

# **PILOT**

## **Product Overview**

### **and**

## **Installation Procedures**

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# Preface

This publication contains information necessary for the installation, and tailoring of PILOT, a family of proprietary program products used for performance management and capacity planning. It provides data processing managers, system programmers, and capacity planners with the information required to install this product.

Information in this publication is subject to significant change.

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## **Seventh Edition (November, 2007)**

This edition applies to Version 1.7 of the PILOT program products and to all subsequent versions and modifications until otherwise indicated in new editions or newsletters.

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# Getting Started

## Introduction

The PILOT products are a series of programs designed to minimize the manual labor required to perform the three vital functions:

- Maintaining SMF and RMF data
- Producing reports to format SMF, CMF and RMF data
- Perform Performance and Capacity management tasks

Each of these functions are integrated into the product line. PILOT/SMF was developed first to overcome the short comings of using only IFASMFDMF and IEBGENER to manage SMF data. PILOT/MVS, and PILOT/CICS were developed to provide a consistent reporting format across new releases of MVS and CICS. These components provide a cost effective alternate you can use to produce graphs and analyze data.

## PILOT/SMF

PILOT/SMF is used to collect, maintain, and produce reports on SMF records. All of the programs run on the mainframe. The main program used by PILOT/SMF is **READSMF**, which will read data from the system MAN data sets or other QSAM or VSAM files.

READSMF will:

- Manage your SMF data
- Ensure integrity
- Delete duplicate records
- Maintain a History file
- Create multiple output files
- Recover from 002 abends automatically
- Has two user exits for customization or modification of SMF records
- Reduces data for quicker processing by other programs that use SMF data

In addition, there are other programs named RDSMFnn where nn is a SMF record type. These programs are mainframe programs that format and create reports for common SMF records. For example RDSMF5 is a program that formats SMF type 5 records. An exception is RDSMF14 will format SMF types 14, 15, and 64. All of these records are related and produce an excellent report that has many uses. Further information on supplementary programs are provided in the PILOT/SMF user guide section "Additional Modules".

## PILOT/MVS

The PILOT/MVS is used to format RMF records so that they can be downloaded to a PC in Lotus 1-2-3 format. The major design consideration is to continue the same format across different releases of RMF with the flexibility to use any file transfer program, and to maintain compatibility with future releases of Lotus 1-2-3 and Excel.

The main program, **SMFPC**, runs on the mainframe and formats the RMF (SMF types 70-76) data. The other program, **SMFPC30**, formats SMF type 30 records (job termination sub-type 5). **SMFPC** or **SMFPC30** can read QSAM SMF files directly, but does not have the ability to pick and choose records. **SMFPC** and **SMFPC30** take advantage of **PILOT/SMF**'s User Exit facility. By specifying **SMFPC** as a parameter to **READSMF**, **PILOT/SMF** will pass every record that satisfies criteria (date, time, record types, etc.) to the program **SMFPC**. For further information refer to the topic "Sample Capacity Plan Using **PILOT**" in the **PILOT/MVS** section of this manual. That section has sample JCL showing how **READSMF** and **SMFPC** work together to create the download files.

Once files are created on the mainframe, they have to be transferred to the PC. The data must be transferred with the following options:

- Carriage return and Line feed
- Not numbered (NONUM)
- ASCII conversion.

The local file on the PC must have the extension **PRN**. The ASCII file must be placed in the **PILOTPRN** subdirectory and conform to the naming conventions that are described later in this manual (on page [19](#)). Examples of a file transfer CLIST and batch commands are provided later in this manual as well.

Data can now be analyzed using a compatible spreadsheet product and the **PILOT** templates (spreadsheets designed to import the PC files into themselves for analysis and graphing).

The spreadsheet package must be activated first and the default directory must be set to the **PILOT** directory. Refer to the installation instructions for further information if the PC software is not installed. The tutorial sections in this manual have a more detailed explanation.

## PILOT/CICS

**PILOT/CICS** is used to format **CICS CMF** (SMF Type 110) records for capacity planning and performance tuning on the global system and transaction levels. The mainframe program **SMFPC110** executes as a stand-alone program to process Type 110 records. It can not run as a User Exit of **READSMF**.

**PILOT/CICS** also formats **The Monitor™** detail records for capacity planning and performance tuning on the system and transaction level. The mainframe program **SMFPCLMK** executes as a stand-alone program to process **The Monitor™** records. The input data set for the program **SMFPCLMK** is either **The Monitor's™** dump tape, created by **Landmark's** program **MV608** or the Version 8 compressed history file. **SMFPCLMK** reads **The Monitor's™** system records.

## Modeling

The mainframe program **SIMBUILD** will generate a model for either **CICS** simulator **SIMCICS** or the **MVS** simulator **SIMMVS**, and the input parameters for the analytic model template (**MODLCICS**).

The model generator uses control cards, RMF, CMF, and The Monitor™ records as input. All of the modeling software resides on the PC. The output of the model generator must be downloaded to the PC in order for PC programs to process it. In addition, the program SIMBUILD creates a workload file to be used to help calibrate models.

## Common Questions

### What do I do first?

The quickest way to get started is to read this entire section, the installation instructions found on pages [9](#) and [17](#), and the Techniques section of the manual.

### How do use the PC Software?

A quick look using Lotus 1-2-3:

- You need to install the mainframe programs and PC programs.
- Run jobs on the mainframe to collect data.
- Download data to your PC.
- Start Lotus and load PILOT's AUTO123 spreadsheet.
- Import data into your template.
- Customize the templates as needed.
- Create graphs and exit Lotus 1-2-3.
- Start the Lotus 1-2-3 print graph program PGRAPH.

A quick look using Excel:

- You need to install the mainframe programs and PC programs.
- Run jobs on the mainframe to collect data.
- Download data to your PC.
- Start Excel and load PILOT's PMACROS.XLW workbook.

- Customize your Excel by choosing “Set Defaults” under the “PILOT” pull down menu.
- Choose “New File” under the pull down menu of the type of data to import into a template.
- Create graphs and queries.
- Worksheets can be printed using the “Print” option under the pull down menu that matches the template type. For example, if the current window is DASDET1, then choose “Print” under the DASD pull down menu.
- Print graphs using the “Print” option under the Excel “File” menu.

### What is the difference between Interval, Hourly, and Daily?

These parameters are specified on the EXEC card of the program SMFPC (PILOT/MVS). “Interval” will format data based upon the length of the default interval for the RMF monitor in member ERB-RMFxx found in SYS1.PARMLIB. “Hourly” will summarize the intervals for each hour. If the default interval in RMF monitor session is greater than or equal to an hour then this parameter will work the same as the “Interval” parameter. “Daily” will summarize all of the data found for each day. A technique used in capacity planning takes the peak times (more than one hour) and summarizes them daily to show long term effects.

### When I produce a graph I can't read the X-axis

This means there are too many values to print along the X-axis. Use the option



“Skip Factor” in the spreadsheet. This is available using the first level of the PILOT graph menus in most templates, or you can use the second level of menus in native Lotus graph menus.

If the X-axis is unreadable, just press the Esc key three times (**READY** should appear in the top right hand corner) and type:

1. /goss (a native Lotus command).
2. Increase the number shown.
3. Press Enter.
4. Press q for quit.
5. Press v for view.
6. Press space bar (the Lotus menu appears).
7. Press Esc (**READY** should appear in the top right corner).
8. Press “**ALT-G**” to return to second level graphics menu. Return to the graphics setup menu by moving the cursor over the “RETURN” option and press Enter. Choose SKIP X Axis and increase the number. Now, when a graph is produced, the new skip value will be used.

### How do I calibrate a model?

A detailed explanation is presented in the section “Modeling MVS using PILOT/-MVS”. Calibration is the process of adjusting model parameters until they are within a 5-10% range of measured values. The program SIMBUILD creates the model parameters and a spreadsheet file to make this process easy. Once this process is completed, additional workloads can be added, deleted, or modified. The degree of calibration

required depends on what questions you would like to ask the model. For example, if you want to model a CPU upgrade, you need to match the percentage of CPU used by each workload and the CPUR\_SEC value from the output of the simulator to the value found in the spreadsheet. In other words, workload CICS may use 25% and .254 cpu seconds in the output of the simulator and 24.5% and .250 in the spreadsheet. This is accurate within 2%, which means the model has the ability to simulate your workload within a 2% error. At this point you can change the CPU model and run the model to determine the CPU usage with a high degree of confidence.

## Glossary

### Capacity Management

Planning for the long term ability of a system to provide adequate service to a particular job or user as volume grows due to new applications or applications adding users or new functionality.

### Column

A vertical block of data within a spreadsheet.

### Directory (on a PC)

Directories are used to organize a hard disk. The PC PILOT installation program creates a directory and two sub-directories to keep programs and templates/spreadsheets and graphs separated. It also improves the performance of the product.

### Download

The term used to refer to moving data from the host (mainframe) to the PC via a file transfer.

### Import

A process of loading data into a PC application. Lotus 1-2-3 has a IMPORT feature which PILOT uses.

### Macro

A set of Lotus 1-2-3 or Excel commands used to control Lotus or Excel menus and native commands.

### Performance Management

The process of looking at day to day trends with shorter intervals to achieve results that improve the system's performance. Systems performance is "how well the system is able to provide service to a particular job or user."

### QSAM

Queued Sequential Access Method. Typically, SMF data is stored as a physical sequential file using variable block format. This compacts as much data as possible on the pack.

### Root Directory

The base directory on a hard disk. The lowest level of indexing data.

### Row

A horizontal block of data within a spreadsheet.

### Sub Directory

Another level to further separate related data for a PC applications. PILOT has two sub-directories; PILOTPRN, where the download files reside on the PC, and PILOTPIC, where the graph files produced by Lotus 1-2-3 are stored.

### Spreadsheet

Is the tool used to establish a relationship among numbers, formulas, or symbols that are stored in rows and columns.

**Template**

Is a Lotus 1-2-3 or Excel spreadsheet that has macros programmed to perform a set of functions. PILOT's templates are programmed to import data, graph and print reports.

**Upload**

The term used to referring to moving data from the PC to the host (main-frame).

## Spreadsheet Packages

### Lotus 1-2-3

The Lotus 1-2-3 version 2.2 DOS version is recommended because of the improved performance and enhancements made. Lotus 1-2-3 Version 1A is not supported. Lotus 1-2-3 DOS versions 2.01 through 3.4, Lotus 1-2-3 for Windows Release 1.0 and 4.0 are also supported.

### Lotus 1-2-3

Lotus 1-2-3 must be installed on the PC using the directions provided by Lotus. Ensure that the graphics board on your PC is supported by Lotus 1-2-3 and is in the install list of graphic options. Lotus 1-2-3 can be started by typing: Lotus {Enter}, which gives a Lotus 1-2-3 menu, or by typing 123 {Enter} to get directly to the spreadsheet component. The install menu is used to configure your Lotus 1-2-3 system. Please refer to the Lotus 1-2-3 documentation for further information on the installation process. If you are having problems, contact our technical support group for help.

The templates (also called spreadsheets or worksheets) provided with PILOT are custom built to get you started quickly. There are other techniques that can be used with Lotus 1-2-3 to create graphs. Lotus has built-in functions such as regression analysis, data base table look-ups, and data sorting for additional analysis. Some of these functions

are used in the PILOT spreadsheets. Sort, perhaps, is one of the most powerful built-in functions. You can look at your data in any order you wish. You may sort by any field defined in the spreadsheet.

### Combining Spreadsheets

A Lotus 1-2-3 command useful for combining information is the "/File Combine" command. When using this command, make sure you do not delete the macros in the template. The safest place to combine data is to go to the bottom of the present data within your spreadsheet and <Page down>. Name that area with a "/Range Name Create" command. This allows you to address that area of the spreadsheet. Also, by pressing "F5" and typing in the name of the area, you can find it easily.

### Lotus 1-2-3 Compatible Graphics Packages

Another useful command is the "/Graph Name" command used to save graph settings. After graphs are created, the settings can be saved with this command. To retrieve a graph setting, type "/Graph Name Use". The current settings will be displayed, however, the ranges may have to be redefined. This is caused by a different number of elements in a range. This technique is useful once you have established a

set number of elements to graph. Remember to save your spreadsheet to save the graph names. The PILOT templates all use the /Graph Name Create command to save chart settings for later printing or other processing.

Other graphic packages such as Harvard Business graphics and Microsoft's Chart take advantage of the "/Graph Name" command. Freelance Graphics from Lotus can read the .PIC files directly. These are excellent tools to create high quality graphic presentations.

