *NO
Remove QTEMP module reference . . *YES     *YES, *NO
Reorganize Xref Data Base . . . *NO       *YES, *NO
Printer Output Queue: . . . . .          Name
Library name: . . . . . *LIBL           Name, *LIBL
Submit Job Queue . . . . .           Name
Library name: . . . . . *LIBL           Name, *LIBL
Job Desc. for Submit Job: . . . > SUPERVISOR Name, *USRPRF
Library name: . . . . . *LIBL           Name, *LIBL
Schedule date . . . . . *CURRENT        Date, *CURRENT, *MONTHSTR...
Schedule time . . . . . *CURRENT        Time, *CURRENT

Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
```

The prompt for the Build Cross-Reference Command (XBLDXDB) is presented. Parameters for the command are outlined below.

Xref data base

The name of a single database, or the special value *ALL for all cross reference definitions.

Build or refresh data base

*REFRESH will update the database for objects added or changed since the last time this command was run. *BUILD is used clears and rebuilds the database. *BUILD is ordinarily used when changes are made to the cross-reference definition or after an OS/400 upgrade.

Rebuild command file

SuperVisor needs to know about all commands on the system to work properly. A command file is created when SuperVisor is loaded. If new commands are created and stored in one of the libraries covered by the cross-reference *YES should be entered in this parameter. Otherwise, *NO should be entered.

Remove QTEMP module reference

This option applies to programs created using the different CRTBNDxxx commands. These commands are used to create ILE programs directly from source. But actually they don't. It only seems that way.

The different CRTBNDxxx commands actually create a module in the QTEMP library, then creates the program from that module. Once the program is created, the module in QTEMP is deleted.

SuperVisor Xdb

Building the Xdb Data Base

Because no module exists outside the execution of the CRTBNDxxx command include these QTEMP references in the Xdb Data Base does not add any real value to the analysis.

Enter the special value *YES, to have any references to modules in QTEMP removed from the Xdb Data Base as part of the Xdb Data Base Build. Use the default *NO to leave these references in the Xdb Data Base.

Printer Output Queue/Library

To override the job descriptions print queue an alternate print queue may be entered.

Submit Job Queue/Library

To override the job descriptions job queue an alternate job queue may be entered.

Job Description for Submit Job/Library

To submit this command to batch, enter the name of the job description. If no job description is entered, the command will not be submitted, but will run in the current job.

Schedule date/time

For ease of use, schedule date and time parameters are provided.

Pressing enter submits the job to batch.

Build Database Reports

The Build Cross Reference Data Base (XBLDXDB) command creates two reports for each database processed, Source Reconciliation and Objects Processed Log.

The Source Reconciliation identifies objects for which the related source is not in the location specified in the object's description. (Note: When the cross-reference definition source list is used to override the object description source the database will include the proper references, but the object will appear on the report.)

Object Source Reconciliation Report

Following is an example of the source reconciliation report.

Object Name	Library Name	Object Type	Object Attribute	Source Member	Source File	Source Library	Override File	Override Library	Message
POQTMP	SPOSUP	*FILE	PF38	UQRYP00	SUPER21	SUPERSRC			Source not found
Total missing		1							

Note: Be sure to review this report in detail. Discrepancies between data in the Xdb Data Base and your expectation are usually resolved using this information. The most common reason is that expected source is not found, or the reconciliation caused an undesired source to be processed.

Object Processed Log Report

The Object processed log identifies each object processed and recorded in the cross-reference. Objects are processed alphabetically in two groups.

SuperVisor Xdb Building the Xdb Data Base

1. Non-executable objects
2. Executable Objects

Non-Executable objects include objects such as files or commands. Executable objects include objects such as programs, menus or service programs.

Following is an example of the Object Processed Log Report

SPO	SuperVisor5(tm)					XBLDXDB	System
1/04/00	Build Cross Reference Data Base					Page 1	SMI
Object Processed Log							
Object Name	Library Name	Object Type	Object Attribute	Source Member	Source File	Source Library	
PAA01AFM	SPOOBJ	*FILE	DSFF	PAA01AFM	QDDSSRC	SPOSRC	
PAA02AFM	SPOOBJ	*FILE	DSFF	PAA02AFM	QDDSSRC	SPOSRC	
PAA03AFM	SPOOBJ	*FILE	DSFF	PAA03AFM	QDDSSRC	SPOSRC	
PAA05AFM	SPOOBJ	*FILE	DSFF	PAA05AFM	QDDSSRC	SPOSRC	
PAA05CPF	SPOOBJ	*FILE	PRTF	PAA05CPF	QDDSSRC	SPOSRC	
PAA05DPF	SPOOBJ	*FILE	PRTF	PAA05DPF	QDDSSRC	SPOSRC	
PAA06AFM	SPOOBJ	*FILE	DSFF	PAA06AFM	QDDSSRC	SPOSRC	
PAA08AFM	SPOOBJ	*FILE	DSFF	PAA08AFM	QDDSSRC	SPOSRC	
PAA14AFM	SPOOBJ	*FILE	DSFF	PAA14AFM	QDDSSRC	SPOSRC	
PAA14CPF	SPOOBJ	*FILE	PRTF	PAA14CPF	QDDSSRC	SPOSRC	
PAA15AFM	SPOOBJ	*FILE	DSFF	PAA15AFM	QDDSSRC	SPOSRC	
PAA15CPF	SPOOBJ	*FILE	PRTF	PAA15CPF	QDDSSRC	SPOSRC	
PAA16AFM	SPOOBJ	*FILE	DSFF	PAA16AFM	QDDSSRC	SPOSRC	
PAA16CPF	SPOOBJ	*FILE	PRTF	PAA16CPF	QDDSSRC	SPOSRC	
PAA16EW1	SPOOBJ	*FILE	PF	PAA16EW1	QDDSSRC	SPOSRC	
PAA22AFM	SPOOBJ	*FILE	DSFF	PAA22AFM	QDDSSRC	SPOSRC	
PAA23AFM	SPOOBJ	*FILE	DSFF	PAA23AFM	QDDSSRC	SPOSRC	
PAA23BPF	SPOOBJ	*FILE	PRTF	PAA23BPF	QDDSSRC	SPOSRC	
PAA23CPF	SPOOBJ	*FILE	PRTF	PAA23CPF	QDDSSRC	SPOSRC	
PAA23CWF	SPOOBJ	*FILE	PF	PAA23CWF	QDDSSRC	SPOSRC	
PAA24AFM	SPOOBJ	*FILE	DSFF	PAA24AFM	QDDSSRC	SPOSRC	
PBA01AFM	SPOOBJ	*FILE	DSFF	PBA01AFM	QDDSSRC	SPOSRC	
PBA08AFM	SPOOBJ	*FILE	DSFF	PBA08AFM	QDDSSRC	SPOSRC	
PBA09AFM	SPOOBJ	*FILE	DSFF	PBA09AFM	QDDSSRC	SPOSRC	
PBA12AFM	SPOOBJ	*FILE	DSFF	PBA12AFM	QDDSSRC	SPOSRC	
PDSCLO1	SPOOBJ	*FILE	LF	PDSCLO1	QDDSSRC	SPOSRC	
PDSCP00	SPOOBJ	*FILE	PF	PDSCP00	QDDSSRC	SPOSRC	

Copy Book Source Reconciliation

An additional report is created when the use of Copy Books or Includes is used. When Copy Books are encountered a secondary source reconciliation takes place to locate the source member referenced by the Copy Book statement. This report documents the results of this reconciliation.

Note: As with the Source Reconciliation, differences between the data in the Xdb Data Base and the expectation is usually due to differences caused by source identified by this reconciliation process.

Note: Any time a library reference *LIBL is listed, this is a copy book not found. Determine why this occurred and after the corrections are made, perform another build of the Xdb Data Base.

Source Scan Exception Report

The Source Scan Exception Report is printed only when exceptions are encountered. An exception is anytime a the Xdb Build begins to search a source member, but does not complete the analysis. The exception is noted when the total number of lines in the source is more than the number of lines search by the build process.

Note: Total number of lines, less comments. The Xdb Build does not include comments, so the this is reflected in the Total number of lines reported for that source member.

Work with the XBLDXDB job

SuperVisor Xdb Building the Xdb Data Base

The following screen represents the typical way the output for the any job executing the XBLDXDB command generally appears.

```

                                Work with Job Spooled Files

Job:   XBLDXDB           User:   SMI           Number:  020758

Type options, press Enter.
  1=Send  2=Change  3=Hold  4=Delete  5=Display  6=Release  7=Messages
  8=Attributes  9=Work with printing status

Opt  File           Device or      User Data  Status  Total  Current  Copies
     XR0201R        SMI           SRCSP0    RDY     59     1         1
     XR0204         SMI           BLDSPO    RDY    123     1         1
     QPDSPMNU                          FIN
     QPDSPMNU                          FIN
     XR0204B        SMI           CPYSPO    RDY     1         1

                                                                Bottom

Parameters for options 1, 2, 3 or command
====>
F3=Exit  F10=View 3  F11=View 2  F12=Cancel  F22=Printers  F24=More keys

```

The three main reports are:

File	User	Date	Report Description
XR0201R	SRC		Source Reconciliation Report
XR0204	BLD		Xdb Build Log
XR0204B	CPY		Copy Book Reconciliation Report

Note: The Source Analysis exception report appears only when exceptions are encountered

The "User Data" is derived by using the literal and as much of the Xdb Name as it can. Different number of FIN reports exist based on the nature of the application that was processed.

USING THE XDB DATA BASE

Using the Cross-Reference

```
MAIN                               SuperVisor5(tm) Main Menu                               System: SMI5
Select one of the following.
SuperVisor Xdb "Cross Reference Data Base"                               Authorized
                                                                           *TEMP
    15. Work with Xdb Definition
    16. Manage the Xdb Data Base
Use the Xdb Data base
    19. Work with object references
    20. Work with objects where used
    21. Work with files
    22. Work with fields
    23. Work with programs
    24. Work with System/36 OCL
                                                                           More...
Selection
===>
F3=Exit    F5=Next Menu- *SELECT    F6=Display Message    F10=Command entry
F12=Cancel F14=Work with jobs    F16=Main menu        F18=Work with output
F21=Print menu help
```

The Cross Reference Main Menu is presented.

Navigating the Interface

The above menu is the top-level menu for the Cross-Reference. Options 19 and 20 select menus containing commands relating to all objects. The other submenus contain commands with features specific to the types of references indicated.

The command line displays the name of the database being used or *SELECT. (Note: SuperVisor remembers that last database used by user.)

SuperVisor Xdb Using SuperVisor Xdb Data

To see how the interface works, select Option 7.

```

XDB07                Work with Object References                System: SMI

Select one of the following.

    1. Work with objects in Xdb                XWRKOBJXDB
    2. Work with object references            XWRKOBJJREF

    4. Work with *BNDDIR references            XWRKOBJJREF
    5. Work with *CMD references              XWRKOBJJREF
    6. Work with *JOBID references            XWRKOBJJREF
    7. Work with *QRYDFN input references     XWRKOBJJREF
    8. Work with *SBSD references            XWRKOBJJREF
    9. Work with *SQLPKG references          XWRKOBJJREF
   10. Work with *USRPRF references          XWRKOBJJREF

   12. Print object references                XPRTOBJJREF

Selection
====>
F3=Exit      F5=Next Menu- *SELECT      Xref Data Base *PRV      F10=Command entry
F12=Cancel   F14=Work with jobs        F6=Display Message      F18=Work with output
F21=Print menu help      F16=Main menu
  
```

This presents the Work with Objects References submenu. Option 1 is the "Work with Objects in Xdb" (XWRKOBJXDB) command. This command appears at the top of all of the submenus, except Work with Fields menu. (This is because fields are not objects.)

Select Option 1 to display the command prompt.

```

                Work with Objects in Xdb (XWRKOBJXDB)

Type choices, press Enter.

Objects--Generic* or *ALL: . . .    *all          Name, generic*, *ALL
Library name: . . . . .            *ALL          Name, *ALL
Object type: . . . . .             *ALL          *ALL, *BNDDIR, *CMD, *FILE...
Sub-type attribute . . . . .       *ALL          Character value, *ALL
Xref data base . . . . .           > *PRV        Character value, *SELECT...
Output . . . . .                   *            *, *PRINT, *OUTFILE

                                                    Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
  
```

The command prompt enables the user to filter object references by name, library, type, and subtype. Pressing Enter presents the Work with Objects in Xdb display.

SuperVisor Xdb Using SuperVisor Xdb Data

```

XWRKOBJXDB          Xdb - Work with Objects in Xdb          SMI
SPO                                                         1/30/00
                    Position . . . .
Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 8=Object reference 9=Where used ...

  Object      Object
Opt Name      Library   Type      Attribute  Date      Time
  GENPO      SPOOBJ    *PGM     RPG        2000-01-30 11:02:24
  PAA01A     SPOOBJ    *PGM     RPG        2000-01-30 11:02:24
  PAA01AFM   SPOOBJ    *FILE    DSPF       2000-01-30 11:02:24
  PAA01B     SPOOBJ    *PGM     RPG        2000-01-30 11:02:24
  PAA02A     SPOOBJ    *PGM     RPG        2000-01-30 11:02:24
  PAA02AFM   SPOOBJ    *FILE    DSPF       2000-01-30 11:02:24
  PAA03A     SPOOBJ    *PGM     RPG        2000-01-30 11:02:24
  PAA03AFM   SPOOBJ    *FILE    DSPF       2000-01-30 11:02:24
                                          More...

F3=Exit          F4=Prompt        F5=Refresh       F10=Command entry
F11=Next view    F12=Cancel       F23=More Options F24=More keys
  
```

This display is the primary navigational display for cross-reference objects.

```

XWRKOBJXDB          Xdb - Work with Objects in Xdb          SMI
SPO                                                         1/30/00
                    Position . . . .
Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 8=Object reference 9=Where used ...

  Object      Object
Opt Name      Library   Type      Attribute  Date      Time
  PAA16AFM   SPOOBJ    *FILE    DSPF       2000-01-30 11:02:24
  PAA16B     SPOOBJ    *PGM     CLP        2000-01-30 11:02:24
  PAA16C     SPOOBJ    *PGM     RPG        2000-01-30 11:02:24
  PAA16CPF   SPOOBJ    *FILE    PRTE       2000-01-30 11:02:24
  PAA16D     SPOOBJ    *PGM     CLP        2000-01-30 11:02:24
  PAA16E     SPOOBJ    *PGM     RPG        2000-01-30 11:02:24
  9 PAA16EW1   SPOOBJ    *FILE    PF         2000-01-30 11:02:24
  PAA22A     SPOOBJ    *PGM     CLP        2000-01-30 11:02:24
                                          More...

F3=Exit          F4=Prompt        F5=Refresh       F10=Command entry
F11=Next view    F12=Cancel       F24=More keys
  
```

For example to see where the PAA16EW1 file is used select Option 9.

SuperVisor Xdb Using SuperVisor Xdb Data

```

XWRKOBJWU          Xdb - Work with Object Where Used          SMI
SPO                                                         1/30/00

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 7=CL statement 8=Object reference 9=Where used ...

