

MAINVIEW® for OS/390

Getting Started

Version 2.6

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 - machine type
 - operating system type, version, and service pack or program temporary fix (PTF)
 - system hardware configuration
 - serial numbers
 - related software (database, application, and communication) including type, version, and service pack or PTF
- sequence of events leading to the problem
- commands and options that you used
- messages received (and the time and date that you received them)
 - product error messages
 - messages from the operating system, such as `file system full`
 - messages from related software

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About This Book

This book contains exercises designed to guide you through the BMC Software MAINVIEW[®] window interface, an easy-to-use extension of the standard ISPF interface also used by the BMC Software CMF MONITOR and MAINVIEW VistaPoint[™] products. The book is intended for anyone who wants to learn about MAINVIEW for OS/390 but has never used the product, or for those people who are familiar with an earlier version of the product and are interested in learning the new features.

Note: If you are a product administrator, make sure that you have completed the tasks in the following books before beginning this workbook:

- *MAINVIEW[®] Common Customization Guide*
- *MAINVIEW[®] for OS/390 Customization Guide*

Throughout this book, references to OS/390 support also include support for MVS and z/OS.

How This Book Is Organized

This workbook contains two sets of exercises: one for beginners and one for advanced users. It is organized as follows, with a glossary of terms and an index appearing at the end of the book:

Chapter Number and Title	Description of Task
Beginning exercises:	
Chapter 1, "Getting Started"	provides a list of the MAINVIEW family of products and gives an overview of MAINVIEW for OS/390
Chapter 2, "Logging On to MAINVIEW for OS/390"	describes how to log on to MAINVIEW for OS/390

Chapter Number and Title	Description of Task
Chapter 3, "Using MAINVIEW for OS/390 Views"	describes how to perform basic view functions, examine views, and solve problems by using MAINVIEW for OS/390 views
Chapter 4, "Troubleshooting with the System Programmer Utilities"	describes how to solve problems by using the MAINVIEW for OS/390 system programmer utilities
Advanced exercises:	
Chapter 5, "Displaying Historical Data"	describes how to use historical data to look at the system as it existed during previous intervals
Chapter 6, "Accessing Other Systems and Products"	describes how to access another MAINVIEW product or another system while simultaneously displaying your local system
Chapter 7, "Screen Definitions"	describes how to open windows, display views in them, and save the entire area as a screen definition
Chapter 8, "Customizing Views"	describes how to use view customization to create your own views and change the appearance and content of MAINVIEW for OS/390 views
Chapter 9, "Using Summarized Views"	describes ways to use a summary view
Chapter 10, "Redisplaying Data without Updating"	describes how to use MAINVIEW for OS/390 to debug a problem without updating the data
Chapter 11, "Filtering Data"	describes how to use the WHERE command for a more complex filtering process

It should take approximately 30 minutes to work through the beginning exercises. At the end of that time, you will know how to use the *essential* features of MAINVIEW for OS/390. The advanced set of exercises should take about 90 minutes to complete.

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- online and printed books
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- release notes and other notices

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Required Reading

As you work through the exercises in this book, you might find that you need more information to complete a given task. If you do, refer to the following books:

- *MAINVIEW[®] Quick Reference*, which introduces the MAINVIEW family of products and lists the commands used to manage the MAINVIEW windows environment.
- *MAINVIEW[®] for OS/390 User Guide and Reference*, which explains in detail how to use MAINVIEW for OS/390.

Related Reading

If you are using MAINVIEW Alternate Access, you might wish to refer to the *MAINVIEW[®] Alternate Access Implementation and User Guide*.

Online Help

The MAINVIEW for OS/390 product includes online Help. In the MAINVIEW for OS/390 ISPF interface, you can access Help by pressing **PF1** from any ISPF panel.

Release Notes and Other Notices

Printed release notes accompany each BMC Software product. Release notes provide current information such as

- updates to the installation instructions
- last-minute product information

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Conventions

This book uses the following general conventions:

Item	Format	Example
information that you are instructed to type	bolded and in Times 10 pt. font	Type SEARCH DB in the designated field.
specific (standard) keyboard key names	bolded and in Times 10 pt. font	Press Enter .
field names, text on a panel	bolded and in Times 10 pt. font	Type the appropriate entry in the Command field.
directories, file names, Web addresses	bolded and in Times 10 pt. font	The BMC Software home page is at www.bmc.com .
nonspecific key names, option names	every letter capitalized	Use the HELP function key. KEEPDICTIONARY option
MVS calls, commands, control statements, keywords, parameters, reserved words	every letter capitalized	Use the SEARCH command to find a particular object. The product generates the SQL TABLE statement next.
commands that can be shortened	required letters capitalized; other letters in lowercase	To clear the screen, type RESet .
code examples, syntax statements, system messages, screen text	Courier font	//STEPLIB DD The table <table_name> is not available.
emphasized words, new terms, variables	italics	The instructions that you give to the software are called <i>commands</i> . In this message, the variable <i>file_name</i> represents the file that caused the error.
single-step procedures	preceded by the >> symbol	>> To enable incremental backups, type y and press Enter at the next prompt.

This book uses the following types of special text:

Note: Notes contain important information that you should consider.

Warning! Warnings alert you to situations that could cause problems, such as loss of data, if you do not follow instructions carefully.

Tip: Tips contain useful information that might improve product performance or that might make procedures easier to follow.

Chapter 1 Getting Started

This chapter provides an overview of MAINVIEW for OS/390, a system-management application that helps you manage the performance of your entire system. MAINVIEW for OS/390 employs the MAINVIEW window interface along with OS/390 Easy Menus to provide easy, intuitive access to all of the system performance data that you need.

MAINVIEW for OS/390 monitors job, workload, and system activity through a series of easy-to-use menus and views. You can monitor data from multiple systems or devices, and use a *summary view* to display multiple-system data in one line. With MAINVIEW for OS/390, you can customize screens and views to suit the exact needs of your organization.

This chapter includes the following topics:

MAINVIEW Organization	1-2
OS/390 Easy Menus	1-4
Before You Begin	1-5

MAINVIEW Organization

The BMC Software MAINVIEW organization for systems management currently supports the following products:

- MAINVIEW[®] for OS/390 (replaces MAINVIEW[®] for MVS)
- CMF[®] MONITOR
- IMSplex System Manager
- MAINVIEW[®] Alarm Manager
- MAINVIEW[®] Alternate Access
- MAINVIEW[®] Explorer
- MAINVIEW[®] FOCAL POINT
- MAINVIEW[®] for CICS
- MAINVIEW[®] for DB2[®]
- MAINVIEW[®] for DBCTL
- MAINVIEW[®] for IMS
- MAINVIEW[®] for MQSeries (replaces Command MQ for S/390)
- MAINVIEW[®] for TCP/IP
- MAINVIEW[®] for UNIX System Services
- MAINVIEW[®] for VTAM
- MAINVIEW[®] for WebSphere
- MAINVIEW[®] VistaPoint[™]
- Plex Manager (part of MAINVIEW Architecture)

Before you examine the capabilities of MAINVIEW for OS/390, it is important that you understand the MAINVIEW organization.

MAINVIEW Address Spaces

All MAINVIEW products require three address spaces:

- **Coordinating address space (CAS)**

The CAS, which runs as a subsystem, provides many services to all MAINVIEW products. For example, the CAS is responsible for managing communication with other CASs on other local and remote systems and for establishing direct communication between an individual user address space and a product address space. There is one CAS per OS/390 system image.

- **Product address space (PAS)**

A product address space (PAS) provides special services to one or more related products. MAINVIEW for OS/390 uses the OS/390 PAS, which houses the data collectors for MAINVIEW for OS/390, as well as data collectors for MAINVIEW for UNIX System Services, MAINVIEW SYSPROG Services, and the CMF Extractor. The OS/390 PAS runs as a started task.

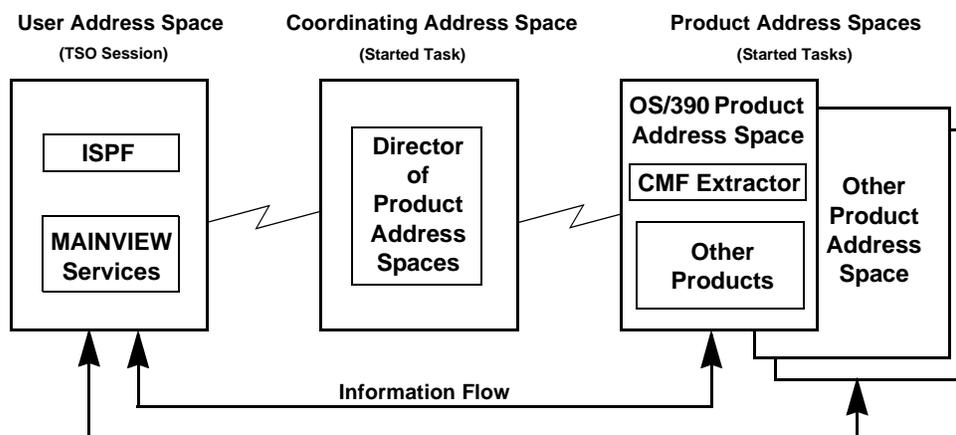
MAINVIEW for OS/390, MAINVIEW for UNIX System Services, MAINVIEW SYSPROG Services, and CMF MONITOR share the OS/390 PAS. Other MAINVIEW products might also share this product address space or might require their own PAS.

- **User address space (UAS)**

A user address space is a TSO or MAINVIEW Alternate Access session.

The communication flow between the MAINVIEW for OS/390 address spaces is illustrated in Figure 1-1.

Figure 1-1 Communication Flow between OS/390 Address Spaces



The OS/390 coordinating address space and the product address space are set up by your system administrator. Under most circumstances, they are automatically started at each system IPL.

You can control MAINVIEW for OS/390 data collectors and the CAS independently because they are separated from each other. This feature is especially useful if you want to run MAINVIEW for OS/390 only during certain periods of the day—you can stop the OS/390 product address space without stopping the CAS, thus keeping other MAINVIEW products up and running.

MAINVIEW Window Interface

Each product in the MAINVIEW family takes full advantage of the BMC Software MAINVIEW window interface, a robust, easy-to-use extension of the standard ISPF interface. With the MAINVIEW window interface, you can use multiple products to control and monitor multiple resources on multiple systems—all on just one screen.

OS/390 Easy Menus

MAINVIEW for OS/390 offers a quick, convenient way to use the product with little introduction and without having to remember view names. This interface consists of a set of views with two primary menus:

- OS/390 Easy Menu (EZM390)

EZM390 is the primary starting point for using MAINVIEW for OS/390. This menu is basically a menu of high-level choices with succinct, descriptive names, allowing you to quickly choose from its views and menus—all displayed on one panel.

- OS/390 Fast Menu (EZMFAST)

EZMFAST goes to a deeper level of MAINVIEW for OS/390 than EZM390 but still presents simple, descriptive choices, all on one panel and organized by view type. This menu is presented as an option on the EZM390 menu.

Before You Begin

Before you start working through this workbook, here are a few things that you should know:

- Check with your MAINVIEW for OS/390 administrator to make sure that the coordinating address space (CAS) and product address space (PAS) have been started. These address spaces, along with your user address space, are required by MAINVIEW for OS/390 for successful operation.
- As you work through this tutorial, pay close attention to the concepts that begin with the word *Tip*. These concepts are fundamental to understanding how to use MAINVIEW for OS/390.
- The exercises in this book assume that your CMF Extractor recording interval is set to 15 minutes.

Chapter 2 Logging On to MAINVIEW for OS/390

This chapter shows you how to log on to MAINVIEW for OS/390. It includes the following topics:

Instructions for Logging On	2-2
ISPF Session Control Parameters Panel	2-3
OS/390 Easy Menu	2-4
Screen Definition Created by Your Product Administrator	2-5

Instructions for Logging On

To log on to MAINVIEW for OS/390, follow these instructions:

Step 1 Display the MAINVIEW Selection Menu panel by performing one of the following steps:

- If your ISPF main panel contains an option for MAINVIEW products, select that option.

Note: When you are using MAINVIEW Alternate Access, see the *MAINVIEW® Alternate Access Implementation and User Guide* for information about accessing the MAINVIEW Selection Menu.

- Type **TSO MAINVIEW** from any ISPF panel. (MAINVIEW is a CLIST that you or your product administrator created during AutoCustomization.)

The MAINVIEW Selection Menu panel is displayed, as shown in Figure 2-1.

Figure 2-1 MAINVIEW Selection Menu Panel

```
----- MAINVIEW Selection Menu -----
OPTION  ===>                                DATE  -- MM/DD/YY
                                           TIME  -- HH:MM:SS
      O Parameters and Options              USERID -- BAOSRR1
      E Alerts and Alarms                   MODE   -- ISPF 4.8
      P PLEX Management (PLEXMGR)
      U Utilities, Tools, and Messages

Solutions for
  A Automated Operations
  C CICS
  D DB2
  I IMS
  L Linux
  N Network Management
  S Storage Management
  T Application Management and Performance Tuning
  W WebSphere and MQSeries
  Z OS/390, z/OS, and USS

Enter X to Terminate

                                Copyright BMC Software, Inc. 2001
```

Step 2 Select Option **Z OS/390, z/OS, and USS**.

The OS/390, z/OS, and USS Solutions panel is displayed, as shown in Figure 2-2 on page 2-3.

Figure 2-2 OS/390, z/OS, and USS Solutions Panel

```

----- OS/390, z/OS, and USS Solutions -----
OPTION ==>>
                                     DATE  -- MM/DD/YY
                                     TIME  -- HH:MM:SS
Performance                          USERID -- BAOSRR1
  1 MV390      MAINVIEW for OS/390      MODE  -- ISPF 4.8
  2 MVUSS      MAINVIEW for Unix System Services
  3 CMF        CMF MONITOR
  4 SYSPROG    MAINVIEW SYSPROG Services

Operations
  5 CSMON      Common Storage Monitor
  6 CMFMON     CMFMON realtime analysis
  7 CMFUTIL    CMF Extractor Online Utilities
  8 ANALYZER   Generate CMF Analyzer batch reports
  E ALERTS     Alert Management

General Services
  M MESSAGES   Messages and Codes
  P PARS       Parameters and Options

```

Step 3 Select Option 1 MV390.

One of the following screens is displayed:

- ISPF Session Control Parameters panel
- OS/390 Easy Menu
- screen definition created by your product administrator

These screens are described in the next few sections.

ISPF Session Control Parameters Panel

The ISPF Session Control Parameters panel looks like Figure 2-3.

Figure 2-3 Session Control Parameters Panel

```

----- SESSION CONTROL PARAMETERS -----
COMMAND ==>>

Subsystem ID  ==>> BBCS   (Coordinating Address Space subsystem ID)

XDM mode     ==>> NO    (Execute session in diagnostic mode, Yes/No)

Press ENTER to confirm use of session parameters entered above.

```

If this panel is displayed, make sure that the Subsystem ID field contains the coordinating address space (CAS) identifier, and then press **Enter**. If no default value is present, if you do not know the CAS identifier, or if the default value produces an error message, see your OS/390 product administrator.

When you see the message `Connecting...` in the upper right-hand corner of your screen, you are in the process of accessing MAINVIEW for OS/390. Go to Chapter 3, “Using MAINVIEW for OS/390 Views.”

OS/390 Easy Menu

When you log on, the OS/390 Easy Menu (EZM390) is displayed, as shown in Figure 2-4.

Figure 2-4 EZM390 Menu

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS  -----
COMMAND  ===>
CURR WIN  ===> 1      ALT WIN  ===>
W1 =EZM390=====DXTSTJ===*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
                                OS/390 Easy Menu
Activity                        Time frame - Interval      Utilities
> System Overview              +-----+                  > SYSPROG Services
> Jobs                          | Place cursor on |      . Program and I/O Trace
> Devices                       | menu item and  |      > Alarm Management
> Data Set Usage                |   press ENTER  |      > OS/390 Fast Menu
> Storage                       +-----+                  > RMF-like Menus
> XCF Monitoring                |                 |      > Environment Settings
> Coupling Facility              |                 |      . Return...
> WLM Workloads
> Non-WLM Workloads

```

If you do not have CMF MONITOR, the RMF-like Menus option will not be available to you, and * - CMF Only will appear on your menu.

If the EZM390 menu is displayed, go to Chapter 3, “Using MAINVIEW for OS/390 Views,” where you will learn what the EZM390 menu contains and how to use it.

Screen Definition Created by Your Product Administrator

If your screen does not look like any of the previous screens, you are looking at a screen definition created by your product administrator. You can still proceed with the exercises in this book; just type the appropriate view name on the **COMMAND** line and press **Enter** if you do not see the view on your customized menu.

Chapter 3 Using MAINVIEW for OS/390 Views

To use MAINVIEW for OS/390 to its fullest potential, you must know how to use its views. Each view provides critical information about specific components of your OS/390 system. This chapter describes how to perform basic view functions, how to examine views, and how to solve problems by using MAINVIEW for OS/390 views.

This chapter includes the following topics:

Understanding MAINVIEW for OS/390 Views	3-2
Performing Basic View Functions	3-6
Examining Workload Delay Views	3-13
Examining System Activity Views	3-17
Troubleshooting	3-24

Understanding MAINVIEW for OS/390 Views

A view is a collection of data gathered by MAINVIEW for OS/390 and displayed in an easy-to-read format. It is the result of a query run by the MAINVIEW for OS/390 data selectors against the data that MAINVIEW for OS/390 has collected from an OS/390 system. Using MAINVIEW for OS/390 effectively involves moving between different views to display the information that you need.

In most cases, MAINVIEW for OS/390 has made it easy for you to display views by establishing hyperlinks between related views. You can position the cursor and press **Enter** to move from one view to the next view, because MAINVIEW for OS/390 has already determined the views that you are likely to access next. You can also set your own hyperlinks to establish paths between views. This procedure is explained in “Performing Basic View Functions” on page 3-6.

MAINVIEW for OS/390 further simplifies the process of displaying the data that you need by providing the OS/390 Easy Menu, a cursor-sensitive menu that hyperlinks to an assortment of more specific views and menus. Options on this menu correspond to particular areas of system performance and have been given brief, descriptive names. This feature allows you to begin using MAINVIEW for OS/390 without having to remember the names of specific views.

In some cases, however, you might need to examine a particular area of system performance immediately, without using hyperlinks. You can do this by typing the name of a view on the **COMMAND** line and pressing **Enter**.

You can display views by performing one of the following actions:

- choosing a menu item from an Easy Menu
- using a hyperlink
- typing the view name on the **COMMAND** line

Before beginning the exercises in this chapter, review the basic view concepts in the next section.

Understanding View-Naming Conventions

To help you understand the aspect of your system that a particular view monitors, and in which time frame, view names generally follow these naming conventions:

TxxxxI

where

T Identifies the view type.

W—Workload activity views

J—Job activity views

CF—Coupling Facility views

EZ—Easy Menus and Fast Menus

WM—WLMON menus and views

xxxx Identifies the area of interest. For example, CPU in the view name WCPUR indicates that the view monitors CPU activity; OBJ in the view name WOBJ indicates that the view monitors service objectives.

I Identifies the time frame or other criteria:

blank (Interval data)—Reflects the system over the last 1–15 minutes or so, depending on what was specified on the INTERVAL operand of the CMF Extractor REPORT statement.

R (Real-time data)—Reflects the system as it exists at this moment. Real-time data is refreshed approximately every 15 seconds, depending on the interval established for that element. Real-time data also can be used with historical data (if you specify a specific time within an interval).

Z (Summarized data)—Presents data in a condensed format; for example, it can display one row per device and include averaged information about all jobs running on that device.

D (Delay data)—In certain views, such as JSTORD and WSRMD, displays data about delays experienced by address spaces, workloads, or devices.

For example, the R in WCPUR indicates that the view monitors CPU activity in real time; the blank at the end of WCPU indicates that the view displays CPU information collected over the current interval. The Z at the end of DEVSTATZ indicates that the view displays DEVSTAT data summarized to one line per device.

Tip: You can quickly change the time frame of the data that you are monitoring by using the OS/390 Easy Menu. To do so, follow these steps:

1. Display EZM390.
2. Move the cursor to the **Environment Settings** option under **Utilities** and press **Enter**.
3. Move the cursor to the desired option (**Show Realtime Menus** or **Show Interval Menus**) under **Change Time frame** and press **Enter**.

If you select **Show Realtime Menus**, you are hyperlinked to the EZM390R Easy Menu; all options selected from this menu display data in real-time. If you select **Show Interval Menus**, you are returned to the EZM390 Easy Menu; all options that you select from this menu display data for interval time.

Sometimes you can determine a view category based on the middle part of its name.

- Views that end in OVER display overview information; for example, JOVER shows you an overview of jobs and the system resources that they are using.
- Views that end in STAT display summary information about CPUs, devices, data collectors, and other areas of interest. Most xxxxSTAT views contain a hyperlink to the corresponding xxxxINFO view.
- Views that end in INFO display detailed information about a single resource; for example, CPUINFO displays information about a single CPU, and DEVINFO displays information about a single device.

These are just some examples of view categories. As you work with MAINVIEW for OS/390, you will become familiar with view types and names.

Reading the Window Information Line

The MAINVIEW for OS/390 *window information line* helps you keep track of what is displayed in a particular window. Here is a sample window information line:

```
>W2 =W10=====SYSD=====*=====15MAR2002=====16:53:58=====MVMVS=====D===20
```

The following table explains the parts of a window information line:

>	Indicates that there is more data to the right of the screen.
<	Indicates data to the left.
+	Indicates data to the right and the left.
	A blank indicates that all data fits in the current window.
W2	Is the number and status of the window. W2 means that window 2 is in Wait status. To see other possible statuses, place your cursor on W2 and press PF1 for help.
W10	Is the name of the view.
<i>form_name</i>	Appears next to the view name when you use the FORM command to display the data in a different format. In this example, the field is blank. For more information about the FORM command, refer to Chapter 10, "Redisplaying Data without Updating."
SYSD	Indicates the current context. This information can be the name of the current system or a predefined <i>SSI context</i> that can include certain targets. SSI contexts are discussed in "Accessing Several Systems Simultaneously" on page 6-9.
*	Indicates the current scope. The scope allows you to find a particular system within an SSI context. If you are not using an SSI context, this field contains an asterisk (*).
15MAR2002	Is the date that data currently in the window was last updated.
16:53:58	Is the time that data currently in the window was last updated.
<i>duration</i>	Appears next to the time field when you use the duration parameter with the TIME command. This field tells you how many minutes of historical data are displayed. In this example, the field is blank. For more information about historical data, see Chapter 5, "Displaying Historical Data."
MVMVS	Indicates the product identifier.
<i>form_location</i>	Shows the location of the form that is being displayed: D—in a distributed library (is in its original form) U—in a user library (has been customized)
20	Indicates the number of rows available in the display. Note: For detail views (views that end in INFO, like JINFO, DEVINFO, etc.), this number is always 1.

MAINVIEW for OS/390 online help also provides information about these fields. Place the cursor on any field on the window information line and press the HELP key.

Everything below the window information line is called the *display area*. The top three lines of the MAINVIEW window interface are called the *window control area*, which is made up of these lines and fields:

- Information Display line
- COMMAND line
- these three fields:
 - SCROLL field
 - CURR WIN field
 - ALT WIN field

Performing Basic View Functions

In this section, you will begin using MAINVIEW for OS/390 views.

Step 1 On the **COMMAND** line, type **RESet** and press **Enter**.

This completely clears the screen.

Step 2 On the **COMMAND** line, type **EZM390** and press **Enter**.

The MAINVIEW for OS/390 Easy Menu is displayed, as shown in Figure 3-1.

Figure 3-1 EZM390 Menu

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ====>                                SCROLL ====> PAGE
CURR WIN ====> 1          ALT WIN ====>
W1 =EZM390=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
                                OS/390 Easy Menu
Activity                        Time frame - Interval          Utilities
> System Overview               +-----+                       > SYSPROG Services
> Jobs                          | Place cursor on |         . Program and I/O Trace
> Devices                       | menu item and  |         > Alarm Management
> Data Set Usage                | press ENTER   |         > OS/390 Fast Menu
> Storage                       +-----+                       > RMF-like Menus
> XCF Monitoring                |               |         > Environment Settings
> Coupling Facility             |               |         . Return...
> WLM Workloads                 |               |
> Non-WLM Workloads             |               |

```

Tip: The OS/390 Easy Menu is the primary launch area for using MAINVIEW for OS/390. Options on this menu are divided into two categories:

- Activity—These options display an Easy Menu containing options related to system data.
- Utilities—These options, selected from the Utilities category, display an Easy Menu or a view from which you can access a broad variety of information.

If you lose your way in MAINVIEW for OS/390, you can always type **RESet** and display EZM390 to regain your direction.

Step 3 To display Jobs, place the cursor on the **Jobs** option under the Activity category, and then press **Enter**.

Note: Displaying a view by placing the cursor on an option and pressing **Enter** is called *hyperlinking*. Hyperlinking allows you to quickly move from view to view to access additional information about an activity.

You can hyperlink from any column with a highlighted header by placing your cursor on a data element within that column and pressing **Enter**.

The Jobs option hyperlinks to the Jobs Easy Menu, EZMJOB, as shown in Figure 3-2.

Figure 3-2 EZMJOB Easy Menu

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS  -----
COMMAND  ==>>>                                SCROLL  ==>>  PAGE
CURR WIN ==>> 1          ALT WIN ==>>
W1 =EZMJOB=====SYSDJEN1=*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1

                Jobs Easy Menu
Resource Usage      Time frame - Interval      Delays
. Overview          +-----+                . Overview
. Common Storage   | Place cursor on | . Data Sets
. CPU              | menu item and  | . Devices
. Data Sets        | press ENTER    | . Enqueues
. Devices          +-----+                . HSM
. Enqueues
. HSM              General                . JES
. I/O              . Overview                . SRM Service Units
. Paging           . Abends                  . Storage
. SRM Service Units . Status                    . Subsystem
. Storage          > Steps                      . XCF
                  . Workflow                 . WTOR
                  . Return...
    
```


Tip: You can move any value to the top of the window by typing **L** <value> on the **COMMAND** line, placing the cursor on the appropriate column heading, and pressing **Enter**. If the value that you are looking for is in the first column, you do not have to use the cursor at all; just type **L** <value> on the **COMMAND** line.

Step 6 On the **COMMAND** line, type **L** <job_name> (where *job_name* is the job name for the process), position the cursor in the Jobname column, and press **Enter**.

The process that you specify appears at the top of the view.

Notice that the heading for the Jobname column, as well as every other column heading, appears highlighted. This highlight indicates that hyperlinks are available for these columns. If you are not sure which hyperlink you want, you might want to retain the JOVERZ view so that you can experiment with the different hyperlinks.

Step 7 Open a second window.

7.A On the **COMMAND** line, type **HS** (Horizontal Split).

To split the screen vertically instead, type **VS** on the **COMMAND** line.

7.B Position the cursor where you want the new window to begin. Usually, you will start a new window about halfway down the screen. However, because you used the **LOCATE** command to move your desired job to the top of the screen, positioning the cursor just several lines below the job gives you more room to display data about the job.

7.C Press **Enter**.

An open window below the JOVERZ view is displayed.

Step 8 In the **ALT WIN** field, type **&2**.

Note: The **ALT WIN** field is located one line down from the **COMMAND** line. You can navigate from the **COMMAND** line to the **ALT WIN** field by pressing **Tab** three times.

The **ALT WIN** field—*not* the **CURR WIN** field—tells MAINVIEW for OS/390 where to display the output of a hyperlink. The ampersand (&) retains the **ALT WIN** setting between actions so that you do not have to keep retyping the number.

Step 9 Place the cursor on your job in the **Jobname** field and press **Enter**.

The EZMJOB menu is displayed for the job that you specified, as shown in Figure 3-4 on page 3-10.

Figure 3-4 Using the Hyperlink between JOVERZ and EZMJOB

```

DDMMYYYY HH:MM:SS -- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -- NO MORE VIEWS IN STACK
COMMAND ==>>
CURR WIN ==>> 2          ALT WIN ==>> &2
>W1 -JOVERZ-----SYSDJEN1-*-----DDMMYYYY--HH:MM:SS---MVMVS---D--127
C Jobname T SrvClass Step Total Total %Dly %Dly %CPU EXCP DmdP SwpP A
- ----- - ----- Data Dly% Use% Idle Unknown Util /Sec /Sec /Sec Fra
  XTSTIPAS S STCPAS YES 92.74 6.30 0.96 0.9 0.9 3.3 20
  CMDJENPJ S STCPAS YES 70.85 3.19 25.96 1.0 1.7 4.6 24
  BMVWRW2 T TSONRM NO 59.71 6.63 33.65 0.1 0.6 10
  DC$BBIRR S STCNRM NO 55.99 0.74 43.27 0.2 0.5 0.5 3
  BOLGBG3 T TSONRM NO 41.49 7.54 50.96 1.0 0.4 11.0 17
  AAOMH41 S STCNRM NO 39.53 0.86 59.62 0.1 1.0 0.5 3
  ANTAS000 S STCNRM NO 39.42 60.58 0.2 1
>W2 =EZMJOB=====SYSDJEN1=*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
                                     Job Menu
                                     Timeframe - Interval

                                     Current Job -> AAOMH41

  Activity                               +-----+ Resource Usage
  . Using Resources                       | Place cursor on | . Data Sets Allocated
  . Delay Reasons                         | menu item and   | . Data Sets Open
  . Status                                | press ENTER    | . Data Set Usage and Dela
  . Last 10 intervals                     +-----+ . Data Spaces
  . Overview                              . Detail
  . Paging                                 . SRM Service Units
  . Trending                              . Storage Used
  . Workflow

  SYSPROG Services
  > Actions
  > MVScope CPU Tracing
  > Performance
  > Storage                                . Return...
    
```

EZMJOB is a menu from which you can access specific information about a particular job (notice that the job name of the job that you selected is displayed near the center of your screen).

Step 10 To select an option, move the cursor to that option and press **Enter**. Depending on where you split your screen, you might need to scroll down to view all EZMJOB options.

Take a few minutes to experiment with the EZMJOB menu. When you have finished experimenting, close window 2.

Step 11 On the **COMMAND** line, type **CLOse** and press **Enter**.

Step 13 To return to JOVERZ, press **PF3**.

Now that you have looked at the MAINVIEW for OS/390 view help, take a look at some *field help*.

Step 14 Put the cursor in any JOVERZ field and press **PF1**.

Step 15 Review the text, and then press **PF3**.

MAINVIEW for OS/390 provides dynamically created online help for every field on every view. Each view has a set of actions, called *view actions*, that you can perform from each particular view. See what you can do from the JOVERZ view.

Step 16 On the **COMMAND** line, type **HELP ACTions** or **SHOWAct**.

If you use the SHOWAct command, the screen looks similar to Figure 3-6.

Figure 3-6 JOVERZ View Actions

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                                SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
>W1 =JOVERZ=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==159
C Jobname  T SrvClass Step Total Total  %Dly  %Dly  %CPU  EXCP DmdP SwpP  A
- - - - -  - - - - -  Data  Dly%  Use%  Idle Unknown  Util  /Sec /Sec /Sec  Fra
AAOMH41  S  STC                5
BOLDBS3  T  TSO  Help          Available Actions          Help          2
BOLGBG3  T  TSO  Command ==>                                Scroll ==> PAGE          15
*MASTER* S  SYS  -----
OLTE     S  STC                20
OLTG     S  STC  Two line command actions are available:          24
BOLRBS4  T  TSO                13
OLTF     S  STC    o The "m" line command used to initiate MVScope          28
AAOSFS41 S  STC    monitoring for a job or device.          5
IMS61Z   B  BAT                2
MQM20WH0 S  STC    o The "c" line command used to generate an          11
XTSTIPAS S  STC    internal OS/390 CANCEL console command for an          35
IMS51X   S  STC    address space, job, or device.          2
OLTMVA   S  STC                18
AAOJC41  S  STC  The MVScope facility identifies problem areas by          4
CNMNETD  S  STC  tracing CPU usage down to to the CSECT level and          7
WLM      S  SYS  I/O usage down to the channel program level. You          3
DB2HMSTR S  STC  can initiate the MVScope facility from most          2
DC$BBI   S  STC  MainView for OS/390 views in one of three ways:          4
AAOTSHD  S  STC  PF 1=HELP      2=SPLIT      3=END      4=RETURN          2
IMSIR15  S  STC  PF 5=RFIND     6=RCHANGE     7=UP      8=DOWN          1
DC$EXT   S  STC                1
CSQDCHIN S  STCNRM NO      6.35  1.41          92.24  0.0      0.2          2
JES2     S  STCNRM NO      6.22  1.18          92.60  0.1     0.7  0.2          4
    
```

Like all MAINVIEW for OS/390 views, JOVERZ provides access to the system programmer services through the SYSPROG action and to the COMMON STORAGE MONITOR through the CSMON action. If you are interested, place the cursor on one of these actions and press **Enter** to learn more about that action.

To Summarize:

In this brief survey of job activity views, you learned several essential MAINVIEW for OS/390 concepts:

- how to tell what a view contains just by studying the view name
- how to understand the difference between real-time and interval views
- how to read the window information line
- how to use hyperlinks
- how to open and close windows
- how to move a particular workload, job, or resource to the top of the view by using the LOCATE command
- how to display online help for a view
- how to display online help for a field
- how to find out which actions you can perform from a view

Examining Workload Delay Views

In this section, you will examine workload delay views.

Workload delay views display information about the delays experienced both by workloads and jobs. There are two primary ways of displaying a workload delay view. You can use the OS/390 Fast Menu, also referred to as EZMFAST, or the conventional view names.

To use EZMFAST, follow this procedure:

- Step 1** Perform *one* of these actions:
- On the **COMMAND** line, type **EZMFAST**.
 - From the EZM390 menu, choose **OS/390 Fast Menu**.
- Step 2** From the **Workloads** category, select **Delay Reasons**.

To use conventional view names:

Step 1 To display the MAIN view, type **MAIN** on the **COMMAND** line.

Step 2 Perform *one* of these actions:

- Hyperlink to the **WORKDEL** view.
- Type **WORKDEL** on the **COMMAND** line.

WORKDEL, shown in Figure 3-7, lists the views that show how well workloads and jobs are moving through the system, where delays are occurring, and the reason for each delay.