## **EXCEL**

Microsoft EXCEL 5.0 and above is supported by PILOT.

### **EXCEL BASICS**

EXCEL must be installed on the PC in a Windows environment using the directions provided by Microsoft.

An EXCEL workbook containing macros, provided with PILOT, is custom built to get you started quickly. A workbook is a facility within EXCEL that is used to group similar work. PILOT macros will automatically build menus to open templates and charts for the specified worksheet. Unlike the processing in Lotus 1-2-3, PILOT menus are added to the native EXCEL commands. For example, in the PILOT RMF menu you will find commands to load data into a template. A chart to graph CPU, and other summary data can be easily created. There are other techniques that can be used within EXCEL to create graphs. EXCEL has built-in functions

such as regression analysis, data base table look-ups, and data sorting for additional analysis. Some of these functions are used in the PILOT macros. Sort, perhaps, is one of the most powerful built-in functions. You can look at your data in any order you wish. You may sort by any field defined in the worksheet.

### **Connecting EXCEL To Word**

A connection between your EXCEL worksheets and WORD (Microsoft's word processor for Windows) can be established. When you load data into your worksheet, your charts will automatically be updated. A link to your word processor will automatically pick up the new information in the report. This is very useful for creating monthly reports. Refer to EXCEL, WORD, and Windows documentation for more information. There are extensive memory requirements to accomplish this. It is dependent on the number of windows open and the amount of data within the applications of the windows.

## Mainframe Installation Procedures

The following instructions are used to install the PILOT software. There are seven steps to be performed to install PILOT. They are:

1. Load the distribution data sets.
2. Edit PILOTGEN in the source library.
3. Run the PILOTGEN job stream.
4. Apply any additional maintenance.
5. Validate the installation.
6. Tailor the PILOT product.
7. Install the PC software.

### Load The Distribution Data Sets

The mainframe software is distributed in TSO Transmit format. The files will be extracted from the .zip file that you downloaded from our web site. Please refer to the instructions for loading the PC files on page [17](#) for instructions. Once the .zip file has been unpack, continue here.

The two Transmit files, object.xmi and source.xmi are located in the HOST sub-directory and must be transferred to your host. FTP or other file transfer methods are suitable. The .xmi files must be transferred to the host as binary, with LRECL=80 and RECFM=FB. Any appropriate BLKSIZE may be used.

Next, you must Receive the two files to create the PILOT source and object PDS libraries. The job stream shown in [1](#) on page

[10](#) contains a sample of how this is done. You can add allocation parameters as needed.

### Edit Member PILOTGEN In The Source Library

Edit the member "PILOTGEN" in the source library. This member contains two JCL procedures which should be changed to run at your installation. Within the job stream there are control cards to be modified for your installation. The RDSMFMAC statement in PILOTGEN must be tailored for your installation. *Do not edit the original source member.*

### Macro - RDSMFMAC

Be sure to read the full explanation of this macro following its description.

<u>OPERAND</u>	<u>REQUIRED</u>	<u>DEFAULT</u>
LOC	YES	NONE
AUTH	NO	YES
MAXCRDS	NO	50
UNIT	NO	SYSDA
TUNIT	NO	TAPE
ACLNTH	NO	4
ACCPOS	NO	0
UT1BUF	NO	20

```
//PILOT JOB (PILOT), 'LOAD PILOT', CLASS=A, MSGCLASS=X, NOTIFY=&SYSUID
//RST1STEP EXEC PGM=IKJEFT01, DYNAMNBR=30
//SYSPRINT DD SYSOUT=*
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD *
  PROFILE NOPREFIX
  RECEIVE INDSNAME('PILOT.V1M8.OBJECT.XMI')
  DSNNAME('PILOT.V1M8.OBJECT')
  RECEIVE INDSNAME('PILOT.V1M8.SOURCE.XMI')
  DSNNAME('PILOT.V1M8.SOURCE')
/*
```

## 1 JCL To Load The PILOT Data Sets

UT2BUF	NO	20
SYSEXIT	NO	RDSMFEXT
OS	NO	SP3

as a non-swappable address space and to link to the IBM utility IFASMFDP to clear system data sets after the dump is successful. READSMF will not clear the data set until the data set has been dumped successfully. The HISTORY option must be used in conjunction with the ISMF option to create an audit trail of system data set activity (refer to the PILOT/ SMF User's Guide for more information).

### Explanation and Recommendations

#### LOC

This operand must be specified. A maximum of 44 characters may be specified. This operand identifies the data center to which the program is licensed. Usually, your company name is used in this operand. The value you supply will be included in the reports produced by PILOT and will appear in the identifying information in the files prepared by PILOT for transfer to the PC.

Example:

```
LOC='Acme Data Center'
```

#### AUTH

This operand is used to include authorized functions executed by the PILOT/SMF modules in an MVS environment. Authorization is used to make the program READSMF run

#### MAXCRDS

This operand specifies the maximum number of control cards allowed on a SYSIN file. Usually only one or two cards are needed.

#### UNIT

This operand is used to dynamically allocate a work file of one 80 byte record needed when the ISMF option is active. It is also used for dynamic allocation of an input file for disk devices.

#### TUNIT

This operand is used for dynamic allocation of an input file for tape devices.

**ACLNTH**

This operand defines the length of the account field in your installation. The maximum size is 8 bytes when ACCPOS=0, and an SMF Exit is installed into the system to put the account number from a job card into those SMF records that provide for a user identification field. Otherwise the length of the account field is restricted to 255 characters.

**ACCPOS**

This operand defines the position of the account field that is used in your installation. The default value of zero means that the account number is provided in the user identification field of the record (support for prior releases). A value of "1" means that the first accounting field will be matched against the account numbers for specific extraction request.

**UT1BUF**

This operand controls the number of buffers used for SYSUT1 I/O operations. The number of buffers should not be less than 10 in a non-XA environment (the MANx data set block size is 4K). In an XA environment, fewer buffers are needed due to the 32k block size. PILOT's ESTAE logic uses the number of buffers to locate bad records (AB-END S002). All I/O is quiesced in order to read, skip, and print the bad record. We recommend that you do not exceed 30 buffers for each file. As the number of buffers increases,

the storage required to run READ-SMF increases.

**UT2BUF**

This operand controls the number of buffers used for SYSUT2.

**SYSEXIT**

This operand specifies an additional exit that will be taken prior to the user exit at execution time. The default exit provided illustrates the linkage necessary for installation tailoring. The system installation exit should observe the following standards:

1. Use standard linkage conventions.
2. Register 1 contains the address of the current record using VBS format; i.e., register 1 points to the RDW.
3. Return codes:
  - R15=0 Pass this record as is, or modified.
  - R15=4 Delete this record.

**OS**

This parameter is not needed in this release of PILOT, but is included for compatibility with previous releases. When specified, it will change the defaults for UT1BUF= and UT2-BUF= key words from 20 buffers to 10 in XA environments. Valid values are: SP3 or XA.

Example:



```
TITLE 'PILOT/SMF GEN'
RDSMFMAC LOC='ACME DATA CENTER', X
      MAXCRDS=30,ACLNTH=6, X
      ACCPOS=1,TUNIT=TAPE62
```

Take all the defaults except: allow only 30 SYSIN control cards; use a 6 digit account number in the first account field; and use "TAPE62" as the generic name for tape allocation.

## Run The PILOTGEN Job Stream

This job stream will link the PILOT components with the options chosen. Ensure that the data set names match the names created in the unload step. The JCL procedure "LKRDSMF" links these modules into the "LOAD=" library. The PILOT program READSMF issues a LINK macro to pass control to RDSMFAUT. This module must be in a Link List data set when a STEPLIB (*which must be authorized in MVS*) is omitted from the execution JCL.

## Convert The History File

If you are upgrading from an earlier release of PILOT, the old history files must be converted before they can be used by PILOT version 1.7. For PILOT 1.7, the history files have been modified to include Y2K compatible dates. However, the old history file still contains the old date formats which are not Y2K compliant. The CON VHIST program is provided to perform the conversion of your history file.

Please find member RUNCVHST in your PILOT.V1M7.SOURCE library. This member contains sample JCL to execute the CON VHIST program. There are no input control statements to be coded for the CON VHIST program. The CON VHIST program simply reads the old history file, and creates a new version 1.7 compatible history file.

Data definition statements are described by the following:

**V1M5HIST** - Allocates, the input history PDS/PDSE file.

**V1M7HIST** - Allocates the output converted history PDS/PDSE file.

**SYSPRINT** - Allocates the report and messages file.

A sample of the JCL required to run the CON VHIST program can be found in figure [2](#) on page [15](#).

As indicated by the comments of the sample JCL member, you must observe the following restrictions when running the CON VHIST program.

1. You must code the DCB blocksize on the output history file allocated by DD statement V1M7HIST. The blocksize value must match exactly the size used by the input history file.
2. No backward reference to the DCB blocksize is permitted on the V1M7-HIST DD statement. You must code the DCB blocksize value explicitly.

There are no other restrictions. Dataset names, space allocations, and unit specifications may be modified as required.

## Validate The Installation

Members that begin with TESTnnnn in the source library should be modified and run to ensure the product is installed properly. The quickest and easiest way to ensure proper installation is to run the member called TESTRSMF, which will test PILOT by reading a system MAN data set. If this job fails, contact the technical support group for further assistance.

## Tailoring PILOT

### PILOT/SMF

PILOT program READSMF may be used as an SMF data back up and migration aid.

The following procedure can be used to back up SMF data reliably.

1. Back up SMF data on a daily, weekly, and monthly basis.
2. The record selection can vary between migrations. That is, you may wish to save all SMF types daily, and only a few on a monthly basis.
3. Create GDG's for daily dumps with a maximum number of 99.
4. Create GDG's for weekly dumps with a maximum number of 7. This means that every 7 weeks the last weekly tape is rolled out and not available.
5. Create GDG's for monthly dumps with a maximum of 18 if you do not wish to create yearly tapes, otherwise 14-16 months are sufficient.

6. The system exit IEFU29 is used to dump MAN data sets. PILOT can create two copies of this data, or up to eight variations of different record types for reporting purposes.
7. The weekly procedure will reset the GDG count on the daily tapes when it runs successfully. This keeps the number of tapes to a minimum.
8. The monthly procedure will read the last seven tapes and create a tape with the exact month's data.
9. PILOT/SMF has additional features that can help customize SMF management to your needs.

Member IEFU29 is provided in the source library. This exit is used to automatically start the dump procedure if a MAN(x) data set is full or if the operator switches the MAN(x) data sets. This exit is also invoked when an IPL is performed. Additional procedures SMFDUMP (daily dump procedures) and SMFWKLY (an example of the weekly migration of SMF data) are also in the source library.

Multiple output data sets can be utilized to create back up copies of SMF data as well as creating spin-off files of different record types. Member SMFDYN is a sample job stream using this feature.

Member SMFMNLY is an example of how to use PILOT to create exactly one month's worth of SMF data using GDG's and program called GENMONTH. To activate the GENMONTH program just prime the date in the sample member CARD to the previous month's date. For example, to collect data for all July after collecting seven weeks of

data, set the date to June 1 in the CARD member.

We have also provided a member called "ZAPWTO", which suppresses the WTOR to reset the RBA in the system data sets.

The ISMF option can be specified in the PARM= field on the EXEC card.

The NODUP option can also specified only with the ISMF option.

```
//DUMPMAN EXEC PGM=READSMF, PARM=ISMF
//SYSPRINT DD SYSOUT=A
//SYSUT1 DD DSN=SYS1.MAN1, DISP=SHR
//SYSUT2 DD ...
//SYSIN DD DUMMY
```

**or**

```
//DUMPMAN EXEC PGM=READSMF, PARM=' ISMF, NODUP '
//SYSPRINT DD SYSOUT=A
//SYSUT1 DD DSN=SYS1.MAN1, DISP=SHR
//SYSUT2 DD ...
//SYSIN DD DUMMY
//SORTWK01 DD ...
// PLUS OTHER DD STATEMENTS TO INVOKE SORT
```

**This reserves the name "ISMF" as a user exit name to PILOT.**

## PILOT/MVS

Sample JCL procedures to run PILOT for MVS performance analysis are provided in the source library members PCDAILY, which will produce files for a 24 hour period; PCWKLY, which will produce files by shift over a one week period; and PCMNLY, which will produce files for a peak period for the month. **A sample capacity plan is provided in the Techniques section of this manual. The job stream to complete stage**

**one of the plan is found in member PILOTRMF.**

Although PILOT does not depend on any particular file transfer program, the data templates (Lotus spreadsheets where data produced on the mainframe is processed) included depend on the following naming convention:

NNNssMMt.PRN or NNNssMMt.WK1

where:

- NNN = RMF RMF summary data.
- CHA Channel detail data.
- DAS DASD detail data.
- PAG Paging subsystem data.
- PDS Page data set data.
- WKL Workload data.
- CPU CPU/LPAR data.
- CAC Cache device data.
- TSO TSO data.
- S30 Type 30 summary data.
- T30 Type 30 detail data.

ss = 01,... identifies the system.

