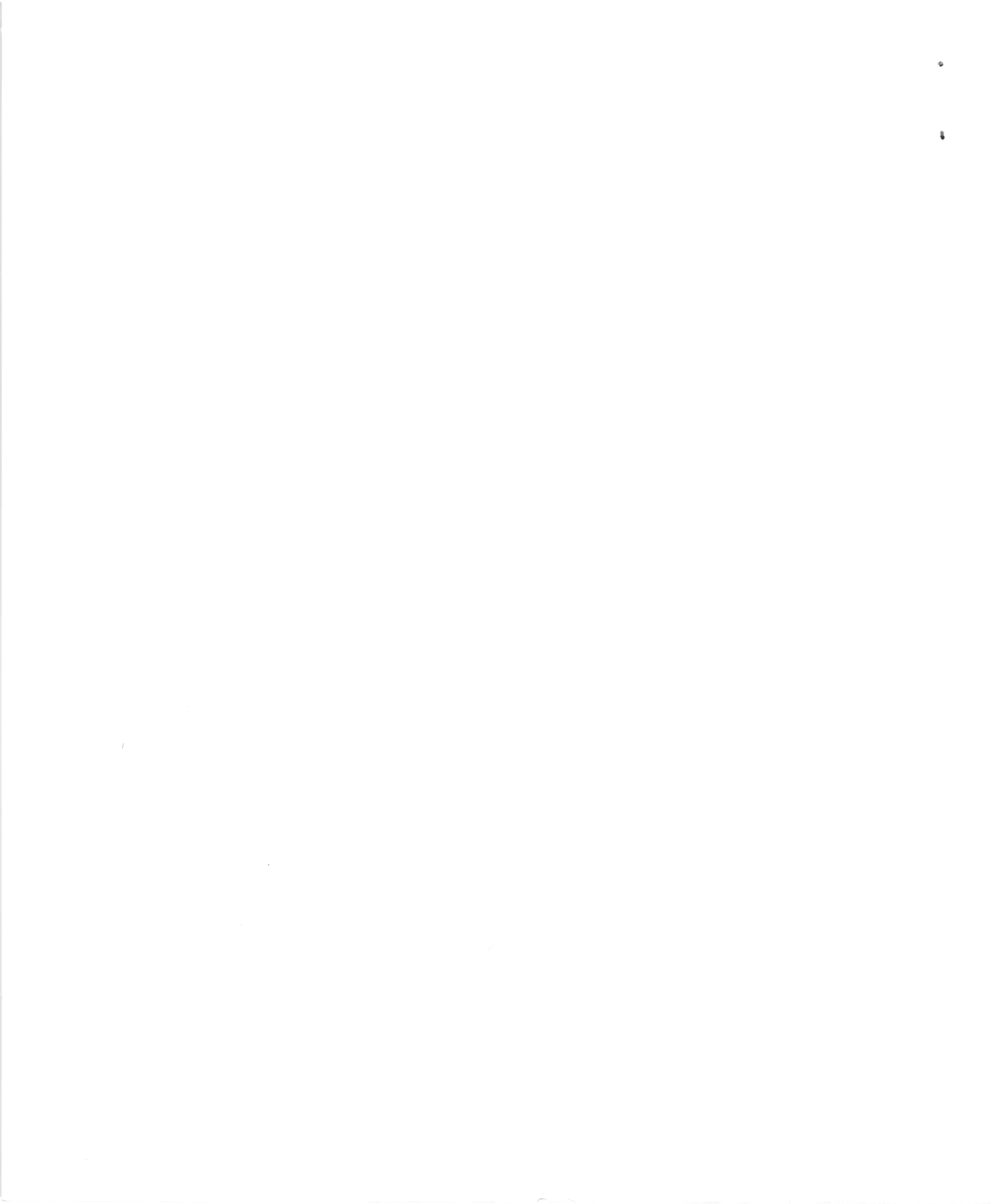


# INSTALLATION GUIDE



**PRODUCT : D902-0029-0000 RELEASE : 03.03.00**



RELEASE BULLETIN  
FOR  
NCR I-XPERT  
RELEASE 03.03.00

I. PRODUCT IDENTIFICATION

I-XPERT Version 03.03.00 (Version 3.03 hereafter) is a quality release for I-XPERT. The changes are listed in Section IV (PROBLEMS REPAIRED IN THIS VERSION) of this document. Version 3.03 will support PDP files collected and analyzed under ITX 7.00.16 or later point release, and transferred electronically to the I-XPERT PC. Performance data from earlier ITX binds may be entered into the I-XPERT program manually.