  Object      Object
Opt Name      Library   Type      Attribute Usage      Format
>PAA16EW1    SPOOBJ   *FILE    PF          -----
PAA16B      SPOOBJ   *PGM     CLP         OVRDBF   *CMD
PAA16B      SPOOBJ   *PGM     CLP         Unknown
PAA16B      SPOOBJ   *PGM     CLP         Unknown
PAA16C      SPOOBJ   *PGM     RPG         Input     PAA16EWA
PAA16D      SPOOBJ   *PGM     CLP
PAA16D      SPOOBJ   *PGM     CLP         CLRPFM   *CMD
PAA16D      SPOOBJ   *PGM     CLP         CPYF     *CMD
                                                    More...

F3=Exit          F4=Prompt      F5=Refresh     F10=Command entry
F11=Next view    F12=Cancel

```

The file's usage is displayed.

```

XWRKOBJWU          Xdb - Work with Object Where Used          SMI
SPO                                                         1/30/00

Type options, press Enter.

21=File fields  22=Logical files  23=Based on file  24=Data base Wu
25=Record format Wu  26=Member Wu  27=File in src Wu ...

  Object      Object
Opt Name      Library   Type      Attribute Usage      Format
21 >PAA16EW1  SPOOBJ   *FILE    PF          -----
PAA16B      SPOOBJ   *PGM     CLP         OVRDBF   *CMD
PAA16B      SPOOBJ   *PGM     CLP         Unknown
PAA16B      SPOOBJ   *PGM     CLP         Unknown
PAA16C      SPOOBJ   *PGM     RPG         Input     PAA16EWA
PAA16D      SPOOBJ   *PGM     CLP
PAA16D      SPOOBJ   *PGM     CLP         CLRPFM   *CMD
PAA16D      SPOOBJ   *PGM     CLP         CPYF     *CMD
                                                    More...

F3=Exit          F4=Prompt      F5=Refresh     F10=Command entry
F11=Next view    F12=Cancel

```

F23 presents the next group of options. For example, to see the file's fields enter Option 21.

SuperVisor Xdb Using SuperVisor Xdb Data

```

XWRKFFD          Xdb - Work with File Fields          SMI
SPO                                                     1/30/00

Type options, press Enter.

51=File.field Wu  52=Ref.field Wu  53=Alias.field Wu
55=Programs fields 56=Pgm.field Wu ...

      Format      Field
Opt  Name        Name        Position  Text
>PAA16EW1      SPOOBJ                Totals Work File for built by progra
kPAA16EWA      WWCATC                1      CATEGORY.....
kPAA16EWA      WWDEPD                3      DEPT DESC....
PAA16EWA      WWORDA                33     ORDERED AMT..
PAA16EWA      WWRCA                38     RECEIVED AMT.
51  PAA16EWA      WWCNLA                43     CANCELED AMT.
PAA16EWA      WWOORA                48     ON ORDER AMT.

                                                     Bottom

F3=Exit          F4=Prompt          F5=Refresh          F10=Command entry
F11=Next view    F12=Cancel         F24=More keys
  
```

To see which files contain the field, select Option 51.

```

XWRKFFDWU       Xdb - Work with File Fields Where Used  SMI
SPO                                                     1/30/00

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 8=Object reference 9=Where used ...

      Field      File      File      File      Sel/
Opt  Name        Name        Attribute  Format      Key      Omit      Join
-----
>WCNLA
WCNLA  PAA16CPF      PRTF      @WWTOT
WCNLA  PAA16EW1      PF        PAA16EWA

                                                     Bottom

F3=Exit          F4=Prompt          F5=Refresh          F10=Command entry
F11=Next view    F12=Cancel         F24=More keys
  
```

SuperVisor Xdb Using SuperVisor Xdb Data

```

XWRKFFD          Xdb - Work with File Fields          SMI
SPO                                                    1/30/00

Type options, press Enter.

51=File.field Wu  52=Ref.field Wu  53=Alias.field Wu
55=Programs fields 56=Pgm.field Wu ...

      Format      Field
Opt  Name        Name        Position  Text
>PAA16EW1      SPOOBJ
kPAA16EWA      WWCATC          1  CATEGORY.....
kPAA16EWA      WWDEPD          3  DEPT DESC....
56  PAA16EWA      WORDA          33  ORDERED AMT..
      PAA16EWA      WRCVA          38  RECEIVED AMT.
      PAA16EWA      WCNLA          43  CANCELED AMT.
      PAA16EWA      WOORA          48  ON ORDER AMT.

                                                    Bottom

F3=Exit          F4=Prompt        F5=Refresh        F10=Command entry
F11=Next view    F12=Cancel       F24=More keys
  
```

To see which programs use a field select option 56.

```

XWRKFFDWU        Xdb - Work with File Fields Where Used  SMI
SPO                                                    1/30/00

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 8=Object reference 9=Where used ...

      Program      Library      Program      Program      Field
Opt  Name          Name          Type          Attribute    Name in source
-----
>WORDA
PAA16E      SPOOBJ      *PGM          RPG          LRORDA
PAA16E      SPOOBJ      *PGM          RPG          L1ORDA
PAA16E      SPOOBJ      *PGM          RPG          L2ORDA
PAA16E      SPOOBJ      *PGM          RPG          WORDA

                                                    Bottom

F3=Exit          F4=Prompt        F5=Refresh        F10=Command entry
F11=Next view    F12=Cancel       F24=More keys
  
```

Find where a copy book is being used

Copy book usage is classified by SuperVisor in the same way other file member information is stored in the SuperVisor Xdb.

To locate where a copy book source member is used, select option 21 "Work with files".

SuperVisor Xdb Using SuperVisor Xdb Data

```
MAIN                               SuperVisor5(tm) Main Menu                               System: SMI5
Select one of the following.
SuperVisor Xdb "Cross Reference Data Base"                               Authorized
                                                                              *TEMP
    15. Work with Xdb Definition
    16. Manage the Xdb Data Base
Use the Xdb Data base
    19. Work with object references
    20. Work with objects where used
    21. Work with files
    22. Work with fields
    23. Work with programs
    24. Work with System/36 OCL
                                                                              More...
Selection
====>
F3=Exit      F5=Next Menu- *SELECT    F6=Display Message  F10=Command entry
F12=Cancel  F14=Work with jobs             F16=Main menu      F18=Work with output
F21=Print menu help
```

Then select option 8 "Work with Copy Book where used".

```
XDB09                               Work with Files                               System: TOPE
Select one of the following.
    1. Work with files in Xdb                               XWRKOBJXDB
    2. Work with File Field Description                     XWRKFFD
    3. Work with dependant logical files                   XWRKDLF
    4. Work with logical based on file                     XWRKBOF
    6. Work with data base file where used                 XWRKDBFWU
    7. Work with record format where used                 XWRKFMTWU
    8. Work with file Copy Book where used                 XWRKMBRWU
    9. Work with file in source where used                 XWRKFLSWU
    11. Work with trigger programs                         XWRKOBJHU
    12. Work with remote files                             XWRKOBJHU
                                                                              More...
Selection
====> 8
Xref Data Base TPNA
F3=Exit      F5=Next Menu- *SELECT    F6=Display Message  F10=Command entry
F12=Cancel  F14=Work with jobs             F16=Main menu      F18=Work with output
F21=Print menu help
```

Press enter to display the "Work with Members Where Used" command.

SuperVisor Xdb Using SuperVisor Xdb Data

Work with Object References

```

XDB07                Work with Object References                System: SMI

Select one of the following.

    1. Work with objects in Xdb                XWRKOBJXDB
    2. Work with object references            XWRKOBJJREF

    4. Work with *BNDDIR references            XWRKOBJJREF
    5. Work with *CMD references              XWRKOBJJREF
    6. Work with *JOBID references            XWRKOBJJREF
    7. Work with *QRYDFN input references     XWRKOBJJREF
    8. Work with *SBSD references             XWRKOBJJREF
    9. Work with *SQLPKG references          XWRKOBJJREF
   10. Work with *USRPRF references          XWRKOBJJREF

   12. Print object references                XPRTOBJJREF

Selection
====>
F3=Exit      F5=Next Menu- *SELECT      Xref Data Base *PRV
F12=Cancel   F14=Work with jobs        F6=Display Message  F10=Command entry
F21=Print menu help      F16=Main menu      F18=Work with output
  
```

Select option 2 to display the XWRKOBJJREF command prompt.

```

                Work with Object References (XWRKOBJJREF)

Type choices, press Enter.

Object name . . . . . paa01a      Name, *SELECT
Library name: . . . . . *ALL      Name, *ALL
Object type: . . . . . *ALL      *ALL, *BNDDIR, *CMD, *FILE...
+ for more values
Sub-type attribute . . . . . *ALL  Character value, *SELECT...
+ for more values
Referenced object type filter . *ALL  Character value, *SELECT...
+ for more values
Referenced object attr filter . *ALL  Character value, *SELECT...
+ for more values
How used filter . . . . . *ALL    Character value, *SELECT...
+ for more values
Xref data base . . . . . > *select Character value, *SELECT...
Output . . . . . *                *, *PRINT, *OUTFILE

                Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
  
```

Enter the program PAA01A as the program to be displayed. SuperVisor Xdb can contain several Xdb definitions. Using the default *PRV, will cause the command to use the same Xdb as the user used last time.

SuperVisor Xdb Using SuperVisor Xdb Data

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 7=CL statement 8=Object reference 9=Where used ...

  Object      Object
Opt  Name      Library   Type      Attribute  Usage      Format
>PAA01A      SPOOBJ   *PGM      RPG                -----
$BLKUD      SPOOBJ   *BEGSR    RPG                *BEGSR     $BLKUD
$CNLPO      SPOOBJ   *BEGSR    RPG                *BEGSR     $CNLPO
$DTL        SPOOBJ   *BEGSR    RPG                *BEGSR     $DTL
$EDITA      SPOOBJ   *BEGSR    RPG                *BEGSR     $EDITA
$EDITC      SPOOBJ   *BEGSR    RPG                *BEGSR     $EDITC
$EXCA       SPOOBJ   *BEGSR    RPG                *BEGSR     $EXCA
$EXCB       SPOOBJ   *BEGSR    RPG                *BEGSR     $EXCB
                                                    More...

F3=Exit          F4=Prompt        F5=Refresh        F10=Command entry
F11=Next view    F12=Cancel       F23 More options  F24=More keys
  
```

This will cause the Work with Object References screen to appear.

To filter the displayed data, press F17 to redisplay the commands selection criteria.

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work obj :      Xdb Data Filter Edit      :
6=Print so  :      :      :      :      :
:      Object type . . . . *ALL      :
Opt  Name    :      Sub-type attribute. *ALL      :
>PAA01A :      :      :      :      :
$BLKUD :      Ref object type . . *FILE      :
$CNLPO :      :      :      :      :
$DTL   :      Ref object attr . . *ALL      :
$EDITA :      :      :      :      :
$EDITC :      Ref object how used *ALL      :
$EXCA  :      :      :      :      :
$EXCB  :      F5=Select *ALL  F12=Cancel  F14=Process      :
:      :      :      :      :      : re...
:      :      :      :      :      :
F3=Exit          F4=Prompt        F5=Refresh        F10=Command entry
F11=Next view    F12=Cancel       F24=More keys
  
```

Press F14 to process the selections and re-build the "work with" display screen.

SuperVisor Xdb Using SuperVisor Xdb Data

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source  7=CL statement  8=Object reference  9=Where used ...

  Object      Object
Opt  Name      Library   Type      Attribute  Usage      Format
>PAA01A      SPOOBJ   *PGM      RPG
PAA01AFM     SPOOBJ   *FILE     DSPF       IO         PAA01AA
PAA01AFM     SPOOBJ   *FILE     DSPF       IO         PAA01AB
PAA01AFM     SPOOBJ   *FILE     DSPF       IO         PAA01AC
PAA01AFM     SPOOBJ   *FILE     DSPF       IO         PAA01AD
PAA01AFM     SPOOBJ   *FILE     DSPF       IO         PAA01AE
PDSCLO1      SPOOBJ   *FILE     LF         OU         PDSCP00A
PDTLL02      SPOOBJ   *FILE     LF         *EXTNAME

                                                         More...

F3=Exit          F4=Prompt          F5=Refresh          F10=Command entry
F11=Next view    F12=Cancel         F24=More keys
  
```

Now the display is limited to *FILE object references.

To change the object displayed press F18. This will cause the Xdb selection screen to be displayed.

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work object PDM  2=Work member PD :  Xdb Data Filter Edit      :
6=Print source  7=CL statement  8 :  :
                                     :  Object name . . . PAA02A      :
                                     :  Library name . . . *ALL      :
Opt  Object      Object      Type      :  Object type . . . *ALL      :
>PAA01A      SPOOBJ   *PGM      :  Object attribute . *ALL     :
$BLKUD       SPOOBJ   *BEGSR     :  :
$CNLPO       SPOOBJ   *BEGSR     :  F5=Select *ALL              :
$DTL         SPOOBJ   *BEGSR     :  F12=Cancel  F14=Process     :
$EDITA       SPOOBJ   *BEGSR     :  :
$EDITC       SPOOBJ   *BEGSR     :  :
$EXCA        SPOOBJ   *BEGSR     RPG      *BEGSR  $EXCA
$EXCB        SPOBJ    *BEGSR     RPG      *BEGSR  $EXCB

                                                         More...

F3=Exit          F4=Prompt          F5=Refresh          F10=Command entry
F11=Next view    F12=Cancel         F24=More keys
  
```

Enter a new program name (PAA02A), and press F14 to update the display.

SuperVisor Xdb Using SuperVisor Xdb Data

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source  7=CL statement  8=Object reference  9=Where used ...

  Object      Object
Opt Name      Library   Type      Attribute  Usage      Format
>PAA02A      SPOOBJ   *PGM      RPG
PAA02AFM     SPOOBJ   *FILE     DSPF       IO          PAA02AA
PAA02AFM     SPOOBJ   *FILE     DSPF       IO          PAA02AC
PAA02AFM     SPOOBJ   *FILE     DSPF       IO          PAA02AD
PAA02AFM     SPOOBJ   *FILE     DSPF       IO          PAA02AE
PDTLL02      SPOOBJ   *FILE     LF         *EXTNAME
PDTLL02      SPOOBJ   *FILE     LF         *EXTNAME
PDTLL02      SPOOBJ   *FILE     LF         Update      PDTLL02A
                                                    More...

F3=Exit          F4=Prompt      F5=Refresh     F10=Command entry
F11=Next view    F12=Cancel     F24=More keys
  
```

The screen will be redisplayed with references to program PAA02A.

Alternate views of the information are available using F11 to move forward, and F20 to move backward. Pressing F11 will display the next view.

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source  7=CL statement  8=Object reference  9=Where used ...

  Object      Object
Opt Name      Library   Text description
>PAA02A      SPOOBJ   Enter Approved Purchase Orders
PAA02AFM     SPOOBJ   Enter Approved Purchase Orders
PAA02AFM     SPOOBJ   Enter Approved Purchase Orders
PAA02AFM     SPOOBJ   Enter Approved Purchase Orders
PAA02AFM     SPOOBJ   Enter Approved Purchase Orders
PDTLL02      SPOOBJ   Purchase Order Detail (With DMY Dates)
PDTLL02      SPOOBJ   Purchase Order Detail (With DMY Dates)
PDTLL02      SPOOBJ   Purchase Order Detail (With DMY Dates)
                                                    More...