- MM = DL For Daily detail data (every interval or hourly all shifts).
- WL Weekly data on an hourly basis (usually by shift).
- ML Monthly data on daily basis for a peak period.

- t = 1 First shift
- 2 Second shift
- 3 Third shift

PC data file name extension are PRN and spreadsheets are WK1.

Examples:

DAS01WL1.PRN

DASD weekly summary data from system 01 for 1st shift.

WKL02WL2.WK1

Workload summary template for system 02 for 2nd shift.

cccc = Any five letters or numbers to identify the CICS region.

Examples:

SUMPROD1.PRN CICS summary data file for PROD1 region.

RSPPROD2.WK1 CICS response template for PROD2 region.

## PILOT CICS

The PILOT program SMFPC110 is used with the IBM CICS monitor CMF. The PILOT program SMFPCLMK is used with The MONITOR™ by Landmark Systems.

The templates included with PILOT depend on the following naming convention:

NNNcccc.PRN or NNNcccc.WK1

Where:

NNN = SUM CICS summary data.  
RSP CICS detail data.

```
/** ** PLACE YOUR JOB CARD HERE ** **
/** **
/** ** THIS JOB WILL CONVERT YOUR HISTORY FILES(S) TO VERSION 1.7 *
/** ** (AND Y2K) COMPATIBLE FORAMT. PLEASE ADD A JOB CARD, MODIFY *
/** ** DATASET NAMES WHERE APPROPRIATE, AND MODIFY SPACE ALLOCATION *
/** ** ON THE V1M7HIST DD STATEMENT AS REQUIRED. PLEASE CODE THE *
/** ** BLKSIZE DCB PARAMETER SPECIFICALLY, AND NOT AS A BACKWARD *
/** ** REFERENCE TO V1M5HIST. MAKE SURE THE BLKSIZE IS ALSO THE SAME *
/** ** AS THAT USED BY THE V1M5HIST FILE. *
/** **
/** **
//CVHST EXEC PGM=CONVHIST
//STEPLIB DD DSN=PILOT.V1M7.LOAD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//V1M5HIST DD DSN=PILOT.V1M5.HISTORY,DISP=SHR
//V1M7HIST DD DSN=PILOT.V1M7.HISTORY,DISP=(NEW,CATLG,DELETE),
// VOL=SER=VVVVVV,UNIT=SYSDA,SPACE=(TRK,(60,10,80)),
// DCB=BLKSIZE=3120
```

**Figure 2 - CONVHIST JCL**

## PC Installation Procedures

There are five tasks required to complete this step of the installation.

1. Make sure that Lotus 1-2-3 or Excel is installed with the correct graphics, printer, and (if you are using a plotter) plotter drivers, and that the Lotus Print Graph utility (if needed) is configured properly.
2. Install the files for PILOT.
3. Execute file transfer(s) to load mainframe file(s) into the PILOTPRN directory.
4. Tailor each data template as needed.
  - A. Import data into the template.
  - B. Run the template set-up, if needed.
  - C. Tailor the template to your needs.
  - D. **Save your changes.**
5. If you are using Lotus 1-2-3, tailor the AUTO123 template (it directs you to the data templates).
6. If you are using Excel, load the PILOT Excel workbook, choose the PILOT menu, then the Setup option, and set the parameters as required.

### Spreadsheet Product Installation

The PILOT diskette provided includes various spreadsheets, also referred to as templates or worksheets, to be used with Lotus 1-2-3 Version 2.0 or above or MicroSoft Excel 4.0 or above. A high resolution graphics board is recommended. Graphs

produced with the data templates can be viewed and printed with the Lotus Print Graph Utility program (Lotus release dependent). If Lotus is started by typing "123" at the DOS prompt, then the Print Graph Utility can be started by exiting the templates and typing "pgraph" at the DOS prompt.

### Load The PILOT Files

Unzip the pilot.zip file honoring the directory structure. The default directories created are:

#### PILOT

The main PILOT directory is created in the root directory of the drive. It contains all the programs, spreadsheets and data templates.

#### HOST

The mainframe transmit (.xmi) files are provided in this sub-directory.

#### PILOTPRN

The sub-directory which will contain files down-loaded from the mainframe. If you loaded the sample .PRN files, they are placed here.

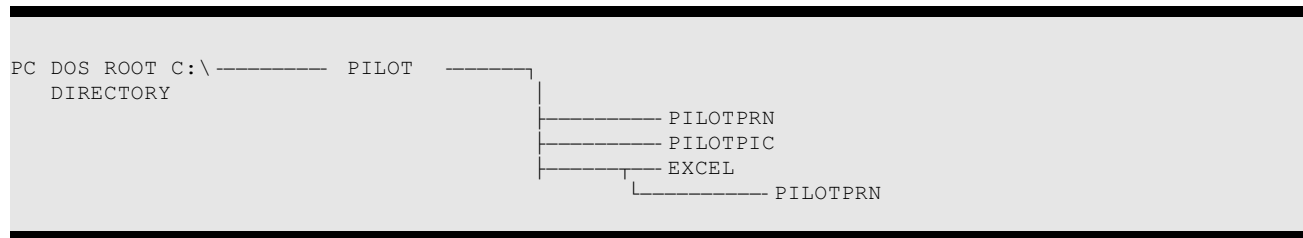
#### PILOTPIC

The sub-directory which will contain graphs saved from PILOT's templates. The files can later be viewed and printed by Lotus' Print Graph Utility program.

## EXCEL

The sub-directory for EXCEL. It contains all the data templates and macros used in the PILOT EXCEL support.

A picture of the directory structure that will be created by the installation program when you use the default values is shown in figure [3](#) on page [18](#).



**3** PILOT Directory Structure

# File Transfer And Spreadsheet Conventions

## File Transfer

The data must be transferred with the following options:

- Carriage Return and Line Feed must be added to the end of each line (CRLF)
- The lines are not numbered (NONUM)
- EBCDIC to ASCII conversion is required (ASCII).

The local file on the PC must have it's extension name of **PRN**. The ASCII file must be placed in the PILOTPRN subdirectory and conform to the naming conventions that follow. Examples of file transfer CLIST and batch commands are provided with the installation instructions.

Example:

Mainframe name:

TSU.RMF01DL1.PRN

PC name:

RMF01DL1.PRN

to be imported into spreadsheet

## PC Naming Conventions

The following naming conventions are used to determine the name of a spreadsheet or a data file (the PC data file name extension is PRN and spreadsheet is WK1).

Lotus 1-2-3:

NNNssMMt.PRN or NNNssMMt.WK1

where NNN:

RMF	RMF system summary data.
CHA	Channel detail data.
DAS	DASD detail data.
PAG	Paging subsystem data.
PDS	Page dataset activity data.
WKL	Workload data.
SUM	CICS summary data.
RSP	CICS detail transaction data.
T30	SMF type 30 detail records.
S30	SMF type 30 summary records.

where ss:

01,02,..etc to identify the system.

where MM:

DL	For Daily detail data (every RMF interval or hourly all shifts).
WL	Weekly data on an hourly basis (usually by shift).
ML	Monthly data on daily basis for a peak time.

where t:

1	First shift
2	Second shift
3	Third shift



Lotus 1-2-3 examples:

RMF01WL1.PRN

RMF weekly summary data file from system 01 for 1st shift.

WKL02DL2.PRN

Workload daily data file for system 02 for second shift.

EXCEL:

NNNxxxx.XLT

where xxxx is the type of EXCEL template to be used. The EXCEL template names are fixed. There is an additional field generated by PILOT called "DATETIME" which is used to create all reports and graphs. This does not exist in the Lotus 1-2-3 templates.

After the data is transferred to the PC, Lotus 1-2-3 can be used to analyze the data. First time users can follow these steps using Lotus 1-2-3 and the **Sample Templates** provided. There are four basic steps to be taken in order to use the sample templates:

1. Bring up native Lotus 1-2-3.
2. Change the default directory to point to the PILOT directory on your hard disk.
3. Choose a sample template.
4. Import the data into the appropriate template. This is the data you previously downloaded to your PC.

The scenarios that follow include the step to IMPORT data. If you did not create a file on the mainframe and downloaded it into the

PILOTPRN directory then you must skip that step within the selected scenario, or use the sample .PRN files provided with PILOT. There is sample data in each template for proper execution of Lotus macros. All graphic scenarios will execute with the sample data provided within the template.

The diskette provided includes various spreadsheets to be used with Lotus 1-2-3 Version 2 and above and EXCEL 4.0 and above. A high resolution Graphics board (EGA or higher) is recommended. Directions for a hard disk system are provided. Operations in a dual floppy system (a system without a hard disk) are not recommended, but may be possible. Please refer to your spreadsheet product's documentation.

## File Transfer Your Mainframe Data To The PC

The examples that follow are samples of the more popular file transfer methods. Each shows how you would setup a file transfer to download RMF summary, DASD summary, TSO detail, Paging detail, and Workload Summary data for two systems produced by PILOT for the first shift.

Examples of the file transfer commands can be found in figure [6](#) on page [23](#), figure [5](#) on page [22](#), and figure [4](#) on page [21](#).

---

**This is a sample BAT file for IBM File transfers using the RECEIVE command.**

This command is executed on the PC and can be found in member IBMFT in the PILOT source library.

```
ECHO ON
RECEIVE C:\PILOT\PILOTPRN\RMF01WL1.PRN 'TSU.S4381.RMFWLY1' ASCII CRLF
RECEIVE C:\PILOT\PILOTPRN\DAS01WL1.PRN 'TSU.S4381.DASWLY1' ASCII CRLF
RECEIVE C:\PILOT\PILOTPRN\TSO01WL1.PRN 'TSU.S4381.TSOWLY1' ASCII CRLF
RECEIVE C:\PILOT\PILOTPRN\PAG01WL1.PRN 'TSU.S4381.PAGWLY1' ASCII CRLF
RECEIVE C:\PILOT\PILOTPRN\WKL01WL1.PRN 'TSU.S4381.WKLWLY1' ASCII CRLF
REM
REM          SECOND SYSTEM
REM
RECEIVE C:\PILOT\PILOTPRN\RMF02WL1.PRN 'TSU.S3090.RMFWLY1' ASCII CRLF
RECEIVE C:\PILOT\PILOTPRN\DAS02WL1.PRN 'TSU.S3090.DASWLY1' ASCII CRLF
RECEIVE C:\PILOT\PILOTPRN\TSO02WL1.PRN 'TSU.S3090.TSOWLY1' ASCII CRLF
RECEIVE C:\PILOT\PILOTPRN\PAG02WL1.PRN 'TSU.S3090.PAGWLY1' ASCII CRLF
RECEIVE C:\PILOT\PILOTPRN\WKL02WL1.PRN 'TSU.S3090.WKLWLY1' ASCII CRLF
```

---

**4 DOS Batch File for File Transfers**

**This is a sample BAT file for IRMA File transfers using FTTSO.**

This command is executed on the PC and can be found in member IRMAFT in the PILOT source library.

```
ECHO ON
FTTSO/R/V \PILOT\PILOTPRN\RMF01WL1.PRN 'TSU.S4381.RMFWLY1' DATA NONUM
FTTSO/R/V \PILOT\PILOTPRN\DAS01WL1.PRN 'TSU.S4381.DASWLY1' DATA NONUM
FTTSO/R/V \PILOT\PILOTPRN\TSO01WL1.PRN 'TSU.S4381.TSOWLY1' DATA NONUM
FTTSO/R/V \PILOT\PILOTPRN\PAG01WL1.PRN 'TSU.S4381.PAGWLY1' DATA NONUM
FTTSO/R/V \PILOT\PILOTPRN\WKL01WL1.PRN 'TSU.S4381.WKLWLY1' DATA NONUM
REM
REM          SECOND SYSTEM
REM
FTTSO/R/V \PILOT\PILOTPRN\RMF02WL2.PRN 'TSU.S3090.RMFWLY1' DATA NONUM
FTTSO/R/V \PILOT\PILOTPRN\DAS02WL2.PRN 'TSU.S3090.DASWLY1' DATA NONUM
FTTSO/R/V \PILOT\PILOTPRN\TSO02WL2.PRN 'TSU.S3090.TSOWLY1' DATA NONUM
FTTSO/R/V \PILOT\PILOTPRN\PAG02WL2.PRN 'TSU.S3090.PAGWLY1' DATA NONUM
FTTSO/R/V \PILOT\PILOTPRN\WKL02WL2.PRN 'TSU.S3090.WKLWLY1' DATA NONUM
```