Figure 3-7 WORKDEL View

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND  ==>                               SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
Wl =WORKDEL=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D===57
C View Name  Description
-----
DDJOB      Devices delaying jobs
DUJOB      Devices used by jobs
JDDEV      Jobs delayed by devices
JDDEVZ     Summary Jobs delayed by device
JDELAY     Interval job delays
JDELAYR    Realtime job delays
JDELAYZ    Summarized job delays
JDENQ      Jobs Delayed by Enqueues
JDENQZ     Summary Jobs Delayed by Enqueue
JFLOW     Interval job workflow and dela
JFLOWR    Realtime job workflow
JFLOWZ    Summarized job workflow
JHSMD     HSM related delays
JHSMDZ    Summary HSM related delays
JHSMSTAT  HSM related delays, details
JINFO     Detailed job delay information
JINFOR    Detailed Realtime job info
JJESD     JES related delays

```

One of the listed views is **WDELAY** (you might need to scroll to it).

Step 3 Hyperlink on **WDELAY**.

The **WDELAY** view appears, as shown in Figure 3-8 on page 3-15.

Figure 3-8 WDELAY View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
>W1 =WDELAY=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====64
C Workload Intvl T #AS          Total Delay%   %Dly %Dly %Dly %Dly %Dly %Dly
- ----- Time- - ---          0...50...100  CPU  Dev  Stor  ENQ  SRM  Subs
STCNRM   13:04 S  42   2.51           0.78           0.04           1.68
GABY2    13:04 S  38   2.43           0.52           0.04           1.87
STC      13:04 W  51   2.15           0.72           0.04           1.39
ALLSTC   13:04 S 112   1.69           0.16           0.01           1.53
ALLWKLDS 13:04 C 139   1.38           0.13           0.01           1.24
SYSTEM   13:04 S  17   1.26           0.00           0.00           1.26
TST      13:04 S   2   1.20           1.20           0.00           0.00
GRS      13:04 S   1   0.64           0.64           0.00           0.00
SYSTEM   13:04 W  62   0.61           0.01           0.00           0.60
GABY9    13:04 S   6   0.47           0.47           0.00           0.00
STCPAS   13:04 S   6   0.47           0.47           0.00           0.00
GABY     13:04 S   6   0.47           0.47           0.00           0.00
GABY1    13:04 S   2   0.24           0.24           0.00           0.00
JES2     13:04 S   2   0.24           0.24           0.00           0.00
TSO      13:04 S  25   0.09           0.09           0.00           0.00
TSO      13:04 W  25   0.09           0.09           0.00           0.00
ALLTSO   13:04 T  26   0.08           0.08           0.00           0.00
TESTCOMP 13:04 C  27   0.08           0.08           0.00           0.00

```

WDELAY tells you how efficiently workloads are being served by system resources. The %Dly fields indicate the type of delay that a workload is experiencing, if any.

The workloads in WDELAY are ordered by delay—from the most severely delayed workload to the least delayed workload. In addition, the most severely delayed workloads appear in a different color or are highlighted (on terminals without color), so that you can quickly identify workloads in trouble.

- Step 4** Find the workload that is experiencing the greatest delay (that is, the first workload listed).

For the purposes of this exercise, check the #AS column in WDELAY to make sure that the workload contains more than one address space (or job).

- Step 5** Execute the hyperlink for this workload from the **Total Delay%** column.

Your screen should look similar to Figure 3-9 on page 3-16.

Figure 3-9 JDELAY View

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS  -----
COMMAND  ===>
CURR WIN  ===> 1          ALT WIN  ===>
>W1 =JDELAY=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D===50
C Jobname  T SrvClass Step          Total Delay %   %Dly  %Dly  %Dly  %Dly  %Dly
- - - - -  - - - - -  Data      0...50...100  CPU   DEV   Stor  ENQ   SRM
SALES      S SYSTEM   NO      90.95 *****  52.84
DUMPSRV    S SYSTEM   NO      64.71 *****  7.68
XCFAS      S SYSTEM   NO      42.09 *****  2.17  6.20
OLCVTS13   S SYSTEM   NO       2.35          2.35          0.27
AAOKMZ51   S SYSTEM   NO       2.17          2.17
DC$BBI     S STCNRM   NO       1.92          1.53          0.38
AAODM5B    S STCNRM   NO       1.90          1.66          0.24
AAORMB5G   S STCNRM   NO       1.83          1.83
AAOHW4A    S STCNRM   NO       1.43          1.43
WRWJCAS    S STCNRM   NO       1.40          1.40
AAOHW51    S SYSTEM   NO       1.36          1.36
DC$RES     S STCNRM   NO       1.09          1.09
AAOTSHE    S STCNRM   NO       0.98          0.98
OLCC41VT   S STCNRM   NO       0.82          0.82
CSBECHIN   S STCNRM   NO       0.82          0.82
DC$EXT     S STCNRM   NO       0.54          0.54
CSBEMSTR   S STCNRM   NO       0.54          0.54
TUNCIC4    S STCNRM   NO       0.54          0.54

```

JDELAY tells you which jobs are contributing the most to the workload's overall delay—and why.

For example, the most severely delayed job, SALES, is delayed primarily by the CPU. In fact, CPU delay accounts for 52.84 percent of the total delay experienced by the job.

Your workload, however, might be delayed by other causes, such as contention for I/O devices, storage, ENQ, SRM (System Resource Manager), or HSM (Hierarchical Storage Manager).

- Step 6** To find more information about the delay, hyperlink from the column on your screen that contains the highest percentage.

Table 3-1 Hyperlinking from Columns (Part 1 of 2)

This Column's Hyperlink	Displays This View
%Dly CPU	JCPU, which tells you about each job's use of the CPU
%Dly DEV	DDJOB, which lists devices that are delaying jobs
%Dly Stor	JSTORD, which tells you about job delays related to storage
%Dly ENQ	JDENQ, which lists jobs that are delayed by ENQ

Table 3-1 Hyperlinking from Columns (Part 2 of 2)

This Column's Hyperlink	Displays This View
%Dly SRM	JSRMD, which tells you about job delays related to SRM constants
%Dly Subs	JSUBD, which tells you about subsystem-related delays

Step 7 Continue hyperlinking from view to view. Refer to Table 3-2 for guidance.

Table 3-2 Hyperlinking from Views

If You Want to See	Use This View
An overview of workload delays	WDELAY
An overview of job delays	JDELAY
How well jobs are being served by all resources	JFLOW, JFLOWS
How well workloads are being served by all resources	WFLOW, WFLOWS
Which I/O devices are delaying jobs	DDJOB
Which jobs are being delayed by I/O devices	JDDEV
Which I/O devices are being used by which jobs	JUDEV

Examining System Activity Views

In this section, you will examine system activity views.

While other MAINVIEW for OS/390 views report on system status from the perspective of workloads and jobs, the SYSACT (system activity) category reports on the status of system resources.

To look at SYSACT category reports, follow this procedure:

Step 1 On the **COMMAND** line, type **SYSACT**.

Your screen should look like Figure 3-10 on page 3-18.

Figure 3-10 **SYSACT View**

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND  ==>                               SCROLL ==> PAGE
CURR WIN ==> 1           ALT WIN ==>
W1 =SYSACT=====SJCXTSM=*=====DDMMYYYY==HH:MM:SS====MVMVS====D====51
C View Name  Description
-----
CACHSTAT    Analyze Cache devices
CACHSTAZ    Summarized Cache activity
CPSTAT      Analyze All Channel Paths
CPUINFO     Detailed info on a single CPU
CPUSTAT     Analyze CPU performance
DMNSTAT     Interval SRM domains
DMNSTATR    Realtime SRM domains
DSIO        Data set IO
DSPCDUMP    Data Space Dump
DSPCINFO    Data space information
DSPCSTAT    Data space status
DSPCZ       Data space owner summary
ENQSTAT     Interval Enqueues
ESINFO      Expanded storage overview
EXCEPT    Tailored Exceptions summary
FRMINFO     Real storage frame usage
LPARCAP     Monitor CPU consumed by LPAR
LPARCAPD    Monitor LPAR CPU detail
LPARCAPZ    Monitor LPAR CPU summary
LPARCLUS    Monitor LPAR CLustering
LPARCLUZ    Monitor LPAR CLustering sum
LPARSTAT    Analyze LPARS/Domains
LPARSTAZ    Analyze LPARS/Domains summ
MPLSTAT     SRM MPL adjustment values
PGDINFO     Analyze single Page Dataset
PGDSTAT     Analyze Page Datasets
PGINFO      System paging overview
SMSINFO     Analyze single Storage Group
SMSSTAT     Analyze SMS Storage Groups
SNQR        Realtime Enqueue
SNQRZ       Realtime Enqueue summary
SRMLSCT     SRM logical swap cntl values
SRMOPT      SRM IEAOPT Values
SRNR        Realtime Reserve Enq
SRNRZ       Realtime Reserve Enq summary

```

Step 2 Review the SYSACT Description column. Scroll down to see the complete list.

SYSACT covers a wide range of system resources—from analyze cache devices (CACHSTAT) to exceptions (WARN).

Step 3 Select **CPUSTAT**.

The CPUSTAT view is displayed, similar to the view shown in Figure 3-11 on page 3-19.

Figure 3-11 CPUTAT View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
W1 =CPUTAT=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====4
C No      CPU Busy(I)   TSO  BAT  STC      CPU Busy(R)   TSO  BAT  STC
- --      0.....50...100 Busy Busy Busy      0.....50...100 Busy Busy Busy
00 30.5           0.7  0.7 29.1 40.2           13.4           26.8
01 30.6           1.2  0.6 28.8 41.0           0.0            41.0
02 30.5           2.9  1.7 25.9 39.1           0.0 13.0       26.0
03 30.4           3.9  1.1 25.4 38.9           29.1           9.7

```

CPUTAT breaks down CPU utilization by TSO jobs, batch jobs, and started tasks. For each CPU, data for the last interval—CPU Busy (I)—and real-time data—CPU Busy (R)—are displayed.

- Step 4** Find the busiest CPU, place the cursor in the **No** column of that processor, and then press **Enter**.

The CPUINFO view is displayed, as shown in Figure 3-12.

Figure 3-12 CPUINFO View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
W1 =CPUTAT==CPUINFO==DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
CPU Number... 00 - Interval. 0.....50...100
Serial Num... 001317 %Utilization. 30.49
                    % TSO..... 0.69
I/O Int Rate. 19.51 % Batch..... 0.69
%TPI..... 1.63 % STC..... 29.10
%CPU Busy Enb 20.45 % TCB Mode... 18.01
%CPU Busy Dis 79.55 % SRB Mode... 12.47
%CPUwt+CH Bsy 14.55 % Supervisor. 29.79

- Real time
I/O Int Rate. 40.60 %Utilization. 40.17
%TPI..... 1.48 % TSO..... 13.39
%CPU Busy Enb 33.33 % Batch..... 0.00
%CPU Busy Dis 66.67 % STC..... 26.78
%CPUwt+CH Bsy 26.78 % TCB Mode... 13.39
                    % SRB Mode... 26.78
                    %Supervisor.. 40.17

```

Like other views that end in INFO, CPUINFO displays detailed information about a single entity—in this case, a single CPU—both in interval time and in real-time. In this example, CPUINFO reports on CPU number 00, the busiest CPU shown in Figure 3-11.

Try another example; this time use the OS/390 Easy Menu.

- Step 5** To clear the screen, type **RESet** on the **COMMAND** line.
- Step 6** On the **COMMAND** line, type **EZM390** and press **Enter**.
- Step 7** Under the **Activity** category, select the **Devices** option and press **Enter**.

The EZMDEVS Activity Menu is displayed.

- Step 8** Under the **Devices** category, select the **Device Utilization** option and press **Enter**.

The DEVSTATZ view is displayed, as shown in Figure 3-13.

Figure 3-13 DEVSTATZ View

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ===> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
W1 =DEVSTATZ=====DXTSTJ====*=====DDMMYYYY=HH:MM:SS====MVMVS====D==169
C Volser Dev LCU Storage I/O Resp. Time IOSQ Conn Disc Pend D/S Dly%
- - - - - Num Num Group /Sec 0...50.100 Time Time Time Time Opn ----
PAGD27 0227 00B 2.90 96.61 49.5 5.73 41.0 0.37 0.28
TSG322 02AD 00C 0.90 78.05 5.9 52.8 0.12 19.1 11
BSD001 0D36 01C 0.03 27.55 0.41 0.10 27.0 4
ES510P 0D32 01C 0.03 26.36 0.47 0.06 25.8
SMS900 0326 00D SGENG 0.11 22.86 3.71 2.03 17.1 1
TSG312 02A1 00C 1.38 16.49 3.8 11.2 0.29 1.09 76
BAB321 030C 00D 0.44 15.84 10.5 1.56 3.71 56
FAT901 0322 00D 0.03 15.63 0.78 0.09 14.7
HSM301 0D00 01C 1.02 14.61 1.06 0.16 13.3
SYM042 024A 00B 0.03 13.94 1.06 0.09 12.7
SYM028 023C 00B 0.26 12.06 0.82 0.88 10.3
BAB331 02A5 00C 0.17 10.51 5.36 4.77 0.38 23
BAB322 0317 00D 0.40 10.05 3.93 2.39 3.73 38
FAT902 0323 00D 0.03 9.93 0.81 0.13 9.00
TSG320 0D38 01C 0.88 9.91 7.98 0.17 1.76 65
SMS001 0D2A 01C SGTST 0.03 9.22 1.64 2.78 4.80
BAB311 0302 00D 1.96 8.81 2.70 1.06 5.05 54
Q26G11 0319 00D 0.03 8.70 0.82 0.05 7.83
PUBBC1 0D06 01C 0.03 8.63 1.78 3.58 3.26
PAGA21 0221 00B 0.03 8.15 1.04 0.09 7.03
BAB402 0252 00B 0.03 7.97 0.99 0.08 6.91 2
```

- Step 9** Hyperlink from the **Volser** column in DEVSTATZ to the DEVSTAT view.
- Step 10** Hyperlink from any line in the **Volser** column within the DEVSTAT view.

MAINVIEW for OS/390 displays the EZMDEV menu, as shown in Figure 3-14 on page 3-21, a menu from which you can access specific information about a particular device. Notice that the number of the device that you selected is displayed near the center of your screen.)

Figure 3-14 Device Activity Menu (EZMDEV)

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1           ALT WIN ==>
>W1 =DEVSTATZ==EZMDEV==DXTSTJ==*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
                Device Activity Menu

        Current Device -> 0227
                Volser -> PAGD27

        This Device      +-----+      All Devices
        . Cache Statistics | Place cursor on | . Cache Overview
        . Data Sets Allocated | menu item and | . Channel Utilization
        . Data Sets Open | press ENTER | . LCU Overview
        . Detailed Info +-----+ . SMS Overview
        . Jobs Delayed by Volume . Tape Activity
        . Jobs Using Volume
        . Data Set Usage and Delay
        . Overview

        SYSPROG Services
        > I/O Subsystem
        > MVScope I/O Tracing . Return...
        > Utilities

```

Step 11 Select Detailed Info.

The DEVINFO view is displayed, as shown in Figure 3-15.

Figure 3-15 DEVINFO View, Showing Information about PAGD27

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1           ALT WIN ==>
W1 =DEVSTATZ==DEVINFO==DXTSTJ==*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
Volser..... PAGD27 % Allocated.... 100.00 Avg Serv Time.. 96.61
Device Number.. 0227 % Utilized..... 13.59 Avg IOSQ Time.. 49.45
Type..... 3380 % Active..... 13.67 Avg Act Time... 47.16
LCU Number.... 00B % Connected.... 1.66 Avg Conn Time.. 5.73
Status..... RDY % Disconn..... 11.91 Avg Dsc Time... 41.05
Mount Status... PRV % Pending..... 0.11 Avg Pnd Time... 0.37
% Mount Pend... % Req Queued... 2.41 Avg DPB Delay..
SSCH/Sec..... 2.90 % Dev Queued... 9.04 Avg CUB Delay..
SSCH/Sec....(R) 1.47 % Q+CPU Wait... 1.60 Avg DvB Delay.. 0.01
Total SSCH.... 1121 % Efficiency... 90.96 % Reserved....
% In Use..... 6.20 Avg Q Depth.... 0.14 % Resv Shr....
% Delaying.... 0.28 Max Q Depth.... 5.00 % Error Rec....
Curr DS open...
Avg DS open.... 4

```

In this example, DEVINFO displays detailed information about PAGD27, as evidenced by the contents of the **Volser** field.

Now take a look at one of the views devoted to overall system performance. These views are

- SYSPERF
- SYSSUM
- SYSINFO
- SYSCNFG
- SYSSTAT
- SYSOVER
- SYSWKLD

SYSSUM, SYSSTAT, and SYSPERF are excellent places to start analyzing the health of your system. In particular, SYSSUM helps you pinpoint dangerous trends that may be developing. SYSPERF gives you an excellent system overview.

To enter SYSSUM, follow this procedure:

- Step 1** To clear the screen, issue the **RESet** command and display **EZM390**.
- Step 2** Under the **Activity** category, select the **System Overview** option and press **Enter**.
- The EZMSYS view is displayed.
- Step 3** In the EZMSYS menu, select the **System Trends** option under the **Activity** category, and then press **Enter**.

The SYSSUM view is displayed, as shown in Figure 3-16.

Figure 3-16 SYSSUM View

```
DDMMYY HH:MM:SS- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -"RCHANGE " is not active
COMMAND ==>>>                                SCROLL ==>> PAGE
CURR WIN ==>> 1          ALT WIN ==>>
W1 =SYSSUM=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====5
In Date  Time      wflow %      CPUbsy%      Pag/Sec      I/O Intr      WarnCt
Nm -----
5 09MAR 14:29 48.4      34.0        101.         + 81.46        2
4 09MAR 14:15 64.6        27.4         10.2         67.04        43      +
3 09MAR 14:00 59.7        28.0         16.7         63.43        44      +
2 09MAR 13:45 44.2        29.8         20.1         65.76        11
1 09MAR 13:30 63.0        32.8         18.9         95.60        12
```

SYSSUM has the ability to display data from the past. Up to 60 past intervals are listed in the SYSSUM Date and Time columns, beginning with the current interval and depending on the availability of past data. These intervals are numbered in the In Nm column. The other columns summarize a

particular statistic as it existed at the end of that interval—workflow percentage, CPU utilization, and so on.

For more information about historical data, see Chapter 5, “Displaying Historical Data.”

Step 4 Open a second window.

Note: Remember to type **&2** in the **ALT WIN** field.

Step 5 Choose an interval and hyperlink from the **Wflow %** column.

In this example, you hyperlink from interval 3—which ended at 14:15 this afternoon—to display the SYSSUM view and WFLOW view, as shown in Figure 3-17.

Figure 3-17 SYSSUM and WFLOW

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 2 ALT WIN ==> &2
W1 -SYSSUM-----DXTSTJ---*-----DDMMYYYY==HH:MM:SS---MVMVS---D---5
In Date Time Wflow % CPUbsy% Pag/Sec I/O Intr WarnCt
Nm ----- 0...100 0...100 0...100 0...500 0...20
 5 09MAR 14:29 48.4 34.0 101. + 81.46 2
 4 09MAR 14:15 64.6 27.4 10.2 67.04 43 +
 3 09MAR 14:00 59.7 28.0 16.7 63.43 44 +
 2 09MAR 13:45 44.2 29.8 20.1 65.76 11
 1 09MAR 13:30 63.0 32.8 18.9 95.60 12

H2 =WFLOW=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====46
C Workload Typ #AS Workflow % Delay % Delay Reason
- - - - - 0.....50...100 0.....50...100 -----
SYSTEM SCL 17 18.5 1.7 Wait for XCF
ALLSTC STC 135 30.7 0.8 Wait for XCF
STCNRM SCL 74 38.7 0.8 Wait for CPU
STC WKL 87 44.0 0.7 Wait for CPU
ALLWKLDS CMP 173 35.2 0.7 Wait for XCF
STCPAS SCL 9 72.6 0.6 Wait for XCF
SYSTEM WKL 48 18.8 0.6 Wait for XCF
BATCH WKL 3 72.1 0.5 Wait for CPU
BATNRM SCL 3 72.1 0.5 Wait for CPU
ALLBAT BAT 3 72.1 0.5 Wait for CPU
STCPROD SCL 1 40.0 0.4 Wait for CPU
GRS SCL 1 66.7 0.4 Wait for CPU
ALLTSO TSO 35 70.4 0.3 Wait for CPU
TSO WKL 35 71.2 0.2 Wait for CPU

```

Look at the **Time** and **Date** fields on the WFLOW window information line. The values in these fields reflect the system as it existed at the end of the interval that you chose. Notice that the beginning of the window information line contains an H, thus confirming the fact that window 2 contains historical data.

In fact, all of the SYSSUM hyperlinks display snapshots of the system as it existed at a particular date and time.

SYSSUM helps you trace the development of certain conditions over a longer time period than just an interval. After you use one of the SYSSUM hyperlinks, all other views that you enter in that window reflect the system as it existed at that time, on that date. In this way, MAINVIEW for OS/390 helps you reconstruct a problem that might have occurred when you were not there to stop it.

You can display older, historical data by using the TIME command with any MAINVIEW for OS/390 view (not just SYSSUM). In fact, SYSSUM established historical mode for window 2 simply by issuing the TIME command for you. You will learn how to use TIME in Chapter 5, “Displaying Historical Data.”

Troubleshooting

This section shows you how to solve problems. You might use MAINVIEW for OS/390 views to solve a performance problem on your system. In this example, you will learn how to determine when a workload is being delayed by contention for I/O devices and how to determine which device is causing the delay.

To see the workload delays, follow this procedure:

Step 1 To close window 2, type **W2** on the **COMMAND** line.

Step 2 Type **CLOse** and press **Enter**.

Step 3 On the **COMMAND** line, type **WIO** and press **Enter**.

The WIO view is displayed.

Step 4 Scan the **%Dly Dev** field.

This field shows the percentage of the last interval (the last 15 minutes or so) that each workload has been delayed due to contention for an I/O device.

You can scroll through the **%Dly Dev** field to see if any of the workloads have been severely impacted. Sort the column so that the most severely delayed workloads appear at the top of the display.

Step 5 On the **COMMAND** line, type **Sort**.

Step 6 Place the cursor on the **%Dly Dev** field and press **Enter**.

Your screen should look similar to Figure 3-18 on page 3-25.

Figure 3-18 WIO Sorted By the %Dly Dev Column

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
W1 =WIO=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====47
C Workload Typ #AS          EXCP/Sec          %Use %Dly %Con  EXCP AvIO
- ----- - - - - - 0...50...100 Dev Dev Time Total Pty
ACCTNG1 CMP 14 276.5 *****+ 2.6 44.3 158.7 8020 224
ALLWKLDS CMP 172 30.92 **** 0.9 0.0 26.9 3432 251
ALLSTC STC 144 30.61 **** 1.0 0.0 25.6 3398 251
STC WKL 98 26.86 **** 1.2 0.0 10.2 2981 250
STCNRM SCL 86 23.58 *** 1.1 0.0 7.7 2617 249
SYSTEM WKL 46 3.76 * 0.5 15.4 417 255
SYSTEM SCL 17 3.76 * 1.5 15.4 417 255
STCPAS SCL 8 3.28 2.8 0.1 1.3 364 253
TSO WKL 25 0.31 0.1 34 249
TSO SCL 25 0.31 0.1 34 249
ALLTSO TSO 25 0.31 0.1 34 249
APPCHOT SCL
CICSHOT SCL
CICSNRM SCL
    
```

Step 7 Find the workload that is experiencing the biggest delay on your system.

In the example in Figure 3-18, ACCTNG1 is delayed more than any other workload. You want to find out why.

You need to examine the jobs that are contained within the workload. It is likely that only one or two jobs are significantly impacting the workload, so this step will help narrow the search to those few jobs.

Step 8 Press **Enter** and scan the **%Dly Dev** column again.

The values need to be refreshed.

Step 9 Place the cursor on the percent number of a severely delayed workload (one that contains more than one address space) in the **%Dly Dev** column, and then press **Enter**.

The JIO view is displayed, as shown in Figure 3-19 on page 3-26.

Figure 3-19 JIO View

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS  -----
COMMAND  ===>
CURR WIN  ===> 1          ALT WIN  ===>
>W1 =JIO=====SJCSTSM=*=====DDMMYYYY==HH:MM:SS====MVMVS====D==366
C Jobname  T SrvClass  Step      EXCP per Sec      %Use  %Dly  %Con  EXCP A
- - - - -  - - - - -  Data      0.....50.....100  Dev   Dev   Time  Total
IMS71Y    B BATNRM   NO      49.52              4.0  14.6  3.8   12034
CATALOG   S SYSTEM   NO      0.02              1.9  0.2   13
BAODYM2   T TSONRM   NO      4.55              0.9  0.1   3833
DC$BBIRR  S STCNRM   NO      0.87              0.1  0.1   731
DC$BBI    S STCNRM   NO      1.98              1.1  0.1   1667
DC$STG    S STCNRM   NO      1.56              0.6  0.1   20.5  1313
I7AARCH   B BATNRM   NO     161.6             + 25.0 28.2  1293
CSQ1MSTR  S STCNRM   NO     81.61             11.9  7.7   68717
BMVDID3   T TSONRM   NO     52.43              6.0  17.9  3513
IMFAH33   B BATNRM   NO     49.20              3.8  6.4   10529
BMVDWP4   T TSONRM   NO     36.33              1.0  3.8   109
BMVDWP5   T TSONRM   NO     32.00              2.6  2.6   128
BMCAXH1   T TSONRM   NO     25.89              6.0  6.4   8881
AAODM6A   S STCNRM   NO     24.36              2.7  2.6   14540
MIMGR     S SYSSTC   NO     23.67              8.4  1.3   19927
RDHCLH    T TSONRM   NO     23.20              1.3  1.3   116
BMVDWP6   T TSONRM   NO     22.33              2.6  2.6   134
BMVDID3   T TSONRM   NO     15.33              1.3  1.3   92
BAOMXM1   T TSONRM   NO     13.75              2.6  2.6   110
BOLKGB2   T TSONRM   NO     12.56              1.3  2.01
    
```

Notice that JIO displays the exact same information as WIO; however, JIO reports on jobs rather than on workloads. In fact, most all workload activity views have job activity views associated with them that display the same information, but at the job level.

The next step is to determine which of these jobs is experiencing the biggest delay. If you can answer this question, you will have a good idea of what is delaying the workload as a whole.

Step 10 To position the job with the highest value at the top of the list, sort the **%Dly Dev** field.

In Figure 3-19, IMS71Y is the most delayed job.

Step 11 To find what is causing the delay, position your cursor on the job that is experiencing the highest delay and press **Enter**.

The EZMJOB view is displayed, as shown in Figure 3-20 on page 3-27.

Figure 3-20 EZMJOB View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ===>                                SCROLL ===> PAGE
CURR WIN ===> 1          ALT WIN ===>
>W1 =JIO=====EZMJOB===SYSE=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
                                     Job Menu
                                     Timeframe - Interval

Current Job ->  IMS71Y

Activity          +-----+ Resource Usage
. Using Resources | Place cursor on | . Data Sets Allocated
. Delay Reasons  | menu item and   | . Data Sets Open
. Status         | press ENTER     | . Data Set Usage and Delay
. Last 10 intervals +-----+ . Data Spaces
. Overview      . Detail
. Paging        . SRM Service Units
. Trending      . Storage Used
. Workflow

SYSPROG Services
> Actions
> MVScope CPU Tracing
> Performance
> Storage . Return...
    
```

Step 12 Under the **Resource Usage** group on the right side of EZMJOB, hyperlink on **Detail**.

The JINFO view is displayed, as shown in Figure 3-21.

Figure 3-21 JINFO View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ===>                                SCROLL ===> PAGE
CURR WIN ===> 1          ALT WIN ===>
>W1 =JIO=====JINFO====SJSCTSM=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
Timeframe... Interval                                0...50..100
Jobname....   IMS71Y Avg Frames..      1433 Workflow...  34.26
Step/Proc...  IMS71Y Avg Cframes..     1377 Using Proc..   7.41
JES Number..  JOB07933 Avg Eframes..    57 Using Dev..    4.01
Terminal ID.  Cframes held             1643 Total Dly..  21.91
ASID.....    53 Eframes held           56 Processor..   6.98
Dmn.....    N/A Fixed frames          181 Device....  14.63
SC or PG #.. 4 Fixed <16M..            70 Storage...   0.00
SrvClass.... BATNRM Dmd Page/Sec       0 Enqueue...   0.31
Workload.... Swp Page/Sec              0 SRM.....     0.00
%Connected.. 3.8 Avg UIC.....          101 Msg.....     0.00
Disp. Prty.. 229 SU/Sec.....           69486 Xcf.....     0.00
Owner.....   BMCAXH1 EXCP/Sec....      49.5 JES.....     0.00
Status.....  Active Job Elpd Tm. 00:04:03 HSM.....     0.00
Last.....   Active JES Queue Tm 00:00:01 Unknown....  4.42
    
```

JINFO always displays detailed information about the job from which you execute a hyperlink. In this case, JINFO contains information about IMS71Y, the job experiencing the biggest delay.

Tip: The progression of hyperlinks that you have seen so far is common to all MAINVIEW for OS/390 views:

- Workload activity views contain hyperlinks to job activity views to show you a breakdown of the jobs within a particular workload.

In this case, the hyperlink from WIO led you to JIO, so that you could see I/O activity for all of the jobs within the workload.

- Job activity views present the exact same information as workload activity views, but at the job level.
- All job activity views contain a hyperlink to JINFO, which displays detailed information about a single job.

Looking at the Device field on JINFO, shown in Figure 3-21 on page 3-27, you can see that the biggest percentage of the total delay experienced by IMS71Y, 14.63 percent, was due to I/O devices.

Step 13 To find the devices that are causing the delay, execute the hyperlink from the JINFO **Device** field.

The DDJOB view is displayed, as shown in Figure 3-22.

Figure 3-22 DDJOB View

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS  -----
COMMAND  ===>
CURR WIN  ===> 1          ALT WIN  ===>
W1 =DDJOB=====SJCSTSM=*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
C Volser  Dev Type  LCU  Resp  Act.  %Delay Jobname  T  SrvClass  Delay
-  -----  Num  ----  Num  Time  Rate  ThisJob  -----  -  -----  Type
  BAB317   308 3390  030  9.59  2.99  14.63  IMS71Y   S  STCNRM  IOSQ
    
```

The DDJOB view lists all of the devices that are delaying jobs. Because you came from the JINFO view, which focused only on IMS71Y, DDJOB shows you which devices are delaying *that particular job*.

Step 14 To find the device that is causing the biggest delay to IMS71Y, scan the **%Delay ThisJob** column and locate the highest value.

Step 15 Place the cursor on the corresponding line in the **Volser** field, and then press **Enter**.

EZMDEV (the Device Activity Menu) is displayed. It is specific to the device that you chose (308, in this example, as shown in Figure 3-23).

Figure 3-23 Device Activity Menu

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
>W1 =EZMDEV=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
                                     Device Activity Menu

      Current Device ->      308
      Volser ->      BAB317

      This Device          +-----+          All Devices
      . Cache Statistics   | Place cursor on | . Cache Overview
      . Data Sets Allocated | menu item and | . Channel Utilization
      . Data Sets Open     | press ENTER   | . LCU Overview
      . Detailed Info      +-----+          . SMS Overview
      . Jobs Delayed by Volume
      . Jobs Using Volume
      . Data Set Usage and Delay
      . Overview

      SYSPROG Services
      > I/O Subsystem
      > MVScope I/O Tracing          . Return...
      > Utilities
    
```

Step 16 Hyperlink on **Detailed Info** (under **This Device**).

Your screen should look similar to Figure 3-24.

Figure 3-24 DEVINFO View, Providing Information on a Single Device

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
W1 =EZMDEV==DEVINFO==EXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
Volser..... BAB317 % Allocated... 100.00 Avg Serv Time.. 13.40
Device Number.. 308 % Utilized..... 8.36 Avg IOSQ Time.. 1.73
Type..... 3390 % Active..... 8.61 Avg Act Time... 11.67
LCU Number..... 030 % Connected... 6.77 Avg Conn Time... 9.17
Status..... RDY % Disconn..... 1.57 Avg Dsc Time... 2.13
Mount Status... PRV % Pending..... 0.27 Avg Pnd Time... 0.36
% Mount Pend... % Req Queued... 0.08 Avg DPB Delay..
SSCH/Sec..... 7.40 % Dev Queued... 1.28 Avg CUB Delay..
SSCH/Sec....(R) 8.47 % Q+CPU Wait... Avg DvB Delay..
Total SSCH..... 2396 % Efficiency... 98.72 % Reserved....
% In Use..... 32.72 Avg Q Depth... 0.01 % Resv Shr.....
% Delaying..... 1.25 Max Q Depth... 1.00 % Error Rec.... 0.64
Curr DS open... 60
Avg DS open.... 131
    
```

Just as JINFO provided detailed information about a single job, DEVINFO provides detailed information about a single device—in this case, BAB317, the device selected on DDJOB.

Step 17 Check the **% In Use** field (near the bottom of column 1).

The value here tells you the percentage of the interval that the device spent processing an I/O request. Higher values indicate that more contention occurred for a device and a single I/O request took longer to process.

In Figure 3-24 on page 3-29, you can see that the **% In Use** value is somewhat high—over 32 percent. Now you want to determine which jobs are contending for this device.

Because the **% In Use** field is highlighted, it is safe to assume that MAINVIEW for OS/390 has established the hyperlink that you need to answer this question.

Step 18 Execute the hyperlink from the **% In Use** field.

The JUDEV view is displayed, as shown in Figure 3-25.

Figure 3-25 JUDEV View

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS  -----
COMMAND  ==>>
CURR WIN ==>> 1          ALT WIN ==>>
>W1 =JUDEV=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D===60
C Jobname  Intvl T  SrvClass  %Use  %Use  Dev Volser  Type  Mnt  Resp  Act.  %R
- - - - -  Time- -  - - - - -  ThisJob AllJobs  Num  - - - - -  - - -  Time  Rate  QU
DC$HSMD   15:55 S  STCNRM    35.99  11.06  308 BAB317  3490 PRV  12.6  8.89  0
BOLTWS4   15:55 T  TSONRM    2.26  11.06  308 BAB317  3390 PRV  12.6  8.89  0
XTSTFPAS  15:55 S  STCPAS    0.97  11.06  308 BAB317  3390 PRV  12.6  8.89  0
XCFAS     15:55 S  SYSTEM    0.65  11.06  308 BAB317  3390 PRV  12.6  8.89  0
XTSTFPAS  15:55 S  STCPAS    0.65  11.06  308 BAB317  3390 PRV  12.6  8.89  0
XTSTFPAS  15:55 S  STCPAS    0.65  11.06  308 BAB317  3390 PRV  12.6  8.89  0
AAOTSHD   15:55 S  STCNRM    0.65  11.06  308 BAB317  3390 PRV  12.6  8.89  0
BMVRTR4   15:55 T  TSONRM    0.48  11.06  308 BAB317  3390 PRV  12.6  8.89  0
*MASTER*  15:55 S  SYSTEM    0.48  11.06  308 BAB317  3380 PRV  12.6  8.89  0
JES2      15:55 S  STCNRM    0.48  11.06  308 BAB317  3390 PRV  12.6  8.89  0
PTR3      15:55 T  TSONRM    0.48  11.06  308 BAB317  3390 PRV  12.6  8.89  0
BOLJSC4   15:55 T  TSONRM    0.48  11.06  308 BAB317  3390 PRV  12.6  8.89  0
BBEJCH1   15:55 T  TSONRM    0.48  11.06  308 BAB317  3390 PRV  12.6  8.89  0
IMS71Y    15:55 S  SYSTEM    0.48  11.06  308 BAB317  3390 PRV  12.6  8.89  0
    
```

Now you can see the problem: 60 jobs are currently contending for BAB317—including IMS71Y.