F3=Exit          F4=Prompt      F5=Refresh     F10=Command entry
F11=Next view    F12=Cancel     F24=More keys
  
```

This view shows the object text description. Press F11 again.

SuperVisor Xdb Using SuperVisor Xdb Data

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 7=CL statement 8=Object reference 9=Where used ...

  Object      Object      Source      Source      Source      Source last
Opt Name      Library     File        Library     Member      Change Date
>PAA02A      SPOOBJ     QRPGRSRC   SPOSRC     PAA02A     1994-01-02
PAA02AFM    SPOOBJ     QDDSSRC   SPOSRC     PAA02AFM   1994-01-02
PAA02AFM    SPOOBJ     QDDSSRC   SPOSRC     PAA02AFM   1994-01-02
PAA02AFM    SPOOBJ     QDDSSRC   SPOSRC     PAA02AFM   1994-01-02
PAA02AFM    SPOOBJ     QDDSSRC   SPOSRC     PAA02AFM   1994-01-02
PDTLL02     SPOOBJ     QDDSSRC   SPOSRC     PDTLL02    1994-01-02
PDTLL02     SPOOBJ     QDDSSRC   SPOSRC     PDTLL02    1994-01-02
PDTLL02     SPOOBJ     QDDSSRC   SPOSRC     PDTLL02    1994-01-02
                                                    More...

F3=Exit          F4=Prompt      F5=Refresh     F10=Command entry
F11=Next view    F12=Cancel     F24=More keys
  
```

This view displays the objects related source. This is the source code used during the building of the Xdb. Press F11 again.

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 7=CL statement 8=Object reference 9=Where used ...

  Object      Object      Usage      Format      Format Id      Member
Opt Name      Library     -----
>PAA02A      SPOOBJ
PAA02AFM    SPOOBJ     IO         PAA02AA     15CDD8482832B
PAA02AFM    SPOOBJ     IO         PAA02AC     11A45CAFF3EEF
PAA02AFM    SPOOBJ     IO         PAA02AD     20DD954969F84
PAA02AFM    SPOBJ      IO         PAA02AE     0180201F0F887
PDTLL02     SPOBJ      *EXTNAME
PDTLL02     SPOBJ      *EXTNAME
PDTLL02     SPOBJ      Update    PDTLL02A    3BE263F581AB7
                                                    More...

F3=Exit          F4=Prompt      F5=Refresh     F10=Command entry
F11=Next view    F12=Cancel     F24=More keys
  
```

This view shows detailed information about each record format. Press F11 again.

SuperVisor Xdb Using SuperVisor Xdb Data

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 7=CL statement 8=Object reference 9=Where used ...

  Object      Object
Opt  Name      Library   Type      File name in source
-----
>PAA02A      SPOOBJ
PAA02AFM     SPOOBJ   *FILE    PAA02AFM
PAA02AFM     SPOOBJ   *FILE    PAA02AFM
PAA02AFM     SPOOBJ   *FILE    PAA02AFM
PAA02AFM     SPOOBJ   *FILE    PAA02AFM
PDTLL02      SPOOBJ   *FILE
PDTLL02      SPOOBJ   *FILE
PDTLL02      SPOOBJ   *FILE    PDTLL02

                                                    More...

F3=Exit          F4=Prompt        F5=Refresh        F10=Command entry
F11=Next view    F12=Cancel       F24=More keys
  
```

This screen shows the name of the file reference in the program source. This is most important in COBOL applications, as well as CL programs using the Override Data Base File (OVRDBF) commands. This is also valuable when programs are created using the (OVRDBF) command.

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 7=CL statement 8=Object reference 9=Where used ...

  Object      Object
Opt  Name      Library   Type      File name in source
-----
>PAA02A      SPOOBJ
PAA02AFM     SPOOBJ   *FILE    PAA02AFM
PAA02AFM     SPOOBJ   *FILE    PAA02AFM
PAA02AFM     SPOOBJ   *FILE    PAA02AFM
PAA02AFM     SPOOBJ   *FILE    PAA02AFM
PDTLL02      SPOOBJ   *FILE
PDTLL02      SPOOBJ   *FILE
PDTLL02      SPOOBJ   *FILE    PDTLL02

                                                    More...

F3=Exit          F4=Prompt        F5=Refresh        F10=Command entry
F11=Next view    F12=Cancel       F24=More keys
  
```

SuperVisor Xdb Using SuperVisor Xdb Data

Creating an Output file with XWRKOBJXDB

```
Work with Objects in Xdb (XWRKOBJXDB)

Type choices, press Enter.

Objects--Generic* or *ALL: . . . > *ALL          Name, generic*, *ALL
Library name: . . . . . *ALL                    Name, *ALL
Object type: . . . . . *ALL                      *ALL, *BNDDIR, *CMD, *FILE...
Sub-type attribute . . . . . *ALL                Character value, *ALL
Xref data base . . . . . > *PRV                 Character value, *SELECT...

Output . . . . . > *OUTFILE                      *, *PRINT, *OUTFILE
Output format . . . . . *XDBOBJ20               *EXTF, *XDBOBJ20
Output File . . . . . *NONE                      Character value, *NONE
  Library name . . . . . SUPEREXTF              Name, SUPEREXTF
  Member option . . . . . *REPLACE              *REPLACE, *ADD
Output File Text . . . . . *SAME

Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

When an *OUTFILE is entered in the OUTPUT parameter, additional parameters are displayed. Each Xdb command offers two formats for the output file. The default is the Xdb format. Different commands output different XDB formats.

The second is the SuperVisor External File format. This is the format used by other SuperVisor commands. The physical file name is limited to 8 characters and can be written to any library.

Work with Objects Where Used

```
MAIN                               SuperVisor5(tm) Main Menu                               System: SMI5

Select one of the following.

SuperVisor Xdb "Cross Reference Data Base"                               Authorized
                                                                              *TEMP

    15. Work with Xdb Definition
    16. Manage the Xdb Data Base

Use the Xdb Data base
    19. Work with object references
    20. Work with objects where used
    21. Work with files
    22. Work with fields
    23. Work with programs
    24. Work with System/36 OCL

                                                                              More...

Selection
====>
F3=Exit   F5=Next Menu- *SELECT   F6=Display Message   F10=Command entry
F12=Cancel F14=Work with jobs     F16=Main menu        F18=Work with output
F21=Print menu help
```

Option 20 from the Cross-Reference Data Base brings forward the Work with Objects Where Used submenu.

SuperVisor Xdb Using SuperVisor Xdb Data

```
XDB08                      Work with Objects Where Used                      System: SMI

Select one of the following.

    1. Work with objects in Xdb                      XWRKOBJXDB
    2. Work with object where used                   XWRKOBJWU

    4. Work with *CMD where used                     XWRKOBJWU
    5. Work with *DTAARA where used                  XWRKOBJWU
    6. Work with *FILE where used                   XWRKOBJWU
    7. Work with *JOBQ where used                    XWRKOBJWU
    8. Work with *JOBQ where used                    XWRKOBJWU
    9. Work with *MENU where used                    XWRKOBJWU
    10. Work with *USRPRF where used                  XWRKOBJWU

    12. Print objects where used                      XPRTOBJWU

Selection
====>
F3=Exit      F5=Next Menu- *SELECT      Xref Data Base *PRV      F10=Command entry
F12=Cancel   F14=Work with jobs         F6=Display Message       F18=Work with output
F21=Print menu help      F16=Main menu
```

Work with Files

```
XDB09                      Work with Files                      System: SMI

Select one of the following.

    1. Work with files in Xdb                      XWRKOBJXDB
    2. Work with File Field Description             XWRKFFD
    3. Work with dependant logical files           XWRKDLF
    4. Work with logical based on file             XWRKBOF

    6. Work with data base file where used         XWRKDBFWU
    7. Work with record format where used          XWRKFMTWU
    8. Work with file member where used            XWRKMBRWU
    9. Work with file in source where used          XWRKFLSWU

    11. Work with trigger programs                  XWRKOBJJHU
    12. Work with remote files                      XWRKOBJJHU

More...

Selection
====>
F3=Exit      F5=Next Menu- *SELECT      Xref Data Base *PRV      F10=Command entry
F12=Cancel   F14=Work with jobs         F6=Display Message       F18=Work with output
F21=Print menu help      F16=Main menu
```

The Work with files in Xdb runs the XWRKOBJXDB command, as with any object. The other options support references that are unique to files. Files also use the "how used" command (XWRKOBJJHU).

SuperVisor Xdb Using SuperVisor Xdb Data

Work with Fields

```
XDB10                      Work with Fields                      System: SMI

Select one of the following.

Fields where used in Files

    3. Work with field where used          XWRKFFDWU
    4. Work with ref.field where used      XWRKFRDWU
    5. Work with alias.field where used    XWRKFADWU

Fields used in programs

    9. Work with programs fields          XWRKPGMFFD
   10. Work with field where used         XWRKPFDWU

Selection
====>
F3=Exit   F5=Next Menu- *SELECT   Xref Data Base *PRV   F6=Display Message   F10=Command entry
F12=Cancel F14=Work with jobs     F16=Main menu         F18=Work with output
F21=Print menu help
```

The work with field's menu is divided into two sections. Fields used in files and fields used in programs. When a field is entered, it will display all files the field is in, as well as other fields that have been created, based on the named field. This includes fields created using the REFFLD keyword. Fields derived from fields using sub-string or concatenation will also be displayed.

Execute the Work with File Field Description Where Used (XWRKFFDWU) command by selecting option 3.

```
Work with Fields Where Used (XWRKFFDWU)

Type choices, press Enter.

Field name . . . . . > PADUEM          Name, *SELECT
Library name: . . . . . *ALL           Name, *ALL
File attribute . . . . . *ALL          Character value, *SELECT...
+ for more values
Xref data base . . . . . > SPO         Character value, *SELECT...
Output . . . . . *                     *, *PRINT, *OUTFILE

Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

In this example the field Purchase Order Header Due Month field (PADUEM) is used.

SuperVisor Xdb Using SuperVisor Xdb Data

```

XWRKFFDWU          Xdb - Work with File Fields Where Used          SMI
SPO                                                         1/06/00

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 7=CL statement 8=Object reference 9=Where used ...

  Field      File
Opt  Name      Name      Position  Text
-----
>PADUEM
PADUEM  PFLDR00      94      DUE MONTH....
PADUEM  PHDRL01      94      DUE MONTH....
PADUEM  PHDRL01      94      DUE MONTH....
PADUEM  PHDRL02     118      DUE MONTH....
PADDUE  PHDRL02     128      DUE DATE MDY
PADUEM  PHDRL03     118      DUE MONTH....
PADDUE  PHDRL03     122      DUE DATE MDY

More...

F3=Exit      F4=Prompt      F5=Refresh      F10=Command entry
F11=Next view  F12=Cancel      F24=More keys
  
```

This screen will show the files that contain the field PADUEM, as well as other fields that have been created, using field PADUEM.

The fields PADDUE, has been created using concatenation within a logical file.

```

XDB11          Work with Programs          System: SMI5

Select one of the following.

  1. Work with programs in Xdb          XWRKOBJXDB
  2. Work with program references      XWRKOBJJREF
  3. Work with program files          XWRKOBJJREF
  4. Work with program calls          XWRKOBJJREF
  5. Work with job stream              XWRKJOBSTM

  7. Work with programs where used      XWRKOBJJU
  8. Work with RPG subroutine where used XWRKOBJJU
  9. Work with Sub-procedure where used XWRKSPRWU
 10. Print program references          XPRTOBJJREF
 11. Print programs where used         XPRTOBJJU
 12. Print Job Stream References       XPRTJOBREF

Selection
====>
F3=Exit      F5=Next Menu- *SELECT      F6=Display Message      F10=Command entry
F12=Cancel  F14=Work with jobs        F16=Main menu           F18=Work with output
F21=Print menu help
  
```

The cross-reference deals with programs in broad terms and supports the following object types as programs.

- *PGM - Program objects
- *MODULE - Module objects
- *SRVPGM - Service Programs
- *MENU - System/36 and Native Menus
- *FILE/OCL36 - File objects with the attribute OCL36.

Work with Job Stream (XWRKJOBSTM)

SuperVisor Xdb Using SuperVisor Xdb Data

In addition to the normal cross-reference ability, program analysis includes job stream analysis. Job stream explosion is supported up to 999 levels, beginning with any "program" found in the cross-reference. For ILE programs, the cross-reference supports Activation Group tracking.

As an example, to review ILE program BCS905, select option 5.

The Work with XWRKJOBSTM command is prompted.

```

Work with Job Stream (XWRKJOBSTM)

Type choices, press Enter.

Object name . . . . . OBJ
Library name: . . . . . *ALL
Object type: . . . . . TYPE *EXE
                + for more values
Sub-type attribute . . . . . SUBTYP *ALL
                + for more values
Job Stream direction . . . . . DIRECTION *FORWARD
Referenced object type filter . REFTYPE *ALL
                + for more values
Referenced object attr filter . REFATTR *ALL
                + for more values
How used filter . . . . . HOWUSED *ALL
                + for more values
Invocation limit . . . . . LIMIT 99
Omit list . . . . . OMIT
                + for more values
More...

F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys

```

The below display is presented.

```

XWRKJOBSTM          Xdb - Work with Job Stream          SMI
BCOST                1/08/00

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 8=Object reference 9=Where used ...

Opt Program      Forward Level      Library      Type      Attribute      Entry
BCS905          00                BCOST        *MODULE   RPGLE
BCS906          01.               BCOST        *PGM      RPGLE
BCS906          01.               QTEMP        *MODULE   RPGLE      *YES
QCMDEXC        02..              QSYS         *PGM
QMHRMVPM       02..              QSYS         *PGM
QMHSNDPM       02..              QSYS         *PGM
RTVCDEWINA    02..              SUPERV4      *PGM      CLP
QCMDEXC        01.               QSYS         *PGM
More...

F3=Exit          F4=Prompt        F5=Refresh    F10=Command entry
F11=Next view    F12=Cancel       F24=More keys

```

Press F11 to move to alternate views, which include Activation Group. Press F21 to print the Job Stream Report. Following is a sample of the Job Stream Report.

SuperVisor Xdb Using SuperVisor Xdb Data

BCOST		SuperVisor5(tm)		XWRKJOBSTM		System	
/08/00		Xdb - Work with Job Stream		Page 1		SMI	
Program		Forward Level		Library		Entry Activation	
				Type		Module Group	
BCS905	00	BCOST	*MODULE	RPGLE		Work with division file	
BCS906	01.	BCOST	*PGM	RPGLE		Edit Division File	
BCS906	01.	QTEMP	*MODULE	RPGLE	*YES	*DFTACTGRP	
QCMDEXC	02..	QSYS	*PGM				
QHRMVPM	02..	QSYS	*PGM				
QMSNDPM	02..	QSYS	*PGM				
RTVCDEWINA	02..	SUPERV4	*PGM	CLP			
QCMDEXC	01.	QSYS	*PGM				
QHRMVPM	01.	QSYS	*PGM				
QMSNDPM	01.	QSYS	*PGM				
BCS905	00	BCOST	*PGM	RPGLE		Work with division file	
BCS905	00	QTEMP	*MODULE	RPGLE	*YES	*DFTACTGRP	
BCS906	01.	BCOST	*PGM	RPGLE		Edit Division File	
BCS906	01.	QTEMP	*MODULE	RPGLE	*YES	*DFTACTGRP	
QCMDEXC	02..	QSYS	*PGM				
QHRMVPM	02..	QSYS	*PGM				
QMSNDPM	02..	QSYS	*PGM				
RTVCDEWINA	02..	SUPERV4	*PGM	CLP			
QCMDEXC	01.	QSYS	*PGM				
QHRMVPM	01.	QSYS	*PGM				
QMSNDPM	01.	QSYS	*PGM				
Records processed		19					

Work with System/36

```

XDB12                Work with System/36                System: SMI

Select one of the following.