**5 File Transfer Commands for IRMA Emulators**

### **This is a sample CLIST for using the Forte file transfer.**

This command is executed on the mainframe as TSO CLIST, and can be found in member FORTEFT in the PILOT source library.

```

PROC 0
WRITE
WRITE THIS CLIST DOWNLOADS WEEKLY FILES TO THE PC.
WRITE
/*  FIRST  SHIFT                */
PCXFER DSN('TSU.S4381.RMFPLY1') TO PC(C:\PILOT\PILOTPRN\RMF01WL1.PRN)
PCXFER DSN('TSU.S4381.DASWLY1') TO PC(C:\PILOT\PILOTPRN\DAS01WL1.PRN)
PCXFER DSN('TSU.S4381.TSOWLY1') TO PC(C:\PILOT\PILOTPRN\TSO01WL1.PRN)
PCXFER DSN('TSU.S4381.PAGWLY1') TO PC(C:\PILOT\PILOTPRN\PAG01WL1.PRN)
PCXFER DSN('TSU.S4381.WKLWLY1') TO PC(C:\PILOT\PILOTPRN\WKL01WL1.PRN)
PCXFER DSN('TSU.S3090.RMFPLY1') TO PC(C:\PILOT\PILOTPRN\RMF02WL1.PRN)
PCXFER DSN('TSU.S3090.DASWLY1') TO PC(C:\PILOT\PILOTPRN\DAS02WL1.PRN)
PCXFER DSN('TSU.S3090.TSOWLY1') TO PC(C:\PILOT\PILOTPRN\TSO02WL1.PRN)
PCXFER DSN('TSU.S3090.PAGWLY1') TO PC(C:\PILOT\PILOTPRN\PAG02WL1.PRN)
PCXFER DSN('TSU.S3090.WKLWLY1') TO PC(C:\PILOT\PILOTPRN\WKL02WL1.PRN)

```

## **6 Forte File Transfer Commands**

### **How To Uninstall The PC Software**

To un-install the PILOT PC software, just delete the files and remove the directories. To reinstall the software, or to install the software on other PC's use the original installation diskette(s) and follow the installation procedures described above.



## Using Lotus 1-2-3

### Tailor the Data Templates

Templates are defined as data templates because they are spreadsheets designed to analyze data with these commands:

#### IMPORT

This command will display files to be loaded into the spreadsheet. The names of the data files must have the extension PRN in order for the spreadsheet product to choose that particular file. For example, if you choose the RMFSUM data template's Import command line, all files that fit the mask RMF?????.PRN will be chosen as a possible import file. You will then choose the exact file from the list provided.

#### GRAPH

This command will display a set of graph options that will establish titles and set graph attributes for all graphs within the current data template. Another menu is presented to choose the type of graph desired.

#### PRINT

This command will print the current data imported, and other ad hoc reports you create within the template. The print command uses the default printer settings. These can be set by normal spreadsheet product native commands or by setting the defaults in the AUTO123

spreadsheet. The correct device drives for your printer(s) must have been installed using the spreadsheet product install or configuration program in order for this function to work properly. This function will not print graphs; use the Lotus print utility or spreadsheet product Graph or Print functions as mentioned earlier.

#### SAVE

This command will save a data template. Enter this command to save changed settings in a template. Do not enter this command unless you want to save the current data in the template. You will have the option to replace the original template or create a new version (new name).

#### RETURN

Return to the first level spreadsheet to choose additional data templates.

#### SETUP

Used to customize the current data template to your requirements.

Each template follows the naming conventions mentioned earlier on page [19](#). The use of the template is to provide a formatted report with built-in graphics to make analysis easier. As you become more experienced with the product you may create your own templates for your special needs.

All templates are distributed with names:

xxx01DLY, xxx01WLY, xxx01MLY, xxx-01SP, or xxx01XA.

where:

xxx is a template type as described in “PC Naming Conventions” on page [19](#).

01 is for the first system.

DLY means the spreadsheet can be used for daily activity for every interval defined. For example: RMF01DLY is an RMF spreadsheet that will graph data by time and can be used for performance management. WLY means the spreadsheet averages the data imported and can be used to graph data by hour across a date range. This is very useful for capacity planning. MLY means the spreadsheet averages data imported and can be used to graph data by day across a date range. This is also very useful for capacity planning. Refer to the sample capacity plan in the Techniques section for more information.

SP or XA are for channel and DASD spreadsheets, which differ. These are supplied in a DLY format only.

- \* First, data should be created on the mainframe to download to the PC (into the PILOTPRN directory).
- \* Next, the data should be imported into the templates provided.

- \* For the RMF templates, be sure to choose the channels (path ids) to format on the mainframe for reporting and graphing. Choose at least one channel and no more than 18 channels.
- \* For Lotus users, the main spreadsheet, AUTO123, is used to direct you to the template for data analysis. This spreadsheet can be customized to describe your installation. Follow the directions for the setup of each template.

## Using Setup To Tailor Your Data Templates

The RMF templates differ from the other templates in that they have to be tailored to graph the proper number of channels for each system. The other templates do not require this tailoring. If the default values were installed by the PC install program and the GDATE option not specified to the mainframe format programs, little tailoring is needed. Each of these templates can be used as models to tailor templates for your installation. Modify each one and then save the template with all of your settings.

Creating different templates for each system is easily done. For example, to generate RMF templates for 2 systems, change the RMF01DLY for system 01 and save your settings. Then, change the settings for the 02 system and save the template as RMF02-DLY. Weekly and monthly spreadsheets can be created in the same manner. The setup options provided in the data templates will allow you to modify the template for:

- Lotus date, or GDATE (**all templates**).
  - default directories (**all templates**).
  - the channels to graph (**RMF only**).
- A. Lotus date (the number of days from Jan 1, 1900) is the default format of the date in the template and when running the PILOT components on the mainframe. Also, Lotus date uses one column while GDATE uses 3 columns in the templates. Previous versions of Lotus did not have the mm/dd/yy Lotus date format. GDATE is not really needed, but is included for compatibility with an earlier version of PILOT. Lotus date is recommended; any of the date formats can be used by choosing Lotus date in the setup option before importing data. **Note the weekly templates must use the Lotus date format.**
- B. The directories only need to be changed if PILOT was not installed using the default values. Notice the default is '??' which means (NNN<sub>ss</sub>MMt in PILOT) that 01, 02, 03... will all be eligible for import. This is needed for the first IMPORT. The IDENT field should be changed after the first import is made for a particular system and the template is to be saved. This will prevent importing new data for one system and graphing it as another system.
- C. **For RMF templates only** - After your data is imported, the template will automatically set itself with the number of processors. The graph routine needs to know how many CPU's to graph. The default is one processor.

- D. **For RMF templates only** - The spreadsheet will group any set of 6 channels to put on one graph (Lotus ranges: A-F). Up to three groups can be defined. Follow the prompts for groups 1-3, ranges A-F.

## Tailor the AUTO123 Template

This template is a shell which will direct you to the data templates. No analysis is done in this template. It is provided to make selection of data templates easier when the naming conventions (see page 19) and defaults values are used.

Lotus 1-2-3 will automatically load the template AUTO123 when the start up directory (Default Directory) points to \PILOT. If you do not want PILOT to come up automatically, the default file directory option of Lotus should not specify the \PILOT directory. To use PILOT in this way, you must change to the PILOT directory manually. To change the file directory in Lotus:

Hit the key marked Esc until **READY** is displayed in the top right corner of the screen.

Type:

/FD\PILOT and press Enter  
to use the File Directory command to change to the \PILOT directory

Next, type:

/FR



to use the File Retrieve command to select a template. The cursor should highlight **AUTO123**. Press Enter to load the template.

To have Lotus start PILOT automatically at start up:

Hit the key marked Esc until **READY** is displayed in the top right corner of the screen.

Type:

/WGDD\PILOT and press Enter to set the Worksheet Global Default Directory value to \PILOT.

Next, type:

UQ  
to Update the Lotus settings and quit to the Lotus Ready prompt.

Finally, type:

/FR  
to use the File Retrieve command to select a template. The cursor should highlight **AUTO123**. Press Enter to load the template.

Lotus 1-2-3 menus are chosen by using the Right Arrow and the Enter key or the first letter of each option. Notice a brief description below each option as the arrow key is moved. To break out of a native or user menu, hit Esc. If a beep is heard, hit Ctrl and Break together followed by Esc. The top right corner of the screen is Lotus 1-2-3's status indicator. Once a "**READY**" appears in the top right corner of the screen, use the arrow keys to examine the spreadsheet. To re-enter the template menus, just

hit the Alt and M keys (use Ctrl and M in Lotus for Windows) simultaneously. The word "**MENU**" will appear when a native or user menu is active. A user menu is indicated by the word "**CMD**" in the lower right portion of the screen.

The following options are provided by the main spreadsheet (AUTO123) command menu:

#### RMFSUM

Analyze RMF summary data when the PARM "DAILY", "HRLY", or "INTVL" is specified.

#### TSOSUM

Analyze RMF TSO data when the PARM "TSO", or "PGN=" is specified.

#### I/O\_SYSTEM

Analyze RMF channel, DASD and Cache data created by PILOT.

#### CICS

Analyze CMF or The Monitor™ CICS data created by PILOT.

#### PAGING

Analyze RMF Paging subsystem and Page Data Set data created by PILOT.

#### WKLOAD

Analyze RMF workload data created by PILOT, LPAR vs Physical CPU utilization, or formatted SMF type 30 records created by program SMFPC30.

**SETUP**

Set the default printer settings and your system configuration for the AUTO123 spreadsheet for your installation.

**Default Printer Settings**

Once the printer setup is completed it will allow you to print all **reports** using the template(s) "Print" command. Here is a list of the prompts and explanations:

**Enter no for printer size (80) or (132) >**

PILOT needs to know the size of your printer. If you have a wide carriage, the value 132 should be chosen. If you are going to compressed print, PILOT will adjust the margins according to the printer specified at this prompt.

**Which Port? LPT1, COM1, LPT2, COM2, or DOSLPT >**

PILOT and Lotus need to know where the printer is attached. LPT1 and LPT2 are parallel ports. COM1 and COM2 are serial ports and, if chosen, you will also be prompted for the baud rate (speed).

**Enter SETUP String of <ENTER>**

A setup string is printer dependent. A common use of this feature is to compress print to extend an 80 column printer to 132 characters and a 132 printer to 240 characters.

**Compressing Print?**

If you entered a setup string to compress print, enter "Y"; PILOT will adjust the margins for the printer.

**Use arrow keys and <Enter> key for prompts. Hit Enter**

PILOT will execute a macro to setup your printer defaults. The arrow key and enter key are needed for proper execution of this macro. The macro will pause at the "Name" of the printer to use and the "baud" rate for serial interfaces. The macro will issue a series of beeps. This is normal during the execution of this macro.

The Lotus status screen showing the defaults of the printer will be displayed. Hit any key to resume.

**Save Settings Yes, No, Change (Y|N|C) >**

After reviewing the printer settings, they will be saved if "Y" is entered, "N" will keep the settings for the current Lotus session only, and "C" will restart at the first prompt.

**System Configuration**

There are eight systems defined in this spreadsheet. You can tailor this template to show only the number of systems at your installation. Follow this procedure:

Move the cursor to the SETUP option and hit Enter.

You will see the menu:

ADD/MODIFY DELETE SAVE

TYPE: A

## ADD/MODIFY

Update the template for number of systems.

1. Start with system 1 (TYPE 1) and change it to the name (usually the SMF ID) used at your installation.
2. Type a description of the system, up to 40 characters. For example, "Production 3081-K".
3. The 01 IDENT field is the xxx01yyy used to associate the data template with the system description. This cannot be changed until the data template has been created.
4. Continue this process for all of your systems.

## DELETE

Use this option to only display the systems defined by your installation. For example, if you have 4 systems defined, delete system 5 ( 6 and 7 need not be deleted).

## SAVE

Save this template or the changes made will not be written to the disk.

## Printing Graphs

In previous releases of PILOT, you could print graphs in either of two ways. In the first, you used the SAVE\_GRAPH option from the PILOT Graph menu to create a .PIC file in the PILOTPIC subdirectory. You then used the Lotus PrintGraph (pgraph) utility program to print or plot the graphs

you saved. In the second method, you used another software package to print the graphs from the Lotus templates.