Note: Instead of hyperlinking on the **% In Use** field, you can return to the Device Activity Menu (press the **End** key from DEVINFO) and choose **Jobs Using Volume**. You will still encounter the same view, JUDEV. MAINVIEW for OS/390 offers you a variety of ways to navigate; choose whichever method or combination of methods that best serves your needs.

To Summarize:

In summary, after identifying a workload that is severely delayed by I/O devices (WIO), you did the following:

1. Displayed a breakdown of the jobs within that workload (JIO).
2. Closely examined the most severely delayed job (JINFO) and displayed a list of all of the I/O devices delaying that job (DDJOB).
3. Displayed detailed information about the device causing the biggest delay (DEVINFO).
4. Displayed a list of all of the jobs contending for the device (JUDEV).

Now that you know exactly where the problem has occurred, turn to Chapter 4, “Troubleshooting with the System Programmer Utilities,” to learn how to solve it.

Chapter 4 **Troubleshooting with the System Programmer Utilities**

If you find a problem when using MAINVIEW for OS/390 views, you can use the MAINVIEW for OS/390 system programmer utilities to solve it. This chapter shows you how to solve the problem found in Chapter 3, “Using MAINVIEW for OS/390 Views.”

This chapter includes the following topics:

How to Use the System Programmer Utilities 4-2

How to Use the System Programmer Utilities

Note: Many system programmer utilities allow you to change the ways in which your OS/390 system operates. Before using a utility, make sure you have a good understanding of what the utility does and the consequences of using it.

Starting with the JUDEV view, examine jobs in your system. In the example shown in Figure 4-1, there are 60 jobs using a specific I/O device.

Figure 4-1 Jobs Contending for the Same Device

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
>W1 =JUDEV=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====99
C Jobname  Intvl T SrvClass  %Use  %Use  Dev Volser Type Mnt  Resp Act. %R
- - - - - Time- - - - - ThisJob AllJobs  Num ----- - - - - Sta Time Rate Qu
DC$HSM D 09:46 S STCNRM    35.99 11.06 308 BAB317 3390 PRV 12.6 8.89 0
BOLTWS4 09:46 T TSONRM     2.26 11.06 308 BAB317 3390 PRV 12.6 8.89 0
XTSTFPAS 09:46 S STCPAS     0.97 11.06 308 BAB317 3390 PRV 12.6 8.89 0
XCFAS    09:46 S SYSTEM     0.65 11.06 308 BAB317 3390 PRV 12.6 8.89 0
XTSTFPAS 09:46 S STCPAS     0.65 11.06 308 BAB317 3390 PRV 12.6 8.89 0
XTSTFPAS 09:46 S STCPAS     0.65 11.06 308 BAB317 3390 PRV 12.6 8.89 0
AAOTSHD  09:46 S STCNRM     0.65 11.06 308 BAB317 3390 PRV 12.6 8.89 0
BMVRTR4  09:46 T TSONRM     0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
*MASTER* 09:46 S SYSTEM     0.48 11.06 308 BAB317 3380 PRV 12.6 8.89 0
JES2     09:46 S STCNRM     0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
PTR3     09:46 T TSONRM     0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
BOLJSC4  09:46 T TSONRM     0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
BBEJCH1  09:46 T TSONRM     0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
IMS71Y   09:46 S SYSTEM     0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
```

Based on your recent investigations, you know that at least one of the jobs delayed by this device belongs to the workload that you selected at the beginning of “Troubleshooting” on page 3-24. Because the job is delayed, the workload is also delayed. If you reduce the contention for the device, you reduce the delay experienced by all of the jobs—and thus reduce the delay for the corresponding workloads.

There are a few ways that you can achieve this goal. One way is to cancel some of the jobs contending for the device—but this method is dangerous if you are not sure what the job does and what else might be depending on it. Another method is to move some data sets to another volume. Still another solution—although a temporary one—is to simply reassign priority to one or more jobs.

To see how to use the system programmer utilities, follow this procedure:

Step 1 Sort on %Use ThisJob.

Step 2 Look at the first couple of values; the highest values are at the top.

This field displays the jobs that are placing the biggest strain on the device, so you know which jobs to reassign.

In Figure 4-1 on page 4-2, DC\$HSMD is the only job that is using volser BAB317 to any significant degree. If you reassign the priority of DC\$HSMD, you afford DC\$HSMD less access to the CPU, and thus less access to BAB317.

Step 3 Write down the names of any jobs to which you want to reassign priority.

You will need these names later.

Step 4 On the **COMMAND** line, type **SYSPROG** and press **Enter**.

SYSPROG displays the full list of system programmer utilities available with MAINVIEW for OS/390, as shown in Figure 4-2.

Figure 4-2 SYSPROG Services Menu

```

----- SYSPROG SERVICES MENU ----- ROW 1 TO 23 OF 94
COMMAND ==>                                SCROLL ==> PAGE
Valid line commands are:                    Valid COMMANDs are: TARGET - SYSE
S - Select service panel                    L - Locate a service in the list
E - Execute service                          service - Execute a service
                                           MENU == RXAMAIN

```

Service	Parameters	Description
ALLOCATE		MARKS DEVICE AS ALLOCATED AND ONLINE
APF		LIST CURRENT APF DATA SETS AND VOLUMES
ASM		DISPLAY AUXILIARY STORAGE MANAGER DATA
ASVT		DISPLAY ADDRESS VECTOR TABLE INFORMATION
AUTHTSO		DISPLAY/BUILD TSO LISTS FROM IKJTSOXX
BBXS		DISPLAY INFORMATION FOR BBX
CDE		LIST INFORMATION ABOUT LOADED MODULES
CHAP		CHANGE ADDRESS SPACE DISPATCHING PRIORITY
CLEAR		CLEAR SYSTEM DUMP DATA SETS
CONSOLES		DISPLAY MCS CONSOLE BUFFER USAGE
CPU		DISPLAY CPU USAGE BY JOB
CSA		DISPLAY SYSTEM USAGE OF CSA
CSMON		DISPLAY COMMON STORAGE USAGE BY ADDRESS SPACE
CTCB		ABNORMALLY TERMINATES THE TASK YOU SELECT
DEALLOC		MARKS DEVICE AS DEALLOCATED
DEVIATN		DISPLAY CONFIGURATION DEVIATION
DOMAIN		DISPLAY SRM DOMAINS TABLE
DONTSWAP		SET A MEMORY NON-SWAPPABLE
DSNAME		DISPLAY DATA SET ATTRIBUTES AND VOLUMES
DUMP		DISPLAY MEMORY IN HEX
DVIEW		VIEW DASD CCHHR/DSN/DSCB/EXTENTS/FILES/LABEL
EDTINFO		DISPLAY EDT INFORMATION
ENQUEUES		DISPLAY ENQUEUE CONFLICTS

Notice that the SYSPROG Services Menu fully replaces the familiar MAINVIEW for OS/390 window interface. That is because the system programmer utilities operate in an ISPF panel environment, rather than in a window environment. This panel environment offers one big advantage over the standard ISPF interface: the ability to affect other target systems (notice the **TARGET** field in the upper right corner).

You will not use this capability now, but remember it for future reference. You will return to the window environment after you finish with SYSPROG.

Step 5 Scan the **Description** column until you see CHANGE ADDRESS SPACE DISPATCHING PRIORITY.

This service is called the CHAP service.

Step 6 Next to **CHAP**, type **S** and press **Enter**.

The CHAP Service panel is displayed, as shown in Figure 4-3.

Figure 4-3 CHAP Service Panel

```

----- SYSPROG - CHAP Service -----
COMMAND ===>
ASNAME ===> BMVWRW1 (Address space name/ID)
Press ENTER to execute service
      END to cancel request

Changes the internal dispatching priority of an
address space. After executing this service,
you will be prompted for a value that increases,
decreases, or assigns an absolute value to
the dispatching priority of the address space.

Note: This service changes the priority of the
      entire address space, which effectively
      changes all tasks in the address space.

Press HELP for more information.

```

SCROLL ==> PAGE											
MM:SS====MVMVS====D===59											
Type	Mnt	Resp	Act.	%R							
----	Sta	Time	Rate	Qu							
3380	PRV	21.5	1.43	0							
3390	PRV	5.1	9.49	0							
3390	PRV	14.6	2.10	0							
3390	PRV	75.1	2.38	0							
3390	PRV	14.6	2.10	0							
3390	PRV	5.1	9.49	0							
3390	PRV	8.3	1.44								
3390	STG	14.7	1.38								
3390	PRV	8.0	0.58								
3380	PRV	2.2	1.62								
3380	PRV	3.7	1.42								
3390	PRV	12.7	0.37								
3390	PRV	8.0	1.54	0							
3380	PRV	2.4	3.24								
3390	PRV	6.8	0.59								
AAODM5B	10:10	S	STCNRM	0.42	2.18	314	BAB325	3390	PRV	8.3	1.44
XCFAS	10:10	S	SYSTEM	0.42	0.62	23E	SYM030	3380	PRV	4.8	0.76
OLCC41VT	10:10	S	STCNRM	0.42	0.93	D3E	BAB328	3390	PRV	6.1	1.24

Step 7 In the **ASNAME** field, type the name of the job.

Using DC\$HSMD as an example, the screen would look like Figure 4-4 on page 4-5.

Figure 4-4 CHAP Service Panel for DC\$HSMD

```

----- SYSPROG - CHAP Service -----
COMMAND ==>
ASNAME ==> DC$HSMD (Address space name/ID)
Press ENTER to execute service
      END to cancel request
Changes the internal dispatching priority of an
address space. After executing this service,
you will be prompted for a value that increases,
decreases, or assigns an absolute value to
the dispatching priority of the address space.
Note: This service changes the priority of the
      entire address space, which effectively
      changes all tasks in the address space.
Press HELP for more information.
-----
MM:SS====MVMVS====D===59
Type Mnt  Resp  Act. %R
---- Sta  Time  Rate Qu
3380 PRV  21.5  1.43  0
3390 PRV   5.1  9.49  0
3390 PRV  14.6  2.10  0
3390 PRV  75.1  2.38  0
3390 PRV  14.6  2.10  0
3390 PRV   5.1  9.49  0
3390 PRV   8.3  1.44
3390 STG  14.7  1.38
3390 PRV   8.0  0.58
3380 PRV   2.2  1.62
3380 PRV   3.7  1.42
3390 PRV  12.7  0.37
3390 PRV   8.0  1.54  0
3380 PRV   2.4  3.24
3390 PRV   6.8  0.59
AAODM5B 10:10 S STCNRM   0.42   2.18  314 BAB325 3390 PRV  8.3  1.44
XCFAS  10:10 S SYSTEM   0.42   0.62  23E SYM030 3380 PRV  4.8  0.76
OLCC41VT 10:10 S STCNRM   0.42   0.93  D3E BAB328 3390 PRV  6.1  1.24

```

Step 8 To execute the CHAP service, press **Enter**.

The SYSPROG Services Output panel is displayed, as shown in Figure 4-5.

Figure 4-5 SYSPROG Services Output Panel

```

-----SYSPROG Services Output----- Row 1 of 4
COMMAND ==> CHAP,DC$HSMD          SCROLL ==> PAGE
ENTER CHANGE AS +NN -NN .NNN ANNN.  PREFIX WITH X FOR HE TARGET - SYSE
REPLY ==>
-----
13:57:45 CMD=CHAP,DC$HSMD
AMTX11I TSU01234 DC$HSMD IKJJOB1 PRTY FE (254) PGP 227/ 1
AMTX12A ENTER CHANGE AS +NN -NN .NNN ANNN.  PREFIX WITH X FOR HEX
***** Bottom of data *****

```

The job's current priority is 254, as specified by PRTY FE in Figure 4-5. The SYSPROG Services Output panel allows you to assign a new priority to the job that you named.

Step 9 To reduce the current priority to 54, type **A54** in the **REPLY** field, and then press **Enter**.

Your screen should look like Figure 4-6.

Figure 4-6 New Priority for DC\$HSMD: 54

```

-----SYSPROG Services Output----- Row 8 of 9
COMMAND ===>  CHAP,DC$HSMD                SCROLL ===> PAGE
                                           TARGET - SYSE

-----
AMTX11I TSU01234 DC$HSMD  IKJJOB1  PRTY DF (54) PGP 227/ 1
-----
***** Bottom of data *****
    
```

The priority for DC\$HSMD is now 54, or 200 less than its original value of 254.

Step 10 Press **PF3** repeatedly until you return to the **MAINVIEW** for OS/390 window environment.

JUDEV should still be displayed, as shown in Figure 4-7.

Figure 4-7 JUDEV after Reducing the DC\$HSMD Priority

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ===>                SCROLL ===> PAGE
CURR WIN ===> 1            ALT WIN ===>
>W1 =JUDEV=====SYSE=====DDMMYYYY==HH:MM:SS==MVMVS==D==99
C Jobname Intvl T SrvClass %Use %Use Dev Volser Type Mnt Resp Act. %R
- - - - - Time- - - - - ThisJob AllJobs Num - - - - - Sta Time Rate Qu
BOLTWS4 09:46 T TSONRM 2.26 11.06 308 BAB317 3390 PRV 12.6 8.89 0
XTSTFPAS 09:46 S STCPAS 0.97 11.06 308 BAB317 3390 PRV 12.6 8.89 0
XCFAS 09:46 S SYSTEM 0.65 11.06 308 BAB317 3390 PRV 12.6 8.89 0
XTSTFPAS 09:46 S STCPAS 0.65 11.06 308 BAB317 3390 PRV 12.6 8.89 0
XTSTFPAS 09:46 S STCPAS 0.65 11.06 308 BAB317 3390 PRV 12.6 8.89 0
AAOTSHD 09:46 S STCNRM 0.65 11.06 308 BAB317 3390 PRV 12.6 8.89 0
BMVRTR4 09:46 T TSONRM 0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
*MASTER* 09:46 S SYSTEM 0.48 11.06 308 BAB317 3380 PRV 12.6 8.89 0
JES2 09:46 S STCNRM 0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
PTR3 09:46 T TSONRM 0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
BOLJSC4 09:46 T TSONRM 0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
BBEJCH1 09:46 T TSONRM 0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
IMS71Y 09:46 S SYSTEM 0.48 11.06 308 BAB317 3390 PRV 12.6 8.89 0
DC$HSMD 09:46 S STCNRM 0.42 11.06 308 BAB317 3390 PRV 12.6 8.89 0
    
```

You can see that DC\$HSMD now accounts for only 42 percent of BAB317's total utilization—a significant improvement.

Tip: The SYSPROG Easy Menu simplifies using system programmer services by categorizing them by function and giving them descriptive names. To access this menu, follow these steps:

1. Display EZM390.
2. Move the cursor to **SYSPROG Services** under the **Utilities** option, and then press **Enter**.

You are presented with the SYSPROG Easy Menu, EZMSPROG.

3. Move the cursor to the option that meets your needs, and then press **Enter**.

A pop-up menu is displayed with clearly named options that are specific to your choice.

Chapter 5 Displaying Historical Data

You have seen two different time frames provided by MAINVIEW for OS/390 views: real-time and interval. MAINVIEW for OS/390 offers a third version of OS/390 data called historical data, which is described in this chapter. Historical data shows you the system as it existed an hour ago, yesterday, last week, last month, or last year.

This chapter includes the following topics:

Determining Data Availability	5-2
Using the TIME Command.	5-4
Displaying Data from Multiple Intervals	5-8
Moving Quickly between Time Periods	5-13
Understanding the Time and Duration Fields	5-14
Viewing Historical Data	5-15
Understanding Summarization	5-16

Historical data consists of your data from a specified recent interval and its preceding intervals. Using the **TIME** command, you can specify intervals from any time frame for which data exists on your system. You can also use the **Intvl Time**, **Interval Date**, and **Hr** (Hour) fields to determine when the data was collected and to hyperlink to particular time frames. These fields are discussed in “Viewing Historical Data” on page 5-15.

You saw an example of historical data when you used the hyperlink on the **SYSSUM** view in Figure 3-16 on page 3-22—each field contained a hyperlink to the **TIME** command. You will now examine the **TIME** command.

Determining Data Availability

In this section, you will learn how to determine what data is available.

When you need historical data, you must make sure the data is available in one of the currently allocated historical data sets. To see available historical data, follow this procedure:

Step 1 To clear the screen, type **RESet**.

Step 2 On the **COMMAND** line, type **EZM390**.

The OS/390 Eazy Menu is displayed

Step 3 Under the **Utilities** option, select the **Environment Settings** option and press **Enter**.

The Environment Settings screen is displayed.

Step 4 Under the **Miscellaneous** category, select the **Historical Data Sets** option and press **Enter**.

DSLIS displays a list of the historical data sets that are currently available, as shown in Figure 5-1 on page 5-3.

Figure 5-1 Sample DSLIST View

```

16FEB2001 15:44:10 ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
>W1 =DSLISL=====DXTSTJ====*=====16FEB2001==15:44:10====MVMVS====D==12
C DDNAME   From Date  Time  To Date    Time  Rec Status Pending  Data set name
- - - - -
HISTDS12 15FEB2001 13:15 16FEB2001 15:30 Yes Active ***** BB.XTSTJ.BIG.I
HISTDS11 14FEB2001 12:45 15FEB2001 13:15 Yes Error  ***** BB.XTSTJ.BIG.I
HISTDS10 12FEB2001 14:00 14FEB2001 12:45 Yes Closed ***** BB.XTSTJ.BIG.I
HISTDS09 11FEB2001 02:00 12FEB2001 14:00 Yes Closed ***** BB.XTSTJ.BIG.I
HISTDS08 09FEB2001 11:00 11FEB2001 02:00 Yes Closed ***** BB.XTSTJ.BIG.I
HISTDS07 08FEB2001 04:45 09FEB2001 11:00 Yes Closed ***** BB.XTSTJ.BIG.I
HISTDS06 06FEB2001 06:30 08FEB2001 04:45 Yes Closed ***** BB.XTSTJ.BIG.I
HISTDS05 04FEB2001 16:45 06FEB2001 06:30 Yes Closed ***** BB.XTSTJ.BIG.I
HISTDS04 03FEB2001 01:00 04FEB2001 16:45 Yes Closed ***** BB.XTSTJ.BIG.I
HISTDS03 01FEB2001 08:00 03FEB2001 01:00 Yes Closed ***** BB.XTSTJ.BIG.I
HISTDS02 30JAN2001 08:30 01FEB2001 08:00 Yes Closed ***** BB.XTSTJ.BIG.I
HISTDS01 28JAN2001 16:56 30JAN2001 08:30 Yes Closed ***** BB.XTSTJ.BIG.I

```

In Figure 5-1, 12 data sets are available, spanning the dates between January 28, 2001 and the current date (February 16, 2001). In fact, today's data is being recorded at the end of every interval in the data set HISTDS12.

Note: You should check DSLIST before using the TIME command because if you specify the TIME command for an unavailable date and time, you will get an error message.

Data from recording intervals between From Date and To Date might not be available for any of the following reasons:

- Data was not collected.
- Data is offline.
- Data was overwritten by new data.
- A data set has an error.

If you do not see the date or time that you want on the DSLIST view, the data set that you need might have been archived, either on tape or in an offline data set. Or, the data might have been purged. To find out the reason, see your product administrator. (If you *are* the administrator, see the *MAINVIEW*[®] Administration Guide.)

Using the TIME Command

This section shows you how to use the TIME command for displaying historical data. The syntax for the command is

```
TIME [date time [duration|NEXT|PREV]] [DOW mask TOD mask]
```

In this syntax, `date` and `time` specify the date and time at the end of the interval at which you want to look. (For example, to see data collected between 9:00 and 10:00, you would specify 10:00 as the time.)

Experiment with the TIME date and time parameters:

- Step 1** Display the SYSSTAT view in window 1.
- Step 2** To open a second window:
- 2.A** On the **COMMAND** line, type **HS**.
 - 2.B** Position the cursor at the point on the screen where you want the next view to appear, and then press **Enter**.

The screen splits horizontally, as shown in Figure 5-2.

Figure 5-2 SYSSTAT with an Open Window

```

26FEB2001 13:52:18 ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> CSR
CURR WIN ==> 2 ALT WIN ==>
W1 -SYSSTAT-----DXTSTJ---*-----26FEB2001--13:52:19---MVMVS---D---1
C SMFID %Util %Util %Util %Util I/O %Ut-R %Ut-R %Ut-R %Ut-R I/O
- ----- CPU Bat TSO STC Intr CPU Bat TSO STC IntrR

T2 =====

```

As you can see from the window information line, the current time is 13:52.

- Step 3** Display the SYSSTAT view in window 2, as shown in Figure 5-3 on page 5-5.

Make sure that yesterday's date and time are contained in one of the currently allocated historical data sets.

Figure 5-3 SYSSTAT in Both Windows

```

26FEB2001 13:53:45 ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 2          ALT WIN ==>
W1 -SYSSTAT-----DXTSTJ---*-----26FEB2001--13:52:19---MVMVS---D---1
C SMFID %Util %Util %Util %Util I/O %Ut-R %Ut-R %Ut-R %Ut-R I/O
- ----- CPU Bat TSO STC Intr CPU Bat TSO STC IntrR

H2 =SYSSTAT=====DXTSTJ===*=====26FEB2001==13:53:45====MVMVS====D====1
C SMFID %Util %Util %Util %Util I/O %Ut-R %Ut-R %Ut-R %Ut-R I/O
- ----- CPU Bat TSO STC Intr CPU Bat TSO STC IntrR

```

Step 4 On the **COMMAND** line, type **TIME** to set the time frame for window 2.

The Set Time Frame dialog box is displayed.

Step 5 Type yesterday's date in the **End Date** field.

Be sure to specify the date in the same format as the date in the upper left corner of your screen.

Example: If today is 26FEB2001 and your screen looks like Figure 5-3, you would type **TIME** on the **COMMAND** line to display the dialog box, and then replace today's date with yesterday's date of 25FEB2001, as shown in Figure 5-4.

Figure 5-4 Changing the End Date in the Set Time Frame Dialog Box

```

----- SET TIME FRAME -----
COMMAND ==>

Requested Time Frame:
End Date ==> 25FEB2001      (*, =, or ddmmyyyy)
End Time ==> 13:52         (*, =, or hh:mm)
Duration ==> 1I           (*, =, NEXT, PREV, TODAY, MONTH,
                          nnnnI, nnnnM, nnnnH, nnnD, or nnW)
DOW Mask ==> EVERYDAY     (EVERYDAY, WEEKDAYS, WEEKENDS)
TOD Mask ==> ALLDAY       (ALLDAY, PRIMESHIFT, SWINGSHIFT,
                          GRAVEYARDSHIFT)

Data in the Requested Time Frame:
Interval ==> 1M           (Length, in minutes, of one interval)
End Date ==> 26FEB2001     (End date of data)
End Time ==> 13:52         (End time of data)
Duration ==> 1M           (Minutes spanned by data)
DOW Mask ==> EVERYDAY     (Day-of-week mask)
TOD Mask ==> ALLDAY       (Time-of-day mask)

Type END to set the window's requested time frame
CANCEL to quit without setting

```

The date field matches the format shown in the upper left corner: day, month, and year.

Step 6 Press **PF3** to exit the dialog box, which has set window 2 for yesterday at 13:52.

Step 7 Type the **SYSSTAT** command.

CURR WIN was set automatically to window 2 when you opened the second window; therefore, SYSSTAT is displayed in that window. Your screen displays SYSSTAT in window 2, as shown in Figure 5-5.

Figure 5-5 SYSSTAT in Two Time Periods

```

26FEB2001 13:53:45 ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                               SCROLL ==> CSR
CURR WIN ==> 2          ALT WIN ==>
W1 -SYSSTAT-----DXTSTJ---*-----26FEB2001--13:53:45---MVMVS---D---1
C SMFID  %Util %Util %Util %Util  I/O  %Ut-R %Ut-R %Ut-R %Ut-R  I/O
- ----- CPU   Bat   TSO   STC  Intr  CPU   Bat   TSO   STC  IntrR

H2 =SYSSTAT=====DXTSTJ===*=====25FEB2001==14:00:02====MVMVS====D====1
C SMFID  %Util %Util %Util %Util  I/O  %Ut-R %Ut-R %Ut-R %Ut-R  I/O
- ----- CPU   Bat   TSO   STC  Intr  CPU   Bat   TSO   STC  IntrR
SYSD    22.5           1.1  21.5  35.0  16.6           4.1  12.4  19.6

```

You are now looking at two versions of SYSSTAT for different time periods: one version as the system exists at this moment and one version as it existed yesterday at the same time. With the two time frames displayed in the same screen, it is easy to compare the two versions to see if the problem is chronic or just a temporary abnormality.

Notice that the window status indicator for window 2 changed from W2 to H2. The H stands for *historical data*.

In addition, notice that the window 2 window information line displays 14:00, not 13:52. That is because historical data is displayed as it existed at the end of the interval containing the specified time. In this case, you specified 13:52 on the TIME command, but 14:00 is the end of the interval containing the time 13:52.

Step 8 Press **Enter**.

Notice that although the data in window 1 is updated, the data in window 2 is not updated. This makes sense: historical data cannot be updated because it represents the system at a fixed point in time.

For more examples of using the TIME command, see the *MAINVIEW[®] for OS/390 User Guide and Reference*.

Note: An alternative way to use the TIME command is to type **TIME** on the **COMMAND** line and press **Enter**. This opens a dialog box, Set Time Frame, as shown in Figure 5-6.

Figure 5-6 Set Time Frame Dialog Box

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS  -----
COMMAND  ===>
CURR WIN  ===> 1          ALT WIN  ===>
>W1 =DSL1ST=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D===30

-----  SET TIME FRAME  -----
COMMAND  ===>

Requested Time Frame:
End Date  ===> *          (*, =, or ddmmmyyyy)
End Time  ===> *          (*, =, or hh:mm)
Duration  ===> 1I        (*, =, NEXT, PREV, TODAY, MONTH,
                        nnnnI, nnnnM, nnnnH, nnnD, or nnW)
DOW Mask  ===> EVERYDAY  (EVERYDAY, WEEKDAYS, WEEKENDS)
TOD Mask  ===> ALLDAY    (ALLDAY, PRIMESHIFT, SWINGSHIFT,
                        GRAVEYARDSHIFT)

Data in the Requested Time Frame:
Interval  ===> 1M        (Length, in minutes, of one interval)
End Date  ===> 16FEB2002 (End date of data)
End Time  ===> 15:44     (End time of data)
Duration  ===> 1M        (Minutes spanned by data)
DOW Mask  ===> EVERYDAY  (Day-of-week mask)
TOD Mask  ===> ALLDAY    (Time-of-day mask)

Type END to set the window's requested time frame

```

The default values are

- today's date
- current time
- duration of one recording interval
- day-of-week (DOW) mask set to EVERYDAY
- time-of-day (TOD) mask set to ALLDAY

These default settings represent the way that you look at views in nonhistorical mode.

To look at historical data, follow this procedure:

- Step 1** Change the value for **End Date**.
- Step 2** Change the value for **End Time**.
- Step 3** Change the value for **Duration**.

Step 4 Press **PF3** to return to the view.

Note: Replace the current DOW and TOD values with the desired days and shifts.

Tip: After you have used the TIME command or the Set Time Frame dialog box for a window, all of the views sent to that window reflect the system as it existed at the date and time that you specified. This condition remains true until you issue another TIME command or until the window is closed.

Displaying Data from Multiple Intervals

In this section, you will learn how to display data from multiple intervals.

You have seen how, with the TIME command, you can look at data as it existed at the end of an interval. If you want to see data that spans a larger period of time—for example, 30 minutes, four Extractor intervals, a 24-hour period, a week, or a month—you can use the TIME duration parameter along with the date and time parameters.

The syntax for the TIME command is

```
TIME [date time [duration|NEXT|PREV]] [DOW mask|TOD mask]
```

In this syntax, *duration* is the period of time over which you want to gather data.

The values for the duration parameter are

nnnnu

where

nnnn Indicates the number of hours, minutes, or intervals in the duration.

u Indicates the unit of time:

- I (intervals)
- M (minutes)
- H (hours)
- D (up to 416 days)
- W (up to 59 weeks)

- TODAY OR TDAY Specifies today's intervals since midnight.
- MONTH Specifies one month.
- * Changes the duration back to the default, which is one interval.
- = Keeps the duration at its current value.

Tip: You can use an asterisk (*) or an equal (=) sign in place of the time, date, or duration parameters.

For example, suppose that CPU utilization was excessively high between 11 A.M. and 12 P.M. today, which is not a peak activity period for your site. Compare today's CPU utilization from 11 A.M. to 12 P.M. to yesterday during the same time frame to see if the problem existed then. Perhaps something occurs regularly during this time period that would explain the increase.

To Perform a Comparison:

Step 1 To clear the screen, type **RESet**.

Determine what the system was doing today between 11:00 A.M. and 12:00 P.M.

Step 2 To set the time frame for window 1, display **CPUSTAT** in window 1.

Step 3 On the **COMMAND** line, type the following command, and then press **Enter**:

TIME * 12:00 1h

where

* Indicates that you want today's date.

12:00 1h Indicates that you want to summarize the data for the one-hour period ending at 12:00.

Step 4 Type **INclude TIME** and press **Enter**.

The screen looks like Figure 5-7.

Figure 5-7 CPUTAT with a Duration of One Hour

```

26FEB2001 16:32:52 ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 2          ALT WIN ==>
>H1=CPUTAT=====SYSE=====*=====26FEB2001==12:00:00=60M====MVMVS====D====8
C No  Intvl          CPU Busy(I)    TSO  BAT  STC    CPU Busy(R)    TSO  BAT  STC
- --  Time-----    0....50...100 Busy Busy Busy    0....50...100 Busy Busy Busy
00  11:15:00  99.6 *****  18.0 12.3 12.3 99.9 *****  8.3    24.4
01  11:15:00  99.7 *****  19.2 15.3 15.2 99.0 *****  4.8    12.4
00  11:30:00  99.6 *****  18.0 12.3 12.3 99.9 *****  8.3    24.4
01  11:30:00  99.7 *****  19.2 15.3 15.2 99.0 *****  4.8    12.4
00  11:45:00  99.6 *****  18.0 12.3 12.3 98.9 *****  8.3    24.4
01  11:45:00 100.7 *****  19.2 15.3 15.2 99.0 *****  4.8    12.4
00  12:00:00 100.6 *****  18.0 12.3 12.3 98.9 *****  8.3    24.4
01  12:00:00 100.7 *****  19.2 15.3 15.2 99.0 *****  4.8    12.4

```

There are several important things to note about this screen:

- One row of data is returned for each entity (in this case, each CPU) and each interval requested (in this case, you requested 4 intervals of 15 minutes each).
- The **Intvl Time** field tells you the ending time of the data-collection interval for every row. In contrast to the SYSSUM view, time intervals in CPUTAT are not limited to intervals recorded during the current MAINVIEW for OS/390 session.

If you want to include this field automatically in every view, it can be added by doing the following:

1. From the **MAINVIEW Selection Menu**, select **Option 0 Parameters and Options**.
2. From the **Terminal Session Parameter Select** menu, select **Option 1 Session Parameters**.
3. From the **MAINVIEW Parameters Editors** menu, select **Option 2 Display**.
4. Move the cursor to the **Show Time** field, and then type **Y**.
5. To save your updates, press **End**.

To hide the field from views when you do not want it displayed, type **EXclude TIME** on the **COMMAND** line; type **INclude TIME** to redisplay the field.

Note: If you want to see the date on which the data was gathered, use the **INclude DATE** command to reveal the **Intvl Date** field. This is primarily useful if your time frame spans more than a 24-hour period.

- The time field on the window information line contains the time at which the last interval in the time frame ended—in this case, 12:00.
- The duration field on the window information line tells you the number of minutes that are spanned by the data in the view. In this case, you specified 1 hour, and 4 intervals were available, which is the same as 60 minutes (60M).
- An arrow appears at the beginning of the window information line to indicate that the fields pushed out by the **Time** field are still available by scrolling to the right.

Step 5 Open a second window so that you can see what CPUSTAT was doing yesterday from 11 A.M. to 12 P.M.

Step 6 Check to make sure that yesterday's date and time are contained in one of the currently allocated historical data sets.

Step 7 Display CPUSTAT in window 2.

Step 8 Set the time frame for window 2 by issuing this command on the **COMMAND** line:

```
TIME <date> 12:00 1h
```

where *date* is yesterday's date.

For example, if your screen looked like Figure 5-8:

Figure 5-8 CPUSTAT and an Empty Window

```

26FEB2001 15:39:44 ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 2          ALT WIN ==>
>H1=CPUSTAT=====SYSE=====*=====26FEB2001====12:00-60M====MVMVS====D====8
C No  Intvl          CPU Busy(I)    TSO  BAT  STC    CPU Busy(R)    TSO  BAT  STC
- --  Time-----    0....50...100 Busy Busy Busy  0....50...100 Busy Busy Busy
00 11:15:00 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:15:00 99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
00 11:30:00 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:30:00 99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
00 11:45:00 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:45:00 100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
T2=====
    
```

You would type

TIME 25FEB2001 12:00 =

Your screen would now look like Figure 5-9.

Figure 5-9 CPUSTAT in Two Time Periods