    1. Work with OCL36 in Xdb                XWRKOBJXDB

    3. Work with OCL36 references            XWRKOBJREF
    4. Work with OCL36 where used           XWRKOBJJU
    5. Work with LABEL in OCL36 where used  XWRKFLSWU

    7. Print OCL36 references                XPRTOBJREF
    8. Print OCL36 where used               XPRTOBJJU

Selection
====>
F3=Exit      F5=Next Menu- *SELECT      F6=Display Message  F10=Command entry
F12=Cancel   F14=Work with jobs         F16=Main menu       F18=Work with output
F21=Print menu help
  
```

The primary difference between applications written for the System/36 Environment and native AS/400 applications is that file and program objects are bound by "File" and "Name" parameters in OCL statements. SuperVisor interrogates OCL source statements to create references in the database. The options on this

SuperVisor Xdb Using SuperVisor Xdb Data

menu execute cross-reference commands, filling in the SuperVisor parameters that extract these System/36 OCL references.

XDB
ADDITIONAL TOPICS

SuperVisor Xdb and ILE

SuperVisor Xdb Build uses both object and source information to build the most complete presentation of the application as is possible. To this end, special attention was made the different characteristics of an application implement using the Integrated Language Environment or ILE.

ILE Import and Export

Whenever an impact analysis is being made for an application created in an ILE environment it is vital to understand now only where modules are used, but how modules are used. For ILE module usage in programs place a role similar to file usage. The impact a change may have to modules used as export procedures is different then those that are imported to a program.

For SuperVisor this is represented as module usage in the different “Work with” commands. The following screen shows an example from the Simple PO system.

```
XWRKOBJWU          Xdb - Work with Object Where Used          SMI5
SPO                1/02/06

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 7=CL statement 8=Object reference 9=Where used ...

  Object      Object      Type      Attribute  Usage      Format
Opt  Name      Library      Type      Attribute  Usage      Format
>PBA24A      SPOOBJ      *MODULE   CLLE       -----
PAA01A      SPOOBJ      *MODULE   RPGLE      *IMPORT
PBA01A      SPOOBJ      *MODULE   RPGLE      *IMPORT
PBA24A      SPOOBJ      *MODULE   CLLE       *EXPORT
PBA24A      SPOOBJ      *SRVPGM   CLLE       *PROCLIST

                                          Bottom

F3=Exit          F4=Prompt        F5=Refresh       F10=Command entry
F11=Next view    F12=Cancel       F23=More options F24=More keys
```

ILE Service Program Signature

Like record format identifications used in files, Service Program Signatures are important when understanding the impact of a change being made to the Service Program on any program which may be making references to it.

Using the SuperVisor Xdb Output Files

Following is a short example, which shows how to use SuperVisor Xdb commands to create an output file, then use other commands to process the file.

The ability for SuperVisor commands to create output files, and then use these files as input to other commands is one of the features which makes SuperVisor so effective.

In this example, the Work with Object References (XWRKOBJREF) command will be used two times. First place all references by program PAA01A into output file XXX in library QTEMP. Next add references by program PAA02A into the same file. The final step is to use the Print Objects Where Used (XWRKOBJWU) report to print objects used by either program PAA01A and PAA02A.

To use SuperVisor, ensure that the libraries SUPERVISOR and QTEMP are in the jobs library list.

Next enter the command SUPERVISOR and use the page down key to display the Cross Reference Data Base (Xdb) main menu.

```
MAIN                               SuperVisor5(tm) Main Menu                               System: SMI5
Select one of the following.
SuperVisor Xdb "Cross Reference Data Base"                               Authorized
                                                                           *TEMP
    15. Work with Xdb Definition
    16. Manage the Xdb Data Base
Use the Xdb Data base
    19. Work with object references
    20. Work with objects where used
    21. Work with files
    22. Work with fields
    23. Work with programs
    24. Work with System/36 OCL
                                                                           More...
Selection
====>
F3=Exit      F5=Next Menu- *SELECT      F6=Display Message  F10=Command entry
F12=Cancel  F14=Work with jobs           F16=Main menu       F18=Work with output
F21=Print menu help
```

Select option 23 "Work with programs"

SuperVisor Xdb Additional Topics

```

XDB11                                Work with Programs                                System: SMI5

Select one of the following.

    1. Work with programs in Xdb                XWRKOBJXDB
    2. Work with program references            XWRKOBJJREF
    3. Work with program files                XWRKOBJJREF
    4. Work with program calls                XWRKOBJJREF
    5. Work with job stream                    XWRKJOBSTM

    7. Work with programs where used          XWRKOBJJUW
    8. Work with RPG subroutine where used    XWRKOBJJUW
    9. Work with Sub-procedure where used     XWRKSPRWU
   10. Print program references                XPRTOBJJREF
   11. Print programs where used              XPRTOBJJUW
   12. Print Job Stream References            XPRTJOBREF

Selection
====>
F3=Exit      F5=Next Menu- *SELECT      Xref Data Base SPO      F10=Command entry
F12=Cancel   F14=Work with jobs         F6=Display Message     F18=Work with output
F21=Print menu help      F16=Main menu

```

This menu includes commands written specifically for accessing program information, or standard Xdb commands, with parameters set to include references to programs.

Select option 2 “Work with program references”.

```

                                Work with Object References (XWRKOBJJREF)

Type choices, press Enter.

Object name . . . . . OBJ
Library name: . . . . . *ALL
Object type: . . . . . TYPE > *EXE
                + for more values
Sub-type attribute . . . . . SUBTYP *ALL
                + for more values
Referenced object type filter . REFTYPE *ALL
                + for more values
Referenced object attr filter . REFATTR *ALL
                + for more values
How used filter . . . . . HOWUSED *ALL
                + for more values
Xref data base . . . . . XDB > SPO
Output . . . . . OUTPUT *

                                Bottom
F3=Exit      F4=Prompt      F5=Refresh      F12=Cancel      F13=How to use this display
F24=More keys

```

This file can be used to view, print or place the object references into an output file.

Note: The special value *EXE, will include all program and program related objects. These are Programs, Service Programs, Modules, and System/36 OCL.

SuperVisor Xdb Additional Topics

```

                                Work with Object References (XWRKOBJREF)

Type choices, press Enter.

Object name . . . . . OBJ                paa01a
  Library name: . . . . .                *ALL
Object type: . . . . . TYPE              > *EXE
      + for more values
Sub-type attribute . . . . . SUBTYP      *ALL
      + for more values
Referenced object type filter . REFTYPE  *ALL
      + for more values
Referenced object attr filter . REFATTR  *ALL
      + for more values
How used filter . . . . . HOWUSED       *ALL
      + for more values
Xref data base . . . . . XDB            > SPO
Output . . . . . OUTPUT                 *outfile

                                                    Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

To process a program, enter its name in the OBJ parameter. The XDB parameter has defaulted to the last used data base. To create an output file, change the OUTPUT parameter to *OUTFILE, and press enter.

```

                                Work with Object References (XWRKOBJREF)

Type choices, press Enter.

Object name . . . . . OBJ                > PAA01A
  Library name: . . . . .                *ALL
Object type: . . . . . TYPE              > *EXE
      + for more values
Sub-type attribute . . . . . SUBTYP      *ALL
      + for more values
Referenced object type filter . REFTYPE  *ALL
      + for more values
Referenced object attr filter . REFATTR  *ALL
      + for more values
How used filter . . . . . HOWUSED       *ALL
      + for more values
Xref data base . . . . . XDB            > SPO
Output . . . . . OUTPUT                 > *OUTFILE
Output format . . . . . OUTFMT         *XDBOBJ30
Output File . . . . . OUTF              xxx

                                                    More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

The screen will redisplay, and provide a place to enter the name of the output file. This name can be anything. The format of the output file is identified by the OUTFMT parameter.

Use the roll key to view additional parameters.

SuperVisor Xdb Additional Topics

```
Work with Object References (XWRKOBJREF)

Type choices, press Enter.

Library name . . . . . OUTL          qtemp
Member option . . . . . OUTMBROPT    *REPLACE
Output File Text . . . . . OUTT      example using output file

Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

This will be a temporary file, so the output library is changed to QTEMP. Enter a text description which will identify the file and its contents.

Press enter to process the command.

```
XDB11                Work with Programs                System: SMI5

Select one of the following.

1. Work with programs in Xdb          XWRKOBJXDB
2. Work with program references       XWRKOBJJREF
3. Work with program files           XWRKOBJJREF
4. Work with program calls           XWRKOBJJREF
5. Work with job stream              XWRKJOBSTM

7. Work with programs where used     XWRKOBJJWU
8. Work with RPG subroutine where used XWRKOBJJWU
9. Work with Sub-procedure where used XWRKSPRWU
10. Print program references         XPRTOBJJREF
11. Print programs where used       XPRTOBJJWU
12. Print Job Stream References      XPRTJOBREF

Selection
==>
F3=Exit   F5=Next Menu- *SELECT   Xref Data Base SPO   F6=Display Message   F10=Command entry
F12=Cancel F14=Work with jobs     F16=Main menu        F18=Work with output
F21=Print menu help
```

When processing has completed, the “Work with Programs” menu will redisplay.

Select option 2 once more to process the next program PAA02A.

SuperVisor Xdb Additional Topics

```

                                Work with Object References (XWRKOBJREF)

Type choices, press Enter.

Object name . . . . . OBJ                paa02a
  Library name: . . . . .                *ALL
Object type: . . . . . TYPE              > *EXE
                                     + for more values
Sub-type attribute . . . . . SUBTYP      *ALL
                                     + for more values
Referenced object type filter . REFTYPE  *ALL
                                     + for more values
Referenced object attr filter . REFATTR  *ALL
                                     + for more values
How used filter . . . . . HOWUSED       *ALL
                                     + for more values
Xref data base . . . . . XDB            > SPO
Output . . . . . OUTPUT                 *outfile

                                                                Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

Enter program PAA02A, as the program to process, and enter the special value *OUTFILE in the OUTPUT parameter to instruct the command to place the references into the output file.

Press enter and the screen will redisplay.

```

                                Work with Object References (XWRKOBJREF)

Type choices, press Enter.

Object name . . . . . OBJ                > PAA02A
  Library name: . . . . .                *ALL
Object type: . . . . . TYPE              > *EXE
                                     + for more values
Sub-type attribute . . . . . SUBTYP      *ALL
                                     + for more values
Referenced object type filter . REFTYPE  *ALL
                                     + for more values
Referenced object attr filter . REFATTR  *ALL
                                     + for more values
How used filter . . . . . HOWUSED       *ALL
                                     + for more values
Xref data base . . . . . XDB            > SPO
Output . . . . . OUTPUT                 > *OUTFILE
Output format . . . . . OUTFMT         *XDBOBJ30
Output File . . . . . OUTF              xxx

                                                                More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

Once again enter xxx as the file to receive the information. Then use the roll key to view the additional parameters.

SuperVisor Xdb Additional Topics

```

                                Work with Object References (XWRKOBJREF)

Type choices, press Enter.

  Library name . . . . . OUTL           qtemp
  Member option . . . . . OUTMBROPT    *add
  Output File Text . . . . . OUTT      *SAME

                                                                Bottom
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

Enter the name of the output library as QTEMP.

Now change the OUTMBROPT parameter from *REPLACE to *ADD. This will cause the command to add new information to the existing information.

Press enter to process the command.

```

XDB11                                Work with Programs                                System: SMI5

Select one of the following.

    1. Work with programs in Xdb                XWRKOBJXDB
    2. Work with program references            XWRKOBJREF
    3. Work with program files                XWRKOBJREF
    4. Work with program calls                XWRKOBJREF
    5. Work with job stream                   XWRKJOBSTM

    7. Work with programs where used          XWRKOBJJU
    8. Work with RPG subroutine where used    XWRKOBJJU
    9. Work with Sub-procedure where used    XWRKSPRWU
   10. Print program references               XPRTOBJREF
   11. Print programs where used             XPRTOBJJU
   12. Print Job Stream References           XPRTJOBREF

Selection
===>
F3=Exit   F5=Next Menu- *SELECT   Xref Data Base SPO   F10=Command entry
F12=Cancel F14=Work with jobs     F6=Display Message   F16=Main menu        F18=Work with output
F21=Print menu help
```

When the menu displays, the output file has been completed. The output file XXX in library QTEMP, now contains references to program PAA01A and PAA02A.

SuperVisor Xdb Additional Topics

To print a report showing what objects are referenced by just those two programs, use option 12 “Print programs where used”.

```
Print Object Where Used (XPRTOBJWU)

Type choices, press Enter.

Reference object name . . . . . REFOBJ
Library name . . . . . *ALL
Referenced object type filter . REFTYPE > *EXE
+ for more values
Referenced object attr filter . REFATTR *ALL
+ for more values
Object name filter . . . . . OBJ *ALL
+ for more values
Object type . . . . . TYPE *ALL
+ for more values
Sub-type attribute . . . . . SUBTYP *ALL
+ for more values
How used filter . . . . . HOWUSED *ALL
+ for more values
Select Using EXCQRYS command: . SQU *NO
Retain SQU Statement: . . . . . SQUKEEP *TEMP
More...
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys
```

To process the existing file you will need to change the REFOBJ and REFTYPE parameter.

```
Print Object Where Used (XPRTOBJWU)

Type choices, press Enter.