In the latest versions of Lotus 2.x, these methods still work, but you can also print the graph from within the template, using the Lotus printing and WYSIWYG publishing facilities. In Lotus for Windows (1.x and 4.0) the Graph Save command (/GS) is obsolete. Graph printing can be accomplished either through the native Lotus commands and menus or through other packages, such as Lotus Freelance Graphics. To allow the maximum flexibility for you to switch between Lotus versions, we have changed the way SAVE\_GRAPH works so that it will be compatible with all Lotus releases. Now, when you decide to save a graph, select SAVE\_GRAPH, and you will be prompted to supply a name which will be used to assign a name to the current graph's settings (Graph Name command). This name can be used both within Lotus and by external packages to select the graph to process. More than one graph can be "saved" in this way, and you will later be able to select from the list of names.

If you still wish to use the PrintGraph utility, and you are running a version of Lotus that supports it, you may exit from the PILOT menus after creating your graph, and use the /GS command manually to do so.

## Printing Graphs in Lotus 2.x

We have tested the following sequence in Lotus 2.3. There may be differences in the

exact behavior of other 2.x releases. The PrintGraph utility is available in this version of Lotus 1-2-3. Use the PrintGraph method for earlier releases of this version of Lotus.

To print a graph in Lotus 2.x, first create and display the graph using the PILOT menus. Assign a name to the graph using the SAVE\_GRAPH menu option.

If you have not already done so, attach and activate the WYSIWYG add-in and use it to put the display into graphics mode.

Position to an empty area of the template, invoke the WYSIWYG menu and choose Graph, then Add, then Named and select the graph to use. You will be prompted to mark a range to receive the graph. This is done in the usual way: anchor the cursor with the “.” key, then move right and down to define an area about the size of your display. Then press enter. The named graph will be displayed in this area.

Use the built-in facilities of the WYSIWYG add-in to “dress up” the graph for printing. Then use the WYSIWYG Print function. Set the Range to cover the graph just created. Edit the printing options as required to get the image sized the way you want (print preview is helpful here). Then choose Go to send the graph to the printer.

### Printing Graphs in Lotus 3.x

We have tested the following sequence in Lotus 3.0 and 3.1. There may be differences in the exact behavior of other 3.x releases.

To print a graph in Lotus 3.0, first create and display the graph using the PILOT menus. Assign a name to the graph using the SAVE\_GRAPH menu option.

Exit to the native Lotus menus. Use the Print, Printer, Image (/PPI) command and then choose Current to print the last graph you displayed, or Named-Graph, to pick a graph saved with the SAVE\_GRAPH option. Select the desired graph. Set the other print options and parameters as desired to provide the output you require. Choose Go then Page from the Lotus menu to print the graph and eject the page.

There are two methods available to you for printing graphs in version 3.1 or higher. The method described above for 3.0 is the first. Here is the second.

If you have not already done so, attach and activate the WYSIWYG add-in and use it to put the display into graphics mode.

Position to an empty area of the template, invoke the WYSIWYG menu and choose Graph, then Add, then Named (or Current) and select the graph to use. You will be prompted to mark a range to receive the graph. This is done in the usual way: anchor the cursor with the “.” key, then move right and down to define an area about the size of your display. Then press enter. The named graph will be displayed in this area.

Use the built-in facilities of the WYSIWYG add-in to “dress up” the graph for printing. Then use the WYSIWYG Print function. Set the Range to cover the graph just created. Edit the printing options as required to get

the image sized the way you want (print preview is helpful here). Then choose Go to send the graph to the printer.

## Printing Graphs in Lotus for Windows 1.0

We have tested the following sequence in Lotus for Windows 1.0a and 1.1. There may be differences in the exact behavior of other 1.x releases.

To print a graph in Lotus 1.x, first create and display the graph using the PILOT menus. Assign a name to the graph using the SAVE\_GRAPH menu option.

Position to an empty area of the template, or open a new sheet. Select a range by dragging the mouse right and down to cover several rows and columns (you can resize the graph later if you wish). Choose Graph, then Add To Sheet, then select the graph to use from the list of names. You can use the "Range" box at the bottom of the dialog box to adjust the size now or later). Click "OK," and the named graph will be displayed in this area.

Use the built-in facilities of Lotus to "dress up" the graph for printing (start by choosing Graph and then View). Edit the printing options as required to get the image sized the way you want (print preview is helpful here). Then choose Print to send the graph to the printer.

## Printing Graphs in Lotus 4.0

We have tested the following sequence in Lotus 4.0. There may be differences in the exact behavior of other 4.x releases.

To print a graph in Lotus 4.0, first create and display the graph using the PILOT menus. Assign a name to the graph using the SAVE\_GRAPH menu option.

Position to an empty area of the template or open a new sheet. Click Edit-GoTo (or press F5). In the Go To dialog, click the "Type of Item" drop-down and select "Chart." A list of the named graphs will be displayed. Select the desired chart. When you click "OK," the dialog box is dismissed, and the selected graph will be displayed in the center of the display area.

The chart is selected, and the Chart menu option is added to the Lotus menu. You may now use all of the facilities of Lotus to "dress up" the graph, and use the Lotus Print functions to send the graph to your printer or plotter.

## PILOT Tutorial Using Lotus 1-2-3

This section will briefly guide you through the use of the PILOT RMFSUM (RMF Summary) template in Lotus 1-2-3. This is not intended to be an exhaustive discussion on the use of this template or of the other PILOT templates, but is, instead, intended to give you a feel for how the templates work. Remember that you cannot harm anything if you do not save a changed template, and you can reload the templates from the original diskette.

1. Place the Lotus distribution diskette in drive A if Lotus is not started from your hard disk. Start Lotus.
2. Lotus 1-2-3 should automatically load the spreadsheet AUTO123. However, if the main spreadsheet is not loaded, then ensure that the start-up directory is pointing to the PILOT directory.

After "READY" is displayed in the top right corner of the screen, type:

```
/FD\PILOT
```

 and press Enter to use the File Directory command to change to the \PILOT directory

Next, type:

```
/FR
```

 to use the File Retrieve command to select a template. The cursor should highlight **AUTO123**. Press Enter to load

the template. A sample of the screen is shown in [Figure 1](#) on page [35](#).

Lotus 1-2-3 menus (native or user) are chosen by using the Right Arrow and the Enter key or the first letter of each option. Notice a brief description below each option as the cursor is moved. To break out of a native or user menu hit the Esc. If a beep is heard, hit Ctrl and Break together followed by Esc. Once "READY" appears in the right hand corner of the screen, use the arrow keys to examine the spreadsheet. To re-enter the menu, hit Alt and M (or Ctrl and M) simultaneously.

All the PILOT templates will provide these options:

### IMPORT

This command will display files to be loaded into the spreadsheet. The names of the data files must have PRN as the extension in order for Lotus 1-2-3 to choose that particular file. See the installation instructions for more information. For example, if you choose RMFSUM in the above command line, the RMF template will let you choose an RMF????? import file.

**GRAPH**

This command will display a set of graph options that will put in titles and set graph attributes. The second menu presented is used to choose the type of graph desired. Choose “GRAPH” again see the second graph menu.

**SAVE**

This command will save a spreadsheet. Do not enter this command unless you are sure you want to save the current data in the worksheet.

**RETURN**

Return to first level worksheet to choose additional worksheets.

**SETUP**

Set up this spreadsheet for your installation. Refer to the installation section of this manual for further information.

3. Choose the **MVS** option to load the MVS123 template. When it has been loaded, the screen will look like that in [Figure 2](#) on page [35](#). A menu will appear with the following template options:

**RMFSUM**

Analyze data when the PARM “DAILY”, “HRLY”, or “INTVL” is passed to PILOT/MVS.

**TSOSUM**

Analyze data when the PARM “TSO”, or “PGN” are passed to PILOT/MVS.

**I/O\_SYSTEM**

Analyze channel and DASD data created by PILOT/MVS.

**PAGING**

Analyze Paging subsystem data created by PILOT/MVS.

**CICS**

Analyze CICS data created by PILOT/CICS.

**WKLOAD**

Analyze data created by program SMFPC30 or PILOT/MVS.

**SETUP**

Setup this spreadsheet for your installation. Refer to the installation section of this manual for further information.

```

A1: 'Spreadsheet                                     MENU
MVS CICS Other Change Save Exit
PILOT/MVS
  A          B          C          D          E          F          G
1 Spreadsheet                                     Version
2 AUTO123                                     AUTO123 For PILOT V1L5.0
3
4          P P P P P          I I I I I          L L          O O O O O O O          T T T T T T T
5          P P          P P          I I          L L          O          O          T T
6          P P          P P          I I          L L          O          O          T T
7          P P P P P          I I          L L          O          P          T T
8          P P          I I          L L          O          O          T T
9          P P          I I          L L          O          O          T T
10         P P          I I I I I          L L L L L L L          O O O O O O O          T T
11
12 This worksheet changes to the directories for the PILOT product chosen.
13 This worksheet uses the directories as shown. If your directory names
14 are different, choose "Change" and enter your directory names.
15 Choose "Other" from the menu for non-PILOT Lotus 1-2-3 work.
16
17         Disk Directory      Product      Dir      Worksheet
18         C:\                  PILOT/MVS  PILOT    MVS123
19                             PILOT/CICS  PILOT    CICS123
20                             Lotus 1-2-3  PILOT
30-Oct-93 10:34 AM                                CMD

```

**Figure 1** PILOT AUTO123 Template

```

A1: '
RMFSUM TSOSUM I/O MENU PAGING WORKLOAD OTHER SETUP AUTO123          MENU
RMF Summary Data Templates
  A          B          C          D          E          F          G          H
1                                     Spreadsheet Version
2                                     MVS123          V1L5.0
3
4          P I L O T / M V S
5          Capacity Planning System
6
7          This is an Automated Capacity Planning / Performance Tool
8
9          1. Choose a template to view.
10         2. Do not import into this spreadsheet.
11         3. All templates return here.
12         4. Use setup to customize this template and the global
13            printer settings.
14         5. Use ALT-M to reinvoke the main menus.
15
16 PILOT (C) 1985-1993          Axios Products, Inc.
17 KLM Technical Specialties, Inc. 1373-10 Veterans Highway
18 All Rights Reserved          Hauppauge, New York 11788-3047
19                               Phone: (800) 877-0990
20                               Fax: (516) 979-0537
23-Mar-94 10:28 AM                                CMD

```

**Figure 2** PILOT MVS123 Template

4. Scenarios for a selected spreadsheet:

Choose the RMF summary template by typing **R** (or Enter if the cursor is high-

lighting RMFSUM). The menu changes to that shown in [Figure 3](#) on page [36](#) is displayed.



Press Enter or choose SYS1. The screen in [Figure 4](#) on page [36](#) is displayed. This menu will help you to choose the template by listing those available for the analysis type (RMF) and system identifier (SYS1). Select your template from the list of available templates, based on the type of data (Daily, Weekly or Monthly) that you have downloaded.

For this example, we assume you have selected daily. The RMF daily template is loaded and will look like the panel in [Figure 5](#) on page [37](#).

### RMFSUM

#### Import data

Type **I** for IMPORT data (skip this step if you did not create data on the mainframe and downloaded the .PRN files into you PILOTPRN directory and you did not install the sample files).

```
A1: '  
MENU  
SYS1  SYS2  SYS3  SYS4  SYS5  SYS6  SYS7  SYS8  
SYSTEM1
```

**Figure 3** System Selection Menu

```
A1: '  
FILES  
Name of file to retrieve: C:\PILOT\RMF01???.wk?  
RMF01DLY.WK1    RMF01MLY.WK1    RMF01WLY.WK1    ASMLIST\  
EXCEL\  

```

**Figure 4** Template Selection Menu

```

A1: [W10]
IMPORT GRAPHS PRINT RETURN SAVE SETUP EXIT
Load a ".PRN" file for an RMF Summary Report
  A      B      C      D      E      F      G      H      I      J      K      L      M
1
2
3
4
5          RMF Summary Template
6
7          SYSID=      SYSA PILOT/MVS (C) 1986-1992
8          DATE      TIME INTJOB JOB TSO TSO STC STC SWAP DPAG DASD TAPE
9          HHMM NO MAX AVG MAX AVG MAX AVG RATE RATE RATE RATE
10         01/09/92  900  5  27  23 126 118 135 129 117  96 579  11
11         01/09/92 1014  4  33  28 145 141 127 123 163 158 524  10
12         01/09/92 1114  5  30  25 144 141 132 127 123 136 522  19
13         01/09/92 1214  3  25  20 129 124 135 133  62  58 528  36
14
15
16
17
18
19
20
23-Mar-94 11:26 AM
CMD

```

**Figure 5** RMF Daily Template

Move the arrow keys to your selection. (If you have created more than one "PRN" file, i.e. RMF01DL1, RMF01DL2, RMF01DL3).