```

26FEB2001 15:48:06 ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> TIME 25FEB2002 12:00          SCROLL==> > PAGE
CURR WIN ==> 2          ALT WIN ==>
>H1=CPUSTAT=====SYSE=====*=====26FEB2001====12:00=60M====MVMVS====D====8
C No  Intvl          CPU Busy(I)    TSO  BAT  STC    CPU Busy(R)    TSO  BAT  STC
- --  Time-----    0....50...100 Busy Busy Busy  0....50...100 Busy Busy Busy
00 11:15:00 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:15:00 99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
00 11:30:00 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:30:00 99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
00 11:45:00 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:45:00 100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
>H2=CPUSTAT=====SYSE=====*=====25FEB2001====12:00=60M====MVMVS====D====8
C No  Intvl          CPU Busy(I)    TSO  BAT  STC    CPU Busy(R)    TSO  BAT  STC
- --  Time-----    0....50...100 Busy Busy Busy  0....50...100 Busy Busy Busy
00 11:15:00 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:15:00 99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
00 11:30:00 100.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:30:00 100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
00 11:45:00 100.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:45:00 100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
    
```

There was high CPU utilization between the hours of 11:00 A.M. and 12:00 P.M., both today and yesterday. Continue with “Moving Quickly between Time Periods” on page 5-13.

Moving Quickly between Time Periods

In this section, you will learn how to move quickly between time periods in order to effectively compare intervals and associated system performances.

You can determine the amount of time that this high CPU utilization lasted by using the NEXT and PREV parameters. Both NEXT and PREV use the duration that was most recently specified to move the time frame either forward (NEXT) or backward (PREV) by the same amount.

To move the time frames, follow this procedure:

Step 1 On the COMMAND line, type **TIME = = NEXT**.

The screen will look like Figure 5-10.

Figure 5-10 Using TIME NEXT to Cycle through Time Frames

```

26FEB2001 14:32:29 ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 2          ALT WIN ==>
>H1=CPUSTAT=====SYSD=====*=====26FEB2001====12:00-60M===MVMVS===D=====8
C No  Intvl      CPU Busy(I)   TSO  BAT  STC   CPU Busy(R)   TSO  BAT  STC
- --  Time-----  0....50...100 Busy Busy Busy   0....50...100 Busy Busy Busy
00 11:15:00 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:15:00 99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
00 11:30:00 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:30:00 99.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
00 11:45:00 99.6 ***** 18.0 12.3 12.3 98.9 ***** 8.3 24.4
01 11:45:00 100.7 ***** 19.2 15.3 15.2 99.0 ***** 4.8 12.4
>H2=CPUSTAT=====SYSD=====*=====26FEB2001====13:00-60M===MVMVS===D=====8
C No  Intvl      CPU Busy(I)   TSO  BAT  STC   CPU Busy(R)   TSO  BAT  STC
- --  Time-----  0....50...100 Busy Busy Busy   0....50...100 Busy Busy Busy
Busy
00 12:15:00 52.6 ***** 18.0 12.3 12.3 11.9 ** 8.3 24.4
01 12:15:00 45.7 ***** 19.2 15.3 15.2 12.0 ** 4.8 12.4
00 12:30:00 33.6 ***** 18.0 12.3 12.3 13.9 ** 8.3 24.4
01 12:30:00 44.7 ***** 19.2 15.3 15.2 11.0 ** 4.8 12.4
00 12:45:00 44.6 ***** 18.0 12.3 12.3 21.9 *** 8.3 24.4
01 12:45:00 45.7 ***** 19.2 15.3 15.2 19.0 *** 4.8 12.4

```

The current window was set to 2, so check the window 2 information line. It now shows 13:00 instead of 12:00.

As you can see, CPU usage was normal from 12:00 to 13:00. You can compare CPU utilization from 10:00 to 11:00 in one window and from 12:00 to 13:00 in the other window.

Step 2 In window 1, type **TIME = = PREV** to check the hour from 10:00 to 11:00.

You might want to define a **PF** key to `TIME == PREV` or `TIME == NEXT` so that you can move through subsequent intervals in historical mode just by pressing a single key.

Understanding the Time and Duration Fields

In this section, you will learn how to use the time and duration fields.

You might find that the time and duration fields on the window information line do not always contain the values that you expect. That is because these fields reflect the *actual data* displayed, which might not be the same as what you requested on the `TIME` command.

For example, if it is 9:00 A.M. and you want to look at `SYSSTAT` to review system activity between 5:00 A.M. and 8:00 A.M. this morning, display `SYSSTAT`, and then type this command:

TIME * 8:00 3h

After doing so, you expect the window information line to look like this:

```
H1=SYSSTAT=====SYSE====*====01MAR2002====8:00=180M===MVMVS====D===24>
```

8:00 is the last interval in the duration that you requested; the three-hour period that you are interested in is equivalent to 180 minutes.

However, the window information line actually looks like this:

```
H1=SYSSTAT=====SYSE====*====01MAR2002====7:15=120M===MVMVS====D===21>
```

Data is not always available for the intervals that you request. Sometimes the PAS is shut down in the middle of a recording interval, or the recording mode is changed from CPM to IPM, or some other event creates gaps in the data recorded to the historical data set. The data that appears on the window information line represents the data that is actually displayed.

In our example, 7:15 was the last interval within the time frame for which data was recorded. There simply was not any data recorded at 7:30, 7:45, and 8:00—that is why the window information shows 7:15 instead of 8:00.

If there was no data for three of the intervals, why is there only data for eight intervals (120 minutes), rather than nine intervals (135 minutes)? The answer: MAINVIEW uses the time between the *first* and *last* available interval. In this case, there must have been an interval's worth of data missing from 5:00 to 5:15 and, as a result, the interval count was reduced by an additional interval—or another 15 minutes.

There might have been some other gaps in the record between 5:15 and 7:15 as well; if so, they were too short to have a significant impact on the data displayed. MAINVIEW makes adjustments so that you get the most accurate picture possible of the data actually displayed in the view.

Tip: The time field always contains the end of the last interval for which data was available, and the number of intervals for which data was actually available, (normalized over the time frame that you requested).

Viewing Historical Data

In this section, you will view historical data and find out when to summarize the data.

When viewing summary data (views ending with the letter Z) or most kinds of tabular data, you can easily determine when the data was collected. The **Intvl Time**, **Interval Date**, and **Hr** (Hour) fields contain this information. They are excluded by default.

Note: Historical data is available for any tabular view whose data is written to historical data sets. For more details, see the *MAINVIEW® for OS/390 User Guide and Reference*

To display the **Intvl Time**, **Interval Date**, and **Hr** (Hour) fields, follow this procedure:

Step 1 Display the SYSSTAT view.

Step 2 On the **COMMAND** line, type **CUST**.

The View Customization panel is displayed.

Step 3 On the **COMMAND** line, type **E**.

The excluded fields are displayed, as shown in Figure 5-11 on page 5-16.

Figure 5-11 Including the Intvl Time, Interval Date, and Hr Fields

```

----- VIEW CUSTOMIZATION - SYSSTAT -----
OPTION ==> E                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude     P - Parameters E - Hide excluded
L - Filter     T - Threshold H - Hyperlink Z - Summarize K - Show template

-----< SHOW EXCLUDED COLUMNS >-----
THE VIEW IS NOW DISPLAYING ALL THE EXCLUDED (OR HIDDEN) COLUMNS.  EXCLUDED
COLUMNS ARE MARKED WITH HIGHLIGHTED COLUMN LETTERS.  YOU CAN CUSTOMIZE AN
EXCLUDED COLUMN (FOR INSTANCE, PLACE A FILTER ON IT).  YOU MAY ALSO MAKE THE
COLUMN PERMANENTLY DISPLAYABLE BY USING THE INCLUDE OPTION.
IF YOU SELECT E - HIDE EXCLUDED, THE EXCLUDED COLUMNS WILL AGAIN BE HIDDEN.

-----
  A   B       C   D E   F   G   H   I   J   K   L   M
C SMFID Interval  Intvl Hr %Util %Util %Util %Util I/O %Ut-R %Ut-R %Ut-R %Ut
- ---- Date----- Time- -- CPU Bat TSO STC Intr CPU Bat TSO S
SYSD 04DEC2001 13:00 8 44.0 10.1 19.9 14.0 317.8 59.9 22.5 37.4

```

Columns B, C, and D display excluded fields. For more information about any of these columns, place your cursor on the desired column and press the **PF1** (Help) key.

Intvl Time and **Interval Date** are dynamic fields (displayed automatically under certain circumstances). For more information about dynamic fields, see “Using Historical Data to Solve Problems” in Chapter 2 of the *MAINVIEW for OS/390 User Guide and Reference*.

Understanding Summarization

It is easy for a screen to become crowded when you use the duration parameter, especially for a view that contains many entities. CPUTAT had only 2 CPUs, but JFLOW might contain 100 jobs. If you issue the TIME command with a duration of 5I (5 intervals), suddenly JFLOW contains 500 lines (5 lines for each job)!

To make it easier to manage these types of situations, you will probably want to use the view customization summarization option to *summarize* the data. Summarization allows you to compress several lines of data into a single row, based on criteria that you specify. Summarization is discussed in “Summarizing Data” on page 9-2. Using the example in the “Summarizing Data” section, if you grouped by (or summarized by) the No column, your screen would look like Figure 5-12 on page 5-17.

Figure 5-12 Summarizing by CPU Number

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 2 ALT WIN ==>

>H1 =CPUSTAT=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====2
C No Intvl CPU Busy(I) TSO BAT STC CPU Busy(R) TSO BAT STC
- -- Time- 0.....50...100 Busy Busy Busy 0.....50...100 Busy Busy Bus
00 13:57 42.6 ***** 18.0 12.3 12.3 28.9 ***** 8.3 24.4
01 13:57 49.7 ***** 19.2 15.3 15.2 29.0 ***** 4.8 12.4

```

Now there are only two rows, one for processor 00 and one for processor 01. When you summarize, the **Time** field contains the time of the last interval in the duration. The other columns—**CPU Busy** field, **TSO Busy** field, and so on—contain data for each CPU summarized over the four-interval period.

Assume that, instead of one line per entity, you want to see one line per interval. If you summarized by the **Intvl Time** field, the screen would look like Figure 5-13.

Figure 5-13 Summarizing by Intvl Time

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>

>H1 =CPUSTAT=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====2
C No Intvl CPU Busy(I) TSO BAT STC CPU Busy(R) TSO BAT STC
- -- Time- 0.....50...100 Busy Busy Busy 0.....50...100 Busy Busy Bus
0* 13:15 42.6 ***** 18.0 12.3 12.3 28.9 ***** 8.3 24.
0* 13:30 42.6 ***** 18.0 12.3 12.3 28.9 ***** 8.3 24.
0* 13:45 49.7 ***** 19.2 15.3 15.2 29.0 ***** 4.8 12.
0* 12:00 42.6 ***** 18.0 12.3 12.3 28.9 ***** 8.3 24.

```

Now that you have one row per interval, you can see that the data in the No column is meaningless; each interval now represents the activity for both CPUs. Thus, at 13:30, the two CPUs together experienced an average CPU busy of 42.6 percent.

Because the No column is useless in this context, you will probably want to exclude it using the X - Exclude option in the View Customization panel.

Tip: Summarization is an extremely effective tool for managing data from multiple intervals.

Chapter 6 Accessing Other Systems and Products

This chapter shows you how to access another MAINVIEW product or another system while simultaneously displaying your local system. It includes the following topics:

Accessing Another Product	6-2
Accessing Another System	6-5
Accessing Several Systems Simultaneously	6-9
Using the Easy Menu to Change Systems	6-13

Accessing Another Product

In this section, you will display two MAINVIEW products—MAINVIEW for OS/390 and Plex Manager—simultaneously. (Plex Manager is shipped as part of the MAINVIEW architecture. It helps you manage the connections between systems and MAINVIEW products.)

There are two ways to access another system or product:

- CONtext command
- SET dialog box

Use the CONtext command first to access Plex Manager.

Step 1 To clear the screen, type RESet.

Step 2 On the COMMAND line, type CONtext * PLEXMGR; PLEX.

The PLEX view is displayed, as shown in Figure 6-1.

Figure 6-1 PLEX View

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS  -----
COMMAND  ===>
CURR WIN  ===> 1          ALT WIN  ===>
SCROLL  ===> PAGE
>W1 =PLEX=====SYSE=====*=====DDMMYYYY==HH:MM:SS====PLEXMGR==D===10
C Product  Context  System  Description  Status
-----
CMF        SYSC     SYSC     CMF MONITOR Online (5.3.02)  Lost Con
CMF        EXTSTJ  EXTSTJ  CMF MONITOR Online (5.3.02)  Active
CMF        SYSC     SYSC     CMF MONITOR Online (5.4.00)  Active
MVALARM   SYSC     SYSC     MainView Alarm Manager (1.1.0)  Active
MVMVS     SYSC     SYSC     MainView for OS/390 2.5.03)  Active
MVMVS     EXTSTJ  EXTSTJ  MainView for OS/390 (2.6.00)  Active
MVMVS     SYSE     SYSE     MainView for OS/390 (2.6.00)  Active
PLEXMGR   SYSC     SYSC     Target Manager  Active
PLEXMGR   SYSE     SYSE     Target Manager  Active
PLEXMGR   EXTSTJ  EXTSTJ  Target Manager  Active
    
```

The PLEX view belongs to the Plex Manager product. Look at the window information line: the first field (the view name field) is PLEX. Further down, you see a field called PLEXMGR. PLEXMGR is the *product identifier* for Plex Manager. (Each product has its own product identifier, so you always know the product at which you are looking.)

The PLEX view is the most frequently used view in Plex Manager. PLEX lists all of the systems and products that you can access and tells you if they are currently available.

By looking at the Status column, you can see that your local system, SYSE, has lost contact with SYSC's CMF MONITOR. You will not be able to access that product until contact is reestablished.

Notice that all systems always have an active version of Plex Manager.

Tip: In general, it is a good idea to check the PLEX view before you try to display another product or system, to verify that the product or system that you want is available.

You can access any available system or product directly from PLEX. Before you do so, open another window so that you can see two products at the same time.

Step 3 Open another window by using the **HS** command.

An open window below the PLEX view is displayed, as shown in Figure 6-2.

Figure 6-2 PLEX View and an Open Window

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
>W1 =PLEX=====SYSE=====*=====DDMMYYYY==HH:MM:SS====PLEXMGR==D====10
C Product Context System Description Status
-----
CMF SYSC SYSC CMF MONITOR Online (5.3.02) Lost Con
CMF EXTSTJ EXTSTJ CMF MONITOR Online (5.3.02) Active
CMF SYSC SYSC CMF MONITOR Online (5.4.00) Active
MVALARM SYSC SYSC MainView Alarm Manager (1.1.0) Active
MVMVS SYSC SYSC MainView for OS/390 2.5.03) Active
MVMVS EXTSTJ EXTSTJ MainView for OS/390 (2.6.00) Active
MVMVS SYSE SYSE MainView for OS/390 (2.6.00) Active
PLEXMGR SYSC SYSC Target Manager Active
PLEXMGR SYSE SYSE Target Manager Active
PLEXMGR EXTSTJ EXTSTJ Target Manager Active
T2 =====
```

Step 4 Find the line that pertains to MAINVIEW for OS/390 on the *current system*—that is, the system reflected on the window information line, SYSE.

Step 5 In the ALT WIN field, type 2 and place the cursor on that line in the Product column.

Step 6 Press Enter.

The MAINVIEW for OS/390 EZM390 view is now displayed in window 2, as shown in Figure 6-3 on page 6-4.

Figure 6-3 PLEX View and the MAINVIEW for OS/390 Easy Menu

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>> SCROLL ==>> PAGE
CURR WIN ==>> 2 ALT WIN ==>>
>W1 -PLEX-----SYSE-----*-----DDMMYYYY==HH:MM:SS----PLEXMGR--D---10
C Product Context System Description Status
-----
CMF SYSE SYSE CMF MONITOR Online (5.3.02) Active
CMF EXTSTJ EXTSTJ CMF MONITOR Online (5.3.02) Active
CMF SYSC SYSC CMF MONITOR Online (5.4.00) Active
MVALARM SYSC SYSC MainView Alarm Manager (1.1.0) Active
MVMVS SYSC SYSC MainView for OS/390 2.5.03) Active
MVMVS EXTSTJ EXTSTJ MainView for OS/390 (2.6.00) Active
MVMVS SYSE SYSE MainView for OS/390 (2.6.00) Active
PLEXMGR SYSC SYSC Target Manager Active
PLEXMGR SYSE SYSE Target Manager Active
PLEXMGR EXTSTJ EXTSTJ Target Manager Active

W2 =EZM390=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
OS/390 Easy Menu
Activity Time frame - Interval Tools and Menus
. Jobs +-----+ > Utilities
. Workloads | Place cursor on | . Console
> System Overview | menu item and | > MAIN Menu
. System Trends | press ENTER | . MVScope
. Storage +-----+ > WLM Monitoring
. Devices > OS/390 Fast Menu
> XCF Monitoring > RMF-like Menus
> Coupling Facility . Return...
> Data Set Usage
    
```

When you access MAINVIEW for OS/390 or any other MAINVIEW product from the PLEX view, the easy menu for that product is displayed.

Now that window 1 is set to PLEXMGR and window 2 is set to the OS/390 Easy Menu, you can use views in both products simultaneously. Make sure that the **CURR WIN** field is set properly; if you try to display a MAINVIEW for OS/390 view in window 1 or a Plex Manager view in window 2, you will get an error message.

Accessing Another System

In this section, you will look at DEVSTAT on two systems to compare the performance of each system's I/O configuration simultaneously. Although this section uses SYSE and SYSC as examples, you should use your own system IDs.

MAINVIEW's Single System Image (SSI) function allows you to retrieve data from multiple systems in a single view. If your site has set up SSI *contexts*, see "Accessing Several Systems Simultaneously" on page 6-9.

If your site is *not* using SSI, you can use MAINVIEW for OS/390 to monitor different systems in multiple windows. If your site does not have SSI contexts established, or if you simply want to look at another system or MAINVIEW product without using SSI, this section contains the information you need.

Note: You must have cross-system communication established between two or more OS/390 images to complete this section. If you are not sure whether you meet this requirement, see your MAINVIEW for OS/390 product administrator. If you know that you do not have cross-system communication, proceed "Creating Screen Definitions" on page 7-2.

To access two different systems, follow this procedure:

Step 1 Display DEVSTAT in window 2.

The PLEX and DEVSTAT views are displayed, as shown in Figure 6-4 on page 6-6.

Figure 6-4 PLEX and DEVSTAT Views

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 2 ALT WIN ==>
>W1 -PLEX-----SYSE-----*-----DDMMYYYY==HH:MM:SS---PLEXMGR--D---10
C Product Context System Description Status
-----
CMF SYSE SYSE CMF MONITOR Online (5.3.02) Active
CMF EXTSTJ EXTSTJ CMF MONITOR Online (5.3.02) Active
CMF SYSC SYSC CMF MONITOR Online (5.4.00) Active
MVALARM SYSC SYSC MainView Alarm Manager (1.1.0) Active
MVMVS SYSC SYSC MainView for OS/390 2.5.03) Active
MVMVS EXTSTJ EXTSTJ MainView for OS/390 (2.6.00) Active
MVMVS SYSE SYSE MainView for OS/390 (2.6.00) Active
PLEXMGR SYSC SYSC Target Manager Active
PLEXMGR SYSE SYSE Target Manager Active
PLEXMGR EXTSTJ EXTSTJ Target Manager Active

>W2 =DEVSTAT=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==163
C Volser Interval Intvl Dev LCU MX Storage I/O Resp. Time IOSQ Conn
- - - - - Date- - - - - Time- Num Num -- Group /Sec 0...50.100 Time Time
SMS004 03DEC2001 14:42 02B1 OE1 0.02 80.94 6.62
TSG312 03DEC2001 14:42 02A1 OE1 0.48 74.64 7.86
TSG322 03DEC2001 14:42 02AD OE1 2.30 70.96 2.5 47.6
TSG311 03DEC2001 14:42 02A0 OE1 0.05 38.66 1.01
    
```

You want to display DEVSTAT on two different systems. However, window 1 still displays the Plex Manager product, and DEVSTAT is a MAINVIEW for OS/390 view. You need to change both the product *and* the system.

Although you can use the CONText command to do this, the SET command is easier to remember.

Step 2 To make window 1 current, type **W1** on the **COMMAND** line, and then press **Enter**.

Step 3 On the **COMMAND** line, type **SET**.

The SET dialog box is displayed, as shown in Figure 6-5 on page 6-7.

Figure 6-5 SET Dialog Box

```

----- SET WINDOW CONTEXT, PRODUCT, SERVER, SCOPE AND VIEW -----
COMMAND ==>

Window Parameters:

Context    ==> SYSE
Product    ==> PLEXMGR
Server     ==> *
Scope     ==> *
View      ==> PLEX

Type END to set window parameters
Cancel to quit without setting

```

Step 4 To access MAINVIEW for OS/390 on another system—for example, SYSC—in window 1, complete the fields of the SET dialog box, as shown in Figure 6-6.

Figure 6-6 Accessing Another System

```

----- SET WINDOW CONTEXT, PRODUCT, SERVER, SCOPE AND VIEW -----
COMMAND ==>

Window Parameters:

Context    ==> SYSC
Product    ==> MVMVS
Server     ==> *
Scope     ==> *
View      ==> DEVSTAT

Type END to set window parameters
Cancel to quit without setting

```

Before you press **PF3**, take a look at what you specified on the SET dialog box:

- **Context**—contains the name of the system that you want to access.

In this exercise, you want to access SYSC, so you typed **SYSC** in this field.

- **Product**—contains the *product identifier* of the product that you want to access. Because you want to access MAINVIEW for OS/390, you typed **MVMVS** in this field.

The product identifiers for some of the MAINVIEW products are as follows:

Product	Identifier
CMF MONITOR	CMF
MAINVIEW for OS/390	MVMVS
Plex Manager	PLEXMGR
MAINVIEW VistaPoint	MVVP

- **Server**—reserved for future MAINVIEW product use; this field must contain an asterisk (*).
- **Scope**—references a particular system within an SSI context (a context is usually a group of systems). If you are not using SSI contexts, this field is represented by an asterisk (*).
- **View**—contains the name of the view that you want to display in the new product. It is a required field. Because you want to display DEVSTAT on SYSC, you typed DEVSTAT in this field.

Step 5 Press PF3 (End).

Your screen looks similar to Figure 6-7.

Figure 6-7 DEVSTAT on SYSC and SYSE

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
>W1
=DEVSTAT=====SYSC=====*=====DDMMYYYY==HH:MM:SS==14:50:14====MVMVS====D==165
C Volser Interval Intvl Dev LCU MX Storage I/O Resp. Time IOSQ Conn
- - - - - Date - - - - - Time- Num Num -- Group /Sec 0...50.100 Time Time
SMS001 03DEC2001 14:50 7D0A 040 SGTST 0.55 85.29 2.87
TSG322 03DEC2001 14:50 02AD 02A 2.32 80.69 6.2 49.3
BAB326 03DEC2001 14:50 8D04 040 1.01 24.22 7.1 2.30
PAGC31 03DEC2001 14:50 0231 028 1.49 22.88 8.07
TSG316 03DEC2001 14:50 7D00 040 0.36 21.72 12.7
BAB329 03DEC2001 14:50 8D0F 040 0.09 20.91 0.91
TSG320 03DEC2001 14:50 8D08 040 1.35 11.94 9.73
BAB322 03DEC2001 14:50 0317 019 0.08 11.57 2.30
TSG312 03DEC2001 14:50 02A1 02A 0.71 11.17 9.39
>W2 -DEVSTAT-----SYSE-----*-----DDMMYYYY==HH:MM:SS---MVMVS---D--163
C Volser Interval Intvl Dev LCU MX Storage I/O Resp. Time IOSQ Conn
- - - - - Date - - - - - Time- Num Num -- Group /Sec 0...50.100 Time Time
SMS004 03DEC2001 14:42 02B1 00C SGTST 0.02 80.94 6.62
TSG312 03DEC2001 14:42 02A1 00C 0.48 74.64 7.86
TSG322 03DEC2001 14:42 02AD 00C 2.30 70.96 2.5 47.6
TSG311 03DEC2001 14:42 02A0 00C 0.05 38.66 1.01
TSG320 03DEC2001 14:51 0D38 01B 0.33 36.46 16.3 5.24
BAB333 03DEC2001 14:51 02AE 00C 0.58 33.98 1.46
TSG311 03DEC2001 14:51 02A0 00C 0.10 33.37 1.80
SMS001 03DEC2001 14:51 0D2A 01B SGTST 0.03 18.62 0.58
    
```

Notice that the window information lines in windows 1 and 2 show SYSC and SYSE, respectively; you can identify the system at which you are looking.

You might want to display the I/O activity of SYSC and SYSE side by side, if, for example, you are operating in a shared DASD environment and suspect that problems on one system are causing problems on another system. It is much easier to compare systems on a single screen, rather than jumping back and forth between multiple sessions or lining up a row of terminals, each dedicated to a different system.

Note: If you prefer the CONtext command to the SET dialog box, typing

CONTEXT SYSC MVMVS; DEVSTAT

achieves the same result.

Tip: The fastest way to access the PLEX view is through this command:

CONtext * PLEXMGR; PLEX

(However, SET works just as well.)

Accessing Several Systems Simultaneously

This section shows you how to access several systems simultaneously by using the Single System Image (SSI) function.

MAINVIEW's SSI function allows you to retrieve data from multiple systems in a single view by using a predefined *SSI context*. SSI is a powerful system-management tool, giving you access to data from systems across your multiplex and magnifying the already significant value of summarized data.

To begin exploring SSI contexts, you need to determine whether your product administrator has established any contexts for your site. To do so, follow this procedure:

Step 1 To clear the screen, type **RESet**.

Step 2 To display the CONACT view, type

CONtext = PLEXMGR; CONACT

The CONACT view is displayed, as shown in Figure 6-8.

Figure 6-8 CONACT View

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND  ===>                                SCROLL  ===> PAGE
CURR WIN  ===> 1          ALT WIN  ===>
>W1 =CONACT=====SYSE=====*****DDMMYYYY==HH:MM:SS====PLEXMGR==D===10
CMD SSI    Product  Target  Status      Description
--- Context- ----- Context- of_Target--- -----
ALL      CMF      EXTSTJ  ACTIVE      CMF MONITOR Online (5.3.01)
ALL      CMF      SYSC    ACTIVE      CMF MONITOR Online (5.4.00)
ALL      CMF      SYSE    ACTIVE      CMF MONITOR Online (5.3.01)
ALL      MVMVS    EXTSTJ  ACTIVE      MainView for OS/390 (2.5.01)
ALL      MVMVS    SYSC    ACTIVE      MainView for OS/390 (2.5.03)
ALL      MVMVS    SYSE    ACTIVE      MainView for OS/390 (2.5.01)
ALL      PLEXMGR  EXTSTJ  ACTIVE      Target Manager
ALL      PLEXMGR  SYSC    ACTIVE      Target Manager
ALL      PLEXMGR  SYSE    ACTIVE      Target Manager
    
```

CONACT lists all of the SSI contexts defined for your enterprise and indicates the status (active or inactive) of each context.

Note: If you get a message that says There is no data that satisfies your request, there are no SSI contexts defined for your site. Skip the rest of this section and continue with Chapter 7, “Screen Definitions.”

The **SSI Context** field contains the names of the SSI contexts. As you can see, there are nine targets with SSI context type ALL:

- Three targets give you access to MAINVIEW for OS/390 on all of your OS/390 systems.
- Three targets give you access to CMF MONITOR on all systems.
- Three targets are defined as Plex Manager on all systems.

The SSI context ALL is predefined to include all active targets at your site. However, you can customize the context ALL by using the CONDEF view. See the *MAINVIEW® Common Customization Guide* for more information.

Step 3 To display JFLOW in window 1, display the PLEXOVER view.

Step 4 Hyperlink to the MVMVS view on system SYSE.

The EZMVS view is displayed.

Step 5 On the **COMMAND** line, type **JFLOW**, and then press **Enter**.

Step 6 Next, issue the command **CONtext ALL**.

Your screen looks like Figure 6-9.

Figure 6-9 JFLOW View in the ALL Context

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
>W1 =JFLOW===== (ALL=====*)=====)DDMMYYYY==HH:MM:SS==MVMVS==D==469
C Jobname Intvl T SrvClass Workflow % Delay % Main Reas
- - - - - Time- - - - - 0.....50...100 0.....50...100 - - - - -
DC$SWTHC 15:31 S STCNRM 100.0 Wait for
IMSGEN05 15:31 B BATNRM 39.1 60.9 Wait for
WLM 15:31 S SYSTEM 9.1 30.3 Wait for
BCVSS531 15:31 S STCNRM 12.5 29.2 Wait for
CNMPROCC 15:31 S STCLOW 28.6 Wait for
BCVCJ330 15:31 S STCNRM 28.6 Wait for
CICS4101 15:31 S STCNRM 25.0 25.0 Wait for
DC$BBI 15:31 S STCNRM 14.3 24.5 Wait for
BCVSS53D 15:31 S STCNRM 14.3 24.5 Wait for
*MASTER* 15:31 S SYSTEM 0.2 19.2 Wait for
BITMXPC 15:31 S STCNRM 20.0 19.0 Wait for
AAODM4A 15:31 S STCNRM 19.0 Wait for
DC$SGP 15:31 S STCNRM 68.2 18.2 Wait for
CMRSSTA 15:31 S STCPAS 37.5 17.9 Wait for
WRWJCAS 15:31 S STCNRM 20.0 15.4 Wait for
DC$TCPIP 15:31 S SYSSTC 20.0 15.2 Wait for
BCVCJ410 15:31 S STCNRM 14.3 14.3 Wait for
BOLJAC4 15:31 T TSONRM 14.3 Wait for

```

The screen is now set up as follows:

- The system field on the window information line shows ALL (the name of the SSI context), instead of SYSE.
- The product field still shows MVMVS. MAINVIEW assumes that you want to stay in the same product if you do not specify a product identifier. If you had typed **CONTEXT ALL CMF** instead of **CONTEXT ALL**, you would have been given access to CMF MONITOR.
- There are 469 jobs. You have data for jobs that are running on all of your systems.
- To help you manage all of these jobs and systems, you can display the **SSI Target** and **SSI System** fields by typing **INCLUDE TARget** or **INCLUDE SYStem** on the **COMMAND** line. If you want to hide these fields from view, type **EXclude TARget** or **EXclude SYStem** on the **COMMAND** line.

Take a look at the job DC\$SWTHC. It shows a higher-than-normal delay.

Step 7 Hyperlink from a job in the Jobname column.

EZMJOB is displayed, as shown in Figure 6-10 on page 6-12.

Figure 6-10 EZMJOB View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>>                                SCROLL ==>> PAGE
CURR WIN ==>> 1          ALT WIN ==>>
>W1 =JFLOW====EZMJOB==(ALL====SYSC====)DDMMYYYY==HH:MM:SS====MVMVS====D====1
                                Job Menu
                                Timeframe - Interval

                                Current Job -> DC$SWTHC

Activity          +-----+ Resource Usage
. Using Resources | Place cursor on | . Data Sets Allocated
. Delay Reasons  | menu item and   | . Data Sets Open
. Status         | press ENTER     | . Data Set Usage and Delay
. Last 10 intervals +-----+ . Data Spaces
. Overview      |                   | . Detail
. Paging        |                   | . SRM Service Units
. Trending      |                   | . Storage Used
. Workflow      |                   |
SYSPROG Services
> Actions
> MVScope CPU Tracing
> Performance
> Storage
                                . Return...
    
```

Step 8 Move the cursor to **Detail** under **Resource Usage**, and then press **Enter**.

The JINFO view is displayed, as shown in Figure 6-11.

Figure 6-11 JINFO View for DC\$SWTHC

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>>                                SCROLL ==>> PAGE
CURR WIN ==>> 1          ALT WIN ==>>
W1 =JFLOW====JINFO==(ALL====SYSC====)DDMMYYYY==HH:MM:SS====MVMVS====D====1
Timeframe... Interval                                0...50..100
Jobname..... DC$SWTHC Avg Frames..          61 Workflow... 0.00
Step/Proc... DC$SWTHC Avg Cframes..          48 Using Proc.. 0.00
JES Number.. STC03171 Avg Eframes..          13 Using Dev.. 0.00
Terminal ID. Cframes held                    48 Total Dly.. 100.00
ASID..... 107 Eframes held                    13 Processor.. 0.00
Dmn..... N/A Fixed frames                    36 Device.... 0.00
SC or PG #.. 23 Fixed <16M..                  0 Storage... 0.00
SrvClass.... STCNRM Dmd Page/Sec              0 Enqueue... 0.00
Workload.... Swp Page/Sec                     0 SRM..... 0.00
%Connected.. 0.0 Avg UIC.....                  0 Msg..... 100.00
Disp. Prty.. 0 SU/Sec.....                     0 Xcf..... 0.00
Owner..... TSGSTC EXCP/Sec.... 0.0 JES..... 0.00
Status..... Active Job Elpd Tm. 15:20:02 HSM..... 0.00
Last..... Active JES Queue Tm 00:00:00 Unknown.... 0.00
    
```

Notice that the scope field now displays SYSC. MAINVIEW automatically narrowed the context to the system where DC\$SWTHC is running by issuing the SCOPE command. The SSI context ALL still appears in the context field on the window information line.

Suppose you want to use a system programmer utility to tend to DC\$SWTHC. Because the scope is already set to SYSC, all you have to do is type **SYSPROG** and choose the utility that you want.

Tip: In an SSI context, you must use the SCOpe command to identify the target system before using the SYSPROG or CSMON commands.

When you start working with several systems simultaneously, a lot of data can accumulate quickly in a single window. To help you manage the data, you might want to create some *summary views* to use with SSI contexts. You will learn how in “Summarizing Data” on page 9-2.

Using the Easy Menu to Change Systems

In addition to the methods previously explained, MAINVIEW for OS/390 gives you the ability to change the system, product, or target that you are monitoring quickly and easily from the OS/390 Easy Menu.

To do so, follow this procedure:

Step 1 From the **EZM390** menu, select the **Environment Settings** option, and then press **Enter**.

Under the **Change System** option are three choices:

- Select Target
- Select SSI Context
- Select Product

Each of these options hyperlinks to a Plex Manager view that lists valid targets, products, and contexts.

Step 2 Select the desired option and press **Enter**.

Step 3 Position your cursor on the product or target context that you want to monitor and press **Enter**. (Hyperlinking on either column will give you the same result.)

You are returned to an Easy Menu (or MAIN if you chose **Plex Manager**). Notice that the window information line has changed to reflect your choice. All options selected from this view or menu will display data from the new product or target context.

