

How to use XINFO for migrations

Information is a prerequisite for any conversion. That's why any substantial conversion project begins with an analysis of the current status. This usually involves SMF reports, which take a long time to run, to dump all information, REXX programs to analyze job libraries and so on. This raw information is then collated into compact and easy-to-read lists of important details.

The following document explains how XINFO can be used to perform these tasks while migrating from one z/OS to another or while downsizing from z/OS to UNIX or NT.

This document is not a "cookbook" with detailed instructions but is meant to give you an idea of the powerful functions of XINFO. All the examples given here require knowledge of XINFO tables, the ISPF dialog or the PC client. Please use the XINFO manuals or contact HORIZONT at <mailto:info@horizont-it.com> for further information.

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Which jobs are obsolete?

Experts estimate that 15 -20% of time, cost and effort can be saved by identifying those jobs that have never run or that have not run since a particular date. The XINFO SMF database helps you pinpoint the jobs that have not run in the last month or year. The basic question is simple:

Which jobs are in the job libraries but have not run this year?

XINFO has no standard "display" (XINFO term for a pre-defined query) for doing this, but existing displays can be used as a basis for generating the desired Joblist easily. The "JCL JOB Statements" and "SMF Job Information" displays are especially appropriate for this:

The image shows three screenshots of the XINFO interface, each with a callout box identifying it.

Screenshot 1: XINFO display "JCL JOB Statements"
 This window shows a list of job parameters for a specific job. The parameters listed include Jobname, Account, Programmers Name, CLASS, MSGCLASS, NOTIFY, PRIORITY, REGION, RESTART, TYPRUN, USER, GROUP, MSGLEVEL, PERFORM, SCHEDULE, JCL-Lib, Member, and Client. Each parameter has a corresponding value or status.

Screenshot 2: XINFO display "SMF JOB Information"
 This window displays a list of SMF job information. The parameters listed include Jobname, Jesname, Owner, System ID, Return-Code, Start Time, End Time, Duration (sec), Submit Time, CPU-Time (sec), EXCP, Wait for Initiator, and Waits for Endueue. The values are displayed in a structured format.

Screenshot 3: The TABLE command displays the XINFO data model
 This window shows the output of the TABLE command, displaying the XINFO data model. The output is a table with columns for Column Name, Label, Type, and Width. The rows list various SMF job information fields and their corresponding data types and widths.

Column Name	Label	Type	Width
003864	Table: XXRVSMJ		
003865	Label: SMF - Job Info (U)		
003866			
003867	Column Name	Label	Type
003868			Width
003869	XXRDATACLIENT	Client	CHAR 8
003870	XXRDATAENV	Environment	CHAR 8
003871	XXRDATAINFO	DataAddInfo	CHAR 8
003872	SMFJOBNAME	Jobname	CHAR 8
003873	SMFJESNAME	Jesname	CHAR 8
003874	SMFJOBSID	System ID	CHAR 4
003875	SMFJOBRC	Return-Code	CHAR 7
003876	SMFSTARTTS	Start Time	TIME 8
003877	SMFENDTS	End Time	TIME 8
003878	SMFDURATION	Duration (sec)	INTEGER 11
003879	SMFWAIT	Time since Submit	INTEGER 11
003880	SMFCPU	CPU-Time (sec)	INTEGER 11
003881	SMFEXCP	EXCP	INTEGER 11
003882	SMFSUBMIT	Submit Time	TIME 20
003883	SMFWAITENQ	Wait for Enqueue	INTEGER 11

The BATCH command allows you to create a batch job that will run any query in batch mode. This function is normally used to generate lists automatically but it also has an additional advantage: The "simple" SQL generated by XINFO's ISPF dialog can be modified easily.