Press Enter to choose an RMF PRN file.

Create a graph:

Type **G** or use the arrow keys to graph data.

Press Enter to bypass the graphics setup menu.

Type **C** or Enter to choose the CPU graph.

The CPU graph will be shown. If a graph is not created, first refer to

the installation instructions to ensure the product is installed properly. Be sure that you have configured Lotus for graphics. If you are still having trouble contact Axios technical support for assistance.

Press Enter to continue.

Press Right Arrow twice (skip channel graphs unless you set up this template for your installations data).

Press Enter.

The second graph is displayed.

Press Enter to continue.

To view the spreadsheet:

Press Esc and then Home to examine the template. Navigate through the template using the arrow keys.

Press Alt-M together to invoke the main menu.

Type **R** twice to return to the AUTO123 template's main menu.

**Note:**

The distribution templates were created with a high resolution graphics board. This may cause the graph's X-axis to be overwritten. If the X axis is unreadable, just press the Esc key three times (**READY** should appear in the top right hand corner) and type:

1. /GOSS (a Lotus command).
2. Increase the number shown.
3. Press Enter.
4. Choose Q for quit.
5. Choose V for view.
6. Press Enter (Lotus menu appears).
7. Press Esc (Ready should appear in the top right corner)
8. Press Alt-G to return to the second level graphics menu. Return to the graphics setup menu by moving the cursor over the "RETURN" option and press Enter. Choose SKIP X-Axis. Increase the number. Now, when a graph is produced the new skip value will be used.

## Lotus 1-2-3 Template Directory

### Template Summary

<b>Template Name</b>	<b>Description (component)</b>
AUTO123	Introductory panel and navigation aide (All).
CAC01DLY	Cache Controller Analysis by Interval (MVS)
CHA01SP	Channel Analysis for SP by CHIP and Interval (MVS)
CHA01XA	Channel Analysis for XA and ESA by PI and Interval (MVS)
CICS123	Introductory panel and navigation aide (CICS)
CPU01DLY	Physical and LPAR Analysis by Interval (MVS)
CPU01WLY	Physical and LPAR Analysis With Averages by Time of Day
DAS01SP	DASD Analysis for SP by Address (MVS)
DAS01XA	DASD Analysis for XA an ESA by Address (MVS)
MODELCIC	CICS Modeling and Prediction (CICS)
MVS123	Introductory panel and navigation aide (MVS)
PAG01SP	Paging Analysis for SP by Interval (MVS)
PAG01XA	Paging Analysis for XA and ESA by Interval (MVS)
PGD01DLY	Page Data Set Analysis by Interval (MVS)
RMF01DLY	RMF Analysis Daily by Interval (MVS)
RMF01MLY	RMF Analysis Monthly With Averages by Day (MVS)
RMF01WLY	RMF Analysis Weekly With Averages by Time of Day (MVS)
RSPCICS	CICS Response Time Analysis (CICS)
S3001DLY	SMF Type 30 Summary Analysis (MVS)
SUMCICS	CICS Summary Performance Data (CICS)
T3001DLY	SMF Type 30 Detail Analysis (MVS)

<b>Template Name</b>	<b>Description (component)</b>
TSO01DLY	TSO Analysis (MVS)
TSO01MLY	TSO Analysis Monthly With Averages by Day (MVS)
WKL01DLY	Work Load Daily Activity Analysis (MVS)
WKL01MLY	Work Load Monthly Consolidation (MVS)
WKL01SIM	Simulator Calibration Template (All)
WKL01WLY	Work Load Weekly Consolidation (MVS)

## Graphs

Template Name	Graph Name	Description (X-axis, Y-axis)
AUTO123		No graphs are produced.
CAC01DLY	GRAPH GRAPH I/O_COUNT I/O_RATE NORMAL  RATIOS  QUERY I/O_COUNT I/O_RATE NORMAL  RATIOS	I/O count (address, number of IO's) I/O rate (address, SIO/second) Normal cache hits for reads, read hits, writes and write hits (address, number of IO's)  Hit ratios for read, write, SRD and FW (address, % hits)  Select volumes, addresses and time. I/O count (address, number of IO's) I/O rate (address, SIO/second) Normal cache hits for reads, read hits, writes and write hits (address, number of IO's) Hit ratios for read, write, SRD and FW (address, % hits)

Template Name	Graph Name	Description (X-axis, Y-axis)
CHA01SP	GRAPH GRAPH I/O_COUNT  SIO_RATE  BUSY  SRV_TIME  QUERY (TOD) I/O_COUNT  SIO_RATE  %BUSY  SRV_TIME  QUERY (PID) I/O_COUNT  SIO_RATE  %BUSY  SRV_TIME	I/O count for all channels (interval, number of SIO's) SIO rate for all channels (interval, SIO/second) Channel busy for all channels (interval, % busy) Service time for all channels (interval, response time)  I/O count for selected time (channel, number of I/Os) SIO rate for selected time (channel, SIO/second) Channel busy for selected time (channel, % busy) Service time for selected time (channel, response time)  I/O count for selected channel (interval, number of I/Os) SIO rate for selected channel (interval, SIO/-second) Channel busy for selected channel (interval, % busy) Service time for selected channel (interval, response time)
CHA01XA	GRAPH GRAPH BUSY QUERY (TOD) %BUSY QUERY (PID) %BUSY	% Busy for all PIDs (interval, % busy)  % Busy for selected time (PI, % busy)  % Busy for selected PI (interval, % busy)
CICS123		No graphs are produced.

Template Name	Graph Name	Description (X-axis, Y-axis)
CPU01DLY	GRAPH GRAPH CHANGE_TIME CHANGE_LPAR PIE IDLE_WKLD LINE/BAR LCPU  PCPU	Change time of day Change LPAR selection Pie chart (% CPU) Create Idle time segment Line/Bar charts Logical CPU utilization showing maximum, minimum and average by LPAR (time, % busy) Physical CPU utilization showing maximum, minimum and average by LPAR (time, % busy)
CPU01WLY	GRAPH GRAPH CHANGE_TIME CHANGE_LPAR PIE IDLE_WKLD LINE/BAR LCPU  PCPU	Change time of day Change LPAR selection Pie chart (% CPU) Create Idle time segment Line/Bar charts Logical CPU utilization showing maximum, minimum and average by LPAR (time, % busy) Physical CPU utilization showing maximum, minimum and average by LPAR (time, % busy)



Template Name	Graph Name	Description (X-axis, Y-axis)
DAS01SP	GRAPH GRAPH	
	I/O_COUNT	I/O count for all addresses (address, number of SIOs)
	I/O_RATE	I/O rate for all addresses (address, SIO/second)
	%BUSY	% Busy for all addresses (address, % busy)
	SRV/RSP_TIME	Service and response times for all addresses (address, milliseconds)
	OTHER	% I/O queued, reserved and delayed (address, percentage)
	QUERY	
	I/O_COUNT	I/O count for selected addresses (address, number of SIOs)
	I/O RATE	I/O rate for selected addresses (address, SIO/-second)
	%BUSY	% Busy for selected addresses (address, % busy)
RSP_TIME	Service and response times for selected addresses (address, milliseconds)	
OTHER	% I/O queued, reserved and delayed for selected addresses (address, %)	

Template Name	Graph Name	Description (X-axis, Y-axis)
DAS01XA	GRAPH GRAPH I/O_COUNT  I/O_RATE  %UTILIZED  SRV/RSP_TIME  OTHER  QUERY I/O_COUNT  I/O_RATE  %UTILIZED  RSP_TIME  OTHER	I/O count for all addresses (address, number of SIOs) I/O rate for all addresses (address, SIO/second) % Utilization for all addresses (address, % utilization) Response times vs connect, disconnect and pending for all addresses (address, milliseconds) Reserved and delayed for all addresses (address, %)  I/O count for selected addresses (address, number of SIOs) I/O rate for selected addresses (address, SIO/-second) % Utilization for selected addresses (address, % utilization) Response times vs connect, disconnect and pending for selected addresses (address, milliseconds) Reserved and delayed for selected addresses (address, %)  I/O count for selected addresses (address, number of SIOs) I/O rate for selected addresses (address, SIO/-second) % Utilization for selected addresses (address, % utilization) Response times vs connect, disconnect and pending for selected addresses (address, milliseconds) Reserved and delayed for selected addresses (address, %)
MODELIC	RESPONSE RSP_XRATE  SLOPE_XRATE  FACTORS GRAPH  BEST/WORST GRAPH  OPTIONS GRAPH	Response time vs transaction rate (transaction rate, response time) Slope (rate of change) of response time vs transaction rate (transaction rate, response time)  Sensitivity factors (input parameters, sensitivity factor values x 100)  Best/Worst case capacity plan (months, response time)  Comparative configuration options (transaction rate, response time)

Template Name	Graph Name	Description (X-axis, Y-axis)
MVS123		No graphs are produced.
PAG01SP	GRAPH GRAPH TOTAL  DPAGE SWAP  MAX_FRAMES  FIXED  ALLOCATED	Paging rate of total, demand, swap, and PLPA/-CSA (interval, pages/second) Demand page rate (interval, pages/second) Swap in and out activity (interval, pages/-second) Page frame utilization of nucleus, CSA, private and SQA (interval, # pages) Fixed page frames for common, private, LSQA (interval, # pages) Page frame allocation of max. private, avg. private, LSQA, max. fixed, and total (interval, # pages)
PAG01XA	GRAPH GRAPH TOTAL  OTHER AVAILABLE  EXT_STG  MIGRT  AGE  UIC SWAP  MAX_FRAMES  FIXED  ALLOCATED	Paging rate of total, demand, swap, VIO and PLPA/CSA (interval, pages/second)  Available frames in extended storage (interval, # frames) Frames moved to extended storage (interval, # frames) Frames migrated to auxiliary storage (interval, # frames) Migration age showing low, average and high (interval, seconds) Unreferenced Interval Count (interval, UIC) Swap in and out activity (interval, pages/-second) Page frame utilization of nucleus, CSA, private and SQA (interval, # pages) Fixed page frames for common, private, LSQA and below 16m (interval, # pages) Page frame allocation of max. private, avg. private, LSQA, max. fixed, and total (interval, # pages)

Template Name	Graph Name	Description (X-axis, Y-axis)
PGD01DLY	GRAPH GRAPH I/O_COUNT  PAGES  SRV_I/O  TRANS  PGS_I/O  ALLOCATION	Number of I/Os to the page data set (date, # I/Os) Number of pages transferred to the page data set (date, # page frames) Average service time per request (date, seconds) Average time to transfer a page (date, seconds) Number of pages per I/O (date, # page frames) Page slot allocated showing maximum, minimum and average (date, % allocated)
RMF01DLY	GRAPH GRAPH CPU ASIDS  TSORSP  TSOXTS  CHAN 1ST GROUP  2ND GROUP  3RD GROUP  PAGE	CPU utilization (interval, % busy) Address space distribution (interval, # address space ids) Average TSO response time (interval, response time) Number of TSO transactions (interval, # transactions)  Activity for the first 6 channels configured (interval, % busy) Activity for the second 6 channels configured (interval, % busy) Activity for the last 6 channels configured (interval, % busy) Demand and swap page rate (interval, pages/second)

Template Name	Graph Name	Description (X-axis, Y-axis)
RMF01MLY	GRAPH GRAPH	
	CPU	CPU utilization (date, % busy)
	ASIDS	Address space distribution (date, # address space ids)
	TSORSP	Average TSO response time (date, response time)
	TSOXTS	Number of TSO transactions (date, # transactions)
	CHAN	
	1ST GROUP	Activity for the first 6 channels configured (interval, % busy)
	2ND GROUP	Activity for the second 6 channels configured (interval, % busy)
	3RD GROUP	Activity for the last 6 channels configured (interval, % busy)
	OTHER	
PAGE	Demand and swap page rate (date, pages/-second)	
DASD	DASD I/O rate (date, I/O /second)	
TAPE	Tape I/O rate (date, I/O /second)	