Chapter 7 Screen Definitions

This chapter shows you how to open windows, display views in them, and save the entire configuration as a *screen definition*. It also explains how to access a list of screen definitions, and describes how to display them.

This chapter includes the following topics:

Before You Begin	7-2
Creating Screen Definitions	7-2
Maximizing Windows.	7-6
Displaying Screen Definitions	7-7

Before You Begin

Before you begin, create a standard partitioned data set by using a record format of fixed block (FB) and a record length of 80 (called `userid.BBSDEF`), to serve as your personal screen definition library. If your prefix is different from your user ID, name the data set `<prefix>.<userid>.BBSDEF`.

If you use the MAINVIEW CLIST to access MAINVIEW for OS/390, the data set that you created (`<userid>.BBSDEF`) will be allocated to your user address space because the BBDEF attribute in the MAINVIEW CLIST procedure has been set to YES by your system administrator. If you use another access method, however, you must modify your TSO logon procedure so that it contains this concatenation:

```
//BBSDEF DD DSN=<userid>.BBSDEF  
        DD DSN=<hilevel>.SBBSDEF
```

The `hilevel.SBBSDEF` data set is the screen library that contains screen definitions for use by everyone at your site. (Your MAINVIEW for OS/390 product administrator maintains this library; see your administrator if you want to contribute to it.) Your personal screen definition library (`<userid>.BBSDEF`), by contrast, is available to your user ID only.

This concatenation ensures that your personal screen definition is displayed before a site-wide screen definition by the same name.

Creating Screen Definitions

This section shows you how to create screen definitions that summarize the performance of all of the I/O devices in your system. To do so, follow this procedure:

Step 1 To clear the screen, type **RESet** on the **COMMAND** line.

Step 2 On the **COMMAND** line, type **DEVSTAT**.

The DEVSTAT view displays.

Step 3 Open another window by using the **HS** command.

Your screen looks like Figure 7-1 on page 7-3.

Figure 7-1 DEVSTAT View and an Open Window

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> CSR
CURR WIN ==> 2 ALT WIN ==>
>W1 -DEVSTAT-----DXTSTJ-----*-----DDMMYYYY--HH:MM:SS---MVMVS---D--173
C Volser Interval Intvl Dev LCU MX Storage I/O Resp. Time IOSQ Conn
- - - - - Date- - - - - Time- Num Num -- Group /Sec 0...50.100 Time Time
TSG322 11MAR2002 12:55 02AD 00C 0.75 126.2 + 22.8 80.6
PAGD27 11MAR2002 12:55 0227 00B 4.14 105.3 + 50.2 5.37
SYM044 11MAR2002 12:55 024C 00B 0.03 60.28 0.90
ES430D 11MAR2002 12:55 0D24 01C 0.03 49.90 0.46
PUBBC1 11MAR2002 12:55 0D06 01C 0.03 20.48 0.46
SYM046 11MAR2002 12:55 024E 00B 0.03 16.11 0.93
BAB321 11MAR2002 12:55 030C 00D 0.40 15.61 11.1
O25G12 11MAR2002 12:55 02A8 00C 0.04 13.64 7.72
BAB314 11MAR2002 12:55 0305 00D 0.57 13.39 6.0 2.52
TSG312 11MAR2002 12:55 02A1 00C 1.09 13.39 10.1
T2 =====

```

Step 4 On the COMMAND line, type DDJOB.

Because the current window is set to 2, DDJOB is displayed in that window automatically, as shown in Figure 7-2.

Figure 7-2 DEVSTAT and DDJOB Views

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> CSR
CURR WIN ==> 2 ALT WIN ==>
>W1 -DEVSTAT-----DXTSTJ-----*-----DDMMYYYY--HH:MM:SS---MVMVS---D--173
C Volser Interval Intvl Dev LCU MX Storage I/O Resp. Time IOSQ Conn
- - - - - Date- - - - - Time- Num Num -- Group /Sec 0...50.100 Time Time
TSG322 11MAR2002 12:55 02AD 00C 0.75 126.2 + 22.8 80.6
PAGD27 11MAR2002 12:55 0227 00B 4.14 105.3 + 50.2 5.37
SYM044 11MAR2002 12:55 024C 00B 0.03 60.28 0.90
ES430D 11MAR2002 12:55 0D24 01C 0.03 49.90 0.46
PUBBC1 11MAR2002 12:55 0D06 01C 0.03 20.48 0.46
SYM046 11MAR2002 12:55 024E 00B 0.03 16.11 0.93
BAB321 11MAR2002 12:55 030C 00D 0.40 15.61 11.1
O25G12 11MAR2002 12:55 02A8 00C 0.04 13.64 7.72
>W2 =DDJOB=====DXTSTJ=====DDMMYYYY==HH:MM:SS====MVMVS====D====6
C Volser Intvl Dev Type LCU Resp. Act. %Delay %Delay Jobname T SrvClass De
- - - - - Time- Num --- Num Time Rate AnyJob ThisJob - - - - - T
PAGD27 12:58 227 3380 00B 104.5 3.31 0.82 0.41 XTSTIPAS S STCPAS IO
TSG322 12:58 2AD 3390 00C 133.1 0.66 0.68 0.27 AAOMH41 S STCNRM IO
TSG322 12:58 2AD 3390 00C 133.1 0.66 0.68 0.14 OLTG S STCNRM IO
TSG322 12:58 2AD 3390 00C 133.1 0.66 0.68 0.14 AAOMH51 S STCNRM IO
BAB310 12:58 301 3390 00D 6.46 0.94 0.14 0.14 XTSTIPAS S STCPAS IO

```

Step 5 Open a third window, this time by using the VS command to divide window 1 in half vertically.

Step 6 On the **COMMAND** line, type **DUJOB**.

Your screen looks like Figure 7-3.

Figure 7-3 DEVSTAT, DDJOB, and DUJOB Views

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>>>                                     SCROLL ==>> CSR
CURR WIN ==>> 3          ALT WIN ==>>
>W1 -DEVSTAT-----DXTSTJ---*--- >W3 =DUJOB=====DXTSTJ===*=====1
C Volser Interval  Intvl Dev  LCU MX| C Volser Intvl  Dev Type  LCU  Resp Act
- ----- Date----- Time- Num  Num --| - ----- Time-   Num ----  Num  Time Rat
  TSG322 11MAR2002  12:55 02AD 00C |   BAB332 13:00  25B 3390 00B  1.99 0.1
  PAGD27 11MAR2002  12:55 0227 00B |   MVS256 13:00  256 3390 00B  4.53 0.1
  SYM044 11MAR2002  12:55 024C 00B |   BAB329 13:00  D3F 3390 01C  3.54 4.2
  ES430D 11MAR2002  12:55 0D24 01C |   PAGD27 13:00  227 3380 00B 94.86 3.2
  PUBBC1 11MAR2002  12:55 0D06 01C |   TSG322 13:00  2AD 3390 00C 134.0 0.6
  SYM046 11MAR2002  12:55 024E 00B |
  BAB321 11MAR2002  12:55 030C 00D |
  O25G12 11MAR2002  12:55 02A8 00C |
>W2 -DDJOB-----DXTSTJ---*-----DDMMYYYY--HH:MM:SS----MVMVS---D----6
C Volser Intvl  Dev Type  LCU  Resp  Act. %Delay %Delay Jobname  T SrvClass De
- ----- Time-  Num ----  Num  Time  Rate AnyJob ThisJob ----- - ----- T
  PAGD27 12:58  227 3380 00B 104.5  3.31  0.82  0.41 XTSTIPAS S STCPAS  IO
  TSG322 12:58  2AD 3390 00C 133.1  0.66  0.68  0.27 AAOMH41 S STCNRM  IO
  TSG322 12:58  2AD 3390 00C 133.1  0.66  0.68  0.14 OLTG   S STCNRM  IO
  TSG322 12:58  2AD 3390 00C 133.1  0.66  0.68  0.14 AAOMH51 S STCNRM  IO
  BAB310 12:58  301 3390 00D  6.46  0.94  0.14  0.14 XTSTIPAS S STCPAS  IO
```

When displayed on one screen, DEVSTAT, DDJOB, and DUJOB give you a complete overview of device-related activity:

- an overview of each device’s performance in window 1
- a list of all jobs being delayed by devices in window 2
- a list of the devices currently being used by jobs in window 3

Save this screen so that you can use it later.

Step 7 On the **COMMAND** line, type **SAVEScr** and press **Enter**.

The Save Screen Definition panel is displayed, as shown in Figure 7-4 on page 7-5.

Figure 7-4 Save Screen Definition Panel

```
----- SAVE SCREEN DEFINITION-----  
COMMAND  ===>  
  
Screen Definition Parameters:  
  
Name      ===> MVMVS  
Description ===> MVMVS Easy Menu Initial Screen  
  
Replace   ===> N      (Y/N)  
  
Type END to save screen definition  
   CANCEL to quit without saving
```

The Save Screen Definition panel lets you save these three windows under a single name. You will be able to display DEVSTAT, DDJOB, and DUJOB again by using one command instead of five commands.

- Step 8** Choose a name for this screen definition—for example, DEVPERF, for device performance—and complete the fields on the Save Screen Definition panel, as shown in Figure 7-5.

Figure 7-5 Save Screen Definition Panel with Device Performance Name

```
----- SAVE SCREEN DEFINITION-----  
COMMAND  ===>  
  
Screen Definition Parameters:  
  
Name      ===> DEVPERF  
Description ===> Device Performance Screen  
  
Replace   ===> N      (Y/N)  
  
Type END to save screen definition  
   CANCEL to quit without saving
```

Step 9 To exit, press **PF3**.

Notice the message in the upper right corner of the screen, `SCREEN DEF CREATED`, telling you that `DEVPERF` has been stored successfully.

If a screen with the name `DEVPERF` already exists, you will receive the following message:

```
SCREEN DEF NOT REPLACED
```

To Summarize:

These are the steps that you have performed:

1. Displayed three `CMF MONITOR` views by opening multiple windows.
2. Typed `SAVE$cr` on the `COMMAND` line.
3. Completed the Save Screen Definition panel with the name `DEVPERF` and a description of the newly created screen.
4. Issued the End (**PF3**) command to save the screen definition.

Because you allocated your private screen library before you began, `DEVPERF` is stored there automatically.

If you did not create your own library, `DEVPERF` is stored in your site-wide library, assuming that it was allocated to your user address space. If it was not allocated, you would receive an error message.

Maximizing Windows

When several windows are open, it is sometimes difficult to see all of the data that you need within a particular window. This section shows you how to expand one of the `DEVPERF` windows so that it fills the entire screen, and how to return to `DEVPERF` in its original form.

Tip: You can use the `MAXimize` command at any time, not just when you are looking at a screen definition. Use the `RESTore` command to return the window to its original format.

To expand one of the DEVPERF windows, follow this procedure:

Step 1 To expand window 2, type **w2.MAX** on the **COMMAND** line.

Window 2, occupied by DDJOB, now fills the entire screen, as shown in Figure 7-6.

Figure 7-6 Maximizing the Second Window of DEVPERF

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>
SCROLL ==> CSR
CURR WIN ==> 2 ALT WIN ==>
>W2 =DDJOB=====DXSTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====6
C Volser Intvl Dev Type LCU Resp Act. %Delay %Delay Jobname T SrvClass De
- ----- Time- Num ---- Num Time Rate AnyJob ThisJob ----- - ----- T
PAGD27 12:58 227 3380 00B 104.5 3.31 0.82 0.41 XTSTIPAS S STCPAS IO
TSG322 12:58 2AD 3390 00C 133.1 0.66 0.68 0.27 AAOMH41 S STCNRM IO
TSG322 12:58 2AD 3390 00C 133.1 0.66 0.68 0.14 OLTG S STCNRM IO
TSG322 12:58 2AD 3390 00C 133.1 0.66 0.68 0.14 AAOMH51 S STCNRM IO
BAB310 12:58 301 3390 00D 6.46 0.94 0.14 0.14 XTSTIPAS S STCPAS IO
TSG322 12:58 2AD 3390 00C 133.1 0.66 0.68 0.14 XCFAS S SYSTEM IO
```

You can also use the NEXt and PREVIOUS commands to scroll through each maximized window in numerical sequence.

Step 2 To return to your screen definition, DEVPERF, type **REStore** on the **COMMAND** line.

If you want, experiment with MAX and the other windows in DEVPERF.

Displaying Screen Definitions

This section shows you how to display DEVPERF after you have cleared the screen. To do so, follow this procedure:

Step 1 To clear the screen, type **RESet** on the **COMMAND** line.

Step 2 On the **COMMAND** line, type **SCREENS**.

The SCREENS view is displayed, as shown in Figure 7-7 on page 7-8.

Figure 7-7 SCREENS View

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND  ===>                                     SCROLL ===> CSR
CURR WIN ===> 1           ALT WIN ===>
W1 =SCREENS=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====5
C Name      Description                               Userid
-----
CMF         Unknown                                  Unknown
DEVPERF    Device Performance Screen                BMVWRW1
MVALARM    Unknown                                  Unknown
MVMVS      Unknown                                  Unknown
MV390      MV390 Easy Menu Initial Screen BMVWRW1
    
```

The SCREENS view lists all of the screen definitions that are in both your personal screen definition library and the site-wide screen definition library.

Note: The views with a value of Unknown in the **Description** and **Userid** fields are those views that are supplied by MAINVIEW for OS/390. You might want to display these views later.

Step 3 To redisplay DEVPERF, type **S** next to the name **DEVPERF**, as shown in Figure 7-8.

Figure 7-8 Redisplaying DEVPERF

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND  ===>                                     SCROLL ===> CSR
CURR WIN ===> 1           ALT WIN ===>
W1 =SCREENS=====DXTSTJ====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====5
C Name      Description                               Userid
-----
CMF         Unknown                                  Unknown
s DEVPERF   Device Performance Screen                BMVWRW1
MVALARM    Unknown                                  Unknown
MVMVS      Unknown                                  Unknown
MV390      MV390 Easy Menu Initial Screen BMVWRW1
    
```

Step 4 Press **Enter**.

Your three-window DEVPERF screen is displayed, as shown in Figure 7-9 on page 7-9.

Figure 7-9 Three-Window DEVPERF Screen

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 3          ALT WIN ==>
>W1 -DEVSTAT-----DXTSTJ---*--- >W3 =DUJOB=====DXTSTJ===*=====1
C Volser Interval  Intvl Dev  LCU MX | C Volser Intvl  Dev Type  LCU  Resp Act
- ----- Date----- Time- Num  Num --| - ----- Time-  Num ----  Num  Time  Rat
  TSG322 11MAR2002  13:11 02AD 00C |  PAGD27 13:11  227 3380 00B 52.62 3.5
  BAB201 11MAR2002  13:11 0243 00B |  TSG322 13:11  2AD 3390 00C 131.6 0.4
  PAGC31 11MAR2002  13:11 0231 00B |  BAB311 13:11  302 3390 00D 14.89 2.2
  PAGD27 11MAR2002  13:11 0227 00B |  OS120P 13:11  D37 3390 01C  7.13 3.0
  SYM042 11MAR2002  13:11 024A 00B |  BAB400 13:11  250 3390 00B  3.29 4.3
  SYM043 11MAR2002  13:11 024B 00B |  OS120P 13:11  D37 3390 01C  7.13 3.0
  PUBBC1 11MAR2002  13:11 0D06 01C |  TSG320 13:11  D38 3390 01C  9.59 1.0
  BAB321 11MAR2002  13:11 030C 00D |  BAB317 13:11  308 3390 00D 10.83 1.1
  BAB311 11MAR2002  13:11 0302 00D |  SYSP14 13:11  240 3380 00B  3.59 1.5
  TSG312 11MAR2002  13:11 02A1 00C |  BAB329 13:11  D3F 3390 01C  3.34 2.3
>W2 -DDJOB-----DXTSTJ---*---DDMMYYYY--HH:MM:SS---MVMVS---D---4
C Volser Intvl  Dev Type  LCU  Resp  Act. %Delay %Delay Jobname T SrvClass De
- ----- Time-  Num ----  Num  Time  Rate AnyJob ThisJob -----  - -----  T
  OS120P 13:11  D37 3390 01C  7.13 3.06  0.16  0.16 BITRKK2 T TSONRM  IO
  TSG322 13:11  2AD 3390 00C 131.6 0.49  0.16  0.16 OLTG  S STCNRM  IO
  BAB312 13:11  303 3390 00D  5.99 1.80  0.16  0.16 AAOH41 S STCNRM  IO
  TSG320 13:11  D38 3390 01C  9.59 1.04  0.16  0.16 DC$BBIRR S STCNRM  IO
    
```

Notice that the views reflect the *current* time, not the time that you created the screen definition. When you saved DEVPERF, you did not lock a moment in time—you created a tool that you can use repeatedly.

Tip: Instead of displaying the SCREENS view and selecting **DEVPERF** from it, you could have simply typed **SCR DEVPERF** on the **COMMAND** line.

As you can see, screen definitions allow you to display a complicated collection of windows and views quickly and easily. You will use them often as you become more experienced with MAINVIEW for OS/390.

Chapter 8 Customizing Views

In this chapter, you will learn how to use the view customization facility, which enables you to perform the following activities:

- create your own views by using MAINVIEW for OS/390 as a starting point
- change the appearance and content of MAINVIEW for OS/390 views

Using view customization, you can rename a view, change or create hyperlinks, and make many other modifications that help you display data in ways to meet your specific needs.

This chapter includes the following topics:

Creating a Partitioned Data Set	8-2
Creating Your Own View	8-3
Setting Hyperlinks	8-11
Including Excluded Fields	8-16
Renaming Fields	8-18
Moving Fields	8-20
Setting Thresholds	8-22
Performing Other Customization Tasks	8-25

Creating a Partitioned Data Set

Before you begin, you need to create a standard partitioned data set called `userid.BBVDEF` to serve as your personal view library. Use a record format of fixed block (FB) and a record length of 80. If your prefix is different from your user ID, name the data set `prefix.userid.BBVDEF`.

If you use the `MAINVIEW CLIST` to access `MAINVIEW` for OS/390, the data set that you created will be allocated to your user address space because the `BBDEF` attribute in the `MAINVIEW CLIST` procedure has been set to `YES` by your system administrator. If you use another access method, however, you must modify your TSO logon procedure so that it contains the following concatenation:

```
//BBVDEF DD DSN=<userid>.BBVDEF  
//          DD DSN=<hilevel>.SBBVDEF
```

The `<hilevel>.SBBVDEF` library contains customized views for use by everyone at your site. Your `MAINVIEW` for OS/390 product administrator maintains the `<hilevel>.SBBVDEF` library; see your administrator if you want to contribute to the library. Your personal view library (`<userid>.BBVDEF`), by contrast, is available only to your user ID.

This concatenation ensures that when you type a view on the **COMMAND** line, `MAINVIEW` for OS/390 looks for the view in your personal view library first, then in the site-wide library, and, finally, in the `MAINVIEW` for OS/390 view distribution library.

Note: If you customized and saved any views in earlier releases of `MAINVIEW` for OS/390, see the “Migration Considerations” chapter in the *MAINVIEW® for OS/390 Customization Guide*.

As you work through these scenarios, be aware that the screens shown are only examples and might vary slightly from your screens. Letters assigned to columns might change as new fields are added to the product.

Creating Your Own View

This section shows you how to create your own view by using the JCPUR view as a model. By placing a filter on the JCPUR Type column, you can exclude batch and started-task data so that all you see is an overview of TSO job activity.

To create your own view, follow this procedure:

- Step 1** On the **COMMAND** line, type **RESet** and press **Enter**.
- Step 2** On the **COMMAND** line, type **JCPUR** and press **Enter**.

The JCPUR view is displayed, as shown in Figure 8-1.

Figure 8-1 JCPUR View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
Wl =JCPUR=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==118
C Jobname T SrvClass      % CPU Utilization %Dly Cur  CPU %TCB %SRB
- - - - - - - - - - - - - 0.....10.....20  CPU Pty  Secs  Time  Time
XCFAS   S SYSTEM        5.46                4.0 255   5  61.3  38.7
XTSTIPAS S STCPAS        1.08                255   1  78.0  22.0
CNMNETE S SYSSTC         0.78                254   1  69.4  30.6
XTSTHPAS S STCPAS        0.67                255   1  95.2   4.8
WRWJPAS  S STCNRM        0.64                255   1  96.6   3.4
WLM      S SYSTEM        0.41                255   0  84.2  15.8
*MASTER* S SYSTEM        0.22                255   0  25.0  75.0
WRWJCAS  S STCNRM        0.17                249   0  93.7   6.2
XTSTHCAS S STCPAS        0.16                249   0 100.0
XTSTICAS S STCPAS        0.12                249   0 100.0
JES2     S SYSSTC         0.11                254   0  90.0  10.0
AAOTSHE  S STCNRM        0.10                249   0  77.8  22.2
AAOHW41  S STCNRM        0.08                249   0  85.7  14.3
DC$BBI   S STCNRM        0.08                249   0  85.7  14.3
BAODYM4  T TSONRM         0.08                245   0 100.0
AAODM4B  S STCNRM         0.06                249   0 100.0
AAODM5B  S STCNRM         0.05                249   0  80.0  20.0
GRS      S GRS          0.05                253   0  60.0  40.0

```

JCPUR shows how much CPU each job is currently using.

Notice that the second column displays each job type:

T	TSO
B	batch
S	started task

This is the column to which you will add a filter.

Step 3 On the **COMMAND** line, type **CUSToM** and press **Enter**.

The **CUSToM** command invokes the view customization facility, as shown in Figure 8-2.

Figure 8-2 JCPUR in View Customization

```

----- VIEW CUSTOMIZATION - JCPUR -----
OPTION ==>
Options: (that require column selection)      Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat      X - Exclude      P - Parameters E - Show excluded
L - Filter      T - Threshold  H - Hyperlink   Z - Summarize  K - Show template

-----
Some options ask you to select a target column. To do so, either type the
option with the column id on the OPTION line (as in: f e to format column E),
or type just the option, move the cursor to the target column and press ENTER.
Your changes are implemented every time you press ENTER. You can save the
modified view definition with any name you choose and specify where thresholds
-----
  A      B C      F      G      I      J      K      L      M
C Jobname T SrvClass      % CPU Utilization %Dly Cur      CPU %TCB %SRB
- - - - - - - - - - 0.....10.....20      CPU Pty      Secs      Time      Time
XCFAS    S SYSTEM      5.46      4.0 255      5 61.3 38.7
XTSTIPAS S STCPAS      1.08      255      1 78.0 22.0
CNMNETE  S SYSSTC      0.78      254      1 69.4 30.6
XTSTHPAS S STCPAS      0.67      255      1 95.2 4.8
WRWJPAS  S STCNRM      0.64      255      1 96.6 3.4
WLM      S SYSTEM      0.41      255      0 84.2 15.8
*MASTER* S SYSTEM      0.22      255      0 25.0 75.0
    
```

Every time that you access the view customization facility from a view, a working version of the view appears at the bottom of the screen. Each column is assigned a unique letter. The Type column has been assigned to column B. By checking the customization options at the top of the screen, you can see that the filter option is L.

Step 4 On the **COMMAND** line, type **L B** and press **Enter**.

Tip: When customizing views, always specify the option before the column on the **COMMAND** line.

Your screen looks like Figure 8-3 on page 8-5.

Figure 8-6 Save View Definition Panel

```

----- VIEW CUSTOMIZATION - JCPUR -----
OPTION ==>
Options: (that require column selection)      Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat      X - Exclude      P - Parameters E - Show excluded
L - Filter      T - Threshold  H - Hyperlink   Z - Summarize  K - Show template

-----< Save View definition >-----
View name ==> JCPUR      This view definition will be saved as a member in
Replace ==> YES (Yes/No) the data set allocated to DD statement BBVDEF .
Description ==> Realtime job CPU utilization  Dynamic fields ==> YES (Yes/No)
Summary View ==>      (for tabular view only)
Threshold Location ==> VIEW      (View/Central)
Press ENTER to save the view; enter END (PF3) to end without saving.
-----
  A      B C      F      G      I      J      K      L      M
C Jobname T SrvClass % CPU Utilization %Dly Cur CPU %TCB %SRB
- - - - - - - - - - 0.....10.....20 CPU Pty Secs Time Time
BAODYM4 T TSONRM 0.08      245      0 100.0
BMVBAR4 T TSONRM      255
BTSSEC5 T TSONRM      255
BMVDLL3 T TSONRM      255
BMVJES1 T TSONRM      255
PPE2    T TSONRM      255
    
```

The Save View definition panel shows the view name that you modified and confirms that it was replaced.

Step 9 Choose a unique name for the view.

Because the original view was called JCPUR, TCPUR is probably a good choice.

Step 10 In the **View name** field, type **TCPUR**.

Step 11 Add a description for TCPUR in the **Description** field by typing over the original description. Use **TSO Interval CPU Utilization** or something similar.

Step 12 To return to JCPUR, press **Enter**.

Notice that the filter on TSO jobs is still in effect. When you exit view customization, your changes remain on the original view until you redisplay the view.

Step 13 To return to the original version of JCPUR, type **JCPUR** on the **COMMAND** line, and then press **Enter**.

Now you need to confirm that TCPUR is a part of your own MAINVIEW for OS/390 view set.

Step 14 On the **COMMAND** line, type **VIEWS T*** and press **Enter**.

The **VIEWS** panel is displayed, listing all of the views beginning with the letter **T** that are available with **MAINVIEW** for **OS/390**, as shown in **Figure 8-7**.

Figure 8-7 Views Beginning with T

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND  ==>                               SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
W1 =VIEWS=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====5
C View Name Product Area      Description
-----
TCPUR      MVMVS      User      TSO Interval CPU Utilization
TDEV       MVMVS      DMON      Analyze Tape Devices
TDEVR      MVMVS      DMON      Realtime analyze Tape Devices
TRX        MVMVS      RMON      Transaction activity
TSTAT      MVMVS      SYSACT    Tape drive allocation

```

There are five views that begin with **T**:

TCPUR
TDEV
TDEVR
TRX
TSTAT

The **Area** column for **TCPUR** contains the value *User*, which indicates that **TCPUR** is a user-created view, rather than a **MAINVIEW** for **OS/390**-distributed view like **TDEV**, **TDEVR**, **TRX**, and **TSTAT**.

Make sure that **TCPUR** displays what you want it to display.

Step 15 Use the hyperlink to display **TCPUR**.

The new view, **TCPUR**, is displayed, as shown in **Figure 8-8** on page 8-10.

Setting Hyperlinks

In this section, you will set a hyperlink from SYSINFO to TCPUR, the view that you just created. To do so, follow this procedure:

Step 1 Display SYSINFO.

SYSINFO provides an overview of system activity for each type of job, both during the current interval and in real time, as shown in Figure 8-9.

Figure 8-9 SYSINFO View

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE (R.v.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>
W1=SYSINFO=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====1
SMFID..... SYSE - Interval - 0....50...100
IO Interrupt 243.0 %CPU utilization 64.5 *****
% TPI..... 4.2 %TSO..... 27.4 ****
% Enabled... 33.3 %Batch..... 9.9 *
% Disabled.. 66.7 %STC..... 27.3 ****
%CPUwt+ChBsy 23.7 %TCB mode..... 56.3 *****
Avg CPU Q... 2.4 %Prob. state.... 21.0 ***
%Sup. state.... 51.0 *****

- Realtime -
IO Interrupt 153.5 %CPU utilization 87.3 *****
% TPI..... 1.6 %TSO..... 32.2 *
% Enabled... 54.5 %Batch..... 26.1
% Disabled.. 45.5 %STC..... 29.0 ****
Cur CPU Q... 1 %TCB mode..... 19.4 ***
%Prob. state.... 9.1 *
%Sup. state.... 32.3 *****

```

In Figure 8-9, the CPU is running at 87 percent capacity in real-time mode. TSO jobs account for 32.2 percent of all CPU utilization, which is not significantly high. But if it were 70 percent or higher, you would want to see a breakdown of all TSO jobs so that you could see which job was consuming the most CPU time. To do so, you would display this information by moving the cursor to the **Realtime %TSO** field and pressing **Enter**. This action displays the TCPUR view.

Step 2 To enter view customization, type **CUSTom** on the **COMMAND** line.

The View Customization - SYSINFO screen is displayed, as shown in Figure 8-10 on page 8-12.

Figure 8-10 SYSINFO in View Customization

```

----- VIEW CUSTOMIZATION - SYSINFO -----
OPTION ==>                                SCROLL ==> PAGE
Options: (that require column selection)   Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude     P - Parameters E - Show excluded
L - Filter     T - Threshold  H - Hyperlink   Z - Summarize  K - Show template
-----
SOME OPTIONS ASK YOU TO SELECT A TARGET FIELD.  TO DO SO, EITHER TYPE THE
OPTION WITH THE FIELD ID ON THE OPTION LINE (AS IN: F E TO FORMAT COLUMN E),
OR TYPE JUST THE OPTION, MOVE THE CURSOR TO THE TARGET COLUMN AND PRESS ENTER.
YOUR CHANGES ARE IMPLEMENTED EVERY TIME YOU PRESS ENTER.  YOU MAY SAVE THE
MODIFIED VIEW DEFINITION WITH ANY NAME YOU CHOOSE.  ENTER END (PF3) TO EXIT.
-----
      A                B                C
1  SMFID.....  SYSE      - Interval -      0....50...100
2  IO Interrupt 243.0  %CPU utilization  64.5  *****
3  % TPI.....  4.2    %TSO.....      27.4  ****
4  % Enabled... 33.3   %Batch.....     9.9   *
5  % Disabled.. 66.7   %STC.....      27.3  ****
6  %CPUwt+ChBsy 23.7   %TCB mode.....  56.3  *****
7  Avg CPU Q... 2.4    %Prob. state... 21.0  ***
8                      %Sup. state.... 51.0  *****
9
10

```

Because SYSINFO is a *detail*—rather than a *tabular*—view, row numbers are displayed as well as column letters.

Next, you want to set the hyperlink for the **Realtime %TSO** field, which does not currently appear in the work area.

Step 3 Scroll down until you can see the **Realtime %TSO** field.

The **%TSO** field has been assigned to column B, row 13.

Step 4 In the **OPTION** field, type **H B13** and press **Enter**.

Your screen looks like Figure 8-11 on page 8-13.

Figure 8-11 Setting a Hyperlink for %TSO

```

----- VIEW CUSTOMIZATION - SYSINFO -----
OPTION ==> H                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude     P - Parameters E - Show excluded
L - Filter     T - Threshold H - Hyperlink  Z - Summarize  K - Show template
-----< HYPERLINK - FIELD: B12 ELEMENT: SCLTSOPC >-----
CONDITION:      COMMAND: (WITH PARAMETERS)
-----
A                B                C
1 SMFID..... SYSE - Interval - 0.....50...100
2 IO Interrupt 264.6 %CPU utilization 27.5
3 % TPI..... 2.4 %TSO..... 4.3
4 % Enabled... 29.6 %Batch..... 0.0
5 % Disabled.. 70.4 %STC..... 23.2
6 %CPUwt+ChBsy 13.1 %TCB mode..... 21.2
7 Avg CPU Q... 0.2 %Prob. state.... 8.1
8              %Sup. state.... 25.3
9
10
11              - Realtime -
12 IO Interrupt 249.7 %CPU utilization 18.8
13 % TPI..... 0.7 %TSO..... 3.8
14 % Enabled... 40.0 %Batch..... 0.0
15 % Disabled.. 60.0 %STC..... 15.0

```

Hyperlinks consist of two parts: a *condition* that must be satisfied before the associated command is issued and the *command* itself. Specify the condition first.

When specifying a condition, you must first determine when you want the hyperlink to work (all of the time, or only under certain conditions). In this case, you want the hyperlink on the %TSO column to work all of the time.

Step 5 In the **CONDITION** field, type =*.

Step 6 Then type **TCPUR** on the **COMMAND** line, and press **Enter**.

You have entered the condition for TCPUR, as shown in Figure 8-12 on page 8-14.

Step 9 To return to the full SYSINFO display, press **Enter** again.

Test your new hyperlink to make sure that it works.

Step 10 Position the cursor on the highlighted **%TSO** field in the Realtime column and press **Enter**.

The new hyperlink works, as shown in Figure 8-13.

Figure 8-13 Testing the Hyperlink

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>
CURR WIN ==> 1          ALT WIN ==>
W1 =TCPUR=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D====34
C Jobname  T SrvClass      % CPU Utilization  %Dly Cur  CPU %TCB %SRB
- - - - -  - - - - -  0.....10.....20  CPU Pty  Secs  Time  Time
BMVDLL3   T TSONRM      0.96                249     1  98.4  1.6
BOLJEH1   T TSONRM      0.09                247     0  83.3  16.7
BMVWRW1   T TSONRM      0.08                255     0 100.0
BOLHNG3   T TSONRM
PPE2      T TSONRM
BOLDBS1   T TSONRM
BMVJES4   T TSONRM
BAOJDB3   T TSONRM
BOLJEH4   T TSONRM
CIM4      T TSONRM
BAOJDB2   T TSONRM
BMVGKC3   T TSONRM
BITYKC2   T TSONRM
BITYKC4   T TSONRM
BITPCC4   T TSONRM
BMVTLC3   T TSONRM
BOLGBG4   T TSONRM
BOLVAT4   T TSONRM

```

Including Excluded Fields

Almost every MAINVIEW for OS/390 view contains more fields than will fit on one screen. This section shows you how to include an *excluded field* in a view. Follow this procedure:

- Step 1** Display the DEVSTAT view, as shown in Figure 8-14.

Figure 8-14 DEVSTAT View

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND  ==>
CURR WIN ==> 1          ALT WIN ==>
>W1 =DEVSTAT=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==162
C Volser Interval  Intvl Dev  LCU MX  Storage  I/O      Resp. Time IOSQ Conn
- ----- Date----- Time- Num  Num --  Group   /Sec     0...50.100 Time Time
PAGD27 04DEC2001 12:49 0227 00B          0.02 150.8      +      0.96
TSG311 04DEC2001 12:49 02A0 00C          0.02 149.0      +      0.79
PAGA21 04DEC2001 12:49 0221 00B          0.01 42.24           0.96
TSG322 04DEC2001 12:49 02AD 00C          6.98 33.20           2.1 17.4
PAGE25 04DEC2001 12:49 0225 00B          2.11 28.22           6.9 2.22
TSG312 04DEC2001 12:49 02A1 00C          2.06 24.40           3.5 3.25
BAB323 04DEC2001 12:49 030D 00D          1.14 23.45           12.7 3.90
TSG321 04DEC2001 12:49 02B2 00C          0.98 20.87           1.74
SMS001 04DEC2001 12:49 0D2A 01B      SGTST    0.02 19.69           0.45
BAB333 04DEC2001 12:49 02AE 00C          0.78 18.12           1.37
BAB314 04DEC2001 12:49 0305 00D          0.40 17.53           8.74
BAB325 04DEC2001 12:49 0314 00D          0.69 15.53           8.16
BAB317 04DEC2001 12:49 0308 00D          0.40 15.15           2.08
BAB324 04DEC2001 12:49 030F 00D          0.24 14.61           1.93
TSG320 04DEC2001 12:49 0D38 01B          0.51 13.89           4.92
OS120P 04DEC2001 12:49 0D37 01B          0.02 13.59           0.49
MIS902 04DEC2001 12:49 0325 00D          0.03 13.46           0.98
BAB329 04DEC2001 12:49 0D3F 01B          1.00 13.26           3.90

```

- Step 2** To invoke the view customization facility, type **CUSTOM** on the **COMMAND** line, and then press **Enter**.