The BATCH command generates a job

The SQL can be modified easily.

```

Sitzung B - [24 x 80]
----- Search Arguments JCL - JOB Statements ----- ROW 001 TO 018 OF 019
Command ==> batch_
SCROLL ==> CSR

Top : BATCH Build JCL OPT Options Reset Clear Panel Show SQL
Legend Field Description

Jobname      ==> EQ *
Account      ==> EQ
Programmer's Name ==> EQ
CLASS        ==> EQ
MSGCLASS     ==> EQ
NOTIFY       ==> EQ
PRIORITY     ==> EQ
REGION       ==> EQ
RESTART      ==> EQ
TYPRUN       ==> EQ
USER         ==> EQ
GROUP        ==> EQ
MSGLEVEL     ==> EQ
PERFORM      ==> EQ
SCHENU       ==> EQ
JCL-Lib      ==> EQ
Member       ==> EQ
Client       ==> EQ

Sitzung B - [24 x 80]
File Edit Edit Settings Menu Utilities Compilers Test Help
EDIT P390H.SPFTMP1.CNTL Columns 00001 00072
Command ==>
000018 /* WITH RAWDATA=Y ALSO THE HEADER WILL BE OMITTED
000019 //PARM DD *
000020 RAWDATA=N
000021 ONLYDATA=N
000022 USEDSP=Y
000023 DB2SSID=DSN1
000024 PLAN=XXRDLG30
000025 //UTDEFI DD DSN=P390A.XXR.TST30.DEFGLB,
000026 // DISP=SHR
000027 //UTRESO DD DSN=P390H.P390A.XINFO.LIST,
000028 // SPACE=(TRK,(10,50),RLSE),
000029 // DCB=(BLKSIZE=0,DSORG=PS,RECFM=FB,LRECL=255),
000030 // DISP=(,CATLG)
000031 //SYSIN DD *
000032 DSPLTJOB
000033 SELECT JOBJN, JOBJACT, JOBJGMR, JOBJCLASS, JOBJMSGCL, JOBJNOTIF, JOBJPRIY,
000034 JOBJREGIO, JOBJRESTA, JOBJTYPRU, JOBJUSER, JOBJGROUP, JOBJMSGLEVEL,
000035 JOBJPERFORM, JOBJSCHENU, JOBJLIB, JOBJMEMB, JOBJRESERVED,
000036 XXRDATCLIENT, XXRDATENU
000037 FROM XINFO30.XXRTJOB
    
```