Template Name	Graph Name	Description (X-axis, Y-axis)
RMF01WLY	GRAPH GRAPH CPU ASIDS  TSORSP  TSOXTS  CHAN 1ST GROUP  2ND GROUP  3RD GROUP  OTHER PAGE  DASD TAPE	CPU utilization (interval, % busy) Address space distribution (interval, # address space ids) Average TSO response time (interval, response time) Number of TSO transactions (interval, # transactions)  Activity for the first 6 channels configured (interval, % busy) Activity for the second 6 channels configured (interval, % busy) Activity for the last 6 channels configured (interval, % busy)  Demand and swap page rate (interval, pages/second) DASD I/O rate (interval, I/O /second) Tape I/O rate (interval, I/O /second)
RSPCICS	GRAPH GRAPH XRATE  RESPONSE WAIT	Transaction rate (transaction code, number of transactions) Response time (transaction code, seconds) File control wait time, 95th percentile, 50th percentile, minimum, maximum and average (transaction code, seconds)

Template Name	Graph Name	Description (X-axis, Y-axis)
S3001DLY	GRAPH GRAPH JOBS ABENDS EXCPS TOT_EXCPS 3350 3375 3380 TAPE OTHER CPU_MIN MOUNTS OTHER CPU_SU SRB_SU IOC_SU MSO_SU ELAPSED	all graphs are pie charts Number of jobs in each work load Number of abends in each work load Total EXCPS in each work load EXCPS to 3350s in each work load EXCPS to 3375s in each work load EXCPS to 3380s in each work load EXCPS to tape in each work load All other EXCPS in each work load CPU minutes in each work load Tape mounts in each work load CPU service units in each work load SRB service units in each work load I/O service units in each work load MSO service units in each work load Average elapsed time for each work load

Template Name	Graph Name	Description (X-axis, Y-axis)
SUMCICS	GRAPH GRAPH XRATE	Transaction rate (time of day, number of transactions)
	AVG_RSP	Average response time vs average wait time (time of day, seconds)
	CPU + WAIT	Average CPU time vs average wait time (time of day, seconds)
	%CPU	CPU usage of CICS vs applications (time of day, % busy)
	PAGING	CICS page in and out activity (time of day, pages/second)
	OTHER COMPS	Number of tasks active during program compression (time of day, number of tasks)
	PCP_CT	Program load count (time of day, number of loads)
	PCP_RSP	Program load response time (time of day, milliseconds)
	AVG_DLI	Average DLI response time (time of day, milliseconds)
	DLI_CNT	Number of DLI calls (time of day, number of calls)
	DSA_HWM	Dynamic storage high water mark (time of day, kilobytes)
	AVG_I/O	Average I/O vs average access method count (time of day, number of I/Os)
T3001DLY		No graphs are produced.



Template Name	Graph Name	Description (X-axis, Y-axis)
TSO01DLY	GRAPH GRAPH NUMXTS  AVG_RSP  CPUSRV  IOSRV  MSOSRV  TOTSRV	Number of TSO transactions for each TSO period (interval, # of transactions) Average TSO response time for each TSO period (interval, seconds) CPU service units for each period TSO (interval, service units) I/O service units for each period TSO (interval, service units) MSO service units for each period TSO (interval, service units) Total service units for each period TSO (interval, service units)
TSO01MLY	GRAPH GRAPH NUMXTS  AVG_RSP  CPUSRV  IOSRV  MSOSRV  TOTSRV	Number of TSO transactions for each TSO period (interval, # of transactions) Average TSO response time for each TSO period (interval, seconds) CPU service units for each period TSO (interval, service units) I/O service units for each period TSO (interval, service units) MSO service units for each period TSO (interval, service units) Total service units for each period TSO (interval, service units)

Template Name	Graph Name	Description (X-axis, Y-axis)
WKL01DLY	GRAPH GRAPH PIE	CPU utilization by work load. Idle time can be added to the pie. (pie chart)
	LINE/BAR	The contents of these charts depends on the "search" criteria, which can be time of day or work load.
	%CPU	CPU Utilization by work load showing the utilization by work loads for a given time (work load, % busy), or one work load over a period of time (time of day, % busy)
	CPU_SRV	TCB and SRB CPU service units showing the total service units by work load for a given time (work load, CPU service units), or one work load over a period of time (time of day, CPU service units)
	MSO_SRV	MSO service units showing the total service units by work load for a given time (work load, MSO service units), or one work load over a period of time (time of day, MSO service units)
	I/O_SRV	I/O service units showing the total service units by work load for a given time (work load, I/O service units), or one work load over a period of time (time of day, I/O service units)
	RATIO	Capture ratio showing the % captured by work load for a given time (work load, % captured), or one work load over a period of time (time of day, % captured).

Template Name	Graph Name	Description (X-axis, Y-axis)
WKL01MLY	Graph TOTAL  PIE TOTALS CPU_SRV  MSO_SRV  I/O_SRV  DAILY  GRAPH_FIELD	Graphs represent the averages over the imported data date range  CPU utilization of each work load (pie chart)  CPU service units (work load, CPU service units)  MSO service units (work load, MSO service units)  I/O service units (work load, I/O service units) Daily averages for eight different fields can be graphed. You first select the field for analysis, then graph the field CPU Utilization (date, %CPU) XTS (date, transaction count) CPU_SRV (date, CPU service units) MSO_SRV (date, MSO service units) SRB_SRV (date, SRB CPU service units) I/O_SRV (date, I/O service units) CPU_SECS (date, CPU seconds) I/O RTE (date, SIO/second)
WKL01SIM		No graphs are produced.

Template Name	Graph Name	Description (X-axis, Y-axis)
WKL01WLY	Graph TOTAL  PIE TOTALS CPU_SRV  MSO_SRV  I/O_SRV  HOURLY  GRAPH_FIELD	Graphs represent the averages over the imported data date range  CPU utilization of each work load (pie chart)  CPU service units (work load, CPU service units)  MSO service units (work load, MSO service units)  I/O service units (work load, I/O service units) Hourly averages for eight different fields can be graphed. You first select the field for analysis, then graph the field CPU Utilization (hour, %CPU) XTS (hour, transaction count) CPU_SRV (hour, CPU service units) MSO_SRV (hour, MSO service units) SRB_SRV (hour, SRB CPU service units) I/O_SRV (hour, I/O service units) CPU_SECS (hour, CPU seconds) I/O_RTE (hour, SIO/second)

## Reports

Template Name	Report Name	Description
AUTO123		No reports are produced.
CAC01DLY	Print DB Query Area	Print the imported data base. Print the query area.
CHA01SP	Print DB Graph Query Print	Print the imported data base. Print the query area.
CHA01XA	Print DB Graph Query Print	Print the imported data base. Print the query area.
CICS123		No reports are produced.
CPU01DLY	Print DB Query Area	Print the imported data base. Print the query area.
CPU01WLY	Print DB Query Area	Print the imported data base. Print the query area.
DAS01SP	Print DB Query Area	Print the imported data base. Print the query area.
DAS01XA	Print DB Query Area	Print the imported data base. Print the query area.
MODELIC	Response Print Factors Print Best/Worst Print Options Print	Print the Response Characterization. Print the Current Factors. Print the Best/Worst Case analysis. Print the Options analysis.
MVS123		No reports are produced.
PAG01SP	Print DB	Print the imported data base.
PAG01XA	Print DB	Print the imported data base.
PGD01DLY	Print DB	Print the imported data base.
RMF01DLY	Print DB	Print the imported data base.

<b>Template Name</b>	<b>Report Name</b>	<b>Description</b>
RMF01MLY	Print DB Summary_Area	Print the imported data base. Print data base summary area.
RMF01WLY	Print DB Summary_Area	Print the imported data base. Print data base summary area.
RSPCICS	Print or Graph Query Transaction Special  Volume Response  Wait	Print the Transaction Query report. Print the Volume, Response Time or Wait Time report. Generate and print the Volume report. Generate and print the Response Time report. Generate and print the Wait Time report.
S3001DLY	Print DB	Print the imported data base.
SUMCICS	Print DB	Print the imported data base.
T3001DLY	Print DB	Print the imported data base.
TSO01DLY	Print DB	Print the imported data base.
TSO01MLY	Print DB	Print the imported data base.
WKL01DLY	Print DB Query_Area	Print the imported data base. Print the query area.
WKL01MLY	Print DB Summary Hourly	Print the imported data base. Print a summary for the time period. Print an hourly summary.
WKL01SIM	Print DB Query_Area	Print the imported data base. Print the query area.
WKL01WLY	Print DB Summary Hourly	Print the imported data base. Print a summary for the time period. Print an hourly summary.



## Using Microsoft EXCEL

### Starting PILOT under EXCEL

The PILOT menu system can be invoked in two ways.

- 1) After EXCEL is started:  
Select **F**ile|**O**pen from the first pull down menu. Change the drive and directory to where the PILOT EXCEL files were installed on the hard disk. The default directory is PILOT\EXCEL. Select PMACROS.XLW and click the OK button in the dialog box.
- 2) Copy PMACROS.XLW to the EXCEL\XLSTART directory. This will automatically load the PILOT menu system every time EXCEL is started.

In either case a dialog information box will display the message "WELCOME TO PILOT MENU SYSTEM" when it is properly installed. You will see 11 menus added to the EXCEL menu line before the EXCEL "HELP" menu. The macro was designed to allow you access to EXCEL native commands and PILOT's menu system, both at the same time.

### Temporarily Removing Menus from EXCEL

If you wish to remove the PILOT menu system temporarily, select the "PILOT" menu and select "EXIT". This will remove the PILOT menus from the menu bar, but maintain the macros in EXCEL's memory.

### Restoring PILOT Menus

This is easily done by pressing the Ctrl and M keys simultaneously.

### Removing the PILOT menu system from EXCEL

If you wish to remove the PILOT menu system from EXCEL, select "PILOT" menu and select "QUIT". This will remove the PILOT menus from the menu bar and delete the macros from memory. If you are presented with a dialog question box "SAVE PMACROS.XLW and all bound sheets," you can click the "NO" button. The only time the workbook of macros need to be saved is when Default options are changed.



## Menu Description

### PILOT

Used to save the current worksheet, set defaults, and remove PILOT menu system from EXCEL.

### RMF

RMF summary data; will import PC file names RMF\*\*\*\*\*.PRN

### CACHE

Cache statistics; will import PC file names CAC\*\*\*\*\*.PRN

### DASD

DASD detail data; will import PC file names DAS\*\*\*\*\*.PRN

### CHAN

Channel detail data; will import PC file names CHA\*\*\*\*\*.PRN

### LPAR

PR/SM LPAR detail data; will import PC file names CPU\*\*\*\*\*.PRN

### PAGE

Page detail data; will import PC file names PAG\*\*\*\*\*.PRN

### PGD

Page dataset detail data; will import PC file names PGD\*\*\*\*\*.PRN

### TSO

TSO detail data; will import PC file names TSO\*\*\*\*\*.PRN

### WKLD

Workload detail data; will import PC file names WKL\*\*\*\*\*.PRN

### Other

Menu command for SMF type 30 records, CICS, and modeling.

### DET30

SMF type 30 detail data; will import PC file names T30\*\*\*\*\*.PRN

### SUM30

SMF type 30 summary data; will import PC file names S30\*\*\*\*\*.PRN

### SUMCICS

CICS Summary data; will import PC file names SUM\*\*\*\*\*.PRN

### DETCIC

CICS Response time data; will import PC file names RSP\*\*\*\*\*.PRN

### MODEL

Invokes the CICS model spreadsheet or simulator

### WKLSIM

Workload detail data for the simulator worksheet.

## PILOT Menu Selections

Each of the menus have common choices:

### New File

Open a template will import data with a PC file name beginning with the type chosen. The type can be RMF, Cache, DASD, ... etc.)

**Open File**

Open a previously saved file of the type selected.

**New Chart**

When selected, this will invoke the graph menu for the type chosen.

**Open Chart**

Open a previously saved chart of the type selected.

**Print**

Print a report for the type selected.

**Create Query**

Most types will let you create a query to further reduce data for analysis.

**Perform Query**

Once a query worksheet is loaded and a criteria is specified, this option will extract the data from the detail file specified, and reset all definitions in the worksheet. This allows a Zoom, in effect, by selecting the same graph from the query worksheet.

## Setting Defaults

Defaults are set by selecting the “PILOT” menu option “SET DEFAULTS”. An information dialog box will appear: “MODIFY fields and choose SAVE DEFAULTS on PILOT MENU”. To edit fields, select them, type over the existing data and hit the enter key. After your changes have been made you can either save the changes or cancel them. To cancel, choose the “CANCEL” button. When “SAVE” is chosen

under the “PILOT” menu, another dialog box will appear “SAVE ALL Bound worksheets” from EXCEL. Select “OK” to accept the changes.