The corporate ID for I-XPERT, distributed on three low density 5 1/4 inch floppy disks or three 3 1/2 inch floppy disks, is D902-0029-0000. This version will run on any PC compatible personal computer.

I-XPERT will be enhanced on a regular basis. Users should periodically request an update to the software from Software Distribution Centers.

II. DISCLAIMER

The representations and recommendations made by I-XPERT are based on knowledge derived from data on a generalized cross-section of ITX users. If the specific system data does not correspond with the "typical" profile suggested by this sample of ITX users, implementing I-XPERT's recommendations may not result in the level of system performance predicted by the I-XPERT model. If more performance tuning and configuration advice is required, please

contact an NCR Systems Engineer.

NCR does not guarantee that the recommendations made by I-XPERT will solve the performance problems of every customer. The I-XPERT recommendations and graphs are meant to assist users in making performance tuning and capacity planning decisions.

### III. INSTALLATION REQUIREMENTS

#### A. PC REQUIREMENTS

This version of I-XPERT requires the following PC and NCR-DOS features:

- o an NCR PC6, PC8, 710, or 916 personal computer
- o a color monitor
- o NCR DOS version 2.1 or later
- o a fixed disk with a capacity of at least 10 megabytes and sufficient free space for I-XPERT software, session files, and PDP files
- o a disk drive that accepts 5 1/4 inch flexible disks
- o 640K RAM for the exclusive use of NCR-DOS and I-XPERT.

#### B. BACKING UP I-XPERT

Before you start to install the I-XPERT software, copy the files on each of the I-XPERT software distribution diskettes to backup diskettes. Place the I-XPERT software distribution diskettes in safe storage. (Use the diskettes that contain the copied I-XPERT software to install I-XPERT on your PC's fixed disk.)

#### C. INSTALLING ON A HARD DISK

I-XPERT 3.03 has an INSTALL program to make installation easy. Insert the first floppy and type A:\INSTALL. Follow the directions on the screen and in the I-XPERT documentation.

Please view the README file on the first floppy for any additional information regarding this version of I-XPERT.

**WARNING:** The INSTALL program will overwrite any existing files on the I-XPERT directory with their equivalents in the new release.

User data files (session files and environment files) will not be deleted, however files with extensions similar to those used by I-XPERT will be deleted in the I-XPERT directory (ie. \*.DAT, \*.DBA, \*.HLP, \*.SCR, etc).

If you store files other than I-XPERT files in the I-XPERT directory you should install I-XPERT to a directory that is empty or one that does not exist.

Press Return at the Begin Installation prompt when all parameters are correct.

I-XPERT will be installed on your PC's fixed disk drive.

#### D. PREPARING TO RUN I-XPERT

Before running I-XPERT, please observe the following requirements and recommendations for NCR-DOS files. (Use the NCR-DOS Line Editor (EDLIN) to make any necessary changes. After making the changes, re-boot your PC to implement the new configuration.)

- o To ensure the availability of enough random access memory for running I-XPERT, the AUTOEXEC.BAT file should not load any software other than I-XPERT.
- o The FILES command in the CONFIG.SYS file must specify at least 12 files (FILES=12).
- o The BUFFERS command in the CONFIG.SYS file of your PC should specify no more than 15 buffers (BUFFERS=15). If you specify more buffers, you will use more PC memory causing I-XPERT to exhaust space. If you use fewer than 15 buffers, I-XPERT may run slower.
- o To use the File Transfer program that is integrated into I-XPERT, the I-XPERT PC must be connected to an ITX system as a 7900 terminal. If you are connected as an ITX Workstation, you should not use the File Transfer program that is integrated into I-XPERT.

IV. PROBLEMS REPAIRED IN THIS VERSION

The following section documents the new features that have been incorporated in this release of I-XPERT.

I-XPERT now recognizes the ESDI CACHE controller and the MAXTOR 600mb disk (Requires at least PDP 4.8 (ITX 6.1) or PDP 5.4 (ITX 7.0)).