Reference object name . . . . . REFOBJ > XXX
Library name . . . . . > QTEMP
Referenced object type filter . REFTYPE > *XDBOBJ30
+ for more values
Referenced object attr filter . REFATTR *ALL
+ for more values
Object name filter . . . . . OBJ *ALL
+ for more values
Object type . . . . . TYPE *ALL
+ for more values
Sub-type attribute . . . . . SUBTYP *ALL
+ for more values
How used filter . . . . . HOWUSED *ALL
+ for more values
Select Using EXCQRYS command: . SQU *NO
Retain SQU Statement: . . . . . SQUKEEP *TEMP
More...
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys
```

Enter the qualified name of the file QTEMP/XXX. Then enter the special value *XDBOBJ30, as the REFTYPE parameter. This special value tells the command that the object specified in the REFOBJ parameter is the name of file which contains the information to be processed.

Press enter to process the command.

SuperVisor Xdb Additional Topics

Following is the report created by the Print Object Where Used (XPRTOBJWU) report.

SuperVisor Xdb Additional Topics

SPO		SuperVisor4 (tm)				XPRTOBJWU			System
1/19/02	Xdb - Print Object Where Used				Page	1		SMI	
Object Name	Object Library	Object Type	Object Attribute	How Used	Record Format	Source File	Source Library	Source Member	Object Description
>*SPCVL	*LIBL	*DTAARA							
PAA01A	SPOOBJ	*MODULE	RPGL			QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGL						Enter/Update Purchase Order
PAA02A	SPOOBJ	*PGM	RPGL						Enter Approved Purchase Orders
>CMPID	SPOSUP	*DTAARA							Company Id Code
PAA01A	SPOOBJ	*MODULE	RPGL			QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGL						Enter/Update Purchase Order
PAA02A	SPOOBJ	*MODULE	RPGL			QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGL						Enter Approved Purchase Orders
>DSPTXTA	SUPERVISOR	*PGM	CLP						
PAA01A	SPOOBJ	*MODULE	RPGL			QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGL						Enter/Update Purchase Order
PAA02A	SPOOBJ	*MODULE	RPGL			QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGL						Enter Approved Purchase Orders
>PAA01A	SPOOBJ	*MODULE	RPGL			QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGL	*ENTRYMOD	*ACTVGRP				Enter/Update Purchase Order
>PAA01AFM	SPOOBJ	*FILE	DSPF			QDDSSRC	SPOSRC	PAA01AFM	Enter/Update Purchase Order
PAA01A	SPOOBJ	*MODULE	RPGL	IOU	PAA01AA	QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*MODULE	RPGL	IOU	PAA01AB	QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*MODULE	RPGL	IOU	PAA01AC	QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*MODULE	RPGL	IOU	PAA01AD	QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*MODULE	RPGL	IOU	PAA01AE	QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGL	IOU	PAA01AA				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGL	IOU	PAA01AB				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGL	IOU	PAA01AC				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGL	IOU	PAA01AD				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGL	IOU	PAA01AE				Enter/Update Purchase Order
>PAA01B	SPOOBJ	*MODULE	RPGL			QRPGLESRC	SPOSRC	PAA01B	Duplicate Purchase Order
PAA01A	SPOOBJ	*MODULE	RPGL			QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGL						Enter/Update Purchase Order
>PAA02A	SPOOBJ	*MODULE	RPGL			QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGL	*ENTRYMOD	*ACTVGRP				Enter Approved Purchase Orders
>PAA02AFM	SPOOBJ	*FILE	DSPF			QDDSSRC	SPOSRC	PAA02AFM	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*MODULE	RPGL	IOU	PAA02AA	QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*MODULE	RPGL	IOU	PAA02AC	QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*MODULE	RPGL	IOU	PAA02AD	QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*MODULE	RPGL	IOU	PAA02AE	QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGL	IOU	PAA02AA				Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGL	IOU	PAA02AC				Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGL	IOU	PAA02AD				Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGL	IOU	PAA02AE				Enter Approved Purchase Orders

SuperVisor Xdb Additional Topics

>PBA01A	SPOOBJ	*MODULE	RPGLE	-----	QRPGLESRC	SPOSRC	PBA01A	Purchase Order Search
PAA01A	SPOOBJ	*MODULE	RPGLE		QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order

SuperVisor Xdb Additional Topics

SuperVisor4 (tm)									
SPO					XPRTOBJWU				System
1/19/02	Xdb - Print Object Where Used				Page	2			SMI
Object	Object	Object	Object	How	Record	Source	Source	Source	Object
Name	Library	Type	Attribute	Used	Format	File	Library	Member	Description
PAA01A	SPOOBJ	*PGM	RPGLE						Enter/Update Purchase Order
PAA02A	SPOOBJ	*MODULE	RPGLE			QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGLE						Enter Approved Purchase Orders
>PBA01AFM	SPOOBJ	*FILE	DSPF	-----	-----	QDDSSRC	SPOSRC	PBA01AFM	Purchase Order Search
PAA01A	SPOOBJ	*PGM	RPGLE	IOU	PBA01AA				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	IOU	PBA01AB				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	IOU	PBA01AC				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	IOU	PBA01AD				Enter/Update Purchase Order
PAA02A	SPOOBJ	*PGM	RPGLE	IOU	PBA01AA				Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGLE	IOU	PBA01AB				Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGLE	IOU	PBA01AC				Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGLE	IOU	PBA01AD				Enter Approved Purchase Orders
>PBA24A	SPOOBJ	*MODULE	CLLE	-----	-----	QCLLESRC	SPOSRC	PBA24A	Retrieve Code value from Table
PAA01A	SPOOBJ	*MODULE	RPGLE			QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
>PBA24A	SPOOBJ	*SRVPGM	CLLE	-----	-----				Retrieve Table Service Code
PAA01A	SPOOBJ	*PGM	RPGLE	*SIGNATURE					Enter/Update Purchase Order
PAA02A	SPOOBJ	*PGM	RPGLE	*SIGNATURE					Enter Approved Purchase Orders
>PDSC101	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PDSC101	Purchase Order Detail Descript
PAA01A	SPOOBJ	*MODULE	RPGLE	IOU	PDSCP00A	QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	IO	PDSCP00A				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	IOU	PDSCP00A				Enter/Update Purchase Order
>PDTLL01	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PDTLL01	Purchase Order Detail File
PAA01A	SPOOBJ	*PGM	RPGLE	IO	PDTLP00A				Enter/Update Purchase Order
>PDTLL02	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PDTLL02	Purchase Order Detail (With DM
PAA01A	SPOOBJ	*MODULE	RPGLE	*EXTNAME		QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*MODULE	RPGLE	IOU	PDTLL02A	QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	IOU	PDTLL02A				Enter/Update Purchase Order
PAA02A	SPOOBJ	*MODULE	RPGLE	*EXTNAME		QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*MODULE	RPGLE	IU	PDTLL02A	QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGLE	IU	PDTLL02A				Enter Approved Purchase Orders
>PHDRL01	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PHDRL01	Purchase Order Header File
PAA01A	SPOOBJ	*PGM	RPGLE	IO	PHDRP00A				Enter/Update Purchase Order
>PHDRL02	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PHDRL02	Purchase Order Header (With MD
PAA01A	SPOOBJ	*MODULE	RPGLE	*EXTNAME		QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*MODULE	RPGLE	IOU	PHDRL02A	QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	IOU	PHDRL02A				Enter/Update Purchase Order
PAA02A	SPOOBJ	*MODULE	RPGLE	*EXTNAME		QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*MODULE	RPGLE	IU	PHDRL02A	QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGLE	IU	PHDRL02A				Enter Approved Purchase Orders

SuperVisor Xdb Additional Topics

>PHDRL10	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PHDRL10	Purchase Order Header (Status/
PAA01A	SPOOBJ	*PGM	RPGLE	Input		PHDRL02A			Enter/Update Purchase Order
PAA02A	SPOOBJ	*PGM	RPGLE	Input		PHDRL02A			Enter Approved Purchase Orders

SuperVisor Xdb Additional Topics

SuperVisor4(tm)									
SPO								XPRTOBJWU	System
1/19/02	Xdb - Print Object Where Used							Page 3	SMI
Object	Object	Object	Object	How	Record	Source	Source	Source	Object
Name	Library	Type	Attribute	Used	Format	File	Library	Member	Description
>PHDRL11	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PHDRL11	Purchase Order Header (Ven#, S
PAA01A	SPOOBJ	*PGM	RPGLE	Input	PHDRL02A				Enter/Update Purchase Order
PAA02A	SPOOBJ	*PGM	RPGLE	Input	PHDRL02A				Enter Approved Purchase Orders
>PHDRL12	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PHDRL12	Purchase Order Header (Ordered
PAA01A	SPOOBJ	*PGM	RPGLE	Input	PHDRL02A				Enter/Update Purchase Order
PAA02A	SPOOBJ	*PGM	RPGLE	Input	PHDRL02A				Enter Approved Purchase Orders
>PHDRL13	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PHDRL13	Purchase Order Header (Extn, S
PAA01A	SPOOBJ	*PGM	RPGLE	Input	PHDRL02A				Enter/Update Purchase Order
PAA02A	SPOOBJ	*PGM	RPGLE	Input	PHDRL02A				Enter Approved Purchase Orders
>PHDRL14	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PHDRL14	Purchase Order Header (Dept, V
PAA01A	SPOOBJ	*PGM	RPGLE	Input	PHDRL02A				Enter/Update Purchase Order
PAA02A	SPOOBJ	*PGM	RPGLE	Input	PHDRL02A				Enter Approved Purchase Orders
>PNMEL01	SPOOBJ	*FILE	LF	-----	-----	QDDSSRC	SPOSRC	PNMEL01	Purchase Order Name and Addres
PAA01A	SPOOBJ	*MODULE	RPGLE	*EXTNAME		QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*MODULE	RPGLE	IOU	PNMEP00A	QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	Input	PNMEP00A				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	IO	PNMEP00A				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	IOU	PNMEP00A				Enter/Update Purchase Order
PAA02A	SPOOBJ	*PGM	RPGLE	Input	PNMEP00A				Enter Approved Purchase Orders
>POTXT	SPOSUP	*FILE	PF38	-----	-----				Purchase Order User Reference
PAA01A	SPOOBJ	*MODULE	RPGLE			QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA02A	SPOOBJ	*MODULE	RPGLE			QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
>QRPGLESRC	SPOSRC	*FILE	PF	-----	-----				RPG ILE Source Programs
PAA01A	SPOOBJ	*MODULE	RPGLE	*COPYBOOK		QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA02A	SPOOBJ	*MODULE	RPGLE	*COPYBOOK		QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
>RTVDDA	SUPERVISOR	*PGM	CLP	-----	-----				
PAA01A	SPOOBJ	*MODULE	RPGLE			QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE						Enter/Update Purchase Order
>UCDEL01	SPOSUP	*FILE	LF38	-----	-----				Table Service -- Code File
PAA01A	SPOOBJ	*MODULE	RPGLE	IU	UCDEP00A	QRPGLESRC	SPOSRC	PAA01A	Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	Input	UCDEP00A				Enter/Update Purchase Order
PAA01A	SPOOBJ	*PGM	RPGLE	IU	UCDEP00A				Enter/Update Purchase Order
PAA02A	SPOOBJ	*MODULE	RPGLE	Input	UCDEP00A	QRPGLESRC	SPOSRC	PAA02A	Enter Approved Purchase Orders
PAA02A	SPOOBJ	*PGM	RPGLE	Input	UCDEP00A				Enter Approved Purchase Orders
Records processed		92							

**USING
SUPERVISOR XDM**

Field Expansion Projects

Field expansion is an ongoing challenge to any active development group and the most common project that impacts large numbers of programs and screens used throughout your application. SuperVisor has a tremendous number of tools that can be used to analyze your system and help automate the different field expansion tasks.

- Impact Analysis
- Artifact identification
- Global Changes

SuperVisor Field Analysis

Included in SuperVisor are a wide range of different tools and processes all available to provide the details necessary to understand important information that exists for any particular field element that may exist on your system.

Cross Reference Data Base

The cross reference is a terrific place to begin. The Xdb Definition has already defined the scope of the application and the Xdb Data Base exists to identify many detailed relationships. The Xdb has two areas of focus for field usage.

- Fields used in Files
- Fields used in Programs

This information is available using the Xdb “Work with Fields” menu

```
XDB10                Work with Fields                System: SMI5
Select one of the following.
Fields where used in Files
    3. Work with field where used          XWRKFFDWU
    4. Work with ref.field where used      XWRKFRDWU
    5. Work with alias.field where used     XWRKFADWU
Fields used in programs
    9. Work with programs fields          XWRKPGMFFD
   10. Work with field where used         XWRKPFDWU
Selection
====>
F3=Exit      F5=Next Menu- *SELECT      Xref Data Base SPO
F12=Cancel   F14=Work with jobs          F6=Display Message  F10=Command entry
F21=Print menu help
F16=Main menu  F18=Work with output
```

Field usage is separated into different components for research

- Fields where used in files
- Reference fields where used in files
- Alias fields where used in files

SuperVisor Xdb Using SuperVisor Xdb

- Fields where used in programs
- Programs fields

Where Fields are used in files

This research is more in depth than just a display of a file used in physical files. The screens also identify the different fields created based or derived from the field in questions. This can be demonstrated by first looking at a files fields.

```

XWRKFFD          Xdb - Work with File Fields          SMI5
SPO              1/11/06

Type options, press Enter.

51=File.field Wu  52=Ref.field Wu  53=Alias.field Wu
55=Programs fields 56=Pgm.field Wu ...

  Format      Field
Opt Name      Name      Position Text
51 PHDRP00A    PAINPY      80     INPUT YEAR...
   PHDRP00A    PAINPM      82     INPUT MONTH..
   PHDRP00A    PAINPD      84     INPUT DAY....
   PHDRP00A    PAORDY      86     ORDER YEAR...
   PHDRP00A    PAORDM      88     ORDER MONTH..
   PHDRP00A    PAORDD      90     ORDER DAY....
   PHDRP00A    PADUEY      92     DUE YEAR.....
   PHDRP00A    PADUEM      94     DUE MONTH....

                                                    More...

F3=Exit          F4=Prompt      F5=Refresh      F10=Command entry
F11=Next view    F12=Cancel     F23=More options F24=More keys
  
```

In this file date fields are stored as independent year, month and day fields. Selecting Option 51 “File Fields where used”

```

XWRKFFDWU       Xdb - Work with File Fields Where Used    SMI5
SPO              1/11/06

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 8=Object reference 9=Where used ...

  Field      File      File      File      Sel/
Opt Name      Name      Attribute Format      Key      Omit      Join
SFDINP      PAA01AFM  DSPF      PAA01AD
SFDINP      PAA02AFM  DSPF      PAA02AD
SFDINP      PAA03AFM  DSPF      PAA03AD
SFDINP      PAA08AFM  DSPF      PAA08AD
SFDINP      PBA12AFM  DSPF      PBA12AD
PAINPY      PFLDR00   PF        PFLDR00A
PAINPY      PHDRL01   LF        PHDRP00A
PAINPY      PHDRL01   LF        PHDRP00A

                                                    More...

F3=Exit          F4=Prompt      F5=Refresh      F10=Command entry
F11=Next view    F12=Cancel     F23=More options F24=More keys
  
```

Fields, where used in files, includes not just data base files, but screen and printer files.

SuperVisor Xdb Using SuperVisor Xdb

```

XWRKFFDWU          Xdb - Work with File Fields Where Used          SMI5
SPO                                                         1/11/06

Type options, press Enter.

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source  8=Object reference  9=Where used ...

  Field      File      ----- Field -----   ---- Decimal ----  Edt
Opt  Name      Name      Position Length  Type  Digit  Precision Cde
-----
SFDINP  PAA01AFM      55         6    S     6      0      Y
SFDINP  PAA02AFM      40         6    S     6      0      Y
SFDINP  PAA03AFM      39         6    S     6      0      Y
SFDINP  PAA08AFM      39         6    S     6      0      Y
SFDINP  PBA12AFM      56         6    S     6      0      Y
PAINPY  PFLDR00       80         2    S     2      0
PAINPY  PHDRL01       80         2    S     2      0
PAINPY  PHDRL01       80         2    S     2      0
                                           More...