**DRIVE**

The disk drive where the PILOT templates, macros, and charts reside.

**PILOT Directory**

The directory in which PILOT files reside.

**PILOTPRN Directory**

The directory that holds the .PRN files mentioned above. The PC files created on the mainframe. This is the directory the macros will look for the data.

**PILOTPIC Directory**

The directory used to store charts.

**Site**

Your company name, used for titles in reports and graphs.

**Default XAXIS**

DateTime is used as the default, Date or Time are other options.

**Print Preview**

Allows you to view the report before sending it to the printer.

**Hide Date and Times**

This report option will suppress the printing of the “DATE” and “TIME” fields as the “DATETIME” field contains both.

### Orient

Sets the page layout to either landscape or portrait. Type a “2” for landscape, and a “1” for portrait.

### Grid

Grid lines will be printed when this option is set to “TRUE”. Reports print faster when this option is set to “FALSE”.

## PILOT Tutorial Using EXCEL

After the data is transferred to the PC, EXCEL can be used to analyze the data. First time users can follow these steps using EXCEL and the **Sample Templates** provided.

There are four basic steps to be taken in order to use the sample templates:

1. Bring up WINDOWS and EXCEL.
2. Change the default directory to point to the PILOT directory on your hard disk.
3. Choose a sample template.
4. Import the data into the appropriate template. This data was previously downloaded to your PC.

The scenarios that follow include the step to IMPORT data. If you did not create a file on the mainframe and downloaded into the PILOTPRN directory then you must skip that step within the selected scenario. There is sample data in each template for proper execution of EXCEL macros. All graphic scenarios will execute with the sample data provided within the template.

The diskette provided includes various worksheets to be used with EXCEL Version 4.0 and above. Versions prior to 4.0 have not been tested with these files.

### PILOT Tutorial Using EXCEL

The design of this system allows the user to utilize both native EXCEL menus and the customized PILOT menus. The objective of the examples that follow will:

- 1) Create and print a report from import data
- 2) Create and print a graph.
- 3) Create and print a query.
- 4) Create and print a graph from a query.
- 5) Create a script to run PILOT Menu system.

Conventions used in this section:

PILOT menus are upper case (PILOT, RMF, DASD, LPAR, etc.)

EXCEL menus are **bold** (**File**, **Edit**, **Window**, etc.)

PILOT commands under the pull down menus are *Italics* (*New File*, *Open File*, *New Chart*, etc.)

EXCEL commands under the pull down menus are **bold** and *Italics* (**File**, **Open**, **Close**, etc.)

All clicks with the mouse are assumed to be with the left button, unless noted. A basic explanation of Windows, EXCEL, Formula bar, Menu bar, Control menu bar, Tool bar, Title bar, Status bar, Workspace, and dialog boxes follows.

**EXCEL Window.****Title Bar**

The top of the screen, which contains the control menu button, the title of application (Microsoft Excel), a minimize button and a restore button.

**Menu Bar**

Contains the pull-down menus that execute EXCEL and PILOT commands and macros.

**Tool Bar**

A series of commands commonly used in EXCEL. Not used by PILOT.

**Formula Bar**

Has three parts: the current cell reference; the cancel and enter boxes used when you enter or edit data in a cell; and the data you have entered into the current cell.

**Status Bar**

At the bottom of the screen, it displays information about the current command on the pull down menu.

**Workspace**

Is the area between the Formula and Status bars which contains the current EXCEL window, which can be either a worksheet or a chart.

**Dialog Box**

These boxes appear when EXCEL or PILOT needs to communicate to you either information or a question. Dialog boxes always contain command buttons.

**Exploring PILOT Menus**

To find out the description of some of the PILOT Menus, perform the following actions.

- 1) Place the mouse over any of the PILOT menu options.
- 2) Press the left button on the mouse, but don't release it.
- 3) Move the mouse slowly so that you can read the description of each command on the Status bar.

When you release the button, the command is executed.

**Loading data in EXCEL**

Typically, you will need to open a new file that will invoke PILOT commands to load a template and to prompt you for the downloaded file to format. Whenever a PILOT template is loaded, EXCEL will assign a number to the suffix of the name. For example, if RMFSUM is opened, EXCEL will name it RMFSUM1 if this is the first template opened. These names can be changed if the template is saved.

- 1) Click on RMF menu choice "*New File*".
- 2) Highlight the file you wish to retrieve (click the left button on the file name) and press Enter. This loads the data into the template.
- 3) When the mouse pointer has been restored, press Enter again. This will

invoke the PILOT macros to format and name the fields in the worksheet.

You are now ready to look at the worksheet. You can use your mouse to scroll up or down to look at various parts of the worksheet.

### Creating a Graph

Graphs can be created from the data loaded. In the previous example we loaded an RMF summary worksheet with data. We must use the "RMF" menu "New Chart" option to create a graph.

- 1) Highlight and click your mouse on "New Chart" under the "RMF" pulldown menu. A second menu will appear.
- 2) Highlight and click your mouse on "CPU" under the "RMF\_GRAPH" pull down menu. A graph displaying CPU utilization is displayed.

The graph is linked the RMF worksheet we created. The graph can be printed using native EXCEL commands, or it can be saved or copied into another Windows application.

To return to the original worksheet, click your mouse on the EXCEL "Window" pull down menu. The worksheet we created before is displayed, as well as the current window name of the graph. Click on the window name of the original worksheet.

### Printing a PILOT report

There are numerous macros to format the print for the worksheets. The printing in EXCEL is simplified using the PILOT menus. You can change the default options to have reports generated to be previewed on the screen prior to printing. The Status bar will give you the number of pages that will be printed. This is useful in determining the amount of time it will take to print a report. From the original worksheet:

- 1) Click "Print" under the RMF pull-down menu. The image of the printed report will be displayed. EXCEL displays a series of buttons on the menu bar.
- 2) Click on the EXCEL "PRINT" button to print the report. Use the "CLOSE" button to return back to the worksheet.

### Creating a Query

PILOT has built in queries for many of the templates. Once a query is created, a report or graph can be created as shown in the previous examples. The same set of pull-down menus are used to create reports and charts as were used with the original worksheet.

- 1) Create a "New File" of a DASD worksheet using the method previously described.
- 2) Choose the "Create Query" command from the DASD pull-down menu.
- 3) A DASD query worksheet template is loaded with the following fields to query:

```
DATETIME DATE TIME ADR VOLSER LCU
```

The EXCEL query function uses the original worksheet as a database to extract records to satisfy the request. To specify the data to be selected, an extract criteria is entered under one or more of the fields. The “*Perform Query*” pull-down menu will invoke EXCEL to extract the data based upon the criteria specified.

- 4) Move your mouse to the cell below the criteria field “ADR”.
- 5) Type “10\*” and press Enter. This will extract all records that start with address 10.

If you forget the exact criteria you would like to specify, you can use the **Window** pull down menu to switch back to the original worksheet. You can also re-arrange the windows so that both are displayed.

### Printing a Query

This is performed in the same manner as before.

- 1) Click “*Print*” under the DASD pull down menu. The image of the printed report will be displayed. EXCEL displays a series of buttons on the menu bar.
- 2) Click on the EXCEL “**PRINT**” button to print the report. Use the “**CLOSE**” button to return back to the worksheet.

### Creating a script (macro) to run the PILOT menu system.

It is possible to use EXCEL to produce scripts via macros to create charts and reports. Once a macro is created, there are two ways of invoking it. The macro may be invoked by pressing the Ctrl key plus some other key, or it can be started by invoking the “*Run*” command from the **MACRO** pull down menu.

- 1) Click the “**Record**” command from the **Macro** pull down menu. A dialog box will appear prompting for the name of the macro and a key press to simultaneously with the Ctrl key.
- 2) Name the macro “RMFCHTS” by clicking Name and typing the text followed by Enter. Take note of the key that will invoke the macro.
- 3) Click the “OK” button and perform the first scenario creating RMF charts.

After you have completed building the graphs:

- 4) Click the “**Stop Record**” command of the **Macro** pull down menu.

The script is complete. To play it back:

- 5) Click the “**Run**” command of the **MACRO** pull down menu. A dialog box will appear that will show you the macro you created.
- 6) Highlight “RMFCHTS” and click the “OK” button. The macro will execute. Another method of invoking the macro is by pressing the Ctrl key and the other key earlier defined simultaneously.



**Figure 6** Initial Greeting





**Figure 7** RMF Template with RMF Pull-down Menu



**Figure 8** RMF Template with Graphs Pull-down Menu



**Figure 9** RMF CPU Graph with Window Pull-down Menu



## PILOT EXCEL File Descriptions

<b>File Name</b>	<b>Type</b>	<b>Description</b>
CACDET	XLT	Cache detail template
CACDSTG	XLT	De-stage graph
CACHIT	XLT	Cache hit/ratio graph
CACQUERY	XLT	Cache query template
CACTIO	XLT	Cache total I/O
CHADET	XLT	Channel detail template
CHAQUERY	XLT	Channel query template
CHAUTIL	XLT	Channel utilization graph
CPUDET	XLT	LPAR/CPU detail graph
CPUL	XLT	LPAR/CPU CPU utilization graph
CPUQUERY	XLT	LPAR/CPU query template
DASAIOR	XLT	DASD I/O rate graph
DASARSP	XLT	DASD response time graph
DASDET	XLT	DASD detail template
DASQUERY	XLT	DASD query template
DASUTIL	XLT	DASD utilization graph
DCICCPU	XLT	Detail CICS CPU graph.
DCICDB	XLT	Detail CICS data base graph
DCICIO	XLT	Detail CICS I/O graph
DCICRSP	XLT	Detail CICS response time graph
DCICSTO	XLT	Detail CICS storage graph
DCICWT	XLT	Detail CICS wait time graph
DCICXTS	XLT	Detail CICS transaction rate graph
FORMAT0	XLM	Format Columns/Macro sheet
MODELIC	XLS	Model CICS worksheet
PAGDET	XLT	Page detail template
PAGMAG	XLT	Page migration age graph
PAGMIGR	XLT	Page migration rate graph
PAGSFA	XLT	Page storage fixed graph
PAGTOT	XLT	Page total paging graph
PAGUIC	XLT	Page UIC graph
PGDACT	XLT	Page active frame graph
PGDDET	XLT	Page DS template
PGDQUERY	XLT	Page DS query Template
PGDUTIL	XLT	Page DS utilization graph

PMACROS	XLW	PILOT Macros Workbook
RCICDET	XLT	CICS response detail template
RCIQUERY	XLT	CICS response query template
RMFASID	XLT	RMF address space graph
RMFCPU	XLT	RMF CPU utilization graph
RMFDMSW	XLT	RMF summary demand/swap graph
RMFSUM	XLT	RMF summary template
RMFTCH1	XLT	RMF summary 1st channel group graph
RMFTCH2	XLT	RMF summary 2nd channel group graph
RMFTIOR	XLT	RMF summary I/O rate graph
RMFTTSO	XLT	RMF summary TSO graph
S30CPU	XLT	SMF30 summary CPU graph
S30DET	XLT	SMF30 detail template
S30ELP	XLT	SMF30 summary elapsed time graph
S30IO	XLT	SMF30 summary I/O graph
SCICCPU	XLT	Summary CICS CPU graph
SCICDB	XLT	Summary CICS data base graph
SCICDET	XLT	Summary CICS template
SCICIO	XLT	Summary CICS I/O graph
SCICRSP	XLT	Summary CICS response time graph
SCICSTO	XLT	Summary CICS storage graph
SCICWT	XLT	Summary CICS wait time graph
SCIPGM	XLT	Summary CICS fetch graph
T30CPU	XLT	SMF30 detail CPU graph
T30DET	XLT	SMF30 detail template
T30ELP	XLT	SMF30 detail elapsed time graph
T30IO	XLT	SMF30 detail I/O graph
TSOCPU	XLT	TSO detail CPU graph
TSODET	XLT	TSO detail template
TSOIO	XLT	TSO detail I/O graph
TSOMSO	XLT	TSO detail memory graph
TSORSP	XLT	TSO detail response graph
TSOXTS	XLT	TSO detail transaction rate graph
WKLCPU	XLT	Workload %CPU graph
WKLCPUS	XLT	Workload CPU seconds graph
WKLCPUU	XLT	Workload CPU utilization graph
WKLDET	XLT	Workload detail template
WKLIOR	XLT	Workload I/O rate graph
WKLMSO	XLT	Workload memory graph
WKLOHD	XLT	Workload overhead graph
WKLQUERY	XLT	Workload query template

WKLSIM      XLT      Simulator workload template



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