The View Customization - DEVSTAT screen is displayed.

- Step 3** To show the fields that have been excluded for DEVSTAT, type **E** in the **OPTION** field, and then press **Enter**.

- Step 4** Press **PF11** (right) a few times so that you can see all of the excluded fields, as shown in Figure 8-15 on page 8-17.

Figure 8-15 Excluded Fields in DEVSTAT (Scrolled Right)

```

----- VIEW CUSTOMIZATION - DEVSTAT -----
OPTION ==> E                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude     P - Parameters E - Hide excluded
L - Filter     T - Threshold  H - Hyperlink  Z - Summarize  K - Show template

-----< Show excluded columns >-----
The view is now displaying all the excluded (or hidden) columns.  Excluded
columns are marked with highlighted column letters.  You can customize an
excluded column (for instance, place a filter on it).  You may also make the
column permanently displayable by using the Include option.
If you select E - Hide excluded, the excluded columns will again be hidden.
-----
  A      OOO      PPP      QQQ
C Volser free  lext  Cls
-----
  PAGD27                                DSK
  TSG311                                DSK
  PAGA21                                DSK
  TSG322                                DSK
  PAGE25                                DSK
  TSG312                                DSK
  BAB323                                DSK

```

The column headings of the excluded fields appear in a different color. In addition, there are so many columns that there are three separate naming schemes: A-Z, AA-ZZ, and AAA-ZZZ.

Step 5 Press PF10 (left) until your screen looks like Figure 8-16.

Figure 8-16 Excluded Fields in DEVSTAT (Scrolled Left)

```

----- VIEW CUSTOMIZATION - DEVSTAT -----
OPTION ==> E                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude     P - Parameters E - Hide excluded
L - Filter     T - Threshold  H - Hyperlink  Z - Summarize  K - Show template

-----< Show excluded columns >-----
The view is now displaying all the excluded (or hidden) columns.  Excluded
columns are marked with highlighted column letters.  You can customize an
excluded column (for instance, place a filter on it).  You may also make the
column permanently displayable by using the Include option.
If you select E - Hide excluded, the excluded columns will again be hidden.
-----
  A      B      C D      E      F      G      H      I      J      K      L
C Volser Intvl Hr Interval  Dev Type LCU Storage  I/O      Resp. Time IOSQ
- ----- Time- -- Date----- Num ---- Num Group  /Sec      0...50.100 Time
  PAGD27 12:49 12 04DEC2000 0227 3380 00B      0.02 150.8      +
  TSG311 12:49 12 04DEC2000 02A0 3390 00C      0.02 149.0      +
  PAGA21 12:49 12 04DEC2000 0221 3380 00B      0.01 42.24
  TSG322 12:49 12 04DEC2000 02AD 3390 00C      6.98 33.20      2.1
  PAGE25 12:49 12 04DEC2000 0225 3380 00B      2.11 28.22      6.9
  TSG312 12:49 12 04DEC2000 02A1 3390 00C      2.06 24.40      3.5
  BAB323 12:49 12 04DEC2000 030D 3390 00D      1.14 23.45      12.7

```

Next, you will add the **Type** field to DEVSTAT so that device types are displayed as well as device numbers.

The command to add excluded fields is **I** (Include) and, in this example, the **Type** field has been assigned to column F. (Your column identifier might be different.)

- Step 6** In the **OPTION** field, type **I <n>** and press **Enter**, where *n* is the alphabetic column identifier for the **Type** field for your system.

Notice that the **Type** field is highlighted to show that the field has been included. Now include the **Intvl Time** field.

- Step 7** In the **OPTION** field, type **I <n>** and press **Enter**, where *n* is the alphabetic column identifier for the **Intvl Time** field for your system.

The headings on the **Type** and **Intvl Time** fields are now highlighted to show that both fields have been included.

Next, you need to remove the fields that you are not going to include.

- Step 8** To hide the excluded fields, type **E** in the **OPTION** field, and then press **Enter**.

Do *not* press **PF3** yet. You will continue to modify DEVSTAT in the next section, “Renaming Fields”

Renaming Fields

In this section, you will change the name of the **Intvl Time** field that you just added to DEVSTAT. The command to change the field name or appearance is **F** (Format).

To change the field name, follow this procedure:

- Step 1** In the **OPTION** field, type **F <n>** and press **Enter**, where *n* is the alphabetic column identifier for the **Intvl Time** field for your system.

Your screen looks similar to Figure 8-17 on page 8-19.

Figure 8-17 Changing a Column Name

```

----- VIEW CUSTOMIZATION - DEVSTAT -----
OPTION ==> F                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude     P - Parameters E - Hide excluded
L - Filter     T - Threshold  H - Hyperlink  Z - Summarize  K - Show template

-----< Format - column: B element: JACT$INT >-----
Data type: Time          Display Mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 5                Graph range (for 2): Low => 0      High => 0
Decimals => 0 (for numeric data)  Display zero values => N (Yes/No)
Heading1 => Intvl        Summarization type => L (A/S/M/X/C/L/P)
Heading2 => Time        Condition (for C) =>

-----
  A   B   C D      E   F   G H      I   J   K      L
C Volser Intvl Hr Interval Dev Type LCU Storage I/O      Resp. Time IOSQ
- - - - - Time- -- Date----- Num ---- Num Group /Sec      0...50.100 Time
PAGD27 12:49 12 04DEC2000 0227 3380 00B      0.02 150.8      +
TSG311 12:49 12 04DEC2000 02A0 3390 00C      0.02 149.0      +
PAGA21 12:49 12 04DEC2000 0221 3380 00B      0.01 42.24
TSG322 12:49 12 04DEC2000 02AD 3390 00C      6.98 33.20      2.1
PAGE25 12:49 12 04DEC2000 0225 3380 00B      2.11 28.22      6.9
TSG312 12:49 12 04DEC2000 02A1 3390 00C      2.06 24.40      3.5
BAB323 12:49 12 04DEC2000 030D 3390 00D      1.14 23.45      12.7

```

The first part of the field's current name, *Intvl*, appears in **Heading1**, and the second part, *Time*, appears in **Heading2**.

Step 2 In the Format area, type **Time** directly over the current title in the **Heading1** field, and either leave the **Heading2** field blank or type dashes (-), as shown Figure 8-18:

Figure 8-18 Using Dashes in a Column Name

```

-----< Format - column: B element: JACT$INT >-----
Data type: Time          Display Mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 5                Graph range (for 2): Low => 0      High => 0
Decimals => 0 (for numeric data)  Display zero values => N (Yes/No)
Heading1 => Time        Summarization type => L (A/S/M/X/C/L/P)
Heading2 => -----    Condition (for C) =>

```

Step 3 Press **Enter**.

The Intvl Time column changes immediately to look like column B in Figure 8-19 on page 8-20.

Figure 8-19 New Column Name

```

----- VIEW CUSTOMIZATION - DEVSTAT -----
OPTION ==> F                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude    P - Parameters E - Hide excluded
L - Filter     T - Threshold H - Hyperlink   Z - Summarize  K - Show template

-----< Format - column: B element: JACT$INT >-----
Data type: Time          Display Mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 5              Graph range (for 2): Low => 0      High => 0
Decimals => 0 (for numeric data)      Display zero values => N (Yes/No)
Heading1 => Time          Summarization type => L (A/S/M/X/C/L/P)
Heading2 => -----      Condition (for C) =>

-----
  A      B      C D      E      F      G      H      I      J      K      L
C Volser Time Hr Interval Dev Type LCU Storage I/O      Resp. Time IOSQ
- - - - - - - - - - Date----- Num ---- Num Group /Sec      0...50.100 Time
PAGD27 12:49 12 04DEC2000 0227 3380 00B      0.02 150.8      +
TSG311 12:49 12 04DEC2000 02A0 3390 00C      0.02 149.0      +
PAGA21 12:49 12 04DEC2000 0221 3380 00B      0.01 42.24
TSG322 12:49 12 04DEC2000 02AD 3390 00C      6.98 33.20      2.1
PAGE25 12:49 12 04DEC2000 0225 3380 00B      2.11 28.22      6.9
TSG312 12:49 12 04DEC2000 02A1 3390 00C      2.06 24.40      3.5
BAB323 12:49 12 04DEC2000 030D 3390 00D      1.14 23.45      12.7

```

Do *not* press **PF3** yet—you have one more modification to make. Continue with the “Moving Fields” section.

Moving Fields

In this section, you will move the new DEVSTAT **Type** field so that it follows the **Volser** field.

The command to move fields is M (Move).

Tip: When moving fields, specify the field that you want to move first, and then the field that you want the moved field to *follow*.

To move a field, follow this procedure:

- Step 1** In the **OPTION** field, type **M <n1> <n2>** and press **Enter**, where *n1* is the alphabetic column identifier for the **Type** field for your system and *n2* is the alphabetic column identifier for the **Volser** field.

The **Type** field is column F in Figure 8-19, and the **Volser** field is column A. Therefore, to move the **Type** field so that it follows the **Volser** field, you would type: **M F A**.

Setting Thresholds

In this section, you will learn how to set thresholds for the JFLOW Workflow % column so that

- values between 100 percent and 80 percent appear in green
- values between 80 percent and 50 percent appear in yellow
- values less than 50 percent appear in red

Note: If you are using a 3270 emulator package on a PC, the package might not enable all colors.

Workflow is a measurement of how well a workload is being served by system resources. A high workflow value means that the workload is receiving excellent service; a low value means that the workload is experiencing some delay due to contention for a particular resource.

To set thresholds for JFLOW, follow this procedure:

- Step 1** Display JFLOW.
- Step 2** On the **COMMAND** line, type **CUSTom** and press **Enter**.

Your screen looks like Figure 8-21.

Figure 8-21 Displaying JFLOW in View Customization

```

----- VIEW CUSTOMIZATION - JFLOW -----
OPTION ==>                                SCROLL ==> PAGE
Options: (that require column selection)   Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude     P - Parameters E - Show excluded
L - Filter     T - Threshold  H - Hyperlink  Z - Summarize  K - Show template

-----
Some options ask you to select a target column. To do so, either type the
option with the column id on the OPTION line (as in: f e to format column E),
or type just the option, move the cursor to the target column and press ENTER.
Your changes are implemented every time you press ENTER. You can save the
modified view definition with any name you choose and specify where thresholds
-----
  A      C      E F      I      J      K      L      M
C Jobname Intvl T SrvClass      Workflow %      Delay %      Main Reas
- - - - - Time- - - - -      0.....50...100      0.....50...100 -----
AAOHYO41 13:32 S STCNRM      100.0      100.0      Wait for
XTSTGKCP 13:32 S STCPAS      51.5      17.0      Wait for
OLCVTS13 13:32 S STCNRM      21.4      9.9      Wait for
*MASTER* 13:32 S SYSTEM      0.8      8.9      Wait for
AAOHW4A  13:32 S STCNRM      22.2      5.6      Wait for
AAOHW51  13:32 S STCNRM      25.0      5.4      Wait for
CNMNETE  13:32 S SYSSTC      75.0      5.2      Wait for

```

Concentrate on the numeric values for the Workflow % column (identified by letter J in Figure 8-21 on page 8-22).

Note: The alphabetic column headings might be different for all or some of your field names. You will need to substitute your alphabetic column heading character for the character used to identify each of the columns mentioned in this section and in “Summarizing Data” on page 9-2.

The command for establishing thresholds is T.

- Step 3** In the **OPTION** field, type **T <n>** and press **Enter**, where *n* is the alphabetic column identifier for the **Workflow %** field for your system.
- Step 4** In the **Inherit from** field, type **<n>** and press **Enter**, where *n* is the alphabetic column identifier for the column to the left of the **Workflow %** field for your system.

Your screen looks like Figure 8-22.

Figure 8-22 Setting a Threshold for Workflow %

```

----- VIEW CUSTOMIZATION - JFLOW -----
OPTION ==> T                                SCROLL ==> PAGE
Options: (that require column selection)      Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat     X - Exclude     P - Parameters E - Show excluded
L - Filter     T - Threshold  H - Hyperlink  Z - Summarize  K - Show template

-----< Threshold - column: J   element: ASIWKFL   >-----
Condition:          Attr: Sub:   Inherit from => I  0: GREEN  5: GREEN
1st =>              =>   =>              1: BLUE   6: BLUE
2nd =>              =>   =>              2: YELLOW 7: YELLOW
3rd =>              =>   =>              3: PINK   8: PINK
4th =>              =>   =>              4: RED    9: RED
5th =>              =>   =>
6th =>              =>   =>
7th =>              =>   =>
8th =>              =>   =>

-----
  A      C      E F      I      J      K      L      M
C Jobname Intvl T SrvClass  Workflow %      Delay %      Main Reas
----- Time- - -----  0.....50...100  0.....50...100 -----
AAOHO41 13:32 S STCNRM                100.0                Wait for
XTSTGKCP 13:32 S STCPAS      51.5                17.0                Wait for
OLCVTS13 13:32 S STCNRM      21.4                9.9                 Wait for

```

- Step 5** In the **OPTION** field, type **T <n>** and press **Enter**, where *n* is the alphabetic column identifier for the column to the left of the **Workflow %** field for your system.

The numbers on the right-hand side represent the colors that you can specify in the **Attr** fields.

Remember, you want to create the following results:

- jobs experiencing less than 50 percent workflow to appear in red
- jobs that are in potential danger—that is, anything with a workflow value between 80 percent and 50 percent—to appear in yellow
- jobs that are progressing through the system smoothly—between 80 and 100 percent workflow value—to appear in green

Two conditions cannot be specified in the same **CONDITION** column because threshold conditions are satisfied in descending order. That is, **>=80** and **=equals 50** are entered in two separate fields, rather than combining them in a single field as **80 >=x>=50**.

As it progresses down the **CONDITION** column, **MAINVIEW** for OS/390 makes these changes:

1. Values equal to 80 or above are changed to green.
2. Values equal to 50 or above (but not more than 80) are changed to yellow.
3. Values equal to 0 or above (but not more than 50) are changed to red.

Step 6 In the Threshold panel, as shown in Figure 8-23, add these values:

- 6.A** Type **<n>** and the threshold condition in the appropriate **Condition** fields (where **n** is the alphabetic column identifier for the column to the left of the **Workflow %** field on your system).
- 6.B** Type the representative colors (from the columns on the right) in the **Attr** field.

Figure 8-23 Threshold Panel

-----< THRESHOLD - COLUMN: J		ELEMENT: ASIWKFL		>-----	
CONDITION:	ATTR:	SUB:	INHERIT FROM => I	0: GREEN	5: GREEN
1ST => I >= 80	=>	9	=>	1: BLUE	6: BLUE
2ND => I >= 50	=>	7	=>	2: YELLOW	7: YELLOW
3RD => I >= 0	=>	5	=>	3: PINK	8: PINK
4TH =>	=>		=>	4: RED	9: RED
5TH =>	=>		=>		
6TH =>	=>		=>		
7TH =>	=>		=>		
8TH =>	=>		=>		

Step 7 Press **Enter**.

Notice that the values in the Workflow % column (J in Figure 8-22 on page 8-23)—as well as in the column to the left of Workflow % (I in Figure 8-22 on page 8-23)—immediately assume the thresholds that you set, because column J *inherits* the values set for column I so that all thresholds set for column I also affect column J.

- Step 8** In the **OPTION** field, type **T <n>** and press **Enter**, where *n* is the alphabetic column identifier for the **Workflow %** field for your system.

Notice that the **Inherit from** field (on JFLOW just below the element name) shows the alphabetic column heading for the field to the left of **Workflow %** (I in this example).

Threshold colors make it easy to tell at a glance the workloads that are in serious trouble (red), workloads that are potentially in danger (yellow), and workloads that are in excellent service (green).

- Step 9** To exit view customization, press **PF3**.

You can save your changes if you want.

Performing Other Customization Tasks

View customization allows you to perform the customization tasks listed in Table 8-1.

Table 8-1 Customization Tasks

To Do This	Use This Option
Change a column width, change a column heading, or move a decimal point.	F (Format)
Alter the full-screen graphical display of the view.	G (Graph)
Sort rows of data by ascending or descending values.	O (Order)
Find out which fields have been specified as <i>positional parameters</i> for a view.	P (Parameters)

If you need help in using these options or any other options, press **PF1** while in view customization.

Chapter 9 Using Summarized Views

In this chapter, you will learn some ways to use the summary view that you created in Chapter 8, “Customizing Views.” The chapter includes the following topics:

Summarizing Data	9-2
Expanding a Summary View	9-13
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Summarizing Data

In this section, you will learn how to create a *summary view*.

Sometimes it is hard to grasp the significance of the view's information when there are many rows of data to examine. To make things easier, you can compress several rows of data into a single line that represents the data for *all* of the compressed rows. For example, you might want a single row that summarizes performance for all 3380 devices, or all of the jobs in service class/performance group 30 (PGRP0030).

A summary view contains only five rows: one row that summarizes workflow for TSO users; one row for open OS/390; and one row for batch jobs, started tasks, and APPC address spaces, respectively. In creating this view, you will have a chance to review some of the concepts that you learned earlier in this book.

Summarized views are created from tabular views. In this procedure, you will start with JFLOW. To create a summary view, follow these steps:

- Step 1** Display JFLOW.
- Step 2** On the **COMMAND** line, type **CUSTOm** and press **Enter**.

Your screen looks like Figure 9-1, although your column identifiers might be different.

Figure 9-1 Starting with JFLOW to Create a Summary View

```

----- VIEW CUSTOMIZATION - JFLOW -----
OPTION ==>                                SCROLL ==> PAGE
Options: (that require column selection)   Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat     X - Exclude     P - Parameters E - Show excluded
L - Filter      T - Threshold  H - Hyperlink  Z - Summarize  K - Show template

-----
Some options ask you to select a target column. To do so, either type the
option with the column id on the OPTION line (as in: f e to format column E),
or type just the option, move the cursor to the target column and press ENTER.
Your changes are implemented every time you press ENTER. You can save the
modified view definition with any name you choose and specify where thresholds
-----
  A      C      E F      I      J      K      L      M
C Jobname Intvl T SrvClass      Workflow %      Delay %      Main Reas
- ----- Time- - -----      0.....50...100      0.....50...100 -----
AAOHY041 13:32 S STCNRM      100.0      Wait for
XTSTGKCP 13:32 S STCPAS      51.5      17.0      Wait for
OLCVTS13 13:32 S STCNRM      21.4      9.9      Wait for
*MASTER* 13:32 S SYSTEM      0.8      8.9      Wait for
AAOHW4A  13:32 S STCNRM      22.2      5.6      Wait for
AAOHW51  13:32 S STCNRM      25.0      5.4      Wait for
CNMNETE  13:32 S SYSSTC      75.0      5.2      Wait for

```

Look at the T (address space type) column, which is column E in Figure 9-1 on page 9-2. The T column contains a letter that designates each type of job:

- B for batch
- S for started task
- T for TSO
- A for APPC
- O for OMVS

Considering the number of rows on JFLOW, it is easy to see how useful it might be to compress the data into just a few lines—one line for each job type. However, you could also decide to summarize by **SrvClass** (Service Class).

These columns are good candidates for summarization because each column has rows of data that contain identical values. For example, there are several rows of data from the same service class/performance group, just as there are several rows that specify *Wait for CPU* as the main reason for the processing delay. Therefore, it makes sense to compress all of the rows with **SrvClass** STCNRM into a single row so that you can monitor the domain's activity at a single glance.

By contrast, you probably would not want to summarize by the Workflow %, Delay %, or Jobname columns. Because of the nature of these fields, there will not be many identical values—and if there are, it is coincidental—so summarizing the values into a single line would not provide any meaningful data.

Begin creating your summary view by using Option Z - Summarize.

Step 3 In the **OPTION** field, type **Z** and press **Enter**.

The summarize input fields on JFLOW are displayed, as shown in Figure 9-2 on page 9-4.

Figure 9-2 Selecting the Summarize Option

```

----- VIEW CUSTOMIZATION - JFLOW -----
OPTION ==> Z                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude    P - Parameters E - Show excluded
L - Filter     T - Threshold  H - Hyperlink Z - Summarize K - Show template

-----< Summarize - Specify columns for summarization >-----
If you want to summarize rows of data, specify at least one column to group by:
Group by 1=>      To further customize a summarized view:
                2=>      Use option X to exclude a column from the summarized view.
                3=>      Use option F to modify the type of summarization for a column
                4=>      ( S sum, A avg, M min, X max, C count, L any, P percent)

-----
  A      C      E F      I      J      K      L      M
C Jobname Intvl T SrvClass      Workflow %      Delay %      Main Reas
- - - - - Time- - - - - 0.....50...100      0.....50...100 -----
AAOHY041 13:32 S STCNRM      100.0      100.0      Wait for
XTSTGKCP 13:32 S STCPAS      51.5      17.0      Wait for
OLCVTS13 13:32 S STCNRM      21.4      9.9      Wait for
*MASTER* 13:32 S SYSTEM      0.8      8.9      Wait for
AAOHW4A  13:32 S STCNRM      22.2      5.6      Wait for
AAOHW51  13:32 S STCNRM      25.0      5.4      Wait for
CNMNETE  13:32 S SYSSTC      75.0      5.2      Wait for

```

Step 4 To summarize—or group—the data by the **Type (T field)**, type <n> in the **Group by** field, where *n* is the alphabetic column identifier for the **T** field on your system.

In Figure 9-3, the **T (Type)** column is identified by the letter E.

Figure 9-3 Summarizing by the T Field (Column E)

```

-----< Summarize - Specify columns for summarization >-----
If you want to summarize rows of data, specify at least one column to group by:
Group by 1=> E      To further customize a summarized view:
                2=>      Use option X to exclude a column from the summarized view.
                3=>      Use option F to modify the type of summarization for a column
                4=>      ( S sum, A avg, M min, X max, C count, L any, P percent)

```

Step 5 Press **Enter**.

Note: If you are familiar with Structured Query Language (SQL), you might recognize this function's similarity to the **Group By** statement.

Your screen looks like Figure 9-4 on page 9-5.

Figure 9-4 Configuration after Summarizing by the T (Type) Field

```

----- VIEW CUSTOMIZATION - JFLOW -----
OPTION ==> Z                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat     X - Exclude     P - Parameters E - Show excluded
L - Filter     T - Threshold  H - Hyperlink  Z - Summarize  K - Show template

-----< Summarize - Specify columns for summarization >-----
If you want to summarize rows of data, specify at least one column to group by:
Group by 1=> A      To further customize a summarized view:
                2=>      Use option X to exclude a column from the summarized view.
                3=>      Use option F to modify the type of summarization for a column
                4=>      ( S sum, A avg, M min, X max, C count, L any, P percent)

-----
  A B      D      F      I      J      K      L      M
C T Jobname Intvl SrvClass      Workflow %      Delay %      Main Reas
- - - - - Time- - - - - 0.....50...100  0.....50...100 -----
B A***** 13:32 BATNRM      16.7      1.8      *****
S ***** 13:32 *****      14.8      1.9      *****
T ***** 13:32 TSONRM      6.2      0.1      *****

```

In this example, there are only three lines: one line for batch, started tasks, and TSO, respectively. (The other two types, APPC and OMVS, are not represented on this system.)

Also note that the T field moved to the first position in column A. The MAINVIEW window interface arranges the screen this way so that you can always identify the field by which a summary view was grouped; it is always the first field.

Note: You might also choose to group by more than one column. For example, if you group by the T field and then by the SrvClass (service class or performance group) field, you get one line for each job type *within the performance group*, as shown in Figure 9-5.

Figure 9-5 After Summarizing by the T and SrvClass Fields

```

  A B      D      F      I      J      K      L      M
C T Jobname Intvl SrvClass      Workflow %      Delay %      Main Reas
- - - - - Time- - - - - 0.....50...100  0.....50...100 -----
B A***** 13:32 BATNRM      16.7      1.8      *****
S ***** 13:32 SYSTEM      15.8      0.7      *****
S ***** 13:32 SYSSTC      11.9      0.2      *****
S LOGROUTE 13:32 STCLOW
S GRS      13:32 GRS      28.6      3.9      Wait for
S ***** 13:32 STCNRM      12.0      4.0      *****
S XTST**** 13:32 STCPAS      52.1      3.3      *****

```

You need to examine each field and see if it makes sense in the newly summarized data context. If a field does not make sense, you can exclude it. It appears that all of the values in the numeric fields have been averaged. For some fields, this feature makes perfect sense: a summary of workflow and

delay percentage by job type is quite useful. Other fields, however, such as **Jobname** and **Main Reason**, contain character data, which usually appears as asterisks in a summary view, so you can exclude these fields.

Step 6 In the **OPTION** field, type **X <n>**, where *n* is the alphabetic column identifier for the **Jobname** field.

Step 7 To exclude the **Jobname** field, press **Enter**.

Step 8 In the **OPTION** field, type **X <n>**, where *n* is the alphabetic column identifier for the **Main Reason** field.

Step 9 To exclude the **Main Reason** field, press **Enter**.

Your screen looks like Figure 9-6.

Figure 9-6 Excluding a Field

```

----- VIEW CUSTOMIZATION - JFLOW -----
OPTION ===> X                                SCROLL ===> PAGE
Options: (that require column selection)      Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude    P - Parameters E - Show excluded
L - Filter     T - Threshold  H - Hyperlink  Z - Summarize  K - Show template

-----< Exclude - column: M element: ASGCNMC >-----
The column has been excluded from the display. Use option E - Show excluded
to display all excluded columns (excluded columns are the ones with highlighted
column letters). Use the Include option to bring the column permanently back
into the display.

-----
  A D      F      I      J      K      L
C T Intvl SrvClass      Workflow %      Delay %
- - Time- -----      0.....50...100      0.....50...100
B 13:32 BATNRM      16.7      1.8
S 13:32 SYSTEM      15.8      0.7
S 13:32 SYSSTC      11.9      0.2
S 13:32 STCLOW
S 13:32 GRS      28.6      3.9
S 13:32 STCNRM      12.0      4.0
S 13:32 STCPAS      52.1      3.3

```

The data in the **SrvClass** field does not make much sense, either; however, you can turn it into a useful field by changing the format of **SrvClass**.

Step 10 In the **OPTION** field, type **F <n>**, where *n* is the alphabetic column identifier for the **SrvClass** field.

Step 11 To invoke the **Format** option for **SrvClass**, press **Enter**.

Your screen looks like Figure 9-7.

Figure 9-7 Formatting the SrvClass Field

```

----- VIEW CUSTOMIZATION - JFLOW -----
OPTION ==> F                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude    P - Parameters E - Show excluded
L - Filter     T - Threshold  H - Hyperlink Z - Summarize K - Show template

-----< Format - column: F element: ASGCNMC >-----
Data type: Character      Display Mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 8                Graph range (for 2): Low => 0      High => 0
Decimals => 0 (for numeric data)      Display zero values => N (Yes/No)
Heading1 => SrvClass                Summarization type => L (A/S/M/X/C/L/P)
Heading2 => -----                Condition (for C) =>

-----
  A D      F          I      J          K      L
C T Intvl SrvClass      Workflow %      Delay %
- - Time- -----      0.....50...100      0.....50...100
B 13:32 BATNRM      16.7                1.8
S 13:32 SYSTEM      15.8                0.7
S 13:32 SYSSTC      11.9                0.2
S 13:32 STCLOW
S 13:32 GRS          28.6                3.9
S 13:32 STCNRM      12.0                4.0
S 13:32 STCPAS      52.1                3.3

```

You can specify how the data on a summary view is treated—A for averaging the values, S for a sum of all values, and so on—in the **Summarization type** field. For a full list of options, press **PF1** and hyperlink on the **Summarization type** field.

In this case, you want to turn the service class data into a *count* of the address spaces in each job type, so that you can tell how many address spaces are in each category at a given moment.

Step 12 In the **Summarization type** field, type **C** (for count) and press **Enter**.

The data is displayed in the **SrvClass** field in count format, as shown in Figure 9-8 on page 9-8.

Figure 9-8 Making SrvClass a Count Field

```

----- VIEW CUSTOMIZATION - JFLOW -----
OPTION ==> F                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude    P - Parameters E - Show excluded
L - Filter     T - Threshold  H - Hyperlink  Z - Summarize  K - Show template

-----< Format - column: F element: Asgcnmc >-----
Data type: Character      Display Mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 8                Graph range (For 2): Low => 0      High => 0
Decimals => 0 (For Numeric Data)  Display zero values => Y (Yes/No)
Heading1 => SrvClass      Summarization type => C (A/S/M/X/C/L/P)
Heading2 => -----      Condition (for C) =>

-----
  A F      I      J      K      L
C T SrvClass      Workflow %      Delay %
- - -----      0.....50...100      0.....50...100
B      3 15.5      0.9
S      146 24.2      1.2
T      32 24.1      0.5

```

You can see how the meaningless information in the **SrvClass** field has turned into meaningful data. You now know that the rows in Figure 9-8 represent 3 batch jobs, 146 started tasks, and 32 TSO address spaces (no APPC users).

Note: After summarizing a view, you can use summarization type C (count) to create a count field that keeps track of the number of address spaces representing each row. Use the **Condition** field to set a condition by which the count is incremented.

Next, you will change the column heading to show that this field is now a count. The format window is already set for the **SrvClass** field (column identifier F in the example).

Step 13 Type over **SrvClass** in the **Heading1** field, changing its name to **Count**, then press **Enter**.

Notice in Figure 9-9 on page 9-9 that the **SrvClass** column heading now shows *Count*.

Set two new count fields by repeating and reformatting the **Workflow%** field.

Step 14 In the **OPTION** field, type **R <n>** (where *n* is the alphabetic column identifier for the column to the left of the **Workflow %** field), and press **Enter**.

Notice that there are now two **Workflow %** columns. The new column that you created is the one on the left, as shown in Figure 9-9 on page 9-9.

Figure 9-9 Renaming SrvClass and Repeating Workflow %

```

----- VIEW CUSTOMIZATION - JFLOW -----
OPTION ==> R                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat     X - Exclude     P - Parameters E - Show excluded
L - Filter     T - Threshold  H - Hyperlink  Z - Summarize  K - Show template

-----< Repeat - column: I element: ASIWKFL >-----
The column has been duplicated and its format changed to graphic.
Use the format option to change the width or the headings.
Use the exclude option to delete the duplicated column.

-----
  A F      I      J      K      L      M
C T Count      Workflow %      Workflow %      Delay %
- - -----
B      3  15.5      0.....50...100  0.....50...100      0.....50...100
S      146  24.2
T      32  24.1

```

When you repeat a column that contains a graph, view customization assumes that you want to represent the data graphically.

Now, format the column that you repeated (the one to the left of Workflow %) by renaming the heading, setting a count summarization type, and setting the count condition.

Step 15 In the **OPTION** field, type **F <n>** (where *n* is the alphabetic column identifier for the field that you created to the left of **Workflow %**), and then press **Enter**.

Step 16 In the Format panel, type information in these fields: **Display Mode**, **Width**, **Heading1**, **Summarization type**, and **Condition (for C)**, and leave **Heading2** blank, as shown in Figure 9-10.

Figure 9-10 Typing Information in the Format Panel Fields (Workflow %)

```

-----< Format - column: J element: ASIWKFL >-----
Data type: Numeric      Display mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 14             Graph range (For 2): Low => 0      High => 100
Decimals => 1 (for numeric data)      Display zero values => N (Yes/No)
Heading1 => Cnt > 80%      Summarization type => C (A/S/M/X/C/L/P)
Heading2 =>                Condition (for C) => > 80

```

Step 17 Press **Enter**.

The data in the Workflow % column that you modified and formatted reflects the number of address spaces with workflows over 80 percent, as shown in column J in the example in Figure 9-11 on page 9-10.

Figure 9-11 Customized Workflow % Field

```

----- VIEW CUSTOMIZATION - JFLOW -----
OPTION ==> F                                SCROLL ==> PAGE
Options: (that require column selection)    Other options:
F - Format      M - Move      I - Include      G - Graph      S - Save view
O - Order      R - Repeat    X - Exclude    P - Parameters E - Show excluded
L - Filter     T - Threshold  H - Hyperlink Z - Summarize K - Show template

-----< Format - column: J element: ASIWKFL >-----
Data type: Numeric      Display mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 14             Graph range (For 2): Low => 0      High => 100
Decimals => 1 (for numeric data)      Display zero values => N (Yes/No)
Heading1 => Cnt > 80%                  Summarization type => C (A/S/M/X/C/L/P)
Heading2 =>                             Condition (for C) => J > 80
-----

  A F      I      J      K      L      M      N
C T Count      Cnt > 80      Cnt > 80      Workflow %      Delay %
- - - - -
B          3 15.5                0.....50...100 0.....50...100      0.9
S          146 24.2            18.0                1.2
T          32 24.1              3.0                0.5
    
```

Every time that you press **Enter**, the Workflow % column that named **Cnt > 80** is updated to reflect the number of address spaces experiencing workflow above 80 percent.

Repeat the **Cnt > 80%** column.

Step 18 In the **OPTION** field, type **R <n>** (where *n* is the alphabetic column identifier for the **Cnt > 80%** column you created), and then press **Enter**.

Notice that there are now two **Cnt > 80** columns, and the repeated column is formatted to display data graphically, as shown in Figure 9-12.

Figure 9-12 Duplicate Cnt > 80 Columns

```

-----
  A F      I      J      K      L      M      N
C T Count      Cnt > 80      Cnt > 80      Workflow %      Delay %
- - - - -
B          3 15.5                0.....50...100 0.....50...100      0.9
S          146 24.2            18.0                1.2
T          32 24.1              3.0                0.5
    
```

Format the count field that you just repeated to display workflow counts *less* than or equal to 80 percent.