F3=Exit      F4=Prompt      F5=Refresh      F10=Command entry
F11=Next view F12=Cancel     F23=More options F24=More keys

```

A review of the attributes shows that on the screen the year field is combined to become a 6 digit date for display. Paging down to view additional references:

```

XWRKFFDWU          Xdb - Work with File Fields Where Used          SMI5      .
SPO                                                         1/11/06      .
                                                         3

Type options, press Enter.

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source  8=Object reference  9=Where used ...

  Field      File      ----- Field -----   ---- Decimal ----  Edt
Opt  Name      Name      Position Length  Type  Digit  Precision Cde
-----
PAINPY  PHDRL02       80         2    S     2      0
PARINP  PHDRL02       86         6    S     6      0
PAINPY  PHDRL03       80         2    S     2      0
PARINP  PHDRL03       92         6    S     6      0
PAINPY  PHDRL10       80         2    S     2      0
PARINP  PHDRL10       86         6    S     6      0
PAINPY  PHDRL11       80         2    S     2      0
PARINP  PHDRL11       86         6    S     6      0
                                           More...

F3=Exit      F4=Prompt      F5=Refresh      F10=Command entry
F11=Next view F12=Cancel     F23=More options F24=More keys

```

It also shows that the date is combined to derive date fields used in logical files as well as screen files.

Reference Fields where used

If the data base design includes the use of reference fields, the Xdb Data Base allows this information to be used exploit enhanced relationships reference fields can provide.

SuperVisor Xdb Using SuperVisor Xdb

```

XWRKFFD          Xdb - Work with File Fields          SMI5      .
SPO              1/11/06                              .
Type options, press Enter.                            3

51=File.field Wu  52=Ref.field Wu  53=Alias.field Wu
55=Programs fields  56=Pgm.field Wu ...

      Format      Field
Opt  Name        Name        Position  Text
52  PHDRP00A    PAOPER          124      OPERATOR ID..
      PHDRP00A    PAMCU           134      COST CENTER..
      PHDRP00A    PAOBJ           146      OBJECT ACCT..
      PHDRP00A    PAVCHA          150      VOUCHER AMT..
      PHDRP00A    PAVCHY          155      VOUCHER YR...
      PHDRP00A    PAVCHM          157      VOUCHER MT...
      PHDRP00A    PAVCHD          159      VOUCHER DY...

                                          Bottom

F3=Exit          F4=Prompt        F5=Refresh       F10=Command entry
F11=Next view    F12=Cancel       F23=More options F24=More keys
  
```

Selecting option 52 “Reference Fields where used” will use the field PAINPY to show each field that has been created based on it.

```

XWRKFRDWU       Xdb - Work with File Ref.Field Where Use  SMI5      .
SPO              1/11/06                              .
Type options, press Enter.                            3

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source     8=Object reference  9=Where used ...

      Field      File      - - - - - Reference - - - - -
Opt  Name        Name        Field      Format      File        Library
PAOPER  PAA05CPF  PAOPER      PHDRL02A   PHDRL02     SPOOBJ
PAOPER  PHDRL01     PAOPER      PFLDR00A   PFLDR00     SPOOBJ
PAOPER  PHDRP00     PAOPER      PFLDR00A   PFLDR00     SPOOBJ
PBOPER  PFLDR00     PAOPER      PFLDR00A
PCOPER  PFLDR00     PAOPER      PFLDR00A
PDOPER  PFLDR00     PAOPER      PFLDR00A

                                          Bottom

F3=Exit          F4=Prompt        F5=Refresh       F10=Command entry
F11=Next view    F12=Cancel       F23=More options F24=More keys
  
```

Through the use of reference fields, the Data Base Administrator has provided a map showing the fields impacted by a change to “PAOPER”.

Fields used in programs.

In the SuperVisor (Xdb), for a field to be identified as used in a program, the field name must actually appear in the source code. In addition, there is a distinction between field usage in a Copy Book, versus the program source.

The reason for this definition is that it best identifies the source code actually affected by changes to a field.

SuperVisor Xdb Using SuperVisor Xdb

The following screen provides an example, showing the importance of this distinction.

XWRKPFDWU	Xdb - Work with Pgm.Fld Where Used	TOPE				
TFNA		2/28/03				
Type options, press Enter.						
1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source 6=Print source 8=Object reference 9=Where used ...						
Opt	Program Name	Field Name	Field Name in source	File Name	How Used	Source Member
	PSS047	LOCEMP	LOCEMP	PSSLOC08	IU	PSS047
	PSS061	LOCEMP	LOCEMP	PSSLOC04	Input	PSS061
	PSS065	LOCEMP	LOCEMP	PSSLOC02	Input	PSS065
	PSS065	LOCEMP	LOCEMP	PSSLOC08	Input	PSS065
	PSS093	LOCEMP	LOCEMP	PSSLOC01	Input	PSS093
	PSS305	LOCEMP	#04EMP			@LOCI
	PSS305	LOCEMP	LOCEMP	PSSLOC	Input	PSS305
	PSS305	LOCEMP	LOCEMP	PSSLOC02	Input	PSS305
						More...
F3=Exit	F4=Prompt	F5=Refresh	F10=Command entry			
F11=Next view	F12=Cancel	F23=More options	F24=More keys			

This screen provides background into the usage of the field LOCEMP. In this example, this field is currently stored in a file. Information from this file accessed using a Service Program, which returns the information in the format specified in the @LOCI copy book.

Using only this screen, the following can be determined.

1. Copy Book @LOCI defines field #04EMP based on file field LOCEMP
2. Program PSS305 uses the field directly in the file and references the copy book @LOCI.
3. Program PSS047 accesses the file PSSLOC08 directly and updates the file. Review of PSS047 will determine if that program modifies this field LOCEMP.
4. Program PSS061, PSS065 and PSS093 access the file PSSLOCnn and reference the field LOCEMP.

Continue the analysis by researching the field #04EMP created based on the file field LOCEMP and referenced in the copy book @LOCI.

Press F18 "New Selection".

SuperVisor Xdb Using SuperVisor Xdb

```

XWRKPFDWU          Xdb - Work with Pgm.Fld Where Used          TOPE
TFNA                                                       2/28/03

Type options, press Enter.

1=Work object PDM 2=Work member PD : Xdb Data Filter Edit :
6=Print source 8=Object reference : :
      Program      Field      Field      : Field name . . . . #04EMP :
Opt  Name          Name        Name in so : Library name . . . *ALL  :
PSS047 LOCEMP      LOCEMP      : F5=Select *ALL          :
PSS061 LOCEMP      LOCEMP      : F12=Cancel F14=Process  :
PSS065 LOCEMP      LOCEMP      : :                          :
PSS065 LOCEMP      LOCEMP      : :                          :
PSS093 LOCEMP      LOCEMP      : :                          :
PSS305 LOCEMP      LOCEMP      : #04EMP                  @LOCI :
PSS305 LOCEMP      LOCEMP      : PSSLOC      Input      PSS305 :
PSS305 LOCEMP      LOCEMP      : PSSLOC02    Input      PSS305 :
                                           More...

F3=Exit          F4=Prompt          F5=Refresh          F10=Command entry
F11=Next view    F12=Cancel          F23=More options   F24=More keys
  
```

Enter the field #04EMP and press F14 “Process”.

This will cause usage for field #04EMP to be displayed.

```

XWRKPFDWU          Xdb - Work with Pgm.Fld Where Used          TOPE
TFNA                                                       2/28/03

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 8=Object reference 9=Where used ...

      Program      Field      Field      File      How      Source
Opt  Name          Name        Name in source  Name      Used      Member
PSS021 #04EMP      #04EMP      @LOCI
PSS036 #04EMP      #04EMP      @LOCI
PSS305 #04EMP      #04EMP      @LOCI
PSS305 #04EMP      #04EMP      PSS305
PSS312 #04EMP      #04EMP      @LOCI
PSS316 #04EMP      #04EMP      @LOCI
PSS317 #04EMP      #04EMP      @LOCI

                                           Bottom

F3=Exit          F4=Prompt          F5=Refresh          F10=Command entry
F11=Next view    F12=Cancel          F23=More options   F24=More keys
  
```

This screen shows that the field #04EMP is not referenced in a program other than PSS305. While this field is defined in the copy book @LOCI and the copy book is widely used, the field is not.

The Cross Reference Data Base alone is not enough

The Cross Reference Data Base method for impact analysis is great for everything within the scope of the Cross Reference Definition. You must also assume that the Cross Reference Definition has defined the scope of the application accurately.

SuperVisor Xdb Using SuperVisor Xdb

Build Data Dictionary using existing everything

Many iSeries applications are designed with naming conventions. Being limited to only 6 characters and then 10 characters, name fields using naming conventions made sense. It is not uncommon for the first two positions of a field name to represent the file or system in with the field belongs. In this way the same data residing in different fields could be associated and provide meaning when review the source code for the programs.

In a typical order processing system would use the mnemonic CUSN for the customer number. Then the customer number in different files would be:

- CUCUSN Customer Master Customer Number
- OHCUSN Order Header Customer Number
- ODCUSN Order Detail Customer Number
- OICUSN Order Invoice Customer Number

Build into the all the different SuperVisor File Field Compare commands is the ability to identify the prefix and look for field names in only portions of the field name. This feature allows the creation of a data dictionary using the existing data base.

Using the Compare File Field (CMPFFLD) command to search and compare for all Customer Numbers in the above situation, enter the command as it is shown below.

```
Selection or command
====> CMPFFLD FILE(*ALLUSR/*ALL) RMTFILE(PROD01/*ALLUSR/*ALL) FILTER(CUSN) OFFSE
TS(3) OFFSETL(4)
```

Using the command in this way would find the CUSN field in all files on the local and PROD01 systems by processing all physical files.

The combination of the partial name selection and the ability to expand the scope of the analysis across multiple iSeries systems or logical partitions allows you to see relationships between files that would otherwise be unavailable.

```
Selection or command
====> CMPKFLD FILE(*ALLUSR/*ALL) RMTFILE(PROD01/*ALLUSR/*ALL) FILTER(CUSN) OFFSE
TS(3) OFFSETL(4)
```

This command would find all the files where the field xxCUSN is used as a key field in the file.

Exception processing

Taking this idea one more level, uses the Compare File Fields but only list the field, if the field length is different.

```
Selection or command
====> CMPFFLD FILE(*ALLUSR/*ALL) RMTFILE(PROD01/*ALLUSR/*ALL) OFFSETS(3) OFFSETL
(4) FILTER1(CUSN) COMP2(*NE)
```

This becomes an exception process filtering the results based on additional logic. Looking for differences between files

SuperVisor Xdb Using SuperVisor Xdb

Analyze All fields in file throughout the system using partial names

In this example we begin using the Compare File Field (CMPFFLD) commands to build a SuperVisor *LIST with the names of all the file fields. The field offset and positions is used to place only the name information starting in 3 for 4 positions.

Selection or command

```
====> CMPFFLD FILE (SPOOBJ/PHDRP00) OFFSETS(3) OFFSETL(4) LIST(MYFIELDS) SELECT(*  
FLDNAM) LSTDSC('Fields from the SPO Order Header')
```

This results in the following SuperVisor *LIST.

```
Selection or command  
====> edtlist myfields
```

```
SUPERV5      MANAGEMENT - (L) Edit SuperVisor *LIST      1/11/06  
List Name: MYFIELDS  FIELDS FROM THE SPO ORDER HEADER  
Type changes, press enter      Position to . . .  
4=Delete  8=Generic*  9=*Generic*  
Opt Entry      Opt Entry      Opt Entry      Opt Entry  
*ADD*  
CATC           OORA           STTS  
CNLA           OPER           VCHA  
DEPD           ORBY           VCHD  
DUED           ORD#           VCHM  
DUEM           ORDA           VCHY  
DUEY           ORDD           VEN#  
EXTN           ORDM  
INPD           ORDY  
INPM           RCVA  
INPY           RCVD  
MCU            RCVM  
OBJ            RCVY  
  
Bottom  
F3=Exit  F5=Refresh  F13=Repeat  F14=Continue  F17=Top  F18=Bottom
```

Now we can run the command again, but instead of specifying a specific field name, we will specify a SuperVisor *LIST of field names.

```
Display Command String  
  
CMPFFLD FILE (*ALLUSR/*ALL)  
FILTER (*YES/MYFIELDS)  
OFFSETS(3)  
OFFSETL(4)
```

This command will search all physical files on the system, looking for usage of any of the field names found on the SuperVisor *LIST "MYFIELDS".

Differences make all the difference

The analysis combinations made available though this methodology for analysis is unlimited. Using these commands in different ways as needed by the naming conventions used by the application provides you the

SuperVisor Xdb Using SuperVisor Xdb

ability to build data dictionaries where none existed before. The ability to compare the production data base to development data bases to confirm differences provide additional system auditing capabilities that will benefit both the project development team as well as quality assurance personal.

APPENDIX

Appendix A: Enhance the Cross-Reference Database

General Discussion

As described earlier in this manual the SuperVisor Cross-Reference database (Xdb), consists of several parts.

1. The cross-reference definition.
2. Process to load and refresh the Cross Reference database.
3. Commands to display, print and processing information in the Cross Reference database.

SuperVisor derives references from object and source information stored by the operating system. However, it may also be desirable to capture references stored in vendor-supplied databases, such as dynamic menu systems and job schedulers. Object references in these systems are unique to the application, but they can be added to the Cross-Reference. There are two approaches that can be used.

1. Convert the information into a programming model.
2. Add the information to the SuperVisor Xdb directly with programs you write.
- 3.

Convert Information into a Programming Model

The first approach is to convert information into a programming model. The idea here is to take the information you need out of the database, and into a source file member. Next compile the pseudo code and place the program into a library, which will be included in the SuperVisor Xdb.

SuperVisor includes several commands that can be used for this purpose. One is the Retrieve Command File Source (RTVCMDFSRC). This command will process a named field within a data base file, process the data in the field as an AS/400 command, and output the information to a source physical file member. (The input database file may be located on a local or remote AS/400.) You compile this source member into a program, and store it in a library already included in SuperVisor Xdb.

You can see how this works by using a dynamic menu file included in SuperVisor. This file is named UMNOPXX. The field name for the command to be executed is UTCMD. The following command will retrieve the commands from the command file, and output a source member.