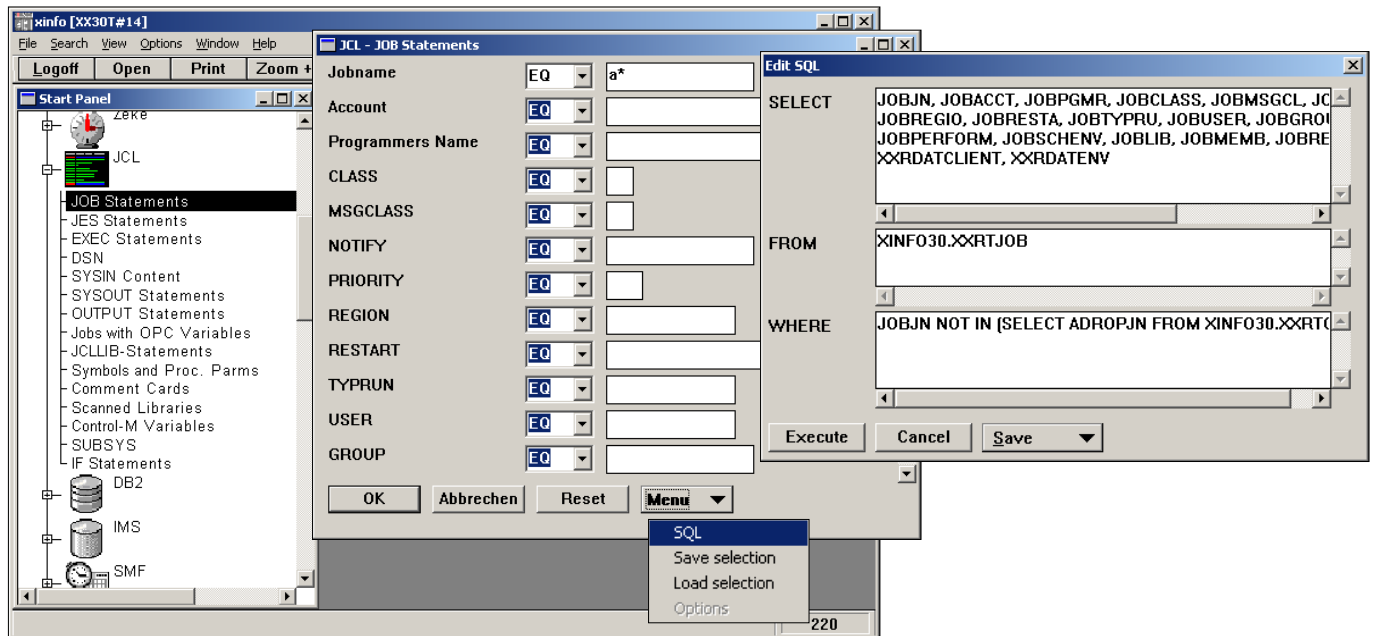
By using the information from the TABLES command, a "sub-select" can be performed to obtain the desired jobs:

```

SELECT JOBJN,...
FROM XINFO30.XXRTJOB
WHERE JOBJN NOT IN (SELECT SMFJOBNAME FROM XINFO30.XXRVSMTJ
                    WHERE SMFSTARTTS >= '2003-01-01-00.00.00')
    
```

The result is a list of all the jobs (in the job libraries) that have not been used in the last year.

The next example shows you how to create a list of jobs that are not defined in the scheduler. Unlike in the previous example, we are now using the XINFO PC client. The PC client is based on the same principles as the ISPF client: A panel allows you to specify selection criteria and the results are displayed in a table. As with the ISPF dialog, the standard panels of the PC client are not sufficient for all questions. For more complicated queries, the SQL must be modified manually.



1. The "JCL job statement" table and the "TWS job definition" table are the basic input, but you need a "SQL sub-select" to answer the question.
2. Use the SQL menu button in the "JCL – Job Statements" display to get the SQL. Please note that this option can be used to get the table and column names of all XINFO objects: The SELECT window shows all columns, the FROM window shows the table names.
3. Modify the WHERE clause

```
WHERE JOBJN NOT IN (SELECT ADROPJN FROM XINFO30.XXRTOP)
```
4. The resulting list shows all the jobs found in job libraries but not defined in the scheduler (in our example OPC, but also possible for all other schedulers).

Please note that the same result is also available using XINFO's ISPF dialog (see previous example).

How much disk space is required by production jobs?

Before performing a migration, it is necessary to determine the space required for all files on the new platform. XINFO's space scanner helps you by creating overviews of all (or selected) volumes or files.

The screenshot displays the XINFO [XX30T#14] application window. The main panel shows a table of volume information with columns: VOLSER, FS, Freespace, Alloc, Capacity, and De. A callout labeled 'Volumes' points to the left sidebar. An inset window titled 'Used (KB)' shows statistics for 'xinfo Statistics, 04.11.2003, 12:26:21' with fields: Rows (347), Min (0), Max (97004), Average (3787), and Sum (1314321). A callout labeled 'Statistics' points to this inset. The main table also has a 'Table Space - Dataset Info (VTOC)' section with columns: Datasetname, DSO, R..., XT, VOLSER, and BLKS. A callout labeled 'Files' points to this section. The bottom status bar shows 'Device Num/Adr' and '1/347'.

As shown in the previous examples, the volume and file information can be linked to information in other tables, for example:

- How much space is required by jobs that are defined in the scheduler?
- How much space is allocated but unused?
- How many files are on tape?
- How many files have been migrated, and how much space is used by these files?