Step 19 In the **OPTION** field, type **F <n>**, where *n* is the alphabetic column identifier for the **Cnt > 80%** field that you repeated (the one to the left of **Cnt > 80**), and then press **Enter**.

Step 20 In the Format panel, type information in these fields: **Display mode**, **Width**, **Heading1**, **Summarization type**, and **Condition (for C)**, and leave **Heading2** blank, as shown in Figure 9-13.

Figure 9-13 Typing Information in the Format Panel Fields (Cnt <= 80%)

```

-----< Format - column: K element: ASIWKFL >-----
Data type: NUMERIC          Display mode => 1 ( 1 as is 2 as graph 3 as hex )
Width => 9                  Graph range (for 2): Low => 0      High => 100
Decimals => 1 (for numeric data)  Display zero values => N (Yes/No)
Heading1 => Cnt <= 80%      Summarization type => C (A/S/M/X/C/L/P)
Heading2 =>                  Condition (for C) => <= 80

```

Step 21 Press **Enter**.

Notice that the column heading **Cnt <= 80%** has been added to the column that you created, and the data has changed to reflect the new condition that you entered (column J in the example):

Figure 9-14 Adding the Cnt <= 80% Column

```

-----
A F      I      J              K              L              M      N
C T Count          Cnt <= 80    Cnt > 80    Workflow %    Delay %
- - - - -          0.....50...100 0.....50...100 0..50.100
B      3  15.5          3.0  **          0.9
S      146 24.2      18.0  128.0  ***          1.2
T      32  24.1      3.0   29.0  ***          0.5

```

Move the fourth column, just to the left of **Cnt > 80%** (which is identified by J in the example) so that the numeric data is correctly paired with its matching graphic displayed in the **Workflow %** column. Specify the column to be moved and the column after which you want it to be located.

Step 22 In the **OPTION** field, type **M <n1> <n2>** (where *n1* is the alphabetic identifier of the column you are moving—the fourth column of data—and *n2* is the alphabetic column identifier of the **Cnt <= 80%** column after which you are moving that fourth column), and then press **Enter**.

Notice that the position of the numeric workflow data (column K in Figure 9-15), is now to the left of its matching graphic display, **Workflow %**.

Figure 9-15 Result of Moving the Numeric Workflow Column

```

-----
A F      I      J              K              L              M      N
C T Count          Cnt > 80    Cnt <= 80    Workflow %    Delay %
- - - - -          0.....50...100 0.....50...100 0..50.100
S      104 28.2          86.0          0.2
T      19  29.5          15.0          0.4

```

You now have a view that shows a summary of the number of jobs of each address space type that have a workflow percentage of > 80% and <= 80%. You will save the changes that you have made to JFLOW and rename it as a user view that you can display whenever you need data in this customized format.

Step 23 In the **OPTION** field, type **S** and press **Enter** to bring up the Save View definition panel.

Step 24 Fill out the Save View definition panel as shown in Figure 9-16.

Figure 9-16 Filling Out the Save View Definition Panel

```

-----< Save View definition >-----
View name ==> SJFLOW           This view definition will be saved as a member in
Replace  ==> YES (Yes/No)      the data set allocated to DD statement BBVDEF .
Description ==> Workflow by Address Space Type Dynamic fields ==> YES (Yes/No)
Summary View ==>                (for tabular view only)
Threshold Location ==> VIEW      (View/Central)
Press ENTER to save the view; enter END (PF3) to end without saving.

```

In general, you should prefix customized view names with an **S** to make it easy to identify the tabular view on which you based the summary view.

Step 25 Press **Enter**.

When you see a message in the upper right-hand corner indicating that your view was created, you have completed this step successfully.

Step 26 Press **PF3** to exit.

To see the original JFLOW view with which you started, on the **COMMAND** line, type **JFLOW** and press **Enter**. To see your customized version, type **SJFLOW**.

To Summarize:

The process for creating a summarized view is to

1. Select a tabular view to use as a pattern.
2. Choose one or more columns by which to group.
3. Eliminate the fields that no longer make sense on the summarized view, *or* change a field's Summarization type (under **Format**) to reflect more meaningful data.

4. Make sure that you have the summarization types that you want for each field.
5. Rename any fields as necessary.

Expanding a Summary View

This section shows you how to expand and tailor a summary view to your needs.

You will find that a summary view is particularly useful if it is tailored specifically to your site and configured to run in automatic screen update (ASU) mode throughout the day. The view regularly updates itself and, as long as you set meaningful thresholds, will immediately indicate when something has gone wrong so that you can begin the debugging process.

To help you begin debugging from a summary view, a hyperlink is established automatically for the first field of every summary view.

Tip: When activated, the first hyperlink in a summary view expands the selected row into all of its constituent rows.

Look at how this process works with the view that you created in the last section, SJFLOW:

Step 1 Display SJFLOW.

The row for batch jobs might have indicated a delay percentage of 100 percent.

Step 2 To begin your investigation, place the cursor on the **B**, under **T** (Type) in the first column, and then press **Enter**.

Your screen looks like Figure 9-17 on page 9-14.

Choosing Another Column By Which to Summarize

This section shows you how to summarize by choosing a different column.

Suppose you decide that you want to group a summary view by a column other than the originally chosen column—not permanently, but only for a few moments. You can do so by using the SUM command.

Because there are not any more meaningful columns to summarize by in SJFLOW, you cannot use it as an example. Instead, use the summary view DSPCZ, which was based on the DSPCSTAT (Data Space Status) view. DSPCZ is grouped by the **Owner Name** field, as shown in Figure 9-18.

Figure 9-18 Another Summary View: DSPCZ

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==> SCROLL ==> PAGE
CURR WIN ==> 1 ALT WIN ==>

W1=DSPCZ=====SYSE=====*=====DDMMYYYY==HH:MM:SS====15:25:59====MVMVS===D==9
C Owner Fetch Cur Max
- Name Count ASID K Type Scope Ref Prot Size Size
*MASTER* 12 0001 1 Basic All Ena Yes 62F50 62F50
RASP 3 0003 0 Basic All Ena No 80000 80000
XCFAS 3 0005 0 Basic Single Dis No 80000 80000
SYSBMAS 2 0008 5 ***** ***** Ena Yes 7FFFF 7FFFF
CONSOLE 5 000A 0 Basic ***** Ena **** 99 99
VLF 2 000F 0 Basic Single Ena No 7FFFF 7FFFF
NETC 31 002E 6 Basic ***** Ena Yes 80000 80000
EYUX110 47 0048 8 Basic ***** Ena Yes 800 7FF00
JES2 2 0173 1 Basic Single Ena Yes 7FFFF 7FFFF
```

For example, to determine how many data spaces currently allow enabled and disabled users, follow this procedure:

- Step 1** To regroup the DSPCZ view by the Ref column, type **SUM** on the **COMMAND** line.
- Step 2** Place the cursor on the **Ref** field and press **Enter**.

The screen looks like Figure 9-19 on page 9-16.

Figure 9-19 Summarizing DSPCZ by the Ref Column

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                               SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
W1=DSPCZ====DSPCZ====SYSE====*=====DDMMYYYY=HH:MM:SS====MVMVS====D====2
C Owner                               Fetch  Cur  Max
- Name      Count ASID K Type  Scope Ref Prot  Size Size
XCFAS      3 0005 0 Basic Single Dis No   80000 80000
*****    104 0173 1 ***** ***** Ena **** 7FFFF 7FFFF
    
```

The groupings originally set for DSPCZ are overridden. The view is now grouped by the **Ref** field, and the information that you wanted is in the **Count** field—currently, 3 data spaces allow disabled users and 104 data spaces allow enabled users.

The SUM command is in effect until you redisplay the summary view. If you wanted to make this change permanent, you would have to enter view customization and follow the procedure outlined in “Summarizing Data” on page 9-2.

Note: There are other ways to use the SUM command. If you are looking at a tabular view—JFLOW, for example—on the **COMMAND** line, you can type **SUM** to display JFLOWZ, a view that summarizes JFLOW by service class. If you use the SUM command from a tabular view and nothing happens, a summary view has not been associated with that view.

To associate a summary view to the SUM command, follow this procedure:

- Step 1** Display the tabular view.
- Step 2** Type **CUST**.
- Step 3** Select the **S** (Save) option.
- Step 4** In the pop-up window, type the name of the summary view that you want displayed with the SUM command.

Using a Summarizing Shortcut: DEVSTATZ

The DEVSTATZ view is useful for sites with multiple systems sharing a single device. The view provides one line of data for each device, allowing system administrators and operators to quickly get an overview of a device's utilization and performance.

DEVSTATZ is actually a form applied to the DEVSTAT view; DEVSTATZ summarizes on the **Volser** field. You could get the same results by using the view customization feature; however, this method is a convenient, time-saving shortcut.

Another way to apply form DEVSTATZ is to type the **SUM** command on the **COMMAND** line from the DEVSTAT panel, as shown in Figure 9-20.

Figure 9-20 Form DEVSTATZ Applied to DEVSTAT View

```
DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
Wl =DEVSTAT==DEVSTATZ=SYSE=====DDMMYYYY==HH:MM:SS==MVMVS==D==89
C Volser Type Dev I/O      Resp. Time IOSQ Conn Disc Pend D/S Dly%
- -----  Cnt /Sec      0..50.100 Time Time Time Time Opn ----
SYSP02 3390  1 0.31 73.23 *****          72.3 0.03 0.82  75
CD4865 3480  1 2.77 57.46 *****          6.64 44.3 6.50
PAGEB6 3380  1 2.37 42.76 ****          20.1 4.41 16.6 1.65
PAGEB1 3380  1 1.83 33.02 ***           9.95 22.8 0.26
PAGEB4 3380  1 1.25 30.08 ***           10.4 18.9 0.64
MIS301 3390  1 28.4 29.68 ***          13.4 6.75 9.15 0.39  21 29.6
PAGEB3 3380  1 1.52 27.29 ***           9.58 17.5 0.17
TSG302 3380  1 1.42 22.38 **            2.91 18.9 0.56  17
BAB322 3390  1 0.42 21.88 **            11.5 9.49 0.83  83
SAD001 3380  1 0.04 21.25 **             0.83      20.4
SPLB04 3380  1 5.96 19.31 **             2.08 16.7 0.47  14
SPLB01 3380  1 1.69 17.28 **             2.10 14.7 0.46  17
ES51D2 3390  1 0.04 15.81 **            0.38 0.06 15.3
SMFB01 3380  1 4.37 15.34 **             2.17 12.7 0.38   3
BAB321 3390  1 2.81 14.78 *             11.6 2.67 0.47  88
SPLB03 3380  1 1.04 14.22 *             2.09 11.1 1.01  19
SPLB00 3380  1 0.31 14.08 *             2.08 11.8 0.16  18
MIS302 3390  1 2.12 10.78 *             3.94 6.51 0.33  29
```

Chapter 10 Redisplaying Data without Updating

The data in a window is generally updated each time that you press **Enter**. Sometimes, though, you do not want the data updated, especially when you want to debug a problem that lasts only for a few minutes. You need a way to use MAINVIEW for OS/390 to debug a problem *without updating the data*. You need *alternate forms*, as described in this chapter.

This chapter includes the following topics:

Understanding Queries and Forms	10-2
Using Commands	10-6

Understanding Queries and Forms

This section explains queries and forms.

Every view consists of one *query* and one *form*. The query tells MAINVIEW for OS/390 the kind of data that you want to see. The form specifies how the data is summarized and displayed.

Determining the Field to Be Queried

Start by looking at a view that is quite familiar.

Step 1 Display JFLOW, as shown in Figure 10-1.

Figure 10-1 JFLOW View

```

DDMMYYYY  HH:MM:SS  -----  MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS  -----
COMMAND  ===>
CURR WIN  ===> 1          ALT WIN  ===>
>W1 =JFLOW=====SYSE=====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==133
C Jobname  Intvl T SrvClass      Workflow %          Delay %          Main Reas
- - - - -  Time- - - - -      0.....50...100    0.....50...100  - - - - -
  OLTE      12:20 S STCNRM      29.6              20.7              Wait for
  OLTG      12:20 S STCNRM      32.5              20.6              Wait for
  MQMPASHN  12:20 S STCNRM      67.0              20.3              Wait for
  DC$BBI    12:20 S STCNRM      19.7              13.3              Wait for
  CICS2121  12:20 S STCNRM      13.8              12.6              Wait for
  AAOJC41   12:20 S STCNRM      29.4              11.3              Wait for
  AAODJ41D  12:20 S STCNRM      21.4              11.3              Wait for
  AAOMH41   12:20 S STCNRM      29.7              11.1              Wait for
  OLTGMVA   12:20 S STCNRM      25.2              9.3               Wait for
  JES2      12:20 S STCNRM      22.9              8.4               Wait for
  TUNCIC3   12:20 S STCNRM      5.6               8.0               Wait for
  BOLJEH1   12:20 T TSONRM      11.3              7.5               Wait for
  CNMNETD   12:20 S STCNRM      26.4              7.5               Wait for
  AAOTSHD   12:20 S STCNRM      33.3              6.8               Wait for
  CMRSST7   12:20 S STCPAS      61.2              6.6               Wait for
  CSBDCHIN  12:20 S STCNRM      2.0               5.9               Wait for
  GRS       12:20 S GRS        61.2              5.8               Wait for
  OLTGCAS   12:20 S STCNRM      36.7              5.8               Wait for

```

Suppose you spot a problem with the OLTE job that you want to investigate immediately by using the JINFO view. You could use the hyperlink in the Jobname column to display JINFO, or you could type **JINFO OLTE** on the **COMMAND** line. Either way, the data on JINFO would not be the same as the data on JFLOW because the data is updated as soon as you display the new view. To prevent this update from happening, use the **FORM** command to change the *form* of the data, without retrieving new data.

Step 2 On the **COMMAND** line, type

FORM JINFO <your_job>

where *your_job* is a job name on JFLOW.

The screen looks like Figure 10-2.

Figure 10-2 Displaying JFLOW Data by Using the JINFO Form

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ====>                                SCROLL ====> PAGE
CURR WIN ====> 1          ALT WIN ====>
Wl =JFLOW====JINFO====SYSE====*====DDMMYYYY==HH:MM:SS====MVMVS====D====1
Timeframe... Interval                                0...50..100
Jobname..... OLTE Avg Frames..          1959 Workflow... 29.56
Step/Proc...  OLTE Avg Cframes.         1682 Using Proc.  7.60
JES Number.. STC03215 Avg Eframes.       277 Using Dev..  1.07
Terminal ID.          Cframes held       1084 Total Dly.. 20.67
ASID.....          125 Eframes held       964 Processor. 20.24
Dmn.....          N/A Fixed frames        0 Device....  0.21
SC or PG #..          23 Fixed <16M..      4 Storage...  0.21
SrvClass.... STCNRM Dmd Page/Sec         0 Enqueue...  0.00
Workload....          Swp Page/Sec        0 SRM.....   0.00
%Connected..          0.0 Avg UIC.....    236 Msg.....   0.00
Disp. Prty..          245 SU/Sec.....     4222 Xcf.....   0.00
Owner.....          ++++++ EXCP/Sec....    1.5 JES.....   0.00
Status.....          Active Job Elpd Tm. 02:11:14 HSM.....   0.00
Last.....          Active JES Queue Tm 00:00:00 Unknown.... 70.66

```

The window information line contains a new field, the form field, to indicate that you are using the form JINFO.

You know that the data was not updated by comparing the data between the two views. For example, JFLOW's **Delay %** field contains the exact same number for OLTE as the **Total Dly** field on JINFO. Also, the time on the window information line did not change from JFLOW to JINFO.

Now that you have this frozen data, experiment a bit more with alternative forms. This time, use the form associated with JOVER.

Step 3 On the **COMMAND** line, type **FORM JOVER**.

The screen looks like Figure 10-3 on page 10-4.

Figure 10-3 Displaying JFLOW Data by Using the JOVER Form

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND  ===>
CURR WIN  ===> 1          ALT WIN  ===>
>W1 =JFLOW====JOVER====SYSE====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==133
C Jobname  Intvl T SrvClass  Total  Total  %Dly  %Dly  %CPU  EXCP  DmdP  SwpP
- - - - - Time- - - - - Dly%  Use%  Idle  Unknown  Util  /Sec  /Sec  /Sec  Fr
  OLTE      12:20 S STCNRM   20.67  8.67           70.66  1.1  1.5  0.2
  OLTG      12:20 S STCNRM   20.61  9.93           69.46  1.3  1.6  0.1
  MQMPASHN  12:20 S STCNRM   20.32  41.34  12.50   25.83  1.0  6.2  0.4
  DC$BBI    12:20 S STCNRM   13.27  3.26           83.47  0.3  1.0  0.1
  CICS2121  12:20 S STCNRM   12.59  2.02           85.39  0.2  0.0  0.0
  AAOJC41   12:20 S STCNRM   11.33  4.71           83.95  0.5  1.2  0.0
  AAODJ41D  12:20 S STCNRM   11.30  3.07           85.63  0.3  1.6  0.0
  AAOMH41   12:20 S STCNRM   11.12  4.69           84.19  0.5  2.2  0.0
  OLTGMVA   12:20 S STCNRM    9.31  3.14           87.54  0.5  0.0  0.0
  JES2      12:20 S STCNRM    8.40  2.50           89.10  0.2  2.2  0.1
  TUNCIC3   12:20 S STCNRM    8.02  0.48           91.50  0.1  0.0  0.0
  BOLJEH1   12:20 T TSONRM    7.54  0.96           91.50  0.1  0.0  0.3
  CNMNETD   12:20 S STCNRM    7.49  2.69           89.82  0.5  0.0  0.1
  AAOTSHD   12:20 S STCNRM    6.79  3.39           89.82  0.2  1.0  0.3
  CMRSST7   12:20 S STCPAS    6.59  10.41          82.99  1.2  0.0  0.0
  CSBDCHIN  12:20 S STCNRM    5.87  0.12           94.01  0.1  0.1  0.0
  GRS       12:20 S GRS      5.85  9.24           84.91  0.6  0.0  0.0
  OLTGCAS   12:20 S STCNRM    5.83  3.39           90.78  1.0  0.0  0.0

```

Again, you are using the same data as you did in JFLOW and in JINFO—but looking at the data in a different form.

The types of views that you can use as alternative forms depend on the view—or the query—from which you started. If you started from the DEVSTAT view, for example, it would not make much sense to request JFLOW as an alternative form. You need to find out the views that you can enter as alternate forms for JFLOW.

- Step 4** To display view help for JFLOW, place the cursor on **JFLOW** and press **PF1**.
- Step 5** Scroll down until you see the **Forms that are valid for this view** topic.
- Step 6** Put your cursor on the **Forms that are valid for this view** topic, and then press **Enter**.

Your screen will look like Figure 10-4 on page 10-5.

Figure 10-4 Help Topic for the FORM Command

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ==>                                     SCROLL ==> PAGE
CURR WIN ==> 1          ALT WIN ==>
>W1 =JFLOW====JOVER====SYSE====*=====DDMMYYYY==HH:MM:SS====MVMVS====D==133
C Jobname Intvl T SrvClass Total Total %Dly %Dly %CPU EXCP DmdP SwpP
- - - - - Time- - - - - Dly% Use% Idle Unknown Util /Sec /Sec /Sec Fr
OLTE      12:20
OLTG      12:20
MQMPASHN 12:20
DC$BBI    12:20
CICS2121 12:20
AAOJC41   12:20
AAODJ41D 12:20
AAOMH41   12:20
OLTGMVA   12:20
JES2      12:20
TUNCIC3   12:20
BOLJEH1   12:20
CNMNETD   12:20
AAOTSHD   12:20
CMRSST7   12:20
CSBDCHIN 12:20
GRS       12:20
OLTGCAS   12:20 S

```

```

Help          Forms          Help
Command ==>                                     Scroll ==> PAGE
-----
You can look at the currently displayed data in a
different format by specifying any of the
following view names on the FORM command.

o EZMJOB
o EZMJOBJA
o EZMJOBJP
o EZMJOBJS

```

This help topic displays all of the views that you can use on the FORM command from JFLOW.

Step 7 Place the cursor on the topic and press **Enter**.

Tip: Only certain views can be specified on the FORM command for a given view. Use the FORM help topic to display the list of possibilities.

You have now displayed three forms: JFLOW, JINFO, and JOVER. There is a host of commands that you can use to manipulate this stack of forms and to further filter the data. These commands are described in “Using Commands” on page 10-6.

Using Commands

The following table briefly describes these commands and their usage. You might want to try some of the examples now. If you need more information about a command, type **HELP <command name>** on the **COMMAND** line.

To Do This	Use This Command	Example
Cycle forward to the next form in the stack.	FNEXt	From the JOVER form, FNEXt displays JFLOW frozen at the time that the FORM command was issued; FNEXt again displays JINFO; FNEXt again displays JOVER.
Cycle back to the last form in the stack.	FPREV	From the JOVER form, FPREV displays JINFO; FPREV again displays JFLOW frozen at the time that the FORM command was issued; FPREV again displays JOVER.
Return to the last form; if there are no more forms in the stack, return to the last query.	END	From the JOVER form: <ol style="list-style-type: none"> 1. If you press PF3, the JINFO form is displayed. 2. If you press PF3 again, the JFLOW query is displayed. Note that the data remains frozen at the time that the first form was requested.
Delete the current query and all of its forms; return to the previous view.	ENDQuery	From the JOVER form, typing ENDQuery discards JOVER, JINFO, and JFLOW and returns to whichever view was displayed before JFLOW.
Change the parameters of a form (without updating the data).	PARm	From the JOVER form, typing PARM * 5 displays only those jobs that are delayed more than 5 percent. Only those jobs that are currently on JOVER are considered.
Change the parameters of a query and update the data.	QPARm	From the JOVER form, typing QPARM * 5 displays only those jobs that are delayed more than 5 percent. Because new data is gathered, newly active jobs may appear in the display.
Display a list of the filters currently in effect for both the query and the form.	SHOWFilt	Use SHOWFilt to help debug a situation in which you have entered several FORM and QPARm commands, but no longer have any data displayed. SHOWFilt helps you determine whether you have accidentally filtered out all possible values.
Update the data in one window without updating data in the other windows.	DATARefresh	If you have more than one window open, try typing W<x>.DATARefresh , where x is the number of the window that you want to update. The data in other windows remains unchanged. The data is updated even if you have a form applied to it. Think of DATARefresh as temporarily unfreezing the data, updating it, and then freezing it again.

Chapter 11 Filtering Data

As you saw in “Creating Your Own View” on page 8-3, you can use the L Filter option in view customization to filter data so that only certain rows are displayed. This technique works well when you want to restrict the screen to something very simple, like all jobs beginning with the letter A.

To avoid using view customization while filtering data based on *more* than one criterion, you can use the WHERE command. Thus, if you want to display all jobs beginning with A that are also experiencing CPU delays of more than a certain percentage, or all jobs having performance group/service class names between PGRP0001 and PGRP0005, you need the WHERE command.

This chapter includes the following topic:

Using the WHERE Command 11-2

Using the WHERE Command

Suppose you have been notified that performance group/service class PGRP0340 is not receiving the CPU resources that it needs. To make it easier to focus on the problem, you want to limit the data to all jobs in performance group/service class PGRP0340 that are delayed more than 60 percent.

Although you could use view customization to get the job done, the fastest, most efficient method is to use the WHERE command. WHERE applies the filter conditions that you specify to the view's *form*. This form works with a *snapshot* of the data—that is, it works with the data that fits your criteria when you applied the filter. This means that you are not consuming excess CPU resources, and you get fast access to the data.

If you *do* want the data updated each time that you press **Enter**, use the QWHERE command instead of WHERE. (It takes more time to display the data this way, because MAINVIEW for OS/390 has to retrieve the data each time.)

Before using the WHERE command, you must know the element names of the fields on which you want to place a filter. Find out these names by using the field help—that is, place the cursor on the field, press **PF1** (Help), and write down the element name. The names that you will use in this example are ASGCNMC, for the **SrvClass** field, and ASIWCPP, for the **%Dly CPU** field.

Experimenting With the WHERE Command

- Step 1** Display JCPU.
- Step 2** On the **COMMAND** line, type **WHERE**.

The Set WHERE Filter panel is displayed, as shown in Figure 11-1 on page 11-3.

Figure 11-1 Set WHERE Filter Panel

```

----- SET WHERE FILTER-----
COMMAND ===>

WHERE CONDITION:

Press END to update the form filter
CANCEL to exit without updating

```

Step 3 Choose a performance group/service class name and a %Dly CPU value from your JCPU screen. Type these conditions in the format shown here:

(ASGCNMC=PRGP0340) AND (ASIWCPP>60)

Notice that each condition is enclosed in parentheses.

Step 4 Press **PF3** (End) to return to JCPU.

The screen looks like Figure 11-2.

Figure 11-2 Jobs in PGRP0340 Delayed More Than 60%

```

DDMMYYYY HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND ===>                                     SCROLL ===> PAGE
CURR WIN ===> 1          ALT WIN ===>
W1 =JCPU=====SYSE=====*=====DDMMYY==HH:MM:SS====MVMVS====D==149
C Jobname  T SrvClass      % CPU Utilization  %Dly Avg   CPU  %TCB  %SRB Intvl
- - - - - - - - - - - - - 0.....10.....20   CPU Pty  Secs  Time  Time-
  CVMDKB11 B PGRP0340    0.81                78.4 164    16  95.9   4.1 14:29

```

All of the jobs in performance group/service class PGRP0340 that have a CPU delay of higher than 60 percent are displayed.

You can also use the WHERE command to specify complex filter conditions. For example, if you want to change the criteria and display all jobs in performance group/service classes PGRP0001 through PGRP0020—but you do not want to include performance group/service class PGRP0005—perform the following steps.

Step 5 On the **COMMAND** line, type **WHERE**.

As you can see, the **WHERE** command and its conditions are still visible, so you do not have to retype them.

Step 6 Remove the **(ASIWCPP>=60)** condition (or the equivalent condition on your system).

CPU delay is not a factor in this example.

Step 7 Type the following text at the **WHERE** prompt, or use data from corresponding fields from your system's screen:

(ASGCNMC BETWEEN PGRP0001 and PGRP0020) AND (ASGCNMC <> PGRP0005)

The **<>** is a NOT EQUAL TO operator.

Step 8 Press **PF3** (End).

The screen looks like Figure 11-3.

Figure 11-3 Jobs with Service Class Names PRGP0001 - PGRP0020

```

DDMMYYYY  HH:MM:SS ----- MAINVIEW WINDOW INTERFACE(Rv.r.mm)MVMVS -----
COMMAND  ==>
CURR WIN ==> 1          ALT WIN ==>
W1 =JCPU=====SYSE=====DDMMYYYY==HH:MM:SS====MVMVS====D==149
C Jobname  T SrvClass      % CPU Utilization  %Dly  Avg  CPU  %TCB  %SRB  Intvl
- - - - -  - - - - -  0.....10.....20  CPU  Pty  Secs  Time  Time  Time-
LGS161    T PGRP0002    1.32                14.4  185  26   97.1  2.9  14:53
EMPPFW    T PGRP0002    1.21                19.6  181  24   96.3  3.7  14:53
RAE2      T PGRP0002    0.88                14.2  205  22   98.5  3.3  14:53
CMR6      T PGRP0002    0.73                2.0   172  15   80.0  19.1 14:53
JES2      S PGRP0001    0.73                28.6  246  15   94.2  5.8  14:53
CMRHX     T PGRP0002    0.73                0.7   164  15   96.8  3.2  14:53
CPS2      T PGRP0002    0.70                84.6  188  14   95.8  4.2  14:53
AAODM22   S PGRP0010    0.68                3.8   168  13   95.5  4.5  14:53
FCL1      T PGRP0002    0.67                18.9  194  13   97.6  2.4  14:53
JDB1      T PGRP0002    0.67                39.1  179  13    8.0  2.0  14:53
LGS27P32  S PGRP0010    0.61                1.6   170  12   93.2  6.8  14:53
LGS273    T PGRP0002    0.57                4.9    11  98.6  1.4  14:53
BBNSMOE   T PGRP0002    0.57                1.1   179  11   95.2  4.8  14:53
CIR1      T PGRP0002    0.56                2.2   197  11   98.1  1.9  14:53
ABK1      T PGRP0002    0.53                0.3   236  11   96.7  3.3  14:53
CMRH      T PGRP0002    0.47                12.5  205  9    96.5  3.5  14:53

```

JCPU now contains all of the jobs having performance group/service class names PGRP0001 through PGRP0020, with the exception of PGRP0005.

Here is another example. Suppose you have several conditions that you want to specify for a single field. Instead of all of the jobs beginning with A, you want to display all of the jobs beginning with A, B, or C. You could specify this command:

```
(ASGNAME=A*) OR (ASGNAME=B*) OR (ASGNAME=C*)
```

However, the WHERE command provides the IN statement so that you can specify multiple conditions at one time. With the IN statement, all you have to specify is