```
RTVCMDFSRC CMDFILE (SUPERV4/UMNOPXX) CMDFLD (UMCMD) OUTSRCF (yyy/xxx) +  
OUTSRCM (zzz)
```

Where yyy/xxx and zzz is the qualified library/source file and member to receive the information.

Job Scheduler Data

Another common place to store commands is within Job Scheduler systems. The best method here is to create a special library that will be used to simulate the job scheduler. The commands Convert IBM Job Scheduler (CVTIBMJS) and Convert ROBOT Job Scheduler(CVTRBTJS) are included with SuperVisor. These commands process the job scheduler data, on a local or remote AS/400, and build a library, which contains source, and programs, which represent each job scheduler job.

For other job schedulers, you must create the library. Within this library create a source file. Next a program is needed to process the job scheduler data, and output a separate CLP source member for each job. Next compile these programs and place the objects into the same special library. The final step is to include this library in the SuperVisor Xdb.

SuperVisor Xdb Appendix A:

Other Database Files

Database files can include references to all types of objects. A field may store the name of a workstation, and the output queue it should use. Other times the data may be the names of programs and data queues. In fact, it is possible that a reference to any type of object may be stored in data base files.

The only way to get this information into the SuperVisor Xdb is to have knowledge of both SuperVisor, and the data base files. A custom program must be written to process the data base file and output directly to the SuperVisor Xdb. This program must be executed after the XBLDXDB command (*BUILD or *REFRESH) completes. This is because the XBLDXDB command removes references nonexistent objects.

SuperVisor Xdb Files

To correctly add object relationship information to the SuperVisor Xdb records should be added to two files.

- **SXREF20 Object Description File**

To print a file description for this command enter the following

```
LSTFFD FLE(SUPERVISOR/SXREF20)
```

To print a complete description of this file, enter the following command.

```
LSTDBD FLE(SXREF20)
```

- **SXREF30 Object References File**

To print a file description for this command enter the following

```
LSTFFD FLE(SUPERVISOR/SXREF30)
```

To print a complete description of this file, enter the following command.

```
LSTDBD FLE(SXREF30)
```

Typical AS/400 configuration

A typical AS/400 configuration consists of a development and one or more production AS/400 computers in a network. Most of the information needed for the SuperVisor Xdb is located on the local development machine. The development machine includes a version of the production applications, which should be replicated on the production machines. The development AS/400 contains source code for the application, which does not exist on the production machines. The production AS/400 contains information different than the development machine, which is important for production support. Having this production information included in the SuperVisor Xdb can be invaluable.

IBM Job Scheduler as an example

The Job Schedule jobs are different on each computer. When performing production analysis, it is important to know the differences between each system. A difference between the systems, may in fact be the issue. In the typical configuration, using the development machine as a repository for information about all systems, makes these complex intersystem analysis possible.

A complete solution for the IBM Job Scheduler has been provided to show how this analysis can be done.

- A preprocess is performed to build libraries on the development AS/400 to simulate the IBM Job Scheduler jobs of each system. When completed these libraries will have source and CL programs that represent each job. A separate library represents each AS/400 computer. These libraries should be included in the SuperVisor Xdb definition, just as the other applications libraries are.
- The Build SuperVisor Xdb (XBLDXDB) command will build the Cross Reference Database.
- Execute the custom programs, to add other important relationships.

IBM Job Scheduler Interface

The SuperVisor5/IBM Job Scheduler interface consists of the following. These programs are provided as is. It is the responsibility of the user to ensure they work correctly for any particular site.

SuperVisor Xdb Appendix A:

Object	Type	Description
SUPERIJSA	CLP	SuperVisor XDB Build Driver
SUPERIJSB	CLP	Process Remote Job Scheduler Data
SUPERIJSC	CLP	Process Remote Object Reference Files
SUPERIJSD	RPGLE	Post Object References to SuperVisor Xdb
SUPERIJSX	CLP	Create SUPERIJSx programs

Please execute the following to create the programs.

```
ADDLIBLE SUPERVISOR
```

```
ADDLIBLE QTEMP
```

```
CRTBNDCD PGM(SUPERVISOR/SUPERIJSX) SRCFILE(SUPERVISOR/SUPERIJS)
```

```
CALL SUPERIJSX
```

The programs are now created in the library SUPERVISOR.

To execute these programs and build the SuperVisor Xdb, enter the following

```
CALL SUPERIJSA ('XXX' 'YYY' 'ZZZ')
```

Where XXX is the name of the SuperVisor Xdb.

YYY is the system name of the local AS/400

ZZZ is the system name of the remote AS/400

Unique at each site

SuperVisor flexibility, and easy to follow configuration, makes it capable of adapting to unique conditions which exist at every AS/400 site. Please feel free to contact ITS, for help to adapt SuperVisor to be a perfect fit for your application.

Appendix B: How do I verify the Xdb Data Base Data

Xdb Definition

Before building the Xdb Data Base, you need to have an Xdb Definition. The Xdb Definition provides the Xdb scope. The definition is used to list the libraries to be processed and where to locate any source code used when creating objects from source. Each Xdb Definition can have up to 999 libraries and you can have as many different Xdb Definitions as you like.

Xdb Build

The Xdb Build is a SuperVisor command which processes each definition, then locates and processes the information specified by the definition. The Xdb Build then places the results into the Xdb Data Base. All Xdb “Work with” and “Print” commands use information found in the Xdb Data Base.

Xdb Data Base Cleanup

Processing for each Xdb Definition begins by processing the Xdb Data Base and removing all information that may already exist for that specific Xdb Definition.

Xdb Build Analysis

Next each library in the Xdb Definition is processed to build an input directory which includes a list of all objects included within the scope of the analysis.

This directory of objects is then processed alphabetically by object type. As each object is processed, information is collected and written out to the data base. The core information is then organized by the Xdb Object in the Xdb, then the Object references. The “Where used” becomes possible by using the capabilities of the Db2 referential database.

Executable Objects

SuperVisor breaks down object types differently than the iSeries does. First non-executable objects are processed, then executable objects. Non-executable objects are things like command definitions and data base files. Executable objects include things like programs, modules, service programs and menus.

Did the Xdb Build complete

The first step in the Xdb Build process is to remove all information from the Xdb Data Base for the Xdb Definition being processed. When that step is complete, then the new Xdb Data Base is built by processing one object at a time. If the Xdb Build does not complete, you will still see references for some objects but not others.

The first way to see if the Xdb Build is complete is to review the iSeries job itself. If it ended abnormally, you know the Xdb Data Base must be incomplete.

It is not only possible but very often the people using the Xdb Data Base are not involved in the Xdb Definition or build process. To make the monitor of the Xdb Build easy, a message queue named SUPERVISOR is provided as Xdb Build log. So a quick and easy to determine if an Xdb Build process has taken place is to display the message found in the message queue SUPERVISOR.

SuperVisor Xdb Appendix B

Execute the following command to view the SUPERVISOR message queue.

DSPMSG SUPERVISOR

```
                                Display Messages
Queue . . . . . : SUPERVISOR           System: SMI
Library . . . . : SUPERV5              Program . . . . : *DSPMSG
Severity . . . . : 00                  Delivery . . . . : *HOLD

Type reply (if required), press Enter.
Start SuperVisor Xdb Build - XBLDXDB 2005-10-18 15:45:41
Start SuperVisor Xdb Build - SPO
End SuperVisor Xdb Build - SPO
End SuperVisor Xdb Build - XBLDXDB 2005-10-18 16:15:02

F3=Exit          F11=Remove a message      F12=Cancel      Bottom
F13=Remove all  F16=Remove all except unanswered    F24=More keys
```

Messages are sent to this queue with the start and end of each command, as well as the start and stop of each Xdb definition being processed.

If you locate a “Start” without an “End” you will know a build did not perform a complete analysis.

SuperVisor Xdb Build

The Xdb Build (XBLDXDB) command processes the SuperVisor Xdb Definition to build the Xdb Data Base. The Xdb Data Base is a presentation of your business application using the relational data base, (Db2) which exist on each iSeries. SuperVisor then provides a number of different commands which can be used to view or print the information.

To be successful, it is important that the Xdb Definition be complete. The entire scope of the application being analyzed, including all libraries and source files that are used by the application must be identified in the Xdb Definition, or the Xdb Data Base will lack vital information.

Next the Xdb Build process must process all objects and source without errors, or once again, the Xdb Data Base will lack vital information.

To ensure the Xdb Data Base includes all the references it should, the Xdb Build job produces audit logs, which document the build process. If problems are encountered during the build, the different log reports will record what happened.

SuperVisor Xdb Appendix B

The audit log reports are created as part of the job which executes the Xdb Build. Use the IBM Work Job (WRKJOB) command to view the Xdb Build audit reports. SuperVisor supports multiple Xdb Definitions. The Xdb Build will process each specified Xdb Definition separately to produce 3 audit log reports, plus a source exception report.

```
Work with Job Spooled Files

Job:  XBLDXDB      User:  SMI      Number:  021215

Type options, press Enter.
 1=Send  2=Change  3=Hold  4=Delete  5=Display  6=Release  7=Messages
 8=Attributes  9=Work with printing status

Opt  File          Device or  User Data  Status  Total  Current  Copies
     XR0201        SMI       SRCSPO    RDY     3      Page     1
     XR0204        SMI       BLDSPO    RDY     4      Page     1
     XR0204B       SMI       CPYSPO    RDY     4      Page     1
     XR0204J       SMI       SRCAUD    RDY     6      Page     1

Parameters for options 1, 2, 3 or command
====>
F3=Exit  F10=View 3  F11=View 2  F12=Cancel  F22=Printers  F24=More keys

Bottom
```

Note: The report XR0204J is created only when exceptions have been found.

Source Reconciliation XR0201

The Xdb Definition includes rules which tell the Xdb Build how to locate source, when processing objects created from source. This report documents this reconciliation process and can be used to verify exactly which source code the Xdb Build used when writing references to the Xdb Data Base.

The most common reasons the Xdb Data Base includes unexpected references is the source reconciliation did choose the expected source member. Several methods exist through the Xdb Definition to define rules for the Xdb Build to use. Review the rules and make changes as needed.

Object Processed XR0204

As the Xdb Build processes each object, the name of the object is printed on this log. Use this report log to confirm that all objects within the scope of the Xdb Definition are processed.

Copy Book/Includes XR0204B

For RPG and COBOL source code can be included in the compile by using different /COPY or /INCLUDE directives in the found in the source member main line of the program. Just as the compiler searches for this code at compile time, SuperVisor locates this source when the objects source member is being analyzed. This report documents the name of the source member analyzed as the result of each include.

SuperVisor Xdb Appendix B

Source Exceptions XR0204J

This report is produced only when exceptions exist. A source exception is a situation where SuperVisor begins process source related to the object being processed, but for some reason is unable to complete it. It is rare for this situation to happen. But when it does occur, it can cause a lot of confusion when using the Xdb Data Base. If this report is not included in the Xdb Build job, no exceptions existed.

Most often the reason for this is an invalid source statement. If you attempted to recompile the program using the source, the compile would fail. Correct this source statement and run the Xdb Build again will correct this situation.

It may be that the source code is correct and the problem is with the Xdb Build. In this case please notify SMI at support@smisupervisor.com. What we will need is a copy of the compile listing used to create the program. This information will be used to create a program correction that will be provided to you as soon as is possible.

This information is retained and can be reprinted if needed. To print another copy of this report for any given Xdb Build, enter the following command.

```
CALL XR0200J PARM('xxxx' 'yyyy' 'zzzz' '*PRINT')
```

Where	xxxx is the Xdb Build job name
	yyyy is the Xdb Build job user name
	zzzz is the Xdb Build job number

Note: Information used to print this report is purged by the Xdb Build command after 30 days.

Note: Totals lines are the number of executable lines after comments have been removed. Lines analyzed, is a counter as the analysis takes place. A problem was encountered when these counts are not equal.

Analyze source without comments

The source line analysis documented using Source Exception report represents the line counts after comments have been removed. To correctly match exception lines with the source member you must first remove the comments.

Remove the comments from the source by using the Copy Source Multiple Source Members (CPYMSRCG). Use the command to copy the source from your source file to a different source file using the following command.

```
CPYMSRCG FRMFLE (BBB/AAA) TOFLE (DDD/CCC) MBR (EEE) DROPCMT (*YES)
```

SuperVisor Xdb Appendix B

Work with Objects in Xdb

Object information in the Xdb Data Base is organized in a simply data dependency. The Object Directory which contains the name and attributes of each object analyzed. For each object analyzed, a dependent file includes each identified reference.

When Working with Objects in the Xdb, it is important to realize that they are listed alphabetically within the Xdb Definition. Not alphabetically by library.

To display the objects in the Xdb, use the “Work with Objects in the Xdb” (XWRKOBJXDB) command. The screen image below was taken while the Xdb build was processing, but not yet completed.

```
XWRKOBJXDB          Xdb - Work with Objects in Xdb          SMI
SPO                                                         10/30/05
                    Position . . . . PAA02AFM

Type options, press Enter.

  1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
  6=Print source    8=Object reference  9=Where used ...

  Object      Object
  Opt  Name    Library   Type      Attribute  Date      Time
  PAA02AFM    SPOOBJ   *FILE     DSPF       2005-10-30  18:23:48
  PAA03A      SPOOBJ   *MODULE   RPGLE
  PAA03A      SPOOBJ   *PGM      RPGLE
  PAA03AFM    SPOOBJ   *FILE     DSPF       2005-10-30  18:23:48
  PAA05A      SPOOBJ   *MODULE   CLLE
  PAA05A      SPOOBJ   *PGM      CLLE
  PAA05AFM    SPOOBJ   *FILE     DSPF       2005-10-30  18:23:48
  PAA05B      SPOOBJ   *MODULE   RPGLE
                                          More...

F3=Exit          F4=Prompt        F5=Refresh       F10=Command entry
F11=Next view    F12=Cancel       F23=More options F24=More keys
```

At this point, file object have been processed, but executable objects (programs and modules) are not processed. You can tell the difference by viewing the Xdb Load Date column. As objects are analyzed, the load date and time is updated to the object attributes.

Waiting a little longer, will allow us to perform a refresh of this screen. When we do so, the additional objects show processed. Use the position to field to rebuild data on the screen.

Note: Press F5 to clear options which may have been entered into the option field.

SuperVisor Xdb Appendix B

```

XWRKOBJXDB          Xdb - Work with Objects in Xdb          SMI
SPO                                                         10/30/05
                                     Position . . . .
Type options, press Enter.

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source  8=Object reference  9=Where used ...

  Object      Object      Xdb Load.....
Opt Name      Library     Type      Attribute  Date      Time
PAA02AFM     SPOOBJ    *FILE     DSPF       2005-10-30 18:23:48
PAA03A       SPOOBJ    *MODULE   RPGLE      2005-10-30 18:23:48
PAA03A       SPOOBJ    *PGM      RPGLE      2005-10-30 18:23:48
PAA03AFM     SPOOBJ    *FILE     DSPF       2005-10-30 18:23:48
PAA05A       SPOOBJ    *MODULE   CLLE       2005-10-30 18:23:48
PAA05A       SPOOBJ    *PGM      CLLE       2005-10-30 18:23:48
PAA05AFM     SPOOBJ    *FILE     DSPF       2005-10-30 18:23:48
PAA05B       SPOOBJ    *MODULE   RPGLE      2005-10-30 18:23:48
                                     More...

F3=Exit          F4=Prompt        F5=Refresh       F10=Command entry
F11=Next view    F12=Cancel       F23=More options F24=More keys
  
```

Now all objects on this display have been processed and the references placed into the Xdb Data Base.

Use option 8 “Object reference” to view the reference details.

```

XWRKOBJJREF        Xdb - Work with Object References          SMI
SPO                                                         10/30/05
                                     Type options, press Enter.

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source  7=CL statement  8=Object reference  9=Where used ...