If XINFO's integrated statistics function is not sufficient for your needs, you can also export tables easily to other programs. The XINFO PC client exports to HTML, XML, CSV (EXCEL) and many more formats.

Which DB2 tables are used by which production jobs?

Before performing a migration it is essential to get an overview of the complexity of the database used by production jobs. Typical standard sources such as JCL or DB2 catalogs do not answer questions such as:

- How many tables are used by applications ABC*?
- How many views are defined for tables XYZ*?
- How many jobs are doing DB reorgs?

XINFO's source analyzers and DB2 scanners help you to create the reports you need.

The screenshot displays two windows of the XINFO software. The top window, titled 'xinfo [XX30T#14]', shows a 'Start Panel' with a tree view of database catalogs (Cat: SYSPLAN, Cat: SYSPLANDEP, etc.) and a 'View/Table' button. A callout bubble points to the 'DB2' section of the tree, labeled 'DB2 information'. The bottom window, titled 'xinfo [XX23T#14]', shows a 'Table PL/1 - DB2 Access' report. This report is a table with columns: MainPgm, Prefix, Object, ObjectType, Action, and Column Na. It lists various DB2 objects accessed by programs, such as ZZBIFRTB, ZZOPCOTB, ZZARCOTB, ZZBICOTB, ZZOPCOTB, ZZOPRUTB, ZZBIRUTB, ZZARRUTB, ZZOPRUTB, ZZOPOPTB, ZZBIOPTB, ZZAROPTB, ZZOPOPTB, and ZZOPDFTR. A callout bubble points to the 'DB2 Access' section of the tree view, labeled 'Source code tables show how programs access DB2 objects'.

MainPgm	Prefix	Object	ObjectType	Action	Column Na
BIOIDB2		ZZBIFRTB	TABLE/VIEW	INSERT	
BIOIDB2		ZZOPCOTB	TABLE/VIEW	SELECT	
BIOIDB2		ZZARCOTB	TABLE/VIEW	INSERT	
BIOIDB2		ZZBICOTB	TABLE/VIEW	SELECT	
BIOIDB2		ZZOPCOTB	TABLE/VIEW	INSERT	
BIOIDB2		ZZOPRUTB	TABLE/VIEW	SELECT	
BIOIDB2		ZZBIRUTB	TABLE/VIEW	SELECT	
BIOIDB2		ZZARRUTB	TABLE/VIEW	INSERT	
BIOIDB2		ZZOPRUTB	TABLE/VIEW	INSERT	
BIOIDB2		ZZOPOPTB	TABLE/VIEW	SELECT	
BIOIDB2		ZZBIOPTB	TABLE/VIEW	SELECT	
BIOIDB2		ZZAROPTB	TABLE/VIEW	INSERT	
BIOIDB2		ZZOPOPTB	TABLE/VIEW	INSERT	
BIOIDB2		ZZOPDFTR	TARI F/WFW	SFI FCT	

XINFO produces diagrams illustrating the job streams planned in the scheduler. During migration these XINFO outputs can be used as a ready method to quickly gauge the quality of the conversion. No one can read and absorb all the information in a long written list but a glance at the conversion result diagram will tell you whether something has been overlooked or not.

The screenshot displays the XINFO software interface, which is a job flowcharting tool. The main window is titled "XINFO [XINFO]" and includes a menu bar with "File", "Search", "View", "Options", "Window", and "Help". Below the menu bar are buttons for "Print", "Zoom +", and "Zoom -".