Model 75 to 2-node Model 85 upgrade. I-XPERT will analyze the performance data from the Model 75 to determine the best way to distribute the workload across the two nodes of the Model 85. The report will be written to the file M85UPG.RPT. This report contains a list of the Object Programs, Users (CRTs), and Files that should be moved to the second node of the Model 85.

PLEASE NOTE: The recommendations are made based on the analysis of a single interval of data. Since the distribution of the Model 75 workload across the two nodes of the Model 85 requires a considerable amount of work, it is recommended that IXPERT be run on a number of different intervals collected at different times during the day. Only implement the recommended changes that are consistent across the multiple intervals.

The recommendations were made based on the best information available to IXPERT. It cannot be guaranteed, however, that the recommendations will be optimum for your system since IXPERT has no knowledge of the specific applications being executed. It is therefore recommended that the information contained in this report be evaluated based on the specific knowledge of the applications being run.

Additional Disk Cache Recommendations are reported. These include files placed in cache but have no cache reads, and increasing the cache size.

Ability to move files from a high disk on one node to a low disk on another node.

ITXNET clustered environment files are now supported. I-XPERT will give the option of building an environment file that contains information on each of the ITXNET nodes.

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#### V. OUTSTANDING PROBLEMS

There are no outstanding problems in this release of I-XPERT.

#### VI. DOCUMENTATION

The following publication is available for this release:

I-XPERT USER GUIDE (Version 3.01)      D1-1708-A

In addition to the User Guide, the following references may be useful:

ITX OPERATING SYSTEM REFERENCE MANUAL      D1-0545-D  
(See Tab F: Document F1 - Performance Considerations and  
Document F2 - Performance Diagnostics Package)

#### VII. EDUCATION

Refer to the NCR CASE COURSE CATALOG AND SCHEDULE CATALOG for the following course:

ITX PERFORMANCE MEASUREMENT AND TUNING      K80005

CASE (Customer And Support Education) is supported by the central services toll-free 800 numbers. You are not required to be licensed by central services for educational questions. They welcome all calls from customers pertaining to curriculum planning, course content, and availability of new courses.

The toll-free number is:

1-800-845-CASE

The following information is provided to help you model the second node of a model 75 -> model 85 upgrade recommendation:

After upgrading a Model 75 to a 2-node Model 85, I-XPERT automatically projects and reports the performance of Node-A of the Model 85 in graphical form. Using I-XPERT's Interactive Input Option and Model 85 Upgrade Report (M85UPG.RPT), the performance of Node-B can also be projected and reported the same way.

The following section explains, step-by-step, how to obtain Node-B Model 85 performance projections by deriving information from the upgrade report and entering the information into I-XPERT using its interactive input option.

This exercise requires some computation, so a calculator is recommended and a hard copy of the upgrade report is required. After executing IXPERT, open the Interactive window of the I-XPERT

Initial Menu.

Node-B Minimum Model 85 Hardware Configuration:

The following data to be entered are based on the configuration of a minimum Model 85 node. If the configuration of Node-B is already known, replace the entries below (memory size, no. of IOPs, no. of adapters, etc.) accordingly.

a. Environment File Descriptive Label

Enter Model 85 Node-B.

b. Processor Model

Press <CR>. Choose Model 75 to represent Node-B of the Model 85.

c. Real Memory Size

Press <CR>. Choose 32 Mbytes.

d. Number of IOPs

Enter 5.

e. Terminal Count

Determine the total number of terminals that will be installed on Node-B. Divide the total by two and enter the result under IOP2 and IOP3. If the total number of terminals is over 160, divide the total by three and enter the result under IOP2, IOP3 and IOP4. (Note: An IOP is connected to a 5432 Communications Module which can hold up to 80 TTY terminals.)



f. Number of Adaptor Boards  
Enter 2.

g. Adaptor #1 Type (Disk Subsystem 1)  
Press <CR>. Choose ISM.

h. Number of Controllers  
Enter 1.

i. Controller Type  
Press <CR>. Choose 6830-02.

j. Number of Disks  
Enter 2.

k. Disk Type  
Press <CR>. Choose 6545. Repeat for second disk drive.

l. Disk Subsystem 2  
Repeat steps g. to k. for subsystem under Adaptor #2. Disk Subsystem 2 is switchable. If desired, Adaptor #2 can utilize two 6830-2 controllers with two 6545 disks each.