```
ASGNAME IN ('A*', 'B*', 'C*')
```

Multiple conditions must be enclosed in parentheses, and each character string must be enclosed in single quotation marks. (If you are using numeric values, you would not need the quotation marks.)

Note: WHERE is limited to the data in the current *form*. That is, you cannot ask WHERE to display data that is not contained in the current view. For example, suppose you type a view name with a parameter—JFLOW LGS*, in this case—to list all of the jobs beginning with the characters LGS. If you use WHERE to try to display all jobs beginning with ABC, you will not get any data returned; the original form contains only those jobs beginning with LGS, so those are the only jobs that WHERE can list. If you do not want to be limited to the form's data, use the QWHERE command instead of WHERE.

Statements That You Can Use with the WHERE Command

The following is a list of statements that you can use with the WHERE command:

- AND
- BETWEEN
- IN
- NOT BETWEEN
- NOT IN
- OR

in conjunction with these operands:

- =
- <> (NOT EQUAL TO)
- >
- >=
- <
- <=

The WHERE equation can include an element and a constant (ASGNPGN=5) or *two* elements (ASIAVFC < ASIAVEF).

Take a few minutes now to experiment with some of the statements and operands that you did not see in this step: NOT IN, <, and so on.

For a complete discussion of the rules associated with the WHERE command, and some examples, type **HELP WHERE** on any MAINVIEW **COMMAND** line.

Glossary

This glossary defines BMC Software terminology. Other dictionaries and glossaries can be used in conjunction with this glossary.

Since this glossary pertains to BMC Software-related products, some of the terms defined might not appear in this book.

To help you find the information you need, this glossary uses the following cross-references:

Contrast with indicates a term that has a contrary or contradictory meaning.

See indicates an entry that is a synonym or contains expanded information.

See also indicates an entry that contains related information.

action	Defined operation, such as modifying a MAINVIEW window, that is performed in response to a command. <i>See</i> object.
active window	Any MAINVIEW window in which data can be refreshed. <i>See</i> alternate window, current window, window.
administrative view	Display from which a product's management tasks are performed, such as the DSLIST view for managing historical data sets. <i>See</i> view.
ALT WIN field	Input field that allows you to specify the window identifier for an alternate window where the results of a hyperlink are displayed. <i>See</i> alternate window.
Alternate Access	<i>See</i> MAINVIEW Alternate Access.
alternate form	View requested through the FORM command that changes the format of a previously displayed view to show related information. <i>See also</i> form, query.

alternate window	(1) Window that is specifically selected to display the results of a hyperlink. (2) Window whose identifier is defined to the ALT WIN field. <i>Contrast with</i> current window. <i>See</i> active window, window, ALT WIN field.
analyzer	(1) Online display that presents a snapshot of status and activity data and indicates problem areas. (2) Component of CMF MONITOR. <i>See</i> CMF MONITOR Analyzer.
application	(1) Program that performs a specific set of tasks within a MAINVIEW product. (2) In MAINVIEW VistaPoint, combination of workloads to enable display of their transaction performance data in a single view.
application trace	<i>See</i> trace.
ASCH workload	Workload comprising Advanced Program-to-Program Communication (APPC) address spaces.
AutoCustomization	Online facility for customizing the installation of products. AutoCustomization provides an ISPF panel interface that both presents customization steps in sequence and provides current status information about the progress of the installation.
automatic screen update	Usage mode wherein the currently displayed screen is refreshed automatically with new data at an interval you specify. Invoked by the ASU command.
batch workload	Workload consisting of address spaces running batch jobs.
BBI	Basic architecture that distributes work between workstations and multiple OS/390 targets for BMC Software MAINVIEW products.
BBI-SS PAS	<i>See</i> BBI subsystem product address space.
BBI subsystem product address space (BBI-SS PAS)	OS/390 subsystem address space that manages communication between local and remote systems and that contains one or more of the following products: <ul style="list-style-type: none"> • MAINVIEW AutoOPERATOR • MAINVIEW for CICS • MAINVIEW for DB2 • MAINVIEW for DBCTL • MAINVIEW for IMS Online • MAINVIEW for MQSeries (formerly Command MQ for S/390) • MAINVIEW SRM • MAINVIEW VistaPoint (for CICS, DB2, DBCTL, and IMS workloads)
BBPARM	<i>See</i> parameter library.

BBPROC	<i>See</i> procedure library.
BBPROF	<i>See</i> profile library.
BBSAMP	<i>See</i> sample library.
BBV	<i>See</i> MAINVIEW Alternate Access.
BBXS	BMC Software Subsystem Services. Common set of service routines loaded into common storage and used by several BMC Software MAINVIEW products.
border	Visual indication of the boundaries of a window.
bottleneck analysis	Process of determining which resources have insufficient capacity to provide acceptable service levels and that therefore can cause performance problems.
CA-Disk	Data management system by Computer Associates that replaced the DMS product.
CAS	Coordinating address space. One of the address spaces used by the MAINVIEW windows environment architecture. The CAS supplies common services and enables communication between linked systems. Each OS/390 or z/OS image requires a separate CAS. Cross-system communication is established through the CAS using VTAM and XCF communication links.
CFMON	<i>See</i> coupling facility monitoring.
chart	Display format for graphical data. <i>See also</i> graph.
CICSplex	User-defined set of one or more CICS systems that are controlled and managed as a single functional entity.
CMF MONITOR	Comprehensive Management Facility MONITOR. Product that measures and reports on all critical system resources, such as CPU, channel, and device usage; memory, paging, and swapping activity; and workload performance.
CMF MONITOR Analyzer	Batch component of CMF MONITOR that reads the SMF user and 70 series records created by the CMF MONITOR Extractor and/or the RMF Extractor and formats them into printed system performance reports.
CMF MONITOR Extractor	Component of CMF that collects performance statistics for CMF MONITOR Analyzer, CMF MONITOR Online, MAINVIEW for OS/390, and RMF postprocessor. <i>See</i> CMF MONITOR Analyzer, CMF MONITOR Online, MAINVIEW for OS/390.

CMF MONITOR Online

Component of CMF that uses the MAINVIEW window interface to present data on all address spaces, their use of various system resources, and the delays that each address space incurs while waiting for access to these resources. *See* CMF MONITOR, MAINVIEW for OS/390.

CMF Type 79 API

Application programming interface, provided by CMF, that provides access to MAINVIEW SMF-type 79 records.

CMFMON

Component of CMF MONITOR that simplifies online retrieval of information about system hardware and application performance and creates MAINVIEW SMF-type 79 records.

The CMFMON *online facility* can be used to view data in one or more formatted screens.

The CMFMON *write facility* can be used to write collected data as MAINVIEW SMF-type 79 records to an SMF or sequential data set.

CMRDETL

MAINVIEW for CICS data set that stores detail transaction records (type 6E) and abend records (type 6D). Detail records are logged for each successful transaction. Abend records are written when an abend occurs. Both records have the same format when stored on CMRDETL.

CMRSTATS

MAINVIEW for CICS data set that stores both CICS operational statistic records, at five-minute intervals, and other records, at intervals defined by parameters specified during customization (using CMRSOPT).

column

Vertical component of a view or display, typically containing fields of the same type of information, that varies by the objects associated in each row.

collection interval

Length of time data is collected. *See also* delta mode, total mode.

command delimiter

Special character, usually a ; (semicolon), used to stack commands typed concurrently on the COMMAND line for sequential execution.

COMMAND line

Line in the control area of the display screen where primary commands can be typed. *Contrast with* line command column.

Command MQ Automation D/S

Command MQ agents, which provide local proactive monitoring for both MQSeries and MSMQ (Microsoft message queue manager). The Command MQ agents operate at the local node level where they continue to perform functions regardless of the availability of the MQM (message queue manager) network. Functionality includes automatic monitoring and restarts of channels, queue managers, queues and command servers. In cases where automated recovery is not possible, the agents transport critical alert information to a central console.

Command MQ Automation S/390

Command MQ component, which monitors the MQM (message queue manager) networks and intercedes to perform corrective actions when problems arise. Solutions include:

- Dead-Letter Queue management
- System Queue Archival
- Service Interval Performance solutions
- Channel Availability

These solutions help ensure immediate relief to some of the most pressing MQM operations and performance problems.

Command MQ for D/S

Command MQ for D/S utilizes a true client/server architecture and employs resident agents to provide configuration, administration, performance monitoring and operations management for the MQM (message queue manager) network.

Command MQ for S/390

See MAINVIEW for MQSeries.

COMMON STORAGE MONITOR

Component of MAINVIEW for OS/390 that monitors usage and reconfigures OS/390 or z/OS common storage blocks.

composite workload

Workload made up of a WLM workload or other workloads, which are called *constituent workloads*.

constituent workload

Member of a composite workload. Constituent workloads in a composite usually belong to a single workload class, but sometimes are mixed.

contention

Occurs when there are more requests for service than there are servers available.

context

In a Plex Manager view, field that contains the name of a target or group of targets specified with the CONTEXT command. *See* scope, service point, SSI context, target context.

CONTEXT command

Specifies either a MAINVIEW product and a specific target for that product (*see* target context) or a MAINVIEW product and a name representing one or more targets (*see* SSI context) for that product.

control statement	(1) Statement that interrupts a sequence of instructions and transfers control to another part of the program. (2) Statement that names samplers and other parameters that configure the MAINVIEW components to perform specified functions. (3) In CMF MONITOR, statement in a parameter library member used to identify a sampler in the extractor or a report in the analyzer, or to describe either component's processing requirements to the operating system.
coupling facility monitoring (CFMON)	Coupling facility views that monitor the activity of your system's coupling facilities.
current data	Data that reflects the system in its current state. The two types of current data are real-time data and interval data. <i>Contrast with</i> historical data. <i>See also</i> interval data, real-time data.
current window	In the MAINVIEW window environment, window where the main dialog with the application takes place. The current window is used as the default window destination for commands issued on the COMMAND line when no window number is specified. <i>Contrast with</i> alternate window. <i>See</i> active window, window.
DASD	(Direct Access Storage Device) (1) A device with rotating recording surfaces that provides immediate access to stored data. (2) Any device that responds to a DASD program.
DASD ADVISOR	An interactive software tool that diagnoses DASD performance problems and makes recommendations to reduce overall service time. This tool measures and reports on the operational performance of IBM and IBM-compatible devices.
data collector	Program that belongs to a MAINVIEW product and that collects data from various sources and stores the data in records used by views. For example, MAINVIEW for OS/390 data collectors obtain data from OS/390 or z/OS services, OS/390 or z/OS control blocks, CMF MONITOR Extractor control blocks, and other sources. <i>Contrast with</i> extractor.
delta mode	(1) In MAINVIEW for DB2 analyzer displays, difference between the value sampled at the start of the current statistics interval and the value sampled by the current analyzer request. <i>See also</i> statistics interval. (2) In CMFMON, usage mode wherein certain columns of data reflect the difference in values between one sample cycle and the next. Invoked by the DELta ON command. <i>See also</i> collection interval, sample cycle, total mode.
DFSMS	(Data Facility Storage Management System) Data management, backup, and HSM software from IBM for OS/390 or z/OS mainframes.
DMR	<i>See</i> MAINVIEW for DB2.

DMS	(Data Management System) <i>See</i> CA-Disk.
DMS2HSM	<i>See</i> MAINVIEW SRM DMS2HSM.
DSO	(Data Set Optimizer) CMF MONITOR Extractor component that uses CMF MONITOR Extractor data to produce reports specifying the optimal ordering of data sets on moveable head devices.
EasyHSM	<i>See</i> MAINVIEW SRM EasyHSM.
EasyPOOL	<i>See</i> MAINVIEW SRM EasyPOOL.
EasySMS	<i>See</i> MAINVIEW SRM EasySMS.
element	(1) Data component of a data collector record, shown in a view as a field. (2) Internal value of a field in a view, used in product functions.
element help	Online help for a field in a view. The preferred term is <i>field help</i> .
Enterprise Storage Automation	<i>See</i> MAINVIEW SRM Enterprise Storage Automation.
event	A message issued by Enterprise Storage Automation. User-defined storage occurrences generate events in the form of messages. These events provide an early warning system for storage problems and are routed to user-specified destinations for central viewing and management.
Event Collector	Component for MAINVIEW for IMS Online, MAINVIEW for IMS Offline, and MAINVIEW for DBCTL that collects data about events in the IMS environment. This data is required for Workload Monitor and optional for Workload Analyzer (except for the workload trace service). This data also is recorded as transaction records (X'FA') and program records (X'F9') on the IMS system log for later use by the MAINVIEW for IMS Offline components: Performance Reporter and Transaction Accountant.
expand	Predefined link from one display to a related display. <i>See also</i> hyperlink.
extractor	Program that collects data from various sources and keeps the data control blocks to be written as records. Extractors obtain data from services, control blocks, and other sources. <i>Contrast with</i> data collector.
extractor interval	<i>See</i> collection interval.
fast path	Predefined link between one screen and another. To use the fast path, place the cursor on a single value in a field and press Enter . The resulting screen displays more detailed information about the selected value. <i>See also</i> hyperlink.

field	Group of character positions within a screen or report used to type or display specific information.
field help	Online help describing the purpose or contents of a field on a screen. To display field help, place the cursor anywhere in a field and press PF1 (HELP). In some products, field help is accessible from the screen help that is displayed when you press PF1 .
filter	Selection criteria used to limit the number of rows displayed in a view. Data that does not meet the selection criteria is not displayed. A filter is composed of an element, an operator, and an operand (a number or character string). Filters can be implemented in view customization, through the PARM/QPARM commands, or through the Where/QWhere commands. Filters are established against elements of data.
fire	The term used to indicate that an event has triggered an action. In MAINVIEW AutoOPERATOR, when a rule selection criteria matches an incoming event and <i>fires</i> , the user-specified automation actions are performed. This process is also called <i>handling</i> the event.
fixed field	Field that remains stationary at the left margin of a screen that is scrolled either right or left.
FOCAL POINT	MAINVIEW product that displays a summary of key performance indicators across systems, sites, and applications from a single terminal.
form	One of two constituent parts of a view; the other is query. A form defines how the data is presented; a query identifies the data required for the view. <i>See also</i> query, view.
full-screen mode	Display of a MAINVIEW product application or service on the entire screen. There is no window information line. <i>Contrast with</i> windows mode.
global command	Any MAINVIEW window interface command that can affect all windows in the window area of a MAINVIEW display.
graph	Graphical display of data that you select from a MAINVIEW window environment view. <i>See also</i> chart.
hilevel	For MAINVIEW products, high-level data set qualifier required by a site's naming conventions.
historical data	(1) Data that reflects the system as it existed at the end of a past recording interval or the duration of several intervals. (2) Any data stored in the historical database and retrieved using the TIME command. <i>Contrast with</i> current data, interval data and real-time data.

historical database Collection of performance data written at the end of each installation-defined recording interval and containing up to 100 VSAM clusters. Data is extracted from the historical database with the TIME command. *See* historical data.

historical data set In MAINVIEW products that display historical data, VSAM cluster file in which data is recorded at regular intervals.

HSM (Hierarchical Storage Management) Automatic movement of files from hard disk to slower, less-expensive storage media. The typical hierarchy is from magnetic disk to optical disk to tape.

hyperlink (1) Preset field in a view or an EXPAND line on a display that permits you to

- access cursor-sensitive help
- issue commands
- link to another view or display

The transfer can be either within a single product or to a related display/view in a different BMC Software product. Generally, hyperlinked fields are highlighted. (2) Cursor-activated short path from a topic or term in online help to related information. *See also* fast path.

Image log Collection of screen-display records. Image logs can be created for both the BBI-SS PAS and the BBI terminal session (TS).

The BBI-SS PAS Image log consists of two data sets that are used alternately: as one fills up, the other is used. Logging to the BBI-SS PAS Image log stops when both data sets are filled and the first data set is not processed by the archive program.

The TS Image log is a single data set that wraps around when full.

IMSplex System Manager (IPSM)

MVIMS Online and MVDBC service that provides Single System Image views of resources and bottlenecks for applications across one or more IMS regions and systems.

interval data Cumulative data collected during a collection interval. Intervals usually last from 15 to 30 minutes depending on how the recording interval is specified during product customization. *Contrast with* historical data.

Note: If change is made to the workloads, a new interval will be started.

See also current data and real-time data.

InTune Product for improving application program performance. It monitors the program and provides information used to reduce bottlenecks and delays.

IRUF	IMS Resource Utilization File (IRUF). IRUFs can be either detail (one event, one record) or summarized (more than one event, one record). A detail IRUF is created by processing the IMS system log through a program called IMFLEEDIT. A summarized IRUF is created by processing one or more detail IRUFs, one or more summarized IRUFs, or a combination of both, through a sort program and the TASCOSTR program.
job activity view	Report about address space consumption of resources. <i>See</i> view.
journal	Special-purpose data set that stores the chronological records of operator and system actions.
Journal log	Collection of messages. Journal logs are created for both the BBI-SS PAS and the BBI terminal session (TS). The BBI-SS PAS Journal log consists of two data sets that are used alternately: as one fills up, the other is used. Logging to the BBI-SS PAS Journal log stops when both data sets are filled and the first data set is not being processed by the archive program. The TS Journal log is a single data set that wraps around when full.
line command	Command that you type in the line command column in a view or display. Line commands initiate actions that apply to the data displayed in that particular row.
line command column	Command input column on the left side of a view or display. <i>Contrast with</i> COMMAND line.
Log Edit	In the MAINVIEW for IMS Offline program named IMFLEEDIT, function that extracts transaction (X'FA') and program (X'F9') records from the IMS system log. IMFLEEDIT also extracts certain records that were recorded on the system log by IMS. IMFLEEDIT then formats the records into a file called the IMS Resource Utilization File (IRUF).
MAINVIEW	BMC Software integrated systems management architecture.
MAINVIEW Alarm Manager (MV ALARM)	In conjunction with other MAINVIEW products, notifies you when an exception occurs. MAINVIEW Alarm Manager is capable of monitoring multiple systems simultaneously, which means that MAINVIEW Alarm Manager installed on one system keeps track of your entire sysplex. You can then display a single view that shows exceptions for all MAINVIEW performance monitors within your OS/390 or z/OS enterprise.

MAINVIEW Alternate Access

Enables MAINVIEW products to be used without TSO by providing access through EXCP and VTAM interfaces.

MAINVIEW Application Program Interface (MVAPI)

A CLIST- or REXX-based, callable interface that allows MAINVIEW AutoOPERATOR EXECs to access MAINVIEW monitor product view data.

MAINVIEW AutoOPERATOR

Product that uses tools, techniques, and facilities to automate routine operator tasks and provide online performance monitoring, and that achieves high availability through error minimization, improved productivity, and problem prediction and prevention.

MAINVIEW control area

In the MAINVIEW window environment, first three lines at the top of the view containing the window information line and the COMMAND, SCROLL, CURR WIN, and ALT WIN lines. The control area cannot be customized and is part of the information display. *Contrast with* MAINVIEW display area, MAINVIEW window area.

MAINVIEW Desktop Version of the MAINVIEW window interface designed to run on OS/2 and Windows workstations.

MAINVIEW display area

See MAINVIEW window area.

MAINVIEW Explorer Product that provides access to MAINVIEW products from a Web browser running under Windows. MAINVIEW Explorer replaces MAINVIEW Desktop.

MAINVIEW for CICS Product (formerly MV MANAGER for CICS) that provides real-time application performance analysis and monitoring for CICS system management.

MAINVIEW for DB2 Product (formerly MV MANAGER for DB2) that provides real-time and historical application performance analysis and monitoring for DB2 subsystem management.

MAINVIEW for DBCTL (MVDBC)

Product that provides real-time application performance analysis and monitoring for DBCTL management.

MAINVIEW for IMS (MVIMS) Offline

Product with a Performance Reporter component that organizes data and prints reports used to analyze IMS performance and a Transaction Accountant component that produces cost accounting and user charge-back records and reports.

MAINVIEW for IMS (MVIMS) Online

Product that provides real-time application performance analysis and monitoring for IMS management.

MAINVIEW for IP

Product that monitors OS/390 and z/OS mission-critical application performance as it relates to TCP/IP stack usage. Collected data includes availability, connections, response times, routers, service levels, storage, traffic, Web cache, and so on.

MAINVIEW for Linux–Servers

Product that allows you to monitor the performance of your Linux systems from the MAINVIEW windows interface.

MAINVIEW for MQSeries (formerly known as Command MQ for S/390)

Delivers comprehensive capabilities for configuration, administration, performance monitoring and operations management for an entire MQM (message queue manager) network.

MAINVIEW for OS/390

System management application (formerly known as MAINVIEW for MVS prior to version 2.5). Built upon the MAINVIEW window environment architecture, it uses the window interface to provide access to system performance data and other functions necessary in the overall management of an enterprise.

MAINVIEW for UNIX System Services

System management application that allows you to monitor the performance of the Unix System Services from a MAINVIEW window interface.

MAINVIEW for VTAM

Product that displays application performance data by application, transaction ID, and LU name. This collected data includes connections, response time statistics, application availability, and application throughput.

MAINVIEW for WebSphere Application Server (formerly known as MAINVIEW for WebSphere)

Product that provides extensive monitoring for the IBM WebSphere Application Server for z/OS and OS/390 environment.

MAINVIEW Selection Menu

ISPF selection panel that provides access to all MAINVIEW windows-mode and full-screen mode products.

MAINVIEW SRM

See MAINVIEW Storage Resource Manager (SRM).

MAINVIEW SRM DMS2HSM

Product that facilitates the conversion of CA-Disk, formerly known as DMS, to HSM.

MAINVIEW SRM EasyHSM

Product that provides online monitoring and reporting to help storage managers use DFHSM efficiently.

MAINVIEW SRM EasyPOOL

Product that provides control over data set allocation and enforcement of allocation and naming standards. EasyPOOL functions operate at the operating system level to intercept normal job processing, thus providing services without any JCL changes.

MAINVIEW SRM EasySMS

Product that provides tools that aid in the conversion to DFSMS and provides enhancement to the DFSMS environment after implementation. EasySMS consists of the EasyACS functions, the SMSACSTE function, and the Monitoring and Positioning Facility.

MAINVIEW SRM Enterprise Storage Automation

Product that delivers powerful event generation and storage automation technology across the storage enterprise. Used in conjunction with MAINVIEW AutoOPERATOR, automated solutions to perform pool, volume, application, or data set-level manipulation can be created and used in response to any condition or invoked to perform ad hoc requests.

MAINVIEW SRM SG-Auto

Product that provides early warning notification of storage anomalies and automated responses to those anomalies based on conditions in the storage subsystem.

MAINVIEW SRM SG-Control

Product that provides real-time monitoring, budgeting, and control of DASD space utilization.

MAINVIEW SRM StopX37/II

Product that provides enhancements to OS/390 or z/OS space management, reducing the incidence of space-related processing problems. The StopX37/II functions operate at the system level to intercept abend conditions or standards violations, thus providing services without any JCL changes.

MAINVIEW SRM StorageGUARD

Product that monitors and reports on DASD consumption and provides historical views to help control current and future DASD usage.

MAINVIEW Storage Resource Manager (SRM)

Suite of products that assist in all phases of OS/390 or z/OS storage management. MAINVIEW SRM consists of products that perform automation, reporting, trend analysis, and error correction for storage management.

MAINVIEW SYSPROG Services

See SYSPROG services.

MAINVIEW VistaPoint

Product that provides enterprise-wide views of performance. Application and workload views are available for CICS, DB2, DBCTL, IMS, OS/390, or z/OS. Data is summarized at the level of detail needed; for example, views can be for a single target, an OS/390 or z/OS image, or an entire enterprise.

MAINVIEW window area

Portion of the information display that is not the control area and in which views are displayed and windows opened. It includes all but the first three lines of the information display. *Contrast with* MAINVIEW control area.

monitor

Online service that measures resources or workloads at user-defined intervals and issues warnings when user-defined thresholds are exceeded.

Multi-Level Automation (MLA)

The user-defined, multiple step process in Enterprise Storage Automation that implements solutions in a tiered approach, where solutions are invoked one after another until the condition is resolved.

MVALARM

See MAINVIEW Alarm Manager.

MVAPI

See MAINVIEW Application Program Interface.

MVCICS

See MAINVIEW for CICS.

MVDB2

See MAINVIEW for DB2.

MVDBC

See MAINVIEW for DBCTL.

MVIMS

See MAINVIEW for IMS.

MVIP

See MAINVIEW for IP.

MVLNX

See MAINVIEW for Linux–Servers.

MVMQ

See MAINVIEW for MQSeries.

MVMVS

See MAINVIEW for OS/390.

MVScope

MAINVIEW for OS/390 application that traces both CPU usage down to the CSECT level and I/O usage down to the channel program level.

MVSRM

See MAINVIEW Storage Resource Manager (SRM).

MVSRMHSM

See MAINVIEW SRM EasyHSM.

MVSRMSGC	<i>See</i> MAINVIEW SRM SG-Control.
MVSRMSGD	<i>See</i> MAINVIEW SRM StorageGUARD.
MVSRMSGP	<i>See</i> MAINVIEW SRM StorageGUARD.
MVUSS	<i>See</i> MAINVIEW for UNIX System Services.
MVVP	<i>See</i> MAINVIEW VistaPoint.
MVVTAM	<i>See</i> MAINVIEW for VTAM.
MVWEB	<i>See</i> MAINVIEW for WebSphere Application Server.
nested help	Multiple layers of help pop-up windows. Each successive layer is accessed by clicking a hyperlink from the previous layer.
object	<p>Anything you can manipulate as a single unit. MAINVIEW objects can be any of the following: product, secondary window, view, row, column, or field.</p> <p>You can issue an action against an object by issuing a line command in the line command column to the left of the object. <i>See</i> action.</p>
OMVS workload	Workload consisting of OS/390 OpenEdition address spaces.
online help	Help information that is accessible online.
OS/390 and z/OS Installer	BMC Software common installation system for mainframe products.
OS/390 product address space (PAS)	Address space containing OS/390 or z/OS data collectors, including the CMF MONITOR Extractor. Used by MAINVIEW for OS/390, MAINVIEW for UNIX System Services, and CMF MONITOR products. <i>See</i> PAS.
parameter library	<p>Data set consisting of members that contain parameters for specific MAINVIEW products or a support component There can be several versions:</p> <ul style="list-style-type: none"> • the distributed parameter library, called BBPARAM • a site-specific parameter library or libraries <p>These can be</p> <ul style="list-style-type: none"> • a library created by AutoCustomization, called UBBPARAM • a library created manually, with a unique name

PAS	Product address space. Used by the MAINVIEW products. Contains data collectors and other product functions. <i>See also</i> OS/390 product address space (PAS) <i>and</i> BBI subsystem product address space (BBI-SS PAS).
performance group workload	Collection of address spaces defined to OS/390 or z/OS. If you are running OS/390 or z/OS with WLM in compatibility mode, MAINVIEW for OS/390 creates a performance group workload instead of a service class.
PERFORMANCE MANAGER	MAINVIEW for CICS online service for monitoring and managing current performance of CICS regions.
Performance Reporter (MVIMS)	MVIMS Offline component that organizes data and prints reports that can be used to analyze IMS performance.
Performance Reporter	Product component that generates offline batch reports. The following products can generate these reports: <ul style="list-style-type: none"> • MAINVIEW for DB2 • MAINVIEW for CICS
Plex Manager	Product through which cross-system communication, MAINVIEW security, and an SSI context are established and controlled. Plex Manager is shipped with MAINVIEW window environment products as part of the coordinating address space (CAS) and is accessible as a menu option from the MAINVIEW Selection Menu.
pop-up display	Full-screen panel that displays additional information about a selected event in a detail trace.
pop-up window	Window containing help information that, when active, overlays part of the window area. A pop-up window is displayed when you issue the HELP command while working in windows-mode.
PRGP workload	In MVS/SP 5.0 or earlier, or in compatibility mode in MVS/SP 5.1 or later, composite of service classes. MAINVIEW for OS/390 creates a performance group workload for each performance group defined in the current IEAIPS.xx member.

procedure library Data set consisting of members that contain executable procedures used by MAINVIEW AutoOPERATOR. These procedures are execute command lists (EXECs) that automate site functions. There can be several versions:

- the distributed parameter library, called BBPROC
- a site-specific parameter library or libraries

These can be

- a library created by AutoCustomization, called UBBPROC
- a library created manually, with a unique name

The site-created EXECs can be either user-written or customized MAINVIEW AutoOPERATOR-supplied EXECs from BBPROC.

product address space

See PAS.

profile library

Data set consisting of members that contain profile information and cycle refresh definitions for a terminal session connected to a BBI-SS PAS. Other members are dynamically created by MAINVIEW applications. There can be several versions:

- the distributed profile library, called BBPROF
- a site-specific profile library or libraries

These can be

- a library created by AutoCustomization, called SBBPROF
- a library created manually, with a unique name

The site library is a common profile shared by all site users. The terminal session CLIST creates a user profile automatically if one does not exist; it is called `userid.BBPROF`, where `userid` is your logon ID. User profile libraries allow each user to specify unique PF keys, CYCLE commands, target system defaults, a Primary Option Menu, and a unique set of application profiles.

query

One of two constituent parts of a view; the other is form. A query defines the data for a view; a form defines the display format. *See also* form, view.

real-time data

Performance data as it exists at the moment of inquiry. Real-time data is recorded during the smallest unit of time for data collection. *Contrast with* historical data. *See also* current data and interval data.

Resource Analyzer

Online real-time displays used to analyze IMS resources and determine which are affected by specific workload problems.

Resource Monitor	Online data collection services used to monitor IMS resources and issue warnings when defined utilization thresholds are exceeded.
row	(1) Horizontal component of a view or display comprising all the fields pertaining to a single device, address space, user, and so on. (2) Horizontal component of a DB2 table consisting of a sequence of values, one for each column of the table.
RxD2	Product that provides access to DB2 from REXX. It provides tools to query the DB2 catalog, issue dynamic SQL, test DB2 applications, analyze EXPLAIN data, generate DDL or DB2 utility JCL, edit DB2 table spaces, perform security administration, and much more.
sample cycle	Time between data samples. For the CMF MONITOR Extractor, this is the time specified in the extractor control statements (usually 1 to 5 seconds). For real-time data, the cycle is not fixed. Data is sampled each time you press Enter .
sample library	Data set consisting of members each of which contains one of the following items: <ul style="list-style-type: none"> • sample JCL that can be edited to perform specific functions • macro that is referenced in the assembly of user-written services • sample user exit routine <p>There can be several versions:</p> <ul style="list-style-type: none"> • the distributed sample library, called BBSAMP • a site-specific sample library or libraries <p>These can be</p> <ul style="list-style-type: none"> • a library created by AutoCustomization, called UBBSAMP • a library created manually, with a unique name
sampler	Program that monitors a specific aspect of system performance. Includes utilization thresholds used by the Exception Monitor. The CMF MONITOR Extractor contains samplers.
SBBPROF	<i>See</i> profile library.
scope	Subset of an SSI context. The scope could be all the data for the context or a subset of data within the context. It is user- or site-defined. <i>See</i> SSI context, target.

screen definition	Configuration of one or more views that have been stored with the SAVEScr command and assigned a unique name. A screen includes the layout of the windows and the view, context, system, and product active in each window.
selection view	In MAINVIEW products, view displaying a list of available views.
service class workload	<p>Collection of address spaces defined to OS/390 or z/OS. If you are running Workload Manager (WLM) in goal mode, MAINVIEW for OS/390 creates a service class workload for each service class that you define through WLM definition dialogs.</p> <p>If you are running MVS 4.3 or earlier, or MVS/SP 5.1 or later with WLM in compatibility mode, OS/390 creates a performance group workload instead of a service class. <i>See</i> performance group workload.</p>
service objective	Workload performance goal, specified in terms of response time for TSO workloads or turnaround time for batch workloads. Performance group workloads can be measured by either objective. Composite workload service objectives consist of user-defined weighting factors assigned to each constituent workload. For compatibility mode, neither OS/390 nor z/OS provides any way to measure service.
service point	<p>Specification, to MAINVIEW, of the services required to enable a specific product. Services can be actions, selectors, or views. Each target (for example, CICS, DB2, or IMS) has its own service point.</p> <p>The PLEX view lists all the defined service points known to the CAS to which the terminal session is connected.</p>
service request block (SRB)	Control block that represents a routine to be dispatched. SRB mode routines generally perform work for the operating system at a high priority. An SRB is similar to a task control block (TCB) in that it identifies a unit of work to the system. <i>See also</i> task control block.
service select code	Code entered to invoke analyzers, monitors, and general services. This code is also the name of the individual service.
session	Total period of time an address space has been active. A session begins when monitoring can be performed. If the product address space (PAS) starts after the job, the session starts with the PAS.
SG-Auto	<i>See</i> MAINVIEW SRM SG-Auto.
SG-Control	<i>See</i> MAINVIEW SRM SG-Control.

single system image (SSI)

Feature of the MAINVIEW window environment architecture where you can view and perform actions on multiple OS/390 or z/OS systems as though they were a single system. The rows of a single tabular view can contain rows from different OS/390 or z/OS images.

Skeleton Tailoring Facility

A facility in MAINVIEW AutoOPERATOR that allows skeleton JCL to be used during job submission. Skeleton JCL can contain variables within the JCL statements to be substituted with data values at job submission time. Directive statements can be used in the skeleton JCL to cause the repetition of a set of skeleton statements. This facility functions similar to the TSO skeleton tailoring facility.

SRB *See* service request block.

SSI *See* single system image.

SSI context Name created to represent one or more targets for a given product. *See* context, target.

started task workload

Address spaces running jobs that were initiated programmatically.

statistics interval For MAINVIEW for DB2, cumulative count within a predefined interval (30-minute default set by the DB2STATS parameter in the distributed BBPARM member BBIISP00) for an analyzer service DELTA or RATE display. Specifying the DELTA parameter displays the current value as the difference between the value sampled by the current analyzer request and the value sampled at the start of the current interval. Specifying the RATE parameter displays the current value by minute (DELTA divided by the number of elapsed minutes).

stem variables A REXX facility, supported in MAINVIEW AutoOPERATOR REXX EXECs and the Skeleton Tailoring Facility, where variable names end with a period followed by a number, such as &POOL.1. This configuration allows each variable to actually represent a table or array of data, with the zero variable containing the number of entries in the array. For example, &POOL.0 = 5 would indicate variables &POOL.1 through &POOL.5 exist.

StopX37/II *See* MAINVIEW SRM StopX37/II.

StorageGUARD *See* MAINVIEW SRM StorageGUARD.

summary view View created from a tabular view using the Summarize option in view customization. A summary view compresses several rows of data into a single row based on the summarize criteria.

SYSPROG services	Component of MAINVIEW for OS/390. Over 100 services that detect, diagnose, and correct OS/390 or z/OS system problems as they occur. Accessible from the OS/390 Performance and Control Main Menu. Note that this component is also available as a stand-alone product MAINVIEW SYSPROG Services.
system resource	<i>See</i> object.
target	Entity monitored by one or more MAINVIEW products, such as an OS/390 or z/OS image, an IMS or DB2 subsystem, a CICS region, or related workloads across systems. <i>See</i> context, scope, SSI context.
target context	Single target/product combination. <i>See</i> context.
TASCOSTR	MAINVIEW for IMS Offline program that summarizes detail and summary IMS Resource Utilization Files (IRUFs) to be used as input to the offline components.
task control block (TCB)	Address space-specific control block that represents a unit of work that is dispatched in the address space in which it was created. <i>See also</i> service request block.
TCB	<i>See</i> task control block.
terminal session (TS)	Single point of control for MAINVIEW products, allowing data manipulation and data display and providing other terminal user services for MAINVIEW products. The terminal session runs in a user address space (either a TSO address space or a stand-alone address space for EXCP/VTAM access).
TDIR	<i>See</i> trace log directory.
threshold	Specified value used to determine whether the data in a field meets specific criteria.
TLDS	<i>See</i> trace log data set.
total mode	Usage mode in CMFMON wherein certain columns of data reflect the cumulative value between collection intervals. Invoked by the DELta OFF command. <i>See also</i> collection interval, delta mode.
trace	(1) Record of a series of events chronologically listed as they occur. (2) Online data collection and display services that track transaction activity through DB2, IMS, or CICS.

trace log data set (TLDS)

Single or multiple external VSAM data sets containing summary or detail trace data for later viewing or printing. The trace log(s) can be defined as needed or dynamically allocated by the BBI-SS PAS. Each trace request is assigned its own trace log data set(s).

trace log directory (TDIR)

VSAM linear data set containing one entry for each trace log data set. Each entry indicates the date and time of data set creation, the current status of the data set, the trace target, and other related information.

transaction

Specific set of input data that initiates a predefined process or job.

Transaction Accountant

MVIMS Offline component that produces cost accounting and user charge-back records and reports.

TS

See terminal session.

TSO workload

Workload that consists of address spaces running TSO sessions.

UAS

See user address space.

UBBPARM

See parameter library.

UBBPROC

See procedure library.

UBBSAMP

See sample library.

user address space

Runs a MAINVIEW terminal session (TS) in TSO, VTAM, or EXCP mode.

User BBPROF

See profile library.

view

Formatted data within a MAINVIEW window, acquired from a product as a result of a view command or action. A view consists of two parts: query and form. *See also* form, job activity view, query.

view definition

Meaning of data that appears online, including source of data, selection criteria for data field inclusion and placement, data format, summarization, context, product, view name, hyperlink fields, and threshold conditions.

view command

Name of a view that you type on the COMMAND line to display that view.

view command stack

Internal stack of up to 10 queries. For each command, the stack contains the filter parameters, sort order, context, product, and time frame that accompany the view.

view help	Online help describing the purpose of a view. To display view help, place the cursor on the view name on the window information line and press PF1 (HELP).
window	Area of the MAINVIEW screen in which views and resources are presented. A window has visible boundaries and can be smaller than or equal in size to the MAINVIEW window area. <i>See</i> active window, alternate window, current window, MAINVIEW window area.
window information line	Top border of a window. Shows the window identifier, the name of the view displayed in the window, the system, the scope, the product reflected by the window, and the tomfooleries for which the data in the window is relevant. <i>See also</i> window status field.
window number	Sequential number assigned by MAINVIEW to each window when it is opened. The window number is the second character in the window status field. <i>See also</i> window status field.
window status	One-character letter in the window status field that indicates when a window is ready to receive commands, is busy processing commands, is not to be updated, or contains no data. It also indicates when an error has occurred in a window. The window status is the first character in the window status field. <i>See also</i> window information line, window status field.
window status field	Field on the window information line that shows the current status and assigned number of the window. <i>See also</i> window number, window status.
windows mode	Display of one or more MAINVIEW product views on a screen that can be divided into a maximum of 20 windows. A window information line defines the top border of each window. <i>Contrast with</i> full-screen mode.
WLM workload	In goal mode in MVS/SP 5.1 and later, a composite of service classes. MAINVIEW for OS/390 creates a workload for each WLM workload defined in the active service policy.
workflow	Measure of system activity that indicates how efficiently system resources are serving the jobs in a workload.
workload	(1) Systematic grouping of units of work (for example, address spaces, CICS transactions, IMS transactions) according to classification criteria established by a system administrator. (2) In OS/390 or z/OS, a group of service classes within a service definition.
workload activity view	Tracks workload activity as the workload accesses system resources. A workload activity view measures workload activity in terms of resource consumption and how well the workload activity meets its service objectives.

Workload Analyzer Online data collection and display services used to analyze IMS workloads and determine problem causes.

workload definition Workload created through the WKLIST view. Contains a unique name, a description, an initial status, a current status, and selection criteria by which address spaces are selected for inclusion in the workload. *See* Workload Definition Facility.

Workload Definition Facility

In MAINVIEW for OS/390, WKLIST view and its associated dialogs through which workloads are defined and service objectives set.

workload delay view

Tracks workload performance as the workload accesses system resources. A workload delay view measures any delay a workload experiences as it contends for those resources.

Workload Monitor Online data collection services used to monitor IMS workloads and issue warnings when defined thresholds are exceeded.

workload objectives

Performance goals for a workload, defined in WKLIST. Objectives can include measures of performance such as response times and batch turnaround times.

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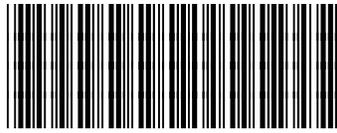
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