Three separate flowchart windows are visible:

- GRAPH - OPC Job Netplan:** This window shows a hierarchical flowchart for OPC jobs. It starts with a root node "XINFO01" and branches out into multiple levels of sub-jobs, each represented by a blue rectangular box with text like "XINFO01", "XINFO02", "XINFO03", etc., and "CPU" followed by a number.
- GRAPH - ZEKE Netplan:** This window shows a more complex flowchart for ZEKE jobs. It includes various nodes, some highlighted in green and red, and a central box labeled "OFFICE".
- GRAPH - CA7 Job Netplan:** This window shows a flowchart for CA7 jobs. It features a central yellow box labeled "PIMACATURINDUTEST" and several blue boxes representing different job steps.

A speech bubble points to the flowcharts with the text: "XINFO job flowcharts for OPC/TWS, CA7, ZEKE, Control-M..."

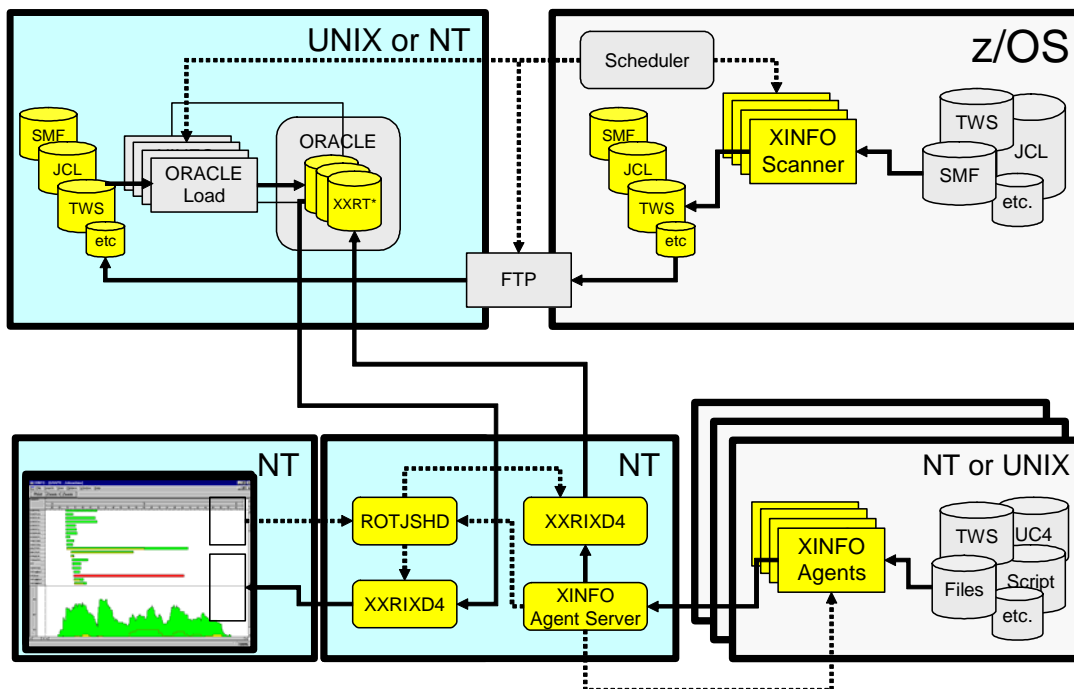
At the bottom left of the screenshot, the text "XINFO01-80-CPU1-XXRJ07" is visible. At the bottom right, the number "164" is displayed.

And after migration you throw XINFO away?

There is a myth that prevails in our industry: “The next conversion will be the last one.”

The next conversion is probably in sight or just around the corner. Whatever your next big conversion is, it'll involve finding out about current jobs, programs, databases, files and their complex relationships and then modifying them.

XINFO is continually being developed: It now has a new distributed architecture. And TWS, UC4, script scanners, SAP interfaces and much more are under development or available now.



But if you're sure you won't need XINFO anymore (because you're migrating to pure online systems or to a platform not supported by XINFO), there are other ways of taking advantage of its benefits: You can rent XINFO at a reasonable price. Just ask us. We'll be happy to answer any of your questions: <mailto:info@Horizont-it.com>.