  Object      Object      Usage      Format
Opt Name      Library     Type      Attribute  Usage      Format
>PAA03A      SPOOBJ    *MODULE   RPGLE      -----
$BLKUD      SPOOBJ    *BEGSR    RPGLE      *BEGSR    $BLKUD
$EDITA      SPOOBJ    *BEGSR    RPGLE      *BEGSR    $EDITA
$HDR        SPOOBJ    *BEGSR    RPGLE      *BEGSR    $HDR
$HELP       SPOOBJ    *BEGSR    RPGLE      *BEGSR    $HELP
$IHDR       SPOOBJ    *BEGSR    RPGLE      *BEGSR    $IHDR
$INZPA      SPOOBJ    *BEGSR    RPGLE      *BEGSR    $INZPA
$INZPB      SPOOBJ    *BEGSR    RPGLE      *BEGSR    $INZPB
                                     More...

F3=Exit          F4=Prompt        F5=Refresh       F10=Command entry
F11=Next view    F12=Cancel       F23=More options F24=More keys
  
```

Use the roll key to view additional information.

SuperVisor Xdb Appendix B

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         10/30/05

Type options, press Enter.

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source  7=CL statement  8=Object reference  9=Where used ...

  Object      Object
Opt Name      Library  Type      Attribute  Usage      Format
$INZPD      SPOOBJ  *BEGSR   RPGLE     *BEGSR     $INZPD
$INZSA      SPOOBJ  *BEGSR   RPGLE     *BEGSR     $INZSA
$INZSD      SPOOBJ  *BEGSR   RPGLE     *BEGSR     $INZSD
$INZSF      SPOOBJ  *BEGSR   RPGLE     *BEGSR     $INZSF
$INZS1      SPOOBJ  *BEGSR   RPGLE     *BEGSR     $INZS1
$WSUB       SPOOBJ  *BEGSR   RPGLE     *BEGSR     $WSUB
*PROCLIST   *SUBPROC
*PROCLIST   *SUBPROC

More...

F3=Exit      F4=Prompt    F5=Refresh   F10=Command entry
F11=Next view  F12=Cancel   F23=More options  F24=More keys
  
```

Press F11 to view more information about a particular reference.

```

XWRKOBJREF          Xdb - Work with Object References          SMI
SPO                                                         10/30/05

Type options, press Enter.

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source  7=CL statement  8=Object reference  9=Where used ...

  Object      Object
Opt Name      Library  Type      Referenced as
$INZPD      SPOOBJ  *BEGSR
$INZSA      SPOOBJ  *BEGSR
$INZSD      SPOOBJ  *BEGSR
$INZSF      SPOOBJ  *BEGSR
$INZS1      SPOOBJ  *BEGSR
$WSUB       SPOOBJ  *BEGSR
*PROCLIST   *SUBPROC  _QRNI_SOFT_ERR
*PROCLIST   *SUBPROC  PAA03A

More...

F3=Exit      F4=Prompt    F5=Refresh   F10=Command entry
F11=Next view  F12=Cancel   F23=More options  F24=More keys
  
```

Verify Object References

Review the references for the object. Compare this information to what you know about the object itself. This can be done for any object you choose. If the object shows here as a reference, it will also show up under a where-used condition.

So the key to using the SuperVisor Xdb is the ability to understand each of its parts.

SuperVisor Xdb Appendix B

SuperVisor Xdb	Verify action
Scope of the analysis	<ul style="list-style-type: none">• Xdb Definition
Build Xdb Data Base	<ul style="list-style-type: none">• Processing the definition and analyzing each object.
Verify Build is complete.	<ul style="list-style-type: none">• Use the SUPERVISOR message queue.• Verify load date using XWRKOBJXDB command
Verify References	<ul style="list-style-type: none">• Use XWRKOBJREF to verify references of a single object to references you can verify

What to do to get help

There are five reasons a field appears in the source code of, but not here.

1. The object source reconciliation performed during the Xdb Build, was unable to locate the source code.
2. The object source reconciliation located source, but not the one you expect.
3. The Xdb Build did not complete normally
4. The Xdb Build started analysis of the source but did not complete it.
5. The reference in a unique way causing the Xdb Build to miss the reference

For reasons 1 to 4, double check the Xdb Build audit recommendations made previously in this document. If you have a situation that is explained by reason 5, or you have a question of any kind, contact Software Management, Inc. at support@smisupervisor.com. Provide any information you have including a compile list of the source in question and we will work with you to resolve the situation.

Working with Field References

Field references are additional detail to any object which accesses information found in the iSeries Db2 data base. To verify field references you can also begin by using the Work with Objects in the Xdb.

SuperVisor Xdb Appendix B

```

XWRKOBJXDB          Xdb - Work with Objects in Xdb          SMI
SPO                                                         11/18/05
                    Position . . . .
Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 8=Object reference 9=Where used ...

   Object      Object
Opt Name      Library   Type      Attribute  Date      Time
PAA03A      SPOOBJ   *MODULE  RPGLE     2005-11-18 08:28:48
PAA03A      SPOOBJ   *PGM     RPGLE     2005-11-18 08:28:48
PAA03AFM    SPOOBJ   *FILE    DSPF      2005-11-18 08:28:48
PAA05A      SPOOBJ   *MODULE  CLLE     2005-11-18 08:28:48
PAA05A      SPOOBJ   *PGM     CLLE     2005-11-18 08:28:48
PAA05AFM    SPOOBJ   *FILE    DSPF      2005-11-18 08:28:48
PAA05B      SPOOBJ   *MODULE  RPGLE     2005-11-18 08:28:48
PAA05B      SPOOBJ   *PGM     RPGLE     2005-11-18 08:28:48
                    More...

F3=Exit          F4=Prompt        F5=Refresh       F10=Command entry
F11=Next view    F12=Cancel       F23=More options F24=More keys

```

SuperVisor Xdb provides many more options than be displayed at one time. To view additional options press F23. Repeat this until you can see option 55 “Program Fields”.

```

XWRKOBJXDB          Xdb - Work with Objects in Xdb          SMI
SPO                                                         11/18/05
                    Position . . . .
Type options, press Enter.

51=File.field Wu 52=Ref.field Wu 53=Alias.field Wu
55=Programs fields 56=Pgm.field Wu ...

   Object      Object
Opt Name      Library   Type      Attribute  Date      Time
55 PAA03A      SPOOBJ   *MODULE  RPGLE     2005-11-18 08:28:48
PAA03A      SPOOBJ   *PGM     RPGLE     2005-11-18 08:28:48
PAA03AFM    SPOOBJ   *FILE    DSPF      2005-11-18 08:28:48
PAA05A      SPOOBJ   *MODULE  CLLE     2005-11-18 08:28:48
PAA05A      SPOOBJ   *PGM     CLLE     2005-11-18 08:28:48
PAA05AFM    SPOOBJ   *FILE    DSPF      2005-11-18 08:28:48
PAA05B      SPOOBJ   *MODULE  RPGLE     2005-11-18 08:28:48
PAA05B      SPOOBJ   *PGM     RPGLE     2005-11-18 08:28:48
                    More...

F3=Exit          F4=Prompt        F5=Refresh       F10=Command entry
F11=Next view    F12=Cancel       F23=More options F24=More keys

```

Note: It is not necessary to view the option before using it. This was simply done as an illustration.

Enter option 55 next to the desired object and press enter to continue to the “Work with Program Fields” screen.

SuperVisor Xdb Appendix B

```
XWRKPGMFFD          Xdb - Work with Program File Field Desc.          SMI
SPO                  11/18/05

Type options, press Enter.

1=Work object PDM  2=Work member PDM  3=Copy source  5=Display source
6=Print source  8=Object reference  9=Where used ...

      Field          Field          File          File
Opt  Name.....  Name in Source.....  Name          Usage
>PAA03A  SPOOBJ      *MODULE  RPGLE
##CDT    ##CDT
##CTM    ##CTM
##EDT    ##EDT
##ENBR   ##ENBR
##ETM    ##ETM
##ETYP   ##ETYP
##FLR1   ##FLR1

                                          More...

F3=Exit      F4=Prompt    F5=Refresh    F10=Command entry
F11=Next view F12=Cancel   F23=More options F24=More keys
```

Before you can find where a field is used using the SuperVisor Xdb system, it must first be included as a program field here.

What to do to get help

There are five reasons a field appears in the source code of, but not here.

6. The object source reconciliation performed during the Xdb Build, was unable to locate the source code.
7. The object source reconciliation located source, but not the one you expect.
8. The Xdb Build did not complete normally
9. The Xdb Build started analysis of the source but did not complete it.
10. Field is referenced in a unique way causing the Xdb Build to miss the reference

For reasons 1 to 4, double check the Xdb Build audit recommendations made previously in this document. If you have a situation that is explained by reason 5, or you have a question of any kind, contact Software Management, Inc. at support@smisupervisor.com. Provide any information you have including a compile list of the source in question and we will work with you to resolve the situation.

Using the Scan Source to verify information

A different way to verify information in the SuperVisor Xdb is to use the Scan Source (SCNSOURCE) command. This is another useful tool that can be used for both simple and complex scans across multiple source file members.

The scan source is complex enough that the information needed to define the scan was separated from the command interface normally used. So to use the scan requires the use of the Scan Source command parameters, which provide the controls used to identify the processing porting of the such as:

SuperVisor Xdb

Appendix B

Scan Processing Options

- Which source files to process
- Which source members to process
- Which source member types to process
- Is the source file a local source file or a DDM file identifying a remote source file
- Include or exclude comments
- Name of the Source Scan Definition
- Scan Definition Keep option
- Which reports should be printed
- Output to SuperVisor *LIST

The second part of the Scan Source is the Scan Definition. This part of the scan defines how the scan will take place and the different search strings can be entered.

Scan Definition

- Simple Member Scan
 - Strings must be found within the source member
- Record Scan
 - Strings must be found within the same record
- Consecutive scan
 - Strings must appear on consecutive records
- Date Scan
 - Select records based on source last change date
- Scan String
 - From 1 to 3500 separate search strings
 - Relate strings with different AND/OR logic

To verify field usage in the SuperVisor Xdb Data Base using the Scan Source the best way is to search for the string and output the results to a SuperVisor *LIST. The SuperVisor *LIST will contain the name of each source member where the field actually appears, which is the same logic used by the Xdb Build.

The following command will perform a member search without comments.

```
Selection or command
====> SCNSOURCE SRCFILE(SPOSRC/QRPGLESRC) MBR(*ALL) COMMENT(*NO) SCAN(PAORD#) LIS
T(PAORD#) LSTMBROPT(*REPLACE) LSTDSC('Members using PAORD#')
```

Executing this command will cause the Edit Scan Definition screen to appear:

SuperVisor Xdb Appendix B

```
SCNSOURCE          Edit Scan Definition

Type changes, press enter.  When complete press F14 to begin processing

Search Name . . . . PAORD#
Relationship . . . . M (Member, Consecutive, Record, Date)
Keep after use . . . N (Yes, No)
1=Add, 4=Delete

                                Kind
                                Length of Wild
Opt Search String                Seq.   Rel Start Match Card
                                1.00 IF  001   00   2

F3=Exit  F12=Return  F14=Process  F23=Delete
```

Use the Add line to enter new search strings.

```
SCNSOURCE          Edit Scan Definition

Type changes, press enter.  When complete press F14 to begin processing

Search Name . . . . PAORD#          Verify SuperVisor Xdb
Relationship . . . . M (Member, Consecutive, Record, Date)
Keep after use . . . N (Yes, No)
1=Add, 4=Delete

                                Kind
                                Length of Wild
Opt Search String                Seq.   Rel Start Match Card
1 paord#                          1.00 IF  001   00   2

F3=Exit  F12=Return  F14=Process  F23=Delete
```

Press Enter to add the search string and clear the space for the next add.

SuperVisor Xdb Appendix B

```
SCNSOURCE          Edit Scan Definition

Type changes, press enter.  When complete press F14 to begin processing

Search Name . . . . PAORD#          Verify SuperVisor Xdb
Relationship . . . . M (Member, Consecutive, Record, Date)
Keep after use . . . N (Yes, No)
1=Add, 4=Delete

                                Kind
                                Length of Wild
Opt Search String                Seq.   Rel Start  Match Card
    paord#                        2.00 OR   001   00   2
                                1.00 IF   001   06   2

                                Bottom

F3=Exit  F12=Return  F14=Process  F23=Delete
```

In this case we will perform a Member search for just the one field. Press enter to begin processing.

Note: If a job description was entered on the command prompt, processing would be submitted to batch.

Use the Edit SuperVisor *LIST (EDTLIST) to view the results of the scan.

```
Selection or command
===> edtlist
```

You can enter the name of the list, or use the default *ALL, if you are not sure what you named the list.

```
UMBRA              MANAGEMENT - (L) Edit SuperVisor *LIST          1/08/06

Select one, press enter
1=Select
Opt Entry          Description
1 PAORD#          MEMBERS USING PAORD#

                                Bottom

F3=Exit
```

SuperVisor Xdb Appendix B

Using the default *ALL will display a list of all the different SuperVisor *LISTS and allow you to choose one.

Press enter to continue to the Edit List screen.

```

SUPERVISOR MANAGEMENT - (L) Edit SuperVisor *LIST                1/08/06
List Name: PAORD# MEMBERS USING PAORD#
Type changes, press enter                                     Position to . . .
4=Delete 8=Generic* 9=*Generic*
Opt Entry          Opt Entry          Opt Entry          Opt Entry
*ADD*
  $INZPA           PAA23C
  @SFDS            PBA01A
  GENPO
  PAA01B
  PAA02A
  PAA03A
  PAA05C
  PAA05D
  PAA06A
  PAA14C
  PAA15C
  PAA16C
                                                                Bottom
F3=Exit  F5=Refresh  F13=Repeat  F14=Continue  F17=Top  F18=Bottom
  
```

This screen includes the name of each member where the field PAORD# appears on an executable line of code.

Use this list of member names to compare against the source members identified in the Xdb Data Base displayed using the Work with Program Fields Where Used (XWRKPFDWU) command.

```

XWRKPFDWU          Xdb - Work with Pgm.Fld Where Used          SMI5
SPO                                                         1/08/06

Type options, press Enter.

1=Work object PDM 2=Work member PDM 3=Copy source 5=Display source
6=Print source 8=Object reference 9=Where used ...

  Program   Field   Field   File   How   Source
Opt Name    Name    Name in source  Name    Used  Member
  GENPO     PAORD#  PAORD#  PHDRL02 Output GENPO
  PAA01A    PAORD#  PAORD#  PHDRL02 IOU    $INZPA
  PAA01A    PAORD#  SFORD#  IOU    @SFDS
  PAA01A    PAORD#  SFORD#  PAA01AFM IOU    @SFDS
  PAA01ADEV PAORD#  PAORD#  PHDRL02 IOU    $INZPA
  PAA01ADEV PAORD#  SFORD#  IOU    @SFDS
  PAA01ADEV PAORD#  SFORD#  PAA01AFM IOU    @SFDS
  PAA01B    PAORD#  BOORD#  PAA01B
                                                                More...

F3=Exit  F4=Prompt  F5=Refresh  F10=Command entry
F11=Next view  F12=Cancel  F23=More options  F24=More keys
  
```