Press F10 to go to the next window and choose Input Parameters per Second.

Node-B Workload Characteristics:

The following data to be entered is to be derived from the Model 85 Upgrade Report (M85UPG.RPT).

m. CPU Utilization  
Enter the CPU utilization that is reported at the end of the upgrade report.

n. Terminal Inputs per Second and Terminal Outputs per Second  
Enter the terminal inputs per second and terminal outputs per second that are reported at the end of the Model 85 upgrade report.

o. Number of Active Users  
From the upgrade report, determine which of the Object Programs being moved to node B are interactive (terminal) applications. Total all the number of processes of the interactive Object Programs moved to node B. Enter this value which is considered the current number of active users on node B.

p. IOP I/Os per Second  
Divide the IOP I/Os per second value, which is the sum of terminal

inputs per second and terminal outputs per second (see step n.), by two and enter the result under IOP2 and IOP3. If total number of terminals is over 160 (see step e. of Hardware Configuration), divide the IOP I/Os per second value by three and enter the result under IOP2, IOP3 and IOP4.

q. Disk I/Os per Second

Distribute the files that are being moved to node B among the disk drives of node B (see Model 85 upgrade report). For each node B disk, sum all the physical I/Os of the files placed on that disk. Divide the total physical I/Os per disk by the elapsed time (located at the end of the upgrade report) to obtain the disk I/Os per second values. Enter these values alongside their corresponding disks. (See Example of Deriving Disk I/Os per Second Values.)

Press F10 to initiate I-XPERT to model and validate the data entered.

After I-XPERT has modelled and validated the data, it will bring up the I-XPERT Control Menu. From here, the data can be edited, reviewed and graphed (throughput and response time curves) using the Edit/Review Option and the Graphs Option.

The Recommendations Option can also be performed on the data to check if further bottlenecks can be foreseen.

Finally, the data (session) can be saved to a file using the Save Option.

Example of Deriving Disk I/Os per Second Values:

The following are the "files to be moved" and the elapsed time sections of a sample Model 85 Upgrade Report:

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To I-XPERT's knowledge, the following files are solely accessed by the Object Program. Moving these files to Node-B will avoid any ITXNET overhead:

Filename (LUN)	Drive No.	Physical I/Os
X-TRANS/1(0)	1	5406
CUSTOMER/2(1)	1	1306
MAKE-XY/1(3)	2	7201
ALLOYS/1(5)	2	18
ALLOYS/2(6)	2	200

Moving the following files to Node-B will minimize ITXNET overhead:

Filename (LUN)	Drive No.	Physical I/Os
BRANCH1/1(10)	3	201
BRANCH2/1(11)	3	110
BRANCH3/1(12)	3	12

Moving the following files to Node-B will minimize ITXNET overhead:

Filename (LUN)	Drive No.	Physical I/Os
TOOLS/1(15)	4	51
TOOL-A/1(16)	5	127
TOOL-C/1(16)	5	76

Node-B Summary:

Elapsed Time (seconds): 300.00

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Initially, note that the report states the logical (LUN, logical unit number) and physical (Drive No.) disk locations on Node-A of each file. When actually performing the Model 85 upgrade, this information will make the files to be moved to Node-B easy to locate.

Assuming that four disk drives are assigned to Node-B (see steps f. to l. of Hardware Configuration), an attempt on how to distribute the files is as follows:

Node-B Drive	Filename	Physical I/Os
1	CUSTOMER/2	1306
1	ALLOYS/1	18
1	ALLOYS/2	200
2	X-TRANS/1	5406
3	MAKE-XY/1	7201
4	BRANCH1/1	201
4	BRANCH2/1	110
4	BRANCH3/1	12
4	TOOLS/1	51
4	TOOL-A/1	127
4	TOOL-C/1	76

The only crucial files in this distribution scheme are X-TRANS/1 and MAKE-XY/1 which have considerable disk I/Os. Making sure that they are placed on disks with no other files or files with light

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disk I/Os will lessen or prevent future disk bottlenecks.

Totalling the physical I/Os of each disk and dividing them by the elapsed time (300 seconds) lead to these results:

Node-B Drive	Total Physical I/Os	Disk I/Os per Sec.
1	1524	5.08
2	5406	18.02
3	7201	24.00
4	577	1.92